

**MOKOLO AND CROCODILE
WATER AUGMENTATION PROJECT
PHASE 2 (MCWAP-2)**

TENDER NO 054/2024/PMID/MCWAP2/RFB

**PART C3.1
SPECIFICATION**

SECTION 33

**LAYING AND TESTING
STEEL PIPES**

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SPECIFICATION

SECTION 33
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SECTION 33

LAYING AND TESTING OF STEEL PIPES

33.1 SCOPE

This section covers the laying and jointing of electrically welded low carbon steel pipes and specials of diameter up to 2500 mm, for transporting water under working pressures of up to 4 000 kPa.

This section shall apply to pipes manufactured from low carbon steel plate (grades 300 WA to SANS 1431, grades X42, X46, X52, X56, etc. to API 5L, grade S355JR + AR to EN 10025-2 and grades A, B and C to SANS 719), 3CR12 plate or stainless steel grade 304L or 316L.

This Section shall be read in conjunction with, inter alia, with all the relevant modular Specification Sections. For ease of reference the following key technical Sections are highlighted:

- Section 5 : Survey and Setting Out;
- Section 9 : Bulk Surface Excavation and Trenching
- Section 15 : Backfilling and Bedding;
- Section 20 : Concrete Works (Structural);
- Section 28 : Mechanical General;
- Section 32 : Pipes and Pipe Specials;
- Section 34 : AC Mitigation and Cathodic Protection;
- Section 35 : Valves; and
- Section 37 : Painting and Corrosion Protection.

33.2 DEFINITIONS, ABBREVIATIONS AND REFERENCES

33.2.1 Definitions

The following terms whenever used in this section shall have the following meanings:

- a) **“Approved Inspection Authority”** (AIA) shall mean the accredited organisation appointed by the Contractor to independently monitor the quality of material, welding, corrosion protection, installation and testing in the factories and on Site.
- b) **“Joint hole”** shall mean an enlarged excavation around a joint on the pipe to give room for workmen to reach the sides and bottom of the pipe.
- c) **“Bending shoes”** shall mean devices used when bending a pipe to prevent crushing and flattening the pipe and to obtain a smooth curve.
- d) **“Contractors Inspectorate”** shall mean the accredited organisation appointed by the Contractor to monitor the quality of material, welding, corrosion protection, installation and testing in the factories and on site.

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Deflection (ovality) of pipes shall be $\Delta = \frac{\Delta d}{ND} \times 100 \%$, where Δd is the difference between the actual measured vertical diameter of the pipe [D_v] and the inside diameter of a perfectly round pipe (ID) and ND is the nominal diameter of the pipe.

- e) **“Dolly”** shall mean a device having rollers on which lengths of pipe can be placed, permitting the pipe to be rotated easily to facilitate welding.
- f) **“Minor connection”** shall mean a branch connection where the branch diameter (D_b) does not exceed $0.3D$, where “d” is the main pipe diameter, or DN300, whichever is the lesser.
- g) **“Position weld (or stove pipe weld)”** shall mean a weld made under such conditions that the pipe cannot be rotated to keep the welder always working in the same position, as a consequence of which the welder must change positions as his work proceeds around the weld.
- h) **“Rolling weld”** shall mean a weld made from one position as the pipe is rotated.
- i) **“Root or stringer bead”** shall mean the first weld bead applied to the joint between two sections of pipe.

33.2.2 Abbreviations

AIA	:	Approved Inspection Authority
API	:	American Petroleum Industry
ASME	:	American Society of Mechanical Engineers
ASTM	:	American Society for Testing Materials
AWWA	:	American Water Works Association
BS	:	British Standard
BS EN	:	British Standard and European Norm
BSPT	:	British Standard pipe thread
D	:	Diameter
DN	:	Nominal diameter – (ISO 6708)
ERW	:	Electrical resistance weld
FA	:	Flange adaptor
FBE	:	Flanged both ends
FOE	:	Flanged one end
FW	:	Field weld
ID	:	Inside diameter
ISO	:	International Standards Organisation
OD	:	Outside diameter
PBE	:	Plain both ends
PE	:	Plain end
PN	:	Nominal pressure (Rating) - (ISO 7268)
PQI	:	Production Quality Inspectorate
RFA	:	Restrained flange adaptor
SANS	:	South African National Standard
SAW	:	Submerged arc weld
SOC	:	Slip-on coupling
STT	:	Surface Tension Transfer welding
WP (B)	:	Weld preparation (Butt)

33.2.3 References

When reference is made to a Code of Practice, Specification or Standard, the reference shall be taken to mean the latest edition or replacement at time of tender of the Code, Specification or Standard; including addenda, supplements, modifications and revisions thereto. Where a previous version is intentionally used, it will be indicated as such. Where reference is made to a Code, Specification or Standard that has subsequently been withdrawn and not replaced, the intended content will remain relevant unless confirmed otherwise in writing by the Engineer.

33.3 MATERIALS

33.3.1 General

Refer to Section 32 – Pipes and Pipe Specials.

33.3.2 Flanges

Refer to Section 28 – Mechanical General.

33.3.3 Gaskets

Refer to Section 28 – Mechanical General.

33.3.4 Fasteners

Refer to Section 28 – Mechanical General.

33.3.5 Corrosion Protection

Refer to Section 37 – Painting and Corrosion Protection.

33.3.6 Valves

Refer to Section 35 – Valves.

33.3.7 Bedding and Backfilling

Refer to Section 15 – Backfilling and Bedding.

33.4 EQUIPMENT

33.4.1 General

The Contractor shall provide all labour, equipment, tools and supplies required for the construction of the pipeline.

33.4.2 Welding Equipment

The Contractor shall provide all welding equipment, including shielded-type welding electrodes, standby welding machines and generators and all equipment required to complete the jointing of the pipeline. Mobile welding machines shall be operated within the amperage and voltage ranges recommended for each size and type of electrode. Any equipment which does not meet these requirements shall be repaired or replaced upon request of the Engineer. (Refer also API 1104 clause 4.1).

33.4.3 Storage, Handling and Transportation

Storage, handling and transportation shall comply with the requirements of Section 28 – Mechanical General and Clause 32.8 of Section 32 - Pipes and Pipe Specials.

The following additional requirements are applicable:

- a) Pipes shall generally be distributed and stored as close as possible to the laying position in order to minimize double handling. Where possible pipes are strung alongside the trench, they should be placed on the side away from the excavated material.
- b) Where pipes, fittings and specials are to be stockpiled in bulk storage yards, the Contractor shall make his own arrangements for a suitable area which shall meet with the Engineer's approval. The stockpiling area shall be adequately fenced and protected by a lockable gate and a watchman shall be maintained at all times.
- c) Pipes and Pipe Specials shall be strung and stockpiled on level, well drained ground in a manner such that they will not be in contact with the ground, tree stumps, or other sharp objects and all vegetation and other combustible material shall be completely removed to at least 5 m from the nearest pipe or pipe special.
- d) The Contractor shall arrange with the supplier and with the Engineer for the delivery of the pipes to Site. The Contractor shall be responsible the offloading and storage of the pipes.
- e) The Plant and rigging equipment used by the Contractor for the offloading, storage, handling and placing of pipes shall be such that no pipe shell is over-stressed during any operation and no damage done to the coating or lining of the pipeline.
- f) All rubber rings or other materials which will deteriorate under the action of sunlight, ozone or inclement weather, shall be stored in permanent shade in lockable weatherproof sheds. Welding and the running of welding machines and electric machinery shall not be permitted in or near places where rubber or plastic products are stored and care shall be taken at all times to prevent contamination of these products by oil or other petroleum derived solvents.
- g) The Engineer or the AIA shall be afforded every opportunity to inspect such materials on their arrival on site prior to off-loading. If its condition is found to be unacceptable to the Engineer on arrival, the Contractor shall remove it forthwith from the Site and replace them at no extra cost to the Employer. The Contractor shall ensure that the necessary quality assurance is done prior to pipes being delivered to Site. The complete data pack of the relevant pipes delivered shall accompany the delivery. Payment for material on Site is subject to receipt of approved data packs.

33.4.4 Setting Out

The setting out of pipework shall comply with the requirements of Section 5 – Survey and Setting Out.

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The Contractor may use any device acceptable for the Engineer, including incorporating a laser beam, to control the vertical and horizontal alignment of the pipeline.

33.4.5 Testing

The Contractor shall provide all the Plant, materials, tools and fittings required for the performance of the tests described in Clause 33.7.

33.5 CONSTRUCTION**33.5.1 Laying****33.5.1.1 General**

The pipelines shall be laid and bedded (see Section 15 –Backfilling and Bedding) to straight lines and grades between vertical bends and to the levels and alignments shown on the Drawings, or as directed by the Engineer in writing. The pipeline shall be laid centrally in the trench in such a manner that both side allowances conform to the applicable value specified in Table 9/2 of Section 9 – Bulk Surface Excavations and Trenching or as indicated on the Drawings.

For ease of inspection and testing the pipes shall be laid with the manufacturer's class and quality identification marks visible from the top of the trench, unless, in the case of large pipes, the position of lifting eyes renders this not practical.

Control of laying and the thickness and top surface of bedding layers shall be by means of boning rods and sight rails or an acceptable laser beam device.

All welders shall be qualified. Welding shall be executed only by qualified welders who satisfy the requirements of API 1104. Certificates shall be provided sufficiently in advance of the planned start of any welding on site to allow details contained therein to be verified prior to the commencement of laying.

33.5.1.2 Damage

Each pipe, pipe special and fitting shall be thoroughly cleaned and carefully examined for damage and defects prior to laying. Should any damaged or defective pipe, pipe special or fitting be laid, it shall be removed and replaced at the Contractor's expense and to the satisfaction of the Engineer.

During laying, the anti-corrosion lining of pipes being joined by butt welding shall be protected against damage by foot traffic or weld spatter, to the satisfaction of the Engineer and in the manner described in Clause 33.5.2.4.

Repairs to dented steel pipes and specials shall only be attempted if the dimensions between the lowest point of a dent and the original pipe contour is less than 2% of the outside diameter of the pipe or special for pipes and specials up to 610 mm OD and 1% of the outside diameter for larger pipes and specials. Repair of these minor dents shall be done as approved by the Engineer and all such repairs shall be tested by the application of a liquid penetrant to detect cracks or laminations in the metal.

Dents in steel pipes or specials of which the depth exceed the above limits and any dents which contain scratches or grooves or which affect the curvature of pipe barrels at welds shall be repaired by cutting out a length of pipe barrel long enough to eliminate the defect. Damaged sections shall

be replaced in accordance with the Engineer's instructions. The ends of pipes intended for field welding shall be re-chamfered to $30^{\circ} + 5^{\circ}$ with width of root face 1,6 mm + 0,8 mm.

33.5.1.3 Repairs to Linings and Coatings

All damaged linings and coatings of pipes, pipe specials and fittings shall be made good in accordance with Section 37 – Painting and Corrosion Protection and to the satisfaction of the Engineer before, during and after installation in the trench, provided always that damage, which, in the opinion of the Engineer is extensive, might subject such pipe, pipe special or fitting to rejection and removal from the pipeline.

The materials used for the repairs to linings and coatings shall be in accordance with Section 37 – Painting and Corrosion Protection unless otherwise approved by the Engineer in writing.

The linings and coatings of butt welded steel pipes shall be made continuous over joints as soon as possible after approval and acceptance by the Engineer of the welded joint. The extent of field joint lining and coating repairs shall comply with Section 15 – Backfilling and Bedding.

External protection shall be applied to flexible couplings as soon as the pipeline has been hydrostatically tested and electrically bonded, where applicable.

33.5.1.4 Keeping Pipelines Clean

Every reasonable precaution shall be taken to prevent the entry of foreign matter and water into the pipe(s). At the close of each day's work, or at any time when work is suspended for a significant period, the last laid section of the pipeline shall be plugged, capped or otherwise tightly closed until laying is recommenced.

The interior of pipes shall be perfectly clean before being laid and the Engineer may instruct that the pipe interior be cleaned or washed before the pipes are lowered into the trench. All brushes, trowels, welding rod stumps, pieces of mortar, dust and all foreign matter shall be removed from pipes immediately before laying. Once a section of pipeline has been cleaned, it shall be sealed off and not be entered again unless permitted by the Engineer.

During laying and jointing of pipes and until the pipeline has passed the required acceptance tests and the trench has been backfilled, the trench shall be kept in a state which, in the opinion of the Engineer, is reasonably dry.

The Contractor shall at his own expense make good any damage to valves and fittings or clogging of off-takes or malfunctioning of fittings which result from his failure to keep the pipeline in a thoroughly clean condition.

33.5.1.5 Depths and Cover

Unless otherwise shown on the Drawings or ordered by the Engineer, the minimum cover for pipelines shall be 1.00 m. Pipelines shall be laid to even grades to the levels and alignments shown on the Drawings. Refer to Clause 9.5.7 of Section 9 – Bulk Surface Excavation and Trenching.

33.5.1.6 Clearance between Pipelines

The minimum clearance between the outside of a pipeline being laid and the outside of any other pipe that it crosses shall be 300 mm, unless otherwise approved by the Engineer. Where this

requirement conflicts with the requirements for cover over the pipeline the Contractor shall ask the Engineer for written instructions and shall carry out the work in accordance with those instructions.

33.5.1.7 Cold Stresses and Deflection in Pipe Curvature

Pipes shall be laid free from cold stresses. No pipe string deflections shall be effected by inducing curvature of pipes. Deflections affected shall only be via approved bends mitres with exceptions as hereinafter specified. Deflections in pipes with flexible couplings shall not exceed those recommended by the manufacturer of the couplings, after making allowance for ground movements, etc.

33.5.1.8 Mitres to Effect Pipe Deflections

All deflections under 6° of the axis of pipelines with flexible joints shall be made by spreading the deflection over not less than 5 joints, provided always that the deflection in any one joint does not exceed those recommended by the manufacturer of the joint after allowance for pipe settlement, heave or other ground or pipe movements.

All deflection in the axis of butt welded steel pipelines of 11.25° or less shall be made by scarfing equally the ends of the two pipes to be joined so that the maximum scarf in any one pipe will be 5.63° .

Where the total deflection is 5.63° or less, the scarfing may be made in one pipe end only. Ends to be scarfed shall be carefully and accurately marked and then either machine cut or machine planed. Hand planing shall not be permitted.

After scarfing, the pipe ends shall be re-chamfered as described in SANS 719. The minimum gap between pipe end root faces before welding shall be 1.5 mm and the maximum gap shall be 3.0 mm. After scarfing all pipe ends shall be thoroughly cleaned before the field weld is carried out.

33.5.1.9 Cutting of Epoxy Lined Pipes

Refer Section 37 – Painting and Corrosion Protection for treatment of repairs, pipe cuts and butt-welded joints.

33.5.1.10 Cold Bends to Pipe of DN < 500 mm.

Where the Engineer gives written approval for cold bends, they shall be made by the cold stretch method in such a manner as to preserve the cross-sectional shape of the pipe. The minimum radius of any such bend shall be twenty five times the outside diameter of the pipe. Approved bending shoes shall be used for bending of the pipes.

33.5.1.11 Snaking

Snaking into the trench of butt-welded sections of steel pipeline which have been factory lined and/or coated will not be permitted.

33.5.1.12 Stringing of Pipes

The Contractor shall ensure that pipes are strung in accordance with the Drawings for proper placement by diameter, wall thickness and specifications. Any transporting of pipes resulting from failure to comply with these requirements shall be at the Contractor's expense.

33.5.1.13 Transporting, Handling and Storage of Pipes, Specials and Fittings

Pipes and specials shall be handled as specified in Section 32 – Pipes and Pipes Specials. External pipes shall be protected from grit and other sharp objects while the pipe is in the trench prior to bedding. Walking on coated pipes will not be allowed. The Engineer may reject any length of coating on which physical damage due to any cause whatsoever is found.

33.5.1.14 Wheel/Skid Pipe Supports

Wheel/skid pipe supports are required to launch the service pipe through a concrete sleeve pipe laid or jacked in position at the required level and gradient. Supports of sufficient number and strength shall be supplied by the Contractor to support the pipe at the proper level. If a pipe is supported over the trench, skids shall be of sufficient length to prevent collapsing of the trench and of sufficient strength to carry the pipe. For coated pipe a sufficient number of skids shall be used to prevent damage to the coating.

33.5.2 Jointing Methods**33.5.2.1 Flexible Couplings**

The joints of steel pipes by flexible couplings shall be made only in their final position. Before assembling the joint, care shall be taken to ensure that pipe ends and couplings are clean and free from burrs and ridges. Such burrs and ridges shall be removed. Pipe ends shall be mated carefully before joints are made. Pipe ends shall be concentric and perfectly lined up and the coupling shall not be relied upon to line up or to support the pipe.

Joints shall be made and couplings assembled to the manufacturer's instructions. Bolts shall be placed with bolt heads alternatively pointing in other directions. Two-thirds of the number of coupling bolts, equally spaced, shall first be partially tightened up in a regular sequence, using a short spanner. The remaining bolts shall then be similarly tightened.

After checking the coupling alignment, the bolts shall then be finally tightened evenly, using a torque wrench.

Where couplings without central registers are used, precautions shall be taken to ensure that the pipe ends are apart by the same distance as if a coupling with central register had been used and the coupling shall be carefully centred over the pipe ends.

Flexible couplings shall be provided with additional external protection as soon as the pipeline has been hydrostatically tested and electrically bonded, where applicable.

The roundness of the pipe must be such that it complies with the project specifications, as well as at least the minimum tolerance requirements for the coupling that will be used.

33.5.2.2 Flanged Joints

All flanges shall be installed with bolt holes off-centre and symmetrically off-set from the vertical centre lines of the flanges. Flanges shall be installed truly square to the axis of the pipe.

In the jointing of steel pipes with flanges, special care shall be taken to align, grade and level the pipes, specials and valves to avoid straining of the flanges. All bitumen and paint shall be removed from the mating face of each flange immediately before jointing. Epoxy paints shall not be removed from flange faces. Insertion pieces that have accurately cut holes for bolts shall be placed to form a continuous one-piece ring between the flanges. Bolts shall be tightened up to ensure uniform bearing on the insertion. Care shall be taken to avoid damage to the internal surface of the pipes during assembly of the pipeline.

Wherever loose flanges are welded onto pipelines, the Contractor shall ensure that the inner lining is restored to the thickness specified for such lining and that the new repaired lining is soundly jointed to the existing lining.

In making the joint, the Contractor shall ensure that the flanges are truly parallel with all bolts evenly firm before being finally drawn up with torque wrenches to water tightness. Taper gauges shall be used to check that there is a uniform gap before and after final tightening up of bolts. Bolts shall be tightened in an approved sequence with bolts equally spaced and tightened equally at opposite ends first. The Contractor shall ensure that the correct jointing materials, i.e. gaskets and bolts and nuts are available when required. The gaskets shall be in accordance with Section 32 – Pipes and Pipe Specials. In the case of insulated joints, the insulated materials shall be arranged as set out in Code of Practice No. SAECC/1.

Flanged fittings shall be so installed that there are no stresses induced into the pipework specials or fittings by forcing ill-fitting units into position or by bolting up flanges with faces not uniformly in contact with their gaskets (Refer Section 28 – Mechanical General).

Flanges shall be provided with additional external protection as soon as the pipeline has been hydrostatically tested and electrically bonded, where applicable.

33.5.2.3 Bolts and Nuts

All bolts and nuts shall be in accordance with Section 28 – Mechanical General. All bolt sizes shall conform to the requirements of Section 35 – Valves unless otherwise specified.

The threads of bolts, studs and nuts shall be thoroughly cleaned and then coated with a graphite-grease compound immediately prior to assembly.

33.5.2.4 Field Welding

(a) General

Field welding of pipes with internal lining will only be permitted if it is possible to apply the joint lining in accordance with the Specifications and under safe working conditions, after welding and weld testing in accordance with Clause 33.7.2 has been completed.

At the discretion of the Engineer, controlled roll welding will be permitted, provided pipe alignment is maintained by use of skids or of structural framework to accommodate two or more lengths of pipe with an adequate number of roller dollies to prevent sag in the pipe. The entire root bead, however, shall be made with the pipe in a stationary position.

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All pipes welded in the trench shall be properly laid and aligned before stove pipe welding commences. Joint holes shall be excavated at all such field welds. The Contractor shall not lift the pipe to provide adequate access for the welders to enable them to weld the joint.

The alignment of abutting ends shall be such that the offset will not exceed 1.7 mm. Line up clamps shall be used for joint "fit-ups". "Bridges and wedges" or any method that may damage the coating or pipe end shall not be used unless approved by the Engineer for limited application where no other fit up method works.

Both ends of coated and lined pipes shall be wrapped for a distance of at least 800 mm on either side of the weld by means of an asbestos mat or other approved material to ensure that weld spatter or other damage is not caused to the coating and lining during the welding process. The pipe trench shall be kept free of all dirt and water in the vicinity of the weld until after all corrosion protection measures have been completed and approved.

Destructive testing as specified in Clause 33.7.2.1 shall be carried out. The Contractor shall submit to the Engineer for approval a full procedure specification as detailed in API 1104, clause 5.3 prior to any field welding being allowed.

(b) Welding Procedure

Before any welding of pipeline materials commences, the qualification of welders shall have been approved, all detailed welding procedure specifications with weld diagrams required for their completion shall have been submitted for approval in a neat form and the welding procedure qualification tests shall have been successfully concluded all in accordance with the relevant standard specifications. Each welder shall mark the pipe adjacent to the weld with the figure assigned to him.

Sufficient records shall be kept by the Contractor to ensure that all field welds can be subsequently identified with the welder concerned.

As far as practicable all out-of-trench welding shall be done by an automatic submerged process and the Contractor shall provide all necessary equipment to carry out this process. MSEAP welding may be used where in-trench welding is done.

Pre- and post-heat treatment for welding shall be in accordance with API 1104 if required by same and the Contractor shall provide an approved shield to protect the pipe joint from wind and weather during heat treatment and welding.

(c) Line Up

Pipes shall be lined up in such a manner as to prevent it being damaged. If the pipe to be used has a longitudinal seam, these seams shall be staggered by not less than twenty degrees and welded sections, or single lengths, shall be assembled in such a manner that this seam shall remain in the top quadrant of the pipe during coating operations and after lowering into the trench.

(d) Cleaning of Pipe Ends

Before welding, all foreign matter shall be removed from the bevelled ends. If any of the ends of the pipe joints are damaged to the extent that satisfactory welding contact cannot be obtained, the damaged pipe ends shall be cut and re-bevelled with an approved bevelling machine.

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These field bevels of pipe ends shall be made to the satisfaction of the Engineer. Should laminations, split ends, or other defects in the pipe be discovered, the joints of pipes containing such defects shall be cropped, repaired, or removed from the line as designated by the Engineer.

(e) Inclement Weather

No welding shall be carried out during rain or high wind unless the welder and joint are adequately protected and sheltered, to ensure that the welding is not impaired.

(f) Protection of Coatings and Linings during Circumferential Welding

To protect the pipe coating, before welding commences, a suitable apron at least 800 mm wide shall be wrapped around both sides of the area to be welded. The apron shall be of sufficient width and shall cover a sufficiently wide area of pipe to ensure that weld spatter or fallout from arc weld does not damage the coating.

To protect the pipe lining, before welding commences, rubber mats or other suitable material shall be laid in the pipe invert of epoxy lined steel pipes to protect the lining against damage by construction traffic or fall-out from arc welding at the joint. The mats shall be placed the full distance from the point of access up to the point of weld or weld inspection. The mats shall be of sufficient width and shall cover a sufficiently wide area of pipe to protect the lining against damage due to access by staff, equipment, inspectors or fallout from arc weld.

Workmen shall wear soft rubber soled shoes before entering lined pipes. Care shall be taken not to stroke arcs on the epoxy lined areas adjacent to the weld joint. Immediately before welding of joints, the protective tape between the ends of cement-mortar or epoxy linings and coatings and pipe ends shall be removed.

(g) Butt-welding

Pipes and specials to be joined by field welding shall be supplied with bevel ends for welding. All welding of joints shall comply with API 1104 and only approved type welding rods shall be used.

If backing rings are permitted, they shall be placed in position and wedged up or adjusted so that the pipe ends are completely circular and properly mated. The space between abutting pipe ends, when aligned for welding, shall be such as to ensure complete penetration without burn-through. For pipes having the same dimensions, the spacing shall be approximately 1.5 mm.

The alignment of the abutting pipe ends shall be such as to minimize the offset between pipe surfaces. For pipes of the same nominal wall thickness, the offset shall not exceed 1.5 mm.

Internal line-up clamps shall be used wherever practicable and may be removed after the root bead is 50% completed, provided that the completed part of the root bead is in segments of approximately equal lengths, spaced about the circumference of the pipe. If conditions make it difficult to prevent movement of the pipe, or if the weld will be unduly stressed, the root bead shall be completed before releasing clamp tension.

External line-up clamps shall be used where it is impracticable to use internal line-up clamps. Partial root beads made when using external clamps shall be uniformly spaced about the circumference of the pipe, and shall have an accumulative length of not less than 50% of the pipe circumference before the clamps are removed.

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Tack-welding shall be carried out to maintain the root gap and position of the pipe ends during the welding proper. The number of tack-welds shall be kept to a minimum but shall not be less than four around the circumference of the pipe.

After proper preparation and tack-welding, the root bead shall be carried out followed by successive filler passes, and capper finish pass in accordance with the approved welding procedure.

The filler and capper beads shall be deposited by an acceptable method and each filler bead shall be approximately 3 mm in thickness. Completed welds shall have a reinforcing of not less than 0.8 mm and not more than 1.5 mm above the pipe surface around the entire perimeter of the weld, and the width of the finish or cover shall be not more than 3 mm greater than the original groove.

The number of beads required shall be governed by the wall thickness of the pipe, so that the completed weld will have the reinforcement previously specified, provided however, that each weld shall consist of at least three beads. No two beads shall be started at the same point. No mitre welds will be permitted, and all welds are to be at ninety degrees ($\pm 5^\circ$) to the axis of the pipe. All slag and scale shall be removed from each bead for visual inspection immediately after each bead is run.

In all field butt-welds where it is possible to work inside the pipe, the inside weld shall be undertaken first. The inner weld metal or reinforcement shall not extend more than 1 mm above the inside metal surface of a pipe or special, and any excess shall be removed by grinding.

The Contractor will not be allowed to complete butt-welds partly (i.e., alignment, tack-welding and root-welding) and then returning only to complete the filler welding much later.

The chemical composition of weld metal and parent metal shall be similar.

Defects caused by stray welding arc flashes shall be removed by grinding, provided that the pipe wall thickness is not reduced to less than the specified minimum thickness, otherwise the portion shall be cut out and repaired.

(h) Fillet Welding

Welding shall be as for butt-welding as applicable. All pipes of DN 600 mm and over shall be welded on both the outside and the inside. This is subject to the requirements of the OSH act.

(i) Welding Rods

Only welding rods which have been kept dry and uncontaminated shall be used. Welding rods shall be of grade and quality such that the chemical composition of weld metal and parent metal is similar.

(j) Welding alongside the Trench

Pipes may be welded together alongside the edge of the trench. For factory lined and coated pipes, the maximum length so welded together shall be such that:

- The pipe can be subsequently stored, lifted or handled without damage to linings or coatings or welds.
- The horizontal or vertical pipe deflection shall not be more than 2% for pipes with cement mortar lining and 3% for pipes with epoxy lining.
- Safe and easy access to internal tie-in welds are assured for staff and inspectorate with equipment.

(k) Making Good Linings and Coatings outside the Trench

The linings and coatings of pre-lined and coated pipes jointed together outside the trench shall be made good at these joints outside the trench.

33.5.2.5 Repair of Welds

Rectification of defective welds shall be in accordance with API 1104 and to the satisfaction of the Engineer. All costs related to the repair of defective welds shall be borne by the Contractor. Defective welds shall be repaired immediately once they have been found to be defective. The Engineer has the right to stop the Contractor proceeding with further pipe laying in the event of the Contractor delaying the rectification of defective welds. Furthermore, no consideration will be given to any claims arising from delays in construction resulting from such action.

33.5.3 Installation of Pipe Specials and Fittings**33.5.3.1 General**

Welding shall comply with API 1104. All pipe specials and other fittings shall be installed in accordance with the Drawings and instructions of the Engineer. Where slip-on or sleeve couplings are to be fitted, all surfaces shall be thoroughly cleaned to a smooth finish, care being taken to remove as little of the protective coating as possible.

33.5.3.2 Bends

Bends shall be installed true to line, level and deflection and shall be anchored in concrete where required to counteract thrust. Bends shall normally be supplied with centre planes marked with two small punch marks close to both ends of the bends to facilitate correct positioning of the bends in laying.

33.5.3.3 Tees

Tees for air valves shall be installed as indicated on the Drawings. Tees for scour valves shall be installed with branch barrels horizontal or at the gradients indicated on the Drawings. Tees for off-takes shall be installed as shown on the Drawings.

Field installation of the off-takes from the pipelines for air and scour valve installations and farm connections will not be allowed. Tees for these off-takes and connections shall be factory manufactured unless approved otherwise by the Engineer.

33.5.3.4 Flanges

All flanges shall be installed with bolt holes off-centre and symmetrically off-set from the vertical centre lines of the flange. Flanges shall be installed truly square to the axis of the pipe.

33.5.3.5 Insulating Flanged Joints

Insulating flange joints shall be provided and installed by the Contractor where specified or instructed by the Engineer. The Contractor shall supply all materials, labour and Plant required and

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shall complete and prove that each insulating flange joint after installation in the pipeline has a resistance well in excess of the resistance to earth of the pipeline on both sides of the insulating joint. Refer to Section 34 for detailed specifications.

33.5.3.6 Temporary Closure Pieces

Temporary closure pieces shall be of the same standard, diameter and wall thickness as the pipeline, except where otherwise specified or instructed by the Engineer.

33.5.3.7 Permanent Closure Pipes

Permanent closure pipes shall be provided and installed as pipe laying proceeds. They shall be either butt welded to adjacent pipes, or jointed to adjacent access pipes, fittings or pipe specials by means of slip-on couplings.

33.5.3.8 Thrust Flanges

Where thrust flanges are to be installed on Site for anchoring pipes or steep slopes etc., these flanges shall be supplied by the Contractor split in two equal segments, undrilled with outer perimeter un-machined.

33.5.3.9 Minor Connections and Off-takes

A number of small connections for farms and other minor consumers may be installed during the laying of the pipeline, but the position of these will only be fixed on Site. Connections shall be installed on Site taken from prefabricated branch tees. Typical assemblies of complete minor off-takes are shown on the Drawings and these consist of branches in the pipeline, stop cocks, pressure reducing and relief valves, constant discharge orifices, water meters and strainers and manholes around valves and meters, all in accordance with approved Drawings. All off-takes shall terminate at pipeline servitude boundaries.

33.5.3.10 Dismantling Joints

Dismantling joints shall be installed where indicated on the Drawings. These shall normally be provided to facilitate the removal of valves or similar fittings from the pipeline. The Contractor shall supply and install dismantling joints with due regard to their pressure rating and mating flanges. The hydraulic pressure-restraining tie-bolts shall be carefully installed to tie the pipework across the dismantling joint. Dismantling joints shall be watertight.

33.5.4 Temporary Sealing of Pipeline

33.5.4.1 Night-caps

Metal night-caps shall be used to close off all ends of each laid section of pipeline when work is stopped at the end of each day or for longer periods and shall be left on the ends of sections of completed pipeline until such sections are tied-in with the remainder of the completed pipeline. The night-caps shall consist of a steel plate welded into a half slip-on coupling which shall be provided with a sufficient number of lugs to secure the ring and gasket and shall be strong enough to withstand external water and earth pressure in the event of flooding or collapse of earth. The coupling shall be watertight.

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The Contractor shall also, at his own expense, blank-off all air valves, scour valves and off-takes with 6 mm thick blank flanges which shall be bolted with at least four bolts to tee flanges or shall be fixed to plain ended tee branches by half couplings welded to the blank flanges. These shall be watertight and shall not be removed until the valves or other fittings are about to be fitted.

Notwithstanding the use of night-caps, the Contractor shall, at his own expense, make good all damage to pipe linings and fittings caused by the ingress of dirty water, silt, sand, debris, vermin, insects and other foreign matter. The Contractor shall, at his own expense and to the satisfaction of the Engineer, clean the interior of the pipeline of such contaminants.

33.5.4.2 Prevention of Flotation

Pipes to be encased in concrete shall be prevented from flotation during concreting operations.

Apart from this special case during concreting operations, the Contractor shall prevent the flotation of pipe work due to storm runoff or groundwater entering the trench before backfilling has been completed (see Section 8 - Dealing with Water).

Methods adopted to prevent flotation shall not damage coatings or linings and shall be approved by the Engineer. Notwithstanding this, the Contractor shall at his own expense repair all damage to pipework caused by flotation and/or by the methods adopted to prevent it.

33.5.4.3 Air and Scour Valve Outlets

The Contractor shall, at his own expense, blank-off all air valve, scour valve and off-take tees with at least 8 mm thick blank flanges which shall be bolted with at least four bolts to tee flanges or shall be fixed to plain ended tee branches by using half couplings welded to the blank flanges. These shall be watertight and shall not be removed until the valves or other fittings are about to be fitted.

33.5.5 Installation of Valves and Meters

Valves, meter bodies and fittings shall be supplied, painted externally and internally. The Contractor shall thoroughly clean damaged exterior painted surfaces of all valves, meter bodies and fittings of all dirt, rust, grease and other foreign matter by methods approved by the Engineer and shall make good all damaged surfaces in accordance with the relevant Clauses of Section 37 – Painting and Corrosion Protection.

Valves requiring special adjustment after installation such as self-closing valves shall be commissioned by representatives of the valve manufacturers. Similarly, meters shall be commissioned by the respective suppliers after installation by the Contractor.

The mass of valves or water meters shall at no time be carried by the pipe, the flange or the coupling. Support stools shall be constructed as soon as practicable after the installation of valves and meters, and shall generally be constructed of concrete or masonry work. Where fabricated steel stools are approved or specified they shall comply with the requirements of SANS 10044-3 and shall be fabricated to the Engineer's approval.

Supports shall be welded to the pipe only where specified and linings and coatings of such pipes and specials shall be made good after welding.

Hydrostatic testing of individual sections of the pipeline shall be carried out only when all valves and meters have been installed, except where otherwise instructed by the Engineer in writing.

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Should line control valves or other Plant not be delivered timeously to enable the Contractor to lay continuously and to test the pipeline, the Engineer may order the Contractor to substitute specially made temporary flanged closure pieces. Such temporary closure pieces shall be supplied and installed by the Contractor to enable laying and testing to proceed. Subsequently, in order to install the control valves, etc., it shall be removed and shall become the Contractor's property.

33.5.6 Encasings, Anchor Blocks and Chambers

33.5.6.1 Concrete Encasing

Refer Section 15 –Backfilling and Bedding.

33.5.6.2 Anchor Blocks

Where required, at tees, bends, terminal valves, end caps and where otherwise directed, anchor / thrust blocks shall be constructed to dimensions ordered or shown on the Drawings. Unless otherwise specified or indicated on the Drawings, anchor/thrust blocks and pedestals shall be constructed of Class 15/19 concrete or such other class as is scheduled.

The concrete shall be well punned round the pipe and, if in trenches, against the undisturbed faces and bottom of the trench. Backfilling behind or under thrust faces will not be permitted. Excess excavation shall be replaced with the prescribed mix concrete given above for anchor/thrust blocks at the Contractor's expense unless an item is scheduled to cover payment for overbreak. Care shall be taken to leave the joints accessible. No anchor/thrust blocks and pedestals shall be concreted until the approval of the Engineer has been obtained.

33.5.6.3 Valve Chambers

Valve chamber shall be constructed as indicated on the Drawings.

33.5.7 Corrosion Protection of Exposed Elements

33.5.7.1 Final Painting

Make-good of internal linings and internal field joint linings shall be completed progressively during construction. Once a section of pipeline has been completed, tested and accepted, it shall be quarantined and no further access shall be permitted. If the quarantine is breached, the internal lining must be re-tested for electrical insulation defects (holidays).

After successful hydrostatic testing of the pipeline, and after completion of all construction work under this Contract, all external surfaces of uncoated steelwork and surfaces of all valves and fittings shall be prepared and painted as specified in the relevant clauses of Section 37 – Painting and Corrosion Protection.

In addition, all surfaces of materials which had received first coats of paint in the course of the Contract in accordance with the specifications shall receive final coats of paint according to the colour code in Section 37.

33.5.8 Marker Posts, Bench Marks and Marking of Chambers and Appurtenances

33.5.8.1 Placement of Marker Posts

Precast concrete marker posts as detailed shall be placed as follows:

- a) Exactly above the centre line of the pipeline;
- b) At all changes in direction of the pipeline;
- c) Along straight sections to allow line of sight;
- d) At 500m intervals on straight pipeline sections;
- e) On pipeline servitude boundaries at intersection with property boundaries;
- f) On both sides of road, railway, Eskom and any other servitude crossings;
- g) On both sides of river and stream crossings; and
- h) At farm boundary crossings.

The exact chainage measured along the pipeline at each marker shall be stencilled clearly in indelible paint (see Clause 33.5.8.3) on two opposing sides of the marker beacon and a serial number to easily identify a marker beacon or to detect loss of a beacon by a break in consecutive numbers, on a third side.

33.5.8.2 Triangulation Beacons

Combined triangulation/benchmark beacons as detailed on the Drawings shall be placed at approximately 5 km intervals along the pipeline. Wherever possible and approved by the Engineer, these triangulation pins with benchmark and marking plates with data shall be incorporated on the outside of chambers founded on undisturbed ground i.e., scour valves, non-return valves, isolating valve chambers, jacking pits (launching or receiving) etc.

The beacons shall all be accurately numbered, levelled and triangulated with the following data to the specified accuracy hard stamped on it:

- a) Beacon number;
- b) Measured chainage;
- c) Reduced level above MSL to an accuracy of $\pm (0,01 + 0,005 \sqrt{\text{length of pipeline in km}})$; and
- d) X and Y co-ordinates in metres to the applicable L0 system used on the construction in Section 5.

The free standing combined beacons shall be sited next to manholes and firmly concreted-in in undisturbed ground in a position such that excavations for the repair of the pipeline will not disturb or damage the beacons.

On completion of triangulation the threaded portion of the triangulation pins shall be covered with a graphite/grease compound and the end covers firmly screwed back by hand.

33.5.8.3 Marking of Chambers and Appurtenances

All chambers constructed on the pipeline shall be clearly marked on the outside to denote the appurtenances housed in each and the chainages thereof. Marking shall be by stencilling in yellow

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road marking paint in letters not smaller than 75 mm. All markings shall face the upstream direction. Abbreviations to be used shall be as follows:

Air valves	: AV (number off)
Isolating valves	: IV
Scour valves	: Sc V
Access only	: AX
Air valve in conjunction with access	: AV (T or D or SL)/AX
Non-return valves	: RV
Insulating flanges	: IF
Water meters	: M
All farm off-takes	: FO
All bulk off-takes	: BO
Surge tank	: ST
Pressure control valve	: PC
Flow control valve	: FC

All chambers shall also be marked with the appurtenance abbreviations as above and chainages clearly legible either hard stamped or engraved (10 mm minimum lettering size) on 100 x 40 x 2 mm thick stainless steel 304 L plate fitted to the inside concrete wall closest to the ladder with two M6 stainless steel non-removable anchors. Alternatively, the details may be hard stamped on the manhole covers frame. The marking shall facilitate the component identification tagging or bar coding that forms part of the compilation of the asset register.

33.6 TOLERANCES

33.6.1 General

No deviation will be permitted from the minimum pipe cover specified or shown on the Drawings.

33.6.2 Control Points

Clause 5.8 in Section 5: Survey and Setting Out deals with the general setting out of the Works.

For the purposes of this Clause, valves and pipe specials set on the centre line of the pipeline and designated changes in gradient shall be regarded as control points and shall be located with a permissible vertical deviation of ± 100 mm on the centre line. The same deviation will be permissible laterally except where the pipeline is laid at a designated distance from a property boundary or kerb line in which case the permissible deviation shall be ± 20 mm.

Unless otherwise directed and subject to a permissible deviation (measured along the centre line) of ± 2 m, scour valves shall be located at the lowest points in pipelines and air valves at the highest points.

33.6.3 Alignment (Plan and Level)

PLAN: Unless otherwise directed, the permissible deviation from the defined alignment of the pipeline, when measured on the top centre of the pipeline, shall be ± 100 mm or $\pm 10\%$ of the nominal diameter of the pipe, whichever is the larger, and the permissible deviation per pipe length shall be ± 20 mm.

LEVEL: The permissible deviation from the designated level at any point on the invert of the pipeline shall be plus or minus the smallest value of 10% of the outside diameter of the pipeline or 50 mm subject to the condition that slope of the pipeline shall remain either positive or negative as specified on the Drawings and that the slope shall never be less than 0.20% .

33.6.4 Valve Chambers, etc.

Manholes, valve chambers and the like shall be constructed centrally on the control points and, with the exception of tolerances that affect access to bolts, nuts, etc., with a permissible deviation of 50 mm on all clearance dimensions. The clearance dimension between the outside of each nut and bolt-head and the inside face of the wall of a structure or any other fitting shall be at least the specified value.

The valve chamber general layout drawings must be complied with. If any potential deviations/conflicts are observed at the setting out stage, the Engineer must be notified immediately in writing.

33.7 TESTING**33.7.1 Hydrostatic Testing**

As the work proceeds, pipelines shall be hydrostatically tested by means of test equipment supplied by the Contractor.

Each test shall be carried out in the presence of the Engineer or his representative. The Contractor shall be responsible for carrying out all tests and for all expenses incurred.

When carrying out the hydrostatic tests (see Clause 33.7.5), the Contractor shall ensure that all valves, tees, and bends are properly secured and shored to prevent movement of pipes and fittings and, should any such movement occur, the Contractor shall, at his own expense, reposition and, if necessary, repair the pipes and fittings and the securing means.

Until each section of the pipeline has been subjected to the hydrostatic test and has complied with the applicable requirement for leakage rate given in Clause 33.7.5.6, the pipeline will not be accepted. The hydrostatic test shall be repeated until the Engineer is satisfied that the section under test complies with the said requirement.

33.7.2 Testing of Field Welds**33.7.2.1 Destruction tests**

Tests as specified in API 1104 clause 6.5 shall be carried out and approved prior to any field welding being undertaken.

33.7.2.2 Radiographic Testing of Butt Welds on Pipe-ends and Specials

The Contractor shall be responsible for radiographic testing and adjudication of test records to maintain his quality control system and a high standard of installation and welding. The Contractor shall provide all equipment and consumables required for his own testing.

Although an Approved Inspection Authority (AIA) is appointed by the Contractor to independently monitor the quality of welding and corrosion protection in the factories and on Site, this shall not absolve the manufacturers and Contractor from the obligation to implement their own quality assurance programmes for this work. However, the Employer recognises that the radiographic weld testing on site is a time consuming process and that it may not be practical to duplicate this activity without potentially delaying production. In this regard the Contractor shall allow for the testing of 100% of the field joints by an accredited weld testing authority other than the AIA. The Contractor will share these test results with the Engineer but the Engineer will have the right to instruct independent ad hoc radiographic testing as and when required. The radiographic testing shall be digitally recorded for record purposes.

100% of the total length of all manual field butt welds and field welds undertaken by an approved automatic process on pipe sections and pipe specials will initially be examined radiographically with particular reference to weld intersections, using equipment supplied and staffed by the Contractor's Inspectorate. The extent of testing may be reduced during the course of the Contract if the standard of welding is sufficiently high to warrant such a reduction. All welds on critical sections such as where the pipe intersects with road and river crossings shall be tested radiographically by the Contractor's Inspectorate. Scheduling of the testing activities will have to be coordinated to have the least interference with the progress of the Works.

All welds formed by the installation of the temporary end-caps for the hydrostatic testing (refer to Clause 33.7.5.1) shall be tested radiographically.

The Contractor's Inspectorate shall process and adjudicate radiographs on site. The standard of acceptability shall be in accordance with API 1104.

All welds which are found to be unsatisfactory shall be repaired and re-radiographed at the Contractor's expense.

When welding the line together at places where the test welds have been cut out, one weld will be used if it is practicable to pull the line back into position, otherwise, two welds will be made by setting in a short length of pipe with a minimum length of 750 mm.

A record of the results of each test weld shall be made by the Contractor's Inspectorate and jointly signed by the AIA, Engineer's Representative and Contractor's Representative.

Extra welds shall be construed to mean those welds cut out at the Engineer's request which, after specified tests, are found to meet the Engineer's Specification, except those free initial test welds referred to herein.

Claims arising from delays in construction caused by justifiable additional radiography which may be ordered by the Engineer or re-radiography of repairs will not be considered.

33.7.2.3 Liquid-penetrant Testing

A 100% liquid-penetrant test shall be carried out by the Contractor on all field welds except where radiographic testing is undertaken.

The liquid-penetrant test shall be carried out as specified in SANS 2001-DP6 and a) – g) below:

- a) The Contractor shall obtain the approval of the Engineer for the group of liquid-penetrant and developer that he proposes to use for the test;
- b) As pipe laying progresses, field welds shall be subjected to the test soon after each weld is completed;
- c) In order to obtain a surface that is dry, clean and free from scale, dirt and grease, the Contractor may grind but he shall not grit blast the surface;
- d) The temperature of the surface to which the developer and the penetrant are applied shall not be below 16°C or above 52°C;
- e) Observations for indications shall be made not less than 15 minutes and not more than 60 minutes after the application of the penetrant;
- f) Any surfaces on which non-relevant indications are observed shall be explored by visual methods and, if considered necessary by the Engineer, such surfaces shall be cleaned and retested; and
- g) Welds that show no relevant trace of dye on the developer will be accepted.

33.7.2.4 Visual Testing

All field welds shall be inspected visually throughout their entire length by the Contractor for signs of possible defects/faults. Full records of the testing of each joint shall be kept by the Contractor and his findings reported to the Engineer.

33.7.2.5 Testing of Fillet Welds

In addition to the liquid penetrant tests, each fillet weld shall be air and bubble tested by the Contractor by pumping air into the annular space between the welds to a pressure of at least double the specified working pressure. While this pressure is maintained, all welds and connections shall be tested with soap or primer. Defects found during testing shall be repaired by the Contractor, and testing continued, all at the Contractor's expense until a satisfactory result is obtained.

The test tapping point shall then be plugged in an approved manner.

33.7.3 Pipe Lining Integrity Testing

Once all work in the pipeline has been completed bar the hydrostatic testing and the backfilling, the pipeline shall be cleaned by sweeping with a soft broom and rinsing. Access to this section shall be restricted from this point forward and will only be allowed on the written consent of the Engineer.

Holiday detection testing is to be undertaken by the Contractor on the lining in order to ensure that it remained intact during the transport, handling, placing and backfilling processes. Holiday testing may also be undertaken by the Approved Inspection Authority. Testing and repair work shall be in accordance with Section 37 – Painting and Corrosion Protection.

33.7.4 Pipe Coating Integrity and Testing

Immediately prior to laying a pipe the integrity of the coating shall be tested in accordance with Section 37 – Painting and Corrosion Protection. Signing off on this shall form part of the Quality Control Procedure.

The Contractor shall perform the installed pipe coating integrity surveys as defined in Section 48 - Tests on Completion.

33.7.5 Hydrostatic Pipe Test

33.7.5.1 General

- a) The pipeline shall be hydrostatically tested on completion of pipe laying and after installation of all valves and fittings.
- b) Test sections shall be blanked off by making use of end-caps. Installed isolating valves within the test section shall be left in “Open” position and shall not be used as “End-caps”.
- c) It should be noted that valve and meter chambers are not designed to withstand the full test loads. When the hydrostatic testing of pipes is done against a blank flange in a valve or meter chamber, the following shall apply before the pipe is filled:
 - The chamber shall be complete, including the roof slab, and all concrete shall have reached its specified 28-day strength;
 - Backfilling around the chamber shall be complete, excluding only topsoil and rehabilitation;
 - Pipes shall be backfilled for a distance of at least 100 m in each direction;
 - Where a valve or meter is left out for the purpose of the test, a special spool piece shall be used to transfer the load across the gap in the pipe left for the valve or meter. It shall be installed similarly to the removed valve or meter in all aspects to ensure structural continuity in the pipe during testing; and
 - All joints except welded joints shall be exposed to check for leakage during testing.
- d) The sources of water shall be in accordance with Section 1 - General.
- e) Water quantities used for the pressure testing shall be recorded and quantities submitted to the Engineer. For a typical Hydrostatic Test Certificate refer to Annexure 33/1.
- f) The Contractor shall submit to the Engineer a detailed method statement describing the timing, methodology and scheduling of each hydrostatic pressure test to be undertaken.
- g) No test shall proceed before approval of such method statement by the Engineer.
- h) If sections of a pipeline are encased in concrete, or where concrete anchor blocks had been provided, the Contractor shall allow for a minimum concrete setting period of 28 days prior to the hydrostatic test being executed.
- i) The length of a test section should be planned to fall between main pipeline isolation valves, or a stretch of pipeline not exceeding 10 km, and subject to approval by the Engineer.

33.7.5.2 Method of Testing

- a) The Contractor shall provide as a minimum, one approved test pump, one flow meter, two sealed pressure gauges and an electronic pressure data logger (or similar approved), all tested and certified by an independent testing organisation, and all other equipment, materials and labour required for each pressure test. The Contractor shall provide proof of valid calibration of all the flow meters, pressure gauges and pressure recorders, also duplicate calibrated equipment to ensure an uninterrupted pressure test in the event of one or more items of equipment failing.
- b) The section of pipeline to be tested shall be clean and closed off at the ends by end caps or approved end-closure pieces. Free ends shall be firmly strutted against solid supports or thrust blocks designed to withstand safely twice the calculated end thrust under maximum test pressure. It shall be incumbent on the Contractor to establish the need for blank flanges or isolating valve flanges in order to test the pipeline.
- c) Testing water may be introduced at any air valve or access within the portion of the pipeline under test. A test manifold shall be placed between the selected air valve and its isolating valve. The manifold shall be provided with three branches, each fitted with drop-tight valves.
- d) The main branch shall be sized to suit the Contractor's test pump connection. The two smaller branches shall not be less than 12 mm nominal bore fitted with heavy duty needle valves and reducers to suit pressure gauge connections. The pressure gauges and pressure data logger shall be connected to each of the smaller branches.
- e) A water meter shall be installed between the pump and test manifold. The Contractor shall accurately determine and record the water pressures and water take. The Contractor shall also enter the reduced level of the highest and lowest invert of the section under test on the recorder chart.
- f) The section of pipeline to be tested shall be filled with clean water of quality to the Engineer's approval, great care being exercised to remove all air from the pipeline. All scour valves will initially be left in 'open' position and only closed and sealed as the water reaches this point. The section of pipeline shall be kept full for not less than 3 days in the case of steel pipelines with cement-mortar linings and not less than 1 hour in the case of unlined steel pipelines or steel pipelines with linings other than concrete.
- g) During this initial filling stage, any exposed pipeline joints and all specials, fittings and valves shall be visually inspected for leaks and if found to exhibit signs of leakage rectified before proceeding with the test.
- h) With the pipeline full of water, the pressure data logger shall be put into operation at least 15 minutes before pressurisation of the pipeline commences. Water shall be added until the required test pressure is reached. The reading on the water meter and pressure data logger shall be recorded.
- i) The pressure shall be maintained for one hour and if a pressure drop occurs, more water shall be added to reinstate the test pressure. The quantity of water added shall be measured by recording the readings before and after pumping. This procedure shall be repeated for a period of 24 hours, with water added at hourly intervals where necessary to reinstate pressure and water meter readings recorded. At the end of the 24 hours period, the aggregate quantity of water required to reinstate pressure over 24 hours shall be determined.
- j) The Contractor shall give the Engineer 48 hours written notice of his intention to commence pressure testing and the Engineer may attend and supervise all or any part of tests. All records, recording charts and the attached duly completed hydrostatic test certificate shall be handed to the Engineer as soon as tests over any section have been completed.

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- k) All valves, specials, fittings and exposed joints shall be inspected visually during the 24 hours pipeline test and all visible signs of leaks, sweating and distress shall be reported and attended to without delay.
- l) Immediately after completion of the prescribed 24 hours hydrostatic test, all air valves shall be tested in turn before test pressure in the pipeline is released. Each air valve shall be isolated and the drain plugs removed. The air valve balls and any actuating linkage, also related to the main isolating valve (where applicable) shall work freely without restraint.
- m) After completion of test on air valves, the section of pipeline under test shall be completely refilled with water, if necessary, and pressurised to static head shown on the Drawings. Each scour valve shall be checked for leaks and functionality by opening isolating valves and sleeve valves where applicable for a duration sufficient to check the complete opening and closing cycles. If necessary, the pipeline shall be refilled after each individual test and re-pressurised to static pipeline head in order to test all scours within the section under test. The performance of the scour chamber outlet and erosion protection works and the routing of scoured water inside and outside the pipeline servitude shall also be tested during this process.

33.7.5.3 Remedial Measures

Should the maximum leakage limits as specified be exceeded, the Contractor shall determine the position and cause of the leaks and shall take remedial measures at his own expense and to the satisfaction of the Engineer to stop such leaks and ensure the specified degree of water tightness. Under no circumstances shall opening of valves be permitted as a means for stopping leaks, nor shall the pipeline be allowed to remain under extended period of pressure to allow self-sealing with or without sealing aids in the test water. Any leakages from valves not supplied under this Contract and which cannot be easily stopped by gland adjustment will be the responsibility of the valve supplier.

The Contractor shall in the case of latter event occurring provide and install blank flanges to seal off leaks and to allow testing operations to proceed or to be speeded-up. The Contractor shall be compensated for the supply and installation of these blank flanges.

If during the Contract period of maintenance, the number of leaks and other defects is considered by the Engineer to be more than could reasonably be expected from a well laid pipeline operating under normal conditions, he may order the Contractor to re-test parts or the whole of the pipeline at the Contractor's own expense and no claims for escalation in costs or for whatever other reasons the Contractor might consider to submit claims shall be considered, except where such re-tests are the result from damages caused to the pipeline by the Employer.

33.7.5.4 Test pressure and Time of Test

- a) Unless otherwise ordered, hydrostatic testing shall be commenced only after permanent anchor blocks (where relevant) have attained their specified strength, i.e., after 28 days.
- b) After the pipe trench has been backfilled the pipeline shall be tested in sections between end caps, blank flanges, or other isolating devices, at the pressures indicated in c) appropriate to the pipeline section under test. The Engineer may require that temporary valves or blank flanges be inserted and that the pipeline be tested in reduced lengths and, in addition, at the point of maximum pressure.
- c) The test pressure applied over any section of pipeline under test, taking any differences in elevation along the pipeline into account, shall be such that the pressure at any point along the section complies with the Field Test Pressure as indicated on the Drawings. Care shall

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be taken to ensure that all air is expelled from the line to be tested after it has been filled and before the test commences.

Where not indicated on the Drawings, the test pressure for field testing shall be determined as follows:

- Not be less than 1.25 times the maximum operating pressure at design flow or static flow conditions whichever is the highest (excluding transient/surge pressure);
 - Not be less than 1.10 times the design pressure including transient/surge pressure with surge protection measures as designed operating;
 - Not exceed 1.5 times the maximum allowable operating pressure of the pipeline;
 - Not exceed the allowable test pressure for the specific pipe class;
 - Not exceed 1.5 times the allowable working pressure of the specific valve and fitting class; and
 - Not exceed 800 microstrain (circumferential) for metallic pipes with cement mortar lining.
- d) Draining of the water into tributaries through primary scour valves will be permitted, subject to approved procedures and at except at rivers with pristine water quality, for example the Matlabas River.

33.7.5.5 Visible Leaks

- a) Except as allowed in b) the specified test pressure shall be maintained for a period of at least 24 hours (or such longer period as is necessary for inspection of the pipeline) during which period all pipes, pipe specials, joints, and fittings shall be carefully inspected for leaks. All visible leaks shall be made good and any pipe, pipe special, or fitting found to be defective shall be removed and replaced at the expense of the Contractor and such replacement material shall, after installation, be tested at the expense of the Contractor.
- b) In the case of pipes of DN 400 mm and under, the test period may be reduced proportionally to the nominal diameter of the pipe, provided that in no case shall the test period be less than 1 hour.

33.7.5.6 Permissible Leakage Rates

Leakage of a pipeline under test, taken as the aggregate quantity of water added over a 24 hour period to reinstate required test pressure, shall not exceed quantities equivalent to the following:

- Steel pipelines with welded joints: 1/4000 (one four thousandth) of the volume of water in the section under test, testing procedures being as described in Clause 33.7.5.1.

No visible leaks shall be allowed regardless of the leakage rate.

33.7.5.7 Status of Valves during Hydrostatic Testing

The status of valves during the test shall be as follows:

- a) In-line isolating valves open (The Contractor shall not be permitted to test against a closed in-line valve);
- b) Scour isolating valves closed;

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- c) Off-take isolating valves closed;
- d) Scour sleeve valves open unless no scour isolating valve is provided;
- e) Air valve isolating valves open;
- f) Access isolating valves closed; and
- g) By-pass isolating valves to in-line isolating valves and reflux-valves closed.

33.7.5.8 Deflection / Ovality of Pipes

The Contractor shall ensure that his handling and construction methods do not result in horizontal or vertical pipe deflection more than 2% for pipes with cement mortar lining and 3% for pipes with epoxy lining.

After completion of the main backfill (including joint holes) the Contractor shall determine the deflection of the pipe every 20 m for pipes with a nominal diameter of 600 mm and larger. Should these 20 m measurements indicate a position where the allowable deflection is exceeded, additional measurements shall be taken to determine the extent of the problem. These measurements shall be done within 2 working days of the completion of the main backfill unless otherwise approved by the Engineer in writing. Alternatively the routine drone survey can provide this information.

The Contractor shall submit a method statement for the review of the Engineer to rectify deflection problems.

33.7.6 Earthing Protection

Refer to Section 34 – AC Mitigation and Cathodic Protection. Earthing is required for the coating integrity surveys.

33.8 EXISTING SERVICES

Various services are known to exist and will have to be crossed or the pipeline route runs parallel to it. Their approximate positions are shown on individual Drawings but, although they are based on the best information available, their accuracy cannot be guaranteed.

The Employer shall be responsible for obtaining the necessary permits/wayleaves for all service crossings or where the pipelines run within existing servitudes. These services include, but are not limited, to the following:

- River and water course crossings;
- Vlei / Impeded drainage areas;
- Rail crossings;
- Provincial Roads and other roads;
- Telecommunication lines (underground and overhead);
- Power lines (underground and overhead);
- Pipelines; and
- Other infrastructure.

All services, in particular cables, shall be treated as live until proven otherwise.

Before commencing work in an area, the Contractor shall make sketches and/or take photos of any fences and structures, as directed by, and to the satisfaction of the Engineer. This is to ensure that the standard and layout of the surroundings after completion of the Works can be compared with the original standard. These records shall be made available to the Engineer.

Fences that cross the pipeline route shall be temporarily removed if necessary and replaced. Fences that run adjacent to the pipeline shall be preserved intact unless, in the opinion of the Engineer, it is necessary to remove/replace them.

Where applicable all traffic control shall be in accordance with Section 26 – Road Maintenance. No work at crossings shall be carried out without approval of a Method Statement by the Engineer. The execution of the work without the risk of damaging the existing services shall also be addressed in the Method Statements.

The following conditions will apply to the respective crossings:

33.8.1.1 River / Natural Water Course Crossings

The location and detail of the river/stream crossings are indicated on the Drawings.

The pipe encasement and surface erosion protection depend on the:

- Size of the water course;
- Founding conditions; and
- Erodibility of the bed material.

The higher risk larger river crossings with good founding conditions need to be concrete encased with riprap placed on top as per the detailed construction Drawings. The lower risk less defined small stream crossings may only need surface protection as per the typical construction Drawings.

The Contractor will take cognisance of catchment / drainage area up stream of the crossings and factor these in his construction programme, allowing for potential delays and/or slower progress and scheduling the construction during the dry season where feasible.

The damming of water flow during any stage of construction shall not be permitted. The Contractor shall submit a method statement for each of the larger crossings, clearly indicating how he intends to divert the water with the least possible delay. (Also refer to Section 8 – Dealing with Water). A typical method statement will suffice for the small low risk crossings.

The trenches for the river crossings shall be excavated as per Section 9 – Bulk Surface Excavations and Trenching.

The Contractor shall be responsible for the diversion of flow, if any, over or away from the trench and shall dewater the trench immediately before pipe laying and keep it dewatered until completion of backfilling. He shall be responsible for and shall repair at his own expense, bedding, foundations, structures or other parts of the Works damaged by flooding due to failure of any part of the diversion or protective works or due to any other cause.

Other than where concrete encasement is required the trenches for the river crossings shall be backfilled with conventional bedding material (refer to Section 15 – Backfilling and Bedding) and covered with erosion protection measures as per the Drawings. Where Reno mattresses are used for erosion protection refer to Section 21 – Gabions and Reno Mattresses.

The Contractor shall remove cofferdams, other protective works and surplus spoil immediately after completion of the crossing and shall re-instate the site to its original condition. Flooding on adjacent land, bed erosion, or changes in location of water courses due to the Contractor's failure to comply with this Clause shall be made good at his expense.

33.8.1.2 Vlei Areas / Impeded Drainage Area

Concrete encasing (as for certain low risk stream crossings) will not be required.

To prevent the flow of subsurface water longitudinally along the backfilled trench after installation of the pipeline in vlei areas and to divert subsurface water laterally, groundwater cut-offs shall be installed within the pipe trench during the placing of the bedding layers and backfill at 50 meter intervals or as directed by the Engineer.

Cut-offs shall be formed by placing double 1.0 mm thick PVC sheeting perpendicular and around the pipe during the installation of the pipeline. The PVC sheeting must be strapped to the pipeline with PVC straps and keyed into the trench floor and side walls, approximately 300 mm deep. Care must be taken to avoid damage or puncturing of the PVC sheeting during the installation and backfilling process. The PVC sheeting shall be provided up to the surface. Joints between PVC sheets shall be formed with 300 mm overlaps and glued.

Alternatively a clay barrier shall be installed at 50 m intervals as above. The dimensions of the clay barrier shall be the cross-sectional area of the trench to surface level along a distance of 1.0 m measured along the trench.

33.8.1.3 Railway Lines

Refer to the Drawings for the position and details of railway line crossings.

The pipeline route also runs parallel to a railway line over a long distance and crosses roads crossing the railway line with bridges, railway line storm water structures and future traction substation power lines.

Refer to Annexure 33/2 – Transnet requirements for Works on, over, under or adjacent to railway lines and near high voltage equipment at the end of this document.

33.8.1.4 National and Provincial Roads (Existing Infrastructure)

Three types of road crossings are envisaged:

- Pipe jacking;
- Open excavation without concrete encasement of the pipe; and
- Open excavation with concrete encasement of the pipe.

The number, position and details of the different types of road crossings are shown on the Drawings.

Also refer to Annexure 33/3 at the back of the document for the Roads Agency Limpopo (RAL) requirements for provincial road crossings and Annexure 33/5 for requirements of the South African National Roads Agency SOC Ltd (SANRAL) for national road crossings.

The Contractor shall comply with the following:

- Structure the work to accommodate traffic;
- A safe working environment shall be the first priority;
- The control of the activities, which shall include constructing and maintenance of temporary detours, control and warning road signs and lights, protection work, emergency standby, rehabilitation of the gravel or tar surfaces etc. shall be in accordance with the SARTSM (Volume 2/13) guidelines; and
- For control, maintenance and repair requirements of these crossings refer to Section 26 - Maintenance of Public Roads.

33.8.1.5 ESKOM Overhead Power Lines (Transmission Lines):

Three working conditions are envisaged:

- Pipe crossing transmission line servitudes;
- Pipe parallel to transmission line servitudes; and
- Pipe parallel within the transmission line servitudes.

For the locations and construction detail please refer to the Drawings.

Refer to Annexure 33/4 for Eskom requirements for working in or close to their transmission line servitudes.

Refer to Section 34 – AC Mitigation and Cathodic Protection for the AC mitigation requirements when working in close proximity of high voltage transmission lines.

Wherever any pipe crosses Eskom services, the edge of the excavation shall not come within six meters of the Eskom services and structures.

Where a pipe runs within the Eskom servitude, pipeline markers shall be installed within the shared servitude boundaries. Where the pipe crosses the Eskom servitude, pipeline markers shall be installed on the servitude boundary.

33.9 STANDARD SPECIFICATIONS FOR LAYING STEEL PIPES

The following Standards and Codes of Practice are referred to in this Section:

American Petroleum Institute

- API 1104 : Standard for welding of pipe lines and related facilities.
API 5L : Specifications for LINEPIPE.

South African Bureau of Standards

- SANS 10044 : Welding.
SANS 719 : Electric welded low carbon steel pipes for aqueous fluids (Ordinary duty).

33.10 MEASUREMENT AND PAYMENT

The rates tendered under this Section shall not include for the general obligations, Contractor's Equipment and work deemed to be covered by the items provided in Section 1 – General.

33.10.1 General**33.10.1.1 Night-caps**

No extra payment will be made for night-caps. The supply and use of night-caps will be held to be included in the unit rate tendered for pipe laying.

33.10.1.2 Permanent Closure Pipes

Where closures are butt welded to other pipes, the cost of cutting the pipe, preparing the end for welding and welding, repairing the lining and coating etc., will be held to be included in the rate for laying of pipes.

Where closures are jointed to either access pipes, fittings or pipe specials by means of slip-on couplings, no additional payment will be made for extra cutting of the pipe, preparing the end for welding, welding on the loose collar (approved 150 x 20 mm mild steel, machined round to suit coupling) or making good the lining. Unless separately scheduled, the supply, transport and handling of the collar and slip-on coupling will be held to be included in the rate for the supply of pipes, fittings and pipe specials.

33.10.1.3 Anchor Blocks

Anchor blocks will be measured and paid for in terms of Section 20 – Concrete Works (Structural) and Section 15 –Backfilling and Bedding, as relevant.

33.10.1.4 Concrete Encasing

Concrete casing will be measured and paid for in terms of Section 20 – Concrete Works (Structural) and Section 15 –Backfilling and Bedding, as relevant.

33.10.1.5 Valve Chambers

Valve chambers will be measured and paid for in terms of Section 20 – Concrete Works (Structural) and Section 15 –Backfilling and Bedding, as relevant.

33.10.2 Scheduled Items**33.001 Lay and weld steel pipes****Unit: metre (m)**

Pipes will be measured linearly as laid in the trench. Separate payment will be made for each type and size of pipe laid. Specials will be measured separately.

PART C3.1 - SPECIFICATION

The rates tendered for laying of pipes will be held to cover the cost of the following non-exhaustive list of tasks:

- a) Inspecting, accepting, taking delivery, providing storage, taking delivery from storage on site, transporting, handling, inspecting, stringing alongside trench, laying, jointing, cutting, bevelling, maintaining line and level, provision and use of shield for heat treatment and welding if required;
- b) Maintenance of cleanliness including all night caps and temporary blank flanges, etc., necessary to keep the inside of the pipe dry;
- c) Radiographic examination of field welds and holiday testing of the lining, visual and liquid penetrant testing;
- d) Testing of welders and issuing of the necessary certificates;
- e) Making good of coatings and cleaning of all linings prior to testing; and
- f) Bolts, nuts, washers, gaskets, insulating material, etc.

The application of internal and external corrosion protection over the welded joints (making good of joints) is measured elsewhere.

No extra payment over and above the rates tendered in the Bill of Quantities will be made in respect of additional cutting and jointing of pipes required to locate valves, pipe specials, etc.

No separate payment will be made for the supply and fitting, chipping of lining, cutting, trimming, bevelling and making good on site of any additional couplings and jointing materials which may be required for the connection of shortened pipe closures, unless specific provision is made in the Bill of Quantities.

The unit rate tendered for laying of steel pipes and specials shall cover in addition to the cost of the laying, jointing, etc., as specified, the cost of surface preparation and final painting when applicable.

Notwithstanding the use of night-caps the Contractor shall at his own expense make good all damage to pipe linings and fittings caused by the ingress of dirty water, silt, sand, debris, vermin, insects and other foreign matter. The Contractor shall at his own expense and to the satisfaction of the Engineer clean the interior of the pipeline of such contaminants.

**33.002 Extra over item 33.001 for mitre deflections up to 11.25° Unit: number (No.)
to form bends**

Where pipes are to turn through 11.25° or less the extra over rate for providing the mitre shall cover the cost of any additional cutting or grinding required, the welding of the mitre, the cutting back of linings and coatings, the lining and coating of welds and other damaged sections and any other work required to construct the bend, disinfecting and all related testing. Only those bends shown on the Drawings or as ordered by the Engineer will be measured.

33.003 Temporary closures Unit: number (No.)

Not used.

33.004 Installation of valves and specials**Unit: number (No.)**

The rate tendered for installation of valves and specials within a structure shall cover the cost of taking delivery of these items from storage on site, inspecting each item for visible signs of damage, transporting to the laying site, off-loading, and installing the valves and specials, including actuators, in position in accordance with the manufacturer's instructions and to the satisfaction of the Engineer. All jointing materials shall be supplied by the Contractor and included in the rates. The rate for installation shall also cover the cost of making good and repair of paintwork and final painting as specified.

The rate tendered for installation of valves shall also include the cost of necessary oiling and greasing of moving parts and for minor routine initial maintenance work such as tightening up leaking glands.

33.005 Items cast or built into concrete**Unit: number (No)**

The building in (or casting into concrete) of pipes and pipe specials will be measured by the number of each item built in. The tendered rate shall cover the costs of installation of the pipe or pipe special as identified under item 33.004 or 33.007 as well as all additional costs of formwork, non-shrink grout, fixing of the pipe or pipe special in place and building in or casting into concrete.

33.006 Temporary valves**Unit: lump sum (Sum)**

Not used.

33.007 Installation and testing of pipe specials**Unit : number (No)
metre (m)**

Payment will be made for pipe specials installed outside a structure which will be measured separately by number of each type.

The rates tendered for installation of pipe specials will be held to cover the cost of the following, non-exhaustive list of tasks:

- a) Taking delivery from storage on site, transporting, handling, inspecting, stringing, installing, laying, jointing, cutting, bevelling, provision and use of shield for heat treatment and welding if required;
- b) Maintenance of cleanliness including all night caps and temporary blank flanges, etc., necessary to keep the inside of the pipe dry;
- c) Radiographic examination of field welds and holiday testing of the lining, visual and liquid penetrant testing;
- d) Testing of welders and issuing of the necessary certificates;
- e) Making good of all coatings and linings and cleaning prior to testing;
- f) Bolts, nuts, washers, gaskets, insulating material, etc.; and
- g) The application of internal and external corrosion protection over the welded joint (making good of joints) is measured under item 33.011.

No extra payment over and above the rates tendered in the Bill of Quantities will be made in respect of additional cutting and jointing of pipes required to locate valves, specials, etc.

PART C3.1 - SPECIFICATION

No separate payment will be made for the supply and fitting, chipping of lining, cutting, trimming, bevelling and making good on site of any additional couplings and jointing materials which may be required for the connection of shortened pipe closures, unless specific provision is made in the Bill of Quantities.

The unit rate tendered for installation of steel pipes and specials shall cover in addition to the cost of the installing, jointing, etc., as specified, the cost of surface preparation and final painting when applicable.

Notwithstanding the use of night-caps the Contractor shall at his own expense make good all damage to pipe linings and fittings caused by the ingress of dirty water, silt, sand, debris, vermin, insects and other foreign matter. The Contractor shall at his own expense and to the satisfaction of the Engineer clean the interior of the pipes of such contaminants.

33.008 Hydrostatic testing

- | | |
|---|------------------------------|
| a) Pipelines (including specials and fittings at chambers) | Unit : Kilometre (km) |
| b) Pipework (specials and fittings) in and around structures/buildings. Project Parts to be listed separately where applicable | Unit : lump sum (Sum) |

Payment for the hydraulic pressure testing of all pipelines, specials and fittings as described in Clause 33.7.5 will include for all labour, the cost of supplying fuel and production related wearing parts (bucket teeth, cutters, etc.) for equipment utilised, materials, end-caps (domes and blank flanges), welding, making good as well as obtaining, metering and distributing of the water necessary to perform the test.

Pro-rata payment for the pipe section tested will be certified for payment only on written acceptance of a successful test as defined in Clause 33.7.5.6.

No additional payment for any repair work to the pipe in the event of excessive leakages recorded, or any associated repair costs to obtain the desired results, will be made.

33.009 Pipe lining integrity testing

Unit : lump sum (Sum) or metre (m)

Payment for tests on linings will include for all labour, the cost of supplying fuel and production related wearing parts (bucket teeth, cutters etc.) for equipment utilised, and materials to perform all tests and repair work as defined in Clause 33.7.3. Payment for the pipeline section tested and repaired will be certified for payment only on written acceptance of successful testing and repair work.

33.010 Pipe coating integrity testing

Unit : lump sum (Sum) or metre (m)

Payment for pipe coating integrity testing will include for all labour, the cost of supplying fuel and production related wearing parts (bucket teeth, cutters etc.) for equipment utilised, and materials to perform all tests and repair work as defined in Clause 33.7.4. Payment will be certified for payment only on written acceptance by the Engineer of successful completion of the survey and repair work and submission of the results.

33.011

Supply and install internal/external field joint corrosion protection for pipeline

Unit: number (No.)

The supply and installation of internal/external field joint corrosion protection for pipes and specials will be measured by number for each type of welded field joint and pipeline diameter. The rate tendered will be held to cover the cost of all labour, supplying of fuel and production related wearing parts (bucket teeth, cutters, etc.) for equipment utilised, and material to install the field joint corrosion protection system as specified.

33.012

Marker posts

Unit : Number (No.)

The rate for marker posts shall include full compensation for the supply and erection of precast, reinforced concrete, inscribed posts as detailed on the Drawings, including also all necessary excavation, Class 15/19 concrete, steel reinforcement, footing, form work required and making good.

33.013

Benchmarks and triangulation beacons

a) Survey

Unit: Lump sum (Sum)

b) Benchmarks and beacons

Unit: Number (No)

Survey work required to determine the co-ordinates and elevations of benchmarks and triangulation beacons will be measured by lump sum. The sum tendered shall cover the cost of all labour, supplying of fuel and production related wearing parts (bucket teeth, cutters, etc.) for equipment utilised, and material to complete the survey work as specified under Clause 33.5.8.

The installation of benchmarks and triangulation beacons will be measured by the number of benchmarks or triangulation beacons constructed. The rate tendered shall cover the cost of all labour, supplying of fuel and production related wearing parts (bucket teeth, cutters, etc.) for equipment utilised, and material to construct the benchmark or triangulation beacon as specified in Clause 33.5.8.

33.014

Specific items of work

Unit: As scheduled in BOQ

Measurement will be in terms of the unit given in the Bill of Quantities.

The rate tendered shall cover the cost of all labour, supplying of fuel and production related wearing parts (bucket teeth, cutters etc.) for equipment utilised, and material required to execute and complete the work as specified in the Specification or described in the Bill of Quantities or shown on the Drawings.

ANNEXURE 33/1
PROPOSED HYDROSTATIC TEST CERTIFICATE

PART C3.1 - SPECIFICATION

HYDROSTATIC TEST CERTIFICATE FOR STEEL PIPE

PIPELINE CHAINAGE /SECTION							
PIPE TEST CONTRACT		METHOD 1. AS DESCRIBED		DATE		TEST SECTION BEGIN (m): END (m):	
PIPE DIAMETER (OD) (mm)		LENGTH OF TEST SECTION (km)		TEST PRESSURE (MPa)		ALLOWABLE LEAKAGE RATES LEAK (Max): 1/4000 x volume water = m3/24 hrs	
TEST PUMP TYPE: MANUFACTURER: 		PRESSURE GAUGE(S) TYPE:..... DIAMETER: DIVERSIONS: CALIBRATION:				MEASURING DEVICES METER RECORDER VOLUME: DIVISIONS: CALIBRATION:	
TIME: 30 min		TIME: 60 min		TIME: 12 hours		TIME: 24 hours	
VOLUME	CUMULATIVE	VOLUME	CUMULATIVE	VOLUME	CUMULATIVE	VOLUME	TOTAL
.....
COMMENTS				LEAKAGES		CH (m)	
		NAME				SIGNATURE	
CONTRACTOR		
ENGINEER		

**ANNEXURE 33/2
TRANSNET REQUIREMENTS**

ADDITIONAL TRANSNET REQUIREMENTS

Gravity Main in Parallel with Transnet Reserve:

- Along the entire distance of the proposed pipeline that will be running parallel to the railway line, once the pipeline is installed, the topography should be sloped in such a way that the stormwater run-off, or in case of a pipe burst that all surface water run-off should drain away from the railway line.
- In cases where the topography will be sloping towards the railway line, proper drainage system should be provided to cut-off the surface run-off towards the railway line, and divert it to the nearest drainage system, then provide calculations to ensure that the drainage system can accommodate the stormwater or pipe burst surface run-off.

Principal Engineer
Bridges and Geotechnical
Rail Network

01 July 2016

Rail Network Depot Engineers / Depot Managers / Infra Managers

Guidelines for allowing blasting and mining operations closer than 500m from Transnet Freight Rail assets

1. No **blasting** will be allowed within 500m from Transnet Freight Rail (TFR) assets, unless:
 - a. A risk assessment has identified a lesser safe distance with restrictions and conditions to be complied with. The risk assessment will be conducted by the Mine and representatives from the relevant TFR Maintenance Depot.
 - b. The following requirements from a TFR point of view will be taken into consideration during the risk assessment:
 - i. Prior to blasting:
 1. Receipt of Notice for Blasting from the Mine to the relevant TFR depot.
 2. Application for full occupation 30 days prior to occupation / blasting.
 - ii. During blasting:
 1. No personnel will be allowed within 500m from the blasting area.
 2. No trains will be allowed within 500m from the blasting site. (full occupation)
 3. Track master to be present on site during blasting. Including flagmen.
 4. All costs incurred by TFR to make blasting possible will be for the Mine's account. These costs will be paid to the TFR Depot before commencement of each blasting.
 5. Two way radio communication between the Mine and the TFR Track Master will be made available by the Mine.
 6. Placing of guards at entrances to safe distances will be provided by the Mine.
 7. Warning signs and information boards at entrance to safe area will be made available and erected by the Mine.
 8. Track master may stop the blasting operation if not deemed safe.
 - iii. After blasting:

Transnet SOC Ltd
Registration Number
1990/000900/30

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Johannesburg
2001

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Directors: LC Mabaso (Chairperson) SI Gama* (Acting Group Chief Executive) Y Forbes GJ Mahlalela PEB Mathekga ZA Nagdee VM Nkonyane MR Seleke SD Shane BG Stagman PG Williams GJ Pita* (Acting Group Chief Financial Officer)
*Executive

Group Company Secretary: ANC Ceba

www.transnet.net

1. Teams for the clearing of tracks of debris will be on standby.
 2. Repair of damages to infrastructure will be done against the account of the Mine.
 - c. The above mentioned documents will be submitted to and approved by the Principal Inspector of Mines.
 - d. The Principal Inspector of Mines might add additional restrictions and conditions to be complied with.
 - e. A copy of the approval of from the Principal Inspector of Mine will be made available to TFR.
 - f. For secondary blasting (for removal of obstructions or reducing rock in size), written procedures must include measures to ensure that:
 - i. All persons are moved to safe area prior to blasting.
 - ii. Guards are placed at all entrances at a safe distance.
2. No **mining** operations will be allowed within 100m from TFR assets, unless:
- a. A lesser distance has been determined safe by risk assessment and all restrictions and conditions are complied with.
 - b. Ground movement monitoring systems are to be put in place where the risk exists that ground movement might occur due to the mining operations.
 - c. TFR may ask for restrictions and conditions from a professional geotechnical engineer or the Chief Inspector of Mines if ground movement might be expected due to mining operations. The cost for such a request will be for the Mine's account.
 - d. The mining operations will not negatively affect the TFR drainage systems.
3. Applicable to both blasting and mining operations:
- a. The vibration limit will be limited to 50mm/s to prevent damage to TFR infrastructure.
 - b. Blasting and or mining operation schedules will be made available for a 12 month period to indicate what the impact will be on TFR operations. Updates of these schedules will be sent though 60 days in advance of any changes.

Compiled by:



J. H. Homan
Principal Engineer
Bridges and Geotechnical
TFR Rail Network

ANNEXURE 33/3
ROADS AGENCY LIMPOPO (RAL) REQUIREMENTS



ROADS AGENCY LIMPOPO (SOC) Ltd

26 Rabe Street
Private Bag X 9554
POLOKWANE
0700

Tel: +27 15 291 4236
+27 15 284 4600

Contact Person: P.E. Montjane
Our Ref.: RAL7/2/10/D1675 (01)
Email: MontjanePE@ral.co.za

Direct Line: +27 15 284 4637
Your Ref.: RAL001_02062020-5
Website: www.ral.co.za

Trans-Caledon Tunnel Authority
P.O. Box 10335
CENTURION
0046

Attention: Segomotso Kelefetswe,

APPLICATION FOR INSTALLATION OF WATER PIPELINE CROSSING ROAD D1675 FROM CROCODILE RIVER ON THE FARM MOOIVALLEI 342 KQ TO LEPHALALE FOR MOKOLO CROCODILE WATER AUGMENTATION PROJECT PHASE 2 (MCWAP-2): WATERBERG DISTRICT

Thank you for your application dated 02 June 2020 **for installation of water pipeline.**

Your application to install a 1 100 mm diameter ND steel water pipeline crossing road D1675 at **(GPS LAT S 23°42'41.90" LONG E 27°27'47.99")** on the remainder of the farm Hooikraal 315 LQ encased within 1 473 mm diameter Concrete Class 100D sleeve pipe with a **pipe jacking method** as shown on the submitted plans has been approved subject to strict adherence to the attached conditions 1 to 38 "Pipelines", in terms of Section 48 of the Limpopo Roads Agency Limited and Provincial Roads Act, 1998 (Act No 7 of 1998) and Section 9, 9A and 10 of the Advertisement on Roads and Ribbon Development Act, 1940 (Act No 21 of 1940), Subject to the following conditions:

1. Cost and Indemnities:

- 1.1. The Roads Agency Limpopo SOC Limited (RAL) shall not be involved in any expenditure in connection with and shall not be responsible or liable for:
- (i) The erection of any structure.
 - (ii) Any financial expenditure or loss in the event of the RAL ordering the removal or shifting or relocation of anything related to this approval. Such removal clause shall be noted in the Title Deed of the servitude in terms of Section 48(a) of (Act No 7 of 1998).
 - (iii) Any financial responsibility or liability for any claim from the applicant which may occur from the lapsing of the approval.

Directors: Mr. M.S. Ralebipi (Chairperson), Mr. G.M. Maluleke (CEO), Ms. W.N.G. Moleko, Mr. M.P.K. Tshivhase, Ms. T.M. Ramabulana, Mr. P.L. Makape, Mr. M.J. Phukuntsi, Ms. T. Kekana (Company Secretary)

APPLICATION FOR INSTALLATION OF WATER PIPELINE CROSSING ROAD D1675 FROM CROCODILE RIVER ON THE FARM MOOIVALLEI 342 KQ TO LEPHALALE FOR MOKOLO CROCODILE WATER AUGMENTATION PROJECT PHASE 2 (MCWAP-2): WATERBERG DISTRICT

- 1.2. The applicant (National Department of Water and Sanitation) indemnifies RAL against and holds it harmless from any claim or damage pertaining to the possible expansion of the provincial road(s) in future, or damage which may be instituted or suffered by any person, including legal costs incurred as a result of:
- (i) The erection use or removal of the structure or other works erected or established by the applicant within the building restriction area.
 - (ii) The applicant or his successor-in-title's failure to properly maintain and render safe anything related to this approval or other works, or the non-compliance by the applicant with any condition to which the permission relates.
 - (iii) The lapsing of the approval.
- 1.3 Any action taken by the applicant in connection with approval shall be regarded as an acceptance and compliance with the conditions including the indemnity.
- 1.4 Should any damage be caused to the provincial road or user of the provincial road or the property as a result of the excavation, erection, use or removal of the structure laid, erected or established by the applicant, on the property, such applicant shall be liable for such damage and shall compensate against any claim from a third party.

2. Validity Period:

This approval shall lapse:

- (i) Unless the installation of water pipeline crossing road D1675 is completed within a period of six (6) months from the date of approval by RAL, provided that the applicant may, prior to the date of expiry, apply in writing for an extension of the completion period, or
- (ii) In the event of the applicant not complying with any of the conditions as imposed by RAL.

3. Advertisements:

No advertisements as described under Article 2 of the Advertising on Roads and Ribbon Development Act, 1940 (Act No 21 of 1940) and Section 50 of the Limpopo Roads Agency Limited and Provincial Roads Act, 1998 (Act No 7 of 1998) may be displayed visible from road D1675 without the approval of the Chief Executive Officer of RAL.

APPLICATION FOR INSTALLATION OF WATER PIPELINE CROSSING ROAD D1675 FROM CROCODILE RIVER ON THE FARM MOOIVALLEI 342 KQ TO LEPHALALE FOR MOKOLO CROCODILE WATER AUGMENTATION PROJECT PHASE 2 (MCWAP-2): WATERBERG DISTRICT

4 Notification of Commencement and Completion:

The applicant shall at least fourteen (14) days prior to the commencement of the work advise P.E. Montjane of RAL in writing upon of the date which the work shall be commenced with. The said P.E. Montjane shall also be advised in writing, within thirty (30) days after the completion of the work of the date upon which the work has been completed.

If any work is commenced without notifying RAL as stipulated above, the work shall be considered illegal. If no notification is received by RAL within 30 days after completion of the works, the liability period of the applicant shall be extended and the applicant will remain liable for any damages / claims that may arise during that period.

5 Additional Legal Requirements:

- (i) This approval shall bind any successor-in-title to the land on which the servitude or structure has been established.
- (ii) This approval does not exempt the applicant from the provisions of any other Act.
- (iii) Failure to comply with any of the conditions mentioned above, the applicant shall be liable for any damage(s) or defects that may arise.

Thank you,

pp. 

CHIEF EXECUTIVE OFFICER

14/08/2020

DATE



ROADS AGENCY LIMPOPO (SOC) Ltd

26 Rabe Street
Private Bag X 9554
POLOKWANE
0700

Tel: +27 15 291 4236
+27 15 284 4600

Contact Person: P.E. Montjane
Our Ref.: RAL7/2/10/D1675
Email: MontjanePE@ral.co.za

Direct Line: +27 15 284 4637
Your Ref.: RAL001_02062020-8
Website: www.ral.co.za

Trans-Caledon Tunnel Authority
P.O. Box 10335
CENTURION
0046

Attention: Segomotso Kelefetswe,

APPLICATION FOR INSTALLATION OF WATER PIPELINE ALONGSIDE ROAD D1675 FROM CROCODILE RIVER ON THE FARM MOOIVALLEI 342 KQ TO LEPHALALE FOR MOKOLO CROCODILE WATER AUGMENTATION PROJECT PHASE 2 (MCWAP-2): WATERBERG DISTRICT

Thank you for your application dated 02 June 2020 **for installation of water pipeline.**

Your application to install a 1 100 mm diameter ND welded steel water pipeline alongside road D1675 from **(GPS LAT S 23°42'41.90" LONG E 27°27'47.99")** to **(GPS LAT S 23°41'51.37" LONG E 27°33'05.12")** as shown on the submitted plans has been approved subject to strict adherence to the attached conditions 1 to 38 "Pipelines", in terms of Section 48 of the Limpopo Roads Agency Limited and Provincial Roads Act, 1998 (Act No 7 of 1998) and Section 9, 9A and 10 of the Advertisement on Roads and Ribbon Development Act, 1940 (Act No 21 of 1940), Subject to the following conditions:

1. Cost and Indemnities:

- 1.1. The Roads Agency Limpopo SOC Limited (RAL) shall not be involved in any expenditure in connection with and shall not be responsible or liable for:
- (i) The erection of any structure.
 - (ii) Any financial expenditure or loss in the event of the RAL ordering the removal or shifting or relocation of anything related to this approval. Such removal clause shall be noted in the Title Deed of the servitude in terms of Section 48(a) of (Act No 7 of 1998).
 - (iii) Any financial responsibility or liability for any claim from the applicant which may occur from the lapsing of the approval.

Directors: Mr. M.S. Ralebipi (Chairperson), Mr. G.M. Maluleke (CEO), Ms. W.N.G. Moleko, Mr. M.P.K. Tshivhase, Ms. T.M. Ramabulana, Mr. P.L. Makape, Mr. M.J. Phukuntsi, Ms. T. Kekana (Company Secretary)

APPLICATION FOR INSTALLATION OF WATER PIPELINE ALONGSIDE ROAD D1675 FROM CROCODILE RIVER ON THE FARM MOOIVALLEI 342 KQ TO LEPHALALE FOR MOKOLO CROCODILE WATER AUGMENTATION PROJECT PHASE 2 (MCWAP-2): WATERBERG DISTRICT

- 1.2. The applicant (National Department of Water and Sanitation) indemnifies RAL against and holds it harmless from any claim or damage pertaining to the possible expansion of the provincial road(s) in future, or damage which may be instituted or suffered by any person, including legal costs incurred as a result of:
- (i) The erection use or removal of the structure or other works erected or established by the applicant within the building restriction area.
 - (ii) The applicant or his successor-in-title's failure to properly maintain and render safe anything related to this approval or other works, or the non-compliance by the applicant with any condition to which the permission relates.
 - (iii) The lapsing of the approval.
- 1.3 Any action taken by the applicant in connection with approval shall be regarded as an acceptance and compliance with the conditions including the indemnity.
- 1.4 Should any damage be caused to the provincial road or user of the provincial road or the property as a result of the excavation, erection, use or removal of the structure laid, erected or established by the applicant, on the property, such applicant shall be liable for such damage and shall compensate against any claim from a third party.

2. Validity Period:

This approval shall lapse:

- (i) Unless the installation of water pipeline alongside road D1675 is completed within a period of six (6) months from the date of approval by RAL, provided that the applicant may, prior to the date of expiry, apply in writing for an extension of the completion period, or
- (ii) In the event of the applicant not complying with any of the conditions as imposed by RAL.

3. Advertisements:

No advertisements as described under Article 2 of the Advertising on Roads and Ribbon Development Act, 1940 (Act No 21 of 1940) and Section 50 of the Limpopo Roads Agency Limited and Provincial Roads Act, 1998 (Act No 7 of 1998) may be displayed visible from road D1675 without the approval of the Chief Executive Officer of RAL.

APPLICATION FOR INSTALLATION OF WATER PIPELINE ALONGSIDE ROAD D1675 FROM CROCODILE RIVER ON THE FARM MOOIVALLEI 342 KQ TO LEPHALALE FOR MOKOLO CROCODILE WATER AUGMENTATION PROJECT PHASE 2 (MCWAP-2): WATERBERG DISTRICT

4 Notification of Commencement and Completion:

The applicant shall at least fourteen (14) days prior to the commencement of the work advise P.E. Montjane of RAL in writing upon of the date which the work shall be commenced with. The said P.E. Montjane shall also be advised in writing, within thirty (30) days after the completion of the work of the date upon which the work has been completed.

If any work is commenced without notifying RAL as stipulated above, the work shall be considered illegal. If no notification is received by RAL within 30 days after completion of the works, the liability period of the applicant shall be extended and the applicant will remain liable for any damages / claims that may arise during that period.

5 Additional Legal Requirements:

- (i) This approval shall bind any successor-in-title to the land on which the servitude or structure has been established.
- (ii) This approval does not exempt the applicant from the provisions of any other Act.
- (iii) Failure to comply with any of the conditions mentioned above, the applicant shall be liable for any damage(s) or defects that may arise.

Thank you,

pp. 

CHIEF EXECUTIVE OFFICER

14/08/2020

DATE



ROADS AGENCY LIMPOPO (SOC) Ltd

26 Rabe Street
Private Bag X 9554
POLOKWANE
0700

Tel: +27 15 291 4236
+27 15 284 4600

Contact Person: P.E. Montjane
Our Ref.: RAL7/2/10/D2701
Email: MontjanePE@ral.co.za

Direct Line: +27 15 284 4637
Your Ref.: RAL001_02062020-2
Website: www.ral.co.za

Trans-Caledon Tunnel Authority
P.O. Box 10335
CENTURION
0046

Attention: Segomotso Kelefetswe,

APPLICATION FOR INSTALLATION OF WATER PIPELINE CROSSING ROAD D2701 FROM CROCODILE RIVER ON THE FARM MOOIVALLEI 342 KQ TO LEPHALALE FOR MOKOLO CROCODILE WATER AUGMENTATION PROJECT PHASE 2 (MCWAP-2): WATERBERG DISTRICT

Thank you for your application dated 02 June 2020 **for a water pipeline.**

Your application to install a 1 600 mm diameter ND CONT WELDED steel water pipeline crossing road D2701 at **(GPS LAT S 24°10'48.99" LONG E 27°26'33.32")** on portion 15 of the farm Haarlem Oost 51 KQ encased within 2 000 mm diameter Concrete Class 100D sleeve pipe with **a pipe jacking method** as shown on the submitted plans has been approved subject to strict adherence to the attached conditions 1 to 38 "Pipelines", in terms of Section 48 of the Limpopo Roads Agency Limited and Provincial Roads Act, 1998 (Act No 7 of 1998) and Section 9, 9A and 10 of the Advertisement on Roads and Ribbon Development Act, 1940 (Act No 21 of 1940), Subject to the following conditions:

1. Cost and Indemnities:

- 1.1. The Roads Agency Limpopo SOC Limited (RAL) shall not be involved in any expenditure in connection with and shall not be responsible or liable for:
- (i) The erection of any structure.
 - (ii) Any financial expenditure or loss in the event of the RAL ordering the removal or shifting or relocation of anything related to this approval. Such removal clause shall be noted in the Title Deed of the servitude in terms of Section 48(a) of (Act No 7 of 1998).
 - (iii) Any financial responsibility or liability for any claim from the applicant which may occur from the lapsing of the approval.

Directors: Mr. M.S. Ralebipi (Chairperson), Mr. G.M. Maluleke (CEO), Ms. W.N.G. Moleko, Mr. M.P.K. Tshivhase, Ms. T.M. Ramabulana, Mr. P.L. Makape, Mr. M.J. Phukuntsi, Ms. T. Kekana (Company Secretary)

APPLICATION FOR INSTALLATION OF A WATER PIPELINE CROSSING ROAD D2701 FROM CROCODILE RIVER ON THE FARM MOOIVALLEI 342 KQ TO LEPHALALE FOR MOKOLO CROCODILE WATER AUGMENTATION PROJECT PHASE 2 (MCWAP-2): WATERBERG DISTRICT

- 1.2. The applicant (National Department of Water and Sanitation) indemnifies RAL against and holds it harmless from any claim or damage pertaining to the possible expansion of the provincial road(s) in future, or damage which may be instituted or suffered by any person, including legal costs incurred as a result of:
- (i) The erection use or removal of the structure or other works erected or established by the applicant within the building restriction area.
 - (ii) The applicant or his successor-in-title's failure to properly maintain and render safe anything related to this approval or other works, or the non-compliance by the applicant with any condition to which the permission relates.
 - (iii) The lapsing of the approval.
- 1.3 Any action taken by the applicant in connection with approval shall be regarded as an acceptance and compliance with the conditions including the indemnity.
- 1.4 Should any damage be caused to the provincial road or user of the provincial road or the property as a result of the excavation, erection, use or removal of the structure laid, erected or established by the applicant, on the property, such applicant shall be liable for such damage and shall compensate against any claim from a third party.

2. Validity Period:

This approval shall lapse:

- (i) Unless the installation of a water pipeline crossing road D2701 is completed within a period of six (6) months from the date of approval by RAL, provided that the applicant may, prior to the date of expiry, apply in writing for an extension of the completion period, or
- (ii) In the event of the applicant not complying with any of the conditions as imposed by RAL.

3. Advertisements:

No advertisements as described under Article 2 of the Advertising on Roads and Ribbon Development Act, 1940 (Act No 21 of 1940) and Section 50 of the Limpopo Roads Agency Limited and Provincial Roads Act, 1998 (Act No 7 of 1998) may be displayed visible from road D2701 without the approval of the Chief Executive Officer of RAL.

APPLICATION FOR INSTALLATION OF A WATER PIPELINE CROSSING ROAD D2701 FROM CROCODILE RIVER ON THE FARM MOOIVALLEI 342 KQ TO LEPHALALE FOR MOKOLO CROCODILE WATER AUGMENTATION PROJECT PHASE 2 (MCWAP-2): WATERBERG DISTRICT

4 Notification of Commencement and Completion:

The applicant shall at least fourteen (14) days prior to the commencement of the work advise P.E. Montjane of RAL in writing upon of the date which the work shall be commenced with. The said P.E. Montjane shall also be advised in writing, within thirty (30) days after the completion of the work of the date upon which the work has been completed.

If any work is commenced without notifying RAL as stipulated above, the work shall be considered illegal. If no notification is received by RAL within 30 days after completion of the works, the liability period of the applicant shall be extended and the applicant will remain liable for any damages / claims that may arise during that period.

5 Additional Legal Requirements:

- (i) This approval shall bind any successor-in-title to the land on which the servitude or structure has been established.
- (ii) This approval does not exempt the applicant from the provisions of any other Act.
- (iii) Failure to comply with any of the conditions mentioned above, the applicant shall be liable for any damage(s) or defects that may arise.

Thank you,

pp. 

CHIEF EXECUTIVE OFFICER

14/08/2020

DATE



ROADS AGENCY LIMPOPO (SOC) Ltd

26 Rabe Street
Private Bag X 9554
POLOKWANE
0700

Tel: +27 15 291 4236
+27 15 284 4600

Contact Person: P.E. Montjane
Our Ref.: RAL7/2/10/D175
Email: MontjanePE@ral.co.za

Direct Line: +27 15 284 4637
Your Ref.: RAL001_02062020-3
Website: www.ral.co.za

Trans-Caledon Tunnel Authority
P.O. Box 10335
CENTURION
0046

Attention: Segomotso Kelefetswe,

APPLICATION FOR INSTALLATION OF WATER PIPELINE CROSSING ROAD D175 FROM CROCODILE RIVER ON THE FARM MOOIVALLEI 342 KQ TO LEPHALALE FOR MOKOLO CROCODILE WATER AUGMENTATION PROJECT PHASE 2 (MCWAP-2): WATERBERG DISTRICT

Thank you for your application dated 02 June 2020 **for installation of water pipeline.**

Your application to install a 1 500 mm diameter ND welded steel water pipeline crossing road D175 at **(GPS LAT S 23°53'38.96" LONG E 27°24'12.45")** on portion 4 of the farm Rooipan 357 LQ encased within 2 000 mm diameter Concrete Class 100D sleeve pipe with **an open trench method** as shown on the submitted plans has been approved subject to strict adherence to the attached conditions 1 to 38 "Pipelines", in terms of Section 48 of the Limpopo Roads Agency Limited and Provincial Roads Act, 1998 (Act No 7 of 1998) and Section 9, 9A and 10 of the Advertising on Roads and Ribbon Development Act, 1940 (Act No 21 of 1940), Subject to the following conditions:

1. Cost and Indemnities:

- 1.1. The Roads Agency Limpopo SOC Limited (RAL) shall not be involved in any expenditure in connection with and shall not be responsible or liable for:
- (i) The erection of any structure.
 - (ii) Any financial expenditure or loss in the event of the RAL ordering the removal or shifting or relocation of anything related to this approval. Such removal clause shall be noted in the Title Deed of the servitude in terms of Section 48(a) of (Act No 7 of 1998).
 - (iii) Any financial responsibility or liability for any claim from the applicant which may occur from the lapsing of the approval.

Directors: Mr. M.S. Ralebipi (Chairperson), Mr. G.M. Maluleke (CEO), Ms. W.N.G. Moleko, Mr. M.P.K. Tshivhase, Ms. T.M. Ramabulana, Mr. P.L. Makape, Mr. M.J. Phukuntsi, Ms. T. Kekana (Company Secretary)

APPLICATION FOR INSTALLATION OF A WATER PIPELINE CROSSING ROAD D175 FROM CROCODILE RIVER ON THE FARM MOOIVALLEI 342 KQ TO LEPHALALE FOR MOKOLO CROCODILE WATER AUGMENTATION PROJECT PHASE 2 (MCWAP-2): WATERBERG DISTRICT

- 1.2. The applicant (National Department of Water and Sanitation) indemnifies RAL against and holds it harmless from any claim or damage pertaining to the possible expansion of the provincial road(s) in future, or damage which may be instituted or suffered by any person, including legal costs incurred as a result of:
- (i) The erection use or removal of the structure or other works erected or established by the applicant within the building restriction area.
 - (ii) The applicant or his successor-in-title's failure to properly maintain and render safe anything related to this approval or other works, or the non-compliance by the applicant with any condition to which the permission relates.
 - (iii) The lapsing of the approval.
- 1.3 Any action taken by the applicant in connection with approval shall be regarded as an acceptance and compliance with the conditions including the indemnity.
- 1.4 Should any damage be caused to the provincial road or user of the provincial road or the property as a result of the excavation, erection, use or removal of the structure laid, erected or established by the applicant, on the property, such applicant shall be liable for such damage and shall compensate against any claim from a third party.

2. Validity Period:

This approval shall lapse:

- (i) Unless the installation of a water pipeline crossing road D175 is completed within a period of six (6) months from the date of approval by RAL, provided that the applicant may, prior to the date of expiry, apply in writing for an extension of the completion period, or
- (ii) In the event of the applicant not complying with any of the conditions as imposed by RAL.

3. Advertisements:

No advertisements as described under Article 2 of the Advertising on Roads and Ribbon Development Act, 1940 (Act No 21 of 1940) and Section 50 of the Limpopo Roads Agency Limited and Provincial Roads Act, 1998 (Act No 7 of 1998) may be displayed visible from road D175 without the approval of the Chief Executive Officer of RAL.

APPLICATION FOR INSTALLATION OF A WATER PIPELINE CROSSING ROAD D175 FROM CROCODILE RIVER ON THE FARM MOOIVALLEI 342 KQ TO LEPHALALE FOR MOKOLO CROCODILE WATER AUGMENTATION PROJECT PHASE 2 (MCWAP-2): WATERBERG DISTRICT

4 Notification of Commencement and Completion:

The applicant shall at least fourteen (14) days prior to the commencement of the work advise P.E. Montjane of RAL in writing upon of the date which the work shall be commenced with. The said P.E. Montjane shall also be advised in writing, within thirty (30) days after the completion of the work of the date upon which the work has been completed.

If any work is commenced without notifying RAL as stipulated above, the work shall be considered illegal. If no notification is received by RAL within 30 days after completion of the works, the liability period of the applicant shall be extended and the applicant will remain liable for any damages / claims that may arise during that period.

5 Additional Legal Requirements:

- (i) This approval shall bind any successor-in-title to the land on which the servitude or structure has been established.
- (ii) This approval does not exempt the applicant from the provisions of any other Act.
- (iii) Failure to comply with any of the conditions mentioned above, the applicant shall be liable for any damage(s) or defects that may arise.

Thank you,

pp. 

CHIEF EXECUTIVE OFFICER

28/08/2020

DATE



ROADS AGENCY LIMPOPO (SOC) Ltd

26 Rabe Street
Private Bag X 9554
POLOKWANE
0700

Tel: +27 15 291 4236
+27 15 284 4600

Contact Person: P.E. Montjane
Our Ref.: RAL7/2/10/D769
Email: MontjanePE@ral.co.za

Direct Line: +27 15 284 4637
Your Ref.: RAL001_02062020-7
Website: www.ral.co.za

Trans-Caledon Tunnel Authority
P.O. Box 10335
CENTURION
0046

Attention: Segomotso Kelefetswe,

APPLICATION FOR INSTALLATION OF WATER PIPELINE ALONGSIDE ROAD D769 FROM CROCODILE RIVER ON THE FARM MOOIVALLEI 342 KQ TO LEPHALALE FOR MOKOLO CROCODILE WATER AUGMENTATION PROJECT PHASE 2 (MCWAP-2): WATERBERG DISTRICT

Thank you for your application dated 02 June 2020 **for installation of water pipeline.**

Your application to install a 1 400 mm diameter ND welded steel water pipeline alongside road D769 from **(GPS LAT S 24°34'39.71" LONG E 27°18'31.11")** to **(GPS LAT S 24°31'39.79" LONG E 27°16'29.69")** as shown on the submitted plans has been approved subject to strict adherence to the attached conditions 1 to 38 "Pipelines", in terms of Section 48 of the Limpopo Roads Agency Limited and Provincial Roads Act, 1998 (Act No 7 of 1998) and Section 9, 9A and 10 of the Advertising on Roads and Ribbon Development Act, 1940 (Act No 21 of 1940), Subject to the following conditions:

1. Cost and Indemnities:

- 1.1. The Roads Agency Limpopo SOC Limited (RAL) shall not be involved in any expenditure in connection with and shall not be responsible or liable for:
- (i) The erection of any structure.
 - (ii) Any financial expenditure or loss in the event of the RAL ordering the removal or shifting or relocation of anything related to this approval. Such removal clause shall be noted in the Title Deed of the servitude in terms of Section 48(a) of (Act No 7 of 1998).
 - (iii) Any financial responsibility or liability for any claim from the applicant which may occur from the lapsing of the approval.

Directors: Mr. M.S. Ralebipi (Chairperson), Mr. G.M. Maluleke (CEO), Ms. W.N.G. Moleko, Mr. M.P.K. Tshivhase, Ms. T.M. Ramabulana, Mr. P.L. Makape, Mr. M.J. Phukuntsi, Ms. T. Kekana (Company Secretary)

APPLICATION FOR INSTALLATION OF WATER PIPELINE ALONGSIDE ROAD D769 FROM CROCODILE RIVER ON THE FARM MOOIVALLEI 342 KQ TO LEPHALALE FOR MOKOLO CROCODILE WATER AUGMENTATION PROJECT PHASE 2 (MCWAP-2): WATERBERG DISTRICT

- 1.2. The applicant (National Department of Water and Sanitation) indemnifies RAL against and holds it harmless from any claim or damage pertaining to the possible expansion of the provincial road(s) in future, or damage which may be instituted or suffered by any person, including legal costs incurred as a result of:
- (i) The erection use or removal of the structure or other works erected or established by the applicant within the building restriction area.
 - (ii) The applicant or his successor-in-title's failure to properly maintain and render safe anything related to this approval or other works, or the non-compliance by the applicant with any condition to which the permission relates.
 - (iii) The lapsing of the approval.
- 1.3 Any action taken by the applicant in connection with approval shall be regarded as an acceptance and compliance with the conditions including the indemnity.
- 1.4 Should any damage be caused to the provincial road or user of the provincial road or the property as a result of the excavation, erection, use or removal of the structure laid, erected or established by the applicant, on the property, such applicant shall be liable for such damage and shall compensate against any claim from a third party.

2. Validity Period:

This approval shall lapse:

- (i) Unless the installation of water pipeline alongside road D769 is completed within a period of six (6) months from the date of approval by RAL, provided that the applicant may, prior to the date of expiry, apply in writing for an extension of the completion period, or
- (ii) In the event of the applicant not complying with any of the conditions as imposed by RAL.

3. Advertisements:

No advertisements as described under Article 2 of the Advertising on Roads and Ribbon Development Act, 1940 (Act No 21 of 1940) and Section 50 of the Limpopo Roads Agency Limited and Provincial Roads Act, 1998 (Act No 7 of 1998) may be displayed visible from road D769 without the approval of the Chief Executive Officer of RAL.

APPLICATION FOR INSTALLATION OF WATER PIPELINE ALONGSIDE ROAD D769 FROM CROCODILE RIVER ON THE FARM MOOIVALLEI 342 KQ TO LEPHALALE FOR MOKOLO CROCODILE WATER AUGMENTATION PROJECT PHASE 2 (MCWAP-2): WATERBERG DISTRICT

4 Notification of Commencement and Completion:

The applicant shall at least fourteen (14) days prior to the commencement of the work advise P.E. Montjane of RAL in writing upon of the date which the work shall be commenced with. The said P.E. Montjane shall also be advised in writing, within thirty (30) days after the completion of the work of the date upon which the work has been completed.

If any work is commenced without notifying RAL as stipulated above, the work shall be considered illegal. If no notification is received by RAL within 30 days after completion of the works, the liability period of the applicant shall be extended and the applicant will remain liable for any damages / claims that may arise during that period.

5 Additional Legal Requirements:

- (i) This approval shall bind any successor-in-title to the land on which the servitude or structure has been established.
- (ii) This approval does not exempt the applicant from the provisions of any other Act.
- (iii) Failure to comply with any of the conditions mentioned above, the applicant shall be liable for any damage(s) or defects that may arise.

Thank you,

pp. 

CHIEF EXECUTIVE OFFICER

28/08/2020

DATE



ROADS AGENCY LIMPOPO (SOC) Ltd

26 Rabe Street
Private Bag X 9554
POLOKWANE
0700

Tel: +27 15 291 4236
+27 15 284 4600

Contact Person: P.E. Montjane
Our Ref.: RAL7/2/10/D1649 (01)
Email: MontjanePE@ral.co.za

Direct Line: +27 15 284 4637
Your Ref.: RAL001_02062020-1
Website: www.ral.co.za

Trans-Caledon Tunnel Authority
P.O. Box 10335
CENTURION
0046

Attention: Segomotso Kelefetswe,

APPLICATION FOR INSTALLATION OF WATER PIPELINE CROSSING ROAD D1649 FROM CROCODILE RIVER ON THE FARM MOOIVALLEI 342 KQ TO LEPHALALE FOR MOKOLO CROCODILE WATER AUGMENTATION PROJECT PHASE 2 (MCWAP-2): WATERBERG DISTRICT

Thank you for your application dated 02 June 2020 **for installation of water pipeline.**

Your application to install a 1 400 mm diameter ND welded steel water pipeline crossing road D1649 at **(GPS LAT S 24°35'06.63" LONG E 27°18'51.15")** on portion 1 of the farm Mooivallei 342 LQ encased within 2 000 mm diameter Concrete Class 100D sleeve pipe with **a pipe jacking method** as shown on the submitted plans has been approved subject to strict adherence to the attached conditions 1 to 38 "Pipelines", in terms of Section 48 of the Limpopo Roads Agency Limited and Provincial Roads Act, 1998 (Act No 7 of 1998) and Section 9, 9A and 10 of the Advertising on Roads and Ribbon Development Act, 1940 (Act No 21 of 1940), Subject to the following conditions:

1. Cost and Indemnities:

- 1.1. The Roads Agency Limpopo SOC Limited (RAL) shall not be involved in any expenditure in connection with and shall not be responsible or liable for:
- (i) The erection of any structure.
 - (ii) Any financial expenditure or loss in the event of the RAL ordering the removal or shifting or relocation of anything related to this approval. Such removal clause shall be noted in the Title Deed of the servitude in terms of Section 48(a) of (Act No 7 of 1998).
 - (iii) Any financial responsibility or liability for any claim from the applicant which may occur from the lapsing of the approval.

Directors: Mr. M.S. Ralebipi (Chairperson), Mr. G.M. Maluleke (CEO), Ms. W.N.G. Moleko, Mr. M.P.K. Tshivhase, Ms. T.M. Ramabulana, Mr. P.L. Makape, Mr. M.J. Phukuntsi, Ms. T. Kekana (Company Secretary)

APPLICATION FOR INSTALLATION OF WATER PIPELINE CROSSING ROAD D1649 FROM CROCODILE RIVER ON THE FARM MOOIVALLEI 342 KQ TO LEPHALALE FOR MOKOLO CROCODILE WATER AUGMENTATION PROJECT PHASE 2 (MCWAP-2): WATERBERG DISTRICT

- 1.2. The applicant (National Department of Water and Sanitation) indemnifies RAL against and holds it harmless from any claim or damage pertaining to the possible expansion of the provincial road(s) in future, or damage which may be instituted or suffered by any person, including legal costs incurred as a result of:
- (i) The erection use or removal of the structure or other works erected or established by the applicant within the building restriction area.
 - (ii) The applicant or his successor-in-title's failure to properly maintain and render safe anything related to this approval or other works, or the non-compliance by the applicant with any condition to which the permission relates.
 - (iii) The lapsing of the approval.
- 1.3 Any action taken by the applicant in connection with approval shall be regarded as an acceptance and compliance with the conditions including the indemnity.
- 1.4 Should any damage be caused to the provincial road or user of the provincial road or the property as a result of the excavation, erection, use or removal of the structure laid, erected or established by the applicant, on the property, such applicant shall be liable for such damage and shall compensate against any claim from a third party.

2. Validity Period:

This approval shall lapse:

- (i) Unless the installation of water pipeline crossing road D1649 is completed within a period of six (6) months from the date of approval by RAL, provided that the applicant may, prior to the date of expiry, apply in writing for an extension of the completion period, or
- (ii) In the event of the applicant not complying with any of the conditions as imposed by RAL.

3. Advertisements:

No advertisements as described under Article 2 of the Advertising on Roads and Ribbon Development Act, 1940 (Act No 21 of 1940) and Section 50 of the Limpopo Roads Agency Limited and Provincial Roads Act, 1998 (Act No 7 of 1998) may be displayed visible from road D1649 without the approval of the Chief Executive Officer of RAL.

APPLICATION FOR INSTALLATION OF WATER PIPELINE CROSSING ROAD D1649 FROM CROCODILE RIVER ON THE FARM MOOIVALLEI 342 KQ TO LEPHALALE FOR MOKOLO CROCODILE WATER AUGMENTATION PROJECT PHASE 2 (MCWAP-2): WATERBERG DISTRICT

4 Notification of Commencement and Completion:

The applicant shall at least fourteen (14) days prior to the commencement of the work advise P.E. Montjane of RAL in writing upon of the date which the work shall be commenced with. The said P.E. Montjane shall also be advised in writing, within thirty (30) days after the completion of the work of the date upon which the work has been completed.

If any work is commenced without notifying RAL as stipulated above, the work shall be considered illegal. If no notification is received by RAL within 30 days after completion of the works, the liability period of the applicant shall be extended and the applicant will remain liable for any damages / claims that may arise during that period.

5 Additional Legal Requirements:

- (i) This approval shall bind any successor-in-title to the land on which the servitude or structure has been established.
- (ii) This approval does not exempt the applicant from the provisions of any other Act.
- (iii) Failure to comply with any of the conditions mentioned above, the applicant shall be liable for any damage(s) or defects that may arise.

Thank you,

pp. 

CHIEF EXECUTIVE OFFICER

28/08/2020

DATE



ROADS AGENCY LIMPOPO (SOC) Ltd

26 Rabe Street
Private Bag X 9554
POLOKWANE
0700

Tel: +27 15 291 4236
+27 15 284 4600

Contact Person: P.E. Montjane
Our Ref.: RAL7/2/10/D1649
Email: MontjanePE@ral.co.za

Direct Line: +27 15 284 4637
Your Ref.: RAL001_02062020-8
Website: www.ral.co.za

Trans-Caledon Tunnel Authority
P.O. Box 10335
CENTURION
0046

Attention: Segomotso Kelefetswe,

APPLICATION FOR INSTALLATION OF WATER PIPELINE ALONGSIDE ROAD D1649 FROM CROCODILE RIVER ON THE FARM MOOIVALLEI 342 KQ TO LEPHALALE FOR MOKOLO CROCODILE WATER AUGMENTATION PROJECT PHASE 2 (MCWAP-2): WATERBERG DISTRICT

Thank you for your application dated 02 June 2020 **for installation of water pipeline.**

Your application to install a 1 400 mm diameter ND welded steel water pipeline alongside road D1649 from **(GPS LAT S 24°35'06.63" LONG E 27°18'51.15")** to **(GPS LAT S 24°34'40.83" LONG E 27°18'31.48")** as shown on the submitted plans has been approved subject to strict adherence to the attached conditions 1 to 38 "Pipelines", in terms of Section 48 of the Limpopo Roads Agency Limited and Provincial Roads Act, 1998 (Act No 7 of 1998) and Section 9, 9A and 10 of the Advertising on Roads and Ribbon Development Act, 1940 (Act No 21 of 1940), Subject to the following conditions:

1. Cost and Indemnities:

- 1.1. The Roads Agency Limpopo SOC Limited (RAL) shall not be involved in any expenditure in connection with and shall not be responsible or liable for:
- (i) The erection of any structure.
 - (ii) Any financial expenditure or loss in the event of the RAL ordering the removal or shifting or relocation of anything related to this approval. Such removal clause shall be noted in the Title Deed of the servitude in terms of Section 48(a) of (Act No 7 of 1998).
 - (iii) Any financial responsibility or liability for any claim from the applicant which may occur from the lapsing of the approval.

Directors: Mr. M.S. Ralebipi (Chairperson), Mr. G.M. Maluleke (CEO), Ms. W.N.G. Moleko, Mr. M.P.K. Tshivhase, Ms. T.M. Ramabulana, Mr. P.L. Makape, Mr. M.J. Phukuntsi, Ms. T. Kekana (Company Secretary)

APPLICATION FOR INSTALLATION OF WATER PIPELINE ALONGSIDE ROAD D1649 FROM CROCODILE RIVER ON THE FARM MOOIVALLEI 342 KQ TO LEPHALALE FOR MOKOLO CROCODILE WATER AUGMENTATION PROJECT PHASE 2 (MCWAP-2): WATERBERG DISTRICT

- 1.2. The applicant (National Department of Water and Sanitation) indemnifies RAL against and holds it harmless from any claim or damage pertaining to the possible expansion of the provincial road(s) in future, or damage which may be instituted or suffered by any person, including legal costs incurred as a result of:
- (i) The erection use or removal of the structure or other works erected or established by the applicant within the building restriction area.
 - (ii) The applicant or his successor-in-title's failure to properly maintain and render safe anything related to this approval or other works, or the non-compliance by the applicant with any condition to which the permission relates.
 - (iii) The lapsing of the approval.
- 1.3 Any action taken by the applicant in connection with approval shall be regarded as an acceptance and compliance with the conditions including the indemnity.
- 1.4 Should any damage be caused to the provincial road or user of the provincial road or the property as a result of the excavation, erection, use or removal of the structure laid, erected or established by the applicant, on the property, such applicant shall be liable for such damage and shall compensate against any claim from a third party.

2. Validity Period:

This approval shall lapse:

- (i) Unless the installation of water pipeline alongside road D1649 is completed within a period of six (6) months from the date of approval by RAL, provided that the applicant may, prior to the date of expiry, apply in writing for an extension of the completion period, or
- (ii) In the event of the applicant not complying with any of the conditions as imposed by RAL.

3. Advertisements:

No advertisements as described under Article 2 of the Advertising on Roads and Ribbon Development Act, 1940 (Act No 21 of 1940) and Section 50 of the Limpopo Roads Agency Limited and Provincial Roads Act, 1998 (Act No 7 of 1998) may be displayed visible from road D1649 without the approval of the Chief Executive Officer of RAL.

APPLICATION FOR INSTALLATION OF WATER PIPELINE ALONGSIDE ROAD D1649 FROM CROCODILE RIVER ON THE FARM MOOIVALLEI 342 KQ TO LEPHALALE FOR MOKOLO CROCODILE WATER AUGMENTATION PROJECT PHASE 2 (MCWAP-2): WATERBERG DISTRICT

4 Notification of Commencement and Completion:

The applicant shall at least fourteen (14) days prior to the commencement of the work advise P.E. Montjane of RAL in writing upon of the date which the work shall be commenced with. The said P.E. Montjane shall also be advised in writing, within thirty (30) days after the completion of the work of the date upon which the work has been completed.

If any work is commenced without notifying RAL as stipulated above, the work shall be considered illegal. If no notification is received by RAL within 30 days after completion of the works, the liability period of the applicant shall be extended and the applicant will remain liable for any damages / claims that may arise during that period.

5 Additional Legal Requirements:

- (i) This approval shall bind any successor-in-title to the land on which the servitude or structure has been established.
- (ii) This approval does not exempt the applicant from the provisions of any other Act.
- (iii) Failure to comply with any of the conditions mentioned above, the applicant shall be liable for any damage(s) or defects that may arise.

Thank you,

pp. 

CHIEF EXECUTIVE OFFICER

28/08/2020

DATE



ROADS AGENCY LIMPOPO (SOC) Ltd

26 Rabe Street
Private Bag X 9554
POLOKWANE
0700

Tel: +27 15 291 4236
+27 15 284 4600

Contact Person: P.E. Montjane
Our Ref.: RAL7/2/10/D1925
Email: MontjanePE@ral.co.za

Direct Line: +27 15 284 4637
Your Ref.: RAL001_02062020-4
Website: www.ral.co.za

Trans-Caledon Tunnel Authority
P.O. Box 10335
CENTURION
0046

Attention: Segomotso Kelefetswe,

APPLICATION FOR INSTALLATION OF WATER PIPELINE CROSSING ROAD D1925 FROM CROCODILE RIVER ON THE FARM MOOIVALLEI 342 KQ TO LEPHALALE FOR MOKOLO CROCODILE WATER AUGMENTATION PROJECT PHASE 2 (MCWAP-2): WATERBERG DISTRICT

Thank you for your application dated 02 June 2020 **for installation of water pipeline.**

Your application to install a 1 400 mm diameter ND welded steel water pipeline crossing road D1925 at **(GPS LAT S 23°50'06.57" LONG E 27°25'03.60")** on portion 4 of the farm Rhenosterpan 361 LQ encased within 2 000 mm diameter Concrete Class 100D sleeve pipe with **an open trench method** as shown on the submitted plans has been approved subject to strict adherence to the attached conditions 1 to 38 "Pipelines", in terms of Section 48 of the Limpopo Roads Agency Limited and Provincial Roads Act, 1998 (Act No 7 of 1998) and Section 9, 9A and 10 of the Advertising on Roads and Ribbon Development Act, 1940 (Act No 21 of 1940), Subject to the following conditions:

1. Cost and Indemnities:

- 1.1. The Roads Agency Limpopo SOC Limited (RAL) shall not be involved in any expenditure in connection with and shall not be responsible or liable for:
- (i) The erection of any structure.
 - (ii) Any financial expenditure or loss in the event of the RAL ordering the removal or shifting or relocation of anything related to this approval. Such removal clause shall be noted in the Title Deed of the servitude in terms of Section 48(a) of (Act No 7 of 1998).
 - (iii) Any financial responsibility or liability for any claim from the applicant which may occur from the lapsing of the approval.

Directors: Mr. M.S. Ralebipi (Chairperson), Mr. G.M. Maluleke (CEO), Ms. W.N.G. Moleko, Mr. M.P.K. Tshivhase, Ms. T.M. Ramabulana, Mr. P.L. Makape, Mr. M.J. Phukuntsi, Ms. T. Kekana (Company Secretary)

APPLICATION FOR INSTALLATION OF A WATER PIPELINE CROSSING ROAD D1925 FROM CROCODILE RIVER ON THE FARM MOOIVALLEI 342 KQ TO LEPHALALE FOR MOKOLO CROCODILE WATER AUGMENTATION PROJECT PHASE 2 (MCWAP-2): WATERBERG DISTRICT

- 1.2. The applicant (National Department of Water and Sanitation) indemnifies RAL against and holds it harmless from any claim or damage pertaining to the possible expansion of the provincial road(s) in future, or damage which may be instituted or suffered by any person, including legal costs incurred as a result of:
- (i) The erection use or removal of the structure or other works erected or established by the applicant within the building restriction area.
 - (ii) The applicant or his successor-in-title's failure to properly maintain and render safe anything related to this approval or other works, or the non-compliance by the applicant with any condition to which the permission relates.
 - (iii) The lapsing of the approval.
- 1.3 Any action taken by the applicant in connection with approval shall be regarded as an acceptance and compliance with the conditions including the indemnity.
- 1.4 Should any damage be caused to the provincial road or user of the provincial road or the property as a result of the excavation, erection, use or removal of the structure laid, erected or established by the applicant, on the property, such applicant shall be liable for such damage and shall compensate against any claim from a third party.

2. Validity Period:

This approval shall lapse:

- (i) Unless the installation of a water pipeline crossing road D1925 is completed within a period of six (6) months from the date of approval by RAL, provided that the applicant may, prior to the date of expiry, apply in writing for an extension of the completion period, or
- (ii) In the event of the applicant not complying with any of the conditions as imposed by RAL.

3. Advertisements:

No advertisements as described under Article 2 of the Advertising on Roads and Ribbon Development Act, 1940 (Act No 21 of 1940) and Section 50 of the Limpopo Roads Agency Limited and Provincial Roads Act, 1998 (Act No 7 of 1998) may be displayed visible from road D1925 without the approval of the Chief Executive Officer of RAL.

APPLICATION FOR INSTALLATION OF A WATER PIPELINE CROSSING ROAD D1925 FROM CROCODILE RIVER ON THE FARM MOOIVALLEI 342 KQ TO LEPHALALE FOR MOKOLO CROCODILE WATER AUGMENTATION PROJECT PHASE 2 (MCWAP-2): WATERBERG DISTRICT

4 Notification of Commencement and Completion:

The applicant shall at least fourteen (14) days prior to the commencement of the work advise P.E. Montjane of RAL in writing upon of the date which the work shall be commenced with. The said P.E. Montjane shall also be advised in writing, within thirty (30) days after the completion of the work of the date upon which the work has been completed.

If any work is commenced without notifying RAL as stipulated above, the work shall be considered illegal. If no notification is received by RAL within 30 days after completion of the works, the liability period of the applicant shall be extended and the applicant will remain liable for any damages / claims that may arise during that period.

5 Additional Legal Requirements:

- (i) This approval shall bind any successor-in-title to the land on which the servitude or structure has been established.
- (ii) This approval does not exempt the applicant from the provisions of any other Act.
- (iii) Failure to comply with any of the conditions mentioned above, the applicant shall be liable for any damage(s) or defects that may arise.

Thank you,

pp. 

CHIEF EXECUTIVE OFFICER

28/08/2020

DATE

CONDITIONS : PIPELINES

1. The applicant must at least fourteen (14) days prior to the commencement of any work inform the Chief Executive Officer of the Roads Agency Limpopo SOC Limited in writing of the date upon which the work shall be commenced with in order to make the necessary arrangements for inspection.

The Inspection and Completion certificate must be completed during inspection and handed to the Inspector (The certificate is attached as Addendum A).

2. The necessary and prescribed road signs for the proposed work must conform to the South African Road Traffic Signs Manual.

You must provide the signs and erect them to the satisfaction of the Chief Executive Officer of the Roads Agency Limpopo SOC Limited before commencing with the work. The minimum layout of the road signs is shown on the sketches included in the attached addendum

3. The necessary precautions are to be taken at all times to safeguard traffic while installation operations are in progress within the road reserve. Any accident during installation operations due to negligence on the part of your own employees or contractors will be your responsibility.
4. Any damage to existing wayleaves or to the rights of other people as a result of your installation operations will be your responsibility. If you are the owner of the relevant property, this wayleave is granted to you without prejudice to the rights of the ownership of the owner or any other parties concerned.

When the road servitude ceases to exist, either by the closing or deviation of the relevant road, the full authority and control of the land taken up by the road reserve, will revert to the owner or other parties concerned and removal of your service may be demanded. It will thus be necessary to obtain the consent to this wayleave from the owners of the land in question and/or other parties concerned in order to protect your interests.

5. The Roads Agency Limpopo SOC Limited will not be involved in any expenditure in connection with the laying/erection/installation or maintenance of your service. You must undertake to move or deviate your service(s) at your own expense, within the prescribed period if requested by the Roads Agency Limpopo SOC Limited, should this become necessary as a result of road widening, road works, road maintenance or road surfacing. This include everything concerned and connected to the service(s) such as meter boxes, meters, transformers, poles, street distribution cabinets, anchors, stays, manholes or any other fittings or parts thereof. Where special conditions were allowed, you will still be held responsible for all costs incurred should your service(s) and all appurtenant items have to be shifted.
6. The shifting of the service(s) could be permitted to a position within a new planned and proposed road reserve. This will, however, be subject to specific approval from the Roads Agency Limpopo SOC Limited and will only be considered if the service complies with current standard and policy as laid down by the Roads Agency Limpopo SOC Limited. All obstacles/hindrances

and permission/negotiations (land owners, etc.) required to achieve this new position within the proposed road reserve will have to be surmounted and undertaken by yourselves, irrespective of what stage/phase the planning of the new proposed road reserve has reached.

7. NB : This permission with regard parallel services and services within the existing road reserve can expire later when you are instructed to shift/remove your services and can, therefore, mean that your service will not automatically be allowed within the future/new road reserve. Your service will then have to be placed outside the road reserve and the building line.
8. You will be held responsible for any damage suffered by the Roads Agency Limpopo SOC Limited as a result of your negligence to shift the service(s) within the prescribed period(s)
9. If it is deemed necessary in the future by the Roads Agency Limpopo SOC Limited to repair, resurface or do repair work directly as a result of the presence of your service (in spite of the duration of when the service was installed), you will have to accept full responsibility for the extra costs (that is those repair costs directly attached to the presence of your service within the road reserve) incurred by the Roads Agency Limpopo SOC Limited. You will have to pay the full amount, within three (3) months from date of the written notice, to the Chief Executive Officer.
10. You will be responsible for all liaison and coordination work including any and all correspondence between your commission/Agency and any private property owners. The Roads Agency Limpopo SOC Limited will not be involved with any individual property owners with regard to the service, as this is then still your responsibility. See also clauses 4 and 5 of this wayleave.
11. You indemnify the Premier of Limpopo Province and exempt him from any claim or damage which may be instituted or suffered by any person, including legal costs, as a result of the laying or erection of any service or any other works caused or erected by you, or as a result of negligence on your part to protect or maintain the service or other works caused by any other person unless you can prove negligence on the part of the Roads Agency Limpopo SOC Limited or its officials.
12. The Roads Agency Limpopo SOC Limited will not be liable for any damage suffered by the applicant as a result of operations carried out on road construction or road maintenance or any other operations whatsoever, unless negligence on the part of the Roads Agency Limpopo SOC Limited or its officials can be proved.
13. The work must be carried out to the entire satisfaction of the Chief Executive Officer. No trees, shrubs, cultivated grass or fencing must be removed or damaged. If such plants or fences were removed or damaged you will have to replace it to the entire satisfaction of the Chief Executive Officer.
14. Permission must be obtained from the Chief Executive Officer before any trees or shrubs can be pruned or removed for erection/installation or maintenance purposes. All branches and tree trunks or other waste must be removed and the road reserve must be cleaned up before the final inspection takes place. The service(s) must be erected in such a manner that no trees are affected or will fall within the safe area of the service(s).

15. Drainage systems (surface and sub-surface) must not be interfered with or damaged in any way. The road reserve must be left clean and all waste products be removed.
16. No permanent access to and from the road to the service will be allowed. Temporary access points must be approved by the Chief Executive Officer.
17. The work must be done within six months from the date of this letter. If for any reason at all, the work is delayed for a longer period, extension of time must be requested in writing or a new application will have to be submitted.
18. The official in charge in charge of the construction or maintenance work on the site must, at all times, be in possession of a complete copy of the letter of approval, including the general conditions, special conditions and specific conditions where applicable to the service concerned, as well as all plans that are required and are referred to in the correspondence, so that during an inspection the official can submit it to the official(s) of the Controlling Authority when requested to do so. If no approval can be submitted the official of the Controlling Authority then can order that the road be secured and the work immediately ceased. Any cost incurred by Roads Agency Limpopo SOC Limited to secure the road, will be to your account.
19. The conditions of this wayleave are applicable to you as well as your successor-in-title (where applicable). If property rights of your service be transferred to any other person or institution, it will be your responsibility to bring the contents of this wayleave to the attention of your successor-in-title as the conditions of this wayleave together with your property rights will be transferred to your successor-in-title and will still be applicable.
20. This clause is applicable to Telkom or any other institution/company acting on their behalf within the said Acts as set out below:

The Postal Act No. 44 of 1958 (as amended) and any further amendments to the act will not be applicable with regard to this application and approval. Only the conditions laid down in this wayleaves will be considered as legal and binding! Therefore, any claims that may arise as a result of the presence of your service will be treated strictly according to the conditions laid down in the wayleave. Therefore, section 108 of the Postal Act 44 of 1958 or section 50 of the Postal amendment Act No 113 of 1976 or any other sections of any Postal Act, will not be applicable to the Roads Agency Limpopo SOC Limited.

On non-acceptance of this condition, this approval is withdrawn and your application is not approved. Application must then be re-submitted.

21. If you fail to comply with any of the general, specific and special conditions of this wayleaves during the laying/installation/erection or maintenance of the concerned service, the Chief Executive Officer of the Roads Agency Limpopo SOC Limited reserves the right to withdraw this wayleave and you will be obliged to cease all work immediately or to rectify the situation or failure of the latter you can be ordered (Act 21 of 1940), to remove the service from within the building restriction area.

CONDITIONS FOR UNDERGROUND PIPES / CABLES :

22. Except where the service crosses the road it may in terms of Section 9 of the Advertising on Roads and Ribbon Development Act, 1940 (Act No 21 of 1940, as amended) not be laid nearer than 95 metres from the centre line of the road or within a 500 metre radius measured from the centre line of the junction of a building restriction road and the centre line of any other road (except a national road), without the specific permission of the Roads Agency Limpopo SOC Limited. For any special specifications see the covering letter.

23. The service must be laid in a sleeve pipe over the full width of the road reserve. The top of the sleeve pipe must be laid at least one metre under the lowest point of the road or road reserve and follow a straight line. The cable must cross the road perpendicular as far as possible and no manholes/distribution cabinets, access chamber, etc., must be erected within the road reserve. Manholes, access/valve chambers, air valves, etc., may only be erected on one side of the road and outside the road reserve, Should permission be given to allow one or more of the foregoing structures within the road reserve, it shall not protrude above the surrounding surface and the structure must be of sufficient strength to withstand and carry axle loading as prescribed by the Roads Agency Limpopo SOC Limited.

The sleeve pipe or duct must be acceptable and comply to the standard types approved by the Roads Agency Limpopo SOC Limited. A list of standard types is available on written request. In the event of the sleeve/pipe being larger than 150 mm (inside diameter) a note on the detail plans is to be added confirming that the sleeve/pipe is strong enough for the required purpose. (Detail plans will normally encompass a lay-out plan, locality plan, longitudinal and cross-sections to a suitable scale signed by a professional Engineer).

24. A bright weather-proof plastic tape must be laid, where applicable, +300mm above the sleeve to act as a warning.
25. The material that is used must be of such quality that during the expected life of the road it will not be necessary to disturb the road surface to do repairs to the service.
26. If the open trench method is used, the sleeve pipe must be laid in two sections across the roadway to obviate interruption to the flow of traffic; only one lane may be closed to the public at a time. A deviation to make the crossing of the road easier, can be considered but it must be shown on a fully detailed plan and approved by the Chief Executive Officer before commencement of the work.
27. Care must be taken that the existing stormwater drains or subsurface drainage systems or survey beacons/pegs are not damaged or interfered with by excavations. Excavation within the road reserve must be fenced and secured.
28. a) Any survey pegs/beacons that are damaged as a result of your Activities must be replaced at your own cost by a surveyor who is on an approved panel of surveyors appointed by the The work shall only be carried out provided the abovementioned GENERAL, SPECIFIC and SPECIAL conditions are accepted in writing.

- b) Cadastral beacons, however, must be replaced by a registered Surveyor.
 - c) After the beacons have been replaced, a Completion Certificate, marked for the specific attention of the Control Industrial Technician : Inspection, must be handed in at the office of the Chief Executive Officer for approval.
 - d) All arrangements for the implementation of the abovementioned Procedures will be arranged by the service owner/applicant and will they accept full responsibility thereof.
29. Treatment of the layers for service excavations must conform to the Standard Specifications for Roads Agency as well as the Material and Pavement Design Manual (L1/78 as amended) issued by the Deputy Director General : Roads, Transvaal Provincial Administration, Pretoria.
Should these specifications in any instance be less stringent and / or a lesser standard than the general specifications as given below, these will apply :
Backfilling alongside and over all sleeve pipes must be placed and compacted in layers of at most 100 mm after compaction to a density required for the material in adjacent fill, subgrade or sub base layer. The density of the backfill in excavations in natural ground must be at least 90 % of the modified AASHTO density. You will be held responsible for any subsidence in the backfill or accidents due to such subsidence.
30. You agree to maintain at all times underground services and appurtenant items including repair work to the surface of the road if requested and to take the necessary precautions to safeguard the travelling public.
31. No excavation in the roadway may be left open overnight.
32. Service markers as specified on attached plan W93 indicating the nature, position and depth of the service will have to be erected on both sides at crossings, by the service owner. For parallel services within the road reserve the markers must be erected at least at every 100 metres alongside the underground service. The markers must be at least 200 mm high and also be clearly visible.
33. You will not be allowed to excavate at any time to effect repairs to the service. If a defect occurs you will have to apply for a new wayleave before the service may be repaired.
34. Arrangements must be made with the provincial or local traffic department to be present while work is in progress on the road. This clause may be ignored if you make use of the method where the pipe is pushed underneath the road, but clause 3 will still apply.
35. The joints of the pipes beneath the road must be watertight and you will be responsible for any damage to the road and road reserve because of leakage. (Not applicable in the case of powerline cables).
36. a) You will be required to furnish the abovementioned Senior Project Manager with a deposit to cover the cost of reinstating the road surface.

- b) You will be required to furnish the abovementioned Senior Project Manager with a works order to cover the cost of reinstating the road surface.
 - c) You must reinstate the road surface to the entire satisfaction of the abovementioned Senior Project Manager and it must be to the specifications of Roads Agency.
- 37. The work shall only be carried out provided the abovementioned GENERAL, SPECIFIC and SPECIAL conditions are accepted in writing.
- 38. This wayleaves is granted in terms of the Advertising on Roads and Ribbon Development Act, (Act 21 of 1940,as amended) and the Northern Province Roads Agency (Pty) Limited and Provincial Roads Act, (Act 7 of 1998) and its Regulations, and does not exempt you from the provisions of any other law.

WAYLEAVE NUMBER.....

ADDENDUM A

A CERTIFICATE OF INSPECTION AND COMPLETION

ROAD NUMBER(S).....

N.B. : This form must be signed by the Senior Manager concerned. This signature is just for administrative control and by no means implies that the work has been done to the specification of the wayleave. The onus and responsibility of ensuring that the service has been correctly placed, is that of the applicant.

Roads Agency Limpopo SOC Limited reference number and date_____

Description of the wayleave : _____

(Give the heading of the wayleave as a description)

Name and address of owner / applicant : _____

Responsible person : (For the erection / installation of the service)

Tel. No. : _____

Address (If different from the above)

- It is hereby certified that :
- 1) the owner / applicant has made arrangements with Senior Manager: Land Use Management concerned before commencement of work, and
 - 2) the above mentioned service has completely erected / installed on _____ and that the work has been done strictly according to the wayleave conditions.

PERSON IN CHARGE

DATE

- NOTES :
- 1) This form must be completed in duplicate by the owner / applicant and must be handed to the Roads Superintendent concerned after the completion of the service for his signature. It must also be completed when the final inspection has been done and handed to the Roads Superintendent who must be present.
 - 2) The Roads Superintendent must send one copy of the completed certificate to the Roads Agency Limpopo SOC Limited office, if the work was completed to his satisfaction.

SENIOR MANAGER
Pipelines

DATE

**ANNEXURE 33/4
ESKOM REQUIREMENTS**

Mr. Segomotso Kelefetswe
TRANS-CALEDON TUNNEL AUTHORITY (TCTA)
PO Box 10335
CENTURION
0046

Date:
31 July 2020

Enquiries: Lungile Motsisi
Tel :011 800 5734

Our Ref:
INV52/2020

Dear Mr. Kelefetswe

**RE: MOKOLO CROCODILE WATER AUGMENTATION PROJECT PHASE 2 (MCWAP-2) -
APPLICATION TO CROSS EXISTING TRANSMISSION POWER LINES WITH
PIPELINE CONSTRUCTION**

Your Ref: ESK006_29042020

Your letter dated 29 April 2020 refers.

I wish to inform you that the following Eskom Transmission (Tx's) powerlines will be affected by your proposed pipeline:

- a. Eskom Transmission (Tx) Medupi-Spitskop 1,2 and 3 400kV powerlines
- b. Eskom Transmission (Tx) Medupi-Marang 1 400kV powerline
- c. Eskom Transmission (Tx) Medupi-Ngwedi 1 400kV powerline
- d. Eskom Transmission (Tx) Medupi-Masa 1& 2 400kV powerlines
- e. Eskom Transmission (Tx) proposed Medupi-Witkop 400kV powerline
- f. Eskom Transmission (Tx) Medupi-Borutho 400kV powerline
- g. Eskom Transmission (Tx) Matimba-Medupi 1 400kV powerline
- h. Eskom Transmission (Tx) Matimba-Spitskop 1&2 400kV powerline
- i. Eskom Transmission (Tx) Matimba-Marang 1 400kV powerline
- j. Eskom Transmission (Tx) Matimba-Ngwedi 1 400kV powerline
- k. Eskom Transmission (Tx) Matimba-Midas 1 400kV powerline
- l. Eskom Transmission (Tx) Matimba-Pluto 1 400kV powerline
- m. Eskom Transmission (Tx) proposed Masa-Ngwedi 400kV powerline
- n. Eskom Transmission (Tx) Matimba-Witkop 1 400kV powerline
- o. Eskom Transmission (Tx) Bighorn-Spitskop 1 400kV powerline

Eskom Tx will raise no objection to the proposed steel pipeline provided Eskom Tx's rights and services are acknowledged and respected at all times.

The following pipeline specific conditions should be adhered to:

1. The angle of the crossing should preferably be from 45 degrees to 90 degrees.
2. Sufficient cover or pipe jacking shall be provided at servitude roads to prevent breakage by Eskom's vehicles and heavy equipment.

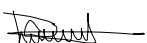
3. In the event of a proposed metal pipeline running parallel to the powerlines, indication must be given that the pipeline will be adequately earthed at intervals of one kilometre, or less. The pipeline must also be adequately protected against the effects of induction and earth faults. Eskom recommends that all work on the pipeline be carried out between two working earths.
 4. Wherever a pipe runs within the Eskom servitude, pipeline markers shall be situated at metre intervals. The norm is a minimum of ten metres apart.
 5. Wherever any pipe crosses Eskom services, the edge of the excavation shall not come within 10 metres of the Eskom services and structures.
 6. At a pipeline crossing, corrosion-free sleeves must be installed at least 600 mm below undisturbed ground level to provide for future installation of Eskom cables.
 7. In case of a proposed canal or above ground pipe a bridge shall be provided to allow permanent Eskom access to the servitude. This bridge, if of conductive material, shall be earthed, but the earthing shall not be onto Eskom structures or within five metres of Eskom's own earthing.
 8. The construction of new temporary or permanent metallic fences in power line servitudes can be extremely hazardous and is prohibited without written approval.
 9. Test posts shall use dead front construction in accordance with NACE RP0177.
 10. The pipeline owner construction manager shall report any damage to Eskom's property, private property or public facilities, and the must pay all expenses incurred in connection with the repair of such damages
- I. Eskom Tx shall at all times retain unobstructed access to and egress from its servitudes.
 - II. Eskom Tx's consent does not relieve the applicant from obtaining the necessary statutory, landowner or municipal approvals.
 - III. The applicant will adhere to all relevant environmental legislation. Any cost incurred by Eskom Tx as a result of non-compliance will be charged to the applicant.
 - IV. No construction or excavation work shall be executed within 20 meters from any Eskom Tx power line structure. Wherever the road crosses Eskom services, the edge of the excavation shall not come within 10 meters of the Eskom services and structures.
 - V. All work in the vicinity of Eskom Tx's servitude area shall comply with the relevant industrial earthing standards at the time.
 - VI. If Eskom Tx has to incur any expenditure in order to comply with statutory clearances or other regulations as a result of the applicant's activities or because of the presence of his equipment or installation within the servitude area, the applicant shall pay such costs to Eskom Tx on demand.
 - VII. The use of explosives of any type within 500 metres of Eskom Tx's services shall only occur with Eskom Tx's previous written permission. If such permission is granted the applicant must give at least fourteen working days prior notice of the commencement of blasting. This allows time for arrangements to be made for supervision and/or precautionary instructions to be issued in terms of the blasting process. It is advisable to make application separately in this regard.
 - VIII. Changes in ground level may not infringe statutory ground to conductor clearances or statutory visibility clearances. After any changes in ground level, the surface shall be rehabilitated and stabilised so as to prevent erosion. The measures taken shall be to Eskom Tx's requirements.

- IX. Eskom Tx shall not be liable for the death of or injury to any person or for the loss of or damage to any property whether as a result of the encroachment or of the use of the servitude area by the applicant, his/her agent, contractors, employees, successors in title, and assigns. The applicant indemnifies Eskom Tx against loss, claims or damages including claims pertaining to consequential damages by third parties and whether as a result of damage to or interruption of or interference with Eskom Tx's services or apparatus or otherwise. Eskom Tx will not be held responsible for damage to the applicant's equipment. The applicant's attention is drawn to the *Electricity Act, 1987, (Act 41 of 1987, as amended in 1994)*, Section 27(3), which stipulates that the applicant can be fined and/or imprisoned as a result of damage to Eskom Tx's apparatus.
- X. No mechanical equipment, including mechanical excavators or high lifting machinery, shall be used in the vicinity of Eskom Tx's apparatus and/or services, without prior written permission having been granted by Eskom. If such permission is granted the applicant must give at least seven working days prior notice of the commencement of any work. This allows time for arrangements to be made for supervision and/or precautionary instructions to be issued.
- XI. **The contact person in this regard Mr. Carel Van Coppenhagen (Lines and Servitude Managers).He can be contacted at Tel. No. +27 15 299 0350.**
- XII. No work shall commence unless Eskom Tx has received the applicant's written acceptance of the conditions specified in the letter of consent and/or permit.
- XIII. Eskom Tx's rights and duties in the servitude shall be accepted as having prior right at all times and shall not be obstructed or interfered with. Note: Where and electrical outage is required, at least fourteen workdays is required to arrange it.
- XIV. Under no circumstances shall rubble, earth or other material be dumped within the servitude area. The applicant shall maintain the area concerned to Eskom Tx's satisfaction. The applicant shall be liable to Eskom Tx for the cost of any remedial action, which has to be carried out by Eskom Tx's.
- XV. The clearances between Eskom Tx's live electrical equipment and the proposed construction work shall be observed as stipulated by *Regulation 15 of the Electrical Machinery Regulations of the Occupational Health and Safety Act, 1993 (Act 85 of 1993)*.
- XVI. Equipment shall be regarded electrically live and therefore dangerous at all times.
- XVII. In spite of the restrictions stipulated by Regulation 15 of the Electrical Machinery Regulations of the Occupational Health and Safety Act, 1993 (Act 85 of 1993), as additional safety precaution, Eskom Tx will not approve the erection of houses or structures occupied or frequented by human beings under the power lines or within the servitude area.
- XVIII. Eskom Tx may stipulate any additional requirements to eliminate any possible exposure to Customers or Public to coming into contact or be exposed to any dangers of Eskom Tx plant.
- XIX. It is required of the applicant to familiarize him/herself with all safety hazards related to Electrical plant.

It is advisable to liaise with the Lines and Servitude Manager during the period of construction.

Please acknowledge receipt of this letter indicating your acceptance of the conditions before commencement of construction.

Regards,



pp

Adv. Ntika Maake

MANAGER LAND MANAGEMENT

**ANNEXURE 33/5
SANRAL REQUIREMENTS**

Reference: N11/1/3-R510/3-1
Date: 3 August 2020
Email: oliverj@nra.co.za

Contact Person J. Oliver
Direct Line: +27 (0) 12 426 6242
Website: www.nra.co.za

Trans-Caledon Tunnel Authority (TCTA)
PO Box 10335
Centurion
0046

Dear Segomotso Kelefetswe

NATIONAL ROAD R510 SECTION 3 AT km. 19.31 N AND km.38.56 N:

LETTER OF PERMISSION IN TERMS OF SECTION 48 OF THE SOUTH AFRICAN NATIONAL ROADS AGENCY LIMITED AND NATIONAL ROADS ACT, ACT 7 OF 1998 (THE "SANRAL ACT"): INSTALLATION OF Ø 1600mm STEEL WATER PIPES IN Ø 2000mm CONCRETE PIPE SLEEVE PIPES ACROSS R510-3 AT km. 19.31 N AND km.38.56 N BY MEANS OF THE PIPE JACKING METHOD

MOKOLO CROCODILE WATER AUGMENTATION PROJECT PHASE 2 (MCWAP-2)

Your reference: NRA001_15062020

1. Letter of TCTA (the "Applicant") dated 15 June 2020 and GBN Joint Venture drawings submitted on your behalf have relevance.
2. The South African National Roads Agency SOC Ltd ("SANRAL") has considered the application in terms of section 48 of The South African National Roads Agency Limited and National Roads Act, Act 7 of 1998 (the "SANRAL Act") and grants you the requisite permission to install Ø 1600mm steel water pipes in a Ø 2000mm concrete sleeve pipes across national road R510-3 at respectively km. 19.31 and km.38.56 by means of the pipe jacking method (the "Works") subject to the following:

1.1. STANDARD CONDITIONS

- 1.1.1. SANRAL hereby grants permission to the Applicant to execute and construct the Works within the specified section of the National Road Reserve and or building restriction area with effect from the Commencement Date;
- 1.1.2. To that end, the Applicant is hereby expressly authorized to conduct any or all of the activities listed in subsections 48(1)(a), (b), and/or (c) to the extent necessary for the design, execution and completion of the Works and, any maintenance thereof;

- 1.1.3. The permission is subject to the terms and conditions set out in this permission as well as any Agreement between the Parties as contemplated by, and in accordance with Section 48(3)(b) of the Act as well as any conditions.
- 1.1.4. The rights granted to the Applicant in terms of this permission shall not at any time constitute a servitude or any real right capable of registration by the Registrar of Deeds;
- 1.1.5. The rights granted to the Applicant are non-exclusive rights and shall not preclude SANRAL from granting similar rights and/or other real or personal rights to any other party and SANRAL may exercise such rights itself, whether above or below the surface of the road reserve and/or the building restriction area. The Applicant shall have no claim of whatsoever nature against SANRAL should it grant such similar rights to a third party;

1.1.6. Commencement

The right of the Applicant to install the Works within the specified section of the road reserve and/or building restriction area shall commence with effect from the date of this letter.

1.1.7. Payment of Fees:

1.1.7.1. The Applicant shall pay such fees as may be determined by SANRAL from time to time for the rights granted to the Applicant in terms of this permission; and

1.1.7.2. The fees shall be paid by the Applicant in accordance with the rates approved by SANRAL.

1.1.8. Detailed Conditions applicable to this Permission.

1.1.8.1. SANRAL shall not be liable for any expenditure incurred with respect to the installation of the Works;

1.1.8.2. SANRAL shall not be liable for any expenditure incurred with respect to the removal, shifting or relocation of the Works in the event that this is required by SANRAL during the currency of this permission;

1.1.8.3. In the event that SANRAL instructs in writing the removal or relocation of the Works for any cause whatsoever, the Applicant shall, within 30 (thirty) days of receipt of such written instruction, attend to the removal or relocation of the Works;

1.1.8.4. In the event that the Applicant does not comply with the instruction referred to above and fails to remove or relocate the Works as required by SANRAL, SANRAL may proceed to remove or relocate the Works and claim the costs occasioned thereby from the Applicant;

1.1.8.5. The Applicant shall settle the costs plus interest referred to above within 30 (thirty) days of receiving notification thereof;

1.1.8.6. The Applicant shall be responsible for the maintenance of the Works and all costs associated therewith, howsoever they may be caused;

1.1.8.7. The Applicant hereby indemnifies and shall hold SANRAL harmless against all and any claims

for loss or damages, inclusive of all legal costs, which may be instituted or suffered by any person (including, but not limited to road users and/or third parties), as a result of the erection, construction, operation or maintenance of the Works in terms of this permission, or as a result of the failure of the Applicant to comply with the terms of this permission or for any reason whatsoever, howsoever caused;

1.1.8.8. SANRAL shall not be liable for any loss or damage suffered by the Applicant as a result of anything which may be done in connection with the road construction, road operation and/or road maintenance or by any action whatsoever;

1.1.8.9. The Applicant indemnifies SANRAL against any and all damage to the national road, structures and any other assets on, under or over the road reserve caused by the Applicant, its employees, agents, contractors and/or their sub-contractors during the currency of this permission;

1.1.8.10. Procedures as to how work must be executed within the road reserve and building restriction area will be determined by SANRAL. The Applicant shall therefore advise SANRAL of the Applicant's intention to proceed in terms of this Permission and be directed by SANRAL accordingly;

1.1.8.11. The Applicant shall not be entitled to cede any of its rights or delegate any of its obligations under this permission without the prior written consent of SANRAL.

1.2. **SPECIAL CONDITIONS**

2.2.1 SANRAL's duly appointed Route Manager for national road R510-3, Mr. Russel Odendaal (M: 081 254 5488 E: Russell.Odendaal@v3consulting.co.za) of V3 Consulting Engineers shall be liaised with prior to commencement of any work inside the national road reserve boundaries.

2.2.2 SANRAL RRM Project Manager for the national route Ms. Evelyn Sambo (T: 012 426 6270 E: samboe@nra.co.za) shall be notified prior to commencement of any work inside the road reserve boundaries.

2.2.3 The sleeve pipes shall be installed by means of the pipe jacking method with its soffits (top part) at a minimum depth of 1.5 m below the lowest point of the road reserve.

2.2.4 The sleeve pipes shall extend across the whole width of the road reserve – from fence to fence.

2.2.5 The pipe jacking pits shall be at least 8 metres from the edge of the road surfacing.

2.2.6 The construction of the Works inside the road reserve boundaries shall be undertaken by an experienced contractor.

2.2.7 Levels shall be taken over fixed points to monitor if there is any settlement during and after the drilling operations. These levels shall be provided to SANRAL during and after construction.

2.2.8 No manholes, bends, valve chambers, junction boxes or other structures related to the pipeline shall be constructed inside the road reserve boundaries.

2.2.9 **Existing Services**

2.2.9.1 Prior to commencement of drilling operations, the Applicant shall be responsible for

determining the existence of existing services within or adjacent to the road reserve.

- 2.2.9.2 The Applicant shall ensure that all existing services within or adjacent to the road reserve are not affected by the construction of the Works.
- 2.2.9.3 The Applicant shall obtain written permission from any affected service providers confirming that they have no objection to the works before commencing with pipe jacking operations.
- 2.2.9.4 Test pits shall be made where necessary to determine the existence and positions of existing third-party underground services. Any damage to such services shall be for the applicants account.
- 2.2.9.5 Any accidental damage to any of the third party services / utilities shall be for the Applicant's account.
- 2.2.10 Applicable construction signage shall be erected and maintained during the duration of construction. Road signage shall be done according to Volume 2 Chapter 13 of the South African Road Traffic Signs Manual. The Applicant shall provide the signs and erect them to the satisfaction of the SANRAL Route Manager concerned.
- 2.2.11 Under no circumstances may the work affect traffic operations on the national road. Lanes may not be closed, or traffic diverted without the written approval of SANRAL.
- 2.2.12 All trenches shall be at least 4.5 m deep where the pipeline cross the road prism.
- 2.2.13 A registered engineer or technologist shall supervise the execution of all work within the road reserve boundaries. A completion certificate certifying the quality and extent of the work shall be prepared by the supervising consultant and be forwarded to SANRAL within one month after completion of the works.
- 2.2.14 Care must be taken that existing stormwater drains or subsurface drainage systems or survey beacons/pegs are not damaged or interfered with by excavations.
- 2.2.15 The Applicant shall take all necessary precautions to safeguard the safety of road users and workers while installation operations are in progress within the road reserve. Any accidents during installation operations due to negligence on the part of the Applicant's employees or contractor will be for the responsibility of the Applicant.
- 2.2.16 On completion of the work the applicant shall reinstate the road reserve to its original condition, including the re-establishing of vegetation and hydro seeding, at the cost of the Applicant. The road reserve must be left clean and all waste products to be removed.
- 2.2.17 All excavations within the road reserve shall be clearly demarcated.
- 2.2.18 The Contractor shall comply with the OHS Act.
- 2.2.22 Service markers indicating the nature, position and depth of the service shall be erected on both sides of the road at the fence.
- 2.2.23 All work shall be carried out to the satisfaction of and subject to the requirements of SANRAL's Regional Manager: Northern Region.

2.3 **CONDITIONS CONTAINED IN THIS LETTER OF PERMISSION FOR WHICH AN AGREEMENT SHALL BE CONCLUDED WITH SANRAL.**

None

2.4 **COMPLIANCE WITH ALL CONDITIONS AS PER THIS LETTER OF PERMISSION**

2.4.23 It Is specifically recorded that non-compliance with any condition and/or part thereof shall entitle SANRAL to forthwith terminate the Works;

2.4.24 The Works so terminated shall only be reinstated once SANRAL is satisfied that all non-compliance issues have been remedied and where such determination remains at the sole discretion of SANRAL;

2.4.25 The Applicant shall procure written confirmation from SANRAL that all conditions as contained in this letter of Permission have been fulfilled to SANRAL's satisfaction provided that the Applicant shall provide SANRAL with a Certificate from a Professional Consulting Engineer certifying that the design and construction of the Works and other ancillary improvements referred to in these conditions have been undertaken to the required standards.

Yours sincerely,



Statutory Control Officer: Northern Region