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	3. SAFE OPERATING PROCEDURES & METHOD STATEMENTS	Rev date:	01/10/2019
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Contract no: C1049.03

Contract name: UPGRADING OF DIVISIONAL ROAD 1098 (KM5, 47 TO KM8, 79) AND REHABILITATION OF DIVISIONAL ROAD 1098 (KM8, 79 TO KM14, 24)

METHOD STATEMENT 013 – EARTHWORKS, EXCAVATIONS AND BACKFILLING

BASELINE CIVIL CONTRACTORS (PTY) LTD SUBMISSION FOR ACCEPTANCE				
	Name	Designation	Date	Signature
Prepared	JOHAN LUBBE	Safety Officer		
Approved	MARK CLOETE	Site Agent		
Submitted				

ENGINEERS APPROVAL				
	Name	Designation	Date	Signature
Engineers Acceptance				
Health and Safety Acceptance				
Environmental Acceptance				

WHAT work is to be undertaken?

Bulk earthworks, excavations and backfilling to increase the size and depth of the existing retention pond and constructing new stormwater structures

WHERE are the works to be undertaken?

JOOSTENBERGVLAKE, Waarburgh Road.

WHEN are the works to start, what is the anticipated finish date?

Start: November 2023 – End: June 2025

HOW are the works to be undertaken?

1. REFERENCE

- 1.1. Work scope
- 1.2. Profile drawings.
- 1.3. Surveying positions (GPS co-ordinates)
- 1.4. Foundation drawings
- 1.5. Geotechnical report
- 1.6. EMP
- 1.7. Construction regulations
- 1.8. OHS ACT
- 1.9. Risk Assessments
- 1.10. Quality Test and Inspection Plan (QTIP)

2. RESPONSIBILITIES

The site management is responsible for:

- 2.1. The compliance of work carried out, as established in this Method Statement, as well as any supplementary specification and/or procedure, which may apply and which will be conveyed by the RE.
- 2.2. Hiring and having available the adequate human and material resources, in quantity, competency, specification, and specialisation, in order to perform the work.
- 2.3. Performing the tests defined in this procedure by means of a certified and qualified Test Laboratory.

3. LABOUR, EQUIPMENT AND PPE

- 3.1. General foreman
- 3.2. Site based junior surveyor/foreman
- 3.3. Skilled, semi-skilled and unskilled labourers
- 3.4. Subcontractors
- 3.5. Digger loader
- 3.6. 7 ton Excavator
- 3.7. 20 ton Excavators
- 3.8. Dumper Trucks
- 3.9. 10 m3 Tipper Trucks
- 3.10. Flatbed crane truck
- 3.11. Water Trucks
- 3.12. Sit-on roller
- 3.13. Mass-fill roller
- 3.14. Tractor and trailer

- 3.15. Rammer and F/R compactors
- 3.16. Compressor
- 3.17. 6" Pump
- 3.18. Generators and power tools
- 3.19. Overalls
- 3.20. Safety boots
- 3.21. Gloves
- 3.22. Reflector vests

4. METHOD

- 4.1. The works will commence once this method statement is approved by the RE. The sequence for the earthworks, excavations and backfilling will be in accordance with the approved construction programme.
- 4.2. Hand excavation to locate the underground services will happen prior to all earthwork activities.
- 4.3. Pumps and other equipment will be used to deal with the inflow and ground water for 24 hours a day.
- 4.4. The classification of excavated materials will be agreed on site with the RE.
- 4.5. The classification will be based on inspection of the material to be excavated and on the criteria given below, as applicable.

4.6. CLASSES OF EXCAVATION:

The excavation of material will be classified as follows:

SOFT EXCAVATION

Soft excavation, other than in restricted excavation, shall be excavation in material that can be efficiently removed or loaded, without prior ripping, by any of the following plant:

- bulldozer of mass (including mass of ripper if fitted) approximately 22 t and flywheel power approximately 145 kW, or
- a tractor-scraper unit of total mass approximately 28 t and flywheel power approximately 245 kW, pushed during loading by a bulldozer equivalent to that specified in (b)(i) below, or
- a track type front-end loader of mass approximately 22 t and flywheel power approximately 145 kW.

In the case of restricted excavation, soft excavation shall be excavation in material that can be efficiently removed by a back-acting excavator of flywheel power approximately 0.10 kW per mm of tined-bucket width, without the use of pneumatic tools such as paving breakers.

INTERMEDIATE EXCAVATION

Intermediate excavation, other than in restricted excavation, shall be excavation (excluding soft excavation) in material that can be efficiently ripped by a bulldozer of mass approximately 35 t, fitted with a single-tine ripper suitable for heavy ripping, and of flywheel power approximately 220 kW.

In the case of restricted excavation, intermediate excavation shall be excavation (excluding soft excavation) in material that requires a back-acting excavator of flywheel power exceeding 0.10 kW per mm of tined-bucket width or the use of pneumatic tools before removal by equipment equivalent to that specified above.

4.7. CLASSIFICATION FOR PLACING PURPOSES**Material Suitable for Backfill or for Fill against Structures**

Unless a particular material is specified in the project specification for the relevant zone shown on the drawings or specified in the project specification for use against structures, the material placed as backfill or as fill within 500 mm of structures shall comply with the requirements above, except that it shall not contain more than 10 % rock or hard fragments retained on a sieve of nominal aperture size 50 mm.

4.8. SELECTION**General**

Where the preservation of topsoil is required for later use on the site, the site management shall select and stockpile such topsoil. The site management will not deal selectively with materials from general excavation unless it is expressly required to do so in terms of the project specification or any other earthworks Specification that forms part of the contract.

Backfilling and Embankments

Sufficient material arising from excavations for the pond, and that is suitable for backfilling or for filling against the finished structures, shall be stockpiled in the vicinity of the structures. All other material from excavations shall be disposed of as directed by the RE. Any material that is below the finished level of an excavation and that the RE considers to be unsuitable shall be excavated and disposed of as directed. The resultant space shall be refilled with backfill and compacted as specified.

4.9. PLANT**General**

Plant shall be suitable for the production of the end result required under the conditions applicable to the Site.

Compaction Plant

The plant used for applying the dynamic load, controlling the moisture content, and grading or mixing, shall be capable of achieving the compaction specified with the materials available for the construction of the Works.

Transport

Vehicles and items of plant used for the movement of materials shall conform to the requirements of the applicable road traffic ordinance if the vehicle or item of plant is required to operate over any public highway, road or street or over any private road or parking area that has been surfaced. Where any of the operations or the movement of any of the Contractor's vehicles or mobile plant, or any combination of such activities, causes damage to the surface of any area normally open to the public, the site management shall repair such surface as a matter of urgency.

4.10. SITE PREPARATION**Clearing or grubbing and stripping of Site**

Prior to the start of excavation, if and as scheduled, all areas in which excavation is to take place or that are to be covered by terraces, banks or structures shall be cleared stripped of all remaining vegetable matter and surface soil to a depth specified and as described in the Project Specifications. Unsuitable material shall be disposed of as specified above.

Conservation of topsoil

When so scheduled and when there is suitable topsoil within the limits of the area to be cleared, the site management shall remove and conserve the topsoil together with any grass or other acceptable vegetation. If it is not used immediately or if it is not stockpiled in windrows clear of

the working areas, the topsoil shall be conserved for later use in the manner specified in the project specification.

Stripping or removal of overburden

Where stripping is required to include the removal of overburden and other unsuitable material to depths exceeding 150 mm, it will be carried out as detailed in the project specification, and measured under a separate scheduled item

4.11. EXCAVATION

Excavation for general earthworks and for structures

After an area has been stripped as specified above, excavation shall be carried out first to any general levels to which the ground has to be reduced and then for foundations, etc., to the depths indicated or to such greater depths as may be required by the RE to ensure a satisfactory foundation. Additional excavations for any stated purpose will only be carried out if authorized by the RE.

Except where otherwise specified, shown on the drawings, ordered or dictated by the requirements for safeguarding, excavation shall be so carried out and so trimmed to the outline of the retention pond and concrete works shown on the drawings that the excavated surfaces will act as forms for the works.

Except where provision for working space has been scheduled, each excavated surface on which or against which a permanent concrete structure will be placed shall be trimmed to ensure that there is no projection outside the specified tolerance excavation profile. Such surface shall be cleaned by hand or by air or other effective means to remove all loose material.

Immediately before any permanent construction is commenced, the bottom of each excavation shall be cleaned of all loose material, and soft material shall be rammed or removed as required by the RE.

Any over excavation shall be filled in a manner specified or approved by the RE. Excavated surfaces that will remain permanently exposed shall be finished off in a neat and workmanlike manner and shall be graded as shown on the drawings, to provide adequate drainage.

Disposal

The site management shall not spoil, stockpile or waste any material without approval. Surplus and unsuitable material shall be disposed of in areas designated on the drawings or in the project specification and/or as directed by the RE. Spoil heaps shall be flattened to present a neat level or graded surface.

4.12. PLACING AND COMPACTION

Pond Embankments

Where material from excavations is sufficient to form designated embankments, the site management shall use this material, unless otherwise ordered or directed by the RE. This material will be free of stumps, trees, rubbish and other deleterious materials. The material shall be spread to form a layer that is of approximately uniform thickness, and graded over the whole area of the embankment. Each layer shall be compacted at OMC to a density as specified in the project specification. Should the material be too wet, owing to rain or any other cause, it shall be harrowed and allowed to dry out to the correct moisture content before compaction is undertaken. The site management shall ensure that storm water will at all times be discharged uniformly over the full area of each embankment or through specially prepared and protected drainage ditches to prevent scouring of the slopes.

BACKFILLING OF TRENCHES AND BACKFILLING AGAINST STRUCTURES

General

No backfilling shall be commenced until permission to do so has been obtained from the RE. Where filling is to be placed against or around a structure, such filling shall be placed, and shall be compacted (whether it be backfilling or embankment) simultaneously on both sides of the structure to minimize unequal loading.

Where shown on the drawings or ordered, all trenches and excavations outside structures shall be carefully refilled with approved material in layers of thickness not exceeding 250 mm before compaction. During the placing of each layer, the filling shall be well rolled and compacted, sufficient water being added uniformly to ensure that the density specified for the particular zone is achieved or, where a density is not specified, that the density achieved is at least that of the adjoining undisturbed material. Each layer shall be completed before the next is added. Except with the consent of the RE, filling shall not be deposited in water.

Restricted

Where the use of conventional compaction plant close to a structure is not possible, the material to be compacted shall be spread in loose layers of thickness not exceeding 250 mm and compacted by means of mechanical tampers to at least the density specified for that particular zone or, where a density is not specified, to at least the density of the adjoining undisturbed material.

4.13. FINISHING

Final grading

On completion of earthworks to the finished level and of backfilling of all holes, trenches and the like, the whole surface shall be graded, shaped and compacted to final grades and levels.

Top soiling

Where scheduled, topsoil shall be placed on level and slightly graded areas and shall be lightly compacted by wheeled vehicles or by tamping, and trimmed neatly to the required lines, grades and levels. The final thickness of topsoil after compaction shall be at least 75 mm.

Grass or other vegetation

If so instructed, grass or other vegetation shall be planted by a specialised sub-contractor after top soiling has been completed.

4.14. TRANSPORT

Free haul

Not specified.

Overhaul

Overhaul will be included in the cut to fill and spoil rates.

4.15. SAMPLES AND TESTS

All materials will be sampled and tested as specified in the project specification.

5. HEALTH AND SAFETY

- 5.1. All employees will be inducted prior to site access.
- 5.2. Everyone entering the site must sign in and out at the access gates.
- 5.3. PPE will be provided to ensure that harmful contact with any products and materials does not occur.

- 5.4. No person will be allowed on site without identification card or temporary visitor's card, except delivery drivers who will be escorted by a member of the site team.
- 5.5. All existing services will be pointed out to the excavation supervisor.
- 5.6. Provision of adequate fire-fighting equipment and training.
- 5.7. Provision of adequate medical aid boxes and trained first aiders.
- 5.8. Risk assessments will be used to train site personnel on all the risks within their working environment.
- 5.9. Machine operators will be medically tested and deemed fit.
- 5.10. Employees will attend annual medical evaluation by an occupational health practitioner to evaluate their health.
- 5.11. All machine operators will be licensed and competent.
- 5.12. Daily, weekly and monthly monitoring, reviewing and reporting will be done on site.
- 5.13. Emergency control numbers and procedures will be readily available on site at all times.
- 5.14. All the required warning and safety signage will be in place.
- 5.15. All incidents and accidents will be reported immediately to the H&S Officer.

6. ENVIRONMENTAL

- 6.1. All employees will be inducted prior to site access.
- 6.2. All areas used for storing of hazardous products and materials will be pre-approved by the ECO and RE.
- 6.3. All areas will be demarcated and where this hazardous materials is present there will be a bund area constructed and ground coverage will be placed to reduce the risk of natural ground exposure.
- 6.4. Storage facilities will be within a safe distance from water sources and plantation.
- 6.5. Signage will be placed at "NO-GO" areas.
- 6.6. Vehicle access roads on site will be kept in good condition and be provided with regulatory site signs.
- 6.7. All plant will park at site office compound during non-working hours.
- 6.8. All works will be monitored and minimum environmental disturbance will be enforced.
- 6.9. All incidents and accidents will be reported immediately to the ECO and RE.
- 6.10. Care will be taken by all when smoking on site.
- 6.11. The minimum clearing will be allowed.
- 6.12. Toilets on site will be secured to prevent toppling of toilets in strong wind.
- 6.13. Toilets will be serviced regularly and monitored for additional services, if required.

7. QUALITY ASSURANCE AND CONTROL

- 7.1. All works will be carried out in accordance with the Project Specification and approved drawings as well as any supplementary specification and/or procedure which may apply.
- 7.2. Prior to any works commencing, the site manager will confirm with the RE that the information being used is the latest approved revision.
- 7.3. Any design changes must be conveyed to the site manager by RE in writing and/or on approved revised drawings.
- 7.4. All setting out will be presented to the RE for approval prior to work commencing.
- 7.5. All completed excavations will be presented to the RE for approval.
- 7.6. Backfilling of excavation will be done in layer thicknesses as specified.

- 7.7. Each layer will be compacted, tested and presented to the RE for approval before the next layer is placed.
- 7.8. Once an excavation is completely backfilled and compacted, it will be presented to the RE for approval and handover.
- 7.9. The quantity surveyor will update all relevant inspection sheets as required and make all necessary arrangements for inspections by the RE.
- 7.10. Once a part of the work has been completed, it will be handed over to the RE with all relevant quality assurance documentation.
- 7.11. Testing and inspections will be done in accordance with relevant ITP.