

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

TENDER NO 054/2024/PMID/MCWAP2/RFB

**PART C3.1
SPECIFICATION**

SECTION 7

CLEARING SITE

PART C3.1 SPECIFICATION

SECTION 7 CLEARING SITE

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SECTION 7

CLEARING SITE

7.1 SCOPE

This Section deals with the clearing, grubbing, removal and stockpiling of topsoil and fertile soil of; the areas required for construction of the Permanent Works, the areas of borrow and spoil sites, the entire Contractor's working and accommodation areas (including the areas designated for the Engineer's use) and the areas required for the construction of temporary roads. It also includes the removal and disposal of buildings or concrete structures.

7.2 DEFINITIONS

7.2.1 Definitions

- a) **“Alien species”** means:
- i) A species that is not an indigenous species; or
 - ii) Vegetation which either does not naturally occur in the country and/or region or which under certain conditions proliferates and becomes problematic since it outgrows other plants and may represent a significant maintenance cost; or
 - iii) An indigenous species translocated or intended to be translocated to a place outside its natural distribution range in nature, but not an indigenous species that has extended its natural distribution range by natural means of migration or dispersal without human intervention.
- b) **“Clearing”** means the clearing and removal of all vegetation, including trees and shrubs to a height not exceeding 300 mm above the surrounding ground level including all loose vegetation, rubble and boulders.
- c) **“Demolishing”** means the breaking out and down and complete removal and disposal of buildings, sheds, poles, concrete and all and any other objects and structures.
- d) **“Fertile Soil”** means the 500 mm (in cultivated land) and 450 mm (in all other areas) of the profile of soil still present after the “Topsoil” (i.e. Original Ground Level (OGL) minus 250 mm and 150 mm respectively) had been removed or the actual depth of fertile soil as determined by an Agronomist, available if it is less than these specified values, which will also be regarded as maximum values. These profiles are also indicated in Volume 5 - Geotechnical Information, and should be consulted in all instances, but specifically in rocky areas.
- e) **“Grubbing”** means the removal and disposal (at an appropriately licenced facility, if the same is not mulched for use in rehabilitation) of roots and stumps of trees and vegetation already cleared.
- f) **“Existing vegetation”** means all existing species, indigenous or otherwise, of trees, shrubs, groundcover, grasses and all other plants found growing on the site.
- g) **“Indigenous species”** means a species that occurs, or has historically occurred, naturally in a free state in nature within the borders of the Republic, but excludes a species that has been introduced in the Republic as a result of human activity.

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- h) **“Invasive species”** means any species whose establishment and spread outside of its natural distribution range –
- i) Threaten ecosystems, habitats or other species or have demonstrable potential to threaten ecosystems, habitats or other species; and
 - ii) May result in economic or environmental harm or harm to human health.
- i) **“OGL”** means the original ground level as surveyed prior to any activities taking place.
- j) **“Sensitive area”** means any area that is denoted as sensitive by the Specification or Engineer in accordance with Section 4 – Integrated Environmental Management, due to its particular attributes, which could include the presence of rare or endangered vegetation, the presence of heritage resources (e.g. archaeological artefact or graves), the presence of a unique natural feature or the presence of a watercourse or waterbody.
- k) **“Sensitive vegetation”** means plant species that has legal protection, and/or may comprise specific specimen vegetation that may not be removed.
- l) **“Topsoil”** means the A Horizon and B Horizon suitable for root development of arable crops. The depth where microbial activity is most active. In undisturbed soils that depth can be 400-600 mm, but specifically means the top 250 mm (in cultivated lands) and 150 mm (in all other areas) of the soil profile below the OGL irrespective of the fertility appearance, structure, agricultural potential, fertility and composition of the soil or the actual available depth if it is less than these specified values, which will also be regarded as maximum values.

7.2.2 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.

7.3 TOLERANCES

Clearing and grubbing as may be required shall be undertaken within the lines and grades shown on the Drawings and defined herein for the excavations and structures to be constructed.

7.4 SUBMISSIONS

Seven days prior to the start of work in any area the Contractor shall submit to the Engineer for approval, Method Statements which shall include programmes, for the following:

- The use of herbicides, pesticides and other poisonous substances;
- Clearing and grubbing for the Works;
- Measures for protecting “Sensitive vegetation” from damage during clearing and other construction activities;
- Cutting down of trees and removal of logs to positions agreed with the Engineer so as to enable the landowners to utilise the material; and
- Stripping and stockpiling of topsoil and fertile soil.

7.5 SCHEDULING

No clearing of vegetation shall occur prior to the Contractor obtaining written permission from the Engineer, and has complied fully with Section 3: Social Management and Socio-economic Development Requirements. This permission will be granted for sections of work or for work fronts as a whole, and will indicate the requirements for sensitive areas. The Contractor shall clear and grub according to the Contract Programme.

The Contractor shall ensure that the clearance of vegetation is strictly limited to that required to facilitate the execution of the Works within the site. Any existing vegetation, particularly trees immediately adjacent to the working area, and still within the permanent and temporary servitude, which do not require removal, shall be fully protected against damage.

In order to reduce erosion and pollution of water entering water courses, grubbing of cleared areas shall, in conjunction with the construction of erosion control structures, be undertaken immediately prior to the commencement of construction or borrow activities in the area. The Contractor shall plan and execute his grubbing operation to minimise the time that grubbed areas are exposed before construction activities start.

7.6 SITE CLEARING

7.6.1 Pre-Construction Survey

Prior to the commencement of site clearing, the Contractor in conjunction with the Engineer, and Landowner shall conduct a pre-construction survey of the entire working area and directly adjacent area to demarcate all sensitive areas, sensitive vegetation and infrastructure requiring protection during construction. All plants to be used in the re-vegetation of identified sections of the site shall be identified and demarcated to either be removed to the on-site nursery or transplanted directly during the search and rescue operation. This shall include GPS coordinates of the areas that were removed and/or replanted. No vegetation protected by law shall be removed before obtaining the required authorisations from the competent authority.

A record detailing the findings of this pre-construction survey shall be compiled by the Contractor and submitted to the Engineer and Landowner, within 5 working days after the preconstruction survey was undertaken. Any further activities may only start after the Contractor has received the Engineer's approval of this record.

The record will consist of a signed attendance register, notes of the preconstruction survey, action list with due dates / milestones, and a photographic record every 50 m covering the servitude in all wind directions. This record will form part of the property specific record, refer to Section 3: Social Management and Socio-economic Development Requirements, and to be used during the final Landowner handover signoff.

7.6.2 Demolition and Removal of Existing Structures

Any existing structures located within the working areas, including but not limited to buildings, dams and services, shall only be damaged or demolished and removed with the prior approval of the Engineer, and in accordance with the requirements of any appropriate Landowner agreements, licenses or approvals.

Material from the demolition of concrete slabs, structures and the like shall be disposed of in accordance with the requirements of the National Environmental Management Waste Act, 2008 (Act of 59 of 2008), its regulations and Norms and Standards, and in accordance with the Engineer's instructions.

The Contractor shall take note that the disposal of inert waste in excess of 25 tons and with a total capacity of 25 000 tons, excluding the disposal of such waste for the purposes of levelling and building authorised by or under other legislation, shall require a license in terms of the National Environmental Management Waste Act, 2008 (Act of 59 of 2008).

7.6.3 Identification and Management of Sensitive Vegetation

At the commencement of the Contract, the Engineer will indicate to the Contractor the areas of existing vegetation that may be disturbed during the execution of the Works, as well as the areas of existing vegetation or any rare or endangered flora that shall be preserved. The latter areas shall be designated as sensitive areas and treated as per the requirements of Clause 4.8.4.

Prior to the onset of construction activities within any area occupied by existing vegetation, a search and rescue operation shall be undertaken by the Contractor, in consultation with the Engineer, to collect plants identified for use in the re-vegetation of identified sections of the site and for direct transplanting. This search and rescue operations shall be in accordance with the requirements of Section 47 – Landscaping and Rehabilitation, and rescued material shall be stored in an on-site nursery that complies with Section 47 – Landscaping and Rehabilitation, and Method Statements.

Where sensitive vegetation, particularly trees, occurs on or near the boundaries of site, effort shall be made to protect this vegetation in-situ. Barricading shall be maintained around sensitive environmental features and any disturbance to demarcated sensitive environmental features shall be avoided.

7.6.4 Clearing

Clearing shall consist of the removal of all trees, brush, other vegetation, rubbish, fences, rubble, boulders and all other objects and material, and includes the disposal of all material resulting from the clearing as per the activities in Clause 7.6.7.

In order to provide essential access for construction purposes, the Contractor shall clear all bush, trees, scrub, rubble, boulders etc. within the temporary pipeline construction servitude as well as all areas on which the Works are to be constructed as indicated on the Drawings, or otherwise as instructed by the Engineer. No other areas shall be cleared without the prior written approval of the Engineer. No work shall be done outside the approved construction footprint.

The removal of a certain amount of soil or gravel material may be inherent to or unavoidable during the process of clearing, but shall be kept to a minimum and no extra payment will be made for this. Loadable and transportable boulders shall be cleared and removed to designated spoil areas.

Under no circumstances shall the Contractor, or any person employed by him, fell and/or remove trees, brush and other vegetation for private use.

The Contractors environmental staff shall monitor the clearing activities, with particular focus on heritage resources and graves, as well as protected fauna and flora species.

Where required, all branches and trunks of trees larger than 75 mm in diameter shall be trimmed off side branches and twigs and cut into logs of 3 m in length and stockpiled at the designated spoil areas or in areas agreed with the land owner or occupier. All other cleared vegetation, except alien vegetation and its seeds, must be mulched, and the mulch used to cover and protect topsoil windrows.

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Any items within areas to be cleared that are to be preserved in accordance with the Drawings, the Specification or the instructions of the Engineer shall be stored on site in a place of safety and in a manner appropriate to their nature. All such items shall remain the property of the Employer.

Any indigenous trees, particularly trees immediately adjacent to the Works, including but not limited to identified protected trees, not required to be removed for construction purposes shall be fully protected against damage by the Contractor's activities. If required, the pruning or cutting of these trees shall be done by staff trained for this task to prevent damage to the trees, only if the necessary authorisation has been received from the competent authority. The Contractor shall acquire all local, provincial and national authorisations / permits before the pruning, cutting or removal of any protected tree or shrub.

Should fauna be encountered during site clearance, activities shall cease in the immediate vicinity of the fauna until such fauna has been safely relocated by the Contractor, after receiving the necessary approvals from the competent authority, and in consultation with the Engineer. Fauna such as snakes could be encountered during construction. These have to be removed by a qualified / skilled person before construction can continue.

Clearing activities within the 1:100 year floodline areas to take place just in advance of construction activities commencing. The Contractor should note that the servitude has been restricted for all construction activities to 15 m within the 1:100 year floodline of all river / stream / donga crossings, and the Contractor should plan and execute his work considering this restriction carefully. In general, work within floodline areas should not be carried out during the rainy season.

7.6.5 Grubbing

The stumps of felled and cut trees and shrubs shall be completely removed within the temporary pipeline construction servitude and borrow pit areas to a designated and licenced disposal facility. Roots having a diameter greater than 20 mm shall be removed to at least 500 mm below foundation level or original ground level, whichever is the lower. Tracked and wheeled mechanised equipment may be used. The Contractor shall not clear and grub in a simultaneous operation, and vegetation shall be cleared prior to grubbing.

In the areas of the Permanent Works, any cavities resulting from grubbing shall be backfilled with approved material and compacted to a density not less than the density of the surrounding ground.

Grubbing shall include the removal of all rocks and boulders of up to 1 m³ in size that are exposed on the surface through levelling of the grubbed area.

7.6.6 Construction – Areas of the Temporary and Permanent Works

The layout of the temporary and permanent pipeline servitudes as well as the Permanent Works are indicated on the Drawings.

There shall be no additional clearing, grubbing and removal of topsoil for the Contractor's Site establishment or Temporary Works areas, other than those on the approved site layout plan.

After clearing and grubbing the Contractor shall remove and stockpile topsoil and fertile soil for future use in terms of Clause 7.6.8.

7.6.7 Removal, Disposal and Stockpiling of Vegetation

Once cleared, woody vegetation shall be stockpiled at designated vegetation stockpile areas for later redistribution over reinstated surfaces. During the clearing of woody vegetation, no basal cover or grass and topsoil shall be removed, and damage to this layer (which will comprise the topsoil and fertile soil addressed in Clause 7.6.8) shall be minimised as far as possible.

All woody vegetation shall be safely and neatly stockpiled in rows not exceeding 2 m in height allowing easy access for unloading and re-loading by mechanical means. Logs shall be placed parallel to each other in the stockpiles and suitably anchored to keep stockpiles intact and safe.

All cleared non-woody vegetation shall be mulched and mixed into the topsoil stockpiles, used as brush-packing (depending on the type of vegetation) or disposed of at an approved disposal site. Burning of cleared vegetation is prohibited in terms of the National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004). The burying of cleared vegetation or use as part of backfill or landscape shaping is prohibited unless written approval is obtained from the Engineer.

All shredded and mulched material shall be safely and neatly stockpiled in rows not exceeding 2 m in height, allowing easy access for unloading and re-loading by mechanical means.

The Contractor may make use of woody material and mulch either in the temporary or Permanent Works subject to the requirements of the Specification and the approval of the Engineer.

7.6.8 Stripping and Stockpiling of Topsoil and Fertile Soil

The Contractor shall strip the topsoil and fertile soil (as indicated below) for subsequent use during rehabilitation and re-vegetation. If the Contractor fails to conserve topsoil and fertile soil as instructed, he shall obtain suitable substitute material from other sources, approved by the Engineer, without any additional payment.

Topsoil shall be stripped from the boundaries of working areas where topsoil will be impacted by construction activities, including areas for temporary facilities, as directed by the Engineer. Records of the stripping depth in each area will be kept for reference during rehabilitation. The areas of topsoil and fertile soil to be stripped along the entire pipeline route within the temporary pipeline construction servitude shall be the areas classified as follows:

- Topsoil shall be stripped over the entire width of the temporary and permanent pipeline construction servitude and borrow pit areas, except for the topsoil storage area, and to a maximum depth of 250 mm within cultivated land or 150 mm in all other areas; and
- In areas where indicated and agreed with the Engineer, the fertile soil shall be removed over the trench width and borrow pit areas as measured at ground level. The depth of the fertile soil shall be limited to 750 mm below the OGL unless otherwise instructed by the Engineer; i.e. maximum excavation depth of 500 mm within cultivated land or 450 mm in all other areas. Fertile soil removed during battering and shoring of existing trenches shall also be stockpiled.

Topsoil from different soil types shall be replaced in the same areas from which they were taken. Furthermore, topsoil, fertile soil and other excavated material shall be handled and stockpiled separately.

Topsoil stockpiles shall be placed (stockpiled) within the servitude and in the designated areas in separate windrows parallel to the pipe centreline or boundaries of the working areas. Windrows shall not exceed 2 m in height and shall be so placed to occupy minimum width compatible with the natural angle of repose of the material, and measure shall be taken to prevent the material from being spread over too wide a surface.

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The stockpiles shall be formed such that no ponding of surface water forms on the surface of the stockpile. Erosion of the topsoil stockpiles by wind and/or water shall be minimised by providing suitable stormwater and cut off drains, and by establishing temporary vegetation on the stockpiles as described in Section 47 – Landscaping and Rehabilitation, and in agreement with the Engineer.

Topsoil shall not be buried or rendered in any other way unsuitable for further use, and precautions shall be taken to prevent unnecessary handling and compaction. In particular, topsoil shall not be subject to a compaction force greater than 1 500 kg/m² and shall not be pushed by a bulldozer for more than 50 m. Trucks may not be driven over the stockpiles, nor shall stockpiles be used as laydown or storage areas, and no stockpiles may be used as loading ramps or topsoil used as blast cover.

Where practical, topsoil shall not be left for longer than six months before being used for rehabilitation.

Placing of the fertile soil stockpiles shall be such as to avoid mixing with the topsoil or other materials. For a detailed description of a typical excavation cross-section and applicable terminology, refer to the Drawings.

The Contractor shall maintain an ongoing record of the quantity of topsoil collected and stockpiled, so that possible shortfalls in the total estimated quantities required may be assessed from time to time.

Placing back of the fertile soil and topsoil on completion of the Works shall be done in reverse order to that used for removal thereof.

The spoil stockpiles shall be moved to the designated spoil areas prior to Contract completion.

If the Contractor fails to conserve topsoil as instructed, he shall obtain suitable substitute material from other legal sources as approved by the Engineer or improve existing available material to an appropriate standard, without any additional payment.

7.6.9 Weeds and Alien Invasive Vegetation

The Contractor shall remove all plants recognized as weeds in a particular area, including alien invasive vegetation for the duration of the construction and maintenance period. Topsoil that is contaminated with seeds of alien invasive species shall not be stockpiled, unless otherwise instructed by the Engineer.

Weeds and alien invasive species shall be controlled as per Section 4 – Environmental Management and Section 47 – Landscaping and Rehabilitation.

7.6.10 Mulching

Branches and twigs, that are smaller than 75 mm diameter and larger than 20 mm diameter, which have been trimmed from trees shall be chipped to a maximum size of 50 mm. All other trimmed material and non-woody vegetation shall be shredded to mulch. Chips and mulch shall be mixed to assist in composting of this material.

7.7 MEASUREMENT AND PAYMENT

7.7.1 General

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.

All excavated material paid for in cubic metres (m³), will be measured in cut (In situ).

7.7.2 Scheduled items

7.001 Clearing

- | | |
|--------------------------------------|--|
| a) Clearing | Unit: hectare (ha) |
| b) Removal of loose surface boulders | Unit: cubic metre (m³) |

The area designated by the Engineer to be cleared shall be measured to the nearest 0.1 ha.

Clearing of all vegetation above natural ground level shall be done under this item.

The rate tendered shall include full compensation for all work necessary for the clearing and cutting down of trees and bushes. The girth of trees shall be measured at the narrowest point of the tree 1 m above ground level. The girth of the tree shall be up to and including 1.0 m cutting into logs, transporting, offloading, stockpiling and maintenance of stockpiles and the clearing, loading, off-loading of rubble and loose boulders.

Removal of loose boulders on the surface shall be done as follows:

- Clearing and removal of all loose surface boulders to spoil shall include boulders of average dimension of 500 mm that can be moved and loaded by the dozing and loading equipment used to do clearing; and
- Rocks and boulders that need to be moved but cannot be moved as part of the loose boulder clearing operation shall be paid for under Section 9 – Bulk Surface Excavations and Trenching.

Transporting longer distances shall be covered under Item 7.006 – Overhaul.

No payment will be made against this item for grubbing of the Contractor's working and office areas, borrow areas and for areas required for construction of temporary works.

7.002	Grubbing and removal of tree stumps of girth up to and including 1.0 m and excavated rocks / boulders	Unit: hectare (ha)
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The area designated by the Engineer to be grubbed shall be measured to the nearest 0.1 ha. The girth of trees or stumps shall be measured at the narrowest point of the tree or stump 1 m above ground level.

The rate tendered shall include full compensation for all work necessary for the grubbing and removal of tree stumps of girth up to 1 m with roots, removal of excavated rocks/boulders up to 1 m³, backfilling of cavities, and the removal, hauling and disposal of all material to the designated spoil dumps or borrow pits as directed by the Engineer.

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Removal of excavated rocks/boulders shall be done as follows:

- Removal to spoil of all rocks/boulders excavated during grubbing shall include boulders of average dimension of 500 mm that can be moved and loaded by the dozing and loading equipment used to do grubbing; and
- Rocks and boulders that need to be moved but cannot be moved as part of the grubbing operation shall be paid for under Section 9 – Bulk Surface Excavations and Trenching.

No payment will be made against this item for grubbing of the Contractor's working and office areas, borrow areas and for areas required for construction of temporary works.

7.003 Grubbing and removal of trees and tree stumps of girth over 1.0 m Unit: number (No)

The girth of large trees shall be measured at the narrowest point of the tree in the first meter of its height above ground level. The rate shall include for the removal of a single tree complete, including the tree and the tree stump. Tree and tree stumps shall not be measured as separate payable items. Any rocks / boulders excavated during this process shall be handled as per the provision in 7.002.

The rate tendered shall include full compensation for all work necessary for the removal of trees, grubbing and removal of tree stumps with roots and rocks / boulders excavated, the backfilling of cavities and the removal, hauling and disposal of all material, to the designated spoil dumps or borrow pits as directed by the Engineer.

No payment will be made against this item for grubbing of the Contractor's working and office areas, borrow areas and for areas required for construction of temporary works.

7.004 Removal of topsoil

- a) **For pipelines, temporary stockpiling to windrows or stockpile alongside the pipeline and construction servitude within the free haul distance Unit: cubic metre (m³)**
- b) **For other work areas, temporary stockpiling adjacent to the work area within free haul distance Unit: cubic metre (m³)**

Measurement will be the volume of topsoil as measured in cut. Only material actually removed (to a depth as shown on Drawings) to windrow or temporary stockpile to the side of the pipeline within the construction servitude or adjacent to the area of the Works shall be measured. Measurement will only be made for the removal and temporary stockpiling of topsoil from areas within the temporary (for construction) and permanent pipeline servitude and the site of the Permanent Works.

For a), the rate tendered shall include full compensation for excavation to windrow or temporary stockpile to the side of the pipeline or construction servitude, thereof to temporary stockpile and maintenance of the stockpile within the free haul distance until re-use.

For b), the rate tendered shall include full compensation for excavation and loading and hauling thereof to temporary stockpile and maintenance of the stockpile within the free haul distance until re-use.

The Contractor shall liaise and agree with the Engineer as to the depth of topsoil to be removed. Where, in the opinion of the Engineer, material that would not normally be classed as topsoil has also been excavated, the excavation shall be backfilled and compacted with selected material at the Contractor's expense.

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The rates tendered shall also include for all supervision required to ensure that only topsoil is removed. No payment will be made against this item for removal and stockpiling of topsoil from the Contractor's working and office areas and borrow areas unless topsoil from these areas is to be removed and stockpiled for use on the Permanent Works. The rate tendered shall include full compensation for all costs associated with transporting of material including equipment, materials fuel and personnel.

7.005 Removal of fertile soil

- a) **For pipelines, temporary stockpiling alongside the pipeline and construction servitude within the free haul distance** **Unit: cubic metre (m³)**
- b) **For other work areas, temporary stockpiling adjacent to the work area within free haul distance** **Unit: cubic metre (m³)**

The rate tendered shall include full compensation for excavation and loading and hauling thereof as indicated to temporary stockpile and maintenance of the stockpile within the free haul distance until re-use.

The Contractor shall liaise and agree with the Engineer as to the depth of fertile soil to be removed. Where, in the opinion of the Engineer, material that would not normally be classed as fertile soil has also been excavated, the excavation shall be backfilled and compacted with selected material at the Contractor's expense.

The rate tendered shall also include for all supervision required to ensure that only fertile soil is removed. No payment will be made against this item for removal and stockpiling of fertile soil from the Contractor's working and office areas and borrow areas unless fertile soil from these areas is to be removed and stockpiled for use on the Permanent Works. The rate tendered shall include full compensation for all costs associated with transporting of material the greater distance than the free haul, including equipment, materials and personnel.

7.006 Overhaul **Unit : cubic metre (m³)**

Overhaul distances will be measured to the nearest 0.1 km from the end of the 1.0 km free haul, using the shortest practical route agreed with the Engineer from the point of loading to the point of dumping in one direction only as follows (Distance categories to follow the free haul):

- a) Between 1 km up to and including 3 km;
- b) Between 3 km up to and including 5 km;
- c) Between 5 km up to and including 7 km;
- d) Between 7 km up to and including 9 km;
- e) Between 9 km up to and including 11 km; and
- f) Between 11 km up to and including 13 km.

The rate tendered shall include full compensation for all costs associated with loading, transporting and tipping of material applicable to the greater distance in a distance category over and above the free haul distance, including equipment, materials, fuel and personnel.

No payment will be made against this item for overhaul of topsoil used for reinstatement of Contractor's working and accommodation areas and temporary roads. Compensation for such work shall be included in the relevant items in Section 1 – General.

7.007 Demolishing and disposal of concrete structures and reinforced concrete **Unit : cubic metre (m³)**

Measurement will be the volume of the item demolished and disposed of.

The rate tendered shall include full compensation for the break up and disposal of all building waste material from the demolition of concrete slabs, structures and the like in accordance with the requirements of the National Environmental Management Waste Act, 2008 (Act of 59 of 2008), its regulations and Norms and Standards.

7.008 Moving Existing Rock Stockpile from previous projects to Provide Working Space **Unit: cubic metre (m³)**

The volume measured for the moving of the existing (before construction commences) rock stockpile in the pipeline servitude to a temporary stockpile to provide sufficient space to carry out the work will be the length times the average width times the average height of the existing rock stockpile moved to temporary stockpile. The rate shall include full compensation for all costs inclusive of loading, transporting, placing, shaping, compacting and erosion control incurred in moving the existing rock stockpile in the pipeline servitude to a designated spoil site.

7.009 Mulching **Unit: hectare (ha)**

The rate tendered shall include full compensation for all work necessary for the handling of the material to be chipped or mulched prior to chipping or mulching, chipping, shredding and mulching, mixing mulch and chips, transporting to stockpile, offloading, and stockpiling of material or mixing with topsoil stockpiles and subsequent maintenance of stockpiles.

7.010 Demolishing and disposal of buildings **Unit: sum**

The rate tendered shall include full compensation for all work necessary for the demolishing and disposal of a single storey building size approximately 600 m² in area on plan, consisting of brick walls, concrete floor slabs and foundations, ceilings, wood trusses, iron roof sheeting, services etc. It shall also include grubbing of foundations, filling in of holes etc. and levelling of site. The rate shall include for disposal at an appropriately licenced facility that fully complies with the requirements of the National Environmental Management Waste Act, 2008 (Act of 59 of 2008), its regulations and Norms and Standards and no overhaul is applicable.

7.011 Demolishing and disposal of farm dam **Unit: sum**

The rate tendered shall include full compensation for all work necessary for the draining demolishing, filling of basin and disposal of material not suitable for filling of the basin of a farm dam. Estimated volume of dam water (capacity) is 1520 m³.

7.012 Removal of existing services **Unit: m**

Removal of services relating to pivot irrigation system and to be handed over to the Engineer (Specific to the parameters of borrow pit B).

**7.013 Disconnecting existing services to the farm dam,
and including demolishing irrigation pumphouse
and surrounding structures**

Unit: sum

Disconnecting existing services (services relating to pivot irrigation system and the pumphouse) to the farm dam and hand over to the Engineer, and including demolishing irrigation pumphouse and surrounding structures which shall be disposed of at a commercial dump site.