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C3.7.6.2 Management

- (a) The successful contractor must keep site records regarding the part/full occupational qualification learners', trade qualification learners', work integrated learners' or candidates' (delete that which is not applicable) progress, site attendance, hours worked and other relevant information as required by the Standard.
- (b) The successful contractor shall provide the required number of appropriately qualified mentors to the maximum number of part/full occupational qualification learners, trade qualification learners, work integrated learners in the proportion as specified in the Standard.
- (c) The successful contractor shall provide a supervisor to manage the training of the part/full occupational qualification learners, trade qualification learners, work integrated learners, candidates.
- (d) The successful contractor shall submit to the employer's representative a baseline training plan in the specified format (Pro-forma A2) for the part/full occupational qualification learners, trade qualification learners, work integrated learners, candidates within 30 days of start of the contract.
- (e) The successful contractor shall submit to the employer's representative project interim report in the specified format (Pro-forma A3) on the progress of each of part/full occupational qualification learner, trade qualification learner, work integrated learner, candidate every three months.
- (f) The successful contractor shall submit to the employer's representative the names and particulars in the specified format (Pro-forma A4) of the supervisor, mentors for the part/full occupational qualification learners, trade qualification learners, work integrated learners or within 30 days of start of the contract.
- (g) The successful contractor shall keep a daily record of all the part/full occupational qualification learners, trade qualification learners, work integrated learners, candidates on site and their daily activities and shall be made available to the employer's representative on request.
- (h) The successful contractor shall submit to the employer's representative the reports on the progress and status of the part/full occupational qualification learners, trade qualification learners, work integrated learners or candidates with the monthly invoice for the payment certificate.
- (i) The successful contractor shall have health and safety inductions for all part/full occupational qualification learners, trade qualification learners, work integrated learners or candidates
- (j) The successful contractor shall conduct entry and exit medical tests of all part/full occupational qualification learners, trade qualification learners, work integrated learners or candidates
- (k) The successful contractor shall provide personal protective equipment (PPE) to all part/full occupational qualification learners, trade qualification learners, work integrated learners or candidates at the start of their employment on site.
- (l) Based on the agreed skills methods the contractor may employ part/full Occupational Qualification Learners and /or Trade Qualification Learners and/or Work Integrated Learners and/or Candidates directly or through a Skills Development Agency (SDA), training provider or skills development facilitator (Form A1 - List of cidb accredited SDAs). The contractor shall ensure that no more than one Method shall be applied to any individual concurrently in the calculation of the CSDG for the contract.

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C3.7.7 NATIONAL YOUTH SERVICE TRAINING AND DEVELOPMENT PROGRAMME (NYS)

The National Youth Service Training and Development Programme is *applicable* to this project.

The programme shall be implemented in terms of the Implementation of the National Youth Service Programme under the Expanded Public Works (EPWP) and shall be priced in the CPG section of the Bills of Quantities. Monthly reports are to be submitted to the Employer's Representative.

Failure by the contractors to achieve the specified number to be trained in the NYS section of the CPG section within the Bills of quantities will result in a payment reduction as per bill of quantities per person, excluding VAT unless the contractor can prove to the Employer's satisfaction that the non-achievement was beyond his/her control.

C3.7.8 LABOUR-INTENSIVE WORKS

Labour Intensive Works is *applicable* to this project.

Where labour intensive work is specified in the Bill of Quantities and indicated by "LI" the contractor must price for and include in rates. Contractors are expected to use their initiative to identify additional activities that can be done labour-intensively to comply with the set minimum labour intensity target. Allowance must be made for submitting monthly reports illustrating the value of the works executed under Labour Intensive Works.

Failure by the contractor to achieve the specified value of the Labour Intensive Participation Goal as stipulated within the Bills of quantities will result in a thirty percent (30%) penalty of the value of the works not done by means of labour intensive methods, excluding VAT, unless the contractor can prove to the Employer's satisfaction that the non-achievement was beyond his/her control.

Employer's objectives:

The employer's objectives are to deliver public infrastructure using labour-intensive methods in accordance with EPWP Guidelines.

Labour-intensive works:

Labour-intensive works shall be constructed/maintained using local workers who are temporarily employed in terms of the scope of work. A **thirty percent (30%)** penalty of the value of the works will be imposed on items where unauthorised use of plant was used to carry out work which was to be done labour-intensively.

Labour-intensive competencies of supervisory and management staff:

Contractors shall only engage supervisory and management staff in labour-intensive works that have completed the skills programme including Foremen/ Supervisors at NQF level 4 "National Certificate: Supervision of Civil Engineering Construction Processes" and Site Agent/ Manager at NQF level 5 "Manage Labour-Intensive Construction Processes" or equivalent QCTO qualifications (See Appendix C) at NQF outlined in Table 1

C3.7.8.1 GENERIC LABOUR-INTENSIVE SPECIFICATION

Contractors are referred to the Guidelines for the Implementation of Labour-intensive Infrastructure Projects under the Expanded Public Works Programme (EPWP) for the generic labour-intensive specification applicable to the contract.

This specification establishes general requirements for activities which are to be executed by hand involving the following:

- trenches having a depth of less than 1.5 metres
- stormwater drainage
- roads
- sidewalks and non-motorised transport infrastructure



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- water and sanitation

Precedence

Where this specification is in conflict with any other standard or specification referred to in the Scope of Works to this Contract, the requirements of this specification shall prevail

Hand excavatable material

Hand excavatable material is:

a) granular materials:

i) whose consistency when profiled may in terms of table 2 be classified as very loose, loose, medium dense, or dense; or

ii) where the material is a gravel having a maximum particle size of 10mm and contains no cobbles or isolated boulders, no more than 15 blows of a dynamic cone penetrometer is required to penetrate 100mm;

b) cohesive materials:

i) whose consistency when profiled may in terms of table 2 be classified as very soft, soft, firm, stiff and stiff / very stiff; or

ii) where the material is a gravel having a maximum particle size of 10mm and contains no cobbles or isolated boulders, no more than 8 blows of a dynamic cone penetrometer is required to penetrate 100mm;

Note

1) A boulder is material with a particle size greater than 200mm, a cobble and gravel is material between 60 and 200mm.

2) A dynamic cone penetrometer is an instrument used to measure the in-situ shear resistance of a soil comprising a drop weight of approximately 10 kg which falls through a height of 400mm and drives a cone having a maximum diameter of 20mm (cone angle of 60° with respect to the horizontal) into the material being used.

GRANULAR MATERIALS		COHESIVE MATERIALS	
CONSISTENCY	DESCRIPTION	CONSISTENCY	DESCRIPTION
Very loose	Crumbles very easily when scraped with a geological pick.	Very soft	Geological pick head can easily be pushed in as far as the shaft of the handle.
Loose	Small resistance to penetration by sharp end of a geological pick.	Soft	Easily dented by thumb; sharp end of a geological pick can be pushed in 30-40 mm; can be moulded by fingers with some pressure.
Medium dense	Considerable resistance to penetration by sharp end of a geological pick.	Firm	Indented by thumb with effort; sharp end of geological pick can be pushed in up to 10 mm; very difficult to mould with fingers; can just be penetrated with an ordinary hand spade.
Dense	Very high resistance to penetration by the sharp end of a geological pick; requires many blows for excavation.	Stiff	Can be indented by thumb-nail; slight indentation produced by pushing geological pick point into soil; cannot be moulded by fingers.
Very dense	High resistance to repeated blows of a geological pick.	Very stiff	Indented by thumb-nail with difficulty; slight indentation produced by blow of a geological pick point.



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Trench excavation

All hand excavatable material in trenches having a depth of less than 1,5 metres shall be excavated by hand.

Compaction of backfilling to trenches (areas not subject to traffic)

Backfilling to trenches shall be placed in layers of thickness (before compaction) not exceeding 100mm. Each layer shall be compacted using hand stampers;

a) to ninety percent (90%) Mod AASHTO;

b) such that in excess of 5 blows of a dynamic cone penetrometer (DCP) is required to penetrate 100 mm of the backfill, provided that backfill does not comprise more than ten (10%) gravel of size less than 10mm and contains no isolated boulders, or

c) such that the density of the compacted trench backfill is not less than that of the surrounding undisturbed soil when tested comparatively with a DCP.

Excavation

All excavatable material including topsoil classified as hand excavatable shall be excavated by hand. Harder material may be loosened by mechanical means prior to excavation by hand. Any material which presents the possibility of danger or injury to workers shall not be excavated by hand.

Clearing and grubbing

Grass and bushes shall be cleared by hand.

Shaping

All shaping shall be undertaken by hand.

Loading

All loading shall be done by hand. Haulage equipment should be selected in a manner that allows loading by hand to the greatest extent possible.

Haul

Excavation material shall be hauled to its point of placement by means of wheelbarrows where the haul distance is not greater than 150m.

Offloading

All material, however transported, is to be off-loaded by hand, unless tipper-trucks are utilised for haulage.

Spreading

All material shall be spread by hand.

Compaction

Small areas may be compacted by hand provided that the specified compaction is achieved. Appropriate rollers should be used where higher (than can be achieved by hand) levels of compaction are required or for large areas.

Grassing

All grassing shall be undertaken by sprigging, sodding, or seeding by hand.

Stone pitching and rubble concrete masonry

All stone required for stone pitching and rubble concrete masonry, whether grouted or dry, must to be collected, loaded, off loaded and placed by hand.

Sand and stone shall be hauled to its point of placement by means of wheelbarrows where the haul distance is not greater than 150m.

Grout shall be mixed and placed by hand.

Manufactured Elements

Elements manufactured or supplied by the Contractor, such as manhole rings and cover slabs, precast concrete planks and pipes, masonry units and edge beams shall not individually, have a mass of more than 320kg. Where the mass of an element exceeds 55 kg, consideration should be given to the size



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of the element relative to its total mass related to the number of workers who would be needed to lift such mass

C3.8 Submission of Accrual Reports

The Contractor shall submit accrual reports to the client representative at the end of March and September each year for the duration of the Service Contract period from the date of appointment up to and including project closeout. This is to ensure that PMTE complies with the accounting framework GRAP, which requires that PMTE disclose all its accruals as at the end of each reporting date.

C.3.9 Submission of Monthly Local Material Utilisation Report (Local Content)

The contractors shall be responsible for record keeping, documenting and submission of monthly local material utilization report with supporting documentation to the Employer's representative within 7 working days of the beginning of the successive month, in terms of DTI&C designated industry/sector/sub-sector schedule as per the PA36 and Annexures C attached to the tender document. The final percentage achievement to be reconciled upon completion of the project and form part of the final account.

Failure by the contractors to achieve the specified percentage of local content per designated industry/sector/sub-sector as listed will result in a thirty percent thirty percent (30%) penalty of the value not achieved, excluding VAT, unless the contractor can prove to the Employer's satisfaction that the non-achievement was beyond his/her control. Allowance must be made for submitting monthly reports illustrating the value of local material utilisation report.



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Examples of calculating CPGs and related penalties

CPGs values are based on the Tender Amount at the time of the award. Determining the actual values is based either on the Tender Amount including allowances and Vat or the Tender Amount at the time of award excluding allowances and VAT, where Allowances include the following:

- Provisional amounts
- CPG allowances
- Nominated and/or selected subcontractors
- Contract price adjustment (Not provided for within the B of Q by NDPWI)
- Contingency amounts (Not provided for within the B of Q by NDPWI)

CPG values in the CPG Bill of Quantities Section will be recalculated based on the “Tender Amount” or the “Contract Amount” which ever applicable and the provisional amounts adjusted accordingly. Sanctions (penalties) are applicable to all CPGs where the contractor fails to achieve the minimum specified requirements, unless the contractor can prove to the Employer’s satisfaction that the non-achievement was beyond his/her control. No penalties will be applied should the CPG value, based on the original “Tender Amount” or the “Contract Amount”, has been achieved.

1.1. 30% SMME mandatory subcontracting CPG

When applicable, a minimum of 30% of the total tender amount at the time of award, including all allowances and VAT are to be subcontracted to SMMEs.

CPG calculation example:

“Tender Amount” = R150 mil
CPG 30% subcontracting value = R45 Mil

Calculation of penalty:

Percentage penalty applicable = 5% as specified in the Scope of Works (PG01.1)
CPG Achieved = R30 Mil (R15 Mil shortfall)
Penalty = R15 Mil x 5% = R750 000 Excl. VAT

1.2 Targeted Local Building Material Manufacturers CPG

When applicable, the CPG is expressed as a percentage of the “Contract Amount”, i.e. the Tender Amount at the time of award excluding allowances and VAT.

CPG calculation example:

“Tender Amount” = R150 Mil all inclusive of allowances and VAT
“Contract Amount” = R130 Mil (Tender Amount at the time of award excluding allowances and VAT)
CPG to be achieved = 5% as specified in the Scope of Works (PG01.1)
CPG target value = R130 Mil x 5% = R 6,5 Mil (Value of material to be purchased from local manufacturers, excluding VAT)

Calculation of penalty:

Percentage penalty applicable = 10% as specified in the Scope of Works (PG01.1)
CPG target value = R6,5 Mil excluding VAT
CPG Achieved = R5,5 Mil (R1 Mil shortfall) excluding VAT
Penalty = R1 Mil x 10% = R100 000 excluding VAT

1.3 Targeted Local Building Material Suppliers CPG

When applicable, the CPG is expressed as a percentage of the “Contract Amount”, i.e. the Tender Amount at the time of award excluding allowances and VAT.

CPG calculation example:

“Tender Amount” = R150 Mil all inclusive of allowances and VAT

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“Contract Amount” = R130 Mil (Tender Amount at the time of award excluding allowances and VAT)
CPG to be achieved = 5% as specified in the Scope of Works (PG01.1)
CPG target value = R130 Mil x 5% = R 6,5 Mil (Value of material to be purchased from local suppliers, excluding VAT)

Calculation of penalty:

Percentage penalty applicable = 20% as specified in the Scope of Works (PG01.1)
CPG target value = R6,5 Mil excluding VAT
CPG Achieved = R5,5 Mil (R1 Mil shortfall) excluding VAT
Penalty = R1 Mil x 20% = R200 000 excluding VAT

1.4 Targeted Local Labour Skills Development CPG

When applicable, the CPG is expressed as a percentage of the total number working days required to complete the Works.

CPG calculation example:

“Tender Amount” = R150 Mil all inclusive of allowances and VAT
“Contract amount” = R130 Mil (Tender Amount at the time of award excluding allowances and VAT)
Number of working days required to complete the Works based on the construction period = 600 days
CPG percentage participation to be achieved = 30% as specified in the Scope of Works (PG01.1)
Required number of working days training to be provided = 180 days (600 x 30%)

Calculation of penalty:

Payment reduction = R 5 000 per day for not providing training as specified in the Scope of Works (PG01.1)
CPG = 600 working days x 30% = 180 working days training to be provided
CPG Achieved = 160 days (20 days shortfall where no training was provided)
Penalty = 20 days x R5 000 payment reduction per day= R100 000 excluding VAT

1.5 National Youth Service Programme (NYS) CPG

When applicable, a separate NYS Bill of Quantities will be included in the tender documentation will indicate the number of beneficiaries to be trained.

Calculation of penalty:

Payment reduction per person not trained as stipulated in the NYS Bill of Quantities = R 2 500 per person.
Total number of NYS Beneficiaries as stipulated in the NYS Bill of Quantities = 25
Total Number of NYS beneficiaries trained = 20 (shortfall of 5 beneficiaries)
Penalty = 5 x R2 500 = R12 500 Excl. VAT

1.6 Labour Intensive Works CPG

When applicable, the work to be done by way of Labour intensive methods are specified in the Bills of Quantities with a “LI”.

CPG calculation example:

“Tender Amount” = R150 Mil all inclusive of allowances and VAT
“Contract Amount” = R130 Mil (Tender Amount at the time of award excluding allowances and VAT)
CPG value = R10 Mil (Total value of labour-intensive works specified in the Bills of Quantities)

Calculation of penalty:

CPG value = R10 Mil
Percentage penalty applicable = 30% as specified in the PG01.1 Scope of Work
CPG Achieved = 9 Mil (R1 Mil shortfall)
Penalty = R1 Mil x 30% = R300 000 Excl. VAT

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1.7 Cidb BUILD Programme: Enterprise Development

When applicable, the Enterprise Development CPG expressed as a percentage of the "Contract amount" =

Tender amount at the time of award excluding allowances and VAT. Failure to achieve the minimum Targeted Local Labour Skills Development CPG will result in a payment reduction of an amount specified in the Scope of Works (PG01.1) per working day where training was not provided.

The monetary value of training to be provided is stipulated in the CPG BoQ section. The number of beneficiaries to be trained is dependent on the "Contract Amount" as well the number of beneficiaries appointed which will generally resort under the Grade 1 and 2 cidb categories. The provisional amount will therefore be adjusted in terms of the "contract Amount", the number of beneficiaries to be trained and the actual cost for providing the training.

Part 1: Calculation of 5% CPG example:

"Tender Amount" = R150 Mil all inclusive of allowances and VAT

"Contract Amount" = R130 Mil (Tender Amount at the time of award excluding allowances and VAT)

CPG percentage participation to be achieved = 5% as specified in the Scope of Works (PG01.1)

CPG value = R6,5 Mil (Value of work to be subcontracted to emerging enterprises)

Calculation of penalty

Percentage penalty applicable = 30% as specified in the Scope of Works (PG01.1)

CPG Minimum 5% = R6,5 Mil

Achieved = R5,5 Mil (Only subcontracted work to the value of R5,5 Mil, i.e. R1 Mil shortfall)

Penalty = R1 Mil x 30% = R300 000 Excl. VAT

Part 2: Calculations in terms of training to be done:

The number of enterprises to be developed is subject to the contract amount and the apportionment of the work as per Example 1 below.

Number of enterprises to be trained = 6 x 1 GB subcontractors

Total cost for training = R 1 660 000

Calculation of penalty

Total number of enterprises to be trained = 6

Total number trained = 4 (2 Shortfall)

Training cost per beneficiary = R1 660 000 / 6 = R 276 666,67 per beneficiary

Penalty = R 276 666,67 x 2 x 30% = R166 000 Excl. VAT

B of Q Item	Description	Unit	Rate	Quantity	Amount (R)
5	Enterprise Development				
5.1	Enterprise Development of Targeted Enterprise or JV partners				
5.1.1	Appointment of training co-ordinator	Per Quarter	45 000	8	360 000
5.1.2	Appointment of Mentor /Training Service provider	Per Quarter	135 000	8	1 080 000
5.1.3	Needs Analysis and Enterprise Development Plan per Targeted Enterprise	No.	5 000	6	30 000
5.1.4	Monitoring and Interim reporting per targeted enterprise	Per Quarter	20 000	8	160 000
5.1.5	Project Completion report per Targeted Enterprise	No.	5 000	6	30 000
	Provisional Sum to be carried over to CPG bill of quantities				1 660 000

"Contract amount" Tender amount excl. allowances and VAT. 130 000 000

CPG Monetary value (5%) to be subcontracted to beneficiaries for training 6 500 000

No of enterprises based on the CPG value 6 Grade 1 / 2 GB/CE,ETC.

Contract period (months) 24

Note: Rates to be determined by PQS and adjusted to accepted quotation amounts

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1.8 Cidb BUILD Programme: Skills Development (Principal contractor including subcontractors and consultants)

When applicable, the contract skills development participation goals, expressed in Rand, shall be no less than the "contract amount" multiplied by a percentage (%) factor for the applicable class of construction works.

The monetary value of training to be provided is stipulated in the CPG BoQ section. The number of beneficiaries to be trained is dependent on the "Contract Amount" as well the number of beneficiaries appointed which will generally resort under the Grade 1 and 2 cidb categories. The provisional amount will therefore be adjusted in terms of the "Contract Amount", the number of beneficiaries to be trained from which *Method* and the actual cost for providing the training.

CPG Calculation

Table 2: Contracting skills development goals for different classes of engineering and construction works contracts

Source: cidb Standard for Developing Skills through Infrastructure Contracts as published in the Government Gazette Notice No. 43495 of 3 July 2020 (Page 7)

Class of construction works as identified in terms of Regulation 25 (3) of the Construction Industry Regulations 2004		Construction skills development goal (CSDG) (%)
Designation	Description	
CE	Civil Engineering	0.25
CE and GB	Civil engineering and General Building	0.375
EE	Electrical Engineering works (buildings)	0.25
EP	Electrical Engineering works (infrastructure)	0.25
GB	General Building	0.5
ME	Mechanical Engineering works	0.25
SB	Specialist	0.25

"Contract amount" = Tender amount at the time of award excluding allowances and expenses, and VAT

Contractor CPG:

CPG calculation

"Contract amount" x factor from Table 3 above.

CPG calculation example:

"Tender Amount" = R150 Mil for GB, all inclusive of allowances and VAT

"Contract Amount" = R130 Mil (Tender Amount at the time of award excluding allowances and VAT)

Factor for GB = 0,5% (as per Table 2 above)

CPG in R value = R130 Mil x 0,5% = R650 000 i.e. total cost of training to amount to R650 000

Calculation of penalty:

Percentage penalty applicable = 30% as specified in the Scope of Works (PG01.1)

CPG value = R650 000

Achieved = R550 000 = R100 000 Shortfall

Penalty = R100 000 x 30% = R30 000 Excl. VAT

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Calculations based on “Contract Amount” after bid award and after bid award and appointment of beneficiaries

Actual CPG training requirement value after award upon selecting method/s of training and appointment of beneficiaries = R676 000 (Table 4 below) and the provisional amount allowed for to be adjusted accordingly. The new monetary value of training required will then form the basis for determining penalties applicable. No penalties will be applied should the CPG value, based on the “Contract Amount” be achieved.

Table 4: Notional cost recalculation upon appointment of beneficiaries.

Source: cidb Standard for Developing Skills through Infrastructure Contracts as published in the Government Gazette Notice No. 43495 of 3 July 2020 (Page 10)

Skills Types	Number of learners	Notional Cost / Learner / Quarter	Notional cost / learner / year	Total Notional Cost over 12 months Contract
Method 2: Workplace learning opportunities, with unemployed TVET graduates	2	R23 000	R92 000	R184 000
Method 3: Candidacy for an unemployed learner with a 3-year qualification	2	R61 500	R246 000	R492 000
Total	4			R676 000

Note: the required CPG will be recalculated based on the awarded Tender amount and “Contract Amount” once the beneficiaries have been appointed and actual costs are known

Note: The notional cost of providing training opportunities will increase by CPI on an annual basis based on April CPI as published by Stats SA. The rates will be adjusted as an adjustment to the provisional amounts should the rates increase after bid award or during the construction period



Additional Specifications

- SA : General Maintenance
- SB : Operating and maintenance manuals
- SC : General decommissioning, testing and commissioning procedures
- SD : General training
- SF : General Operation
- SH : HIV / AIDS requirements
- SI : Occupational Health and Safety (OHS Act)
- SJ : COVID- 19 Occupational Health and Safety
- SN : Implementation of EPWP

ADDITIONAL SPECIFICATION**SA GENERAL MAINTENANCE****CONTENTS**

SA 01	SCOPE
SA 02	MAINTENANCE APPROACH
SA 03	MAINTENANCE REQUIREMENTS
SA 04	MAINTENANCE CONTROL
SA 05	COMMUNICATION
SA 06	PERFORMANCE MEASUREMENT
SA 07	PREVENTATIVE MAINTENANCE
SA 08	MANDATORY PERIODICAL SERVICES
SA 09	FREQUENT SERVICING OF INSTALLATIONS
SA 10	MEASUREMENT AND PAYMENT

SA 01 SCOPE

Maintenance of the specified systems, services and/or parts of buildings and infrastructure shall all be referred to as "Maintenance of an Installation". Maintenance of all completed installations shall ensure reliable functioning and optimum service life thereof. Monthly maintenance responsibilities for each installation including all units and components as specified shall commence with access to the Site.

Maintenance of an installation shall be performed in accordance with the Technical and Particular Specifications, the Operating and Maintenance Manuals (where applicable) and the Maintenance Control Plan.

Remuneration for maintaining "installations" (systems, services and/or buildings and parts of the infrastructure) in good functional condition is provided for in the Schedules of Quantities by means of monthly payment items.

This Additional Specification covers maintenance requirements, development of a maintenance control plan, identification of equipment, site maintenance administration, maintenance performance measurement, as well as the items for measurement of the Contractor's service level and resulting payment.

The residential area at the Kosi Bay Port of Entry form part of an existing Repair and Maintenance Programme.

The various installations are in perfect working order. This places the emphasis of this Contract on maintenance.

No distinction will be made between prior to practical completion and completed installations for the purpose of maintenance.

The maintenance of the operational area for the plumbing and building electrical work will be divided into Section A and Section B as follows:

SA.2

The Contractor will have the opportunity at the start of the contract to point out items which are not in perfect working order which in turn will be serviced/repaired as per the relevant tendered

rates. The Contractor must submit a written report of these items within 28 days of the date of site hand over. Failing to submit the report within the allowed time will render any and all defective items part of the Contractor maintenance responsibly as set out in the relevant Technical and Particular Specifications.

The Contractor will further more at the start of the contract perform annual maintenance on all the installations as per the items listed in the different Technical and Particular Specifications as part of the Contractor's maintenance obligation.

Maintenance of each of these installations will be the responsibility of the Contractor and will be evaluated on a monthly basis by the Engineer. The remuneration for maintenance work and responsibilities will be certified accordingly.

SA 02 MAINTENANCE AND SERVICING APPROACH

The Contractor is expected to be represented on **site full time**. Contractor must allow for the appointment of a qualified project manager to be available on site on a full time basis for the duration of the contract.

SA 02.01 ROUTINE PREVENTATIVE MAINTENANCE VISITS

When submitting the maintenance control plan (MCP), the Contractor shall schedule "routine preventative maintenance visits" to the site. A "routine preventative maintenance visit" shall be scheduled for the intervals as indicated in the table below. The duration of the "routine preventative maintenance visits" will depend on a time required to complete all routine preventative maintenance, corrective maintenance as well as breakdowns logged during the course of the month as specified. However, a "routine preventative maintenance visit" may never be less than the minimum period specified in the table below. The Engineer will carry out a site inspection on any arbitrary day and measure the quality of maintenance and servicing. The Engineer will also inspect correction/repair of breakdowns that were logged with

INSTALLATION	FREQUENCY OF ROUTINE MAINTENANCE VISIT	MINIMUM DURATION OF ROUTINE MAINTENANCE VISIT
KOSI BAY PORT OF ENTRY	5 days a week (Monday, Tuesday, Wednesday, Thursday, Friday)	8 hours

* Note: Operational hours is not limited from above, and will vary from season to season. Operational hour changes will be confirmed by the User Client

The Contractor should indicate to the Engineer within 21 days after the site handover the days of the week which he will visit the site for his scheduled routine preventative maintenance visit including the various resources allocated for the different preventative maintenance actions, site keeping and cleaning services to be performed (at least 6 months in advance). Qualified electrician and plumber should also be available for the above-mentioned dates.

SA 02.02 EMERGENCY BREAKDOWN VISIT

Whenever an emergency breakdown is logged with the contractor, an "emergency breakdown repair visit" shall be carried out by the contractor to attend to the repair of the emergency breakdown within **12 hours** after it was logged with the contractor.

Remuneration for the material and labour required to attend to repair of the emergency breakdown shall be deemed included in the payment item for maintenance of an installation based on a point system and measured monthly. Payment for the "emergency breakdown repair visit" will be measured separately in the schedule of quantities to cover the cost of the call-out, in terms of travel and accommodation cost, including travel time and any cost associated with the call-out. No payment for the "emergency breakdown repair visit" shall be done if the call-out coincides with any of the monthly visits as listed in SA 02.01.

The Contractor will only be remunerated for emergency breakdown repair visits upon instruction of the Engineer or his representative.

Typically examples of "emergency repair breakdown visits" would be:

- A breakdown of any standby power generator that prevents the standby power generator from operating at its capacity and meeting the demand.
- A breakdown of any water supply pump or any other component of the water supply or bulk water installation that affects the water supply to such an extent that it cannot meet the demand.
- A breakdown of the water reticulation network or sewer reticulation network that affects water supply or sewer removal to such an extent that the service is disrupted to any site.
- A breakdown of site electrical or building electrical that disrupts power supply to a building (including residential unit)
- A breakdown of a geyser that prevents it from supplying hot water as per specification
- Any other breakdown that can be regarded as having the potential to cause damage to equipment or property and is included in the scope of work to be maintained and serviced by the Contractor, as per specifications. *The Engineer or his representative will be responsible for categorising a breakdown as an emergency.*

SA 03 MAINTENANCE REQUIREMENTS

SA 03.01 CONTRACTOR'S RESPONSIBILITIES

The Contractor shall maintain the complete installations for the 36-month Contract period.

Maintenance implies and shall include monthly preventative maintenance, corrective maintenance, as well as breakdown maintenance on all components of the specified installations.

The maintenance control plan (specified in Clause SA 03) will be developed by the Contractor, to schedule the frequency of routine inspections and format of reports. The Contractor shall carry out inspections on the equipment as detailed in the Technical and Particular Specifications and the maintenance control plan. Each inspection, test or breakdown shall be recorded in an approved format and listed in a quarterly report (part of the maintenance control plan).

As part of repair of each installation, the Contractor shall submit a set of Operating and Maintenance Manuals where applicable. The Contractor shall ensure through training that the operating and maintenance personnel are conversant with the instructions as presented in the Operating and Maintenance Manuals. Continued training shall be included in the scope of

maintenance work for the duration of the 36-month Contract, in accordance with Additional Specification SD: General Training.

The Operating and Maintenance Manuals, as approved by the Engineer, shall be used as a basis of preventative maintenance. The Contractor shall perform all preventative and corrective maintenance as described in the Operating and Maintenance Manuals. This shall be in accordance with the Technical and Particular Specifications.

The Contractor shall, as part of his maintenance responsibilities repair or replace faulty equipment upon logging of a breakdown, within the down-time as defined in Clause SA 05.02 at the Contractor's cost, except in the event of replacement being labelled as exceeding liability as specified in Clause 63 of the Project Specific Conditions of Contract, in which case the Department of Public Works will bear part of the costs.

The Contractor shall rectify any faulty condition of which he becomes aware, even if it has not been logged. Such rectification shall also be logged and listed in the quarterly report.

SA 03.02

CONDITIONS FOR EXCEEDING THE CONTRACTOR'S LIABILITY DUE TO OPERATIONAL DAMAGE BREAKDOWNS

Irrespective the definition of operational damage given in the Oxford dictionary, it shall be defined for the purpose of this clause as being any damage caused on purpose or through negligence by the User Client's employees, suppliers, subcontractors, etc for any reason whatsoever. For the purpose of this clause, operational damage and vandalism shall have the same meaning. Where repair work is necessitated as a result of operational damage caused by User Clients or their associates, the Contractor will be requested to:

- (a) perform work, using tendered rates for the supply, delivery and installation of material forming part of the repair work schedule, within the maximum down-time allowed for operational damage, where the Engineer rules that the damage has been caused by incorrect operation;
- (b) submit one (1) quotation for repair and/or replacement of the damaged unit, where tendered rates are not available and where the Engineer rules that the damage has been caused by incorrect operation;
- (c) perform the work on receipt of an order from the Engineer, within the time offered as part of the quotation, and
- (d) notify the Engineer well in advance of completion of the repair work in order to enable inspection.

The responsibility of determining whether damage to the installation was caused by people other than employees or associates of the Contractor shall rest with the Engineer.

Damage caused by the employees, suppliers, subcontractors, etc of the Contractor, shall be repaired by the Contractor at his own cost.

CONDITIONS FOR EXCEEDING THE CONTRACTOR'S LIABILITY ABOVE MARGINAL BREAKDOWN COST

In the event where the cost for the repair or replacement of any single component/subassembly where a breakdown has occurred due to a single failure, or where the cost for replacing a single item of equipment completely, exceeds the value of R15 000,00 (transport, accommodation and travelling cost excluded), the liability of the Contractor is limited to the value of R15 000,00. The additional cost above the value of R15 000,00 will be paid for by the Employer provided that conditions 1, 2 and 3 below have been met.

1. The defective part/component/subassembly or machine must be identifiable as a single subassembly or component and not the total of a number of small defects or breakdowns on subassemblies/components on any one or more machines.

Examples of subassemblies/components are the following:

- (a) Should the wiring or bearings on an electric motor fail, the complete motor must be removed for repairs and the cost for the repairs on the complete motor will be regarded as repairs on a single subassembly/component.
 - (b) A starter motor, for example, is a subassembly, which can be removed from the machine for repairs. The repairs on the starter motor together with the repairs on the main bearings will not be regarded as a repair on a single subassembly/component. If the complete diesel engine is replaced with its associated subassemblies the replacement of the complete unit will be regarded as a single component.
 - (c) A pump as a whole is regarded as a single component. The pump and driving machine on long coupled pumps are regarded as separate subassemblies. Pumps and motors on close-coupled equipment are regarded as a single component. The pump and motor of a sump pump are therefore regarded as a single component.
 - (d) Control equipment for the control of a single item, with the sensing device, the controller itself and the final controlled variable are regarded as a single component of the system. The repairs on any one item on a controller have an influence on the rest of the control equipment and must after the replacement be commissioned again as a unit.
2. The Contractor shall submit a written report to the Engineer for approval. This report shall contain the following information:
 - (a) The make and model number of the machine serviced/inspected/ repaired/replaced;
 - (b) The identification number of the machine;
 - (c) A description or name and part number of the defective part/component or subassembly;
 - (d) A statement on whether the component could be repaired, together with a cost estimate;
 - (e) A quotation valid for a minimum period of 60 days if the component/part/subassembly has to be replaced or repaired by an outside firm. If the subassembly/machine is to be repaired or replaced by an outside company, the Contractor shall supply one (1) quotation for such parts/repairs or a quotation from any sole supplier. Only an original quotation will be accepted. The mark-up on such

work shall be a percentage as tendered and shall be applicable to the total cost (VAT excluded) of repair work by outside companies;

- (f) The expected urgency for the replacement or repairs, and
 - (g) The delivery time of a new component/subassembly/machine or delivery times on spares required to repair the defective component/ subassembly.
3. A written approval to proceed with the work must be issued by the Department. Copies of the original VAT invoices from outside companies for all repairs or spare parts supplied must be attached to the Contractor's invoice.

SA 03.04

EMERGENCY BREAKDOWN REPAIR VISIT

Whenever an emergency breakdown is logged at a site where no access has been given the Contractor, an "emergency breakdown repair visit" shall be carried out by the Contractor to attend to the repair of the emergency breakdown within 24 hours after it was logged with the Contractor.

Remuneration for the material and labour required to attend to repair of the emergency breakdown shall be deemed included in the payment item for maintenance of an installation based on a point system and measured monthly. Payment for the "emergency breakdown repair visit" will be measured separately in the schedule of quantities to cover the cost of the call-out, in terms of travel and accommodation cost, including travel time and any other cost associated with the call-out.

The Contractor will not be remunerated for emergency breakdown repair visits once the specific installation or site has been completed (Completion Certified). The contractor will be remunerated for maintenance and attending to emergency breakdowns as per his payment item for maintenance of a completed installation based on a point system as measured monthly.

Typical examples of "emergency repair breakdown visits" would be:

- A Breakdown of any standby power generator that prevents the standby power generator from operating at its capacity and meeting the demand.
- A Breakdown of any water supply pump or any other component of the water supply or bulk water installation that affects the water supply to such an extent that it cannot meet the demand.
- A Breakdown of the water reticulation network or sewer reticulation network that affects water supply or sewer removal to such an extent that the service is disrupted to any building.
- A Breakdown of site electrical or building electrical that disrupts power supply to a building (including residential unit).
- A Breakdown of a geyser that prevents it from supplying hot water as per specification.
- Any other Breakdown that can be regarded as life threatening or having the potential to cause damage to equipment or property and is included in the scope of work to be maintained by the Contractor, as per the technical and particular specifications. The Engineer will be responsible for categorising a breakdown as an emergency.

SA 03.05 **COMPONENTS INCLUDED IN MAINTENANCE SCOPE**

The following main sections of a facility with their subsections are as set out in the Technical Specifications and Particular Specifications where applicable and in the Schedule of Quantities and will each be deemed "an installation". Maintenance, as specified, will be applicable to all of these installations.

INSTALLATIONS: KOSI BAY PORT OF ENTRY

- Installation C1: Kosi Bay - Structural and Building Works
- Installation C2: Kosi Bay - Plumbing, Drainage and Wet Services
- Installation C3: Kosi Bay - Wastewater and Sewer Networks
- Installation C4: Kosi Bay - Fencing, Cleaning and Site Keeping
- Installation C5: Kosi Bay - Bulk Water & External Water Reticulation
- Installation C6: Kosi Bay - Roads and Storm water Drainage
- Installation E1: Kosi Bay – Building electrical and Site Electrical
- Installation E2: Kosi Bay – External Lighting
- Installation E3: Kosi Bay - Standby Power
- Installation M1: Kosi Bay - Heating, Ventilation and Air-Conditioning Systems
- Installation M2: Kosi Bay - Conventional Fire-Fighting Equipment

Building Structural and Building related installations are excluded from the maintenance portion of the contract. The Contractor will however be instructed during the maintenance phase to repair certain damaged structural items. The Contractor will be remunerated for the structural items repaired as per his tendered rates in the schedule of quantities No additional fixed or time related P&G may be claimed for the repair work to damaged structural items.

SA 03.06 **COMMENCEMENT OF MAINTENANCE PERIOD**

Maintenance responsibilities for an installation prior to practical completion of repair work shall include maintenance of all individual units, equipment or components thereof, for which no repair work is required (as per the contract document) or for which the repair work has not yet started, and shall commence with access to the installation.

Where access to an installation with a view to commence repair work is delayed, then the maintenance responsibilities which in such cases will consist of keeping the installation in the condition it is in, shall commence immediately at the start of the Contract.

Such maintenance before access is obtained, shall consist for example of fixing leaks without replacing pipework or opening a blocked pipeline without further altering or inspecting such pipes.

The Contractor shall accept full maintenance responsibilities for each completed installation upon issue of a Certificate of Practical Completion for repair work of that installation.

The preliminary construction programme differentiates between commencement of maintenance on various installations.

SA 03.07 **PREVENTATIVE MAINTENANCE: DEFINITION**

This entails the rendering of services and servicing of equipment according to a predetermined maintenance control plan to:

- (a) replace and service components of equipment, units or parts thereof for each installation at prescheduled moments regardless of condition;
- (b) readjust, reset, clean, corrosion protect all components of equipment, units or parts thereof for each installation, and
- (c) carry out all implied actions to maintain installations in their present functional condition.

Preventative maintenance shall be aimed at minimisation of breakdowns.

SA 03.08 **CORRECTIVE MAINTENANCE: DEFINITION**

This entails regular observation of the equipment, identifying pending breakdowns, maladjustment or anomalies of equipment, units or parts of installations and subsequent action to restore installations to the functional condition as before the breakdown.

SA 03.09 **BREAKDOWN MAINTENANCE: DEFINITION**

This entails repair and/or replacement of defective equipment, units or parts of installations following a breakdown that leaves the installation inoperable or unsafe, and subsequent action to restore installations to their normal functional condition, within the maximum down-time allowed.

SA 03.10 **OPERATIONAL DAMAGE BREAKDOWN MAINTENANCE: DEFINITION**

This entails repair and/or replacement of defective or damaged equipment, units or parts of installations following a breakdown that leaves the installation inoperable or unsafe, and subsequent action to restore installations to their normal functional condition, within the maximum down-time allowed.

Typical examples of "operational damage breakdown visits" would be:

- A Breakdown of any structural items such as locks, window handles and stays, windows, doors and any other structural related items.
- A Breakdown of any plumbing, drainage or sanitary ware related items.
- A Breakdown of any electrical related items.
- Any other damaged items not caused by normal wear and tear.

SA 03.11 **SITE MAINTENANCE RECORD KEEPING**

The Contractor shall provide and maintain hard-cover A4 maintenance files for each installation for the duration of the Contract. All schedules, checklists, breakdown reports, preventative maintenance records, component replacement records and quarterly reports shall be filed, together with information regarding repairs exceeding the Contractor's liability, as set out in SA 03.02 and SA 03.03.

Site maintenance records shall be submitted at each monthly meeting.

SA 03.11 **OPERATIONAL DAMAGE BREAKDOWN DEFINITION****SA 32.12.01** **Labour**

Competent personnel that have been trained by the Contractor, in accordance with Additional Specification SD: General Training shall execute all maintenance work.

SA 03.12.02 **Equipment**

All tools and equipment required for maintenance work shall be supplied by the Contractor at his cost (except where otherwise provided).

SA 03.12.03 **Material**

All material, spare parts, components, equipment and appurtenances necessary for the complete maintenance of each installation shall be supplied and installed by the Contractor at his cost, to a maximum value per part/subassembly as specified in the Special Conditions of Contract for exceeding Contractor's Liability.

Materials as provided for in the Schedule of Quantities, shall be supplied and delivered by the Contractor at the tendered rates upon order of the Engineer only, and shall be free-issued to the User Client for own use. The Contractor shall inform the Engineer of all scheduled deliveries to arrange official hand-over with the User Client.

SA 03.13 **IDENTIFICATION OF EQUIPMENT**

A unique identification number will be allocated only to each mechanical equipment item forming part of the installation. This identification number will be allocated and administered in collaboration with the User Client and must be described in the maintenance control plan.

Reference shall be made to identification numbers in the maintenance control plan, operating and maintenance manuals and during all maintenance activities, including the logging of breakdowns and other correspondence. Identification numbers shall also be indicated on as-built drawings.

SA 04 **MAINTENANCE CONTROL****SA 04.01** **SCOPE**

Maintenance quality control shall be the responsibility of the Contractor. The Contractor shall introduce a maintenance control plan to assist him in ensuring that preventative, corrective and breakdown maintenance are performed as described in the operating and maintenance manuals and Technical and Particular Specifications.

SA 04.02 **PRELIMINARY MAINTENANCE CONTROL PLAN**

A preliminary version of the maintenance control plan shall be submitted with the programme and the framework of the preliminary version shall be as close as possible to that of the final maintenance control plan as specified in SA 03.03 below. Detail contained in this preliminary maintenance control plan shall include:

- (a) Actual time that a representative of the Contractor will be present on Site for the duration of the maintenance period;
- (b) the scope and frequency of routine inspections

- (c) repair methodology
- (d) details of training plan to be implemented in accordance with Additional Specification SD

SA 04.03**MAINTENANCE CONTROL PLAN**

- (a) The maintenance control plan shall be based on the Contractor's preliminary maintenance control plan, and shall be bound in a neat, A4-sized, ring-bound document with a cover page and back cover. The contents of the document shall be indexed.

In drawing up the document, the Contractor may reproduce relevant paragraphs and clauses from any of the specifications forming part of the Contract documents, but should there be any discrepancies between such clauses and paragraphs in the maintenance control plan and those in the Contract documents, those in the Contract documents shall be regarded as being correct and shall apply.

- (b) To ensure that the Engineer is satisfied that the Contractor understands the purpose and advantage of carrying out maintenance work according to a maintenance control plan he shall, as an introduction to the control plan document, set out his views as to what he believes the implementation of a maintenance control plan will achieve.
- (c) The maintenance control plan shall also contain the following:
 - (i) A summary of the repair and maintenance work to be carried out under the Contract giving details of the conditions of the various installations at the facility(ies) affected by the activities under the Contract. The Contractor shall bear in mind that maintenance work may have to be carried out before the repair phase of the installation has been entirely completed and the summary mentioned above shall therefore differentiate between maintenance work before and after the repair phase has been completed.
 - (ii) Details of how the Contractor intends to carry out the various types of maintenance work especially breakdown maintenance should breakdowns occur.
 - (iii) Details of how the call centre works, as specified in clause SA 04 as well as all statistics of breakdowns, leakages, blockages, etc. available from the call centre for the installation and the age of the installation that has been taken into account in compiling the contents of the maintenance control plan.
 - (iv) A list of organisations and persons directly involved with the Contract or whose requirements have to be taken into account during the entire Contract Period such as the Department of Public Works, the User Client, the Consulting Engineer, the Contractor, the Local Authority, etc. Each person's position within his organisation as well as the applicable phone numbers shall be given.
 - (v) Details of monthly meetings to be held with the Department of Public Works, the User Client, Contractor and Engineer;
 - (vi) Reports to be submitted after every routine inspection (all reports, checklists, breakdown records, score card results, etc. for each system of an installation shall be kept on the site in a hard cover file);
 - (vii) Procedures to address complaints and logged breakdowns;

- (viii) Details of quarterly reports, summarising all inspections, together with inspection data such as nature of test, names of persons carrying out tests and inspection results. Detail of repairs and replacements, together with testing of repaired equipment shall also be reflected in this report, and
- (ix) Assistance to be given by the Engineer with decisions regarding material, equipment and other recommendations.
- (d) The codes of practice as set out in ISO 10006 and ISO 9004 for quality systems and management shall be used as a guideline for compiling a maintenance control plan. ISO accreditation is not a requirement in terms of this Contract.
- (e) The maintenance control plan shall be upgraded when its contents are no longer representative of actual conditions.
- (f) The Contractor shall check the contents of existing Operating and Maintenance Manuals (if available) and shall update or modify and then incorporate applicable data into his own manuals. Where no manuals exist, the Contractor shall draw up his own Operating and Maintenance Manuals.

Pertinent data contained in the Operating and Maintenance Manual may be transferred to the Maintenance control plan to make it a document which can be used as an independent handbook for maintenance work.

The Contractor is referred to the contents of paragraph (a) above regarding the reproduction of data, as this shall also be applicable to data reproduced from Operating and Maintenance Manuals.

SA 05 COMMUNICATION

The maintenance control plan (Clause SA 03) will provide, after agreement between the Contractor and the Engineer, for the following communication and complaint logging procedure:

- (a) The Contractor shall establish a telephone and fax line and a cellular telephone connection to ensure that he can be reached at any time.
- (b) The Contractor shall primarily be responsible for determining the items requiring preventative, corrective and breakdown maintenance, and shall communicate this information directly to his maintenance workforce.
- (c) Should the Engineer or operating personnel of the User Client determine or suspect that preventative, corrective or breakdown maintenance is required, a call shall be logged through the call centre to reach the Contractor as soon as possible.
- (d) Reaction times will be as described in Clause SA 05.02.
- (e) All complaints of the User Client shall be reported to the Engineer via the call centre, as set out in the maintenance control plan, and the Engineer shall issue instructions to the Contractor. After the Contractor has attended to the complaint, the Engineer will provide feedback to the call centre both telephonically and via fax.

The call centre logs the details of the Engineer's call and provides feedback to the complainant.

SA 06 **PERFORMANCE MEASUREMENT**

The Contractor's performance shall be measured against the following parameters:

SA 06.01 **SPECIAL TESTING OF AN INSTALLATION**

The Engineer may at any time inspect any part of the entire installation. During Maintenance work, the Engineer shall at his discretion order special tests to be carried out on complete installations at intervals of not less than four months, to verify the satisfactory functional condition of the installation.

The Engineer reserves the right to select at random component equipment and trade practices to be tested by independent authorities for compliance with specifications as specified in this Contract document.

The Contractor shall provide all equipment, tools and instruments required for testing.

SA 06.02 **MAXIMUM MAINTENANCE DOWN-TIME**

After a complaint has been logged and forwarded to the Contractor, the Contractor shall be expected to minimise the maintenance down-time until the system component is fully operational to the satisfaction of the Engineer. Should the Contractor not respond within the maximum down-time, the Engineer may arrange, at the cost of the Contractor, for the necessary repair work to be done by others.

Should the actual down-time exceed the maximum down-time the Contractor shall be liable to a payment reduction for the difference between actual down-time and maximum down-time. This is reflected in the table below:

No.	REQUIRED MAINTENANCE	MAXIMUM DOWN-TIME ALLOWED	PAYMENT REDUCTION IF EXCEEDED
1.	Fatal Breakdown	1 hour	R1 000/hour
2.	Emergency Breakdown	12 hours	R2 000/day
3.	Ordinary Breakdown	7 days	R500/day
4.	Operational damage repair	7 days	R500/day

"Maximum down-time" shall mean the period of time allowed to repair a breakdown, and "actual down-time" shall mean the measured period from the instant when the breakdown was logged with the Contractor until the installation has been repaired to its functional specification.

"Immediate response repairs" shall imply breakdown maintenance repair work where no breakdowns are allowed at any time in terms of the Technical Specification.

"Emergency maintenance repairs" shall imply any breakdown maintenance repair work required to rectify a component or unit of the installation that disables the installation from functioning at its designed maximum requirement in terms of the Technical Specification.

"Ordinary maintenance repairs" shall imply all breakdown maintenance repair work required other than immediate response or emergency maintenance repairs.

"Operational damage repairs" shall imply all operational damage breakdown repair work required on any other damaged items not caused by normal wear and tear and shall also include and structural related breakdowns.

SA 06.03 **PERFORMANCE-BASED PAYMENT**

Remuneration for all value-related as well as all time-related preliminary and general charges shall be deemed included in the monthly maintenance payments for the various installations.

SA 06.03.01 **Score-card**

The Engineer shall inspect each installation monthly after Practical Completion of the repair phase of the installation. The Engineer shall use a score-card to measure the quality of preventative and corrective maintenance rendered by the Contractor during the preceding month, on all components that form part of the installation, in accordance with the maintenance specifications. The Engineer will record his inspection directly onto the score-card. The score-card shall serve to evaluate ten performance indicators each month.

SA 06.03.02 **Performance indicators**

Performance indicators shall be selected to measure the Contractor's service level of preventative and corrective maintenance.

The Engineer shall have the opportunity to select ten (10) performance indicators each month, which shall focus on the measurement of maintenance quality against the relevant specifications for the ensuing month. All ten (10) performance indicators are known to both the Engineer and the Contractor.

The Contractor shall aim to perform satisfactorily on all ten performance indicators. All indicators shall be selected from the scope of his normal preventative and corrective maintenance work and shall be based on the maintenance control plan and operating and maintenance manuals. The work shall either be satisfactory, or unsatisfactory, and the Contractor shall score one (1) or zero (0) respectively per indicator.

Performance indicators shall be used to focus on certain key aspects of the work and shall in no way limit the Contractor's responsibility to do all the required work.

SA 06.03.03 **Satisfactory performance**

The Engineer shall inspect the site on an arbitrary day to measure the quality of maintenance against the ten selected performance indicators. Should the Contractor score the maximum points (10) he shall receive his full maintenance payment for the installation. Should the quality of preventative maintenance, or components requiring persistent corrective maintenance be unsatisfactory according to the score-card, the Contractor may fail to achieve full payment due to a reduced service level. Each monthly payment for maintenance shall be subject to evaluation based on the score-card.

A copy of the score-card including a guideline for the use thereof is included in this Specification.

SA 07 **PREVENTATIVE MAINTENANCE ACTIONS**

The preventative maintenance actions for the various installations for preventative maintenance are described in this section. Remuneration for maintenance of the infrastructure shall be deemed included in the tendered monthly payment for the respective installations

The said maintenance and servicing work shall be executed in accordance with the relevant codes of the practise, standards, regulations, municipal laws and by-laws and the manufacturer's specifications and codes of practise.

The maintenance schedules and frequency shall be developed under the maintenance control plan to be instituted by the Contractor.

The maintenance and servicing work to be performed and executed shall include but not be limited to the items listed below. These actions and findings shall be logged and reported on the relevant approved schedules and reports forming part of the Maintenance Control Plan.

The Ports of Entry consists of various facilities, are listed in additional specification **SS: Site Specific Inventory**. The preventative actions required are divided into maintenance installations and grouped as follows:

1. Plumbing and Drainage

- SA 07.01 – Plumbing and Drainage Installations

2. Electrical Installations

- SA 07.02 – Electrical Installations

3. Fencing, Refuge Removal and Pest Control

- SA 07.03 – Fencing
- SA 07.04 – Refuge Removal and Pest Control

4. Cleaning and Site Keeping

- SA 07.05 – Cleaning and Site Keeping

5. External Water and Sewer Networks

- SA 07.06 – Water Distribution Networks
- SA 07.07 – Water Reservoirs and Storage Tanks
- SA 07.08 – Borehole Pump Systems
- SA 07.09 – Water Pump Systems
- SA 07.10 – Sewerage Networks

6. Roads and Stormwater Drainage

- SA 07.11 – Roads
- SA 07.12 – Stormwater Drainage

7. External Lighting and Standby Power

- SA 07.13 – External Lighting
- SA 07.14 – Low Voltage Distribution Networks
- SA 07.15 – Standby Power Systems

8. Heating, Ventilation and Air-Conditioning Systems

- SA 07.16 – Heating, Ventilation and Air-Conditioning Systems

9 Fire Fighting Equipment

- SA 07.17 – Fire Fighting Equipment

RAINWATER DISPOSAL SYSTEM

NO	PREVENTATIVE MAINTENANCE ITEM DESCRIPTION	MAINTENANCE FREQUENCY
1	Clean out and clear all rainwater gutters and full bores	Bi-monthly
2	Clean out and clear all catch pits, channel drains and floor outlets	Bi-monthly
3	Clean and unblock all pipes	Bi-monthly
4	Check alignments of gutters	Six-monthly
5	Check and inspect all rainwater outlet gratings and replace if necessary	Six-monthly
6	Check gutter and pipe bracketing systems	Four-monthly
7	Check and inspect manhole covers and frames for damage or missing	Monthly

SOIL AND WASTEWATER DRAINAGE SYSTEM

NO	PREVENTATIVE MAINTENANCE ITEM DESCRIPTION	MAINTENANCE FREQUENCY
1	Check, inspect and clean out all gullies	Monthly
2	Replace broken or missing gully gratings	Monthly
3	Check, inspect, repair or replace all manhole covers and frames	Bi-monthly
4	Check, inspect and repair manhole benching	Four-monthly
5	Check, inspect, repair or replace all inspection eyes, end caps and cleaning eye covers	Monthly
6	Check, inspect, repair or replace all bracketing systems	Four-monthly
7	Check, inspect, report and unblock any blockage that occurs	Monthly
8	Check, inspect, service, repair/replace all vacuum and two-way vents	Four-monthly

DOMESTIC WATER DISTRIBUTION AND RETICULATION SYSTEMS

NO	PREVENTATIVE MAINTENANCE ITEM DESCRIPTION	MAINTENANCE FREQUENCY
1	Check, inspect, report and repair all leaks	Monthly
2	Replace all valve gaskets, gland packings and seals	Annually
3	Check, inspect, repair and readjust all pressure-reducing valves	Annually
4	Check, inspect and test operation of all valves on site	Four-monthly
5	Clean out all strainers	Monthly
6	Check, inspect, service test and repair/replace all safety and expansion release valves	Six-monthly
7	Check, inspect, repair or replace all bracketing systems	Four-monthly
8	Check, inspect, service, repair/replace all air release valves and vacuum breakers	Four-monthly
9	Check, service, repair or replace all ball float valves	Four-monthly
10	Check, inspect, test, service and repair all geyser installations	Four-monthly
11	Check, inspect, test, service and repair all non-return valves	Four-monthly

SANITARY AND BRASSWARE EQUIPMENT

NO	PREVENTATIVE MAINTENANCE ITEM DESCRIPTION	MAINTENANCE FREQUENCY
1	Inspect, repair/replace WC seats and covers	Monthly
2	Replace all tap washers	Annually
3	Replace all tap gland packings	Annually
4	Check, inspect, repair, fix and where necessary replace sanitary ware mountings and brackets	Four-monthly
5	Check, inspect, service, repair/replace all cistern flushing mechanisms	Monthly
6	Check, inspect, service, repair/replace all brassware	Four-monthly
7	Check, inspect, service, repair/replace all sanitary ware	Four-monthly
8	Check, inspect, service, repair, readjust all flushing valves	Four-monthly
9	Repair all flushing valve internal parts with replacement kits	As occur
10	Stained equipment to be cleaned with approved manufacturer's cleaning agent	Six-monthly
11	Check, inspect, report and repair all leaks	Monthly
12	Check, inspect, repair/replace all shower gratings	Four-monthly
13	Check, inspect, repair, service, replace all missing valves	Six-monthly
14	Replace missing tap handles	As occur
15	Replace missing bath, basin, sink, plug, etc	As occur

SA 07.02 ELECTRICAL INSTALLATIONS

SA 07.02.01 Monthly maintenance

Check operative protective and monitoring devices.

Verify operation of switching elements and meters

Check lamp operation

Measure phase voltages and currents in distribution board and record values in Record book

Inspect and repair the following:

- any visible damage to the installations
- setting of protective and monitoring devices

Ensure upkeep of the labelling of the distribution board, equipment, cabling and wiring

Ensure presence of labelling on face plates or bodies of light switches, socket, outlets and isolators.

SA 07.02.02 Annual maintenance

Service all luminaries, distribution boards, socket outlets, isolators, light switches, etc.

Witnessed testing of all earth leakage protection units on all socket outlet units.

Visually inspect the following and repair if required:

- Connection of cables and conductors including earthing and bonding.
- Presence of appropriate devices for isolation and switching.
- Correct connection of socket outlets, light switches, isolators, lamp holders, etc.

SA 07.03 FENCING

Maintenance shall include replacing of components, fixing defects, tightening, redressing or any other actions or rectifying measures necessary for complete operation of the fencing installation. This shall include keeping the installation free of litter or any other element interfering with the function or integrity of the system, 0,5 wide on each of the fence.

SA 07.03.01 **Monthly maintenance**

- Clearing the fence route.
- Inspect and repair any visible damages to installation.
- Corrosion protection on fencing, gates and tubular posts.
- Inspect fence for tightness to straining wire redress or repair if necessary.
- Inspect tension of straining wires and repair if necessary.

SA 07.04 REFUGE REMOVAL AND PEST CONTROL

The whole of the site within the perimeter fences of the Kosi Bay Port of Entry shall be kept free of litter, rubble and solid waste. Litter and rubble (solid waste) shall be collected, stored by the Contractor and removed from site as frequently as necessary

Removal of household solid waste to the municipal dump site will be carried out by the Contractor. The cleanliness of the site will be the sole responsibility of the Contractor.

Garden refuse may be amongst the litter rubble to be collected and disposed off by the Contractor.

The tendered monthly payment for maintenance for site keeping shall be deemed to include to *continuously* collecting litter and rubble across the entire site, placing it in a central solid waste container (skip) and removing it off-site to a formal waste facility.

NO	ITEM DESCRIPTION	MAINTENANCE FREQUENCY
1	Cleaning out all waste bins in public areas	Daily
2	Cleaning out all waste bins at residential units	Weekly

3	Collect litter, rubble and other waste across the entire site within the perimeter fences of the Kosi Bay Port of Entry and place in central solid waste container (skip)	Continuously
4	Re-fill all rodent bait stations	Monthly
5	Internal pest, termite and rodent control	Monthly
6	External pest, termite and rodent control	monthly

SA 07.05 CLEANING AND SITE KEEPING

The Contractor shall further be responsible for supplying and maintaining the grass cutting equipment in a perfect working condition.

SA 07.05.01 Site keeping

Site keeping activities will include providing all equipment and consumables necessary for site keeping, such as lawn mowers, brush-cutters, rakes, fuel, shovels, etc, and shall be deemed included in the monthly maintenance cost for Site keeping and Cleaning.

NO	ACTION	FREQUENCY
1	Cleaning out of <i>and supply</i> of black waste bin bags to all waste bins in public areas	Daily
2	Cleaning out of all waste bins in residential areas	Weekly
3	Emptying the solid waste skip and removal of waste off-site to approved dumping site	At least monthly (when required)
4	Watering of plants, shrubs, grass and trees (<i>only</i> if water is readily available and instructed for by Engineer)	daily
5	Removal of weeds	Weekly
6	Clearing of weeds and grass along the edges of paved areas	Weekly
7	Cutting of grass. Lawns: No grass to exceed the length of 40mm. Open areas: No grass shall exceed the length of 100mm.	At least weekly (when required)
8	Trimming of dense shrubs	2 Monthly
9	Removal of undesirable shrubs	Quarterly
10	Trimming of trees where branches cause obstruction	Quarterly
11	Collecting of litter and foreign objects	Continuous Daily

SA 07.05.02 Cleaning tasks for Offices, Ablutions and Support Facilities

The Contractor shall be responsible for cleaning ablution facilities as frequently as necessary to maintain them in a clean and healthy condition. The actions outlined below serve only as a benchmark for the cleaning and maintaining of the facilities.

Cleaning activities will include providing all cleaning agents and equipment necessary for cleaning. Consumables such as toilet paper, sanitizers, bin liners of she-bins, paper towels and hand wash soap will be replaced by the Contractor as and when necessary and shall be deemed include in the monthly maintenance cost for Site Keeping and Cleaning. It can be assumed that toilet paper will be consumed at 3 rolls per toilet (public ablution) per day (single ply), and hand washing soap at 2 litres per soap dispenser per month.

CLEANING TASKS FOR OFFICE AND SUPPORT FACILITIES

NO	ACTION	FREQUENCY
1	Disinfect and cleaning of floors in public passage areas and open plan offices	Daily (before the opening of the port of entry)
2	Disinfect and cleaning of counter tops and under counter shelves	Daily (before the opening of the port of entry)
3	Emptying of waste baskets in offices and service buildings	Daily
4	Disinfect and cleaning of office floors / Vacuum of carpets	Weekly
5	Washing of windows and dusting of window sills and ledges	Weekly
6	Clean and polish all fittings	Weekly
7	Washing of walls	Weekly
8	Dusting of interior of the building to remove dust and spider webs	Weekly

CLEANING TASKS FOR ABLUTION FACILITIES

NO	ACTION	FREQUENCY
1	Disinfecting, cleaning and ensuring that the ablution facilities are in a pristine sanitary condition at all times	Continuous 7 days a week
2	Disinfect, washing and cleaning of floors	Continuous 7 days a week
3	Empty and clean all waste receptacles	Continuous Daily
4	Clean and sanitise all bowls, basins and urinals	Continuous Daily

5	Clean, sanitise and polish all fittings and mirrors	Continuous Daily
6	Sanitising and cleaning out of she-bins	Continuous Daily
7	Washing of windows and dusting of window sills, ledges, pipes and fittings	Weekly
8	Disinfecting and washing of walls	Monthly
9	Dusting of interior of the building to remove dust and spider webs	weekly

SA 07.06

WATER DISTRIBUTION NETWORKS

NO	ROUTINE PREVENTATIVE MAINTENANCE ITEM DESCRIPTION	MAINTENANCE FREQUENCY
1	Water Audit	Monthly
2	Clean out all strainers	Monthly
3	Check, inspect, repair or replace all bracketing systems	Four-monthly
4	Part repairs to piping, fittings and equipment	Annually

CLEANING OF EXISTING PIPELINES

NO	ROUTINE PREVENTATIVE MAINTENANCE ITEM DESCRIPTION	MAINTENANCE FREQUENCY
1	Remove silt, debris and loose lime deposits from within pipeline where required by scouring	Annually
2	Do general cleaning in areas where leakage has occurred	Six-monthly

FITTINGS AND STRUCTURES

NO	ROUTINE PREVENTATIVE MAINTENANCE ITEM DESCRIPTION	MAINTENANCE FREQUENCY
1	Replace all valves gaskets, gland packings and seals	Annually
2	Check, inspect, service, repair and readjust all pressure reducing valves	Annually
3	Check, inspect and test operation of all valves on site	Four-monthly
4	Check, inspect, service, test and repair/replace all safety and expansion release valves	Six-monthly
5	Check, inspect, service, test and repair/replace all air release valves and vacuum breakers	Four-monthly
6	Check, service, repair or replace all ball float valves	Six-monthly
7	Clean out structures of debris	Four-monthly

8	Check, inspect, test, service and repair/replace all non-return valves	Four-monthly
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SA 07.07

WATER RESERVOIRS AND STORAGE TANKS

NO	ROUTINE PREVENTATIVE MAINTENANCE OF PRESSED STEEL TANKS AND ANCILLARIES	MAINTENANCE FREQUENCY
1	Check for and repair all leaks. Repair leaks.	Monthly
2	Corrosion protection.	Annually
3	Clean and sterilise pressed steel tanks.	annually

SA 07.08

BOREHOLE PUMP SYSTEMS

The borehole pumping equipment and systems shall be serviced and maintained to keep it in perfect functional condition.

NO	ITEM DESCRIPTION	MAINTENANCE FREQUENCY
1	Service submersible pumps	Annually
2	Clean filters/ strainers	Three-monthly
3	Check V-belts (Lister Engine)	Monthly
4	Measure rest water-level	Three-monthly
5	Check and clean MCC panel	Three-monthly
6	Check electric motors	Monthly
7	Monitor supply to storage tanks from borehole	Daily

SA 07.09

WATER PUMP SYSTEMS

Maintenance shall include all repairs, replacing of components or materials, routine setting or any other actions necessary to ensure a perfect functional condition

NO	ROUTINE PREVENTATIVE MAINTENANCE OF CLEAR-WATER PUMP SYSTEMS	MAINTENANCE FREQUENCY
1	Check, service, repair and clean all pumps	Annually
2	Corrosion protect pumps, motors and surface piping	As required
3	Check, inspect, report and repair all leaks	Monthly
4	Check and lubricate moving parts	Four-monthly

5	Operation and supply of diesel for water pump at Kosi Bay Port of Entry	Daily
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SA 07.10**SEWAGE NETWORKS****SA 07.10.01****Sewage Network Systems**

NO	ROUTINE PREVENTATIVE MAINTENANCE ITEM DESCRIPTION	MAINTENANCE FREQUENCY
1	Check, inspect, repair or replace all manhole covers and frames and builder's work to manholes	Four-monthly
2	Check, inspect and repair manhole benching	Four-monthly
3	Check, inspect, repair or replace all inspection eye, end caps and cleaning eye covers	Four monthly
4	Check, inspect, report and unblock any blockages that occurs	Monthly
5	Systematically mechanical cleaning of all sewer manholes and unblocking of all sewer line	Monthly
6	Check, inspect, repair/replace sewer pipes where necessary to maintain good working condition at all times	Four-monthly

SA 07.11**ROADS**

All components of a roadway infrastructure, which includes the road surface, underlying layer works, kerbing, road markings, road signs and sidewalks, shall be maintained during the Contract.

Maintenance shall all repair work, replacing of components, fixing of defects, or any other actions or rectifying measures necessary for complete and safe functioning of the road infrastructure.

Maintenance of the road infrastructure shall also include all other actions related to maintenance, such as temporary accommodation of traffic through and around work areas, and provision of temporary accesses to properties.

NO	ROUTINE PREVENTATIVE MAINTENANCE ITEM DESCRIPTION	MAINTENANCE FREQUENCY
1	Check, inspect, repair all surface failures	Two-monthly
2	Check, inspect, repair all pavement failures	Six-monthly
3	Inspect and repair gravel shoulders	Six-monthly
4	Check, inspect, repair, repaint, replace road markings	Six-monthly
5	Check, inspect, repair, repaint, replace road markings	Annually
6	Remove loose material from the surface of parking areas by means of mechanical brooming	monthly

SA 07.12**SRORMWATER DRAINAGE**

All components of the stormwater drainage infrastructure, including surface as well as underground components, shall be maintained during the contract.

Maintenance shall include all repair work, replacing of components, fixing of defects, cleaning, or any other actions or rectifying measures necessary for complete and safe functioning of the stormwater drainage infrastructure.

Maintenance on the stormwater drainage infrastructure shall also include all other actions related to maintenance, such as temporary drainage features and temporary accommodation of traffic.

NO	ROUTINE PREVENTATIVE MAINTENANCE ITEM DESCRIPTION	MAINTENANCE FREQUENCY
1	Check, inspect, repair or replace all manhole or inlet covers, grids and frames and builder's work to manholes.	Four-monthly
2	Check, inspect and repair manhole and inlet benching.	Four-monthly
3	Check, inspect, report and unblock any blockage that occurs.	Monthly
4	Clean all vegetation and debris accumulated in inlets and around stormwater pipes / culverts.	monthly

SA 07.13 **EXTERNAL LIGHTING SYSTEMS**

Maintenance shall include all repairs, replacing of components or materials, routine setting or any other actions necessary to ensure a perfect functional condition. The following shall be used as guidelines to ensure effective maintenance:

SA 07.13.01 **Area Lighting**

Monthly Maintenance

- Verify operation of switching element.
- Check lamps.
- Check mast door for weatherproof seal.
- Check earth connection at footing, record value.

Annual Maintenance

- Service all luminaries
- Measure earth resistance of electrode.
- Measure earth resistance of trench earth.
- Record values in record book.

SA 07.13.02 **Security lighting**

Monthly Maintenance

- Verify operation of switching element.
- Check lamps.
- Check that all pole covers are secure.
- Visually check distribution kiosk.

Annual Maintenance

- Measure phase voltages and line currents in distribution kiosk or local distribution board.
- Do vermin protection.
- Service all luminaires.
- Paint timber poles with creosote.

SA 07.13.03 Street Lighting

Monthly Maintenance

- Verify operation of switching element.
- Check lamps.
- Check that all pole covers are secure.
- Visually check distribution kiosk

Annual Maintenance

- Measure phase voltages and line currents in distribution kiosk.
- Do vermin protection.
- Service all luminaires and distribution kiosks.
- Paint timber poles with creosote.

SA 07.14 LOW VOLTAGE RETICULATION

SA 07.14.01 Monthly maintenance

- Verify operation of volt and ammeters.
- Check that access covers are secure.
- Visually check distribution board.
- Check all connections.
- Check operation of switching timers.
- Inspect and secure access doors and covers.
- Inspect distribution kiosks.
- Inspect overhead conductors, insulators and poles.
- Monthly electricity meter readings.

Annual maintenance

- Service all low voltage boards.
- Measure phase voltages and line currents in low voltage distribution board.
- Record values in record book and Maintenance Control Plan.
- Service all distribution and metering kiosks.
- Service overhead distribution system.

SA 07.15 STANBY POWER SYSTEMS

SA 07.15.01 Weekly maintenance

1. Simulate a power failure **EVERY FRIDAY** at **11:00** to ensure generator is fully operational. Test run shall be undertaken, if possible on load, and running hours, diesel levels, volt, ampere and frequency readings recorded.

SA 07.15.02 Monthly maintenance

1. The following activities shall be executed during the monthly generator inspections:
 - Check oil level and top up as required.
 - Check oil viscosity for dilution by water or fuel.
 - Check starter battery terminals and apply contact grease.
 - Check battery cables for damage and secure termination.
 - Check battery electrolyte.
 - Check battery voltage and record.
 - Check battery voltage drop during engine cranking and record.
 - Check battery charger operation after cranking test.
 - Check starter motor for abnormal noise.
 - Check diesel engine while running for noise, vibration or loose components.
 - Check all flexible hoses for leaks, corrosion and ageing.
 - Check all engine V-belts.
 - Monitor engine / alternator coupling for noise.
2. Verify that the alarm functions are operational by simulation:
 - Low oil pressure.
 - High engine temperature.
 - Low engine coolant level.
 - Abnormal speed.
 - Synchronising failure (if applicable).
 - Cooling water pump failure.
 - Cooling tower fan failure (if applicable).
 - Low battery voltage.
 - Fuel pump failure.
 - Low fuel bulk tank (if applicable).
3. Test that following alarms trigger correctly by creating the alarm condition:

• Unit not in auto	: turn selector switch to manual or test
• Battery charger failure	: switch off AC supply to battery charger
• Auxiliary supply failure	: switch off auxiliary power supply
4. Alternator shall be checked for accumulation of dust on the regular and for any loose components.
5. Test run shall be undertaken, if possible on load, and volt, ampere and frequency readings recorded.
6. Alternator shall be cleaned and switched back into 'auto' mode
7. Complete standby Generator monthly log sheets
8. Record running hours, diesel consumption etc in the following prescribed format (example):

	Previous Measurement	This Measurement	Consumption	Average Per day
Daté:	01-Apr-2016	03-May-2016	Total	32 days
			(litres)	(ltrs/day)
Diesel Tank Meter Reading (litres)	26542.2	30546.2	4004.0	125.1
<u>Running Hours:</u>			(hours)	(hrs/day)
Generator 1 (hrs)	1245.6	1604.2	358.6	11.2
Generator 2 (hrs)	2535.6	2927.6	392.0	12.3
Total Generator hours (hrs)			750.6	
Average Diesel consumption			5.3	ltrs/hr

SA 07.15.03 Annual maintenance

The following activities shall be executed in addition to the monthly maintenance work after every twelve months.

1. Drain an oil sample and submit for analysis to establish need for an oil change.
Fix test report in Record book
2. Record output parameters while on load.
3. Record running hours
4. Replace oil and fuel filters if not replaced during 1 year as part of 200hrs service).
5. The cooling system shall be drained, flushed and refilled with water and prescribed water conditioner.

SA 07.16 HEATING, VENTILATION AND AIR-CONDITIONING SYSTEMS

SA 07.16.01 Monthly maintenance

REFERENCE NUMBER	ACTION
S-1	Clean filters, replace if required
S-2	Inspect air intake and discharge for blockages
S-3	Check all refrigerant, drainage pipes for damage and leaks
S-4	Check sight glass: clear or flash gas
S-5	Carry out visual inspection of condenser coil for blockages and correct operation of fans
S-6	Carry out visual inspection of evaporator coil for blockages and correct operation of supply fan
S-7	Check enclosure for damages
S-8	Check electric motor running temperature
S-9	Check electric connections for tightness
S-10	Test thermostat and control operation
S-11	Clean condensate tray and test drainage for proper operation
S-12	Check cooling and heating cycle

SA 07.16.02 Bi-Annual maintenance (6-months)

REFERENCE NUMBER	ACTION
S-1	Clean filters, replace if required
S-2	Inspect air intake and discharge for blockages
S-3	Check all refrigerant, drainage pipes for damages and leaks
S-4	Check sight-glass: clear or flash gas
S-5	Carry out visual inspection of evaporator coil for blockages and correct operation of fans
S-6	Carry out visual inspection of evaporator coil for blockages and correct operation of supply fans
S-7	Check enclosure for damages
S-8	Check electric motor running temperature
S-9	Check electric connections for tightness
S-10	Test thermostat and control operation
S-11	Clean condensate tray and test drainage for proper operation
S-12	Check filter/dryer
S-13	Check superheat and functioning of expansion valve
S-14	Check operation of HP and LP
S-15	Check operation of controllers
S-16	De-rust, neutralize and touch up paint work
S-17	Check cooling and heating cycle
S-18	Clean evaporator and condenser oil chemically
S-19	Clean all filter frames and seals
S-20	Check fan motor and compressor current
S-21	Check and test overload settings
S-22	Lubricate all bearings

SA 17.17 FIRE FIGHTING EQUIPMENT

The routine preventative maintenance work to be performed and executed shall include, but not be limited to the items listed below under the respective headings. These actions and findings shall be logged and reported on the relevant approved schedules and reports.

SA 17.17.01 Fire Extinguisher: Monthly Maintenance

- Check charge of the extinguisher.
- Check the condition of the discharge.
- Check the mechanism condition of the discharge hose.
- Update the log entry on the extinguisher.
- Log maintenance schedule
- DCP extinguishers: Check charge and replace powder at prescribed intervals.
- CO₂ extinguisher: Check charge.

The following mandatory periodical services shall be measured for payment separately and does not form part of the remuneration for monthly preventative maintenance items

SA 08.01 Log all water meter readings and calculate losses on a monthly basis and report in the following format (example):

	Previous Measurement	This Measurement	Consumption	Average per day (kl)
Date:	01-Apr-2016	03-May-2016	Total	32 days
WATER SUPPLY: (kl)			(kl)	(kl/day)
Main Supply (input)	278540.6	279235.5	694.9	21.716
Admin	15642.0	15690.0	48.0	1.500
Cell Block	15674.0	15721.5	47.5	1.484
House A1	18569.5	18610.8	41.3	1.291
House A2	32598.0	32650.5	52.5	1.641
House B1	13349.4	13396.0	36.6	1.144
House B2	89562.5	89620.7	58.2	1.819
House B3	98685.3	98721.1	35.8	1.119
Ablution A	85684.0	85723.2	39.2	1.225
Ablution B	53265.5	53397.6	132.1	4.128
Building A	25689.2	25790.2	101.0	3.156
Building B	26858.8	269521.1	93.3	2.916
Total consumption Output)			685.5	21.422
Loss (Input – Output)			9.4	0.294
PORTABLE WATER SUPPLY:				
Water supply within standards	Yes/No	Yes/No		
Water test report attached	Yes/No	Yes/No		

SA 08.02

Sample potable water supply and chemical analyses to be provided by an authorised company on a monthly basis. The water report should be provided monthly in the following format, in accordance with SANS241:

SANS 241:2006	Unit	Class 1 (recommended values)
Chemical report		
pH		5.5 tot 9.5
Electrical conductivity	mS/m	150
Calcium as Ca	mg/L	150
Magnesium as Mg	mg/L	70
Sodium as Na	mg/L	200
Potassium as K	mg/L	50
P-Alkalinity	mg/L	
M-Alkalinity	mg/L	
Fluoride as F	mg/L	1
Chlorine as Cl	mg/L	200
Bromide as Br	mg/L	**3
Nitrate as N	mg/L	10
Phosphate as PO ₄	mg/L	
Sulphate as SO ₄	mg/L	400
Calcium Hardness	mg/L	375
Magnesium hardness	mg/L	287
Total hardness as CaCO ₃	mg/L	662
Aluminium as Al	mg/L	0.300
Arsenic as As	mg/L	0.010
Chromium as Cr	mg/L	0.100
Copper as Cu	mg/L	1.000
Iron as Fe	mg/L	0.200
Manganese as Mn	mg/L	0.100
Lead as Pb	mg/L	0.020

Zinc as Zn	mg/L	5000
Bacteria report		
Heterotrophic plate count	cfu/ml	100
Total coliform	cfu/100ml	0
e. coli	cfu/100ml	0

SA 08.03 Log all electricity meter readings on a monthly basis in the following format:

	Previous Measurement	This Measurement	Consumption	Average per day (kl)
Date:	01-Apr-2016	03-May-2016	Total	32 days
ELECTRICITY: (kWh)			(kWh)	(kWh/day)
Main Supply	124899.0	145865.9	20966.9	655.2
Admin	135899.0	1523.3	167.3	5.2
Cell Block	3596.5	3658.2	61.7	1.9
House A1	8976.0	9256.3	280.3	8.8
House A2	9686.0	9785.2	99.2	3.1
House B1	9565.0	10152.2	587.3	18.4
House B2	3594.0	4512.3	918.3	28.7
House B3	3594.0	4689.2	1095.2	34.2
Ablution A	3598.0	4154.3	556.8	17.4
Ablution B	5975.0	8785.3	2779.3	86.9
Building A	5698.0	8520.0	2822.0	88.2
Building B	5689.0	8654.2	2965.2	92.7

- SA 08.04 Cleaning and sterilization of water storage reservoir/tank to be performed annually.
- SA 08.05 Remove and empty waste from skip to external waste disposal site on a weekly basis.
- SA 08.06 De-sludge and cleaning of septic tanks as and when required and instructed for by the Engineer.
- SA 08.07 Service submersible pumps for borehole installations annually.
- SA 08.08 Statutory annual servicing of fire extinguishers.
- SA 08.09 Annual Pest control (internal and external).

SA 09 FREQUENT SERVICING OF INSTALLATIONS**SA 09.01 Wastewater Treatment**

General frequent servicing of the wastewater treatment works shall be done in accordance with this specification.

SA 09.01.01 General

The general frequent servicing work to be performed and executed shall include, but shall not be limited to the items listed in the table below:

Item	Description	Frequency
01	General housekeeping: keeping site in neat and acceptable condition.	Daily
02	Control access to the site.	Daily
03	Maintain safety conditions on site.	Daily
04	Log and report spills, pollution events, power failures, extraordinary process phenomena, etc. check auto-reset of power to mechanical equipment	Event
05	Develop a feel for effective treatment by means of visual indicators of good/bad plant performance: colour, odour, foam, algae growth, aerator spray patterns, effluent clarity, bubbles, floating material, solids accumulation, flow patterns, turbulence, touch.	Daily
06	Record operating hours and kW-hours of all mechanical equipment	Daily
07	Check operation of all valves and sluices	monthly

SA 09.01.02 Specific Processes and Units

The specific frequent servicing work to be performed and executed shall include, but shall not be limited to the items listed in the table below:

Item	Operation of Specific Processes and Units	Frequency
01	Septic tanks and French drains	
	01 Check and log scum, water and sludge depths in tank	6 Months
	02 Empty tank as specified frequencies (max. 3years) or when full	3 Years
	03 Inspect French drain for accumulation of water or for seepage to surface. If positive, repair again	3 Months
	04 Clean connecting pipes and accessories and remove tree and grass roots from pipes	3 Months

02		Inlet works	
	01	Hand-raked screens: remove screenings rags, plastics, etc), ensuring that only degradable material is passed on to subsequent process units. (Last removal after evening peak flow	2 hours during day
	02	Wash screenings and grit, and return degradable material to treatment train	Hourly
	03	Dispose of screenings and grit by on-site burial	Daily
03		Oxidation/maturation ponds	
	01	Remove floating material from trap at an inlet pond and dispose of by off-site removal.	Daily
	02	Remove tree and grass roots from verges of ponds.	Monthly
	03	Check leak detection facilities (if provided) for signs of leakages	Monthly
	04	Ensure that surface growths are not accumulated in ponds.	monthly
04		Settling tanks	
	01	Scour settling tank and check for clumps of floating sludge.	Daily
	02	Remove scum and clean overflow weirs.	Daily
	03	Clean submerged portion of settling tank walls by pushing settled sludge on inclined surfaces down to the apex of the cone.	Monthly
05		Sludge drying beds	
	01	Apply sludge to drying beds in depths to suit climatic conditions, and remove when adequately dried.	Daily
	02	Keep sludge beds free of weed growth.	Daily
	03	Replenish filter media when required.	Event
06		Sludge disposal facilities.	
	01	Remove tree grass roots from verges of sludge lagoon.	Monthly
	02	Check leak detection facilities.(if provided) for signs of leakage from lagoon.	Monthly
	03	Maintain hygienic conditions at sludge handling facilities.	Daily
07		Pump stations	
	01	Check operation and correct switching of pumps.	Daily
	02	Clean pump sumps.	Weekly
08		Bio filters	
	01	Check operation of dosing siphons and snifter pipes.	Daily
	02	Check operation of flow distribution pipes.	Daily
	03	Flush flow distribution pipes.	Weekly
	04	Check spread of flow and clean distribution nozzles/holes	Weekly
	05	Evaluate, by means of measurement and calculation, flushing rates, frequency and duration.	6 Monthly
	06	Inspect health of biological growth on filter media.	Weekly
	07	Check occurrence of blockages, ponding and nuisance conditions on filter media.	Monthly
	08	Check operation of dosing and re-circulation pumps.	Daily
09		Chemical phosphate removal	
	01	Check operation of dosing equipment.	Daily
	02	Select chemicals and dosing rates by means of beaker tests. Ensure correct calculation of dosage concentration and dosing rates.	6 Months
	03	Check, by means of measurement and calculation, the accuracy of dosing rates and their control proportion to flow rate.	Daily
	04	Manage provision, storage and control of chemicals.	Daily
	05	Ensure continuous dosing – avoid pulsing of dosing stream.	Daily
10		Disinfection	
	01	Check operation of dosing facilities.	Daily
	02	Clean chlorine contact tank.	4 Months
	03	Ensure chlorine-dosing proportional to flow rate.	Weekly

11	Effluent disposal facilities	
	01	Oxidation ponds: manage irrigation of effluent as means of disposal.
	02	Ensure erosion free discharge to receiving water body.
		Daily
		Monthly

SA 09.01.03 Monitoring and Reporting

The contractor shall keep a written record of all measurements taken and analyses done for process control and reporting to relevant authorities in terms of legal or project requirements.

A logbook shall be kept for daily recording of failures, malfunctions, spills, pollution events, power failure and detail of measures taken.

SA 10 MEASUREMENT AND PAYMENT**SA.01 MAINTENANCE OF A COMPLETE INSTALLATION Unit: point**

The unit of measurement shall be a point. Each month shall represent a maximum of ten points and a minimum of zero points, depending on the performance and quality of maintenance. Ten points per month, determined by using the tendered rate per point, shall include full compensation for all liabilities and obligations described or implied in the Contract document and deemed by the Contractor to be applicable to the maintenance phase of the Contract, for the complete monthly maintenance of an entire installation, and all appurtenant works deemed to form part thereof, as defined in the relevant Technical or Particular Specifications.

tendered Contract Price) shall also include full compensation for complete preventative, corrective and breakdown maintenance (as defined in this General Maintenance Specification), including full compensation for all costs related to resetting, repair, procurement, supply, delivery, replacement, protecting, furnishing, installing, testing and commissioning of all items and material required to maintain the complete installation in a perfect functional condition. The only items not to be included in the rate for monthly maintenance points are:

1. Supply, delivery, installation and testing of special equipment/materials that will be measured elsewhere, and
2. Special testing of an installation.

Different installations shall be listed in the Schedule of Quantities, in accordance with the definition of each installation.

Although ten points per month shall include full compensation for preventative, corrective and breakdown maintenance, the Contractor might fail to achieve all points applicable in the event of unsatisfactory performance, in which case he shall still perform all maintenance requirements according to specification, but at his own cost where a reduction in points awarded is insufficient to cover his cost.

SA.02 ADDITIONAL TESTS:

SA.02.01 Where ordered by the Engineer Unit: rand (R)

SA.02.02 Charge required by the Contractor on subitem SA.03.01 above Unit: %

An amount has been allowed in the Schedule of Quantities to cover the cost of additional tests required by the Engineer. The Engineer will have the sole authority to spend the amount or part thereof under subitem SA.03.01.

The tendered percentage under subitem SA.03.02 will be paid to the Contractor on the value of each payment made to the approved testing authority.

SA.03 **PAYMENT REDUCTION DUE TO EXCEEDING OF MAXIMUM ALLOWABLE DOWN-TIME DURING EMERGENCY BREAKDOWN**Unit: days

The unit of measurement shall be the number of days, in excess of 36 hours, during which a component of an installation was in a disfunctional condition that required emergency repairs.

The negative fixed rate shall include full compensation for the User Client's loss in productivity and, multiplied by the number of days measured, shall be deducted from the certified amount due to the Contractor.

SA.04 **PAYMENT REDUCTION DUE TO EXCEEDING OF MAXIMUM ALLOWABLE DOWN-TIME DURING ORDINARY BREAKDOWN**Unit: days

The unit of measurement shall be the number of days, in excess of 7 days, during which a component of an installation was in a disfunctional condition that required ordinary repairs.

The negative fixed rate shall include full compensation for the User Client's loss in productivity and, multiplied by the number of days measured, shall be deducted from the certified amount due to the Contractor.

SA.05 **PAYMENT REDUCTION DUE TO EXCEEDING OF MAXIMUM ALLOWABLE DOWN-TIME DURING OPERATIONAL DAMAGE BREAKDOWN**Unit: days

The unit of measurement shall be the number of days, in excess of 7 days, during which a component of an installation was in a disfunctional condition that required ordinary repairs.

The negative fixed rate shall include full compensation for the Client's loss in productivity and, multiplied by the number of days measured, shall be deducted from the certified amount due to the Contractor.

SA.06 **CALL-OUT FOR REPAIR OF EMERGENCY BREAKDOWN (24 Hours)**Unit: No

The Unit of measurement shall be number. The Contractor will be remunerated for the number of call-out trips to the site, in order attend to the repair of an emergency breakdown logged (Before Access to a Site) with him by the Engineer. The tendered rate shall provide full compensation for all travel, accommodation and travel-time cost to and from the site. Remuneration for material and labour cost is deemed to be included under the "maintenance of a completed installation" payment item in the schedule of quantities, based on the points system and measured monthly.

DEPARTMENT OF PUBLIC WORKS

MAINTENACE SCORE-CARD

CONTRACT NUMBER: WCS _____



CONTRACT: _____

CONTRACTOR: _____

ENGINEER: _____

INSTALLATION: _____ MONTH: _____ OF 36

The following components of the installation were selected by the contractor at the Monthly Operation Meeting nr. _____ as performance indicators to be tested according to specification:

1 ENGINEER'S SELECTION

- 1.1 _____
- 1.2 _____
- 1.3 _____
- 1.4 _____
- 1.5 _____
- 1.6 _____
- 1.7 _____
- 1.8 _____
- 1.9 _____
- 1.10 _____

0	1

TOTAL SCORE: _____

Engineer's Representative

Signature

____ / ____ / ____

Date

GUIDELINE FOR THE USE OF THE MAINTENANCE SCORE-CARD

The score-card and performance indicators must be used as a maintenance management tool. The aim with each score-card is to ensure that:

- (a) the project focuses on key aspects of maintenance per month;
- (b) the Contractor receives payment for his work, and
- (c) the Employer receives value for money and a sustained high level of service.

Performance indicators must be selected to measure the Contractor's service level of preventative and corrective maintenance that will be based on the Maintenance Control Plan and the Operating and Maintenance Manuals (containing information specified in the Contract documentation).

For each specific installation, different performance indicators must be defined each month based on the content of the maintenance in relation to the scope of maintenance work per installation and must be based on the Contractor's service level record on preventative and corrective maintenance.

Breakdowns must be dealt with if and when necessary by logging of the breakdown and monitoring the downtime.

The Contractor and the Engineer must agree on all performance indicators at an occasion prior to the month during which the Contractor's performance (service level of maintenance) will be measured.

ADDITIONAL SPECIFICATION**SB OPERATING AND MAINTENANCE MANUALS****CONTENTS**

SB 01	SCOPE
SB 02	PROCEDURE FOR SUBMISSION OF MANUALS
SB 03	FORMAT OF OPERATING AND MAINTENANCE MANUALS
SB 04	CONTENTS
SB 05	MEASUREMENT AND PAYMENT

SB 01 SCOPE

The Contractor shall be responsible for the compilation of complete sets of Operating and Maintenance Manuals. A separate Operating and Maintenance Manual shall be supplied for each installation where required and as defined in the Additional Specification SA: General Maintenance.

SB 02 PROCEDURE FOR SUBMISSION OF MANUALS**SB 02.01 SUBMISSION OF DRAFT MANUALS**

A draft copy of each Operating and Maintenance Manual shall be submitted to the Engineer prior to safety inspection of the installation. Approval of the draft Operating and Maintenance Manuals shall be a prerequisite for commencement of the safety inspection in terms of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)

The manuals will be reviewed and checked by the Engineer and returned to the Contractor with comments, where necessary. The Contractor shall make the necessary changes and amendments to the manuals to incorporate the Engineer's comments.

SB 02.02 DEVELOPMENT OF FINAL MANUALS

A final draft copy of each Operating and Maintenance Manual shall be submitted to the Engineer at least one week prior to commencement of Day 1 tests on commissioning. This set of manuals will not be accepted without the Contractor's verification of the information contained in the manuals and the professional language editing thereof. The Engineer shall return the manuals to the Contractor, who shall make the final corrections. The Engineer will, however, not be responsible for the quality control on manuals. Approval of final Operating and Maintenance Manuals shall be a prerequisite for issuing of a Certificate of Practical Completion for repair of the installation.

After the Engineer has approved the final Operating and Maintenance Manuals, the Contractor shall provide the Engineer with seven (7) sets of the manuals. Approval of the final Operating and Maintenance Manuals shall be a prerequisite for issuing of a Certificate of Completion.

SB 03 **FORMAT OF OPERATING AND MAINTENANCE MANUALS**

- (a) Manuals shall be bound in hardcover lever-arch files with plastic coatings. The files shall be clearly labelled on the front cover, as well as on the back band, with the following information:
- (i) The title "Operating and Maintenance Manuals"
 - (ii) Name of the installation (as defined in Additional Specification SA: General Maintenance)
 - (iii) Name of the contract and contract number
 - (iv) The Contractor's name, address and contact telephone number and fax (logo optional)
 - (v) Month and year in which the manuals are finally handed over to the Employer
 - (vi) Name of the User Client.
- (b) Pamphlets and bound leaflets/booklets from suppliers or manufacturers shall be placed in plastic pockets.
- (c) Drawings and diagrams larger than A3 shall be folded and placed in plastic pockets to be easily removed or stored.
- (d) The sections of the manuals specified below shall be clearly partitioned.
- (e) Cross-referencing between drawings/diagrams and text shall be in a clear and consequent format.
- (f) The Operating and Maintenance Manuals shall be supplied in English.

SB 04 **CONTENTS****SB 04.01** **TABLE OF CONTENTS**

The table of contents shall appear on the second page and shall consist of the headings of the various sections in the manual and the relevant page numbers.

The table of contents shall essentially contain at least the following:

1. Introduction
 - 1.1 Scope of the manual
 - 1.2 General arrangement of the manual
 - 1.3 Description of installation
 - 1.4 Specifications
2. List of drawings and diagrams
3. Parts and components
4. Operating procedures

5. Maintenance
 - 5.1 Purpose of maintenance
 - 5.2 Preventative maintenance
 - 5.3 Trouble-shooting
6. Breakdown maintenance and repair
7. List of Appendices.

SB 04.02 **INTRODUCTION**

The introduction shall contain at least the following:

SB 04.02.01 **Scope of the manual**

A summary shall explain the scope of the contents.

SB 04.02.02 **General arrangement of the manual**

A brief description shall explain the way in which the manual is arranged.

SB 04.02.03 **Description of installation**

This section shall give a functional description of the complete installation covered by the manual, including all systems and/or functional units deemed to form part thereof, as defined in Additional Specification SA: General Maintenance.

SB 04.02.04 **Specifications**

A summary shall be given of the specifications applicable to the particular part of the Contract.

SB 04.03 **DRAWINGS AND DIAGRAMS**

SB 04.03.01 **Mechanical flow diagrams (MFDs) and single line diagrams**

Mechanical flow diagrams (for mechanical systems) or single line diagrams (for electrical systems) of the system and/or functional unit shall be included in the Operating and Maintenance Manuals for easy reference by the operators of the installation. Diagrams shall be drawn not only for parts of an installation that have been repaired, but also for the complete installation, including all the components.

SB 04.04 **PARTS AND COMPONENTS**

SB 04.04.01 **Equipment data sheets**

A data sheet shall be drawn up for each piece of equipment and/or machine forming part of the installation and shall contain the following information:

- (a) Equipment tag number
- (b) Equipment description
- (c) Model/make/manufacture
- (d) Supplier/Reconditioning details
- (e) Ordering details
- (f) Details of fixed components

- (g) Details of lubrication
- (h) Maintenance references (refer to supplier/reconditioning technical manual).

SB 04.04.02 Technical equipment manuals

For each piece of equipment and/or machine forming part of the installation the following information shall be included in this section of the Operating and Maintenance Manuals:

- (a) the supplier or reconditioning manual and/or standards of operating and maintenance instructions;
- (b) illustrated parts breakdown and/or group assembly drawings as agreed with the Engineer;
- (c) parts lists and data sheets, including all characteristic curves for machines indicating operation point, efficiency, power consumption, etc;
- (d) calibration charts, and
- (e) test certificates for hydraulic pressure tests, flame-proof grading, materials, non-destructive examinations, coating and lining details, etc.

Each detailed description shall be accompanied by a set of engineering drawings. From the drawings the functionality of each part or component used, as well as the special characteristics associated with the part or component shall be very clear.

SB 04.04.03 Parts and components list

A detailed description shall specify all the parts and components used for the duration of the Contract. This description shall include new parts and components, as well as existing parts and components that have either been reconditioned or used as specified in the Contract.

The description shall state at least the part or component number, part or component name, the size of the part or component, an explanatory description, the quantity used, the material of which the part or component is made, the coating (if any), date of purchase, as well as any relevant remarks as to the application thereof.

Details of the manufacturer of the part or component shall also be listed. This shall at least state the name, address, telephone number, fax number and name of a contact person.

The supplier of the part or component shall also be stated and shall include at least the name, address, telephone number, fax number, name of a contact person and an alternative supplier (if available).

SB 04.04.04 Drawings

Drawings shall contain a descriptive heading, an explanatory key and relevant comments. Drawings shall be done on a computer-aided design package approved by the Engineer.

A compound drawing for all subassemblies shall clearly indicate how and where the various parts fit in the subassembly. The compound drawing shall be linked to the equipment data sheets and parts and components list and shall clearly specify the parts or components used, their model numbers, their sizes and the quantities used. The compound drawings shall also be accompanied by a short description explaining the workings of the subassembly, as well as the assembly of the parts or components to complete the subassembly.

SB 04.05 **OPERATING PROCEDURES**

The operating instructions shall be a step by step description of the manual start-up and shut-down procedure for every piece of equipment and/or process reconditioned, repaired or supplied with references to the MFDs. For automatic operation the operators shall be referred to the automatic control manual (if applicable).

The functioning of the installation shall be clearly described, using a flow diagram depicting the interrelationships among the various subassemblies. The subassemblies shall be described by descriptive drawings.

Each mechanical or process flow diagram shall contain at least a heading, relevant comments and a key.

Every subassembly shall also have its own flow diagram explaining the operation of the subassembly, as well as the application of each part and component. The application of the subassembly shall also be very clear. The flow diagram shall consist of at least a heading, relevant comments and an explanatory key.

A detailed description shall be given of all operational systems forming part of the installation, explaining the operation and functioning of the system and the number of operations personnel required for performing the operation successfully.

The preparations, which are required before the system can be operational, shall be clearly stated and explained.

The operation tasks shall be clearly explained with reference to dangerous situations that might occur. Hazardous operations shall be explained in great detail and cover all the applicable safety precautions.

SB 04.06 **MAINTENANCE****SB 04.06.01** **Purpose of maintenance**

The maintenance process shall be explained and the main responsibilities described.

SB 04.06.02 **Preventative maintenance**

A preventative maintenance and lubrication schedule shall be included in this section. This schedule shall be in table format and shall include a summary of all the maintenance actions required for each different system and/or functional unit covered by this manual, in order to give a single summary of all routine preventative maintenance actions required for the complete installation.

The schedule shall indicate daily, weekly, fortnightly, monthly and yearly maintenance actions. A lubrication schedule summary shall also be included under this section.

The frequency of routine preventative maintenance actions shall be indicated very clearly.

The Contractor shall provide the maintenance requirements as prescribed by the manufacturer. The type of maintenance shall be clearly indicated. The description of the maintenance to be performed shall include at least the part name, location of the part in either the assembly or subassembly, the model number, the quantity of the particular part or component to be maintained, the type of maintenance, and notes on the maintenance procedure.

A brief description shall accompany the maintenance schedule, indicating special tools to be used, maintenance and test equipment required for the test procedures. Any special tools necessary for maintenance shall be specified in terms of name, model, size, manufacturer, supplier (name, telephone number, fax number, contact person), coating (if any) and notes on the use of the equipment.

Remarks on the system readiness checks of each subassembly shall be explained in detail. Routine inspection and maintenance processes shall be described. It shall be very clear what needs to be done, how to perform the necessary task and any dangers that are present.

SB 04.06.03 Trouble-shooting

An explanation shall be given to assist the maintenance personnel in analysing and resolving malfunctions that might occur. Various scenarios with possible causes and rectification procedures shall be explained.

The scenarios shall be accompanied by drawings indicating the position of the part that is faulty. Each of these drawings shall have a heading, comments and an explanatory key.

SB 04.07 BREAKDOWN MAINTENANCE AND REPAIR

The Contractor shall describe the complete procedure to be followed in the event of a breakdown. It shall be very clear what the operating personnel should look for, how to eliminate any dangers due to the breakdown (eg electricity must be shut off in the event of problems with the wiring) and who should be contacted. The Contractor shall supply the names and telephone numbers of at least two contact persons who may be contacted in the event of a breakdown.

The Contractor shall refer to Additional Specification SA: General Maintenance, to determine the reaction time for the repair to the breakdown.

Repair instructions shall provide the maintenance personnel with detailed instructions for the removal and/or replacement of any item requiring replacement due to malfunctioning. Contact numbers shall also be given to assist maintenance personnel, should a breakdown occur.

The Contractor shall specify the actions expected of maintenance personnel in the event of a breakdown.

The Contractor shall also specify the testing procedures to be followed before the system can be put into operation again. Every procedure shall be described clearly and all the potential dangers pointed out, as well as the precautions that have to be taken.

The testing procedures shall be accompanied by drawings illustrating the process to be performed. Every drawing shall have a heading, comments and an explanatory key.

SB 05 MEASUREMENT AND PAYMENT

SB.01 Compile and supply a complete set of Operating and Maintenance Manuals Unit : sum

The unit of measurement shall be a sum for each complete set (seven copies) of Operating and Maintenance Manuals. Operating and Maintenance Manuals for different installations shall be measured separately in the Schedule of Quantities.

The tendered sum shall include full compensation for all technical research, gathering of information, compilation of manufacturer's instructions, compilation of drawings and diagrams, and for writing of all the descriptions, instructions and functional procedures, as well as language editing, in order to provide a clear and correct set of Operating and Maintenance Manuals.

The tendered sum shall also include full compensation for all expenses such as paper, copy work, binding and printing necessary for the completion of the manuals.

The tendered sum shall also include full compensation for the compilation of draft sets of operating and maintenance manuals in accordance with the specification, and for incorporation of all comments and corrective requirements.

SB.02 **Compile and supply a complete site plan** Unit : sum

The unit of measurement shall be a sum for the complete set (three A1-size copies for each plan) and electronic format of the site plan(s).

The tendered sum shall include full compensation for all expenses such as paper, copy work and printing required for the completion of the site plan.

The site plan shall include and comply with the following:

SB.02. 01 **SCOPE**

This specification provides minimum requirements for the preparation of a Site Layout Plan and is based on the specifications of the Department of Public Works.

SB.02. 02 **SPECIFICATIONS**

The Specification is based on the following specifications:

1. Civil Engineering Manual PW347/2012, Annexure A1
2. Specification of Materials and Methods to be Used PW371
3. Additional Specification SB: Operating and Maintenance Manuals.

Compile and supply a complete Site Layout Plan:

(a) Detail Ground Survey

All services must be shown on a complete Site Layout Plan as required by the Engineer, including roads, fences, paving, transmission and telephone lines, etc. For sewerage reticulation and storm water drainage systems the pipe sizes, as well as invert heights must be provided. An effort must be made to trace the routes of these services.

(b) Survey of Buildings

The "footprint" of all the buildings and structures must be surveyed.

(c) General

All survey data shall be captured in electronic format.

SB.02. 03 **TITLE BLOCK**

The standard drawing sheet layout and title block of the Department of Public Works must be used.

Complete all the relevant fields in the title block with reference to the name of the Port of Entry in the appropriate block. The words SITE LAYOUT PLAN should form part of the drawing title.

SB.01 **Drawing Number**

The drawing number should consist of a four-part identifier:

- Port of entry designator: WCS
- Group: 1
- Drawing number: Numbering will start at 1
- Revision number: Will start at 01

Typical example: WCS/1/1 Rev 01

SB.02 **Overlay Sheets/Layering Scheme (if required)**

The overlay sheet designator identifies the type of drawing (example: overlay for water reticulation) and can be added to the drawing number:

- C: Existing structures, facilities, roads, paving, fencing, etc
- CR: Storm water drainage system
- CE: Electrical power and equipment
- CF: Fire fighting equipment
- CS: Sewer network
- CT: Telephone lines
- CW: Water reticulation system

Typical example for the numbering of an overlay sheet: WCS/1/**CW**/1 Rev 01

SB.02. 04 **DRAFTING CONVENTIONS**

The Site Layout Plan should be created following engineering conventions and standards in order to represent a clear drawing simplifying the huge amount of visual information.

SB.01 **Paper Prints**

Preference is given to size A1 plans, but for reporting size A3 will be used and the information should still be legible in this format.

SB.02 **Scale**

The Site Layout Plan must be drawn according to scale and the following scales can be used:

- 1:200 or
- 1:500 or
- 1:1000

SB.03 Plan Orientation

The Port of Entry should be rotated on the plan so that the north point arrow are pointing in the direction of either the upper left or upper right quadrants of the plan. The north point arrow to be placed in the top right hand corner of the drawing space.

SB.04 Contours

Contours do not form part of the Site Layout Plan.

SB.05 Line Weight






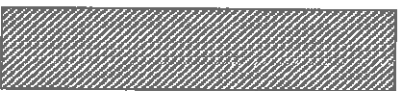
Line weight/width is extremely important and features such as the services should be drawn with lines that are more prominent. The following line weights (mm) can be used:

- | | |
|---------|---------|
| 1. 0.10 | 5. 0.35 |
| 2. 0.15 | 6. 0.50 |
| 3. 0.25 | 7. 0.70 |
| 4. 0.30 | 8. 1.00 |

SB.06 Line Type/Style

The following typical standard line types that can be used:

TYPICAL LINE TYPES

LINE DESCRIPTION	LINE APPEARANCE
1. Centre Line	
2. Solid/Continuous line	
3. Short broken line	
4. Long broken line	
5. Break line	
6. Hatch lines 45°	

SB.07 Hatching

Hatching are angled line patterns to indicate the position of permanent structures. The spacing between lines should be consistent at 45° to the structure. Park Homes must be shown on the plan, but without hatching.











SB.08 Surfaced Areas

Surfaced roads should be indicated by two solid lines as well as paved areas.

Two long broken lines should be used to indicate gravel roads.

SB.09 Non Standard Line Types

The following lines could be used for the various services, but must be identified in the Legend as a non standard line type:

LEGEND		<u>Colour Code</u>	<u>Line Weight (mm)</u>	
	W	Water pipe line	Cyan	0.50
	S	Sewer pipe line	Black	0.50
	EL	Electrical overhead line	Magenta	0.50
	EC	Electrical cable	Magenta	0.50
	T	Telephone line	Green	0.50
	G	Gas pipe line	Brown	0.50
	x	Fence line	Black	0.30
		Surfaced Road	Black	0.30
		Gravel Road	Black	0.30
		Railway Line	Black	0.25

SB.10 Lettering and Font Styles

Use the standard font style and font size for engineering drawings and do not use stylized fonts.

Create all text in upper case letters, except for certain unit designations such as km, m, mm, kVA, etc.

SB.11 Site Layout Plan

When the Port of Entry is too large for one sheet, divide the plan into logical sections. Add a key layout in the title block showing how the various sheets should be joined together to obtain a layout of the entire site. This key layout should form part of each sheet.

SB.12 Facilities

The name of the facility should be written adjacent to the facility. If the space is limited, a reference number of the facility, which refers to a description of the facility, is inserted in a table format in or close to the title block as a legend.

SB.13 Fences and gates

Show the position of the security fence and all other fences as well as gates. Include the height of all fences.

SB.14 Destinations

The destination to the nearest town with a pointing arrow should appear on all incoming and outgoing roads.

SB.02. 05 SERVICES

The position of the services is extremely important and should be indicated by lines that are more prominent/thicker. The description of the line types for the various services must be given in the Legend. See DIR04.09.

The following services, where applicable, must be shown on the Site Layout Pan for future reference:

SB.01 Water Reticulation System

Show the position of the water reticulation system and include the following:

- Pipe lines, pipe sizes, type of pipes, valves, meters, boreholes and tanks (include capacities). Show the direction of flow.

SB..02 Sewerage Network

Show the layout of the sewerage network and include the following:

- Pipe lines, pipe sizes, type of pipes, manholes, rodding eyes, septic tanks (include capacities), french drains (include volumes). Show the invert levels of all manholes as well as the position and level of the bench mark.

SB.03 Electrical Power

Indicate the position of electrical power lines, cables, substations, kiosks, flood lights along the perimeter as well as street lights and area lighting.

Air-conditioning units should be numbered and listed in table format including the type and size.

Give the source(s) of electrical power.

SB.04 Telephone Lines

Show the position of overhead telephone lines.

SB.05 Storm water System

Show the layout of the storm water system, culverts and sizes as well as inlet and outlet structures. Give the invert levels of all structures as well as the position and level of the bench mark.

SB.06 Fire Fighting Equipment

Include the pump installation, tank and capacity, fire hydrants, valves, meters, fire extinguishers and fire hose reels.

Fire extinguishers should be numbered and listed in table format including the type and size.

SB.02. 06 ELECTRONIC FORMAT

A complete set of electronic files shall be placed on CD(s) in a Data Exchange Format (DXF) or DWG format.

Affix a stick-on label to the CD with the following information:

- Department of Public Works and logo
- Name of Port of Entry
- WCS number
- Description: SITE LAYOUT PLAN
- Drawing number(s)
- Date issued
- Electronic format: DXF or DWG

SB.02. 07 SUBMISSION

The Consultant must submit A1 and A3 paper prints as well as a CD(s) of the Site Layout Plan(s) to the Project Manager before the Final Approval Certificate is signed.

The CD(s) must include the entire overlays/layering scheme and a compound drawing which includes all the services and information on one Site Layout Plan in DXF/DWG format.

During the Repair and Maintenance phase, the Project Manager will forward a request from time-to-time to the Consultants to prepare an A3 print(s) of the Site Layout Plan, which will be submitted as part of a report to Department of Public Works.

ADDITIONAL SPECIFICATION

SC GENERAL DECOMMISSIONING, TESTING AND COMMISSIONING PROCEDURES

CONTENTS

SC 01	SCOPE
SC 02	PHASED REPAIRS AND UPGRADING OF THE INSTALLATION
SC 03	DETAILED COMMISSIONING PROGRAMME
SC 04	COMMISSIONING COMMUNICATION CHANNELS
SC 05	COMMISSIONING RISK CONTROL AND PENALTIES
SC 06	DELAYS TO SCHEDULED SHUTDOWNS
SC 07	MATERIAL AND EQUIPMENT PROCUREMENT AND PROTECTION
SC 08	TESTING OF EQUIPMENT PRIOR TO RECOMMISSIONING
SC 09	TESTING OF MATERIAL AND EQUIPMENT SPECIFICATIONS AND WORKMANSHIP
SC 10	DECOMMISSIONING
SC 11	RECOMMISSIONING, COMMISSIONING AND COMPLETION OF INSTALLATIONS
SC 12	MEASUREMENT AND PAYMENT

SC 01 SCOPE

This specification encompasses all aspects of the repairs of systems and services that form part of an installation, including the factory and on-site testing, decommissioning, installation and commissioning of all equipment, instrumentation and materials reconditioned, supplied and installed as part of an installation as defined in Additional Specification SA: General Maintenance.

The specified procedures are the minimum requirements to be supplemented by various technical and particular specifications in this document. These requirements shall apply to all commissioning work scheduled as part of the initial repair work on installations, as well as commissioning work that is part of the routine preventive and corrective maintenance.

SC 02 PHASED REPAIRS AND UPGRADING OF THE INSTALLATION

When an installation consists of parallel systems or components, the complete installation and all its components shall be repaired without taking the complete installation out of commission at any time, unless otherwise specified in the Technical Specifications.

In order to schedule the repairs of an installation, all work shall be done in phases as specified in the Technical Specifications and illustrated in detail on the drawings. Repairs of each part shall terminate with the successful reconditioning of that part.

Each part of the system shall be decommissioned and recommissioned in the sequence specified in the Technical Specifications and on the drawings.

The Contractor shall install all the necessary temporary specials, spool pieces, supporting frames and brackets to provide a functional link between each repaired and upgraded part of the system and the part of the installation that has not yet been repaired and upgraded during recommissioning. Electrical and instrumentation Contractors and subcontractors shall ensure

that the system remains operational as specified, using either existing or newly installed instruments, cables and controls.

Payment is based on the successful recommissioning of a specific part of the installation.

SC 03 DETAILED COMMISSIONING PROGRAMME

No work of any kind on any part of the existing installation shall take place prior to the Engineer's approval of a detailed commissioning programme. This programme shall be submitted in addition to the general programme for planning and monitoring contract progress, at least two weeks prior to any programmed shutdown. The programme shall be the coordinated product of the Engineer and the User Department. Commissioning programmes shall take all process requirements into account. The detailed commissioning programme shall indicate all actions necessary for:

- (a) Decommissioning
- (b) Recommissioning of parts of the installation
- (c) Commissioning of the installation as a whole.

All work deemed necessary for practical completion of the installation shall be indicated on the commissioning programme.

The programme shall indicate the milestones to be achieved before shutdown and decommissioning as activities of zero duration, all of which shall be prerequisites linked to the "start" of decommissioning.

The following specific actions shall be included in the programme, clearly indicating the time allowed for:

- (a) Communication, including the time for confirmation of the official shutdown;
- (b) Draining parts of the installation to sumps, where available, or to other storage facilities provided by the Contractor;
- (c) Installation of temporary blanked flanges or other means of isolation where necessary;
- (d) Partial decommissioning and removal of existing material and equipment to perform work, including protection of pipework against hot work, cutting into pipework, loosening bolts, flanges and all other work necessary for recommissioning;
- (e) Installation of temporary functional links (pipe specials) between any two parts of the installation;
- (f) Each individual field weld, subject to the Engineer's approval;
- (g) Non-destructive testing of materials, for manufacturing/construction quality and for producing test results;
- (h) Installation of all instruments and their connection to SCADA systems;
- (i) Installation and connection of all power cables;
- (j) De-aeration of all pipe sections;
- (k) Communication between the Contractor, the Engineer, the Employer and the User Client;

- (l) Start-up of the complete system, indicating start-up procedures.

Inspection of the prefabricated installation, testing of all equipment prior to final commissioning, pressure testing and non-destructive testing shall be clearly scheduled in the project progress programme.

Day 30 tests and instruction/training sessions with the User Department shall be scheduled in the project progress programme.

SC 04 COMMISSIONING COMMUNICATION CHANNELS

The Contractor shall communicate with the User Department's operating and maintenance managers via the Engineer to finalise start-up after decommissioning in accordance with the specified procedures.

The following key parties shall be involved before and during shutdown and decommissioning of any part of the system:

Contractor: Site Agent
Engineer: Resident Engineer
Employer: Representative of Area Manager
User Department: Operating and Maintenance Manager.

SC 05 COMMISSIONING RISK CONTROL AND PENALTIES

- (a) The safety instructions stipulated by the Occupational Health and Safety Act, 1993 (Act 85 of 1993) shall be adhered to at all times.
- (b) The Contractor shall not be allowed to work on any part of the installation without obtaining a commissioning check permit on the day of shutdown. A typical example of a commissioning check permit is included in this document, referring to the minimum required milestones to be achieved prior to decommissioning.
- (c) Payment reductions for exceeding the maximum permissible down-time during maintenance shall apply as stipulated in the General and special Conditions of Contract. This stipulation does not include shutdowns during programmed routine preventive maintenance work.

SC 06 DELAYS OF SCHEDULED SHUTDOWNS

Specific dates on which an installation shall be shut down for decommissioning shall be finalised during coordination meetings of all the parties involved, including the Engineer, the Employer, the User Department and the Contractor.

Although a date for each shutdown will be scheduled at the coordination meetings, the actual date of the shutdown shall be determined by the process requirements and user demands, allowing for a window of seven (7) calendar days from the date of the planned shutdown.

Prospective tenderers shall make allowances in their tendered rates for the shutdown to occur at any time during this seven-day period. No additional payment shall be due if the shutdown occurs within this seven-day period.

If the Contractor fails to commence with the shutdown and decommissioning of the installation

within the scheduled period, all additional costs arising from the shutdown at a later stage shall be for the Contractor's account.

SC 07 MATERIAL AND EQUIPMENT PROCUREMENT AND PROTECTION

It is the responsibility of the Contractor to ensure the functionality of all units of new equipment prior to decommissioning, before installation of any specific part of the system. If the equipment, whether free-issued or not, does not conform to the functionality specifications during pre-installation testing, the Contractor shall notify the Engineer in writing without delay.

SC 08 TESTING OF EQUIPMENT PRIOR TO RECOMMISSIONING

The equipment shall be tested for functionality after pre-installation of equipment in parts of the installation.

- (a) The Contractor shall inform the Engineer well in advance of his intention to perform the first tests and start-up of equipment in order to allow a representative of the Engineer to witness the tests. The extent of all pre-commissioning tests and checks shall be agreed with the Engineer prior to commencement.
- (b) The Contractor shall first conduct his own tests of the equipment. When he is satisfied that the equipment complies with the specifications, he shall notify the Engineer that he is ready for the official tests on completion. The Contractor shall not conduct an official test without the Engineer's presence or approval. All equipment shall conform to the specified requirements.
- (c) Before starting up any part of the installation or filling the tanks and sumps with liquid, the Contractor shall clean out the tanks, pipes, fittings, equipment or structures and, if necessary, make arrangements with other Contractors to remove their building rubble from the structures, check that all safety devices and alarms have been set and activated, all nuts have been tightened correctly, that all the equipment is complete and ready for start-up, that the plant has been installed correctly, and that copies of the operating manuals have been handed to the Engineer.
- (d) The Contractor shall start up each section of equipment after ensuring that oil fillings, lubrication, vibration monitoring, cable termination and so on have been correctly completed. He is also responsible for the first refilling of all lubricating oils and for adjusting the plant to operate according to the specifications. Before any equipment is started or energised, the Contractor shall ensure that it is safe in terms of the personnel and equipment on the site to do so. The Contractor's tendered rates and sums shall allow for these costs.

All equipment shall be tested according to the relevant specifications that form part of this document.

No shutdown or decommissioning of any part of the system shall take place unless all the equipment to be installed have been tested by the Contractor and approved by the Engineer.

SC 09 TESTING OF MATERIAL AND EQUIPMENT SPECIFICATIONS AND WORKMANSHIP

All results of the required non-destructive, pre-commissioning and manufacturing testing shall be submitted to the Engineer well in advance of testing the equipment on recommissioning. All such test results shall be submitted before Day 1 commissioning tests and no certificate of practical completion shall be issued prior to receipt of the required test results.

SC 10 DECOMMISSIONING

The decommissioning period shall commence on the instant of the entire system shutdown. The recommissioning period shall start in parallel with decommissioning.

Shutdown and decommissioning shall not proceed without compliance with all the milestones in the detailed commissioning programme. The list of milestones in this document is not complete but indicates the minimum requirements. Milestones to be achieved prior to shutdown and decommissioning may be added to the programme at the Engineer's discretion.

The Contractor is responsible for the safe decommissioning of all material, equipment, components and instrumentation to avoid damage to parts or components of the installation.

SC 11 RECOMMISSIONING, COMMISSIONING AND COMPLETION OF INSTALLATIONS**SC 11.01 RE-COMMISSIONING**

Re-commissioning means the commissioning of all sections or systems that form part of the installation to meet the required functional specifications for the individual section or system prior to commissioning of the repaired and upgraded installation.

The Contractor is responsible for the recommissioning of all parts of the system and he shall perform the tasks listed below.

- (a) Prior notice shall be given to and proper arrangements shall be made for recommissioning with the Employer, the Engineer, the User Client and the suppliers of equipment that is affected by recommissioning and testing.
- (b) If plant and equipment supplied by others are to be commissioned, the supplier's specific permission together with all requirements related to commissioning shall be obtained prior to recommissioning without in any way altering the Special Conditions of Contract with reference to the Contractor's liability in terms of defects.
- (c) The new and reconditioned parts of the installation shall be thoroughly inspected by a responsible representative of the Contractor to ensure that manufacture/construction and installation work have been completed according to the specifications.

SC 11.02 COMMISSIONING AND COMPLETION OF REPAIRS AND UPGRADING WORK

Commissioning means commissioning of the repaired and upgraded installation as a whole to perform in perfect working order.

- (a) The commissioning period for each installation as a whole:
 - (i) Commences with the Day 1 tests of the complete repaired and upgraded installation;
 - (ii) Includes commissioning of all sections and systems that have been recommissioned prior to the Day 1 tests;
 - (iii) Includes training of the User Department's operating personnel and the maintenance teams;
 - (iv) Terminates with a Day 30 test in compliance with the commissioning report.

- (b) The purpose of the Day 1 tests is to ensure that:
- (i) The electronic, electrical and mechanical equipment and materials are functional and in perfect working order with respect to each other and the installation as a whole;
 - (ii) The commissioning period, including training, commences on successful completion of the Day 1 tests;
 - (iii) The Contractor is entitled to a certificate of practical completion for the repairs and upgrading of the installation on successful completion of the Day 1 tests;
 - (iv) The Contractor becomes responsible for maintenance of the installation and is entitled to performance-based payments in compliance with the Special Conditions of Contract and Additional Specification SA: General Maintenance.
- (c) Commissioning shall be undertaken over a trouble-free period up to Day 30. During this period the Contractor shall train the User Department's operators and his maintenance team for operating and maintaining the installation. This training shall allow for all possible operational conditions, including emergency conditions, the correct servicing of every part, the type of oil or grease to be used, and similar tasks. The training shall take place by means of demonstrations, and the operating and maintenance manuals shall be referred to for this purpose.
- (d) Day 30 commissioning tests shall be performed thirty calendar days after the successful completion of the Day 1 tests. The commissioning period of the installation terminates upon the successful completion of the Day 30 tests.
- (e) The Contractor shall conduct all the tests required to satisfy the Engineer that the installation is performing according to specification, and shall make allowance for these tests in his tendered rates and prices. These tests shall be conducted to certify that the installation, as repaired, upgraded and installed, is in perfect working order in terms of the specified functional requirements. The Contractor shall note that all equipment is to be tested as part of an installation, where appropriate, and will not be passed if all protection devices, interlocking with other equipment, etc, are not fully functional.
- (f) The Engineer shall provide commissioning sheets to the Contractor at least three weeks before the commissioning period commences, for all the equipment supplied, reconditioned and installed by the Contractor. The Contractor shall complete the commissioning sheets during the commissioning period and all items listed shall be entered. No completion certificate will be issued for an installation of which the equipment has incomplete commissioning reports. Information that is not available or applicable, or instances where certain tests have not been carried out, are subject to the Engineer's decision.
- (g) Commissioning of the plant (which includes the thirty days between the Day 1 and Day 30 tests) includes operating under conditions that adequately prove that all the specifications have been met. All safety devices, standby plant, automatic controls and protection devices shall be adequately tested for reliability and correct functioning. The Contractor may be called upon to repeat testing during the maintenance period if the performance of the equipment is suspected to be substandard. Costs related to such tests shall be for the Contractor's account and shall comply with the specified requirements. Copies of updated commissioning reports shall be provided to the Engineer within two days after a test has been performed.
- (h) The Contractor is responsible for providing all labour and materials (including testing equipment) during the commissioning period and shall carry out all the servicing and adjustments to ensure that the installation operates as specified. Valid calibration

certificates shall be available for all testing equipment on the site during the commissioning period.

- (i) Programmes for the Day 1 tests, Day 30 tests and instruction/training sessions with the User Department's operators and maintenance team shall be prepared by the Contractor and submitted to the Engineer at least two weeks before the commissioning period commences. The Contractor shall provide weekly updates of these schedules for the duration of the commissioning period.
- (j) The Contractor shall note that if any equipment fails during the commissioning period, the equipment shall be repaired or replaced by the Contractor, and testing and commissioning shall commence from scratch.
- (k) Successful commissioning of an installation entitles the Contractor to a certificate of completion for the installation.

SC 12 **MEASUREMENT AND PAYMENT**

SC.01 **Decommissioning and removing parts of the installation**..... Unit: sum

The unit of measurement shall be a sum.

The tendered sum shall include full compensation for all actions and labour required for shutdown and decommissioning of the entire installation as specified to enable decommissioning and removal of parts of the installation as listed in the Schedule of Quantities.

The tendered sum shall include full compensation for the decommissioning and removal of the parts and components of an installation as listed individually in the Schedule of Quantities, including actions and/or costs resulting from such work, to enable the recommissioning of parts of the repaired and/or upgraded installation.

The tendered sum shall include full compensation for final dismantling of decommissioned materials and equipment and the removal of all such items to stores on site, as directed by the Engineer.

SC.02 **Commissioning and testing of parts of the installation**..... Unit: sum

The unit of measurement shall be a sum.

The tendered sum shall include full compensation for commissioning and testing parts of the installation to be operational while still incomplete in relation to the entire repaired and/or upgraded system or installation.

Separate payment items shall be scheduled for separate parts of the system.

SC.03 **Commissioning and testing of the installation**..... Unit: sum

The unit of measurement shall be a sum.

The tendered sum shall include full compensation for commissioning the upgraded installation as a whole and for all costs and expenses related to labour, removal, repair, reinstallation and testing of material and equipment during the commissioning period for each part of the installation. The tendered sum shall include full compensation for the final commissioning and

testing, including Day 1 and Day 30 tests, of all parts and components of the installation to the specified functional condition.

Payment shall be based on successful completion of the Day 30 tests.

SC.04

Provision for safety and hot work requirements during shutdown Unit: number

The unit of measurement shall be the number of shutdowns during which all the required safety and hot work requirements are provided.

The tendered rates shall include full compensation for all the required safety and hot work requirements and arrangements in accordance with the specifications during a shutdown period, including all labour, personnel, equipment, materials and consumables required.

ADDITIONAL SPECIFICATION

SD GENERAL TRAINING

CONTENTS

SD 01	SCOPE
SD 02	BASIC METHOD REQUIREMENT
SD 03	TRAINING OF USER CLIENT PERSONNEL
SD 04	TRAINING OF MAINTENANCE PERSONNEL

SD 01 SCOPE

The Contractor shall be responsible for providing diverse training to various groups, including operating and maintenance personnel. The Contractor shall develop and facilitate initial training sessions for all parties, as well as training sessions at specified intervals to revive and supplement the initial training. An accredited trainer shall present all training sessions.

This specification includes all requirements for methods to be employed, the syllabus required by the User Client, the syllabus required for maintenance managers and workers and the method of measurement and payment.

SD 02 BASIC METHOD REQUIREMENT

The Contractor shall be responsible for conducting a complete investigation of the groups that have to be trained in order to compile a proper training plan.

The investigation shall cover at least the following aspects:

- (a) Assess likelihood of conformance to task-specific requirements (*status quo*) of capabilities.
- (b) Identify minimum pre-qualification criteria in terms of existing knowledge and skill levels in relation to reaching target requirements.
- (c) Evaluate personnel in terms of pre-qualification criteria and tasks to be performed (skills profile).
- (d) Identify training needs.
- (e) Develop appropriate and accredited training courses and material in terms of task-specific activities and identified training needs, and compile the training syllabus per installation.

The Contractor shall identify an accredited trainer to assist in the above investigation and finalise the compilation of a training plan and syllabus. Approval of the syllabus shall be a condition for issue of a Certificate of Practical Completion for repair of an installation. Once the training plan and syllabus have been approved the Contractor shall liaise with the Engineer to establish a date and appropriate training venue that would be conducive to learning to perform training.

The training shall be revived within one month after initial training to determine its effectiveness. Further regular training sessions shall be scheduled according to the effectiveness of initial training.

The Engineer will be responsible for recording all training sessions and shall keep an attendance register. The Engineer will also examine the trainees officially with each training session and issue certificates of trainees' acquired skills on satisfactory completion of the training.

SD 03 TRAINING OF USER CLIENT PERSONNEL

The Contractor's training shall include training of the User Client's operators on biannual basis to acquaint them with operating of installations (especially electrical and mechanical systems). The training sessions shall comprise lectures and on-site (hands-on) demonstrations, and shall be conducted over two-day periods. The Contractor shall liaise with the Engineer to prepare for the correct number of trainee operators.

The content of training courses for operators shall include the essential features of operating the installation, as also described in the Operating and Maintenance Manuals.

Completion of an installation shall, in terms of the Special Conditions of Contract, be subject to successful completion of training. The training course shall also be based on the Operating and Maintenance Manuals. No training shall commence without the Engineer's approval of the final draft Operating and Maintenance Manual for the particular installation.

SD 04 TRAINING OF MAINTENANCE PERSONNEL

The Contractor shall train either his own employees, or local labourers, with regard to maintenance of the installation.

The training of maintenance managers shall include the following aspects:

- (a) Awareness of safety, health and personal hygiene in terms of the requirements of the Occupational Health and Safety Act, 1993 (Act 85 of 1993);
- (b) functioning of the installation, including all its systems, services, parts of buildings and infrastructure;
- (c) all specific tasks related to routine preventative maintenance;
- (d) interpretation and understanding of Operating and Maintenance Manuals with specific reference to requirements in cases of corrective and breakdown maintenance, and
- (e) repair/reconditioning and installation/construction of equipment and materials forming part of an installation.

SD 05 **MEASUREMENT AND PAYMENT****SD.01** **Development of a syllabus for training of operators** Unit: sum

The unit of measurement shall be the lump sum for the compilation of a training syllabus for each installation that shall be measured separately in the Schedule of Quantities.

The tendered sum shall include full compensation for identification of pre-qualification criteria and training needs, staff assessment and evaluation prior to training, all technical research, development and compilation of an accredited training course and course material, and all other actions necessary for commencement of official training sessions in accordance with the specification.

The tendered sum shall also include full compensation for the compilation of a draft syllabus and for incorporation of all the Engineer's comments and corrective requirements.

SD.02 **Presenting a training course for operators** Unit: number

The unit of measurement shall be the number of training courses presented based on the approved syllabus.

The tendered rate shall include full compensation for presenting a two-day training course, including lectures, demonstrations, on-site training and hands-on development and improvement of operators' skills to enable the operators to operate installations safely and efficiently.

The tendered rate shall include full compensation for the Contractor's time, appointment of the accredited trainer for the course, and for all material expenses such as paper hand-outs and slides for the whole group of trainees, the number of which shall be determined during development of the training course.

SD.03 **Presenting a training course for maintenance personnel** Unit: number

The unit of measurement shall be the number of training courses presented.

The tendered rate shall include full compensation for presenting a two-day training course, including lectures, demonstrations, on-site training and hands-on development, and improvement of maintenance personnel's skills to enable them to maintain and repair installations safely and efficiently at the satisfactory functional condition specified.

The tendered rate shall include full compensation for the Contractor's time, appointment of the accredited trainer for the course, and for all material expenses such as paper hand-outs and slides for the whole group of trainees, the number of which shall be determined during development of the training course.

ADDITIONAL SPECIFICATION**SF GENERAL OPERATION****CONTENTS**

SF 01	SCOPE
SF 02	OPERATION REQUIREMENTS
SF 03	OPERATION CONTROL
SF 04	COMMUNICATION
SF 05	PERFORMANCE MEASUREMENT
SF 06	MEASUREMENT AND PAYMENT

SF 01 SCOPE

Operation of the specified systems, services or equipment shall all be referred to as "Operation of an Installation". Operation of an installation shall ensure effective functioning and optimum operational condition thereof. Monthly operation responsibilities for each installation including all units and components as specified shall commence with access to the installation.

Operation of an installation shall be performed in accordance with the Technical and Particular Specifications and the Operating and Maintenance Manuals.

Remuneration for operating "installations" (systems, services and equipment) is provided for in the Bills of Quantities by means of monthly payment items, depending on the score achieved by the operators.

This Additional Specification covers operation requirements, site operation administration, communication operation performance measurement, as well as the items for measurement of the Contractor's service level and resulting payment.

SF 02 OPERATION REQUIREMENTS**SF 02.01 CONTRACTOR'S RESPONSIBILITIES**

The Contractor shall operate the complete installation for the 36-month Contract period.

Operation implies and shall include hourly operation, daily operation (night and day), weekly as well as monthly operation on all components of the specified installations, *including* public holidays and non-working days.

The Contractor shall operate the equipment as detailed in the Technical and Particular Specifications and the operation and maintenance manuals. Each operational function, task, test or action shall be recorded in an approved format and listed in a quarterly report by the Contractor.

As part of the repair of each installation, the Contractor shall submit a set of Operating and Maintenance Manuals where applicable. The Contractor shall ensure through training that the operating and maintenance personnel are conversant with the instructions as presented in the Operating and Maintenance Manuals. Continued training shall be

included in the scope of operation work for the duration of the 36-month Contract, in accordance with Additional Specification SD: General Training.

The Operating and Maintenance Manuals, as approved by the Engineer, shall be used as a basis of hourly, daily, weekly and monthly operations. The Contractor shall perform all operational tasks as described in the Operating and Maintenance Manuals.

SF 02.04 **COMPONENTS INCLUDED IN OPERATION SCOPE**

The main sections of a facility with their subsections are as set out in the Technical Specifications and Particular Specifications where applicable and in the Bill of Quantities and will each be deemed "an installation". Operation, as specified, will be applicable to all of the installations listed in the Bill of Quantities under the "OPERATION" section

SF 02.05 **COMMENCEMENT OF OPERATION PERIOD**

Operation responsibilities for an installation shall include operation of all individual units, equipment or components thereof, and shall commence with access to the installation.

SF 02.09 **SITE OPERATION RECORD KEEPING**

The Contractor shall provide and maintain hard-cover A4 Operation files for each installation that needs to be operated for the duration of the Contract. All schedules, checklists, actions, tasks, reports, hourly, daily and monthly operational records and quarterly reports shall be filed.

Site operation records shall be submitted to the Engineer at each monthly meeting.

These files will become the property of the Department of Public Works after the completion of the 36 months contract.

SF 02.10 **SUPPLY OF LABOUR, EQUIPMENT AND MATERIAL**

SF 02.10.01 **Labour (qualified where necessary)**

Competent personnel (qualified where necessary) that have been trained by the Contractor or external training authority, in accordance with Additional Specification SD: General Training shall execute all operational work.

SF 02.10.02 **Equipment**

All tools and equipment required for operation work shall be supplied by the Contractor at his cost (except where otherwise provided).

SF 02.10.03 **Material**

All material, equipment, testing equipment, protective clothing and appurtenances necessary for the complete operation of each installation shall be supplied and installed by the Contractor at his cost. Remuneration for *maintenance* actions and material shall be measured elsewhere in this document.

The technical specification of each specific installation to be operated, shall indicate whether the Contractor should supply other consumables (such as chemicals or coal) as part of his operation requirements.

SF 03 **OPERATION CONTROL**

Operation quality control shall be the responsibility of the Contractor. The Contractor shall introduce his own quality assurance system to assist him in ensuring that hourly, daily and monthly operational tasks are performed as described in the operating and maintenance manuals and Technical and Particular Specifications.

SF 04 **COMMUNICATION**

The Contractor shall communicate in writing to the Engineer the following operational results on a monthly basis:

- (a) The quantity of ground water or surface water extracted and the total recorded as at the last day of each month.
- (b) The quality of waste water irrigated or discharged into the environment and the total recorded weekly (compiled monthly).
- (c) The quantity of the waste water by grab sampling, at the point at which the waste water enters the effluent disposal system.
- (d) Record keeping of activities as specified shall be up to date on a daily basis and available to the Engineer on inspection.
- (e) The quality of domestic waste water discharged into the environment.
- (f) Details of failures and malfunctions and details of measures taken to avoid environmental pollution.

SF 05 **PERFORMANCE MEASUREMENT**

The Contractor's performance shall be measured against the following parameters:

SF 05.03 **PERFORMANCE-BASED PAYMENT**

Remuneration for all value-related as well as all time-related preliminary and general charges shall be deemed included in the monthly operation payments for the various installations.

SF 05.03.01 **Score-card**

The Engineer shall inspect each installation monthly after access to the installation has been granted. The Engineer shall use a score-card to measure the quality of operational tasks rendered by the Contractor during the preceding month, on all components that form part of the installation, in accordance with the Operation specifications. The Engineer will record his inspection directly onto the score-card. The score-card shall serve to evaluate ten performance indicators each month in the manner set out below.

The Contractor shall always have the opportunity to score the maximum points, provided that his operation work complies with the Specifications. The Employer shall be protected against a reduced or unsatisfactory operational level and may refuse payment on such points.

SF 05.03.02 Performance indicators

Performance indicators shall be selected to measure the Contractor's service level of operation.

The Engineer shall select ten (10) performance indicators each month, which shall focus on the measurement of operation quality against the relevant specifications for the ensuing month. All ten (10) performance indicators are known to both the Engineer and the Contractor.

The Contractor shall aim to perform satisfactorily on all ten performance indicators. All indicators shall be selected from the scope of his normal hourly, daily and monthly operation work and shall be based on the operation control plan and operating and maintenance manuals. The work shall either be satisfactory, or unsatisfactory, and the Contractor shall score one (1) or zero (0) respectively per indicator.

Performance indicators shall be used to focus on certain key aspects of the work and shall in no way limit the Contractor's responsibility to do all the required work.

SF 05.03.03 Satisfactory performance

The Engineer shall inspect the site on an arbitrary day to measure the quality of operation against the ten selected performance indicators. Should the Contractor score the maximum points (10) he shall receive his full operation payment for the installation. Should the quality of operation be unsatisfactory according to the score-card, the Contractor may fail to achieve full payment due to a reduced service level. Each monthly payment for operation shall be subject to evaluation based on the score-card.

A copy of the score-card including a guideline for the use thereof is included in this Specification.

SF 06 MEASUREMENT AND PAYMENT

SF.01 OPERATION OF AN INSTALLATION..... Unit: point

The unit of measurement shall be a point. Each month shall represent a maximum of ten points and a minimum of zero points, depending on the performance and quality of operation. Ten points per month, determined by using the tendered rate per point, shall include full compensation for all liabilities and obligations described or implied in the Contract documents and deemed by the Contractor to be applicable to the operation of an entire installation, and all appurtenant works deemed to form part thereof, as defined in the relevant Technical or Particular Specifications.

The combined bid rate for ten points shall also include full compensation for complete hourly, daily, weekly and monthly operation.

Although ten points per month shall include full compensation for hourly, daily and monthly operation, the Contractor might fail to achieve all points applicable in the event of unsatisfactory performance, in which case he shall still perform all operation requirements according to specification, but at his own cost where a reduction in points awarded is insufficient to cover his cost.

Remuneration for all value-related as well as all time-related preliminary and general charges shall be deemed included in the monthly operation payments for the various installations.

SF.02

**APPOINT MANDATORY CLASS I AND CLASS II
PROCESS CONTROLLERS**..... Unit: point

The unit of measurement shall be each month the stipulated number of process controllers has performed the duties as prescribed in the Contract and Technical Specifications. Each month shall represent 16 hours per day for 7 days per week. The rate tendered for the process controllers shall include all duties as required by the process controllers in terms of the Contract and Technical Specifications.

The item shall not limit the Contractor to the amount of personnel required to operate the works but shall be deemed the minimum requirement for the operation of the works as required in the Contract and Technical Specifications.

Any additional labour or process controllers required to perform any preventative or breakdown operation work shall be included in the Contractor's rate tendered for the ten operation scoring points per month.

The item shall be deemed mandatory and the Contractor shall be liable in terms of the ten operation scoring points per month to ensure that the required process controllers are appointed.

Remuneration for all value-related as well as all time-related preliminary and general charges shall be deemed included in the monthly operation payments for the various installations.

SF.03

**APPOINT MANDATORY CLASS III AND CLASS IV
PROCESS CONTROLLERS**..... Unit: point

The unit of measurement shall be each month the stipulated number of process controllers has performed the duties as prescribed in the Contract and Technical Specifications. Each month shall represent 8 hours per day for 5 days per week. The rate tendered for the process controllers shall include all duties as required by the process controllers in terms of the Contract and Technical Specifications.

The item shall not limit the Contractor to the amount of personnel required to operate the works but shall be deemed the minimum requirement for the operation of the works as required in the Contract and Technical Specifications.

Any additional labour or process controllers required to perform any preventative or breakdown operation work shall be included in the Contractor's rate tendered for the ten operation scoring points per month.

The item shall be deemed mandatory and the Contractor shall be liable in terms of the ten operation scoring points per month to ensure that the required process controllers are appointed.

Remuneration for all value-related as well as all time-related preliminary and general charges shall be deemed included in the monthly operation payments for the various installations.

DEPARTMENT OF PUBLIC WORKS

MAINTENACE SCORE-CARD

CONTRACT NUMBER: WCS _____



CONTRACT: _____

CONTRACTOR: _____

ENGINEER: _____

INSTALLATION: _____ **MONTH:** _____ OF 36

The following components of the installation were selected by the contractor at the Monthly Operation Meeting nr. _____ as performance indicators to be tested according to specification:

1. ENGINEER'S SELECTION

- 1.1 _____
- 1.2 _____
- 1.3 _____
- 1.4 _____
- 1.5 _____
- 1.6 _____
- 1.7 _____
- 1.8 _____
- 1.9 _____
- 1.10 _____

0	1

TOTAL SCORE: _____

Engineer's Representative

Signature

_____|_____|/_____|_____|/_____|_____|
Date

GUIDELINE FOR THE USE OF THE OPERATION SCORE-CARD

The score-card and performance indicators must be used as an Operation management tool. The aim with each score-card is to ensure that:

- (a) the project focuses on key aspects of Operation per month;
- (b) the Contractor receives payment for his work, and
- (c) the Employer receives value for money and a sustained high level of service.

Performance indicators must be selected to measure the Contractor's service level of operation that will be based on the Operating and Maintenance Manuals (containing information specified in the Contract documentation).

For each specific installation, different performance indicators must be defined each month based on the content of the Operation in relation to the scope of Operation work per installation and must be based on the Contractor's service level record on operation.

The Contractor and the Engineer must agree on all performance indicators at an occasion prior to the month during which the Contractor's performance (service level of Operation) will be measured.

ADDITIONAL SPECIFICATION

SH HIV/AIDS REQUIREMENTS

CONTENTS

SH 01	SCOPE
SH 02	MAINTENANCE REQUIREMENTS
SH 03	MAINTENANCE CONTROL
SH 04	COMMUNICATION
SH 05	PERFORMANCE MEASUREMENT
SH 06	MEASUREMENT AND PAYMENT

SH 01 SCOPE

This specification contains all requirements applicable to the Contractor for creating HIV/AIDS awareness amongst all of the Workers involved in this project for the duration of the construction period, through the following strategies:

- Raising awareness about HIV/AIDS through education and information on the nature of the disease, how it is transmitted, safe sexual behaviour, attitudes towards people affected and people living with HIV/AIDS, how to live a healthy lifestyle with HIV/AIDS, the importance of voluntary testing and counselling, the diagnosis and treatment of Sexually Transmitted Infections and the closest health Service Providers
- Informing Workers of their rights with regard to HIV/AIDS in the workplace
- Providing Workers with access to condoms and other awareness material that will enable them to make informed decisions about sexual practices.

SH 02 DEFINITIONS AND ABBREVIATIONS

SH 02.01 DEFINITIONS

Service Provider: The natural or juristic person recognised and approved by the Department of Public Works as a specialist in conducting HIV/AIDS awareness programmes.

Service Provider Workshop Plan: A plan outlining the content, process and schedule of the training and education workshops, presented by a Service Provider which has been approved by the Representative/Agent.

Worker: Person in the employ of the Contractor or under the direction or supervision of the Contractor or any of his Sub-contractors, who is on site for a minimum period of 30 days in total.

SH 02.02 ABBREVIATIONS

HIV	:	Human Immunodeficiency Virus
AIDS	:	Acquired Immune Deficiency Syndrome
STI	:	Sexually Transmitted Infection

SH 03 BASIC METHOD REQUIREMENT

The Contractor shall, through a Service Provider, conduct onsite workshops with the Workers.

The Service Provider shall develop and compile a Service Provider Workshop Plan to be presented at the workshops and which will be best suited for this project to achieve the specified objectives with regard to HIV/AIDS awareness.

The Service Provider Workshop Plan shall be based on the following information provided by the Contractor:

- Number of Workers and Sub-contractors on site
- When new Workers or Sub-contractors will join the construction project
- Duration of Workers and Sub-contractors on site
- How the maximum number of Workers can be targeted with workshops
- How the Contractor prefers workshops to be scheduled, e.g. three hourly sessions per Worker, or one 2.5 hour workshop per Worker
- Profile of Workers, including educational level, age and gender (if available)
- Preferred time of day or month to conduct workshops
- A Gantt chart reflecting the construction programme, for scheduling of workshops
- Suitable venues for workshops.

The Contractor shall submit the Service Provider Workshop Plan for approval within 21 days after the tender acceptance date. After approval by the Representative/Agent, the Contractor shall make available a suitable venue that will be conducive to education and training.

The Service Provider Workshop Plan shall address, but will not be limited to the following:

- The nature of the disease;
- How it is transmitted;
- Safe sexual behaviour;
- Post exposure services such as voluntary counselling and testing (VCT) and nutritional plans for people living with HIV/AIDS;
- Attitudes towards other people with HIV/AIDS;
- Rights of the Worker in the workplace;
- How the Awareness Champion will be equipped prior to commencement of the HIV/AIDS awareness programme with basic HIV/AIDS information and the necessary skills to handle questions regarding the HIV/AIDS awareness programme on site sensitively and confidentially;
- How the Service Provider will support the Awareness Champion;

- Location and contact numbers of the closest clinics, VCT facilities, counselling services and referral systems;
- How the workshops will be presented, including frequency and duration;
- How the workshops will fit in with the construction programme;
- How the Service Provider will assess the knowledge and attitude levels of attendees to structure workshops accordingly;
- How the video will be used;
- How the Service Provider will elicit maximum participation from the Workers;
- A questions and answers slot (interactive session)
- The Service Provider Workshop Plan shall encompass the Specific Learning Outcomes (SLO) as stipulated.

SH 04 HIV/ AIDS AWARENESS EDUCATION AND TRAINING

SH 04.01 WORKSHOPS

The Contractor shall ensure that all Workers attend the workshops.

The workshops shall adequately deal with all the aspects contained in the Service Provider Workshop Plan. A video of HIV/AIDS in the construction industry, which can be obtained from all Regional Offices of the Department of Public Works, is to be screened to Workers at workshops. In order to enhance the learning experience, groups of not exceeding 25 people shall attend the interactive sessions of the workshops.

SH 04.02 RECOMMENDED PRACTICE

SH 04.02.01 WORKSHOP SCHEDULE

Presenting information contained in the Service Provider Workshop Plan can be divided in as many workshop sessions as deemed practicable by the Contractor, provided that all Workers are exposed to all aspects of the workshops as outlined in the Service Provider Workshop Plan.

Breaking down the content of information to be presented to Workers into more than one workshop session however, has the added advantage that messages are reinforced over time while providing opportunity between workshop sessions for Workers to reflect and test information. Workers will also have an opportunity to ask questions at a following session.

SH 04.02.02 SERVICE PROVIDERS

A database of recommended Service Providers is available from all Regional Offices of the Department of Public Works.

SH 04.02.03 HIV/AIDS SPECIFIC LEARNING OUTCOMES AND ASSESSMENT CRITERIA

Workers shall be exposed to workshops for a minimum duration of two-and-a-half hours. In order to set a minimum standard requirement, the following specific learning outcomes and assessment criteria shall be met.

04.02.03.01 UNIT 1: THE NATURE OF HIV/AIDS

After studying and understanding this unit, the Worker will be able to differentiate between HIV and AIDS and comprehend whether or not it is curable. The Worker will also be able to explain how the HI virus operates once a person is infected and identify the symptoms associated with the progression of HIV/AIDS.

Assessment Criteria:

1. Define and describe HIV and AIDS.
2. List and describe the progression of HIV/AIDS.

04.02.03.02 UNIT 2: TRANSMISSION OF THE HI VIRUS

After studying and understanding this unit, the Worker will be able to identify bodily fluids that carry the HI virus. The Worker will be able to recognise how HIV/AIDS is transmitted and how it is not transmitted.

Assessment Criteria:

1. Record in what bodily fluids the HI virus can be found.
2. Describe how HIV/AIDS can be transmitted.
3. Demonstrate the ability to distinguish between how HIV/AIDS is transmitted and misconceptions around transmittance of HIV/AIDS.

04.02.03.03 UNIT 3: HIV/AIDS PREVENTATIVE MEASURES

After studying and understanding this unit, the Worker will comprehend how to act in a way that would minimise the risk of HIV/AIDS infection and to use measures to prevent the HI virus from entering the bloodstream.

Assessment Criteria:

1. Report on how to minimise the risk of HIV/AIDS infection.
2. Report on precautions that can be taken to prevent HIV/AIDS infection.
3. Explain or demonstrate how to use a male and female condom.
4. List the factors that could jeopardize the safety of condoms provided against HIV/AIDS transmission.

04.02.03.04 UNIT 4: VOLUNTARY HIV/AIDS COUNSELLING AND TESTING

After studying and understanding this unit, the Worker will be able to recognise methods of testing for HIV/AIDS infection. The Worker will be able to understand the purpose of voluntary HIV/AIDS testing and pre- and post-test counselling.

Assessment Criteria:

1. Describe methods of testing for HIV/AIDS infection.
2. Report on why voluntary testing is important.
3. Report on why pre- and post-test counselling is important.

04.02.03.05 UNIT 5: LIVING WITH HIV/AIDS

After studying and understanding this unit, the Worker will be able to recognise the importance of caring for people living with HIV/AIDS and be able to manage HIV/AIDS.

Assessment Criteria

1. List and describe ways to manage HIV/AIDS.
2. Describe nutritional needs of people living with HIV/AIDS.
3. Describe ways to embrace a healthy lifestyle as a person living with HIV/AIDS.
4. Explain the need for counselling and support to people living with HIV/AIDS.

04.02.03.06 UNIT 6: TREATMENT OPTIONS FOR PEOPLE WITH HIV/AIDS

After studying and understanding this unit, the Worker will be familiar with the various treatments available to HIV/AIDS infected or potentially HIV/AIDS infected people.

Assessment Criteria

1. Discuss anti-retroviral therapy.
2. List methods of treatment to prevent HIV/AIDS transmission from mother-to-child.
3. Describe the need for treatment of opportunistic diseases for people living with HIV/AIDS.
4. Describe post exposure prophylactics.

04.02.03.07 UNIT 7: THE RIGHTS AND RESPONSIBILITIES OF WORKERS IN THE WORKPLACE WITH REGARD TO HIV/AIDS

After studying and understanding this unit, the Worker will be able to identify the rights and responsibilities of the Worker living with HIV/AIDS in the workplace. The Worker will recognise the importance of accepting colleagues living with HIV/AIDS and treating them in a non-discriminative way.

Assessment Criteria:

1. Discuss the rights of a person living with HIV/AIDS in the workplace.
2. Discuss the responsibilities of a person living with HIV/AIDS in the workplace.
3. Report on why acceptance and non-discrimination of colleagues living with HIV/AIDS is important.

SH 04.03 DISPLAYING OF PLASTIC LAMINATED POSTERS AND DISTRIBUTION OF INFORMATION BOOKLETS

The Contractor shall obtain a set of four laminated posters conveying different key messages and information booklets, which are available from all Regional Offices of the Department of Public Works.

The above-mentioned posters and information booklets have been prepared to raise awareness and to share information about HIV/AIDS and STI's.

Posters or display stands shall be displayed on site as soon as possible, but not later than 14 days after the date of site handover.

Posters shall be displayed in areas highly trafficked by Workers, including toilets, rest areas, the site office and compounds.

The posters on display must always be intact, clear and readable.

Information booklets must be distributed to all Workers as soon as possible, but not later than 14 days after site handover, or as soon as the Worker joins the site.

SH 05 PROVIDING WORKERS WITH ACCESS TO CONDOMS

The Contractor shall provide and maintain condom dispensers and make both male and female condoms, complying with the requirements of SANS ISO 4074, available at all times to all Workers at readily accessible points on site, for the duration of the contract. The Contractor may obtain condom dispensers from the Department of Health and condoms may be obtained from the Local Clinic or the Department of Health.

At least one male and one female condom dispenser and a sufficient supply of condoms, all to the approval of the Representative/Agent, shall be made available on site within 14 days of site hand over. Contractors should note that arrangements to obtain condoms from the Department of Health Clinics prior to site hand over may be necessary, to ensure that condoms are available within 14 days of site handover.

Condoms shall be made available in areas highly trafficked by Workers, including toilets, the site office and compounds.

SH 06 ENSURING ACCESS TO HIV/AIDS TESTING AND COUNSELLING FACILITIES AND TREATMENT OF SEXUALLY TRANSMITTED INFECTIONS (STI)

The Contractor shall provide Workers with the names of the closest Service Providers that provide HIV/AIDS testing and counselling and Clinics providing Sexually Transmitted Infection (STI) diagnosis and treatment. Information on these Service Providers and Clinics must be displayed on a poster of a size not smaller than A1 in an area highly trafficked by Workers.

SH 07 APPOINTMENT OF AN HIV/AIDS AWARENESS CHAMPION

Within 14 days of site handover the Contractor shall appoint an Awareness Champion from amongst the Workers, who speaks, reads and writes English, who speaks and understands all the local languages spoken by the Workers and who shall be on site during all stages of the construction period. The Contractor shall ensure that the Awareness Champion has been trained by the Service Provider on basic HIV/AIDS information, the support services available and the necessary skills to handle questions regarding the HIV/AIDS programme in a sensitive and confidential manner.

The Awareness Champion shall be responsible for:

- 7.1 Liaising with the Service Provider on organising awareness workshops;
- 7.2 Filling condom dispensers and monitoring condom distribution;
- 7.3 Handing out information booklets;
- 7.4 Placing and maintaining posters

SH 08 MONITORING

The Contractor shall grant to the Representative/Agent reasonable access to the construction site, in order to establish that the Contractor complies with his obligations regarding HIV/AIDS awareness under this contract.

The Contractor must report problems experienced in implementing the HIV/AIDS requirements to the Representative/Agent.

SH.7

The attached SITE CHECKLIST (SCHEDULE A) shall be completed and submitted at every construction progress inspection to the Representative/Agent.

The attached SERVICE PROVIDER REPORT (SCHEDULE B) shall be completed and submitted on a monthly basis to the Department's Project Manager, through the Representative/Agent.

The attached CONTRACTOR HIV/AIDS PROGRAMME REPORT (SCHEDULE C), a close out programme report, shall be completed by the Contractor at the end of the contract.

	PI			PI			PI			PI			PI			PI		
	D	M	D	D	M	D	D	M	D	D	M	D	D	M	D	D	M	D
Support service poster/s in highly trafficked area																		
Support service poster/s in a good condition																		
<i>Please indicate the applicable number for the reporting period</i>																		
Workers on payroll (at PI)																		
Sub-Contractors who will be on site for longer than 30 days (at PI)																		
Workshop attendees																		
Number of workshops held																		
Scheduled workshops according to approved workshop plan																		
Booklets distributed																		
Male condoms distributed																		
Female condoms distributed																		

Tick the block if Contractor satisfactorily complied with specifications

SCHEDULE A

Date of progress inspection (dd/mm/yy) _____

Reporting period: (dd/mm/yy) _____ to (dd/mm/yy) _____

Deviations from HIV/AIDS awareness programme plan:

Corrective actions

Representative/Agent

Departmental Project Manager

Date

Date

SCHEDULE B

HIV/AIDS AWARENESS PROGRAMME: SERVICE PROVIDER REPORT

Reporting period: (dd/mm/yy) _____ to (dd/mm/yy) _____

Number of workshops conducted in reporting period _____

Number of scheduled workshops according to approved workshop plan _____

Deviations from workshop plan:

State reasons for deviating from workshop plan:

Corrective actions:

Service Provider

Contractor

Date

Date

SCHEDULE B

HIV/AIDS AWARENESS PROGRAMME: WORKSHOP CONTENT ADDRESSED

		W/S			W/S			W/S			W/S			W/S			W/S		
		D	D	M	D	D	M	D	D	M	D	D	M	D	D	M	D	D	M
Content of workshop: (Mark the content included)																			
	SLO1																		
	SLO2																		
	SLO3																		
	SLO4																		
	SLO5																		
	SLO6																		
	SLO7																		
HIV/AIDS in construction video																			
Indicate the duration of the workshop in hours																			
Total number of Workers																			
Indicate workshop venue																			

Fill in the applicable information with regard to each workshop conducted

SCHEDULE C

CONTRACTOR HIV/AIDS PROGRAMME REPORT

Project name _____

Project Location _____

Contract value of project (R) _____

Department of Public Works Project Manager _____

HIV/AIDS Programme duration: (dd/mm/yy) _____ to (dd/mm/yy) _____

AWARENESS MATERIAL

Describe location of posters displayed during the programme _____

Comments on posters _____

Indicate total number of booklets distributed _____

Comments on booklets _____

CONDOMS

Indicate total number of male condoms distributed _____

Indicate total number of female condoms distributed _____

Describe where male condom dispenser was placed _____

Describe where female condom dispenser was placed _____

HIV/AIDS WORKSHOPS

Indicate the total number of HIV/AIDS workshops conducted _____

Indicate the duration of workshops _____

Indicate the total number of Workers that participated in the HIV/AIDS workshops _____

Indicate the total number of Workers that were exposed to the video on HIV/AIDS in the Construction Industry

Comments on HIV/AIDS workshops on site _____

GENERAL

Briefly describe programme activities and satisfaction with outcome _____

Additional comments, suggestions or needs with regard to the HIV/AIDS awareness programmes on site

Please indicate if your company has a formal HIV/AIDS policy focussing on HIV/AIDS awareness raising and care and support of HIV/AIDS Workers

Yes	No	Currently developing one
-----	----	--------------------------

Please indicate if, to your knowledge, you have lost any workers during the duration of the project to HIV/AIDS related sicknesses. One or more of the following might indicate an HIV/AIDS related death:

Excessive weight loss
 Reactive TB
 Hair loss
 Severe tiredness

Coughing or chest pain
 Pain when swallowing
 Persistent fever
 Diarrhoea

Vomiting
 Meningitis
 Memory loss
 Pneumonia

Number of HIV/AIDS-related deaths _____

Contractor

Date

Departmental Project Manager

Date

ADDITIONAL SPECIFICATION**SI OCCUPATIONAL HEALTH AND SAFETY****CONTENTS**

SI 01	APPLICABLE LEGISLATION AND REGULATIONS
SI 02	SCOPE OF WORK
SI 03	THE PRINCIPLE CONTRACTOR'S DUTIES
SI 04	THE PRINCIPLE CONTRACTOR'S SPECIFIC DUTIES
SI 05	THE PRINCIPLE CONTRACTOR'S SPECIFIC DUTIES WITH REGARD TO HAZARDOUS WORK OR ACTIVITIES

SI 01 APPLICABLE LEGISLATION AND REGULATIONS

This document was prepared to guide the Agent in the compilation of a Health and Safety Specification in terms of Sub-regulation 4(1)a of the Construction Regulation as published under Government Notice R. 85 of 07 February 2014. The content of this document or the fact it was made available for the use of the Agent will not relieve the Agent of any of his obligations in terms of the act.

The Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) together with its applicable Regulations ("the Act") forms part of this Health and Safety Specification. Any word or expression to which a meaning has been assigned in the Act shall have the meaning so assigned to it unless the context otherwise indicates.

SI 02 SCOPE OF WORK

All work forming part of this Contract is divided into installations.

Schedule 2: Corrective Maintenance Related Work

- Structural And Building
- Plumbing And Drainage
- Building And Site Electrical
- Fencing, Cleaning And Site Keeping
- Bulk Water Supply Systems And External Water Networks
- Wastewater Treatment Works And Sewer Networks
- Roads And Storm Water
- Heating, Ventilation And Air Conditioning
- Conventional Fire Fighting Equipment
- Incinerator

Structural and Building Works

- General structural repair due to operation damage, wear and tear work such as paintwork, replacement of damaged items, e.g. doors, locks, windows, etc. on all buildings
- Apply varnish to all exterior timber doors

SI 2

- Painting of roof timbers and fascia boards
- Repair work to two face brick houses

Plumbing and Drainage

- Replacement of missing or damaged toilette seats
- Replacement of damaged toilette pans
- Service of Cisterns and flush masters
- Servicing of all taps, valves, etc.
- Servicing and cleaning of geysers due to hardness salt precipitation
- Replacement of geyser due to hardness salt precipitation
- Repair work to two face brick houses

Building and Site Electrical

- Supply and install a cable to the chlorinator
- Power supply to the borehole pump
- Power supply to the pumps and equipment at the WWTW
- Service the HV Switchgear and transformers
- Replace the distribution kiosks at the park homes
- Lamp replacements
- Service distribution boards
- Replacement of faulty/damaged lights, light switches and socket outlets

Fencing, Cleaning and Site Keeping

- Installation of ablution block equipment
- Damage repair to fences
- Cleaning of fire break areas at perimeter fences

Bulk Water & External Water Reticulation

- Pressure cleaning the three existing boreholes that were drilled during the construction Contract.
- Test 4 boreholes.
- Connect one borehole for additional water supply and allow for repair of borehole pumps if required to ensure the recommend flow.
- Installation of a motor control centre for the army base borehole.
- Recondition existing motor control centres when required.
- Borehole pipe connections for four boreholes that will be utilised.
- Servicing of all type of valves.
- Replace all types of valves when required.
- Once off cleaning out of manholes in borehole pump line.
- Service manhole covers opening mechanisms on pumping main valve chambers.
- Supply, deliver and install new enclosure complete with roof and floor at the army base borehole as per drawing.
- Supply, deliver and install new enclosure complete with roof and floor at the reservoir as per drawing.
- Supply and Delivery of a Chlorination System.
- Compile operating and maintenance manuals to supply a complete set of operating and maintenance manuals.
- Repair of pipe lines when required, valves, sprinklers and manholes.

Wastewater Treatment Works and Sewer Networks

- Repair (When necessary) two sludge removal pumps in order to accommodate gravity sludge removal and to ensure a 100mm diameter solid passing through the pump
- Recondition existing motor control centres when required.
- Clean at raw sewer pump station
- Service motor control centre if required
- Servicing of existing flow measuring equipment
- Service existing pumps and motors when so required
- Cleaning out of rotating biological contactor
- Repair a leak in the biological contactor chamber.
- Service motor control centre if required
- Cleaning out of chlorination channel
- Service chlorinator
- Servicing of all types of valves if required
- Update existing operating and maintenance manual
- Commissioning and testing of the installation

Roads and Storm water Drainage

- Road marking and maintenance of road signs
- Replacement of damaged paving at residential area
- Repair exiting bitumen road surface at the residential area

Standby Power

- General servicing of the existing Standby Generators
- Provide diesel for the standby generators for the duration of the contract

External Lighting

- Servicing of the existing perimeter, street and area lights
- Bulk Lamp replacement

Heating, Ventilation and Air-Conditioning Systems

- Servicing of all the existing air conditioners in the various buildings and residential units
- Replacement of air conditioners that are at the end of their life cycle at the park homes

Conventional Fire-Fighting Equipment

- Servicing of all fire fighting equipment
- Compile fire plans for operational buildings

Incinerator

- Servicing of burners and equipment of Incinerator
- Provide diesel for the Incinerator for the duration of the contract

SI 03 DUTIES OF A PRINCIPAL CONTRACTOR

The Principal Contractor's duties in terms of this Health and Safety Specification are, but not limited to, the following:

- (1) A principal contractor must-
- (a) provide and demonstrate to the client a suitable, sufficiently documented and coherent site specific health and safety plan, based on the client's documented health and safety specifications contemplated in regulation 5(1)(b), which plan must be applied from the date of commencement of and for the duration of the construction work and which must be reviewed and updated by the principal contractor as work progresses;
 - (b) open and keep on site a health and safety file, which must indicate all documentation required in terms of the Act and the Regulations, which must be made available on request to an inspector, the client, the client's agent or a contractor; and
 - (c) on appointing any other contractor, in order to ensure compliance with the provisions Act-
 - (i) provide contractors who are tendering to perform construction work for the principal contractor, with the relevant sections of the health and safety specifications contemplated in regulation (5)(b) pertaining to the construction work which has to be performed;
 - (ii) ensure that potential contractors submitting tenders have made sufficient provision for the health and safety measures during the construction process;
 - (iii) ensure that no contractor is appointed to perform construction work unless the principal contractor is reasonably satisfied that the contractor he or she intends to appoint, has the necessary competencies and resources to perform the construction work safely;
 - (iv) ensure prior to work commencing on the site that every contractor is registered and in good standing with the compensation fund or with a licensed compensation insurer as contemplated in the Compensation for Occupational Injuries and Disease Act, 1993;
 - (v) appoint each contractor in writing for the part of the project on the construction site;
 - (vi) take reasonable steps to ensure that each contractors health and safety plan contemplated in subregulation (2)(a) is implemented and maintained on the construction site;
 - (vii) ensure that the periodic site audits and document verification are conducted at intervals mutually agreed upon between the principal contractor and any contractor, but at least once every 30 days;
 - (viii) stop any contractor from executing construction work which is not in accordance with the clients health and safety specifications and the principal contractors health and safety plan for the site or which poses a threat to the health and safety of persons;
 - (ix) where changes are brought about to the design and construction, make available sufficient health and safety information and appropriate resources to the contractor to execute work safely; and
 - (x) discuss and negotiate with the contents of the health and safety plan contemplated in subregulation (2)(a), and must thereafter finally approve that plan for implementation;

- (d) ensure that a copy of his or her health and safety plan contemplated in paragraph (a), as well as the contractors health and safety plan contemplated in subregulation (2)(a), is available on request to an employee, an inspector, a contractor, the client or the client's agent;
- (e) hand over a consolidated health and safety file to the client upon completion of the construction work and must, in addition to the documentation referred to in subregulation (2)(b), include a record of all drawings, designs, materials used and other similar information concerning the completed structure;
- (f) in addition to the documentation required in the health and safety file in terms of paragraph (c)(v) and subregulation (2)(b), include and make available a comprehensive and updated list of all the contractors on site accountable to the principal contractor, the agreements between the parties and the type of work being done; and
- (g) ensure that all his or her employees have a valid medical certificate of fitness specific to the construction work to be performed and issued by an occupational health practitioner in the form of annexure 3.

SI 04 THE PRINCIPAL CONTRACTOR'S SPECIFIC DUTIES

The Principal Contractor's specific duties in terms of this Health and Safety Specification are specified in the Construction Regulation as published under Government Notice R. 85 of 07 February 2014. (Hereinafter referred to as "Construction Regulation, 2014").

The Principal Contractor is specifically referred to the following sub-regulations of the Construction Regulation, 2014:

Subject	Applicable sub-regulation of the Construction Regulation, 2014.
Definitions	1
Scope of application	2
Application of construction work permit	3
Notification of construction work	4
Duties of principal contractor and contractor	7
Management and supervision of construction work	8
Risk assessment for construction work	9
Approved inspection authorities	32
Offences and penalties	33
Withdrawal of regulations	34
Short life	35

The Principal Contractor will acquaint himself with these duties and will make provision in his Contract price for the implementation and supervision of these duties.

SI 05 THE PRINCIPAL CONTRACTOR'S SPECIFIC DUTIES WITH REGARD TO HAZARDOUS WORK OR ACTIVITIES

The following hazardous work or activities were identified in terms of the Construction Regulation, 2014, and it is the duty of the Principal Contractor to ensure that the said work and activities are performed or carried out in terms of the relevant sub regulations of the Construction Regulation, 2014 and other applicable Regulations.

SI 06 **PERFORMANCE MEASUREMENT**

The Contractors compliance to the Occupational Health and Safety Act shall be measured against pre-set parameters relating to compliance to the Act.

SI 06.01 **INSPECTIONS BY THE APPOINTED OHS OFFICER**

The OHS Officer shall inspect the construction site at any time during the construction and repair work period. The Officer shall complete a score card consisting of the following parameters to ensure that the Principal Contractor provide and maintain as far as reasonable a working environment that is safe and without risk to the health of his employees and other persons:

- Safety Management
- Appointments
- Registers
- Facilities
- Incident Management
- Signs
- Contractors (Sub-Contractors)
- Activity / Conditions
- Personal Protective Equipment
- Electrical
- Housekeeping
- Site Establishment
- Records

SI 06.02 **EVALUATION SCORE CARD**

The OHS Officer shall inspect each of the above indicated compliance criteria relating to construction and repair work for each type of installation.

The Officer will use a score card to measure compliance under the 13 Sections culminating in a total of 82 possible inspection items, depending on construction activities being executed.

The Officer will record his inspection findings directly onto the Score Card. Items that are not applicable to the site or construction work will not be relevant on the score card and each will have a maximum score of 100%. The Contractor shall always have to comply 100% to each section in order to receive payment for the point associated with that particular section.

SI 06.03 **PERFORMANCE SCORE CARD**

The thirteen performance indicators shall be recorded on the Performance Score Card and will be used to measure the Contractors remuneration for compliance to the Occupational Health and Safety Act.

The Contractor shall aim to perform satisfactory on all 13 indicators. Compliance shall either be satisfactory (full compliance) or unsatisfactory(less than 100% per indicator) and the Contractor shall score one (1) or zero (0) respectively per indicator.

A copy of the OHS Evaluation Score Card and Performance Score Card is included in this specification.

SI 07 MEASUREMENT AND PAYMENT

SI. 01 COMPLIANCE TO OHSA REQUIREMENTS AND CONSTRUCTION REGULATIONS 2014Points

The unit of measurement shall be a point. Each month shall represent a maximum of thirteen points and a minimum of zero points depending on the compliance to the OHSA.

Thirteen points per month shall mean full compensation for OHSA compliance for work.

DEPARTMENT OF PUBLIC WORKS
PERFORMANCE SCORE CARD

OHSA

CONTRACT NUMBER: WCS _____

CONTRACT: _____

CONTRACTOR: _____

ENGINEER: _____

INSTALLATION: _____

MONTH:

0	0
---	---

 OF 36

OHSA Performance Indicators

1. EMS

	0	1
1.1 SAFETY MANAGEMENT		
1.2 APPOINTMENTS		
1.3 REGISTERS		
1.4 FACILITIES		
1.5 INCIDENT MANAGEMENT		
1.6 SIGNS		
1.7 CONTRACTORS (SUB CONTRACTORS)		
1.8 ACTIVITY / CONDITIONS		
1.9 PERSONAL PROTECTIVE EQUIPMENT		
1.10 ELECTRICAL		
1.11 HOUSEKEEPING		
1.12 SITE ESTABLISHMENT		
1.13 RECORDS		
TOTAL:		

Engineer's Representative

Signature

Date

Construction, Repair and Maintenance							
ADDITIONAL SPECIFICATION. SI OCCUPATIONAL HEALTH SAFETY EVALUATION SCORE CARD							
ITEM		DESCRIPTION				ACTION	
NO	ITEM	POSSIBLE POINTS	POINTS AWARDED	NO	ITEM	POSSIBLE POINTS	POINTS AWARDED
1	<u>SAFETY MANAGEMENT</u>			7	<u>CONTRACTORS (SUB CONTRACTORS)</u>		
1.1	Client SHE (SI) Specifications available on site?	1		7.1	Updated list of Sub Contractors available?	1	
1.2	Principal Contractors SHE Plan available?	1		7.2	Mandatory Agreements with all Sub Contractors on file?	1	
1.3	Adequate Risk Assessments available?	1		7.3	Safety File complete (appointments, risk assessments, safe work procedures, registers)?	1	
1.4	Safe Work Procedures available?	1		7.4	Sub Contractor's First Aider on site or alternatively	1	
1.5	Safe Work Procedures approved by Engineer?	1			First Aid Agreement in place with Contractor?		
1.6	Fall Protection Plan available?	1					
1.7	Notification of Construction Work available?	1					
2	<u>APPOINTMENTS</u>			8	<u>ACTIVITY / CONDITIONS</u>		
2.1	Contractor to confirm if there are any new appointments to be minuted	1		8.1	Correct use of Scaffolding?	1	
2.2	Are all the appointments recorded and available in the Health and Safety File ?	1		8.2	Correct use of Support Work?	1	
3	<u>REGISTERS</u>			8.3	Workers working safely at Elevated Positions?	1	
3.1	Fire Extinguisher (stores, site office etc.)	1		8.4	Safe Operations?	1	
3.2	Ladders	1		8.5	Barricading?	1	
3.3	Scaffolding	1		8.6	Roof work: Harnesses & Lifelines?	1	
3.4	Excavations	1		8.7	Excavation: Shoring & Batter?	1	
3.5	Form / Support Work	1		8.8	Manholes: Demarcated?	1	
3.6	Portable Electrical Tools	1		8.9	Ladders Conditions?	1	
3.7	Hand tool Inspection	1		8.10	Construction Vehicle Condition?	1	
3.8	Personal Protective Equipment & Clothing (PPE & C)	1		8.11	Haz. Chem. Substances Applications?	1	
3.9	Explosive Powered Tools	1		8.12	Hand tools properly used and in good condition?	1	
3.10	Crane	1		9	<u>PERSONAL PROTECTIVE EQUIPMENT</u>		
3.11	Lifting Machines	1		9.1	Correctly issued (documented in file)?	1	
3.12	Lifting Tackle	1		9.2	Used correctly?	1	
3.13	Construction Vehicles	1		10	<u>ELECTRICAL</u>		
3.14	Material/ Man Hoist	1		10.1	DB's & COC's?	1	
3.15	Hazardous Chemical Register	1		10.2	Good Plugs / Earth Wire?	1	
4	<u>FACILITIES</u>			10.3	Electrical Leads / Condition?	1	
4.1	Hygiene Inspection performed?	1					

4.2	Toilets adequate and clean for workers?	1		10.4	Portable Electrical Tools?	1	
4.3	Change Area available?	1		11	HOUSEKEEPING		
4.4	Eating Area available for workers?	1		11.1	Good Stacking & storage?	1	
4.5	Washing Area available for workers?	1		11.2	Cement spillage control?	1	
5	INCIDENT MANAGEMENT			11.3	Dust control?	1	
5.1	First Aid Box adequate and available?	1		11.4	Placing of Sand / Stone / Bricks/ materials?	1	
5.2	First Aider on site & valid First Aid Certificate in place?	1		12	SITE ESTABLISHMENT		
5.3	Any incidents to report; (Annexure 1 report; recur/investigation; record to FEM)?	1		12.1	Office	1	
6	SIGNS			12.2	Stores	1	
6.1	"No Unauthorized Entry" Signs?	1		12.3	Fencing / Hoarding	1	
6.2	"Danger Construction Work" signs?	1		12.4	Access Control	1	
6.3	"Danger Lifting Operations" sign?	1		13	RECORDS		
6.4	"Hard Hats" sign?	1		13.1	OHS Act; OHS spec; Construction Regulations	1	
6.5	"Dust Mask" sign?	1		13.2	SANS 10085 (Scaffolding)	1	
6.6	"Ear Protection" sign?	1		13.3	Safety Rep. Inspections	1	
6.7	"Eye Protection" sign?	1		13.4	Safety Meetings (Toolbox Talks and/or Safety Committee)	1	
6.8	"Safety Harness" sign?	1		13.5	Employees Induction	1	
6.9	"No Smoking" sign?	1		13.6	Visitors Inductions	1	
6.10	Scaffold use: "Safe" or "Unsafe" signs?	1		13.7	Job Assessments	1	
6.11	"Emergency Assembly Point" sign?	1		13.8	Medical Certificates	1	
				13.9	Training Certificates (<i>Crane, Lifting Machines, Vehicles, Scaffold, Safety Rep., TLB, Water Cart, Grader, Excavator, Roller, Front Loader, Mobile Crane, Bob-Cat, Bomag, Wacker and Tipper Trucks</i>)	1	
				TOTAL POINTS TO BE AWARDED		82	
				TOTAL POINTS AWARDED		0	
				PERCENTAGE (%)		0.00%	
The Principal Contractor's Score Achieved is:		0.00%					
Compliance with Construction Regulations 2003 is SATISFACTORY / UNSATISFACTORY (delete which is N/A)							

ADDITIONAL SPECIFICATION**SJ COVID-19 GUIDELINES FOR MANAGEMENT OF RISK ON CONSTRUCTION SITES****CONTENTS**

- SJ 01 SCOPE**
SJ 02 SPECIFICATIONS, ACTS AND REGULATIONS
SJ 03 GENERAL REQUIREMENTS
SJ 04 DEGREE OF RISK PER SITE TYPE
SJ 05 RISK MITIGATION PLAN
SJ 06 MEASUREMENT AND PAYMENT

SJ 01 SCOPE

This specification covers guidelines and requirements to reduce the risk of a COVID-19 outbreak in the workplace and the possible impact on workers and the public.

SJ 02 SPECIFICATIONS, ACTS AND REGULATIONS**SJ 02.01 GENERAL STANDARD SPECIFICATIONS**

The latest edition, including all amendments up to the date of tender, of the following specifications, publications and codes of practice shall be read in conjunction with this specification and shall be deemed to form part thereof:

CODE	DESCRIPTION
SH	HIV/AIDS Requirements
SI	OHS Act: Health and Safety
SANS 1200	Standard Specifications. A. General.

SJ 02.02 ACTS AND REGULATIONS

All regulations and statutory requirements as laid down in the latest edition of the following Acts and Regulations shall be adhered to:

ACT	DESCRIPTION
Act No. 85 of 1993	Occupational Health and Safety Act
	Construction Regulations, 2014
	Hazardous Biological Agents Regulation, 2000
Act No. 57 of 2002	Disaster Management Act
	COVID-19 Occupational Health and Safety Measures in Workplaces Covid-19 (C19 OHS), 2020
	Section 27(2) Regulations, 29 April 2020

SJ 02.03 MANUFACTURERS' SPECIFICATIONS, CODES OF PRACTICE AND INSTALLATION INSTRUCTIONS

All equipment and materials shall be installed, serviced and repaired strictly in accordance with the manufacturers' specifications, instructions and codes of practice.

SJ 02.04 MUNICIPAL REGULATIONS, LAWS AND BY-LAWS

All municipal regulations, laws, by-laws and special requirements of the Local Authority shall be adhered to unless otherwise specified.

SJ 03 GENERAL REQUIREMENTS

SJ 03.01 IMPLEMENTING WORKPLACE CONTROLS

The legislation governing workplaces in relation to COVID-19 is the Occupational Health and Safety Act (Act 85 of 1993) as amended, in conjunction with the Hazardous Biological Agents Regulation.

A COVID-19 specific risk assessment together with a written policy concerning the health and safety of all employees, clients, suppliers and sub-contractors who are associated with the Contractor, shall be drawn up and communicated to all the relevant parties, along with mitigation measures which need to be monitored and adjusted should the need arise.

SJ 03.01.01 WORKPLACE CONTROLS

- All offices (including site offices) will be sanitised before opening for business each day.
- Place posters that encourage staying home when sick, cough and sneeze-etiquette, and hand hygiene at the entrances of offices and sites.
- On-site induction with special emphasis on COVID-19 will be done with all employees upon return to work.
- Provide tissues and waste bins lined with a plastic bag so that they can be emptied without contact with the contents.
- Instruct employees to clean their hands frequently using soap and water, for at least 20 seconds or with an alcohol-based hand sanitiser that contains at least 70% alcohol.
- Continue routine environmental cleaning, which includes tools and equipment.
- Increase ventilation in offices by natural or mechanical means.
- Provide soap and water and/or alcohol-based hand sanitiser (at least 70%) in the workplace in multiple locations and in common areas to encourage hand hygiene.
- Practice social distancing (2m) as far as possible (no handshakes, hugs, kissing, horseplay or touching each other). Keep distance from each other while working on site. Supervisors will monitor this throughout the day.
- While queuing at the gate to enter the site, employees must stand in a line, with at least 2m between them.

- Desks for employees working in the office (site office) will be spaced at least 1.5m apart or where this is not possible, protective barriers will be erected between desks.
- It is compulsory to wear face masks at all times. Each employee will be issued with two cloth face masks to wear at work and while commuting, with appropriate training on the use of these masks. Arrangements will be made for the washing, drying and ironing of cloth masks.
- Temperature testing will be done on all employees every morning upon arrival to site, and also randomly during the day. All readings will be recorded, monitored and sent to the SHEQ department. The testing will be conducted by the site safety officer. On sites where a full-time safety officer is not available, the responsibility will fall onto the supervisor.
- During the temperature screening, employees will be screened for any additional symptoms such as body aches, loss of smell or taste, nausea, vomiting, diarrhoea, fatigue, weakness or tiredness. The results will be recorded in the Social Distancing Control Sheet and send to the SHEQ department. If an employee displays any of the symptoms, he will not be permitted to enter the site/offices.
- In addition to posters, brief employees and sub-contractors that anyone with a mild cough or low-grade fever (37.3 or more) needs to stay at home and take sick leave.
- Any employee who develops flu-like symptoms (i.e. cough, shortness of breath, fever) or any of the additional symptoms should inform his supervisor immediately.
- Where practical, the minimum number of employees will be allowed on site, and rotation, staggered working hours and shift work may be implemented. Promote working from home for employees who are able to do so.
- All visitors to site will undergo induction and temperature screening and must be in possession of the appropriate PPE (i.e. face mask) prior to being allowed access to site. No access will be granted to visitors not complying.
- All visitors will be required to sanitize their hands before entering the site as well as when they leave.
- Sub-contractors shall ensure that all of their employees are issued with face masks and any other necessary PPE, and that hand sanitiser and soap is available for their employees.
- Temperature testing will be done by the sub-contractor and records kept. Failure to do so will result in the sub-contractor's employee/s being put off-site until compliant.
- A copy of the Essential Service Permit must be available on site at all times. All sub-contractors to provide a copy of their Permit prior to being granted permission to work.
- All employees are obliged to comply with measures introduced in the workplace.

SJ 03.01.02 WHAT TO DO WHEN AN EMPLOYEE ON SITE BECOMES ILL WITH COVID-19

If someone becomes ill in the workplace and there is reason to suspect they may have contracted or come into contact with someone who has contracted the COVID-19 virus, the person must be isolated immediately, provided with a **FFP1 surgical mask**, and transport arranged for the employee to go home to be self-isolated or for medical examination. Ensure testing is done at an identified testing site.

The Department of Health and Department of Labour will be informed of any employees testing positive for COVID-19, whereafter an investigation will be conducted to establish the cause, including any control failures. The risk assessment will be reviewed to ensure necessary controls and PPE is in place. The risk of transmission will be assessed, the employees working area disinfected.

If an employee is confirmed to have COVID-19, his/her fellow employees will be informed of their possible exposure to COVID-19 in the workplace and referred for screening, but confidentiality must be maintained at all times, and no discrimination must be shown toward an employee who tested positive for COVID-19.

If evidence exist that the employee contracted COVID-19 as a result of Occupation Exposure, a Claim for Compensation will be lodged in terms of the Compensation of Occupational Injuries and Diseases Act 1993 (Act No. 130 of 1993) in accordance with Notice 193 published on 3 March 2020.

Once an employee was positively diagnosed with COVID-19 and isolated in accordance with the Department of Health Guidelines, the employee may only return to work after he has undergone a medical evaluation confirming the employee has tested negative for COVID-19. The employee will be required to wear a face mask, maintain social distancing and adhere to cough and sneeze-etiquette. The employee will also be monitored for symptoms upon his/her return to work.

SJ 03.01.03 TRANSPORT

- Where transport is provided, occupancy of the vehicle should be reduced in line with social distancing practice.
- All passengers must wear face masks or respirators.
- All passengers to sanitise their hands before getting into the transport, as well as when disembarking.
- Transport vehicles should be sanitised before and after each trip.
- Employees making use of public transport to ensure they wear face masks and sanitise their hands regularly (before getting into the transport and when disembarking) and attempt not to touch any surfaces unless absolutely necessary.

SJ 03.01.04 MEETINGS

Wherever possible, meetings are to be held via tele or video conference in order to maintain social distancing and prevent the possible spread of COVID-19.

Toolbox talk meetings, inductions and briefing sessions should be done in open areas with social distancing in place.

Progress meetings and technical meetings will be held in the site meeting building specified as 14 meter x 5 meter = 70m² to accommodate 12 persons. The conference table will accommodate 12 attendees, 2 meters apart. The room shall be well ventilated at a maximum temperature of 22°C.

SJ 04 DEGREE OF RISK PER SITE TYPE

BUILDING AND PROJECT TYPE	SITE SET-UP AND STAFF WELFARE	CONSTRUCTION STAGE
Lower Risk	For most, but not all project construction stage risk may be as follows:	For most but not all sites, set-up risk may be as follows:
Industrial, Logistical, Roads and Bridge Construction	Lower Risk	Lower Risk
Medium Risk	<ul style="list-style-type: none"> • Excavation and groundworks • Foundations and Piling 	<ul style="list-style-type: none"> • Large Sites
Residential Accommodation	Medium Risk	Medium Risk
High Risk		<ul style="list-style-type: none"> • Site and management offices
		High Risk
	High Risk	
	<ul style="list-style-type: none"> • Cladding and Glazing • M+E and Lifts • Interior First Fix • Interior Second Fix 	
		<p><u>GUIDLINE</u> For each construction site there will be different levels of risk and it will be critical to evaluate the specific risk of each individual project.</p>

SJ 05 RISK MITIGATION PLAN

RISK DESCRIPTION	MITIGATION PLAN/ACTION	RESPONSIBILITY
Demographics of Labour: <ul style="list-style-type: none"> • Inadequate procedures in place to identify potential infected employees and workers • Manage the exposure to COVID-19 on the project, including visitors and suppliers 		CONTRACTOR

RISK DESCRIPTION	MITIGATION PLAN/ACTION	RESPONSIBILITY
<p>Origin of labour and transportation Need to minimize the risk of exposure to virus whilst in transport</p>	<ul style="list-style-type: none"> • <u>On site transportation:</u> Where on site transportation is done, a policy needs to be available for how such transportation will be made safe and limit any opportunity for cross infection. If possible, the Principal Contractor should provide their own transportation of work force. (Where not possible, use of public transport can be considered to comply to transport limitations) • <u>Parking areas:</u> Private and public vehicles are required to park outside of the construction site • Support staff for professional service providers are to work from office location or from home • <u>Education and information:</u> Information boards are required at entrance of sites and within Site Offices with information on the virus and precautions to be taken during working hours and traveling. • <u>Social Distancing:</u> <ul style="list-style-type: none"> ○ <u>On site:</u> As far as possible, work activities must be so arranged that social distance is kept to a minimum of 2 metre. ○ <u>Site office:</u> seating arrangements must be of such that social distancing for roll players is kept to a minimum of 1 metre, ie; '<u>ONE CHAIR. SKIP CHAIR. ONE CHAIR. SKIP CHAIR</u>'. ○ Roll players must be limited to Professional Team and principal contractor. ○ Facial Masks must be worn at all times by all roll players. ○ Contractor work force when on site and transportation to and from site, where hand gloves can be used, they should be worn at all times to minimize touching of possible contaminated surfaces and injury. 	<p style="text-align: center;">CONTRACTOR AND PROFESSIONAL TEAM</p>

RISK DESCRIPTION	MITIGATION PLAN/ACTION	RESPONSIBILITY
<p>Public transportation across boarders/towns/cities</p> <p>Where a return to work will necessitate travel between Provinces and cities for employees and workers to return to the project, The Principal Contractor and Sub-Contractors are to have in place procedures for or provision of transport for the return of workers to minimize the risk of exposure to the virus whilst in transit.</p>	<p>The contractor to source/recommend a transport service provider that complies with all travel restrictions and requirements as gazetted by the government, inter alia:</p> <ul style="list-style-type: none"> • Maximum occupancy of vehicles to allow for social distancing • Vehicles sanitized before passengers board • Passengers provided with Face Masks and hand sanitizers provided within vehicles for passengers sanitization before boarding and after returning from vehicles for comfort breaks • Regular testing of body temperature • Adequate number of vehicles to be provided to comply with the maximum occupancy • Principal Contractor to put in place procedures for sanitization of personal belongings and luggage of work force on arrival at final destination • Permits to be provided per vehicle and per passenger from Authorising Authority 	<p>CONTRACTOR</p>
<p>Social Distancing:</p> <p>Construction site and facilities not set up in such a way that it will be possible as far as is practicable to maintain the required social distancing of 2 metres between persons when at work</p> <p>Risk:</p> <p>Manual labour for physical tasks and tasks that will not allow for social distancing;</p>	<p><u>Tasks that require more than 1 person to complete:</u></p> <ul style="list-style-type: none"> • Providing adequate supplies of suitable PPE such as face masks, task specific gloves, safety glasses, disposable/additional coveralls; • PPE used during multi-person activities to be exchanged immediately after the task is completed; • Sealed bins to be provided for disposable PPE such as masks, disposable coveralls, disposable gloves, etc.; • Sealable bags provided to each person for keeping PPE requiring laundering, such as gloves and coveralls, and • Sanitizing/washing facilities provided for immediate sanitizing of hard hats, safety glasses, shoes, safety harnesses etc, on completion of multi-person tasks 	<p>CONTRACTOR</p>

RISK DESCRIPTION	MITIGATION PLAN/ACTION	RESPONSIBILITY
<p>Site access by non-employees/security access</p> <p>Inadequate access control measures in places</p>	<ul style="list-style-type: none"> • Stop all non-essential visitors • All employees and non-employees to be screened with non-contact thermometers (Thermal Thermometers); • Body temperature checks with thermometer upon employee's arrival and departure; • Introduce staggered start and finish times to reduce congestion and contact at all times; • Take body temperatures of anybody stepping on or off site; • Monitor site access points to enable social distancing; • Number of access points to be reduced to enable controlled monitoring; • Ensure disinfectants are in place for disinfecting of shoes on entering/leaving the site; • Provide hand sanitizer for all entering the site to sanitize hands; • Allow social distancing of 2 metres in ques for all entering the site; • Regular cleaning of common contact surfaces areas, e.g.; desks, telephones handsets, site office door handles, chairs, etc.; • Drivers of suppliers of materials and goods and services must remain with their vehicles if load will allow it, if not, drivers are to wash hands before unloading goods and materials 	<p style="text-align: center;">CONTRACTOR</p>
<p>Alcohol and Drug Testing</p> <p>Lack of safe testing procedures in place for alcohol and drug testing</p>	<ul style="list-style-type: none"> • Alcohol testing may only be done using single use test units, and must be disposed of in the appropriate contaminated waste bins provided on site; • Drug testing will only be done by an occupational health facility either using urine or blood sampling; • A protocol will be drawn up by the Principal Contractor to manage this with the occupational health service being used. 	<p style="text-align: center;">CONTRACTOR</p>

RISK DESCRIPTION	MITIGATION PLAN/ACTION	RESPONSIBILITY
<p>Medical Surveillance</p> <p>No methodology in place as part of the normal requirements for pre-placement, periodic and exit medicals that includes factors related to COVID-19</p>	<ul style="list-style-type: none"> • The normal requirements of pre-placement, periodic and exit medicals will remain, with the Occupational health service providing a methodology of how they will be including factors relating to Covid-19. No lung functions or peak flows will be done until deemed safe to do so by the South African Thoracic Society. • It is preferable that occupational health service providers use a cloud-based record keeping service to ensure easy tracking and tracing. Free apps such as Square 1 is such an example. • Any person who contracts the virus may need to be reported to the Compensation Commissioner as an occupational disease where their work is to monitor and in contact with others. Such details are provided in the Compensation for Injuries and Diseases Act (COIDA). • Isolation of workers who have a temperature or any symptoms, and removal to the closest facility for testing and treatment, through the numbers provided. The PC is to ensure their policy on this includes such information. • Workers will be required to complete COVID-19 questionnaires prior to returning to site. Any worker with any symptoms is not to return to work, or notify the PC of same. 	<p style="text-align: center;">CONTRACTOR</p>
<p>Ablution Facilities on Site</p> <p>Unhygienic ablution facilities leading to poor hygiene</p>	<ul style="list-style-type: none"> • Restrict the number of people using toilet facilities at any one time. e.g. use a welfare attendant; • Hand washing facilities (soap and water, paper towel) to be available where possible, and if not, to provide hand sanitizer. Wash hands before and after using the facilities • Induction training to educate to ensure all users are hand washing correctly; • Enhance the cleaning regimes for toilet facilities particularly door handles, locks and the toilet flush handle. Flush toilets preferably 1:15 ratio unless increased cleaning regime present; • Portable toilets should be avoided wherever possible, but where in use these should be cleaned and emptied more frequently. Portable toilets to be provided at a 1:10 ratio; • Provide suitable and enough rubbish bins for hand towels with regular removal and disposal be cleaned and emptied more frequently; • Introduce staggered start and finish times to reduce congestion and contact at all times; • Consider increasing the number or size of facilities available on site if possible. 	<p style="text-align: center;">CONTRACTOR AND EMPLOYEES</p>

RISK DESCRIPTION	MITIGATION PLAN/ACTION	RESPONSIBILITY
<p>Waste Management for Covid-19 Waste</p> <p>Outdated waste management arrangements in place that leads to an increased risk of the spread of Covid-19</p>	<p>Waste management arrangements to be updated to include provision for the disposal of additional waste generated due to preventative measures implemented. All waste to be managed as hazardous waste.</p> <p>a. Disposal of any gloves, masks</p> <p>The contractor shall dispose of all used gloves and masks as hazardous waste and provide sealable bags and containers for the safe disposal of this waste.</p> <p>b. Paper towels</p> <p>The contractor shall provide adequate supplies of paper towels on site. At points where these towels are provided lined waste bins to be placed in order to collect all used towels and then to be disposed of in hazardous waste.</p> <p>c. Disinfectant solution</p> <p>The contractor to provide adequate supplies of disinfectant on site where the use of water and soap for cleaning is not practical. If disinfectant dispensers are not refilled it should be disposed with other hazardous waste.</p> <p>d. Wastewater</p> <p>Wastewater at washing points, toilets, and bathrooms to be contained in a drainage system that prevent surface spills. If wastewater is contained in waste buckets it must be sealed when removed and disinfected after it is cleaned.</p>	<p>CONTRACTOR</p>
<p>Site Meetings</p> <p>Not limiting the number of employees at all activities to the minimum required to do the work in a safe manner.</p>	<p>Only necessary meeting participants should attend.</p> <ul style="list-style-type: none"> • Attendees should be two metres apart from each other. • Rooms should be well ventilated / windows opened to allow fresh air circulation. • Consider holding meetings in open areas where possible. • Technological alternatives to be exploited for meeting • Attendance if possible (Zoom, Skype, MS Teams). • Training and awareness to address procedures and the importance of social distancing. • Toolbox talks to be conducted outdoors when possible in order for persons to maintain social distancing. Where inclement weather does not allow for this, toolbox talks to be conducted with smaller groupings of workers in a sheltered area large enough to maintain social distancing. 	<p>CONTRACTOR</p>

RISK DESCRIPTION	MITIGATION PLAN/ACTION	RESPONSIBILITY
<p>Signage</p> <p>Conflicting messages/notices displayed on the site in contravention with current requirements to respond to Covid-19</p>	<p>The Principal Contractor is to review all current signs and notices displayed on site. The PC is to avoid conflicting messages/notices that have been in place prior to lockdown and review accordingly.</p> <p>a. Access rules</p> <p>The contractor shall install additional signage with site rules specific to the prevention of spreading the COVID-19 virus at the access control points of the site.</p> <p>b. Notices/Posters with protocols</p> <p>Notices and posters shall be placed and installed to raise awareness and regarding protocols to be followed on site. These notices and posters shall be placed conspicuously at various points on the site including the following places:</p> <ul style="list-style-type: none"> • Entrance • Site notice board • Site Office • Eating areas • Next to toilets and bathrooms • Hand washing stations • Storerooms 	<p style="text-align: center;">CONTRACTOR</p>
<p>Emergency Planning</p> <p>Emergency plan not completed and undated in line with current Regulations of the National Disaster Management Act</p>	<p>An updated emergency plan is to be completed that is in line with the current Regulations of the National Disaster Management Act.</p> <p>a. First aid</p> <p>Extra gloves, and disinfectants are to be available, first aiders are to be issued with at least FFP2 masks should they be required to respond</p> <p>b. Evacuation plans</p> <p>Evacuation plans should consider social distancing.</p> <p>c. Isolation of potentially infected workers</p> <p>The emergency plan is to consider how anyone who arrives on site and displays any of the symptoms, or has a raised temperature.</p>	<p style="text-align: center;">CONTRACTOR</p>

RISK DESCRIPTION	MITIGATION PLAN/ACTION	RESPONSIBILITY
<p>Welfare facilities</p> <p>Lack of procedures and arrangements for the provision of welfare facilities to prevent the spread of Covid-19 between employees on site</p>	<p>The Principal Contractor shall adapt arrangements regarding the provision of welfare facilities to be in line with Government guidelines and requirements.</p> <p>a. Clean, storage for food and personal belongings</p> <p>The Principal Contractor to provide lockable storage for all employees on site, which shall be disinfected daily. Training and awareness to address procedures and the importance of good hygiene practice.</p> <p>b. No personal belongings to be kept on site</p> <p>Apart from extra clean personal clothing no other personal belongings allowed on site accept if kept in locker provided by the Principal Contractor.</p> <p>c. No communal drinking facilities (shared cups etc.)</p> <p>The Principal Contractor to provide adequate supplies of bottled water to all employees on site. Empty bottles to be disposed of as normal waste. Training and awareness to address procedures and the importance of good hygiene practice.</p> <p>d. Eating areas</p> <p>The Principal Contractor is to limit the number of employees at all activities to the minimum. Stagger lunchbreaks and resting periods for work teams. Training and awareness to address procedures and the importance of good hygiene practice and social distancing.</p> <ul style="list-style-type: none"> • Workers are required to stay on site once they have entered it and not use local shops. • Dedicated eating areas should be identified on site to reduce food waste and contamination. <p>Where catering is provided on site, it should provide pre-prepared and wrapped food only;</p> <ul style="list-style-type: none"> • Payments should be taken by contactless card wherever possible; • Crockery, eating utensils, cups etc. should be disposable if supplied; • Drinking water should be provided with enhanced cleaning measures of the tap mechanism introduced; • Tables should be cleaned and disinfected between each use; • All rubbish should be put straight in the bin and not left for someone else to clear up; • All areas used for eating must be thoroughly cleaned at the end of each break and shift, including chairs, door handles, vending machines and payment devices. 	<p style="text-align: center;">CONTRACTOR AND EMPLOYEES</p>

RISK DESCRIPTION	MITIGATION PLAN/ACTION	RESPONSIBILITY
<p>Consequence Management</p> <p>Inadequate processes and procedures in place for consequence management</p>	<ul style="list-style-type: none"> • When non-compliance activities are noted, that activity will be stopped. Should the remedial actions not take place the site will be shut down till the corrective actions have been implemented. • Employees that do not work according to the SSHSS and SSHSP must be disciplined according to the company's disciplinary codes and practices. • Supervisory employees on site must ensure compliance, and when non conformances are noted disciplinary actions should also be followed. • Principal Contractor's should note that they could be fined and even according to the Disaster Management Act, arrested. 	<p>CONTRACTOR</p>

SJ 06 MEASUREMENT AND PAYMENT

SJ 06.01 APPOINTMENT OF A COVID-19 AWARENESS CHAMPIONUnit: Month

The unit of measurement shall be for the number of months the Awareness Champion is employed.

The tender rate shall include the training of the person on basic COVID-19 information and regulations and to ensure that the person has the necessary skills to handle questions and apply correct procedures regarding the COVID-19 regulations.

SJ 06.02 ARRANGING AWARENESS WORKSHOP Unit: Number

The unit of measurement shall be for the number of events arranged.

The tender rate shall include the cost of the service provider, suitable venue and all tuition material and performing assessment procedures.

SJ 06.03 PROVIDING PERSONAL PROTECTIVE EQUIPMENT (PPE)..... Unit: Month

The unit of measurement shall be for the number of months the Contractor must provide PPE to all workers on site.

The tender rate shall include for face masks, gloves, tissues, towels etc. for all workers for the full construction period of 24 months.

SJ 06.04 PROVIDING SANITIZING/WASHING FACILITIES..... Unit: Month

The unit of measurement shall be for the number of months the Contractor must provide sanitizing and washing facilities on site for the total 24 month contract period.

The tender rate shall include for providing sanitizing and washing facilities for all construction workers at all the different construction sites for all PPE equipment as specified.

SJ 06.05 **ADDITIONAL ABLUTION FACILITIES**.....Unit: Number

The unit of measurement shall be for the number of facilities on the different construction sites.

The tender rate shall include for the construction of sanitizing and washing facilities consisting of a concrete floor area min 3 x 3 meter with 3 hand wash basins and IBR roof covering, including 5000ℓ water tank on stand, as well as soak away for grey water. The facilities to be maintained for the duration of construction at each site.

SJ 06.06 **SITE MEETING VENUE**.....Unit: Sum

The unit of measurement shall be for the additional cost relating to the site meeting venue building as specified in SANS 1200 and PS 5.4.

The additional rate shall include for the additional m² size of the building and furniture which will consist of a separate chair and an 800mm x 600mm table desk for each of the 12 places.

SJ 06.07 **PROVIDE NOTICES AND POSTERS**.....Unit: Month

The unit of measurement shall be for the posters and information notices and booklets to raise awareness and to share information about COVID-19.

The posters and notices must be maintained at places as indicated in Item 1.10.7 at all the different construction sites for the duration of construction.

SJ 06.08 **PROVIDE SCREENING FACILITY**.....Unit: Month

The unit of measurement shall be for the provision of a screening facility to accommodate workers daily at the start of every working day, including provision of infrared forehead thermometers and the maintenance of the equipment for the duration of the 24 month contract period.

ADDITIONAL SPECIFICATION**SN IMPLEMENTATION OF LABOUR-INTENSIVE INFRASTRUCTURE PROJECTS UNDER THE EXPANDED PUBLIC WORKS PROGRAMME (EPWP)****CONTENTS**

SN 01	SCOPE
SN 02	TERMINOLOGY AND DEFINITIONS
SN 03	APPLICABLE LABOUR LAWS
SN 04	EMPLOYMENT OF UNSKILLED AND SEMI-SKILLED WORKERS IN LABOUR INTENSIVE WORKS
SN 05	TRAINING OF EPWP WORKERS
SN 06	CONTRACTUAL OBLIGATIONS IN RELATION TO LABOUR
SN 07	SETTING OF RATE OF PAY
SN 08	GENERIC LABOUR INTENSIVE SPECIFICATION

SN 01 SCOPE

This project is part of the Expanded Public Works Programme and aims to alleviate and reduce unemployment. EPWP will achieve this aim through the provision of work opportunities as part of the project. EPWP workers will be recruited and trained in skills relevant to the work to be done on this project. These workers will be employed by the Contractor as part of this project so that they can gain work experience on these projects. The Contractor will be required to manage, supervise and report on the EPWP workers, monthly, for a period of 36 months. Furthermore the Contractor will be required to supervise these EPWP workers to ensure that the work they perform is of the required standard.

Labour-intensive infrastructure projects under the EPWP include:

- using labour intensive construction methods to provide employment opportunities to local unemployed people;
- providing training or skills development to those locally employed workers;
- building cost-effective and quality assets.

The employment of locally employed temporary workers on all EPWP labour-intensive infrastructure projects must be in accordance with the Code of Good Practice for Employment and Conditions for Expanded Public Works Programmes issued in terms of the Basic Conditions of Employment Act, 1997 (Act N°75 of 1997)..

SN 02 TERMINOLOGY AND DEFINITIONS**SN 02.01 TERMINOLOGY**

- | | | |
|----|---------|--|
| a) | BY HAND | refers to the use of tools which are manually operated and powered. |
| b) | EPWP | Expanded Public Works Programme, a National Programme of the government of South Africa, approved by Cabinet. |
| c) | DOL | Department of Labour. Labour-intensive refers to methods of construction involving a mix of machines and labour, where labour, |

utilising hand tools and light plant and equipment, is preferred to the use of heavy machines, where technically and economically feasible. (Note: The normal emphasis on the cost-effectiveness and quality of the asset must be retained.)

- d) **Public body** refers to a department, trading entity, constitutional institution, municipality, public entity or municipal entity
- e) **Scope of work** refers to a specification and description of the services or construction works which are to be provided and any other requirements and constraints relating to the manner in which the contract is to be performed

SN 02.02 DEFINITIONS

- (a) "employer" means the contractor or any party employing the worker under the EPWP Programme.
- (b) "client" means the Department of Public Works.
- (c) "worker" means any person working or training in an elementary occupation on an EPWP.

SN 03 APPLICABLE LABOUR LAWS

In line with the Expanded Public Works Programme (EPWP) policies, the Code of Good Practice for Employment and Conditions of Work for Expanded Public Works Programmes read in conjunction with a Ministerial Determination for Expanded Works Programmes issued by the Minister of Labour in terms of Section 50(1) of the Basic Conditions of Employment Act of 1997 of which extracts have been reproduced below in clauses SN 04, shall apply to works described in the scope of work and which are undertaken by unskilled or semi-skilled workers.

SN 04 EMPLOYMENT OF UNSKILLED AND SEMI-SKILLED WORKERS IN LABOUR INTENSIVE WORKS

SN 04.01 REQUIREMENTS FOR THE SOURCING AND ENGAGEMENT OF LABOUR

The beneficiaries of the programmes should be locally-based (as close to the project site as possible) individuals prepared to work on the specific EPWP.

In order to spread the benefits as broadly as possible in the community, a maximum of one person per household should be employed, taking local available labour into account.

Workers from other areas may be employed if they have skills that are required for a project and there are not enough persons in the local communities who have those skills or who could undergo appropriate skills training. However, workers from other communities should not exceed 20% of all persons working on a programme. A proper skills audit should be conducted, where possible, in an area where an EPWP is in operation.

Programmes should set participation targets for employment with respect to women, youth, and people with disabilities.

The proposed targets are:

- 55% women;
- 40% youth from 16 to 35 years of age; and
- 2% people with disabilities.

EPWPs should seek to achieve these targets in all occupational categories. Persons under sixteen years of age may not be employed on EPWP.

SN 04.02 SPECIFIC PROVISIONS PERTAINING TO SANS 1914-5

Definitions

Targeted labour: Unemployed persons who are employed as local labour on the project.

Contract participation goals

- The specified contract participation goal for the contract is stated in the Scope of Works. The contract participation goal shall be measured in the performance of the contract to enable the employment provided to targeted labour to be quantified.
- The wages and allowances used to calculate the contract participation goal shall, with respect to both time-rated and task rated workers, comprise all wages paid and any training allowance paid in respect of agreed training programmes.
- Further to the provisions of clause 3.3.2 of SANS 1914-5, written contracts shall be entered into with targeted labour.

The definition for net amount shall be amended as follows:

- Financial value of the contract upon completion, exclusive of any value added tax or sales tax which the law requires the employer to pay the contractor.

SN 05 TRAINING OF EPWP WORKERS

The contractor shall provide all the necessary on-the-job training to targeted labour to enable such labour to master the basic work techniques required to undertake the work in accordance with the requirements of the contract in a manner that does not compromise worker health and safety.

Three types of training are applicable, namely

- Life skills;
- On the job training;
- First Aid training;
- Technical Skills training.

Training will be implemented by training instructors accredited by DOL and/or CETA:

- EPWP workers shall be employed on the projects for a minimum period of 12 months.
- EPWP workers shall be deployed on projects in the vicinity of their homes. The same arrangements as for other workers regarding accommodation, subsistence and travel shall be applicable to EPWP workers.

SN.4

- (a) The contractor shall provide all the necessary on-the-job training to targeted labour to enable such labour to master the basic work techniques required to undertake the work in accordance with the requirements of the contract in a manner that does not compromise worker health and safety.
- (b) The cost of the formal training of targeted labour, will be funded by the provincial office of the Department of Labour. This training should take place as close to the project site as practically possible. The contractor, must access this training by informing the relevant provincial office of the Department of Labour in writing, within 14 days of being awarded the contract, of the likely number of persons that will undergo training and when such training is required. The employer must be furnished with a copy of this request.
- (c) A copy of this training request made by the contractor to the DOL provincial office must also be faxed to the EPWP Training Director in the Department of Public Works
- (d) The contractor shall be responsible for scheduling the training of workers and shall take all reasonable steps to ensure that each beneficiary is provided with a minimum of six (6) days of formal training if he/she is employed for 3 months or less and a minimum of ten (10) days if he/she is employed for 4 months or more.
- (e) The contractor shall do nothing to dissuade targeted labour from participating in the above mentioned training programmes.
- (f) An allowance equal to 100% of the task rate or daily rate shall be paid by the contractor to workers who attend formal training, in terms of (d) above.
- (g) Proof of compliance with the requirements of (a) to (e) must be provided by the Contractor to the Employer prior to submission of the final payment certificate.

SN 06 CONTRACTUAL OBLIGATIONS IN RELATION TO LABOUR

The EPWP workers to be employed in the programme (EPWP) shall be directly contracted to the Contractor. Over and above the construction and project management responsibilities, the contractor will be expected to perform the tasks and responsibilities as set out in this specification.

Implementation of labour intensive practices under the Expanded Public Works Programme (EPWP) is required to a value of not less than 10% of the tendered contract amount for wages paid to local labour.

SN 07 PAYMENT OF WORKERS

Employers must pay workers at least the minimum rate as stipulated in the Ministerial Determination: Expanded Public Works Programme

Workers can be paid on the basis of the number of tasks completed. These workers are referred to as "task-rated workers". Alternatively, workers can be paid on a daily rate.

There are jobs where it is not possible to pay workers on the basis of tasks performed. These workers must be paid on the basis of the amount of time they worked. They are referred to as "time-rated workers".

On the task-based system, a worker is paid for each task completed or part thereof.

If workers are informed a day before that work will not take place the next day, they should not be entitled to any payment.

Workers will be paid a training allowance in case they are required to attend agreed training programmes. This should be equal to 100% of the daily task rate for task-rate workers or 100% of the daily rate of pay for time-rated workers. All the costs of training will be covered, for example, travel, trainers, material, tuition fees.

Where a worker participates in a learnership, the relevant learnership determination must be used to determine the training allowance whilst on training.

Each worker must be given written particulars of employment and verbal explanations in an appropriate language of their rate of pay and how this is to be calculated.

Where a project is completed earlier than anticipated the worker should receive the full agreed remuneration for the stipulated period of the contract if the pay for the task was to be calculated on the basis of time. Where such work was to be performed on a task-based system, the full agreed remuneration for the task should be paid for early completion.

SN 08 GENERIC LABOUR INTENSIVE SPECIFICATION

The Generic Labour-intensive specification below is the same as SANS 1921-5, Construction and management requirement for works contracts- Part 5: Earthworks activities which are to be performed by hand and should be included in the scope of works without amendment or modification as set out below.

SN 08.01 Scope

This specification establishes general requirements for activities which are to be executed by hand involving the following:

- a) trenches having a depth of less than 1.5 metres
- b) cleaning of storm water drainage
- c) cleaning of roads and sidewalks
- d) clearing of fence routes
- e) cleaning and site keeping
- d) cleaning of buildings

SN 08.02 Precedence

Where this specification is in conflict with any other standard or specification referred to in the Scope of Works to this Contract, the requirements of this specification shall prevail.

SN 08.03 Hand excavateable material

Hand excavateable material is material:

- a) granular materials:
 - i) whose consistency when profiled may in terms of table 1 be classified as very loose, loose, medium dense, or dense; or
 - ii) where the material is a gravel having a maximum particle size of 10mm and contains no cobbles or isolated boulders, no more than 15 blows of a dynamic cone penetrometer is required to penetrate 100mm;
- b) cohesive materials:
 - i) whose consistency when profiled may in terms of table 1 be classified as very soft, soft, firm, stiff and stiff / very stiff; or
 - ii) where the material is a gravel having a maximum particle size of 10mm and contains no cobbles or isolated boulders, no more than 8 blows of a dynamic cone penetrometer is required to penetrate 100mm;

Note:

- i) A boulder, a cobble and gravel is material with a particle size greater than 200mm, between 60 and 200mm.
- ii) A dynamic cone penetrometer is an instrument used to measure the in-situ shear resistance of a soil comprising a drop weight of approximately 10 kg which falls through a height of 400mm and drives a cone having a maximum diameter of 20mm (cone angle of 60° with respect to the horizontal) into the material being used.

SN 08.04 Trench excavation

All hand excavateable material in trenches having a depth of less than 1,5 metres shall be excavated by hand.

SN 08.05 Compaction of backfilling to trenches (areas not subject to traffic)

Backfilling to trenches shall be placed in layers of thickness (before compaction) not exceeding 100mm. Each layer shall be compacted using hand stampers

- a) to 90% Proctor density;
- b) such that in excess of 5 blows of a dynamic cone penetrometer (DCP) is required to penetrate 100 mm of the backfill, provided that backfill does not comprise more than 10% gravel of size less than 10mm and contains no isolated boulders, or
- c) such that the density of the compacted trench backfill is not less than that of the surrounding undisturbed soil when tested comparatively with a DCP.

SN 08.06 Excavation

All hand excavateable material including topsoil classified as hand excavateable shall be excavated by hand. Harder material may be loosened by mechanical means prior to excavation by hand.

The excavation of any material which presents the possibility of danger or injury to workers shall not be excavated by hand.

SN 08.017 **Clearing and grubbing**

Grass and small bushes shall be cleared by hand.

SN 08.08 **Shaping**

All shaping shall be undertaken by hand.

SN 08.09 **Loading**

All loading shall be done by hand, regardless of the method of haulage.

SN 08.10 **Haul**

Excavation material shall be hauled to its point of placement by means of wheelbarrows where the haul distance is not greater than 150 m.

SN 08.11 **Offloading**

All material, however transported, is to be off-loaded by hand, unless tipper-trucks are utilised for haulage

SN 08.12 **Spreading**

All material shall be spread by hand.

SN 08.13 **Compaction**

Small areas may be compacted by hand provided that the specified compaction is achieved.

SN 08.14 **Grassing**

All grassing shall be undertaken by sprigging, sodding, or seeding by hand.

SN 08.15 **Stone pitching and rubble concrete masonry**

All stone required for stone pitching and rubble concrete masonry, whether grouted or dry, must be collected, loaded, off loaded and placed by hand.

Sand and stone shall be hauled to its point of placement by means of wheelbarrows where the haul distance is not greater than 150m.

Grout shall be mixed and placed by hand.

SN 08.16 **Manufactured Elements**

Elements manufactured or designed by the Contractor, such as manhole rings and cover slabs, precast concrete planks and pipes, masonry units and edge beams shall not individually, have a mass of more than 320kg. In addition the items shall be large enough so that four workers can conveniently and simultaneously acquire a proper hand hold on them.

SN 08.17 Roads

The following operations may be carried out using labour intensive methods:

1. Site clearance
2. Layer work construction including loading, hauling and spreading material.

Note: All compaction should be done using conventional compaction equipment and where necessary the use of heavy machinery may be employed to loosen material for excavation by hand. Where significant use of blasting is indicated, then the Works are probably not suitable for labour intensive methods.

3. Where higher standards of roads are to be constructed then the following operations may be included:
 - Macadam base course either dry, water bound or emulsion bound; foamed bitumen gravel; emulsion treated gravel; or slurry bound or composite macadams.
 - Application of bitumen bound surface treatment (cold) including spreading and dragging of chips.
 - Slurry treatments to existing or new road surfaces.
 - In situ concrete roads
 - Segmented block paved roads.
 - Cast in-situ block pavements (hyson-cells);
 - Road markings.
4. Fencing.
5. Erection of road signs.
6. Grass maintenance.
7. Road reserve maintenance.
8. Rubble masonry bridges, culverts and retaining walls

SN 08.18 Storm water

The following operations may be constructed using labour intensive construction methods:

1. Gabions and reno mattresses.
2. Small diameter pre-cast concrete elements (pipes and arches).
3. Grassed or lined water channels

SN 08.19 Sewers

The following operations may be constructed using labour intensive construction methods:

1. Sewer manholes either in brickwork or using specially manufactured pre-cast manhole rings (individual mass less than 320kg).
2. Sewer manhole covers and lids using specially designed pre-cast units.
3. Maturation or flocculation ponds with least dimension not exceeding 100m.

SN 08.20 Water

The following operations may be constructed using labour intensive construction methods:

1. Laying of water pipelines, fittings and house connections in all materials (including steel) where the mass of individual pipe lengths does not exceed 320kg.
2. Construction of ferro-cement reservoirs.
3. Excavation for membrane lined and floating roof reservoirs.

4. Construction of small masonry reservoirs.
5. Spring and well protection measures

SN 08.21 Haul of Material

Where the haul of any material exceeds 200m, consideration should be given to the use of local resources for transporting material. This includes the use of animal drawn vehicles and small trailer combinations utilising locally sourced tractors. All loading and off loading can be done by hand.

SN 08.22 Electricity

The following operations may be constructed using labour intensive methods:

1. Excavation of trenches for reticulation of all voltages.
2. Excavation for and erection of poles for overhead lines.
3. Installation of all electricity cables (joints and terminations by qualified persons).

SN 08.23 Bill of quantities

Labour-intensive works is highlighted in the bills of quantities for the payment items relating to labour-intensive works (LI).

SN 09 REPORTING

The Consultant shall, before certifying a contractor's payment certificate, ensure that the contractor has submitted labour information in a format and timeframe specified by the employer. If the information submitted by the contractor is inadequate the consultant shall not submit the payment certificate to the employer for payment.

The Contractor's payment invoices shall be accompanied by labour information for the corresponding period in a format specified by the employer. If the contractor chooses to delay submitting payment invoices, labour returns shall still be submitted as per frequency and timeframe stipulated by the Employer. The contractor's invoices shall not be paid until all pending labour information has been submitted.

SN 10 MEASUREMENTS AND PAYMENT

The number of EPWP workers specified for this contract that will receive orientation and life skills development training is 15 and technical training is 15

SN 10.01 PAYMENT FOR EMPLOYMENT AND TRAINING OF EPWP WORKERS (TARGET: - 15 EPWP WORKERS)

- SN 10.01.01 Orientation and Life Skills development training for EPWP workers for an average of 10 days per EPWP worker.....Unit: PC Sum
- SN 10.01.02 Technical skills training for EPWP workers for an average of 20 days per EPWP worker.....Unit: PC Sum
- SN 10.01.03 First Aid Level 1 training for EPWP workers for an average of 5 days per EPWP worker.....Unit: PC Sum

SN.10

SN 10.01.04 Profit and attendance for administration of items 1 and 2 above..... Unit: %

SN 10.02 PAYMENT FOR TRAVELING OF EPWP WORKERS

SN 10.02.01 Travelling (based on return trip/EPWP worker) Unit: worker/ day

The unit of measurement shall be the number of EPWP workers transported from the nearest local community to the work place and back on a daily basis. The tendered shall allow for the cost of each worker to be able to safely reach the work place and travel back each day and shall be measured as a number for each worker per day.



REPAIR, MAINTENANCE AND SERVICING CONTRACT

LAND PORT OF ENTRY: KOSI BAY: APPOINTMENT OF A SERVICE PROVIDER(S) FOR THE MAINTENANCE AND REPAIRS OF BUILDING, CIVIL, MECHANICAL AND ELECTRICAL INFRASTRUCTURE AND INSTALLATIONS FOR A PERIOD OF 36 MONTHS.



Public Works
& Infrastructure
Department:
Public Works and Infrastructure
REPUBLIC OF SOUTH AFRICA

PART C4: SITE INFORMATION



PG-03.1 (EC) SITE INFORMATION – GCC (2010) 2nd Edition 2010

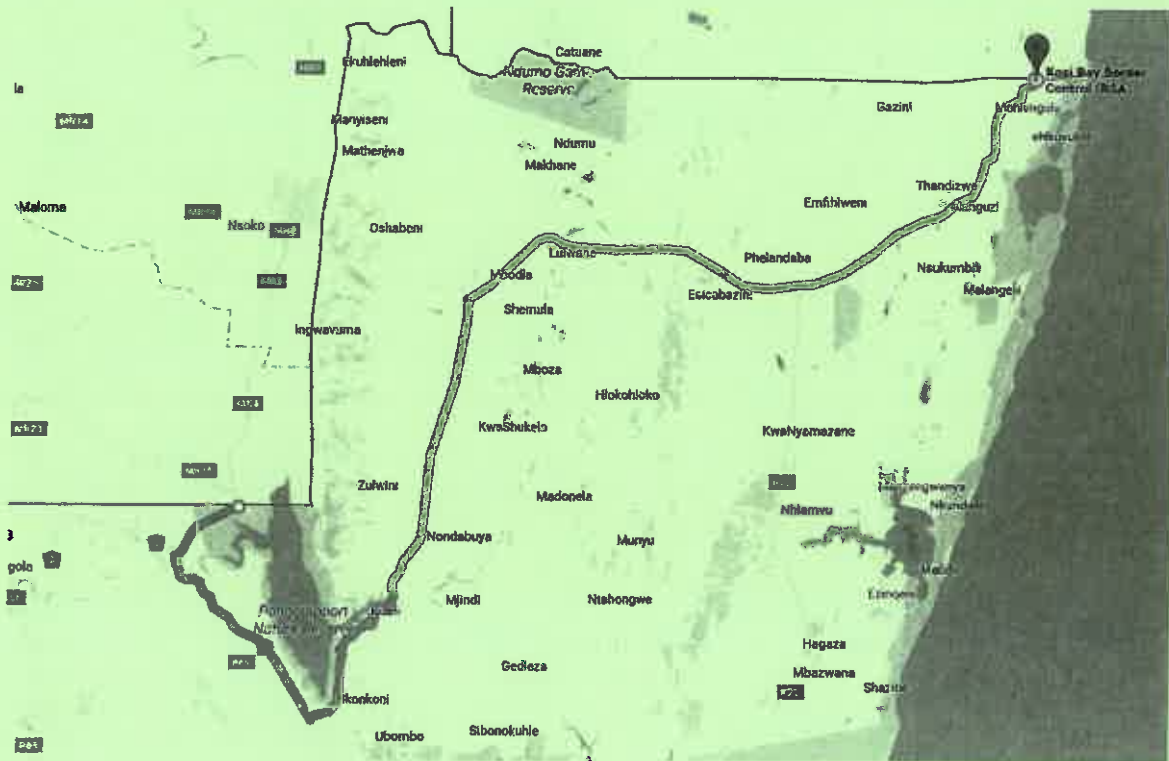
Project title:	Land Port of Entry: Kosi Bay: Appointment of a Service Provider(s) for the Maintenance and repairs of Building, Civil, Mechanical and electrical Infrastructure and Installations for a period of 36 Months.				
Tender no:	<i>H23/007A1</i>	WCS no:	<i>055330</i>	Reference no:	N/A

C4 Site Information

The location of each facility is briefly below:

Kosi Bay Port of Entry is situated on the southern borderline of Mozambique approximately 20 km from Manguzi Town. The GPS coordinate is 26° 51' 52.65" S, 32° 49' 45.86" E. Operating hours are from 08:00 to 16:00.

A map indicating the position of Kosi Bay Port of Entry on the RSA/Mozambique borderline:

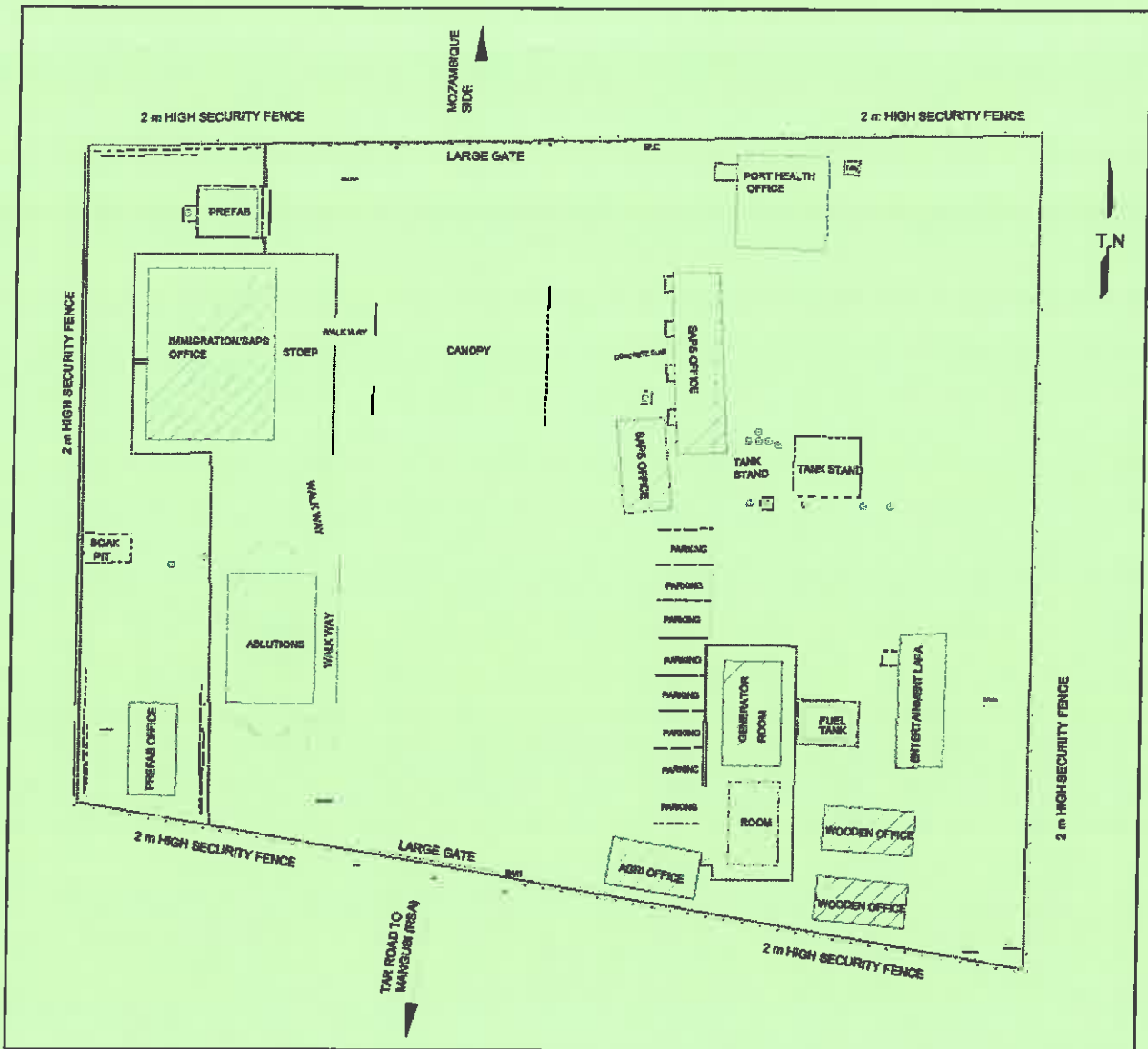




- Operational Area of the Port of Entry



*(image from Google Maps)



*Note: Operational Buildings is not limited to the above-mentioned list



Housing Areas of the Kosi Bay Port of Entry consist of the following (See table and drawing below)

- Two Accommodation Houses are found close by Manguzi Police Station (See google Image below)

ITEM	DESCRIPTION
1	House 1
2	House 1 Outbuilding
3	House 2
4	House 2 Outbuilding

*Note: Residential Buildings is not limited to the above-mentioned list



(Image from google maps)

DRAWING REGISTER



CLIENT:	DEPARTMENT OF PUBLIC WORKS		
PROJECT MANAGER:	G K LUKHELE		
TENDER NO:	H17/007		
WCS No:	WCS 052728		
PROJECT TITEL:	KOSIBAY PORT OF ENTRY: 36 MONTHS MAINTENANCE; SERVICING AND REPAIR OF BUILDINGS; CML; MECHANICAL AND ELECTRICAL INFRASTRUCTURE AND INSTALLATIONS		
	DRAWING TITLE	DRAWING No:	REVISION NUMBER
	KOSIBAY PORT OF ENTRY: DRAWING REGISTER	C5852/00	0
	KOSIBAY PORT OF ENTRY: SITE & FENCE LAYOUT PLAN	C5852/01	0
	KOSIBAY PORT OF ENTRY: WATER RETICULATION SITE	C5852/02	0
	KOSIBAY PORT OF ENTRY: SEWER NETWORK SITE LAYOUT	C5852/03	0
	KOSIBAY PORT OF ENTRY: ELECTRICAL NETWORK SITE	EE10718/00	0
	KOSIBAY PORT OF ENTRY: FIRE LAYOUT PLAN	ME304107/00	0

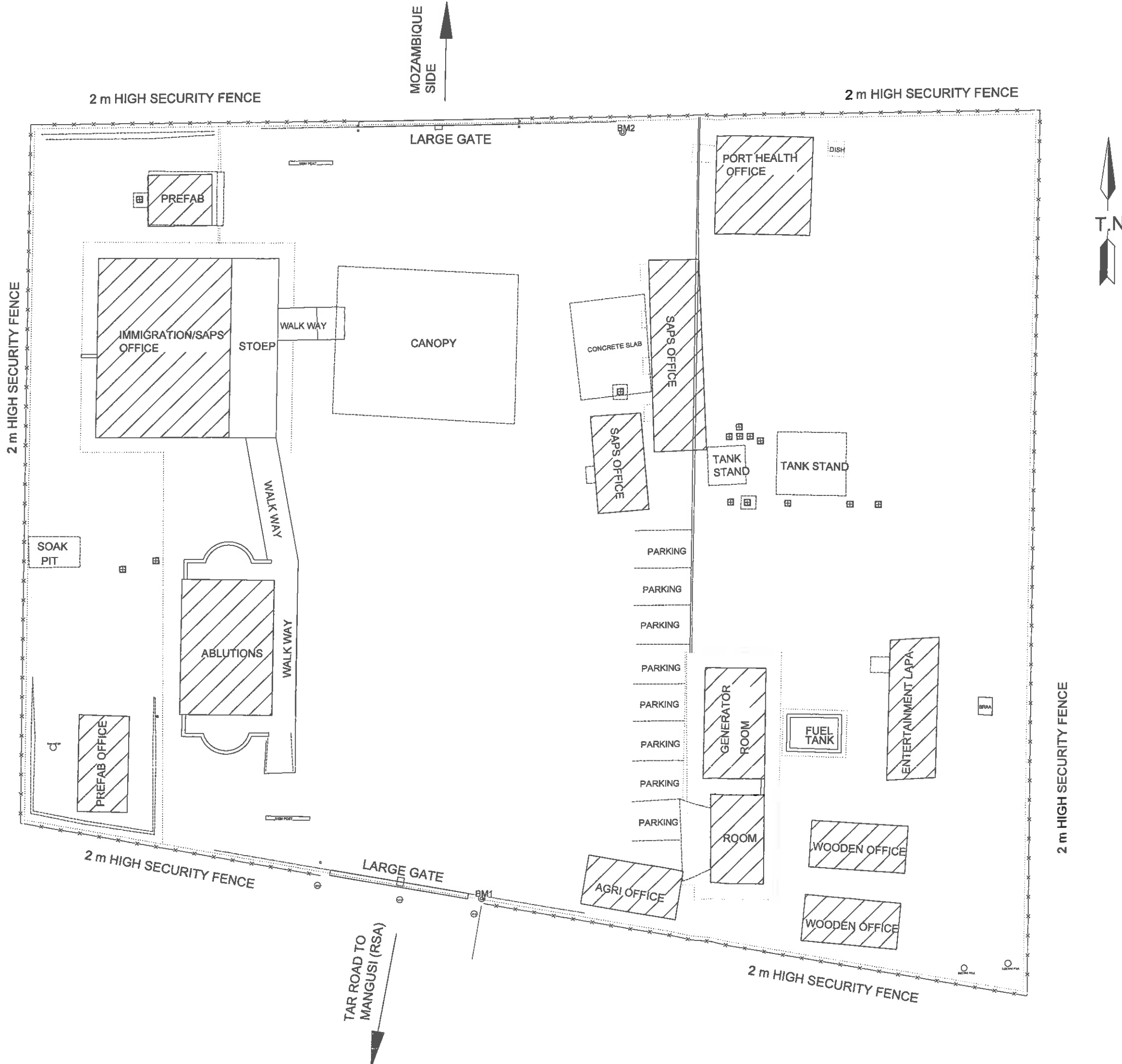
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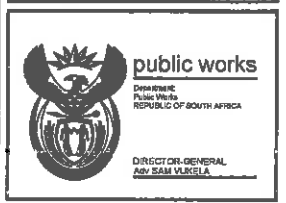
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 KOSIBAYPORT OF ENTRY:
 36 MONTHS MAINTENANCE;
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 AND ELECTRICAL
 INFRASTRUCTURE AND
 INSTALLATIONS
 WCS number
 WCS 052728
 drawing title
 KOSIBAY PORT OF ENTRY:
 DRAWING REGISTER
 designed by
 J. H. MÖLLER
 scale
 1:750
 drawn by
 J. CAMPER
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 8 FEBRUARY 2019
 checked by
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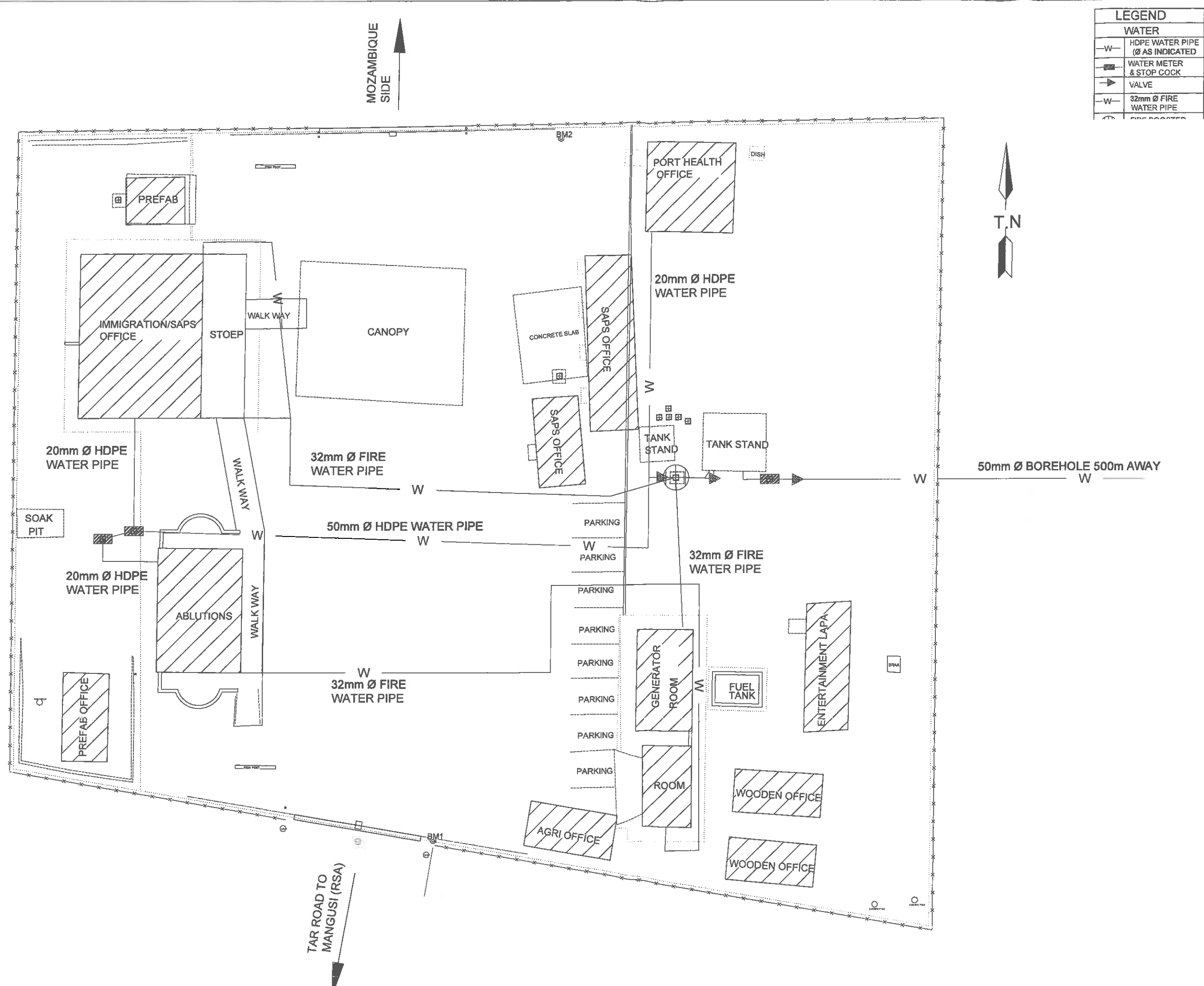
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WCS number: WCS 052728
 drawing title: KOSIBAY PORT OF ENTRY:
 SITE AND FENCE LAYOUT
 title no.: designed: J. H. MÖLLER
 scale: 1:750 drawn: J. CAMPHER
 date: 8 FEBRUARY 2019 checked: J. H. MÖLLER
 drawing number: C5852/01

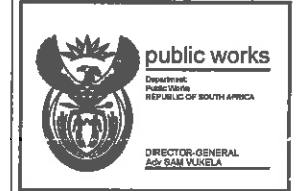


LEGEND	
WATER	
—W—	HDPE WATER PIPE (Ø AS INDICATED)
⊠	WATER METER & STOP COCK
→	VALVE
—W—	32mm Ø FIRE WATER PIPE
⊙	FIRE SCOPES

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 DATE: 8 FEBRUARY 2019
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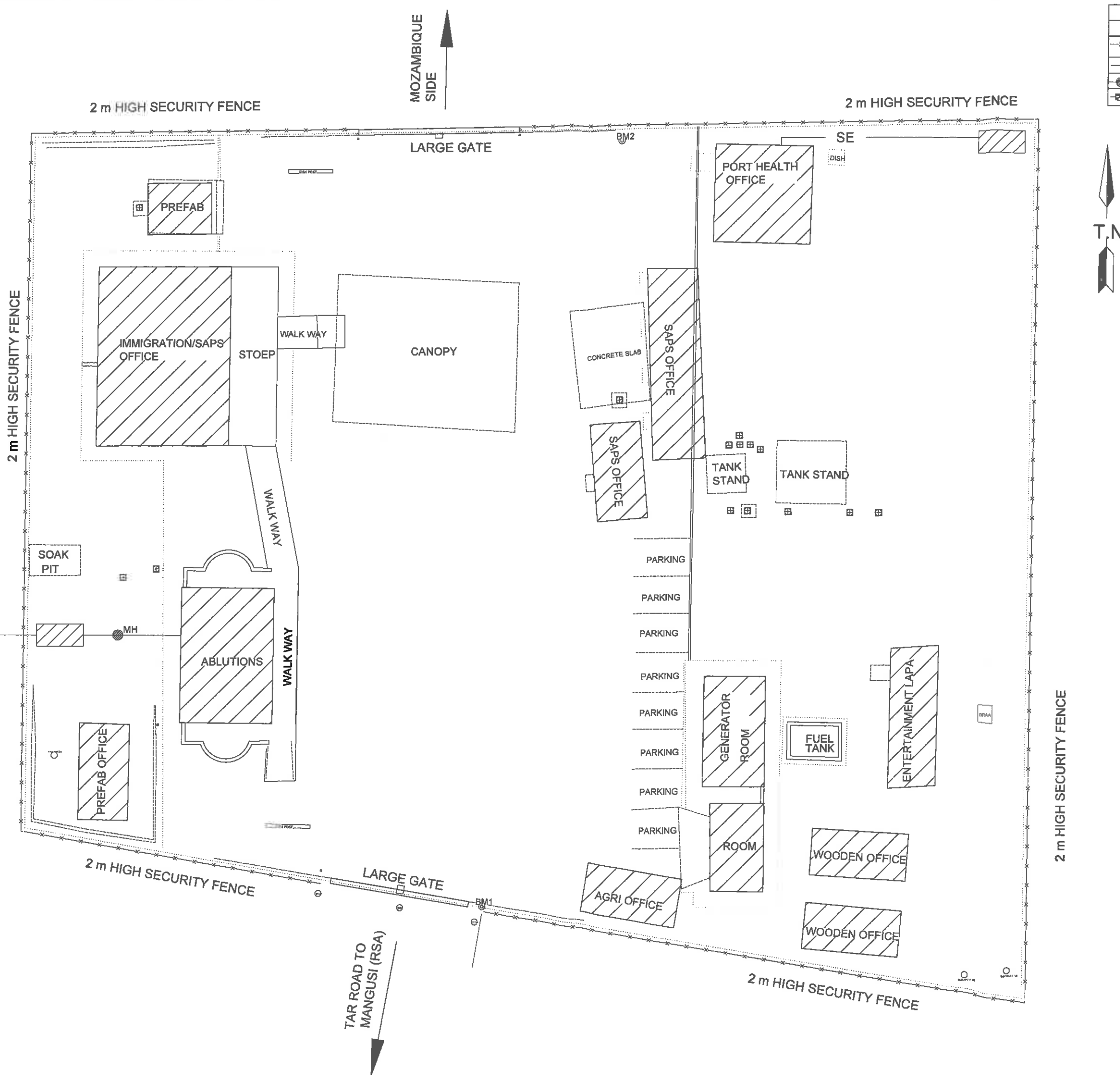
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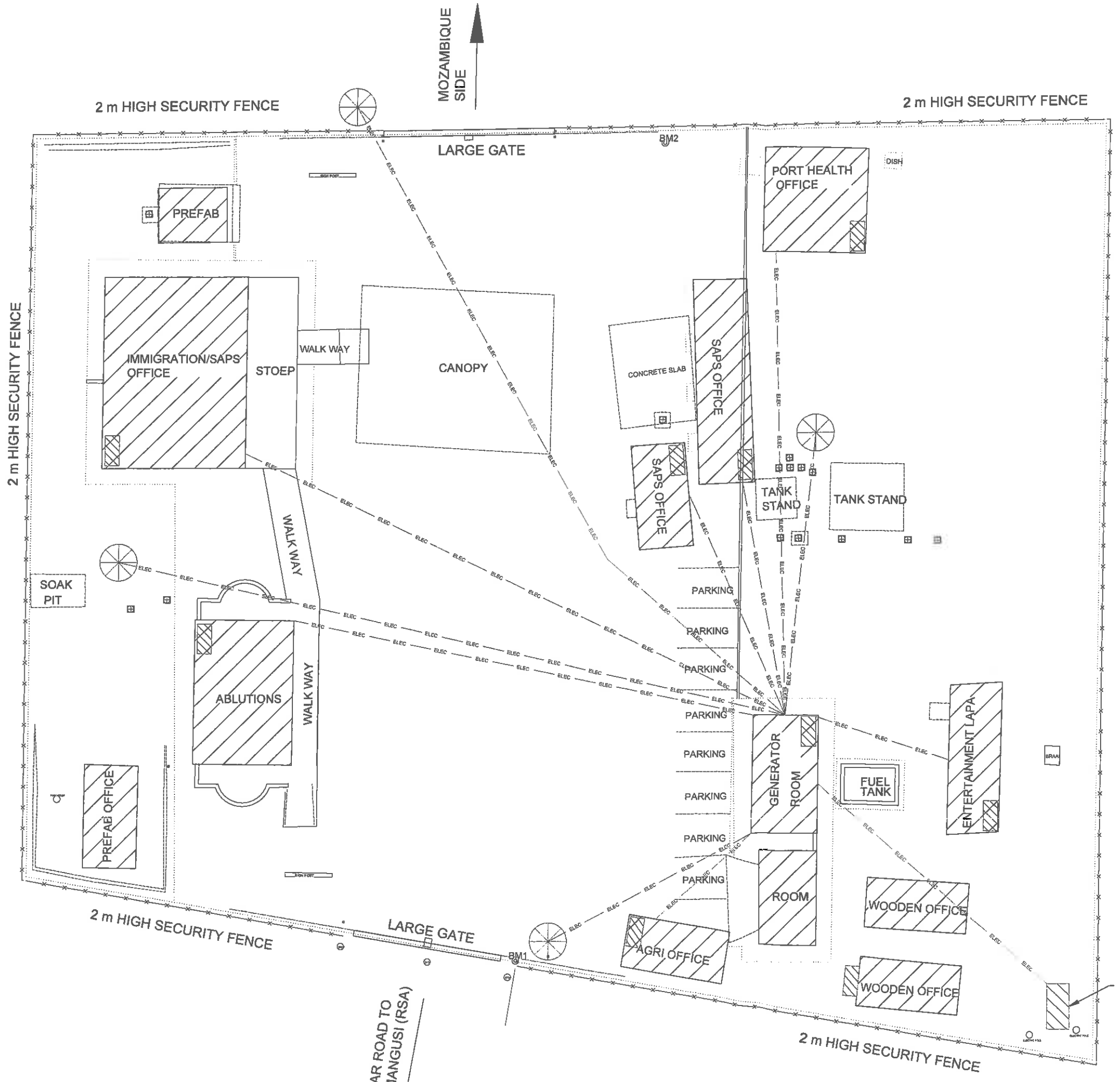
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 ref no.: J. H. MÖLLER
 scale: 1:750
 date: 8 FEBRUARY 2019
 drawing number: J. H. MÖLLER



LEGEND	
SEWER	
—SE—	110mm Ø PVC SEWER LINES
▨	SEPTIC TANK
⊕	MANHOLE
—	FRENCH DRAIN



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discipline: CIVIL AND STRUCTURAL ENGINEERING services:			
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ref no:	designer: J. H. MÖLLER	scale: 1:750	drawn: J. CAMPER
date: 8 FEBRUARY 2019	checked: J. H. MÖLLER	copy drawing number:	
C5852/03			



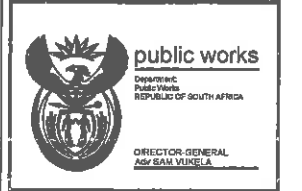
LEGEND	
ELECTRICITY	
-ELEC-	ELECTRICAL CABLE
⊗	LIGHT POLE
▨	KIOSK



LEGEND		
CABLE ROUTES		
FROM	TO	CABLE SIZE
ESKOM SUPPLY	GENERATOR ROOM	16mm² 3 CORE
GENERATOR ROOM	ENTERTAINMENT AREA	10mm² 3 CORE
GENERATOR ROOM	PORT HEALTH	10mm² 3 CORE
GENERATOR ROOM	SAPS OFFICE	10mm² 3 CORE
GENERATOR ROOM	SAPS OFFICE	10mm² 3 CORE
GENERATOR ROOM	IMMIGRATIONS/SAPS	16mm² 3 CORE
GENERATOR ROOM	ABLUTIONS	10mm² 3 CORE
GENERATOR ROOM	AGRICULTURE	10mm² 3 CORE
GENERATOR ROOM	4 X STREET LIGHTS	16mm² 3 CORE

No.	DATE	AMENDMENT	D.P.W.

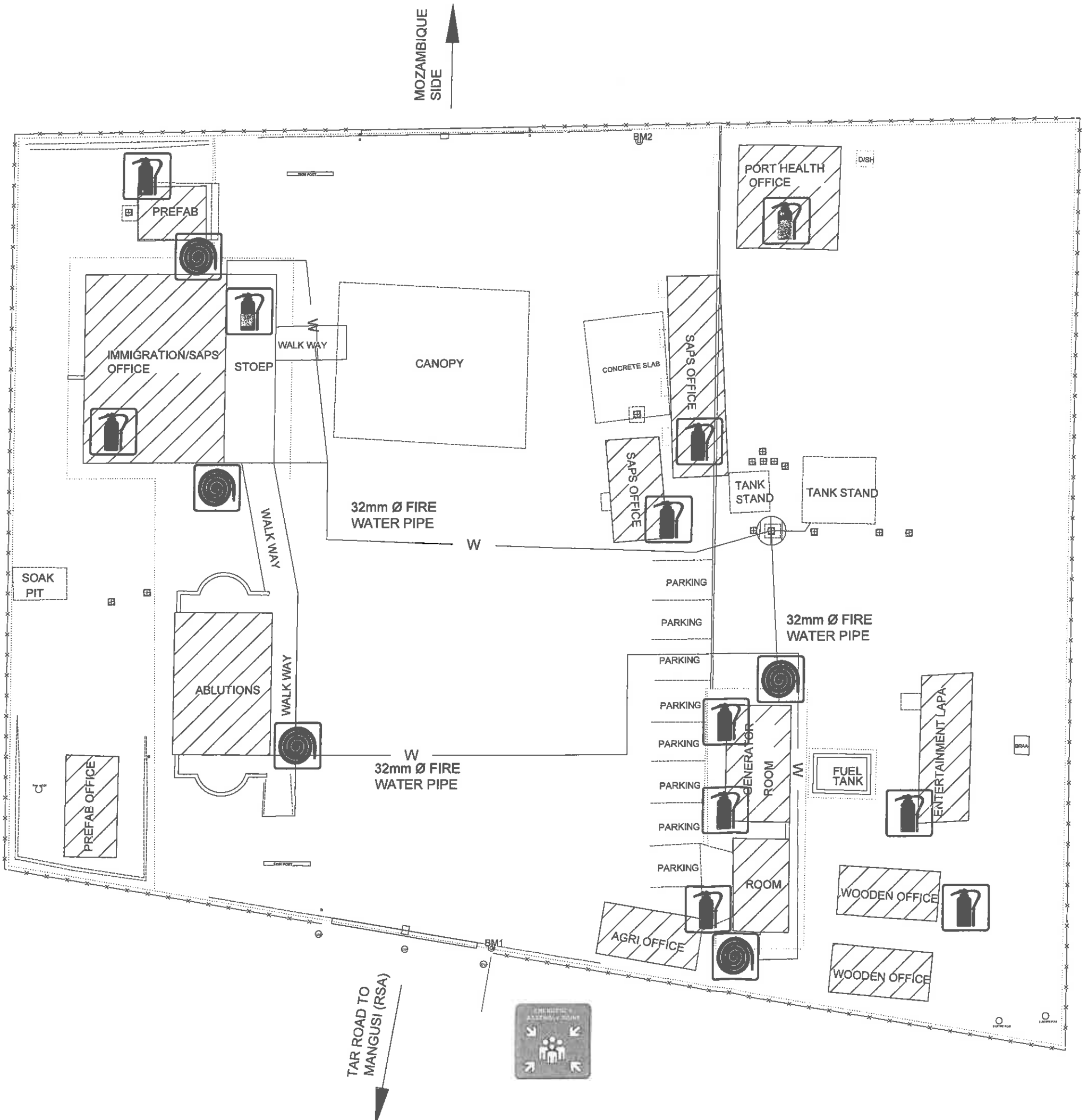
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 AND ELECTRICAL
 INFRASTRUCTURE AND
 INSTALLATIONS

WCS number: WCS 052728
 drawing title: KOSIBAY PORT OF ENTRY:
 ELECTRICAL RETICULATION LAYOUT
 drawing by: J. H. MÖLLER
 checked by: J. CHAMBER
 date: 8 FEBRUARY 2019
 drawing number: EE10718/00



LEGEND	
	ASSEMBLY POINT
	EXTINGUISHER
	HOSE REEL
	BOOSTER PUMP



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 AND ELECTRICAL
 INFRASTRUCTURE AND
 INSTALLATIONS

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 ref. no.: designed: J. H. MÖLLER
 scale: 1:750 drawn: J. CAMPLER
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ME304107/00