



DEPARTMENT OF PUBLIC WORKS

EMPANGENI PRISON: RAMP OF BUILDINGS AND BUILDING RELATED WORKS: MAINTENANCE: UPGRADE OF CIVILS: & CIVIL INFRASTRUCTURE (WCS 044019)

STATUS QUO REPORT



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EXECUTIVE SUMMARY

The Department of Public Works initiated a Repair and Maintenance Programme (RAMP) to address maintenance backlogs and to ensure the optimum functioning of state facilities.

This report, which addresses the Buildings, Civil Infrastructure and Wet Services, defines the scope of work and cost estimates for the Follow-on RAMP project at the Qalakabusha and Empangeni Prisons.

Since 2007, no structured RAMP project has been implemented, thus there has been significant deterioration in civil and structural elements to the facilities.

Deterioration has been due to lack of structured maintenance for a long time, vandalism, general wear and tear, corrosive coastal weather conditions, operational damage, latent defects and overloading of services.

Certain functional improvements and essential upgrades are required and have been recommended.

The **VAT exclusive cost estimate** of the identified Works is tabulated below, in accordance with 8 identified installations, whilst the cost estimate for the entire scope of work, excluding allowance for CPA amounts to **R XXXXXXXX excl. VAT**.

1. BACKGROUND

1.1 The RAMP Programme

The Department of Public Works (DPW) initiated a Repair and Maintenance Programme (RAMP) in order to implement a structured maintenance programme to address maintenance backlogs and to ensure the optimum functioning of State facilities. State prisons were a focus of the RAMP programme, due to the levels of overcrowding being experienced at the prisons.

The Department of Public Works then appointed Tripple CCC Technology in August 2007 to provide professional Civil and Structural Engineering Services for the follow-on RAMP for Building, Wet Services and Structural elements at Qalakabusha and Empangeni Prisons.

1.2 Preliminary Investigation

The purpose of this preliminary report is to provide an overview and cost estimate of the Scope of Work proposed for the follow-on RAMP programme for civil and structural elements at Qalakabusha Correctional Centre (New Prison) and Empangeni Prison (Old Prison).

This report is based on site inspections conducted by Tripple CCC Technology and interviews with Department of Correctional Services (DCS) personnel in November 2015.

1.3 Prison Particulars

The prison facilities comprises of the following components:

- New Prison complex (Qalakabusha Correctional Centre);
- Old Prison complex (Medium Prison);
- Residential Facilities;

New Prison

- Male and female singles quarters;
- Married persons quarters (Flats);
- Free standing houses;

Old Prison

- Free standing Houses;
- Single quarters;

2. FINDINGS

The preliminary investigations carried out for the two correctional facilities according to various installations yielded the following:

2.1 Installation 1: New prison Complex

2.1.1 Components

Installation 1 comprises of the following:

- Entrance gatehouses
 - 1x gatehouse to main complex
 - 1x gatehouse to prison facility
- Administration block
 - Administration block,
 - Visitor and Admissions Building
 - Day Parole Cells Facility
 - DCS staff change room facility
- Logistics, workshops, kitchen, laundry
- Education centre
- Training / workshop facility
- Club facility
- Cell blocks (x6 with 3 subunits)
- Hospital cell block (x1)
- Car park

2.1.2 General Condition

The structural elements and civil infrastructure of this facility were repaired in the last RAMP program. However, there has been no structured program of maintenance for the last four(4) years, as a result there has been significant deterioration to the civil and structural elements as highlighted below.

- Two materials have been used for the roofing at the prison namely:
 - Kliplock roof sheets, with chromadek underside;
 - Perspex sheeting, for sky lighting;

The kliplock is experiencing discoloration and extensive rusting, which can be attributed to the coastal weather effects and ageing;
It should be noted that the lifespan of the roof sheets is 10years according to the manufacturer.
- Kliplock eave closures are rusting;
- Perspex sheeting is buckling and breaking up due to the extreme wind conditions;
- Rain water and moisture penetration into the structure's fabric and elements;
- Steel gutters are being affected by corrosion, thus breaking in parts or become dislocated;
- Some rain water down pipes are broken off, or no longer in position due to usage, accidents/vandalism;
- Degradation of ceilings (plaster boards) due to water penetration;
- Cracking and seepage to surface of water due to leaking, on concrete ceilings;
- Moulding is noticeable on some building surfaces due to the moisture penetration;
- Insulation sheeting is ripping off due to age and lack of maintenance;
- Graffiti, general dirtiness and ink markings to paint finished walls;

- Walls and tiles are chipped off or in certain areas ripped off completely, for example in the kitchen due to trolleys that are used to ferry food;
- The protective steel angles on division walls within kitchens are also damaged/ removed completely in places;
- In workshops where hard objects are used, walls plaster and paint are deteriorated;
- There exist structural cracks, as seen at cells for kitchen inmates and in the Administration block. This can possibly be attributed to building settlement and/or differential movement, from structure and its founding base; Sizeable hairline cracks on plastered walls, some calling for further structural investigation and resolve. Cracks on brickwork as an extension of expansion joints defined on concrete structure;
- As there are no window stoppers/restrainers, coupled with the harsh coastal windy conditions, banging of windows has resulted in glazing breakages and window frames;
- There are broken door panels with damaged frames as a result of vandalism, corrosive elements and general wear and tear;
- Steel doors and window frames deteriorating due to corrosive coastal conditions;
- Ironmongery broken off due to vandalism;
- Damage to floors as a result of use (heavy objects falling on ceramic tiles);
- Vinyl sheeting ripped off completely as a result of vandalism. Missing vinyl tiles as a result of breakages. Vinyl sheets also being ripped from expansion joints in acts of vandalism;
- Sections of tinted grano floors are warping and breaking off from edges due to moisture penetration and general wear and tear;
- Tiles, especially in inmates' bathroom facilities, are ripping off due to moisture and dampness, etc;
- Water leakages through electrical conduits and light fittings are also a cause for concern;
- Some fire fighting equipment does not comply with national regulations with some fire hose reels broken off and missing fire extinguishers;
- Missing or broken plumbing fixtures and fittings as a result of vandalism by inmates or operational damage with particular reference to mixers, shower roses, water supply and sewer pipes;
- Non-functional or leaking flush-masters;
- Corrosion to chinaware and stainless steel units, due to continual cistern leaks, mixer leaks and/or lack of maintenance (includes whb, urinals, wc's);
- Corrosion of external boundary mesh fence;
- Dirt and litter clogged storm-water channels;
- DCS maintenance personnel noted that the main water supply pipe is continuously leaking, requiring constant repair work and maintenance. During our site investigations, there were two occurrences of water leaks, with one requiring urgent attention due the volume of water loss.
- There are four isolation valves along the main water line. These are either leaking or malfunctioning.
- DCS personnel requested two additional valves on the main line to enable isolation of reasonably smaller sections when conducting maintenance works without shutting off a greater portion of the prison.

- DCS personnel also advised that the Municipal main filter is broken. This has resulted in silt within the prison water system, causing breakages to the local filters and water reticulation related elements.
- Due to recurrent maintenance, gate valve closure threading has worn out and closing or opening is increasingly difficult.
- Most of the flush-masters for the toilets, sinks and showers are damaged. Some of the damage can be attributed to vandalism; all the exposed flush-master valves should be covered by protective screens.
- Frequent blockages were reported by the DCS personnel in the Prison Kitchen. During the last site assessment visit the kitchen floor drains were partially blocked.
- Break-up of secure wire mesh in passages, as trolleys for food constantly bump into the mesh panels, as witnessed especially at passages near the main kitchen area. The scenario poses a risk for escape by inmates as they consistently use the passages.
- Some door leafs have been broken off or removed, including locking mechanism, as they have never worked from the day of installation.
- Corrosion of wire mesh around and in the logistics building, due to weather elements. Broken wire mesh in some areas, due to vandalism and day to day use.
- There are broken or missing Perspex sheets in cell areas, meant for sky lighting.
- The roof cladding has exceeded its guaranteed design life of 10 to 15 years.
-

2.1.3 Recommended Scope of Work

Building works:

- Replace worn and rusted kliplock roofing sheets.
- Rusted kliplok sheets eave closure sheets to be removed and replaced with new. As a maintenance measure, due to the salty water depositing onto the eave closure sheets undersides, there is need to constantly wash it off with high pressure water every 2-3 months to remove the deposits;
- Re-apply paint (spray paint) to kliplok roofing sheets as per manufacturer specification.
- Replace perspex sheets that area broken. Perspex sheets to be either braced with more steel purlins or to be interchanged with steel sheets and minimise breakages as it increases resistance to the wind;
- Replace damaged/cracked/rusted gutters and down pipes, with aluminium ones, as they can withstand corrosion better than say galvanized steel, given the coastal environment location, and they carry a better warranty period generally.
- Repair/Replace fascia boards, and apply paint accordingly to make good finishes.
- Rusted kliplock sheets eave closure sheets to be removed and replaced with new.
- Rotting plaster board ceiling sheets to be removed and replaced, ensuring all leaks or moisture penetration on roof have been fixed. Concrete ceiling undersides affected by water to be repainted and well water proofed above.

- Re-instate ripped off insulation sheets. Torn off parts to be replaced and all surfaces to be properly fixed and made good
- Painting and patch plastering repairs to disfigured walls.
- Crack filler to be applied to hairline cracks, paint over to match.
- Structural cracks require urgent repair, it is however recommended that geo-technical tests be done to confirm the causal effects, in view of the fact that the site is a reclaimed swamp. Should the geo-technical report indicate that fill consolidation is still in progress, then underpinning of the foundations might be necessary. The existing cracks will need to be closely monitored on site, i.e. regular measurement of the crack width and orientation will be recorded to determine the extent of any potential structural failure.
- Cracks being formed as a result of extension to the expansion joints require polysulphide joint fill on surfaces or brickwork and well defined with v-jointing on the surface.
- Broken glazing to be refitted, with putty and applicable enamel paint finish off.
- Broken window frames to be re-fitted and painted to match with enamel paint.
- Broken/missing ironmongery to be replaced.
- Heavily rusted steel doors to be replaced, timber doors to be repaired where applicable or replaced, including replacement to broken or missing ironmongery.
- Repair missing/broken tiling to kitchen, bathroom showers, etc.
- Proper damp proofing to be laid to all wet areas before tile application.
- Bracing and/or protection of secure wire mesh in passages in the form of steel bump rails.
- Repair/replace door leafs have broken off or removed, including locking mechanism.
- Replace wire mesh around and in the logistics building, which has corroded due to weather elements, broken due to vandalism and day to day use. Replace broken or missing Perspex sheets, in cell areas, with a more stable sheet (thicker version), and add bracing, as the current detail design is flimsy and is failing to withstand the coastal wind pressure. Diagonal crack repair with reinforced plaster and Rebuild brickwork along crack length
- Cut out and strip screed around crack and make good screed with a vee joint along movement joint
- Surface bed crack repair with low viscosity epoxy grout

Wet services:

- Replace corroded pipe work embedded in walls,
- Replace embedded shower columns and refit applicable vandal proof roses,
- Replace broken / missing mixers,
- Replace broken or non-functioning flush master system
- Replace main water supply pipe with proper grade, and install same with good practice procedure, i.e. lay on sand bedding and protect from loads with concrete casing.
- Repair leaking main water valves.
- Add 2no. main line valves to facilitate efficient sectional isolation of sections during maintenance.

- Repair/replace broken filters in cell units
- Gate valve closures to be replaced at units where broken.
- Replace/ Repair malfunctioning Fire Hose Reels or pieces thereof.
- Missing Fire Extinguishers to be replaced.
- Replace broken / non-functional flush master units.
- Flush master elbows fitted wrongly to be reconfigured for ease of access
- Install appropriate water filter units at each unit
- Storm water drains need cleaning and constant maintenance
- Broken lever mixers in Hospital to be replaced
- Rusted chinaware in Hospital to be cleaned or replaced where applicable. Broken units to be replaced
- Install flexi pipe mixers in cell kitchenettes to eliminate operational breakages.
- Replace all non-functional wash basins, cisterns etc.
- Repair damaged locking mechanism for all prison manholes
- Clean and un-block all blocked storm-water pipes. Storm-water channel from the main gate to be concrete lined.
- Repair damaged hot-water geysers

2.2 Installation 2: Old Prison

2.2.1 Components

Installation 2 comprises of the following:

- Entrance Gate House
- Administration Block and Offices
- Single and Communal cells
- Hospital Cell
- Kitchen and Logistics Stores
- The garden

2.2.2 General Condition

The current condition of civil and structural elements at the facility leaves a lot to be desired with a sizable amount of work required to reinstate the facility to an acceptable functional condition, with particular emphasis to the following:

- Corrugated roof sheets were used for this structure, though generally good, some sheets are lifting up due to wind forces;
- Fibre cement fascia boards were used around the complex, and the bulk of the pieces are either flaking off paint, out of place or broken. Some of the pieces are heavily termite infested.
- Concrete ceilings are showing signs of moisture through mould growth, and plaster board ceilings are moulding due to steam effects or roof leaks in some parts.
- There is general degradation of the walls, due to dirt, ink markings, sharp object scratching, etc. Also evident on the walls is moulding due to moisture rising through the walls, or general disfigurement as embedded steel water pipes are rusting.

- As a result of degradation, it has now been noted that the walls to some of the cells are built of earth (adobe), and this poses a security risk, thus brick skin reinforcement will be appropriate.
- There are the structural cracks on the walls as a result of the concrete ceiling added onto a pre-existing wall structure.
- Hairline cracks in masonry walls due to structural movement
- Hairline cracks and masonry walls due to mortar shrinkage
- Diagonal structural cracks (more than 1mm wide) in masonry walls due to differential settlement
- Vertical structural cracks (more than 1mm wide) in masonry walls to differential lateral movement
- Horizontal structural cracks (more than 1mm wide) in masonry walls due to foundation settlement resulting in brick separation along the mortar beds
- The roof sheets have exceeded their design life of about 10-15 years
- Floor cracks in surface beds with steelfloat finish
- Floor cracks in screed surfaces beds with grano finish
- concrete columns constructed in cell walk way and thereby obstructing traffic
- Rising damp in masonry walls
- There is extensive rusting to the steel window frames which DCS personnel attribute to inmates using the window frames as clothes drying lines.
- There exist breakages to the glazing, through day to day occupant incidents, vandalism, or banging of the window due to the strong winds experienced in the region.
- General deterioration of the door leafs as paint flaks off, and handling.
- There is general breakage to the timber doors in the office areas due to banging by hard objects, etc.
- General deterioration of the grano walls due to the high traffic.
- Serious wear and tear to the vinyl tiled floors.
- Moisture effects to the ceramic tiles in the bathrooms.
- Broken tiling in the main kitchen.
- Inefficient surface water drainage system in the kitchen.
- General wear and tear also in view of the age of the building
- Broken/missing/leaking mixers, shower roses and pipe to the cell toilets.
- Broken stainless steel tubs in the cell toilets.
- Flush master systems broken for some wc units or urinals to the cells.
- Within the courtyard, next to the kitchen server, there is no proper roofing structure to cover inmates from weather elements such as rain, when they line up for food or when washing up dishes.
- There is no proper view panel from the guard house in Block F, forcing officials to be outside all the time to check on inmates when they are in the courtyard irrespective of weather conditions.
- As a request from the DCS officials, there is need to replace a dry wall partition with proper brick work in the Food Rations Store, and possibly have proper shelving for mealie-meal stacking.
- The courtyards floor are now rugged and damaged and can no longer actively self-drain during rain storms
- Within the courtyard, special reference being block F, there is extreme rusting to the steel tubs and support structure.

- The prison is overcrowded resulting in the obsolete water and sewer infrastructure being overstrained. The numerous blockages and leakages observed can be attributed to this.
- Some of the cells do not have urinals
- The existing pipe works has, over the years, severely corroded
- The secure concrete roof that was added as a security measure, to the cell blocks is now buckling and requires immediate attention.
- The hospital facility has been undergoing structural patch work by the user client.
- The kitchen block has become small for the facility and a new block will be highly recommended. Currently the kitchen cell block is directly linked into the kitchen, and the floor level of the cells are more than 500mm below the kitchen surface level and without stair access, which on its own is a health and fire risk, besides being illegal.
- There is one house built out of asbestos sheeting, which has been vacant over a long period of time. This building material has been deemed illegal by the laws of South Africa and requires being demolished and a new one in an approved shell material.

2.2.3 Recommended Scope of Work

Building works:

- Nail down some of the corrugated roof sheets where appropriate and seal joints accordingly.
- Replace/Re-fix/Provide new fascia boards and paint finish appropriately.
- Add a roofing span over the courtyard adjacent to the kitchen to cover Officials and Inmates during bad weather, and also above dish washing area.
- Erection of additional columns in the communal cells to support concrete roofs.
- Plasterboard ceilings affected by moisture to be ripped off and replaced.
- Repainting of walls
- Replace/repair/repaint rusted window frames and broken glazing to be replaced.
Broken ironmongery to be replaced
- Repaint all steel doors and grill doors
- Replace broken timber doors and heavily rusted steel doors.
- Ironmongery broken / missing to be replaced.
- Re-place broken tiling with similar where possible or as a whole if existing colour material cannot be matched. Applicable to vinyl and ceramic tiled floors.
- Retile cell bathroom floors and walls with proper damp proofing applied.
- Upgrade the water discharge from pots system in the kitchen to avert pooling.
- Upgrade current store next to F-Block into proper cold room with a brick partition wall (currently there is a drywall partition)
- Remove fiberglass/asbestos eave closure panels around courtyards area and replace with appropriate and secure material (health and safety concerns + termite resistant material)
- The pharmacy, dentist room and nurse's room need to be reconfigured and planned properly.

- Structural cracks are to be monitored for a period of no less than 6 months and ideally 12 months to establish if the cracks are still active with seasonal variations. The current recommendations assume active cracks. At the end of the monitoring period, the current recommendations will be reviewed.
- Repair of surface bed cracks by crack stitching
- Repair of cracked surface bed by crack stitching and making good to finishes
- Make good to hair line cracks with a filler and paint over
- Make good to structural hairline cracks by applying reinforced plaster
- Make good horizontal structural cracks by rebuilding brickwork either side of the crack
- Make good vertical cracks exceeding 2mm wide by crack stitching
- Make good to diagonal cracks exceeding 2mm by crack stitching
- Make good to structural cracks in reinforced concrete columns by injecting with a low viscosity epoxy grout
- Making good structural cracks in reinforced concrete beams by injecting with a low viscosity epoxy grout
- Make good structural cracks in suspended slabs by injecting with a low viscosity epoxy grout
- Strip and replace existing galvanised corrugated iron roof sheets with concealed fixing Kliplok roof sheets
- Raise steel cage over walkway on one side to be out of reach of inmates
- Strip off all existing yard and walkway surface beds, including excavation and re-compaction of the layerworks reinstatement of surface.
- Replace concrete columns with downstand beams
- Build DPC into existing brick wall

Wet services:

- Repairs to storm water channels and drainage in courtyard;
- Replace corroded pipe work;
- Replace missing / broken brassware tap heads;
- Address plumbing in cells (non-working/inefficient trap system)
- Replace broken fittings and fixtures (whb, tubs, wc's)
- Rusted pipe work to be replaced;
- Leaking/non-functional flush masters to be replaced.
- Install urinaries in cells which do not have.

2.3 Installation 3: Residential Facilities

2.3.1 Components

Installation 3 comprises of the following:

New Prison Complex (Qalakabusha)

- Married persons quarters (168 units)
- Free standing houses (9 units)
- Male and Female Single Quarters (68 units)

Old Prison Complex (Medium B)

- Free standing houses at the old prison (4 units)

- Single quarters at the old prison

2.3.2 General Condition

The repair of structural elements and civil infrastructure of the residential facilities in the previous RAMP program involved the repair/replacement of roofs, gutters, floors, walls, doors, windows, burglar guards, security doors, plaster, ceilings, plumbing and drainage as well as sanitary and brassware. The facilities were generally repaired to a satisfactory condition. Additional repairs are, however, now required due to deterioration over time with no structured repair and maintenance programme. Highlighted below are the site conditions.

The New Prison Single Quarters are the worst affected in terms of infrastructure damage. There is a stand-alone house which was completely vandalised and had most of its installations stripped and stolen. The house will need to be fully re-equipped with necessary fittings.

- Due to strong winds and loose fixing, there is rattling and lifting of roofing tiles.
- Because of the above, there is subsequent leaking, affecting ceilings beneath. Concrete soffit ceilings also affected by moisture evident in garages to the flats, because of the leaking bathrooms above,
- Rusting gutters and down pipes,
- Heavy moulding on the walls of the bathrooms to single quarters at New Prison due to continual dampness. One room next to the bath has even been de-commissioned.
- Generally, on the flat units, paint is colouring the face brick,
- Serious disintegration of building fabric due to termite infestation, moisture and aging as seen at the prefabricated house at the Old Prison.
- Structural cracks resulting from differential settlement/movement on some of the houses and flats,
- Broken window glazing and frames in some instances.
- No burglar proofing on the ground floor, compromising security of homes.
- Rusting steel door frames and steel window frames,
- There are termite infested and moisture affected door frames especially at the Old Prison residential units.
- Advised by the DCS personnel that the locks are interchangeable on the external doors of units, posing a security threat.
- Moisture affected external timber doors, some of the doors are rotting and unstable,
- Due to moisture, vinyl sheeting is warping and rotting especially evident in bathrooms and the extreme case is the public baths at the single staff quarters at main prison.
- Water leakages through walls, ceilings etc in areas adjacent to or below showers,
- The poor condition of certain kitchen cupboards of the residential facilities has been deteriorating due to wear and tear;
- A number of bath tubs, wc's and whb are stained,
- Leaking mixers.

- Broken urinals, mixers in the toilets of the single quarters – New Prison
- Broken towel rails, mirrors, china whb in the single quarter units,
- No valve gates for per block separation on main water supply.
- General plumbing irregularities (e.g. no gulleys for drain pipes at new prison single quarters ablutions, drain pipes connect directly into main line, and with no inspection eyes)
- Boundary fence heavily rusted.
- Grill bars at the mess patio heavily rusted.
- Blockages to storm water drains with litter and dirt.
- Missing and/broken cast iron and concrete drainage infrastructure covers (manholes, gulleys, kerb inlets, rodding eyes etc.). This poses a hazard to children in the area.
- The roads are generally still in a good condition, although minor damages were noted in isolated sections. Most of the statutory road markings are no longer visible.
- Diagonal cracks in plastered masonry walls
- Horizontal cracks in plastered masonry walls
- Vertical crack repair in plastered walls with reinforced plaster
- Hairline shrinkage cracks in plaster
- Plaster cracking in suspended slab soffit along walls
- Plaster cracks in suspended slabs soffit along line of existing movement joints

2.3.3 Recommended Scope of Work

Building works:

- Waterproofing repairs to slabs above flat entrances and below bathrooms
- Re-painting of walls in flats;
- Tiling and painting in sections of floors and showers / bathrooms;
- Replace rotten / damaged roof timber;
- Replace damaged/cracked roof tiles;
- Repair/replace kitchen cupboards in poor condition
- Once off repair/replacement of broken doors/door locks;
- Nail down the first three tiles on roof to hold all down during windy periods, etc
- Paint exterior doors, replace some,
- Chemical cleaning to face brick walls
- Replace damaged asbestos prefab walls with brick,
- Termite treatment to foundations and walls
- Replace rotting timber structures
- Replace damaged/cracked gutters and down pipes with galvanized or aluminium ones
- Geyser repair/replacements
- Ceiling repairs/replacements.
- Proper ventilation to bathrooms to avert steam affecting ceilings
- Repair and replace broken glazing

- Diagonal crack repair in plaster walls with reinforced plaster
- Horizontal crack repair in plastered walls with reinforced plaster
- Vertical crack repair in plastered walls with reinforced plaster
- Fill hair line cracks with poly-filler and paint over
- Repair soffit crack with reinforced plaster
- Installation of vee joint in plaster along movement

Wet services:

- Re-enamel/replace baths in poor condition;
- Replacement of basins in poor condition and corroded pipe work in the houses and flats.
- Leaking cisterns to be sealed, flushing mechanism replaced in certain instances
- New urinal and drainage to be installed to the new prison single quarters ablutions
- Replace broken mixers
- Reap out and replace bathroom floors, add waterproofing membrane to showers and gulley to be added to allow for good building practice
- China whb's in the units to be replaced with ss sink units.
- Replace broken main hole covers.
- Clean storm water drains and maintain same.
- Clean storm water drains and maintain same.
- Replacing missing drainage infrastructure covers; new covers to be a lockable type.

2.4 Installation 4: Support services, Recreational and Club Facilities

2.4.1 Components

Installation 4 comprises of the following:

- Logistics Building;
- Workshops;
- Transport
- Offices;
- Soccer Field;
- School
- Library

2.4.2 General Condition

The structural elements and civil infrastructure of most of these facilities were repaired to a satisfactory condition during the previous RAMP programme.

- There are worn and rusted kliplock roofing sheets.
- Decolouration of roof sheets.
- There are broken perspex sheets.
- There exist damaged/cracked/rusted gutters and down pipes due to the coastal environment location

- There are damaged/disfigured fascia boards,
- Rusted Kliplock sheets eave closure sheets
- Rotting plaster board ceiling sheets in some areas due to leaks or moisture penetration.
- Some concrete ceiling undersides have been affected by water/moisture.
- Insulation sheeting ripping off especially in Logistics/Workshop/Laundry building.
- General disfigurement to walls and surfaces by dirt, greasing, scratching and ink markings.
- The drywall and mesh fence partition in the Logistics building is not adequate to close off rats and mice from destroying dry food stocks and it is virtually impossible to control environmental elements to prolong the lifespan of the foodstuffs;
- Broken ironmongery to doors and windows, Broken glazing and broken timber door panelling.
- Vinyl sheeting flaking / warping in parts due to use pressure.
- Broken light fittings due to vandalism. Fittings malfunction due to wear.
- Missing parts to fire hose reels.
- Staining to china ware and stainless steel fittings in bathrooms
- General blockages to storm water drain by dirt and litter.

2.4.3 Recommended Scope of Work

Building works:

- Replace rusted roofing sheets and repaint existing
- Replace/refix broken or rusted gutters
- Repaint plastered walls
- Crack fill and paint over, hairline cracks
- Replace broken glazing and frames
- Replace rusted steel doors,
- Repaint all steel doors
- Replace iron monger to doors and windows where it is missing or broken
- Warped vinyl floor tiles to be replaced
- Paint and plaster update to ceiling (plasterboard)

Wet Services:

- Allow for minor repair work to plumbing fixtures and fittings
- Replace broken units
- Replace mirrors, etc
- Replace missing manhole covers
- Unblock stormwater pipes and inlet structures

2.5 Installation 5: Sewerage Reticulation Networks

2.5.1 Components

Installation 5 comprises of the sewer reticulation networks of the various sections of the prison.

2.5.2 General Condition

The current condition of the sewer installation, including pump station is in good condition in most sections of the prison. However, the pump station at the New Prison blocks frequently as indicated by DCS maintenance personnel due to the jamming of the macerator. It is recommended that a manual screen with a recessed screen bucket be installed.

Due to the overcrowding at the facility, the existing pump station at the New Prison cannot cope with the current prison sewer flow loads, consequentially the system has numerous leakages and blockages. The effluent from the de-grit sump is disposed into the storm-water channels/stream. This is against the Department of Water Affairs Regulations and is a serious health hazard to downstream communities.

The pump station has Huber Technology screening machines which are used for trapping and removing solids. The resultant compressed solids are dumped on the floor of the sewer treatment works. This is also a health hazard; skip bins should be provided and emptied on a regular basis.

The sewerage infrastructure as a whole has been negatively affected by the overcrowding, thus resulting in the blockages and leakages observed in the prison facility. The cells are the worst affected areas.

A need for 24 hour manning of New Prison pump station was highlighted due to the incessant breakdowns and need for constant monitoring.

The clay pipe work is degrading due to effects by organic material and age.

2.5.3 Recommended Scope of Work

- Install a manual screen and a recessed bucket screen at the New Prison
- Repair all damaged and blocked elements in the New Prison pump station. The sewer effluent should be pumped to the sewer treatment works.
- Construct a guard house at the New Prison pump station
- At Old Prison, one main pipe from single quarters to be replaced (length extend of +/-30m) by PVC as the current clay pipe is old and being affected by tree roots
- Structural defects due to age and weather effects to be repaired.
- Sewer system to be upgraded as a result of failing pipe.

2.6 Installation 6: Water Reticulation Network

2.6.1 Components

Installation 6 comprises of the bulk water supply network of the prison.

2.6.2 General Condition

Priority portions of the bulk pipe work were replaced during the previous RAMP. The focus for the water reticulation network would be on general maintenance, including allowances for breakages and nominal pipe replacement.

Sand particles are found in municipal water in the Empangeni area. These particles are causing severe damage to filters and flush master valves and taps.

2.6.3 Recommended Scope of Work

- Allowance for operational damage.
- Upgrade the existing water reticulation network.
- Install in-line strainers in front of all taps and flush masters.

2.7 Installation 7: Roads, Parking Areas and Storm water Outfall

2.7.1 Components

Installation 7 comprises of the following:

- The roads of the prison and their associated storm water structures:
- Storm water outfall;
- The parking areas of the prisons

2.7.2 General Condition

The surfaced roads at the prison are generally in good condition with only small portions and minor cracks and potholes requiring patchwork.

The main storm water drains require high maintenance because of the grass blocks that were used to construct it.

The existing parking space is also no longer adequate (both for visitors and officials). The parking areas should be extended. For security purposes the staff parking should be fenced and not be accessible to the visiting public.

Some of the staff parking carports have canvas roofing. Due to the coastal wind conditions in the area, the canvas sheets are torn and damaged in certain sections. The roofing should be replaced by a more durable IRB roof sheeting.

The turning radii at the entrance to the logistics section on the New Prison is not adequate for long (22m +) delivery trucks; as a result, the entrance structures have been damaged by the delivery trucks. There is also no on-site turning circle for the trucks.

Most of the statutory road markings are no longer visible on all the areas.

The New Prison patrol ring-road has been uplifted by tree roots in certain sections, it also has cracks. Guard rails should be introduced at the corners where there are substantial differences in the road level and natural ground level.

DCS personnel also advised that the parking bays in the transport section are not adequate.

The old prison staff parking has no car-ports and the parking area is not demarcated by any road markings. The concrete paving in the parking areas is also damaged.

2.7.3 Recommended Scope of Work

- Minor patch-work to surfaced roads.
- Replace grass blocks on the main storm water drain with concrete surfacing.
- Clearing and surfacing for new parking bays.
- It is recommended that the grass blocks be replaced with 50mm concrete surfacing which is maintenance free.
- Additional parking
- Replace the canvas roofing in the parking bays with more durable IRB roof sheets
- Remove trees adjacent to the patrol road. Repair portholes, cracks and uplifting on the prison roads
- Install guard rails on the corners on the patrol road, relocate the patrol fence gate for easier access
- Re-instate all statutory road markings
- New carports in the Old Prison

2.8 Installation 8: Fencing

2.8.1 Components

Installation 8 comprises of the various fencing installations at the different sections of the prison, excluding electric security fencing.

2.8.2 General Condition

- The perimeter fence at both institutions has been greatly degraded by rust.
- Sectional area fence at both institutions has been greatly affected by vandalism.
- A need to enhance security by a motorised sliding gate at New Prison complex entrance was highlighted

2.8.3 Recommended Scope of Work

- Install new boundary mesh fence along the prison boundaries, and within, where it is rusted, broken or has disappeared.

- Install new motorised sliding gate at the New Prison Complex.

3. END USER CLIENT REQUESTS

The user-client, through the various representatives made the following requests:

QALAKABUSHA PRISON

- Main sally-port for the new prison complex.
 - Add a guard house to enable visitors to the complex to be searched in a secure space and screened for security purposes. Ablution facilities are already in place.
- Main gate,
 - There is also need to redesign the space, to close off easy access into the armoury as there is no security lobby from the outside. The re-plan requires access to gatehouse which is a controlled zone then link into the armoury zone.
- Emergency Support Team (EST)
 - The EST requires secure office space, off the main entrance area, in the admin building.
 - The current location is not ideal, in terms of location and space availability.
 - They are working off from the Admin building in a single space office with exposed armoury store, and some of their armoury is stored in the armoury for the escort team, which is not ideal for the security requirements of a correctional facility.
 - There has been identified adequate space off this building which requires structural conversion to provide the following requirements:
 - Arsenal
 - Store room
 - Meeting room
 - Office space
- Transport section
 - Requires a secure yard for the accident damaged cars during investigation phase.
 - Requires is a covered garage / parking area for the fleet
 - Replacement of the existing double gate which is currently being damaged from being driven into by big trucks, over the years.
- Logistics
 - Access way into courtyard to be redesigned as trucks constantly rip off the roof of the building.
 - Considerations to include widening of the turning circle into the driveway, or cut off buildings to widen the opening
- Dry food store area

- Solid internal partition walls, most preferably brick, to replace wire mesh partition, to allow for proper ventilation to the space and concurrently keep off rodents' inflow. Currently large volumes of food stuff are rotting due to exposure and by rodents, which is a huge loss to the institution.
- Clothing store
 - 6x offices are required within, by partitioning, to allow for secure store and for admin office space requirements.
- Cell blocks
 - Roller shutter doors at the sub kitchen to be fixed in place, or a fixed opaque panel to be re-introduced, for security purposes to close off visual contact between the offender serving food and the rest on the other side.
 - There is need to provide stable and secured ironing boards in the laundry rooms to all cell blocks
 - There are no drying yards for the offender's washing, forcing them to use windows off cell units as drying lines, which in turn makes the whole facility an eye-sore, and the moisture is affecting the steel window units as they rust and easily break off.
 - There is only one cell block which has courtyard for sun basking and exercise for the offenders. Currently they are not being used as they are completely open to the sky which is a security risk. A secure mild steel wire mesh roof will be required to be installed to make them usable, which will be a definite positive for the offenders' health.
 - Replace the view panels to the bathrooms off the cellblock courts, as they are currently being broken because the space is used as a soccer play area.
 - All the external fire doors to the facility are heavily rusted, thus requiring urgent attention, for health and security reasons added.
- Members' facility requirements:
 - A clubhouse is highly recommended and required for entertainment and recreation purposes. There is space available for the purposes. The benefits of this facility will also include fostering team building, and provision of an all-round community centre for the members.

EMPANGENI PRISON

- Sally-port
 - A proper sally-port is required at the entrance facility, with proper facilities and search room for the visitors.
- Admin building,
 - Office for the prison head is too small and requires to be extended.
 - The control room is too small and requires to be extended, and to separate the server room, which is currently housed in the same space as the operators.
 - The offender reception area has become too small, given the volumes received per day and requires to be extended.
 - Re-organising space to maximise the current space usage.

- Most internal walls within this space are in board partition walls that require to be replaced with brickwork.
- The armoury room is not secure, as it is off the public passage way, and built of rhino-board partition walls. A concrete room is highly recommended for safety and security and to meet government statutes.
- There are no guard houses for members on duty off the courtyards to the cell blocks, which compromises the whole facility on any given day, as they sit exposed to the weather elements
- Residential
 - There is a requirement for a new block of single quarters as the current units are inadequate in terms of numbers and with at least 4 being substandard, as they lack basic facilities and are too old.
- Members' facility requirements
 - A clubhouse is highly recommended and required for entertainment and recreation purposes. There is space available for the purposes. Previously there was a thatch gazebo which burnt down.

4. PRELIMINARY COST ESTIMATE

INSTALLATIONS		GENERAL REPAIRS	ESSENTIAL UPGRADES	SUB-TOTAL	OPERATIONAL DAMAGES	TOTAL
1	New Prison	28,300,000	5,300,000	33,600,000	150,000	33,750,000
2	Old Prison	12,600,000	3,800,000	16,400,000	120,000	16,520,000
3	Residential Facilities	15,800,000	3,000,000	18,800,000	50,000	18,850,000
4	Support Services, Recreational & Club Facilities	1,500,000	2,100,000	3,600,000	50,000	3,650,000
5	Sewerage Reticulation Networks	2,100,000	2,800,000	4,900,000	100,000	5,000,000
6	Water Reticulation Network	2,800,000	0	0	50,000	50,000
7	Roads, Parking Areas & Stormwater outfall	3,500,000	2,200,000	5,700,000	0	5,700,000
8	Fencing	10,110,256	0	10,110,256	0	10,110,256
9	P&Gs	9,200,000	0	9,200,000	0	9,200,000
10	EPWP		0	0	0	0
	SUBTOTAL	85,910,256	19,200,000	102,310,256	520,000	102,830,256
	VAT	12,027,436	2,688,000	14,323,436	72,800	14,396,236
	TOTAL	97,937,692	21,888,000	116,633,692	592,800	117,226,492

5. CONCLUSION

As a result of the time lag between the previous RAMP project and this follow-on RAMP, there are major repair items required.

Some functional improvements are required and certain essential repair items have been recommended.

6. ANNEXURE A: PHOTO REPORT