

**EYE SIZWE KZN MECHANICAL  
CONSULTING ENGINEERS**  
PROJECT REF: ESKZN-03-2018

**ADDINGTON HOSPITAL  
(NURSES HOME)  
-DOMESTIC HOT/COLD WATER,  
FIRE SERVICES & SEWER STACK DRAINAGE &  
FIRE DETECTION & EVACUATION-**

**(JANUARY 2021)**

**-MECHANICAL FEASIBILITY / DESIGN /  
SCOPE OF WORK REPORT- PART 2**



**CLIENT:**

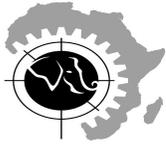
**Department of Health:  
Kwa-Zulu Natal**

**CONSULTING ENGINEERS:**

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**STAGE: 5 – SUBMISSIONS**

**ITEM 2: DESIGN DEVELOPMENT REPORT**

**(a) Cold water Storage and Reticulation:**

Additional new ground level water storage tanks will store water direct from municipal mains, for domestic use and fire fighting. Booster pumps will pump water from new storage tanks up to existing roof level storage tanks.

Domestic use water is fed into building via gravity from roof tank down two separate shafts. Each level has a valve off supply point to feed existing pipe runs. Due to all existing pipework in shafts being in a very poor state, these will be replaced with new non corrosive pipework.

**( Refer to Schematic Line Diagram Part of Stage-4)**

**(b) Fire Wet Services:**

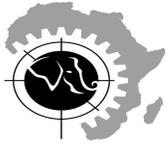
This system only feeds fire hose reels and fire hydrants to comply to rational fire design requirement, ie : One fire hydrant per 1000m<sup>2</sup> and one 30m fire hose reel per 500m<sup>2</sup> and one fire extinguisher per 200m<sup>2</sup>.

New fire booster pump set will draw from fire reserve in storage tanks and boost two fire riser mains (One in each shaft). Each fire main will supply the existing fire hydrant and hose reel points on each level.

Due to all existing pipework in shafts being in a very poor state, these will be replaced with new corrosive resistant pipework.

**(c) Central Hot Water Plant:**

The existing plant consists of 12-Off heat pump units operating simultaneously and 3-Off hot water storage tanks (8300L Each). The hot water circulation is currently dependent by a single little pump to pump



Hot water from tanks to heat pumps and up into building, ie: Only one circuit. The existing plant was temporarily repaired to have 3-Off the heat pumps operating to supply water up to only half way up the building, ie: The existing pump head is too small.

**Upgrade:** The existing reverse cycle heat pump units will be serviced and repaired to work satisfactorily.

The existing hot water pipe system will be redone to operate as primary and secondary systems with each system having its own pump set.  
ie: The primary system will operate water circulation between tanks and heat pump units.

The secondary system will operate between the hot water storage tanks and the supply to the building.  
The existing hot water storage tanks will be restored with minor repairs and back-up element replacements.

Due to all pipework especially in shafts, being in a very poor state, these will be replaced with new copper pipework.

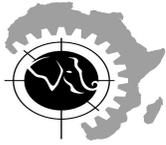
Refer to schematic line diagram part of Stage-4.

**(d) Mains Drainage Stacks in Shafts and Pipework from Shafts to External Manhole**

As per initial report, the existing pipework which is of cast iron origin is corroded and leaking, hence in a poor state. The retrofit works will involve replacing all these pipes with new, non corrosive pipework such as uPVC Class-12 or equal.

**(e) Fire Detection and Alarm Evacuation:**

The existing infrastructure is a high rise building and its occupancy, Class is E.3. As per national building regulation, Clause TT.31 this building must be fitted with a fully integrated fire detection system, with a manually activated fire alarm and emergency evacuation communication system.  
The proposed design and installation will comply to this requirement.



**(f) Identification of fire escape routes and fire signage's:**

Fire plan layouts will clearly indicate escape routes via signage's and emergency light positions in escape routes.

Firefighting equipment signage's and directions to its locations will also be indicated on fire drawings.

**(g) Sprinkler Installation:**

With reference to Clause TT-32 of the National building regulation, this building will require the installation of a fully automatic sprinkler system to comply to rational fire design requirements.

The design proposal will comprise of water storage tanks ( Modular Galvanised Type ) with a minimum of 144,000 L storage.

A booster pump set consisting of a main pump and a jockey booster pump. The main pump can be either diesel generator driven or electric with back-up power. All exposed pipework will be galvanized and internal pipework black mild steel painted.

Fire water under pressure from pumps, will be boosted into system via a sprinkler valve chamber.

**Mechanical Systems:** As described under Item 2.

**Item 7: Cost Report:** As per Option-2 of Stage-4.

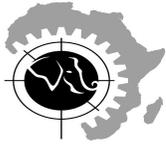
**Item 8: Risk Plans:** As per submission as Stage-4

**Item 9: Health & Safety Report:** As per submission in Stage 4.

**Item 16: Deviations:** As stated in Stage-4. No further in this Stage-5.

**Invitation: Yes**

Department of Health – Infrastructure & Planning  
Mr T Chiro



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