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COGTA: WHITBY LODGE

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1.0 INTRODUCTION

Preben Naidoo and Associates, a firm of civil and structural engineers, were appointed by the Department of Public Works to provide consulting civil and structural engineering services for the repair and renovations to the Cogta: Whitby lodge, located within Pietermaritzburg.

This report provides a brief assessment of the condition of the buildings, together with a brief outline of the proposed remedial action to be taken to reinstate structural integrity and rehabilitate the buildings in line with the proposed architectural designs.

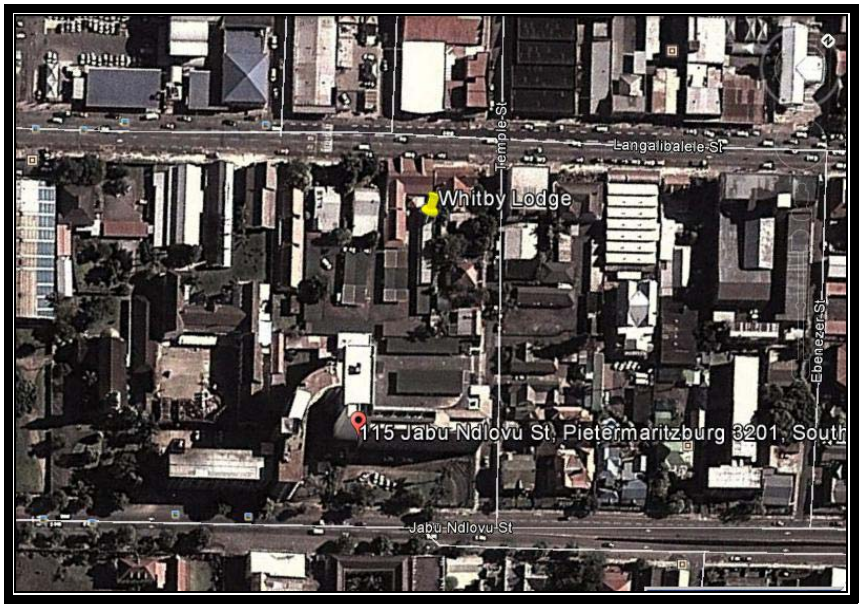
2.0 SITE LOCATION AND DESCRIPTION

The COGTA building is situated at 115 Jabu Ndlovu Street and within the Pietermaritzburg CBD.
Whitby lodge is located behind the main COGTA building (within the same property) and comprises of two rectangular shaped, brick formed buildings.

The two buildings occupy approximate footprint areas of 233 and 110 m2 respectively and are separated by a paved courtyard.

The floor of the smaller building has been constructed with timber (suspended flooring) whilst the floor of the larger building has been constructed as a concrete “surface bed”.
Metal sheeting and Timber trusses have been used for roofs and both buildings have covered verandahs.

Both buildings are located above road level and the natural fall of the ground is estimated to be 1:30.



Locality plan for Whitby Lodge.

3.0 ASSESSMENT OF BUILDINGS

(Refer to Appendix A for site photographs)

3.1 Foundation and Walls

3.1.1 Larger building

Although the existing foundations could not be assessed, it is assumed that these comprise of conventional “strip” type foundations.
Site observations have revealed that cracking along the rear end walls of the larger building is present.
The front, dividing, and gable end walls of the building, however, appeared in “reasonable” structural condition.
It is of the opinion that the cracking along the rear end walls of the building has resulted from foundation movements due to variations in moisture content of founding soils.

Along the length of the entrance walls, a band of brickwork immediately above the verandah floor slab (approximate height = 200mm) was also observed to be damaged.

3.1.2 Smaller building

Although the existing foundations could not be assessed, it is assumed that these comprise of conventional strip type foundations.
A visual inspection has indicated that brickwork appears to be in a ‘reasonable’ structural condition.

3.2 Floors

3.2.1 Larger building

A full assessment on the concrete floors to identify and possible defects and/or cracking could not be done due to the presence of floor covering (carpeting).
However, no areas of significant “settlement” were observed or encountered during the assessment.

3.2.2 Smaller building

A full assessment of the suspended floors could not be carried out due to the presence of existing floor covering (timber boarding).
However, no excessive deflections of the suspended floors were encountered during the inspection.

3.3 Roof (Both Buildings).

The quality of the roof trusses for both buildings could not be assessed due to restricted access and the presence of ceiling boards.

Observations made on the exposed sections of the roof members (verandahs) have indicated that certain section of the purlins, rafters and eaves beam have undergone deterioration and will need to be replaced.
It is estimated that there will be some deterioration to the main trusses; however, the extent of deterioration can only be confirmed once ceiling panels have been removed and a detailed assessment conducted.
Roof sheeting was observed to be badly corroded and will require replacement.

3.4 Verandah Posts (Both Buildings).

The vertical timber supports to the Verandah Eaves beam has undergone severe deterioration, particularly, along the lower portions of the post height.
The posts are in a poor structural condition.

3.5 Drainage Channel

A concrete formed storm-water channel exists adjacent to the verandah of the larger building.
A small portion of the channel length has been covered with a steel grating and/or pre- cast concrete covers (to facilitate access over); however, the majority of the channel length is exposed and not covered.

3.6 Paved Courtyard

The courtyard between the two buildings is covered with concrete pavers.
The paving is in poor condition, unsightly and has an inconsistent fall across its width.

4.0 PROPOSED REHABILITATION

(Refer to Appendix B for sketches)

4.1 Foundation and Walls

In order to remediate the rear end cracked walls of the larger building, it is proposed that “underpin” foundations be constructed to effectively increase founding depths at required locations and thereby minimise variations in soil moisture content.

Ideally, Wall cracking related to ground movements should be repaired approximately a year after the completion of the underpin foundations.
This period allows founding soils to be subjected to a complete cycle of seasonal related moisture variations and thereby enable any further ground movements (if possible) to be mobilised.
Therefore it is recommended that the cracked brickwork be replaced approximately a year after the underpin foundations are completed.
Furthermore, aprons need to be constructed along the length of the rear walls to prevent storm-water from ponding close to the building foundations.

The damaged band of brickwork along the entrance walls to the larger building is to be carefully replaced in line with architectural and AMAFA recommendations, or, alternatively, a “plaster band” be created.

4.2 Floors

4.2.1 Larger building

As mentioned, the quality of the concrete floors could not be assessed due to the floor covering (carpeting).
Once floor covering has been completely removed, the concrete surface beds will be assessed for any possible defects.

4.2.2 Smaller building

As mentioned, the quality of the suspended floors could not be assessed due to the floor covering.
Portions of the existing timber boarding will need to be removed to enable a structural assessment of the timber supporting beams and piers/plinths.

4.3 Roofs (Both Buildings)

A detailed inspection will be carried out once ceilings have been removed to establish the extent of the deterioration and the amount of replacement of roofing members, if needed.

Judging by the visible deterioration on the exposed sections of the roof members, it is estimated that approximately 50% of the roofing members will need to be repaired and/or possibly replaced.
Roof sheeting will need to be removed and replaced in line with architectural specifications. It is also anticipated that battens will most likely be required to be replaced.

4.4 Replacement of Verandah Posts and Eaves Beam

It is proposed that the existing deteriorated timber posts be removed and suitably replaced.
New hardwood posts will need to be installed to match the existing post profile and satisfy architectural requirements.
The removal of the Vertical posts will also result in the removal and adequate replacement of the eaves timber beam.

4.5 Covering to Storm-water channel

It is proposed that suitable pre-cast concrete covers be used along the length of the existing channel to enable safe access over the v-drain and onto the verandah of the Larger building.

4.6 Cleaning of Storm-water channels (Reticulation)

The stormwater channel adjacent to the larger building continues further down the site and merges with other open channels as part of the stormwater reticulation on the site.
These stormwater channels are covered with a steel grating to enable vehicular access over.

Observations have revealed that these stormwater channels (which covered with steel grating) are heavily silted up and/or blocked.
It is therefore recommended that these stormwater channels which extend past the larger building undergo adequate cleaning to ensure that storm-water is effectively conveyed away from the buildings.

4.7 Surfacing of Courtyard

It is proposed that the existing concrete pavers be removed and that this area be finished with asphalt to match the surrounding surface finish.
Suitable “imported”, compacted “fill” material will be utilised for this area to ensure that vehicular loads are adequately sustained.
Adequate fall of the asphalt towards the existing stormwater drain will be facilitated.

5.0 APPENDIX A: SITE PHOTOGRAPHS

Photograph 1: External View of Larger Building

Photograph 2: External View of Smaller Building

Photograph 3: View of unsightly Courtyard between buildings

Photograph 4: View of Crack along rear Wall of Larger building

Photograph 5: View of damaged brickwork along entrance wall of Larger building.

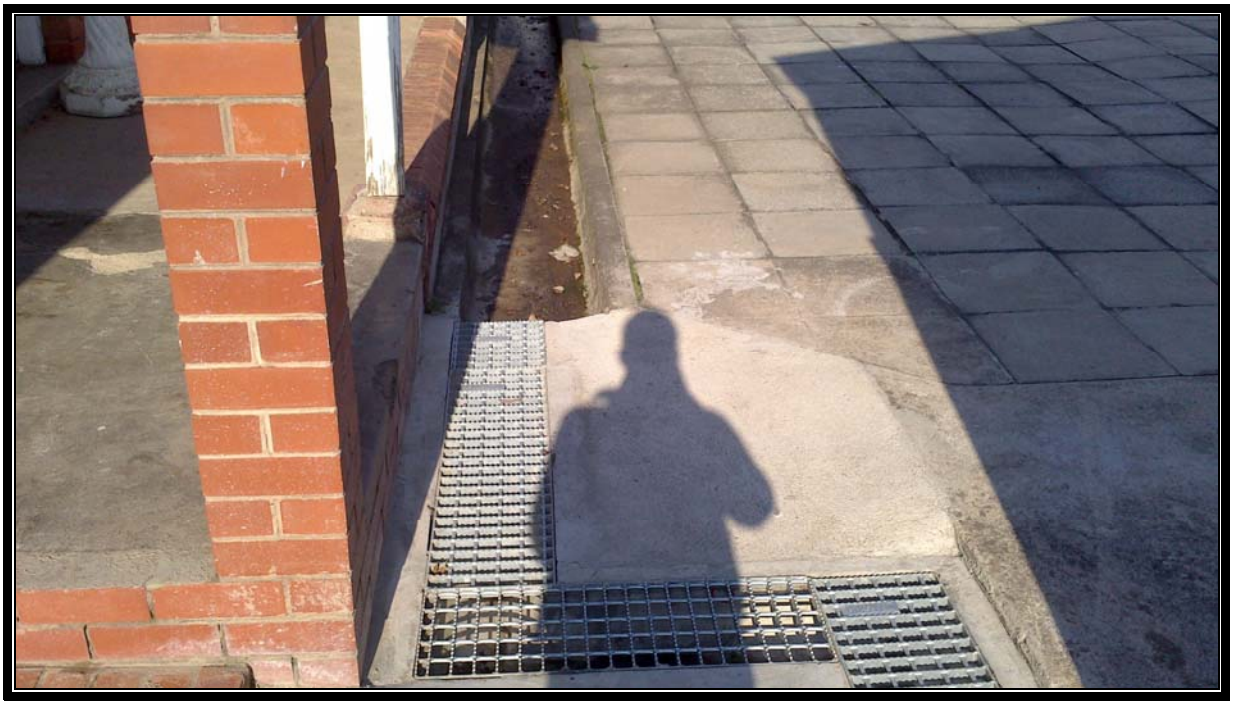
Photograph 6: View of damaged verandah post

Photograph 7: View of damaged and deteriorated verandah post

Photograph 8: View of roof to verandah

Photograph 9: View of deteriorated verandah purlin.

Photograph 10: View of deteriorated verandah rafter



Photograph 11: View of steel grating over portion of storm-water channel

Photograph 12: View of channel (grating over) used to convey Stormwater away from Buildings. Channel observed to be blocked and requires cleaning.

6.0 APPENDIX B: REHABILITATION SKETCHES