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J5423 – The Radisson, Malelane

WET Services Installation

Description of Design Intent & Works Information Document

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Contents

1	General	4
2	Local Authority	4
3	Domestic Cold Water (Potable)	5
3.1	Energy and Environmental Strategy	5
3.2	Description of Intended Operation & Conditions	5
4	Grey & Black Water	6
4.1	Energy and Environmental Strategy	6
5	Domestic Hot Water (DHW)	7
5.1	Energy and Environmental Strategy	7
5.2	Description of Intended Operation & Conditions	7

1 General

This report is intended to clarify the design of the Wet Services installation with respect to the construction of The Radisson Lodge Hotel, Malelane.

2 Local Authority

For the purpose of the Wet services design the mains water & sewer connections are **not** available from the local municipality.

The design of the buildings has taken into account that should there be services supplied from the municipality, the supply of water will be on the following three conditions:

- a) there is no guarantee of water supply,
- b) there is no guarantee of water pressure and
- c) there is no guarantee of water quality.

Based on the above, the systems are so designed that the buildings will be self-sustainable, not dependent on the municipal systems.

3 Domestic Cold Water (Potable)

3.1 ENERGY AND ENVIRONMENTAL STRATEGY

The Wet services design approach is to design and construct buildings that feature many sustainable systems. With this in mind the design of the building for the Wet Services scope of works has taking into account energy efficient system and to minimise greenhouse gas emissions.

With regards to the Wet Services installation the following has been taken into account that will contribute to the sustainability of the building and energy efficiency of the building:

- Dual flush WC mechanisms
- Automatic Pulse Meters for water management and leak detection.
- Low flow electronic taps and water using fixtures.
- Solar panels for water heating.
- Waterless urinals.

3.2 DESCRIPTION OF INTENDED OPERATION & CONDITIONS

The Domestic cold water supply will be via borehole/s or water licence for river use. This process is underway and will be finalized as the project progresses. A water storage capacity of **350,000** litres is provided at the Staff Facilities area. This water is supplied to all the hotel rooms and fixtures.

The water storage calculation is based on the SANS 10-0252 Part 1 criteria.

No of Guests: 250 persons @ 250 litres storage per person per day.

No of Staff: 90 persons @ 150 litres storage per person per day.

There is a packaged variable speed pump set consisting of 3 pumps with integral controls to supply the building with cold water and a combined discharge capacity of approximately 9 l/s at approximately 900kPa.

Variable speed pumps are used as they only deliver the pressure and flow that is required by the demand. i.e. if the demand is high the pumps will increase the delivery and if the demand is low, the pumps will automatically decrease the delivery. This makes the operation more energy efficiency.

4 Grey & Black Water

4.1 ENERGY AND ENVIRONMENTAL STRATEGY

The Black Water and sewer reticulation will be designed by the Nelspruit branch of WSP and is covered in a separate report.

5 Domestic Hot Water (DHW)

5.1 ENERGY AND ENVIRONMENTAL STRATEGY

The Domestic hot water heating will be via localized solar hot water storage tanks.

The hot water storage capacity will be sized to suit the needs of each building.

The solar panels and tanks would need to be accommodated within the architectural building design.

5.2 DESCRIPTION OF INTENDED OPERATION & CONDITIONS

The hot water storage tanks to store hot water at 60 degrees Celsius. The system makes use of electrical power when the solar capacity is not available.

The primary generation of the hot water will be via electrical elements. However, 2 off heat exchangers will be used to provide secondary heating for the water.

All hot water piping will be insulated throughout to ensure minimum heat losses which in turn reduce the amount of energy consumed to heat the water.

The systems operation is such that there will be a constant supply of hot water within the system.