17063-OFF Mon Tresor Business Gateway (MTBG)

MAN05	**Building Users' Guide**
ASSESSMENT	**Round 1**
DISCUSSION	**Relevant TC/CIRs attached**

POINTS CLAIMED **1**

Credit Criteria

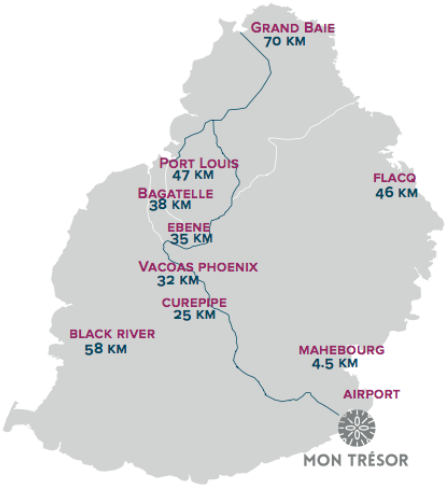
Building Users' Guide	**Building users' guide**	**1**
	A simple and easy to use Building Users Guide which includes information relevant for the building users, occupants and tenant representatives, is to be developed and made available to the building owner.	

Documentation Requirements

Submitted	Document	Assessors' Comments
☑	**Building Users' Guide**	

	MAN-05: Building User's Guide To encourage and recognise information management that enables building users to optimise the building's environmental performance.	Building user guide is not generally provided in projects in Mauritius. Usually, each specialist contractors would submit their commissioning report and the manuals. Training would provided mainly to maintenance staff to explain the operation of the building. Informing the users on how the building should function is an important aspect of making sure that the building performs to its optimum, therefore the credit in its current form is equally relevant and applicable in Mauritius as it is in South Africa. The credit is applicable to Mauritius **Resources** None.	MAN-05 should be kept in its current form and no adjustments need to be made.
	MAN-06: Environmental Management To encourage and recognise the adoption of a formal environmental management system in line with established guidelines during construction.	The Environmental Protection Act 2002 provides a list of building/activity type which requires an EMP. The Environment Impact Assessment (EIA) consultant usually produces the latter. Office buildings are not included in this list and contractors do not provide EMP's. Currently new developments lack pollution prevention plans, which due to frequent tropical rain falls and strong winds cause loss of top soil and pollute water bodies. Environmental management will help mitigate the impact of the construction process on the environment. EIA consultants have the experience in producing EMPs and can be appointed to do same for projects. The EIA consultant could produce the EMP but the contractor is required to implement the recommendations in the EMP to achieve point for this credit. For the 2nd point, there is no building contractor certified ISO14001 in Mauritius yet. . **Resources**	MAN-06 should be kept in its current form and no adjustments need to be made.

BUILDING USERS' GUIDE



Mon Tresor Business Gateway (MTBG)

Environmental initiatives and performance

Background

MTBG – In line with Smart City Scheme

As part of the Mon Tresor Smart City, the MTBG is developed around a 'Live-Work-Play' concept in line with the Smart City Scheme.

The office park is designed and meant to be a flagship of 21st century conurbation lifestyle, cast in sustainable values and focused on quality of life, where professional, private and social life all lie within reach an inclusive community with a genuine local spirit and a cosmopolitan flavor.

The conveniently close location of Mon Trésor Business gateway at the doorstep of SSR International airport and to its cargo logistics and Freeport zones, as well as the proximity of the business-oriented Holiday Inn hotel makes airport-related business and transits the seminal elements of Mon Trésor Business Gateway.

The Office Park is an integral part of this business-oriented compendium, together with the Logistics Park & Freeport Zone and the Trade Exhibitions area.

The MTBG office has incorporated environmental and sustainable practices from its design to its construction and has specifically been designed to give our people the workplace to enhance not only their productivity but also reduce the natural resource depletion on the environment.

Introduction

The purpose of the Building Users' Guide is to inform visitors and staff working in the building of relevant building operations that influence them and on which they have an effect. This Guide will contribute to optimal operational efficiency by informing relevant parties to use building systems effectively which will in turn improve the user's experience within the building.

The Building User's Guide aims to:

- Identify and describe green initiatives that ensure an environmentally responsive and resource efficient building
- Inform occupants and users of all the buildings incorporated service and management systems to optimize the building's environmental performance and minimize its environmental impact.
- Ensure that all future alterations, additions and program changes are consistent with the intent of the purpose of the Building Users' Guide and the health of the environment,

The MTBG – office park is the first phase of the smart city master plan and is developed by "MAREF Mon Tresor Investments 1 Ltd"

The MTBG compromises of a basement level, a podium level and three office blocks, all complete with roads, infrastructure, external works, hard landscaping and all ancillary and related facilities.

Two blocks consist of Ground Floor, first floor and second floor whereas the third bloc consists of Ground floor, First Floor, Second Floor, Third Floor and Fourth Floor.

The MTBG project developer is committed to design and develop the project to meet the 4 Star Green Star SA Office v1.1 Design and As Build Certification.

The Usable Area of the project is 11,629m2 and the GFA is 13,493m2 excluding car parking areas.

The construction consists of substructure, concrete work, blockwork, roofing works and related finishes including all related external infrastructure works and MEP services.

Requirements of the Building Users' Guide

REQUIREMENTS	Complied within BUG
Energy & Environmental Strategy – Description of the building initiatives intended to enhance energy efficiency and minimize greenhouse gas emissions, including quantification of the potential water, energy and greenhouse gas emissions and financial (i.e. operational) savings	Pages 6-7
Monitoring and Targeting – Details on energy, water, indoor environment quality and waste targets and benchmarks for the building, such as W/m2, and on the metering & sub-metering strategy	Page 8
Building Services – Description of basic function and operation of the following, with simplified systems diagrams and an explanation of energy saving features: - ventilation, - Cooling system, - Electrical system, - Lightings	Pages 9 -19
Transport Facilities: Car parking requirements and provision of cyclist facilities, conditions of access and appropriate use. Also provided where applicable, local public transport information, maps and timetables, and details or links on alternative methods of transport to workplace such as car pooling	Page 20
Materials and Waste Policy: Include instructions on proper use for less common practices, such as composting, as well as information on recycling including: - what can be recycled, where the recycling storage areas are and schedule for waste and recycling removal	Page 21
Expansion/Re-fit considerations: Includes a list of environmental recommendations for consideration, highlighting in particular the areas covered in the building user's guide. Consider examples such as use of environmentally friendly materials, reuse of other materials, or exhausts for printing and photocopying rooms.	Page 22
References & Further Information: Should include links to online information such as websites, publications, and organizations relating to energy and water conservation, efficient building operation, indoor air quality or sick building syndrome, and environmentally friendly design features	Page 23

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Energy & Environmental Strategy

Energy Strategies are implemented to reduce the overall energy consumption of the building, which essentially has an impact on the greenhouse gas and other emissions associated with energy generation from fossil fuels. The strategy directly reduces the cost associated with energy, as the energy consumption reduces.

Through reducing the building's energy consumption, we are not only reducing energy expenses, but we are ensuring that fewer harmful gases such as CO2 and SO2 are being produced. These gases are contributors to climate change.

Sub-metering of major energy consuming systems is in place. Gathering information is key to understanding and managing building systems and to assess opportunities for energy savings.

Minimisation of Greenhous Gas Emissions associated with operational energy consumption is reduced. An energy model of the building was generated and in the design stage of the building compared to a notional building model. The building design showed an improvement over a SANS 10400 notional building.

Proision is made to ensure all individual spaces or enclosed spaces are individually switched with occupancy sensors. This will offer greater flexibility for light switching, making it easy to light only occupied areas

The project saves energy by providing office lighting that is not over designed. This is achieved as the office lighting design achieves an average maintained illuminance level of no more than 400lux

The office lighting design ensures the use of artificial lighting with minimal energy consumption as the energy use if 1.44W/m2 per 100 lux was set for the office lighting power densities

Goals	Strategy	Detail
Reduce internal load	Lighting	maximize benefits of daylighting
		Use efficient electric lighting system (100% LED)
		Use separate controls for lighting in areas near window
		Use zoning control
		Use automatic controls to turn off light when not in use
	Equipement, appliances and lightings : reduce cooling loads and energy use	Use of efficient equipement (energy star)
		Use of controle to minimize waste and usage
		Educate occupant
Reduce heat gain/loss through building enveloppe	Control solar gain to reduce cooling load through window	Minimize windows east-west, maximize North and South
		Use glazing with low SHGC
		Use of external shade glazing to reduce SHGC
		Use vegetation on N/E/W to control Solar Heat Gain and glare
Reduce HVAC loads	Reduce heat gain and loss in ductwork	Insulate ductwork
		No ductwork outisde the building envelope
	Properly size equipement	calculate load
		size equipement accordingly
	Use more efficient HVAC system	select efficient cooling equipement
		Use high efficient motors with Variable speed drives
Monitor of energy efficiency	Maintain efficiency	Commissioning and tuning process for each services so that they work at their optimal capacity
	Monitoring of building consumption	Metering and submetering electrical load to be connected to a BEMS for a proper monitoring

Energy & Environmental Strategy

Environmental Strategies are implemented to enhance the wellbeing of the occupants within the building and in return ensure enhanced work performance. As salaries are the biggest cost to companies, an improvement in working quality and quantity is a direct cost saving:

A High level of thermal comfort is ensured by addressing the internal operative temperatures through modelling and ensuring they are within the ASHRAE Standard 55-2004 Acceptability Limits for at least 98% of occupied hours.

Tobacco smoke is prohibited inside the building to ensure air quality benefits to the building occupants

All selected gaseous and fire suppression systems and thermal insulants used for the development have an Ozone Depletion Potential (ODP) of zero to eliminate any contributions to long-term damage to the earth's stratospheric ozone layer.

A project specific Environmental Management Plan was developed and implemented throughout the duration of construction to establish guidelines to follow to minimize the environmental impact associated with construction activities

Evaporative cooling towers or other evaporative cooling systems that creates the risk of legionella disease are eliminated from the design of the building.

Water Strategies are implemented to address the reduction of potable water use through design of water efficient systems and using a valuable resource responsibly.

The Building achieves a saving through the use of water efficient fittings that limit the occupant water usage to 0.35L/day/m2

Sub-metering of major water consuming systems is in place. Gathering information is key to understanding and managing building systems and to assess opportunities for water savings.

The building is designed to reduce the consumption of potable water for the building's fire protection and for use of treated water for irrigation.

Monitoring & Targeting

Water monitoring and targeting

Has been implemented to reduce the use of potable water through efficient design of building systems and accurate monitoring of water consumption.

The water consumption will be effectively monitored by water meters that will be provided for all major water uses and an effective automated mechanism for monitoring water consumption data. This monitoring system will also be able to detect leaks and alert management, ensuring little to no water is wasted. 0.37L/day/m2 is the target for potable water consumption.

The following water initiatives have been implemented:

- The building made use of sanitary fittings, which reduce predicted potable water consumption by building occupants.
- Water meters and an automated monitoring mechanism are in place to effectively monitor and manage water consumption
- The project initiative to eliminate the provision of heat rejection water systems reduces the use of potable water consumption
- The building does not make use of a fire sprinkler system. This helps to reduce potable water wastage.
- The development is designed to minimize storm water run-off to, and the pollution of, the natural watercourses
- The building's outflow from occupant usage has been reduced by 50% against an average practice benchmark

Energy monitoring and targeting

Is part of the design and energy strategy. Energy monitoring has been implemented to reduce the use of energy through efficient design of building systems and accurate monitoring of energy consumption.

The energy consumption will be effectively monitored by energy meters that will be provided for all energy uses and a BMS system for monitoring energy consumption data.

Real time consumption and statistics will be displayed to occupant at entrance for sensitization.

274kWh/ m2 is the target for energy consumption.

Building Services - HVAC

System description

System description and cooling source

The general office areas are provided with comfort type air conditioning, employing variable speed drive (VSD) on chillers' compressor fans and on chill-water pumps. The use of air cooled chillers reduces water wastage, as water is not required to cool down the system. The system is the most efficient system available at present.

No heating system is required for the building due to the local climate

Fresh air/ventilation rates through Air Handling Unit

Fresh air supply is provided at minimum of 12.5L/s/pers to all air-conditioned areas through Air Handling Unit and Fan Coil Unit. The Air Handling Units is fitted with Thermal wheels to pre-cool the outside air. The AHU provide 100% fresh air with no recycled components and no economy cycle. All systems and units make use of refrigerant with ozone depleting potential of zero.

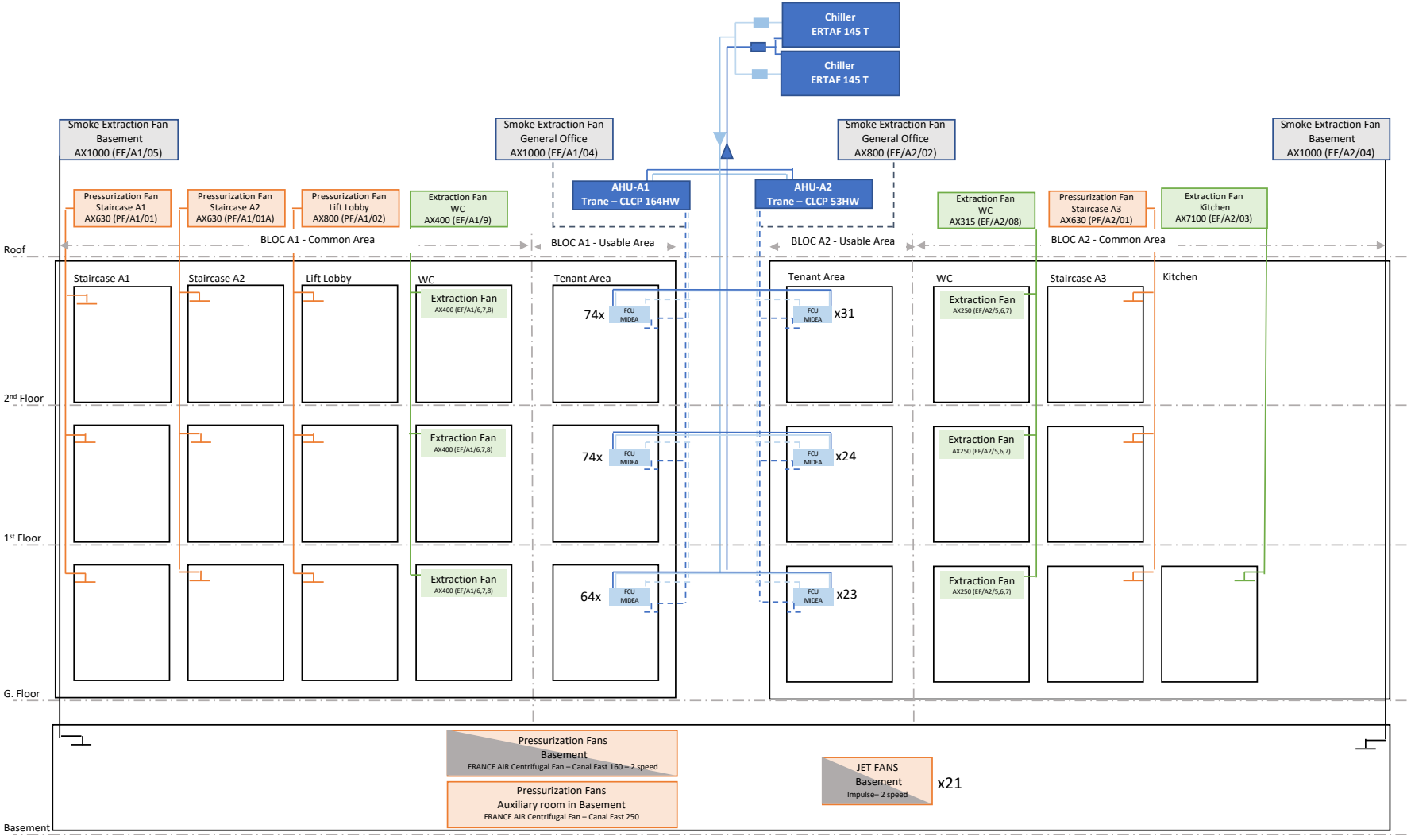
Room temperature control

This system provides temperature control to individual delimited areas.

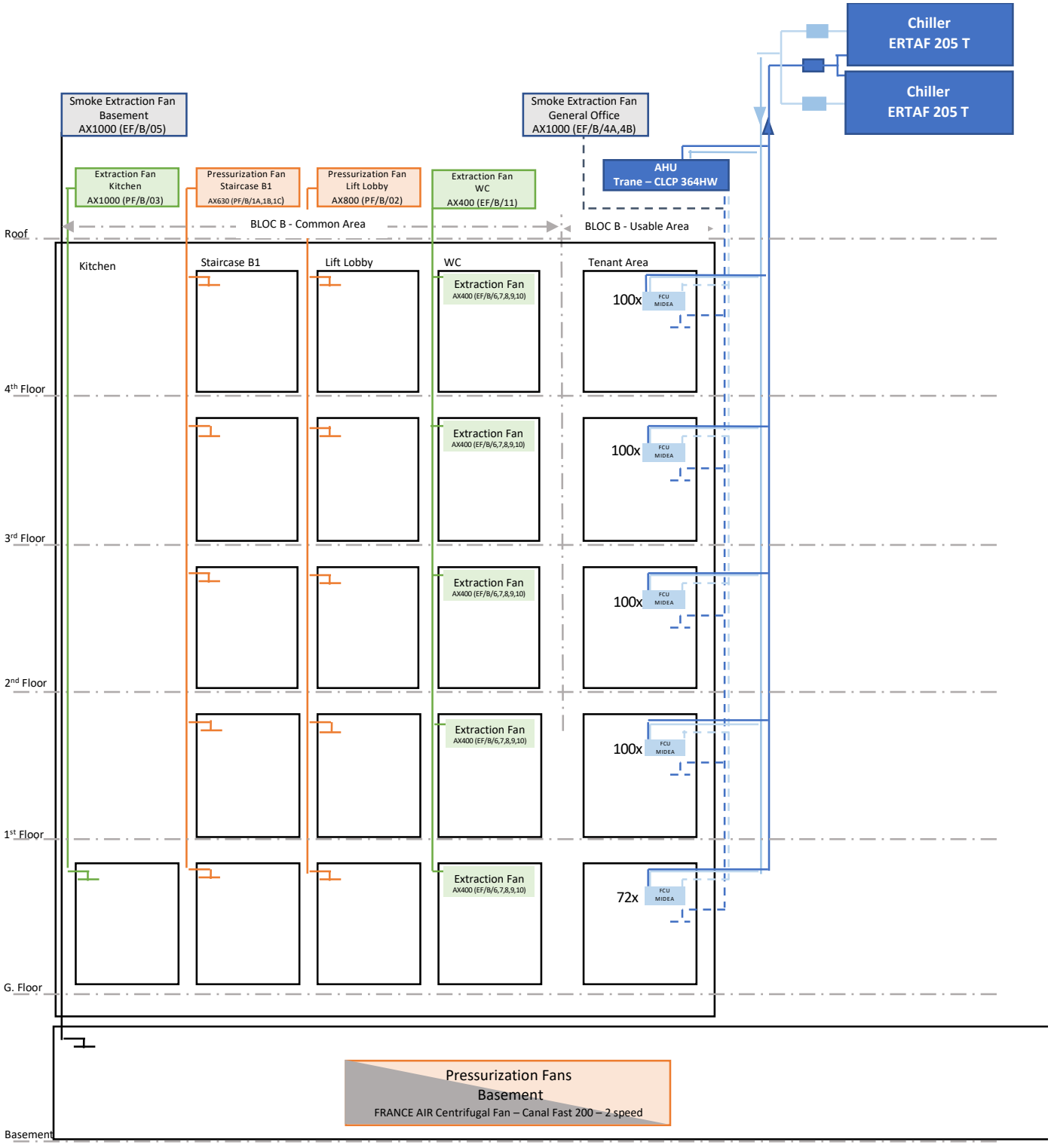
The design parameters are as followed:

Open plan office: 1 person/ 15m2
Equipment: 10W/m2
Indoor Temperature 24C

HVAC System Simple Diagram BLOC A



HVAC Simple Diagram - BLOC B



Building Services – Electrical System

ELECTRICAL INSTALLATION

The services design concept for the MTBG office utilizes the latest technology, which provides special attributes to energy conservation. 3 MV/LV transformers supply electrical distribution with metering and sub-metering, CCTV system, Access Control (boom gates and biometric access points), standby generators for full load back-up, fire alarm systems, burglar alarm systems;

EMERGENCY POWER INSTALLATION

The building integrates 3 generators which back up the whole site

LIGHTING

The whole building is equipped with low consumption lighting system, LED, with light intensity, motion detector sensors and fixed shading equipment for luminosity control; this facilitates light fittings to switch off if there is no one present in close vicinity. The sensor also allows the building management team to set the general light level in the office space or individually set a specific light intensity in a specific zone. The building management team maintains the system at an average of 400 Lux.

ENERGY SUB-METERING

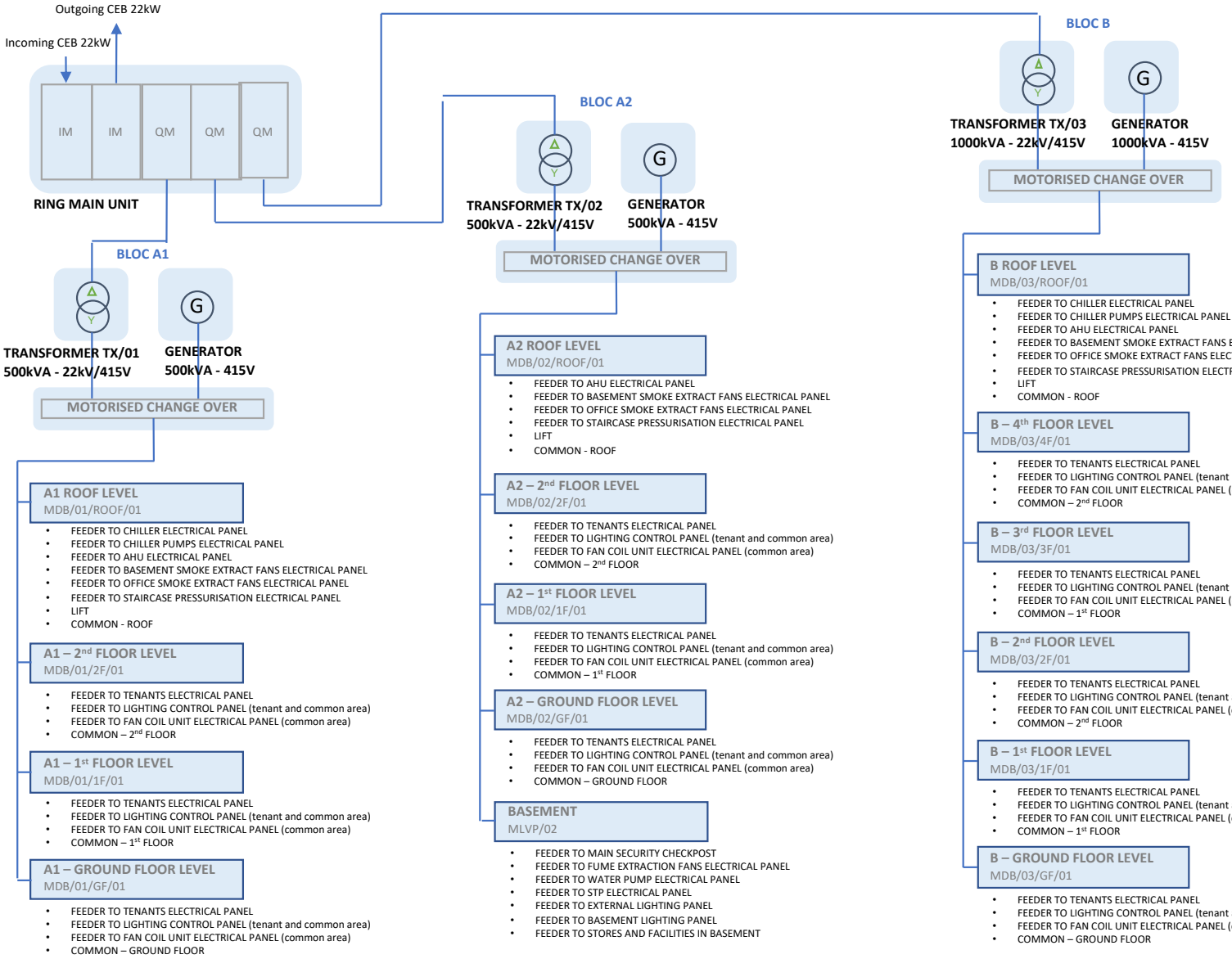
Sub-meters will be installed for substantive energy uses of 100kVA or more. In addition sub-meters will also be installed separately for lighting, power and HVAC in each Distribution Board on each floor. The sub-meters are linked to the BMS for the monitoring of energy consumption

BMS SYSTEM:

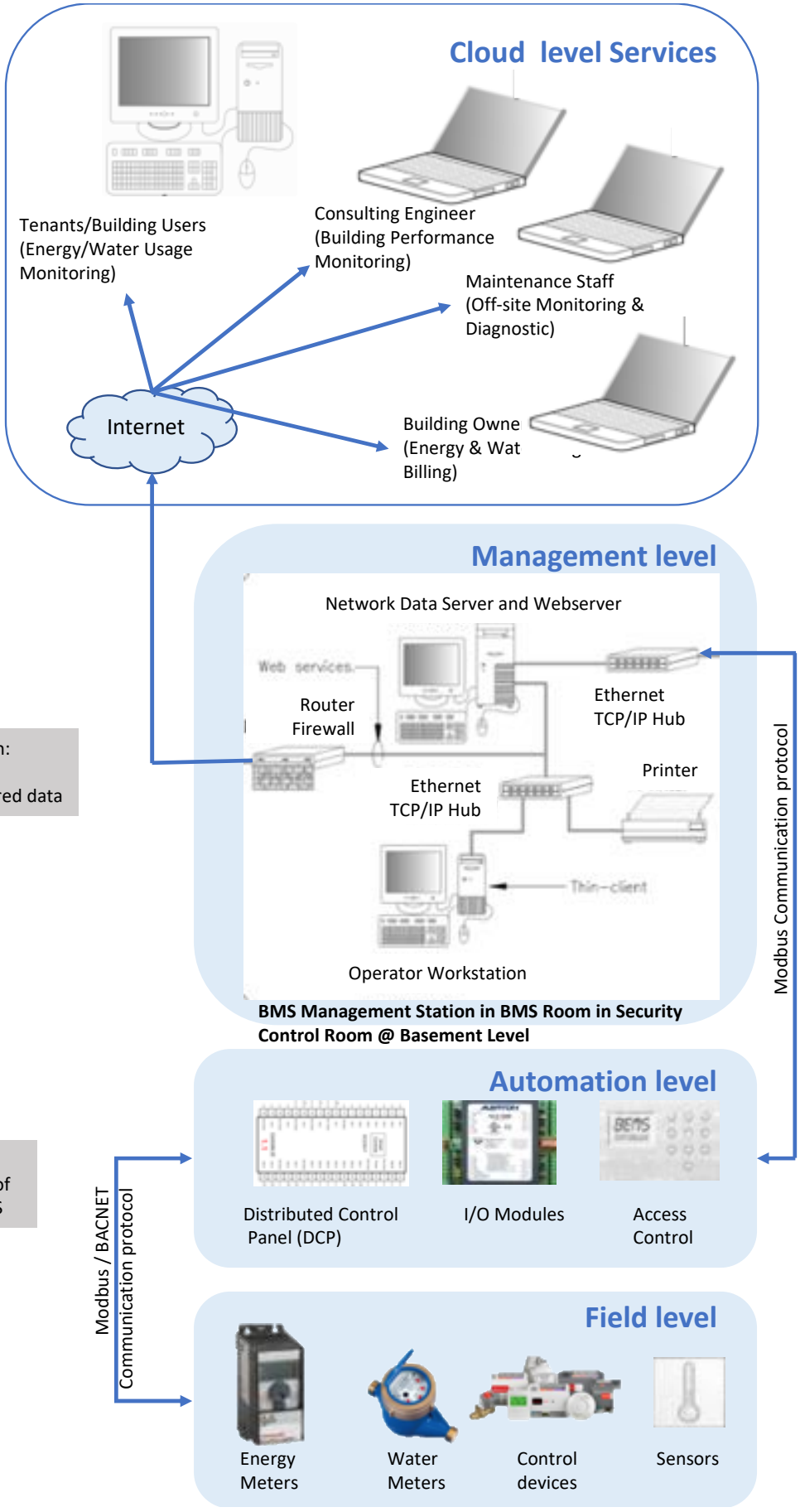
The system was configured in five level:

- BMS Thin clients: where operators of BMS interacts with the system by mean of HMI.
- Application Server: containing the application software linking the thin client to the automation server
- Automation server: containing the logics which controls the various aspects of the BMS
- IO Modules: which receives signal from field devices and output signals to controllable devices
- Field Devices: used to measure and/or control various aspect of HVAC, Water and Power systems

Electrical Distribution Simple diagram



BMS System simple diagram



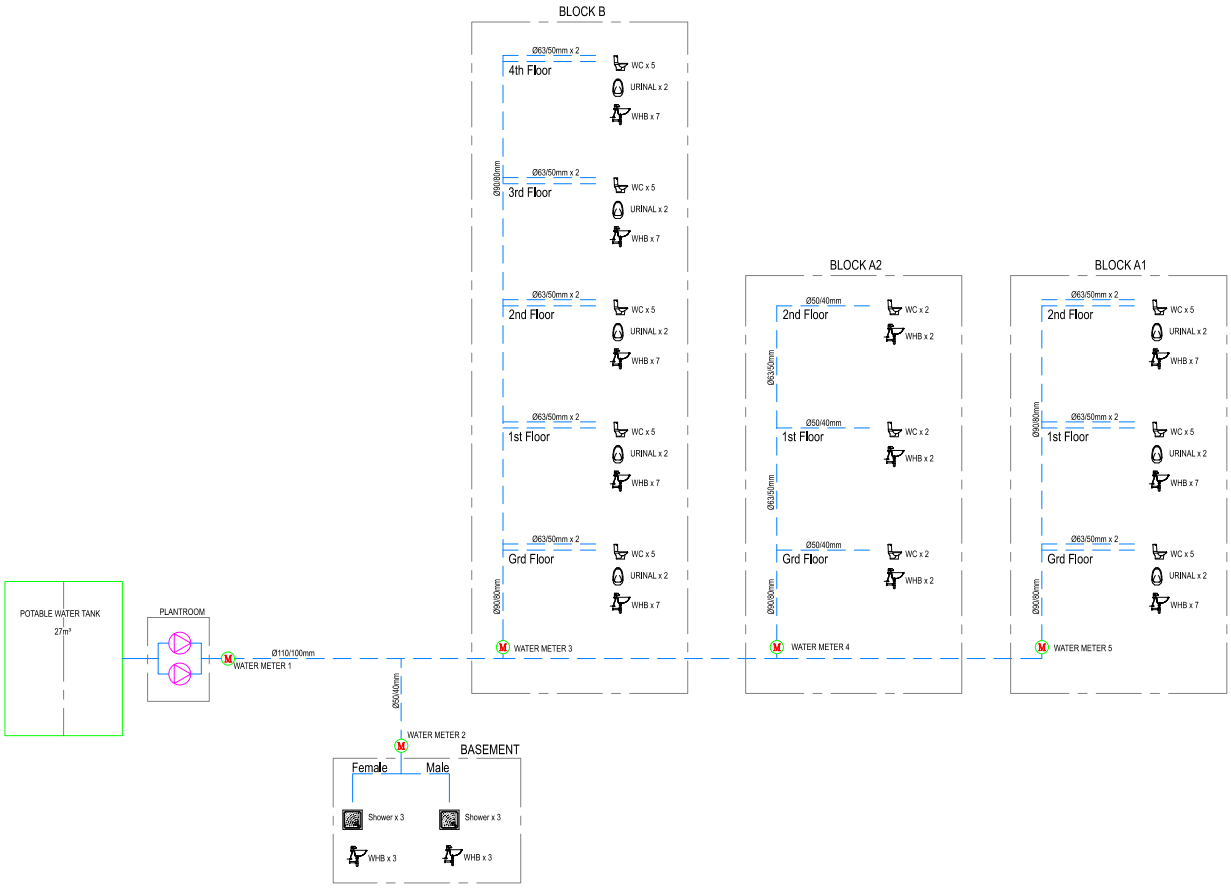
Building Services – Water services

HYDRAULIC SYSTEM

All water pumps are equipped with Variable Speed Drive. Water is distributed through galvanized mild steel reticulation, and using efficient fittings reduces potable water consumption. Grease traps are provided for kitchen wastewater. Wastewater is treated through a Sewerage Treatment Plant and reused for irrigation,

No hot water is provided throughout the building.

Water distribution - Schematic layout



Building Services – Water services

WATER EFFICIENT FITTINGS

Water efficient sanitary fittings have been provided throughout the building to reduce water consumption through daily activities. The following flushing systems, taps and shower will be provided for the building

Item	Brand/reference	Number of fixtures	Flow rate	Fittings
WC (dual flush)	ROCA DUPLO SMART WC – Concealed structure for Smart Toilets with dual flush cittern Ref. 890080020	**38** Bloc A1: 12 Bloc A2: 6 Bloc B: 20	2L/4L/flush	
WC for disable (dual flush)	ROCA DUPLO SMART WC – Concealed structure for Smart Toilets with dual flush cittern Ref.	**8** Bloc A1: 3 Bloc B: 5	2L/4L/flush	
Wash Hand Basin With integrated reducer	ROCA L20 + L20E Ref. 5A5609C00 Ref. AG0129000R	**68** Bloc A: 27 Bloc B: 35 Basement: 6	1.89L/min	
Urinal (manual)	ROCA Sentronic-R Ref. 5A982.0N	**16** Bloc A: 6 Bloc B: 10	0.8L/flush	
Shower with integrated reducer	ROCA Rainsense Ref. 5B2150C00 Ref. AG0099307R	**6** All in basement	6L/min	

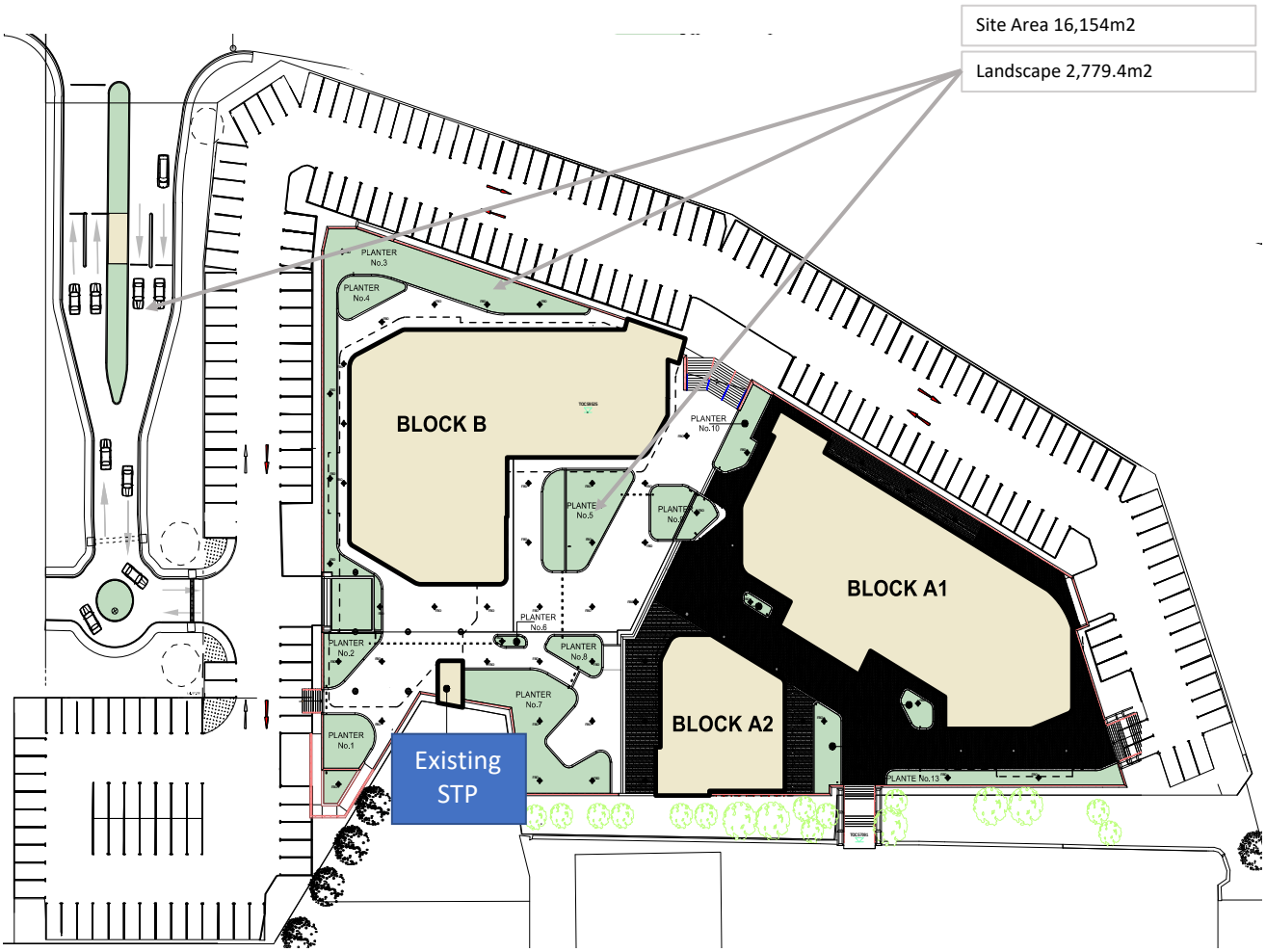
Building Services – Water Services

Irrigation system

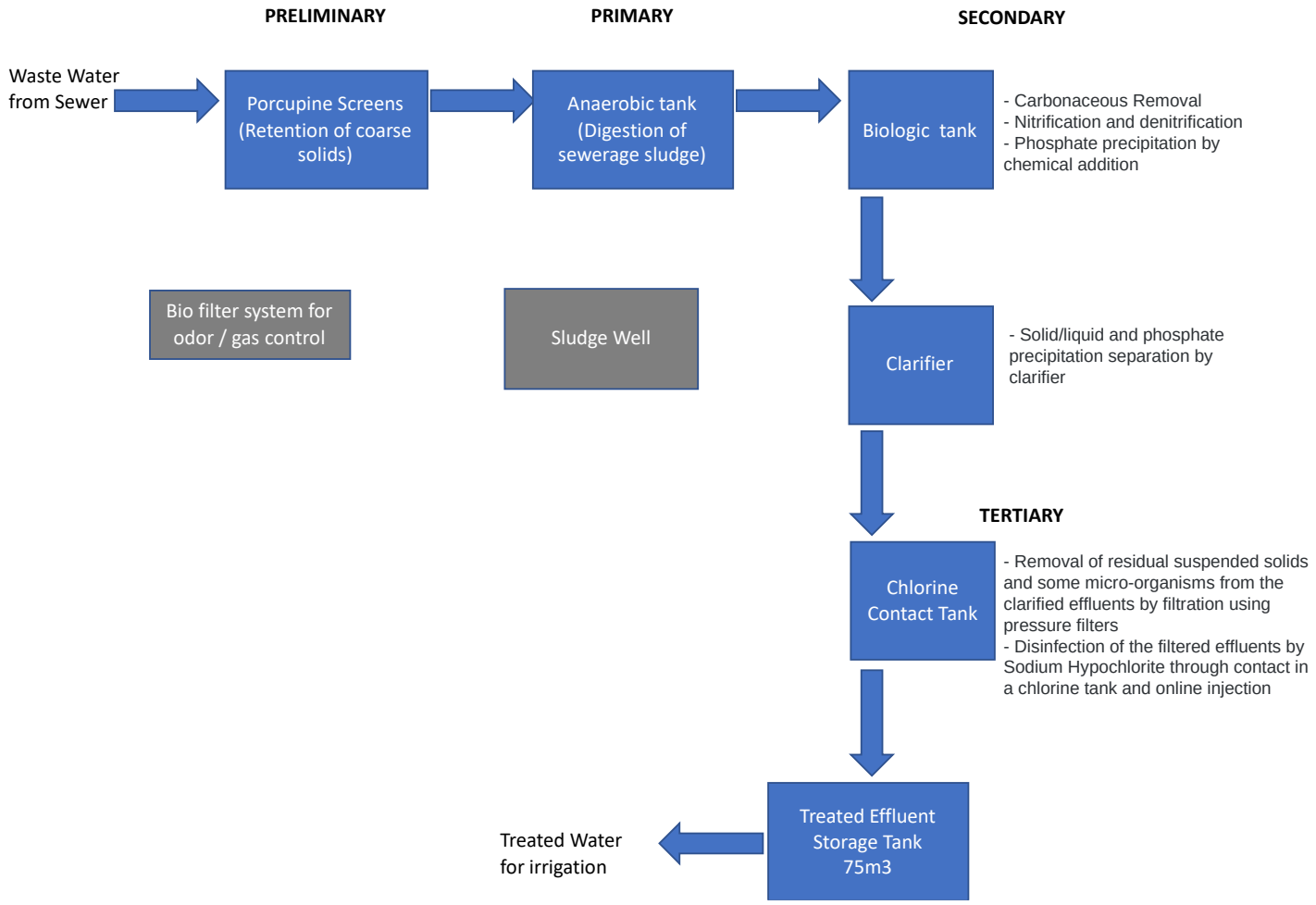
Water for irrigation purposes will be derived from the existing Sewerage Treatment Plant located at the Holiday Inn Hotel. No potable water consumption will be used for irrigation. The existing STP has a design Capacity of 75 m3 /day but has never been loaded with more than 48 m3 /day (as per latest data).

Phase 1 of the current project will discharge a maximum of 18 m3 /Day, thus leaving a capacity margin of 75 -(48+18) = 9 m3 /day.

The landscape area is 2779m2 and is less than 30% of the project total site area



STP- Simple Diagram



Tobacco Smoke

The building is a smoke free zone to protect the health of all occupants and to recognize the air quality benefits by not having any smoking areas in or immediately around the building. Signage will be strategically placed around the building to remind occupants that smoking is strictly prohibited

Building Services –

Fire services

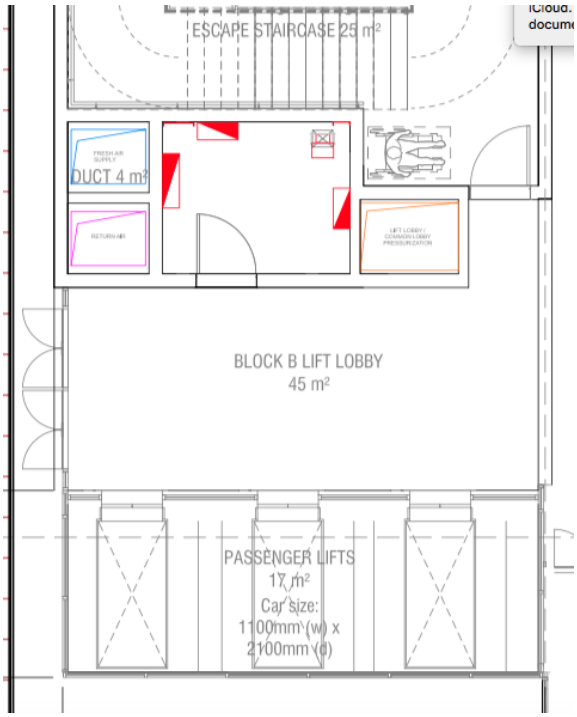
No sprinkler is provided in the project. The fire protection measures incorporate

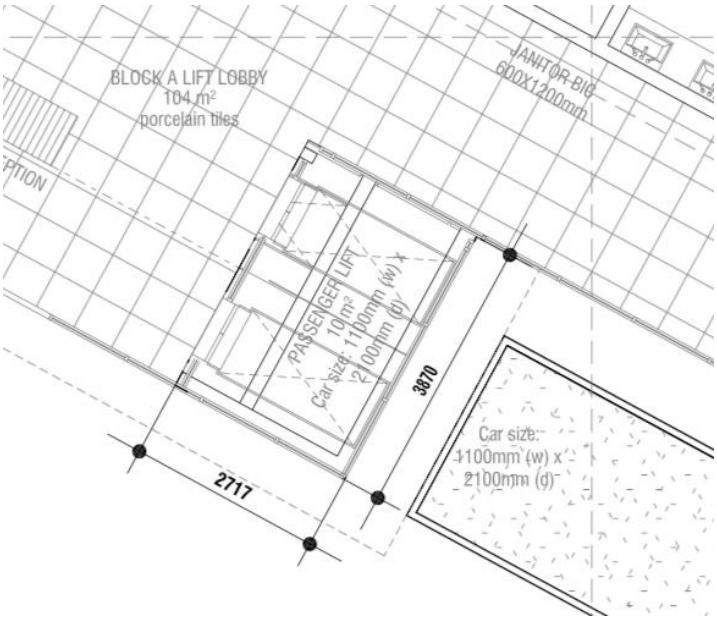
- Horse Reel System
- Dry Chemical Powder Extinguisher
- CO2 Extinguisher
- Smoke Extraction fans

Lift

The MTBG project is provided with 2 elevators for bloc A and 3 elevators for bloc B serving 4 stories (basement + GF + 2) and 6 stories (Basement + GF + 4) respectively.

The elevators ar all rated at a duty of 1000kg and operate at an optima speed of 1m/s. The lift are not provided with regenerative braking.





Transport Facilities

WALKING

'Live-Work-Play' concept

As part if the Mon Tresor Smart City, the MTBG is built around the 'work-live-play' lifestyle, meaning that the MTBG is developed within a mix of residential, commercial, office, education, medical, leisure uses that, as a whole, achieves physical and functional integration and creates a pedestrian-oriented urban environment

Airport Mall

The Airport Mall close to the MTBG with convenient access for staff will provide various facilities such as pharmacy, gym, bank, cinema, post office, retail shops, hair salon, convenience store, restaurant, playground….

CYLING

46 secured bicycle bays and changing facilities/lockers are provided for staffs and 15 parking bays for visitors. Convenient cycling routes are provided between the office development and the adjacent street network as well as specific signage.

ALTERNATE TRANSPORT

20 parking bays are reserved for alternate transport and 20 for scooters. A Green Travel Plan is implemented to reduce single occupancy vehicles

Waste & Waste Policy

Solid waste

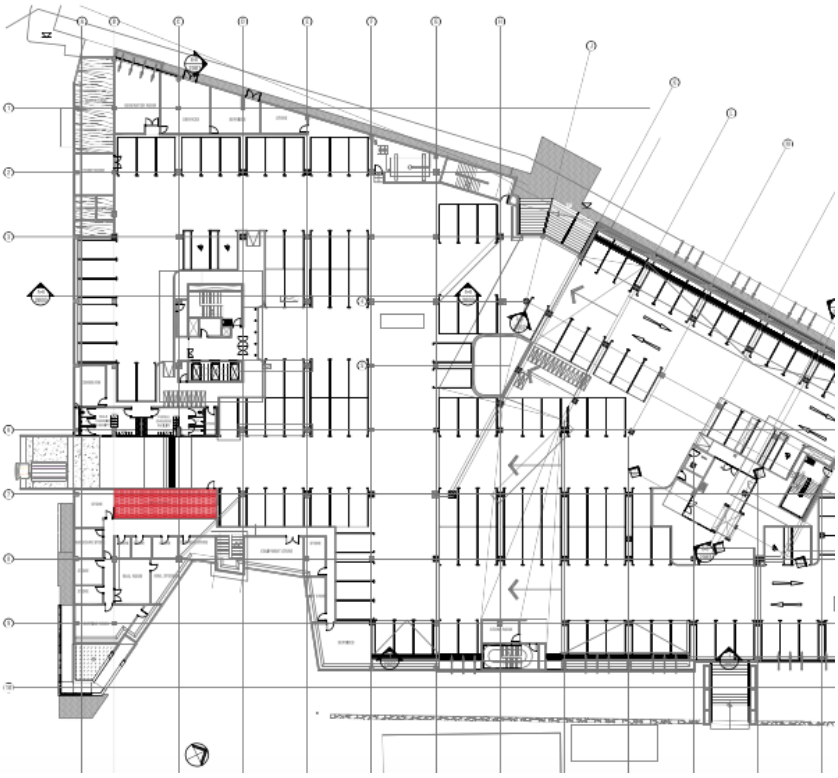
A waste recycling storage area is provided to encourage recycling of resources used within the building to reduce waste going to landfill. This concerns:

- Paper and Cardboard
- Plastic , glass and cans
- Metals
- General Waste

The recycling and waste storage area is located in the basement with easy access to the dedicated sorting bins in the refuse area. The waste storage area is indicated in red on the plan.

Wastewater

100% of wastewater is treated by a Sewerage Treatment Plan next to the building and recycled water is used for irrigation.



Expansion / Re-fit Considerations

LED LIGHTINGS

Only LED lightings are installed within all occupied spaces to reduce lightings energy consumption

LOW VOC: PAINTS, CARPETS, ADHESIVES AND SEALANT

Paints, carpets, adhesives and sealants and composite wood products used within the building will be specifically selected to minimise emissions typical of these materials.

LOCAL SOURCING: MATERIALS

New construction should aim to achieve the following:

Where concrete is used within the building to make 40% reduction of the quantity of Portland cement, as an average across all concrete mixes where implemented.

Where steel is used in the project ensure a 60% recycled content of all the steel by mass on the project.

Where timber is used 95% (by cost) of all timber products used in the building and construction works should be specified to be Forest Stewardship Council (FSC) Certified Timber, reused or recycled timber.

References and Further Information

Green Building Council of South Africa
www.gbcsa.org.za

Environmentally Friendly Design Features
www.sustainablehomedesign.co.za

Energy used by appliances
www.ge.com

Occupancy sensors
http:www.wbdg.org/ccb

Energy Saving
www.enersense.org

Water Conservation
Wwww.waterconservation.co.za

Indoor Air Quality in Building
www.greenbuilding.com

MTBG- Building Users' Guide

Mon Tresor Business Gateway

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www.montresor.mu