

SUMMARY SPECIFICATION

The Wings office development is designed to provide approximately 27,000m² of high quality office space in a twin tower configuration. The ground floor contains a series of entry spaces escalating the user through security clearances.

Access is controlled via the public lobby, which leads on to the retail areas, restaurant and banking hall, as well as security reception desks in the lobbies of each tower.

Parking is positioned both above and below the ground floor areas in podium and basement parkades respectively. Each of the towers comprises 12 office levels, designed around a central service core.

DESIGN CONFIGURATION AND CRITERIA

Design Life

The building design life, as defined within BS754, is Class 4 - normal life of up to 60 years.

Grids

The office floor plates are designed on an 8400mm grid in the one direction and a 10 550mm – 8400mm – 10 550mm grid in the other direction, with a central atria route through each tower. Internal planning based on 1.2m module. Perimeter columns to the façade are at 8.4m centres and have a finishing module of 600mm. Four columns per typical office floor plate are internalised, the remaining structural elements are designed into the building envelope.

Imposed Loads

Office area	3.0 kN/sq m
Partitions	1.2 kN/sq m
Storage	None
Plant areas	7.5 kN/sq m
Loading bay	None

Floor to Floor Heights

Main entrance	4.32m
Ground Floor Retail	5.75m
Typical Office floors	3.52m
Parking Decks	2.88m
Loading bay (u/s of slab)	4.30m

Floor to Ceiling Height

Main entrance	4.32m
Ground floor retail	5.75m
Typical office floors	3.52m
Parking decks	2.88m
Loading bay (u/s of slab)	4.30m

Office Level Toilet Ablutions

Male/female fittings are based on 1 person per 10m². Separate male and female WCs are provided to suit a range of multi-tenancy layouts on each floor. One disabled WC is provided on a typical office floor per tower. The toilet fittings and fixtures are motion sensor controlled to deliver the highest level of personal hygiene standards while maintaining a quality consistency with the rest of the building.

Public Ablutions at Ground Floor Level

Five shower/WC suites are provided, with adequate space for lockers at car park level.

Driver Ablutions at Podium Parking Levels

Four separate facilities with WC, urinal and wash hand basins will be provided, with two facilities servicing each split-level of the parking complexes. In total 12 separate abluion facilities are available to the whole parking structure. Lounges are provided at all parking levels for waiting drivers.

Parking

700 parking spaces (twelve disabled), are provided at basement level, ground level and podium parking levels. All accessed by a separate set of shuttle lifts, transporting users to the ground level in order to integrate with the security lobbies of each office tower.

Refuse Disposal

Loading of refuse will be restricted from a storage facility on Ozumba Mbadiwe Avenue at ground floor, discharging local collection via a siding established within the property alongside the Porte Cochere. The use of this facility will be restricted to hours outside of the prime usage of the office complex and ancillary areas.

SERVICES DESIGN CRITERIA

Occupancy Levels

Office floors 1 person/10m²

Fire Strategy

The building is designed in line with the guidance of Approved Document B Volume 2 of 2007 for fire safety in the design, management and use of buildings.

The building incorporates:

- BS5839-1 Category L1 detection and alarm system to allow phased evacuation.
- BS EN 12845 Automatic sprinkler system covering all areas including dedicated sprinkler pumps and tanks.
- Firefighting shaft including: Fireman's lift and lobby for fire-fighting, evacuation and stairwell.
- Stairwell pressurisation.
- Escape routes allowing 1 person/8m² on the office floors.
- Mechanical smoke extraction from the basement.

External Design Conditions

Wet season 35°C db/28°C wb
Dry season 22°C db/22°C wb

Internal Design Conditions (offices)

Wet season 25°C db
Dry season 25°C db

Minimum Fresh Air Rate

8 Litres per person

Mechanical Ventilation Rates

Toilets 15 l/s/m²
Basement plant/storage 10 l/s/m²
Car park 10 ACH

Cooling/Power Loads

Lighting (Offices) 15 W/m²
Equipment (Offices) 20 W/m²
Equipment (Meeting Rooms) 25 W/m²
Percentage floor area (Office levels only):
90% Office
10% Meeting Room

Illumination Levels

Office (open plan) 300 lux - 500 lux
Toilets 100 lux -150 lux
500 lux over vanities
Staircases/corridors 100 lux -150 lux
Car park/loading bay 100 lux -250 lux
Plant rooms 200 lux -300 lux

Acoustics

Location Max NR(dB)
Open plan offices 40
General circulation 45
Entrance lobby 45
Toilets 45

BUILDING – GENERAL BUILDING FABRIC

Substructure

New basement walls formed from concrete retaining walls supported on a piled raft that forms a tanked system via the Preprufe waterproofing system.

Superstructure

The superstructure generally consists of concrete columns and post-tensioned flat slabs with central concrete cores providing lateral stability.

Office Cladding

The principal external cladding system comprises a double glazed factory preassembled system, installed as a series of unitised floor to floor panels stacked vertically and fixed to concrete slabs. The cladding modules align with the structural bays of the building. Each 8400mm structural bay is subdivided into seven 1200mm glazed cladding panels. The curved curtain screens oriented north/south, with 90% vision panels have a veil of ceramic frit baked onto the glass in a dot matrix of varying density with a pattern of vision panes through them creating the necessary glare control to the exterior views.

The performance shading to the double glazed solar glazing panels has been matched to the performance specifications of the air conditioning. The solar coating to the glass has a silver appearance which will be textured externally by the frit pattern. All curtain wall façades will be equipped with a cleaning rail designed to facilitate the use of cleaning equipment and maintenance cradle for repairs.

Roof Build-up

The roof construction at level seventeen comprises a proprietary extruded aluminium louvered screen which conceals the roof plant area. The north/south curtain wall screens have been extended to a level 5000mm above the roof level to provide adequate visual screening.

Façade Access

The main equipment consists of a roof mounted rail to the full perimeter of each tower. The rail is designed to support two static lines onto which a climbing cradle can be fixed. The cradle then climbs the static lines and is the operating platform for all maintenance and cleaning.

INTERIORS

Reception Lobby

The main entrance to the building is from Porte Cochere located on the Ozumba Mbadiwe Avenue frontage. The reception also opens to the north of the property onto Five Cowrie Creek. This facilitates both vehicular and waterborne access to the building. The reception lobby offers a spacious one and a half storey high space. The main doors to the reception lobby incorporate three, fully glazed, revolving doors. The revolving doors are semi-power assisted and temperature controlled. An additional pair of glazed, double swing doors are provided for emergency access.

The reception space comprises a public lobby which contains the main entrance door arrangements and the parking shuttle lifts. All retail spaces are accessed off this lobby space. Two security entrance lobbies to the office towers adjoin the public lobby and provide access control to the office towers. The main public lobby will be furnished and have adequate “way finding” signage as required, to be tastefully positioned within the space.

The security lobbies contain a reception desk, which can accommodate up to three receptionists. The desk can be fitted with equipment related to the security and 24-hour monitoring of the tenanted area.

The floor to the lobby is porcelain tiled surface. Toilets are provided for the reception lobby. A dedicated security/management room is provided for the overall building management function.

Passenger Lifts

The building is served by a single bank of three passenger lifts operating in sync with the emergency lift, which is programmed to operate as a fourth passenger lift or as a fire lift, opening onto the fire lobby located at the rear of the lift in an emergency.

The lift car walls are made up of brushed stainless steel panels to the sides and a full height mirror to the rear panel, polished stainless steel doors, porcelain tile floors, stainless steel COPs and matt black ceiling with bulkhead lighting.

Office Areas

The walls of the office areas are made up of full-height, glazed perimeter cladding to the north/south façades, with a strip window configuration to the oblique facades facing north/east, north/west, south/east, and south/west respectively.

Walls of the cores, facing the office space, will be plastered and painted. Core smoke and draft doors are full height glass and aluminium double swing doors. A fully accessible 600mm x 600mm mineral fibre, acoustic ceiling tile grid system, incorporating light fittings, sprinklers, smoke detectors and motion sensors has been designed for the office ceiling, which

co-ordinates with the 1200mm planning grid. Power skirting is provided to the entire perimeter, providing for power and data reticulation.

Office Restrooms

The toilet areas have a traditional layout, with separate WC cubicles and vanity units. The fittings and materials are selected to be simple, functional and low maintenance. Porcelain tiles (600mm x 600mm) are used for the floors and walls.

The toilet cubicles are full height and are finished with frosted white “Cubical Solutions” doors and pilasters fixed to tiled and block-work partitions. Cantilevered WC pans with concealed cisterns are installed in the cubicles.

Wash hand basins, set on top of a “Caesarstone” vanity unit are provided to both male and female toilets. The mirrors to the WC area are the full width of the vanity unit and extend from the ceiling to the top of the vanity counter.

Two disabled toilets are located on ground floor for each tower. Further disabled toilets are positioned for access off the main public entrance lobby and facilitate these public spaces. The disabled toilet cubicles have the same finishes as the main toilets. Motion sensors installed in the toilet areas will automatically control the lighting supply when not in use. Similarly, the toilet fittings and fixtures are motion sensor controlled to deliver the highest level of personal hygiene standards; and energy and resource efficiency while maintaining aesthetic consistency with the rest of the building.

Waste bins, hand dryers and soap dispensers are designed for ease of supply and maintenance.

Loading Bay

The loading bay is designed to enable access from Ozumba Mbadiwe Avenue. The loading bay gives direct access to the retail space at ground floor of the building. The entrance to the loading bay is through a metal roller door with a clearance height of 4500mm.

Basement and Parking Deck Finishes

The parking area generally has full-height, painted block-work walls and colour graphics painted on concrete columns for deck identification. Parking bays are painted on the floor plates, with numbers for identification. Directional signage will be provided for ease of ingress and egress.

Partition Finishes

Provision is made within the perimeter cladding mullions to enable future partitions to be installed. Each mullion incorporates a continuous 20mm wide recess which is specifically designed to accommodate a partition restraint toggle, from which a partition wall can be constructed.

Internal Blinds

Fixing zones have been provided in the cladding transoms to enable the future installation of horizontal Venetian blinds.

SERVICES INSTALLATION

Electrical

Electrical power is provided to the building at 11kV and up to 3.5MVA. Electrical services for each floor of each tower are supplied from a main floor DB which is designed to accommodate up to four occupants per typical floor, with separate metering of electricity consumption for each tenant.

Standby Generation

A total of five prime rated diesel generators complete with exhaust systems will be provided. These will be housed in a designated room in the basement. These generators will supply full back-up during a power failure or severe voltage fluctuations and will be used as the secondary supply for the building. Exhaust emission and noise levels will be minimised by means of

catalytic converters and sound attenuation systems, respectively. Noise levels and exhaust emissions will comply with the relevant by-laws.

The generator sizes and setup are as follows:

- Tower 1, Basement and Ground floor
2 x 1000kVA Generators.
- Tower 2 and Parkade
2 x 1000kVA Generators.

A 40,000L fuel tank is provided. In each instance above, one or both generators will work at any given time, dependent upon the load. The fifth generator will only operate as a replacement in the case of any of the other four units undergoing regular maintenance or in the case of failure.

Telecoms

A telecommunications room is located in the basement and is the point of first fix to the site. Telecom cables are then reticulated through two riser positions, one in each tower core. These risers are continuous to the roof level and are to be used for all tenant data reticulation and to connect with communication hardware to be erected at roof level. A satellite farm is provided on the roof of each tower and is intended to be the designated area for the erection of any such communications equipment.

Mechanical

A decentralised Variable-Air-Volume (VAV) air-conditioning system with air-cooled chillers will be provided.

Cooling Source

Chilled water at 6°C for cooling is generated by means of 2 air-cooled chillers located in an exposed plant room on the roof slab of the generator room.

Chilled Water Distribution

The chilled water is pumped through a “primary-secondary” pumping arrangement to the building. Variable speed secondary/

building pumps are provided.

They control the amount of chilled water supplied to meet the overall cooling requirements in the buildings. One set of secondary building pumps, consisting of a duty and standby pump, will be provided for each of the tower blocks.

Chilled Water Air-Handling Units

The chilled water is distributed through insulated chilled water pipes installed in riser shafts and connects to floor-standing chilled water air-handling units, located in a plant room on each office and penthouse level.

The air-handling units consist of an air-filter, cooling coil and variable speed supply air fan. The units supply filtered and conditioned air at a constant temperature of 13°C. Filters are mounted on the air-handling units and can be cleaned without entering the occupied areas. Condensate drains are contained in the air-handling unit plant rooms with reduced risk of damage to other areas.

Air Distribution

The supply air is distributed throughout the air-conditioned areas by way of externally insulated galvanized sheet metal ducts installed in the ceiling void and introduced into the space by means of ceiling mounted VAV diffusers at approximately 1 per 20m² air conditioned floor area. Return air is through return air type light fittings and the ceiling void to the air-handling unit plant rooms. If return air light fittings are not provided, return air grilles will be installed in the ceiling.

VAV Air Terminals

Each ceiling-mounted VAV diffuser is connected through an insulated flexible duct to sheet metal ducts in the ceiling. The diffusers consist of a motorised damper that controls the amount of conditioned air supplied. The indoor air temperature is controlled through a wall-mounted set point adjuster that allows occupants to adjust the desired temperature set point.

The actual air temperature sensor is located in the wall-mounted set point adjuster. If the actual air temperature increases above the set point, the modulating damper in the VAV diffusers will throttle

open to increase the amount of cool air at 13°C that is supplied to the space. If the actual air temperature decreases below the set point, the modulating damper throttles close until it reaches a minimum position of typically 30%.

The minimum position is required to ensure that there is always an adequate amount of air circulation in the room to meet the fresh air requirements and eliminate stuffiness.

Ceiling-Mounted Chilled Water Fan-Coil Units

The ground floor areas e.g. shops, lift lobbies, etc. will be air-conditioned by means of ceiling-mounted chilled water fan-coil units, connected to the chilled water piping. These units consist of a primary filter, cooling coil and supply fan that supplies filtered and conditioned air into the space through constant air volume diffusers.

Each area will be supplied with a wall-mounted set point adjuster that allows occupants to switch the units on/off, adjust the desired temperature set point, as well as the fan speed. The actual air temperature sensor is located in the wall-mounted set point adjuster. If the actual air temperature increases above the set point, the 2-way modulating valve throttles open and chilled water is diverted through the cooling coil. Air at approximately 13°C is supplied to the space. If the space temperature increases above the set point, the 2-way valve will throttle close. Filtered and conditioned fresh air will be supplied directly into the air-conditioned spaces through ceiling grilles.

Fresh/Outside Air Supply

Filtered and conditioned fresh/outside air is introduced through one fresh air handling unit located at roof level per tower block. The fresh air handling unit consists of primary and secondary filtration, a chilled water cooling coil and a constant volume supply air fan. The fresh/outside air is distributed to each of the office floors as well as the ground floor through externally insulated galvanized sheet metal ducts installed in riser shafts in the floor air-handling unit plant rooms. The fresh/outside air is discharged into the air-handling unit plant rooms where it mixes with return air before introduced into

the air-conditioned areas. Fresh/outside air to the ground floor areas are introduced directly into the areas through ceiling grilles.

Ablutions Ventilation System

Mechanical exhaust ventilation will be provided to the ablution facilities. The installation consists of ceiling mounted exhaust air grilles connected via un-insulated flexible ducts to galvanized sheet metal ducts installed in the ceilings and riser ducts to the roof level. The air is discharged at roof level through an axial-fan/sound attenuator assembly. Makeup air to the ablution facilities are through a ceiling mounted transfer grille assembly.

Basement Ventilation System

Mechanical exhaust ventilation will be provided to the lower basement parking level. The installation consists of 4-off exhaust air shafts with intake louvers connected to axial fan/sound attenuator assemblies installed at ground floor level. The fans will be fire rated at 300°C for 30 minutes and will run in the event of a fire signal in accordance with the Rational Fire Design. Make-up air is through the entrance ramps to the basement levels.

Staircase/Lift Lobby Pressurisation System

The emergency escape stairs and lift lobby will be pressurised in accordance with the Rational Fire Design requirements as follows:

- Staircase adjacent to the fire lift lobby: 15m³/s with relief air into the fire lobby.
- Second escape staircase: 7.5m³/s with relief air into the lift lobby. Pressurisation will be provided by means of axial fans located in the Level 4 parking area. The fans will be fire rated at 300°C for 30 minutes and will run in the event of a fire signal. Air will be discharged into the staircases and lobbies through wall mounted grilles.

Store Room/**Plant Room Ventilation Systems**

Mechanical exhaust ventilation will be provided to store rooms and plant rooms. The installation consists of wall-mounted fans. Door grilles will be provided for make-up air.

BMS & Automatic Controls

The Automatic Controls and Building Management System is a micro-processor based system. Intelligent (computerised) outstations and plant power centres are distributed throughout the building generally in plant rooms and service risers. The operator's terminal is located within the Facilities Management rooms and can also be monitored at the main reception desk. Interfaces with the Life Safety System are provided.

Security and Access Control

First fix will be provided for an access control system. This will consist of conduits and boxes for a card reader/keypad, pushbutton and maglock in office floor lobbies, as well as at main entrances into the building on ground floor. Fixed and PTZ cameras will be used in the podium and external areas. A Network Video Recording (NVR) system will be implemented that will be able to store video feeds from each camera for a maximum of 14 days. A total of 12 cameras will be provided.

Areas that can be monitored:

- Entry and exit points into the building.
- Common areas.
- Parking areas – particularly entry and exit points.
- Sensitive and high risk (VIP) areas.

Water and Sewerage Treatment Plant

The main office accommodation within the building is provided with a metred incoming borehole water supply. The supply connects to storage tanks at basement level. The

borehole water then goes through a water treatment plant and stored in a treated water storage tank. Boosted treated water distribution rises in two locations to roof storage tanks. Two pressure zones will distribute through the building for the top floors and lower level floors and blanked connections will be installed at each floor for future tenant use.

Public Health Services

A condensate drainage system is provided with vertical risers within the cores. Separate foul/waste water systems are provided throughout the building connecting to a sewer treatment plant that will treat the sewer to an accepted water quality level that will discharge to the adjacent statutory authority sewers.

Lifts per Office Tower

Designed for occupation density of: one person per 10m² (less 15% absenteeism)
Average interval at ground floor <30 seconds.

3x High rise passenger lifts

Electric traction type

Size: 1,275kg/12 person

Speed: 2.0m/sec serving Ground to fourteenth floor

1x firefighting lift

Electric traction type

Size: 1275kg/12 person

Speed: 2.0m/sec serving all levels in fire emergency and ground to office levels during normal operation.

Lifts to Parking Levels

2x Car park Shuttle lifts

Electric traction type

Size: 1000kg/10 persons

Speed: 1.0m/sec serving basement and podium

Parking levels to ground floor level.

All lifts have the capacity to introduce CCTV surveillance

EXTERNAL WORKS

General

The external works to the building comprise an internalised driveway and Porte Cochere off Ozumba Mbadiwe Avenue. Storm water is directed away from the main entrance toward the street drainage along Ozumba Mbadiwe Avenue. Two drainage channels running along the east and west boundary of the site drain the street channels into the Creek. The site has two access points, one serving the Porte Cochere and the other providing dedicated off street access to the parkade.

A security boundary fence has been provided with security booths for each of the access points to the site. A system of gates provide varied degrees of access control during operating hours and full closure outside of operating hours. External lights are installed within the soffit of the first floor cladding to provide lighting for the perimeter of the building. Permanent and retractable security bollards are installed outside the entrance to the loading bay.

Landscaping

The northern edge of the site overlooking the creek has been landscaped to provide a pleasant and inviting arrival for those accessing the site off the water, while providing a conducive environment and outlook to the planned retail ground floor spaces.