




BUILDING USERS' GUIDE

BALWIN HEADQUARTERS
Johannesburg

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 users' experience within the building.

 The Building Users' Guide aims to:

-  Enable occupants to understand the building and the limitations that they must work within to maintain the design performance and minimize environmental impacts
-  Inform occupants and users of all the building's incorporated service and management systems to optimise the building's environmental performance and minimise 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.

Building Background

The Balwin Headquarters building is located on 105 Corlett Drive close at the M1 offramp in Birnam, Johannesburg. The building is a major refurbishment of the existing iconic Creative Council Building developed and built in 2021.

Located in a high urbanized context adjacent to the Melrose Arch development the building is made up of four basement levels and five office floors.

The project is targeting a 6-star Green Star Office v1.1 Certification – one of the first 6-star major renovations in South Africa. The building will further aim to achieve an As Built rating and Net Zero Carbon and Net Zero Waste Certifications to demonstrate its intent on contributing to sustainability in the built environment .

The redevelopment will see the removal of the three cones and the creation of two new floors under the elevated concrete box. An additional roof space will be



BALWIN HEADQUARTERS
Existing and New

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Water ,Environmental & Material Strategies



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References & Further Information



ENERGY STRATEGIES



Energy Strategies are implemented to reduce the overall energy consumption of the building which in turn has an impact on the reduction of greenhouse gas and other emissions associated with energy generation from fossil fuels.

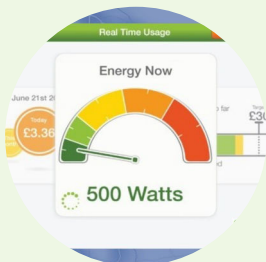
Savings related to energy consumption equal R297/m²/annum, or R 1 833 381 per annum.

Monitoring & Targeting

Energy sub-meters are provided for all substantive energy uses to accurately monitor energy consumption. The behaviour of occupants and users of the building are critical to reduce the energy consumption of the building. The Building is targeting an energy consumption of 101kWh/m²/year , far less than

Energy and environmental initiatives

- Minimisation of Greenhouse Gas Emissions associated with operational energy consumption is reduced by 103%. The use of energy modeling of the building was performed in the design stages of the building and compared to a notional building model
- The building has a 183kW Photovoltaic system on its roof. The annual production of this system is 285.7MWh.
- Sub-metering of lighting and power and all substantive energy loads together with a dashboard that serves as an effective mechanism for monitoring energy is provided to facilitate ongoing management of energy consumption.



- The energy and water data is presented on a live display in the building reception to inform occupants of how the building is performing.

WATER STRATEGIES



Water strategies are implemented to reduce the use of potable water through efficient design of building systems and accurate monitoring of water consumption.

Monitoring and Targeting: 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. The target for potable water consumption is 0.57L/day/m² reduced from 0.95L/day/m² in the case where no water savings fittings and fix-

Some water initiatives:

- The building made use of sanitary fittings which reduce potable water consumption by building occupants.
- Water meters and an automated monitoring mechanism are in place to effectively monitor and manage water consumption
- Potable water consumption for landscape irrigation will be reduced through the use of a water wise landscaping and rainwater collection for irrigation.
- The building's discharge to sewer has been reduced by 50% against an average practice benchmark due to reduction in potable water use.



ENVIRONMENTAL STRATEGIES



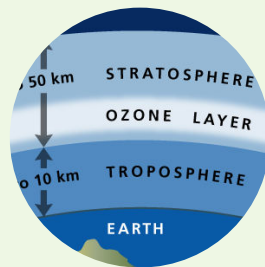
Environmental Strategies are implemented to enhance the wellbeing of the occupants within the building. This is achieved by addressing the HVAC systems, lighting, water, fire suppression, indoor air pollutants and some building attributes to contribute to a good indoor environmental quality.

Some energy and environmental initiatives:

- Green Star Professionals have been engaged to assist the project team with the integration of Green Star objectives and processes throughout the design and construction phases.
- Ample amounts of outside air is provided at 33% greater rates than the requirements stipulated in SANS 10400-O to counteract build-up of indoor pollutants.
- A high level of thermal comfort is maintained through the mechanical systems complying with ISO7730 standards.
- Tobacco Smoke is prohibited inside the building and outside its entrances and balconies, to ensure air quality benefits to the building occupants.
- The sites ecological footprint was minimized by refurbishing an existing building and thereby also utilizing a previously developed site situated within a municipal approved urban edge.



- A project specific Environmental Management Plan was developed and implemented throughout the duration of construction.
- A generator has been installed but emissions are in accordance with Tier 3 Emissions standards to limit harmful emissions into the atmosphere
- The rational fire design makes use of water supplied directly from council mains to avoid the installation of large fire water tanks that potentially waste a lot of water annually for testing and maintenance.
- Stormwater attenuation has been design to reduce the impact of stormwater on public infrastructure and water retention and systems to reduce runoff pollution has been introduced.



MATERIAL STRATEGIES

Material strategies are implemented to reduce the impact on natural resources by making use of reused and recycled material or reducing quantity of material used wherever possible.

Monitoring and Targeting

The following strategies have been implemented :

- 100% of interior finishes such as paints and carpets and adhesives and sealants are selected to minimize the contribution of Volatile Organic Compounds .
- To reduce the possibility of immediate tenant refits, the new office development was developed as an integrated fit-out.
- The project has reduced the absolute quantity of Portland Cement by 40% across all concrete uses during construction. This results in a reduction of the embodied energy and resource depletion which is associated with concrete with a high Portland Cement content.
- Reused or post-consumer recycled content is included in the steel on the project to minimize the embodied energy and resource depletion associated with the use of virgin steel.



Building

Ser-



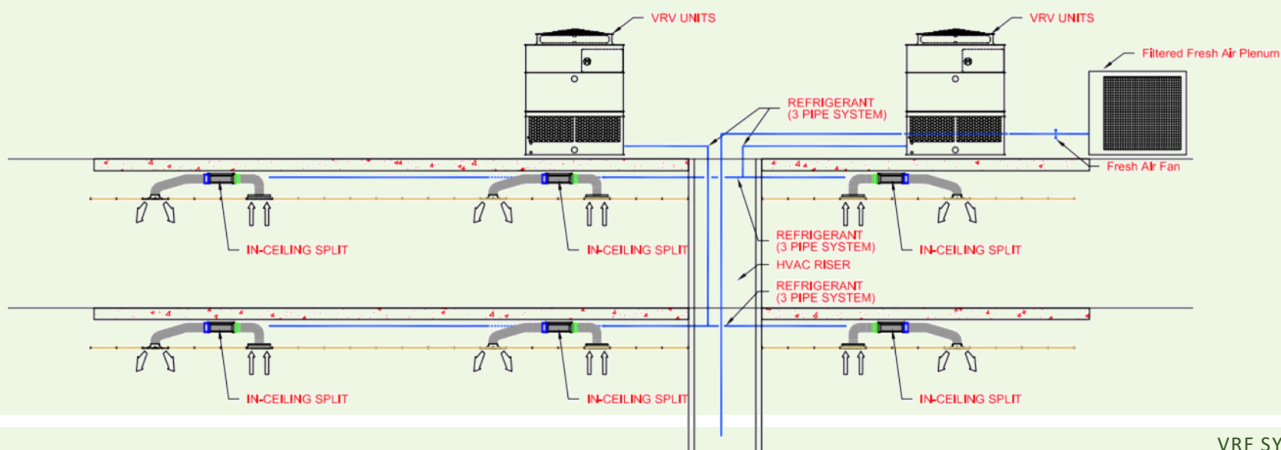
The following section provides a description of basic functions and operations of the Mechanical, Electrical and Hydraulic systems installed within the building.

These systems contribute towards reducing the negative impacts that building operations often have on the environment.

Ventilation

All occupied areas receive large amounts of fresh air to ensure a healthy work environment. The fresh air in the building is more than 33% above the minimum amount required for Green Buildings in South Africa. The energy efficient air conditioning means more fresh air can be introduced into the building without increasing the buildings energy use significantly.

The Air-conditioning system to the building shall be replaced. A new centralized VRF system is detailed with condensers located on upper parking level ducted to the façade louvers. The typical system consists of condensers interconnected to 2 distribution boxes per floor, which in turn connects to ducted fan coil units, midwalls & cassette units located in all internal office areas. A centralized controller is included for the AC system for limited monitoring and control of certain areas. The fresh air ventilation system is existing and modified to accommodate the new internal layouts and increased fresh air rates. There are two fans supplying the building from the roof down via centralized risers.



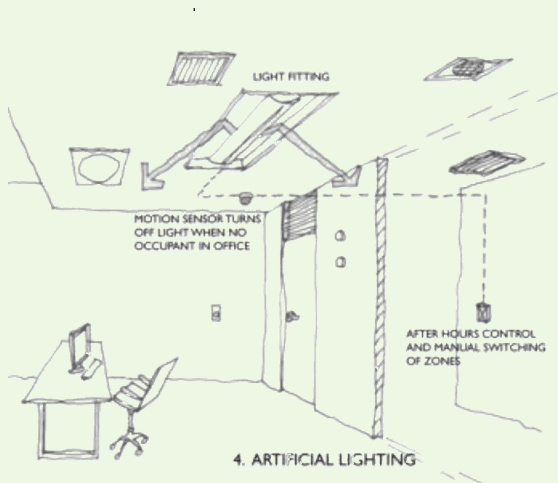
VRF SYSTEM

The Building's Electrical System

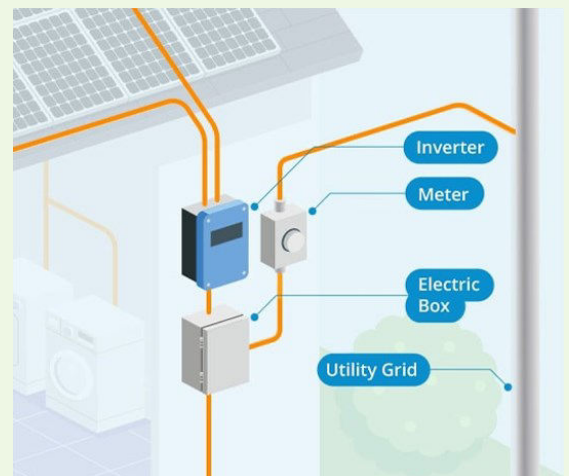
Lighting

The building uses highly efficient lighting to save energy, yet provide a comfortable environment for building users.

New lighting installation shall be provided to the new basement parking levels and typically consist of surface mounted LED luminaires with some switched via motion sensor to conserve energy. New lighting installation shall be provided to the office floors to meet the requirements of SANS 10114 but also designed for a to have minimal energy consumption. The lighting installation typically consist of LED luminaires with individual offices and meeting rooms



MOTION SENSORS



PV SYSTEM

Electrical

A 183kW photovoltaic system has been added on the building roof. The annual energy production of this system is 285.7MWh allowing the base building demand to achieve net-zero carbon emissions.

Solar panels work by letting photons from the sun's rays knock electrons free from atoms inside of photovoltaic cells (pv cells) to generate a flow of electricity. Each panel is composed of many solar cells linked together (typically 60 or 72). Each cell contains a positive and negative layer that combine to form an electrical field in which energy is created. Phosphorus inside the top silicon layer creates the negative charge, while boron in the bottom layer provides the positive charge. The two fields interact with one another to turn the sun's rays into the energy that flows from your panels to your inverter

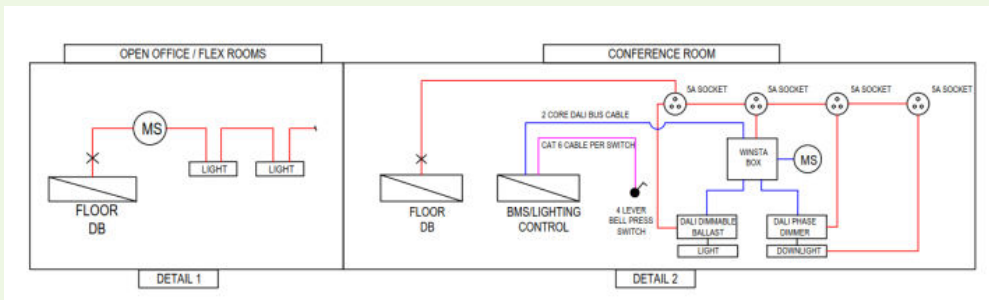
The existing MV/LV supply infrastructure and metering has been reused including the main LV distribution board. Existing DB boards and electrical in-

stallation to the basement parking floors have been retained with only new lighting to the new parking levels. The existing electrical installation to the

Electrical Reticulation and Metering

The bulk supply to the site is metered. All DB boards are equipped with sub-meters to enable lighting, power and HVAC to be metered separately. All meters are connected to the metering dashboard that will be used to monitor

and manage building energy. All substantive energy uses (greater than 100kVA) is metered



TYPICAL ELECTRICAL DETAIL



METER DASHBOARD

Fire

Fire water is supplied directly from council mains therefore no fire water tanks are required. The rational fire design meets SANS requirements while still saving water due to the reduced amount of water wasted in testing and maintenance of typical fire tanks. Sprinklers are installed to the basement only. The existing building installation will be reused as far as possible. Sprinklers tests can be done on a floor by floor basis as there are shut off valves to each floor.

The building data centers have been fitted with gaseous fire suppression systems that in-



DIAGRAM - GASEOUS FIRE SUPPRESSION INSTALLATION

The Building's Water System

Water is a scarce resource and the importance of reducing its wastage is critical. The following water savings initiatives have been implemented to reduce

Rainwater Harvesting

Rainwater will be collected from roof of the building and will be stored in water tanks located in the basement. The water will be filtered and treated to be used for external irrigation. The tanks in the basement serve to attenuate stormwater and also to capture water for irrigation to reduce the building demand for potable water. Potable municipal water is used for basins & kitchenettes.

Landscape Irrigation

The development has a relatively small area of landscaping and has many water wise plants, reducing the need for potable water for landscape irrigation. Most of the necessary irrigation during the wet season will be done with collected rainwater. An efficient irrigation system makes use of a number of measures such as drip irrigation, moisture sensors and smart controls to manage irrigation water use further reducing the overall demand for water in the building.

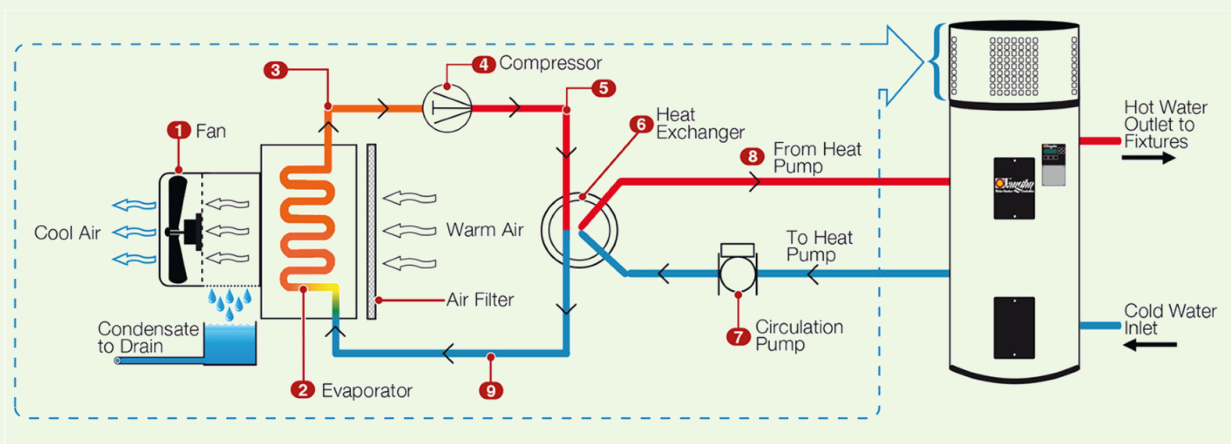
Sanitary Fittings

Sanitary fittings specified help reduce potable water demand through low flow taps, timed taps, dual flush toilets and reduced flush volume urinals.

Hot Water

There is no hot water provided within the ablutions facilities. This is in an effort

to reduce



HOT WATER DIAGRAM

Transport



The office development encourages alternative and public transport options and discourages the dependence on motor vehicles and private car

- The development facilitates mass transport for commuting by identifying transport options within 1000m of the development. Routes as well as service intervals during weekday peak hours have been identified to provide information on transport options and encourage use of public transport.
- In order to reduce the number of automobile trips by the building occupants, the office development has a well-lit dedicated pedestrian network to adjacent buildings allowing pedestrian access to Melrose Arch, Birnam and the public transport network in the area.
- The development is served by the Gautrain. A Gautrain bus stops close to the building and takes passengers to the Sandton Gautrain station. Putco and Metro Bus Services also serve the area and its surrounds. The building is located on a busy transport spine for taxi commuters.
- Dedicated parking has been provided for occupants of Balwin HQ in the basement. Parking for people with disabilities and for electric vehicles have been marked up and are located in preferential spaces close to main entrances and lift cores.

For information regarding public transport options in the BALWIN HQ vicinity, please see Appendix A



Material & Waste



A waste recycling storage area is provided to encourage recycling of materials used within the building to reduce waste going to landfill.

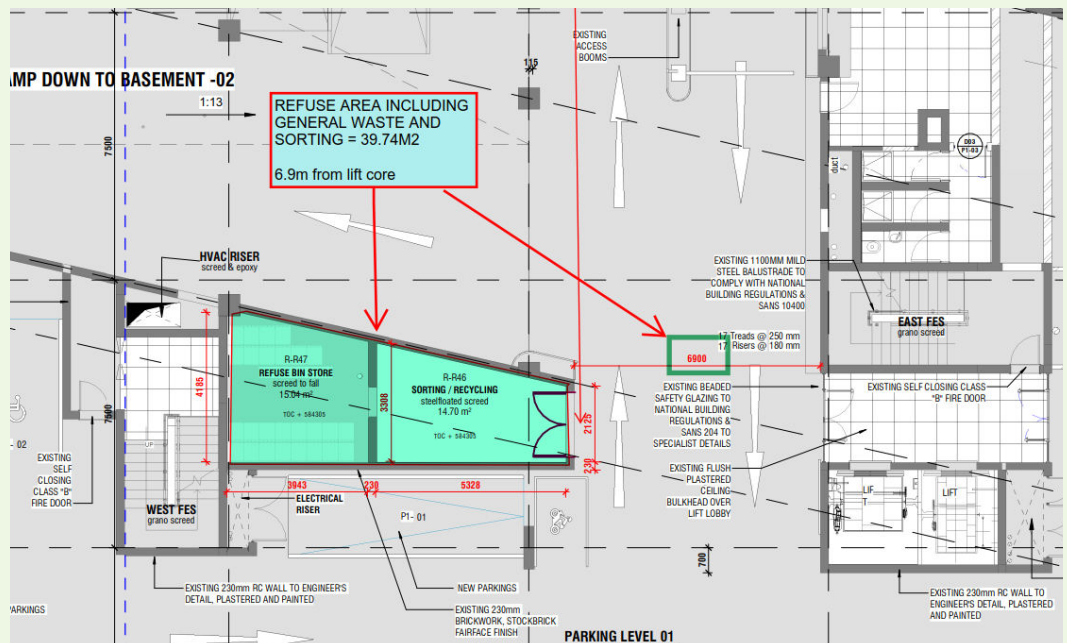
The Balwin HQ building has a 29.74m² area for waste storage and recycling. This area includes a sorting area where waste can be separated on site. Waste Contractor should keep track of the waste generated and implement recycling initiatives. Through monitoring and reporting on the waste produced each year, waste targets can be established. The Balwin HQ building should aim to reduce its overall waste by 10% and improve its recycling rate by 5% per year.

Accessibility

The location and layout of the storage and collection area is safely and easily accessible by building staff and by recycling collection services and vehicle. The storage area allows for separation of recyclables waste from general waste and wet waste.

Awareness

Staff and visitors can assist in waste minimization efforts by separating clean white paper from general waste and by keeping food waste separate from all other waste types.



BUILDING WASTE AREA—PARKING

Material & Waste



Waste Streams

Considering the following waste streams will ensure the best results for diverting waste from landfill.

-  **Paper** White office paper has a high recycling value. Consider arranging white office paper collection by a specialist service provider, to be shredded and recycled.
-  **Cardboard** Boxes should be flattened and stored in recycling waste storage area for collection by waste and recycling service provider
-  **Glass, plastic & tins** Recyclables are comingled on site but are separated off site by the waste service provider and recycled. It is best to rinse and dry these recyclables so that they are clear of food residue and in that way reduce contamination and health and safety risk for waste sorters.
-  **Wet waste** It is best practice to separate wet waste from recyclables and landfill waste in order to improve the rate of recycling the waste service provider can achieve. Dealing with wet waste separately ensures waste areas are cleaner and don't have bad odours.
-  **General waste** Is to be stored for collection in the waste area. The waste service provider sorts general waste for recyclable products and sends the remaining waste to landfill. General waste can be reduced by paying attention to waste reduction at source, for example: providing water dispensers instead of plastic bottles; water; milk; fry in return; glass bottles



Expansion/Re-fit Con-

In the event of a new tenant fit-out, refurbishment or extension of the building, the following factors should be considered and balanced to provide the most efficient, healthy, and enjoyable working environment.

Management

Management plays a key role in ensuring that the various processes implemented within the building are regularly revised and updated to adapt to the changing environmental demands. A Green Star Accredited Professional can assist with this process

Management should consider :

- Updating Waste Management Plans, Environmental Management Plans and the building users' guide annually.
- Any new building systems should be commissioned and tuning should occur at installation completion and recommissioned after 12 months



Lighting

- When lamps need to be replaced, only energy efficient lamps such as LEDs should be installed.



Low VOC, Paints, Carpets, Adhesives and Sealants

- Paints, adhesives and sealants and carpets used within the building have been specifically selected to minimise emissions typical of these materials to ensure occupant health. Tenants are en-



Materials

The following strategies regarding construction materials have been implemented in the building, in order to benefit the environment.

- The cement content in concrete used in the building has been reduced by 40%.
- The average post consumer recycled content of reinforcing steel in the building is at least 54% (by mass).
- This consideration of material properties is encouraged and should be performed when sourcing new materials.

The table below indicates what materials could be re-used during a refurbishment

	Component can be Re-used	Component has Post Consumer recycled Content	Material can be Recycled
Carpet Tile	YES	YES	
Ceiling Tile	YES	YES	
Interior wall lining		YES	
Wall Insulation	YES		
Timber			YES
Timber Windows	YES		
Timber Doors	YES		
Aluminium Windows	YES		YES
Aluminium Doors	YES		YES
Concrete Frame		YES	YES
Steel Framing	YES		YES
Metal Cladding	YES		YES

Water

- Installing water efficient fittings, fixtures and appliances can significantly decrease the buildings water consumption. All of these items should be specified to the highest available and appropriate efficiency and encouraged for installation.
- Where possible, alternative water sources and onsite water storage and treatment should be considered.

Emissions

- All refrigerants and insulation should be specified to have an ODP of zero. This will minimise the potential for long term damage to the natural environment.
- Light pollution can have an adverse effect on the natural environment by interfering or disturbing neighbouring fauna and people. It is for this reason that any external lighting should not be directed beyond the site boundary or upwards without falling on a surface with the clear purpose of illuminating that surface.
- All storm water leaving the site at any time should be treated so that any pollutants in the storm water are filtered out and remain on site for appropriate disposal.

New Equipment

- New Equipment should be selected from the Energy and Water Efficient

References and Further

Green Building Council of South Africa

www.gbcsa.org.za

Environmentally Friendly Design Features

www.sustainablehomedesgn.co.za

Energy Used by Appliances

www.ge.com/visualization/apliancesenergyuse/index.html

FSC Certified Suppliers

www.fsc.org/africa.html

Energy Saving

www.enersense.org

Water Conservation

www.waterconservation.co.za

www.waterefficiencysa.co.za

Indoor Air Quality in Buildings

www.greenbuiding.com/knowledge-base/indoor-air-quality

Building Operation Green Building

www.calrecycle.ca.gov/greenbuilding/Basics.htm#Operation

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Appendix A - Public

Travel by Minibus Taxi

A network of minibus taxis that provide access to the Johannesburg metropolitan area, as well as the adjacent City of Tshwane and City of Ekurhuleni metropolitan areas. There is no formal information available on the taxi routes and schedules. Staff and visitors are advised to speak to the taxi marshal at the rank to get further information about routes and schedules.

Travel by Bus

Johannesburg Metrobus services, Putco services and Gautrain Bus services are accessible in the vicinity of the Balwin HQ building.

The best information source for integrated travel planning with bus and train route maps and time schedules is:

<https://movinggauteng.co.za/>

Travel by Gautrain

Gautrain rail services (Johannesburg-Pretoria (north-south), Sandton-Rhodesfield (east-west) and Sandton-OR Tambo (east-west), as well as the public transport interchanges of the Rosebank and Sandton stations

Gautrain timetable - <http://www.gautrain.co.za/>