



Discovery



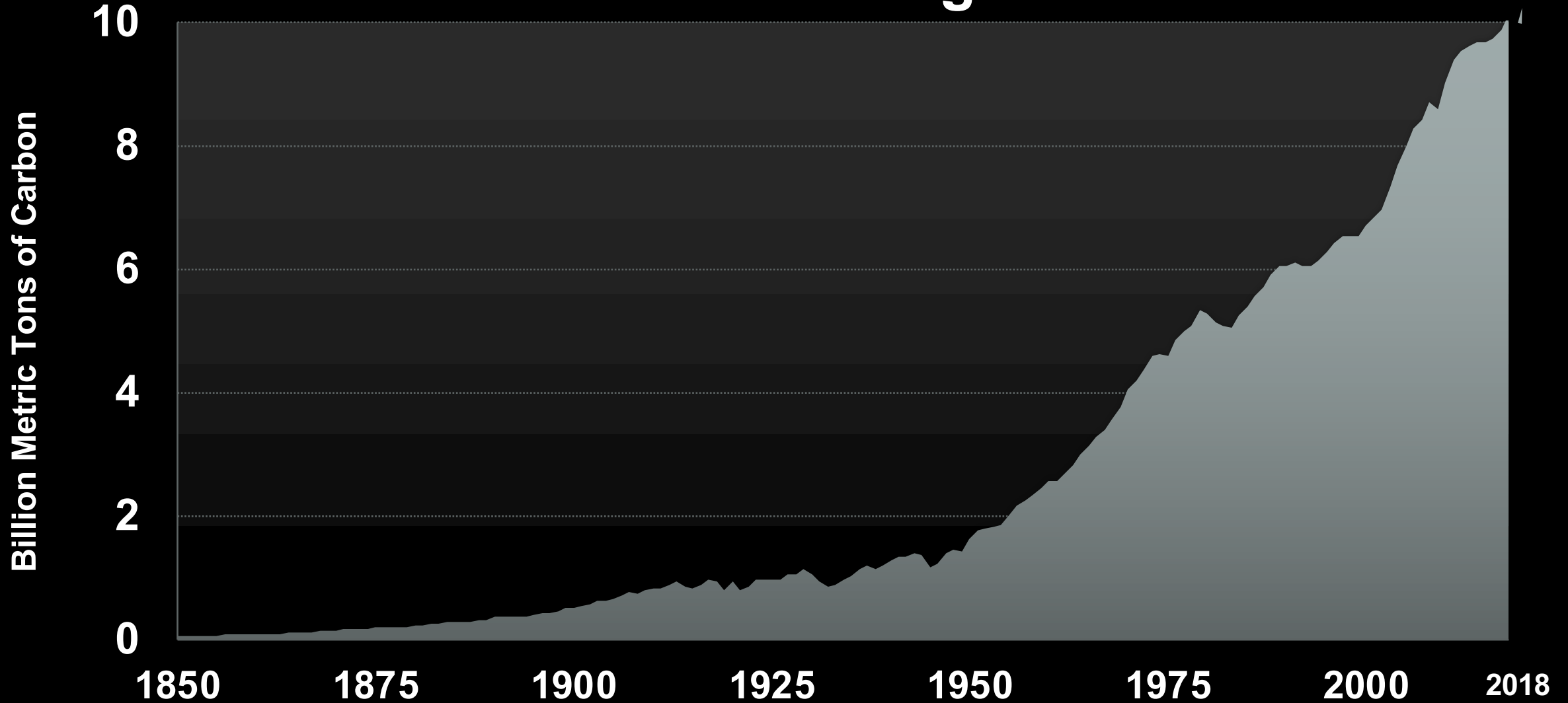


*Bringing ideas
to life*

One Planet

One Home

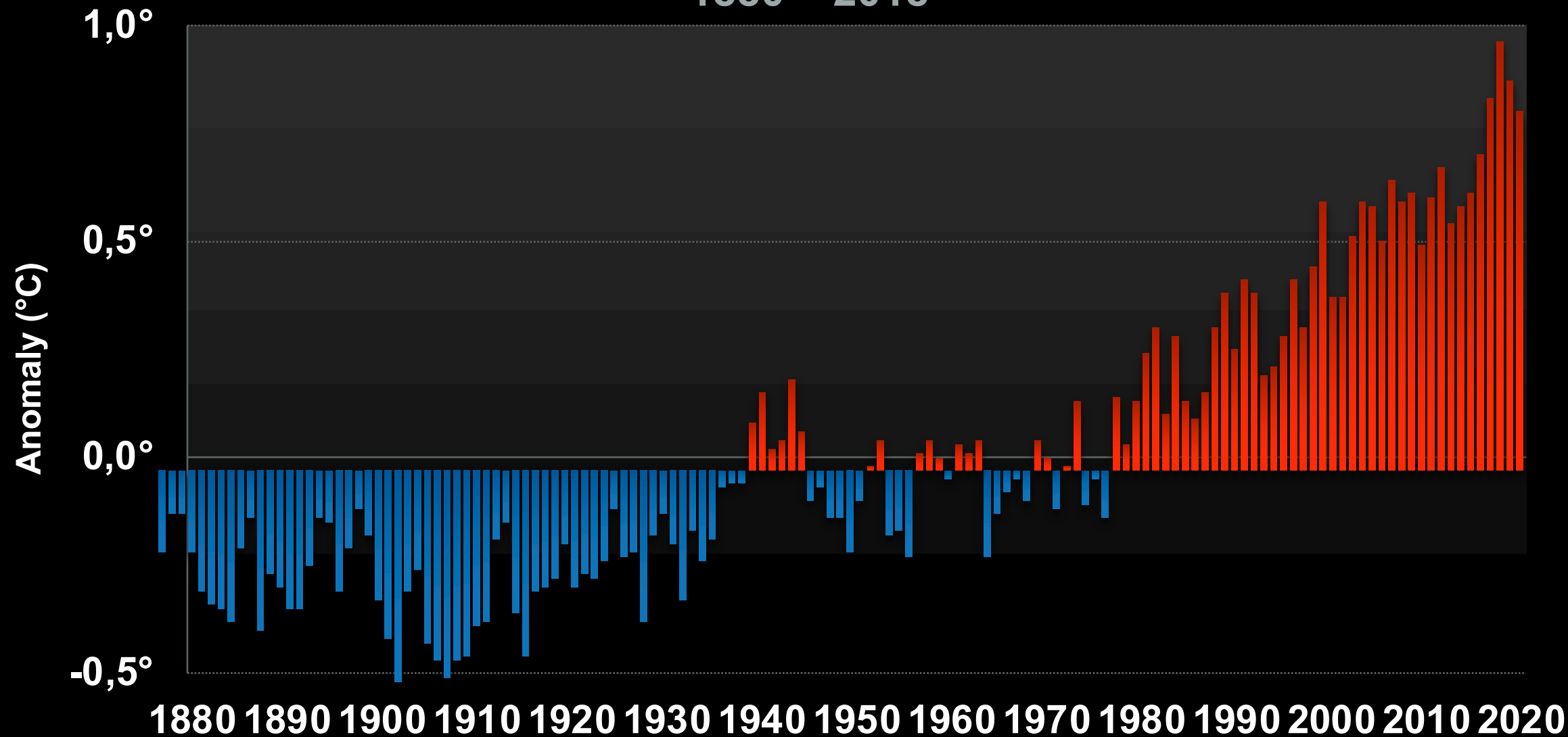
The Largest Source of Global Warming Pollution Is the Burning of Fossil Fuels



Data: U.S. Department of Energy/CDIAC

Global Surface Temperature – Departure from Average

1880 – 2018





Increased consumption of fossil fuel and deforestation leads to increased CO₂ emissions

Climate change – long term change in average weather conditions resulting in

- Increases in average temperatures and more days of extreme heat
- Changes in the intensity and duration of extreme weather events
- Melting of glaciers and sea ice

Sustainable Development

Meeting the needs of the present
without compromising the ability
of future generations to meet their
own needs

*Report of the World Commission on Environment and Development:
Our Common Future, 1987*





Green House Gas
Reduction



Energy Efficiency



Reduced
Resource
Consumption



Enhanced
Biodiversity



Reduced
Transport
Requirements



Water Efficiency



Waste Avoidance,
Reuse and
Recycling



Pollution
Reduction (noise,
water, air, light
etc.)



Flexible and
Adaptable Space



Productive
Environments



Enhanced Indoor
Environmental
Quality



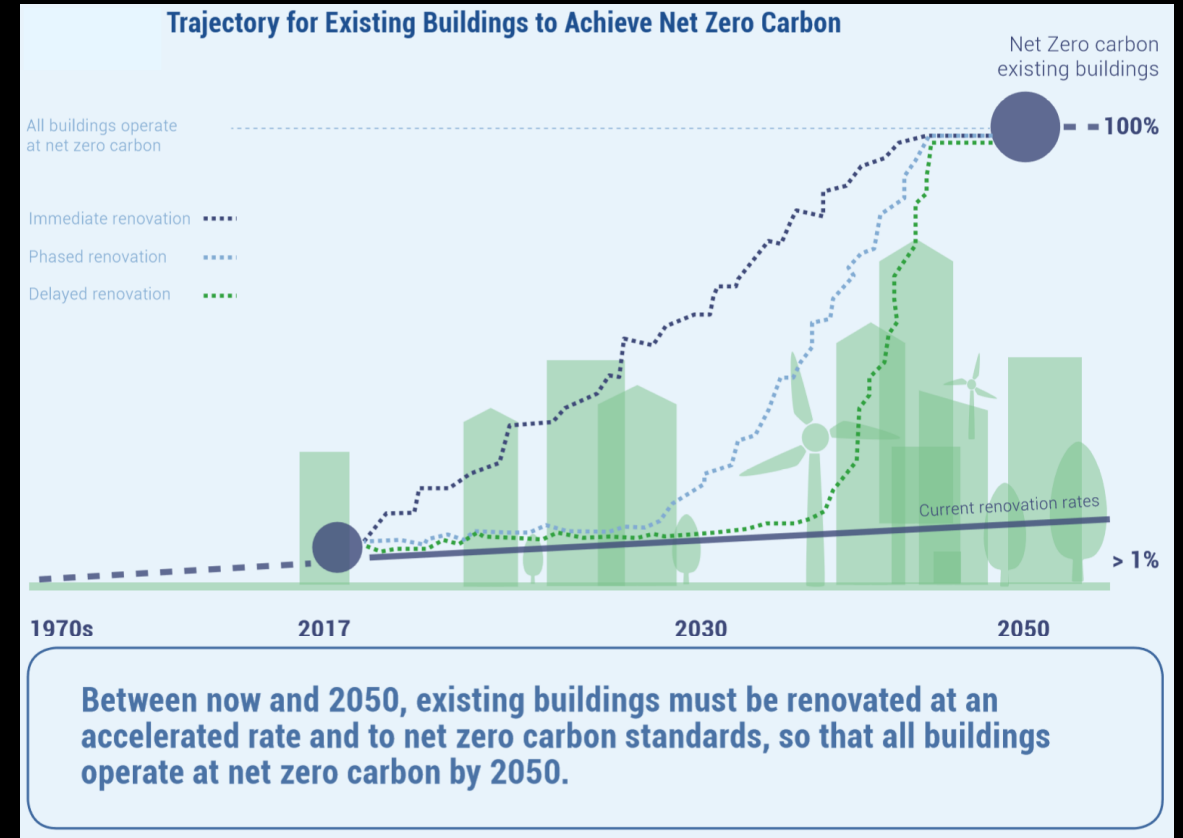
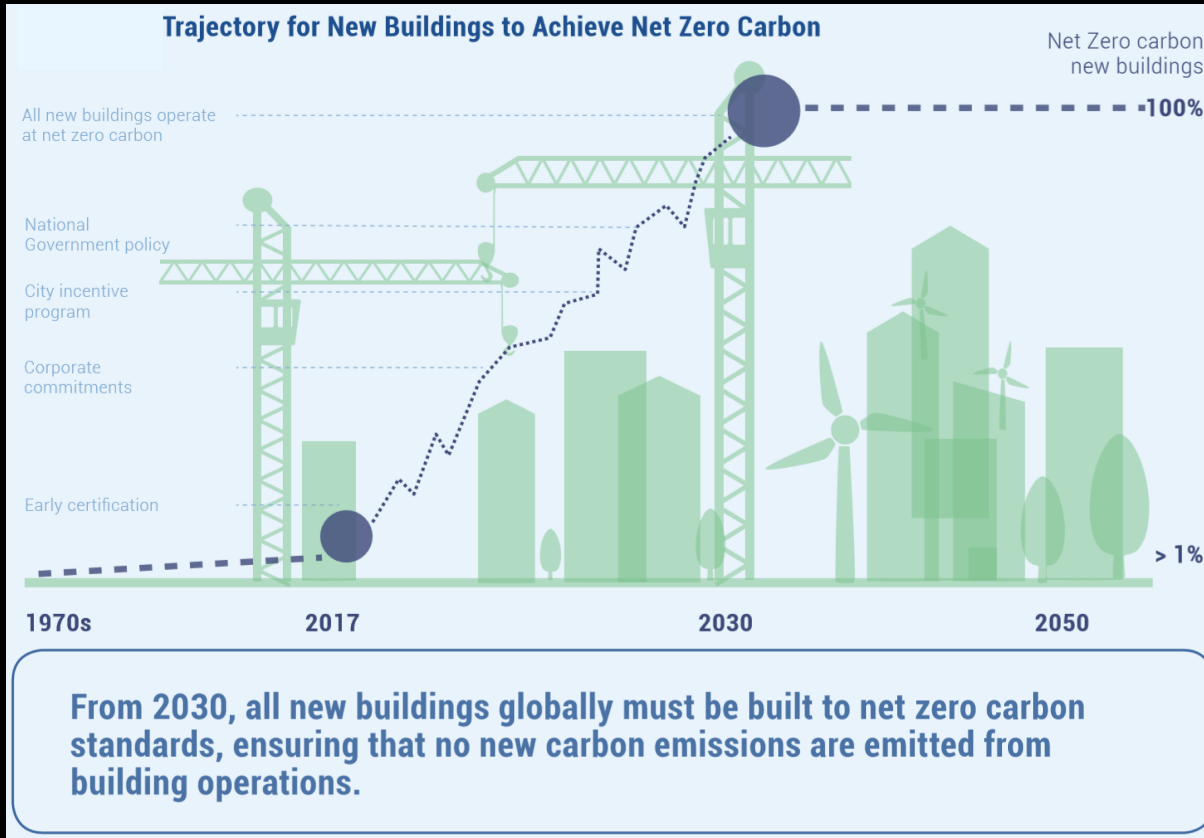
Active Operational
Management

Green Building

A building that incorporates design, construction and operational practices that **significantly reduce** or eliminate the **negative impact** of development on the **environment and occupants**

REDUCE ENVIRONMENTAL IMPACT + ENHANCE OCCUPANT WELLBEING

Coordinated Action towards 100% Net Zero Carbon Buildings by 2050



Net zero energy building - A building that relies on both energy efficiency and entirely on-site renewable energy production to reach its balance of energy-consumed and energy produced

Source: World Green Building Council

South Africa Buildings Programme – launched April 2018

The programme aspires to make **Zero Carbon** buildings **standard practice** across South African cities. This is aligned with the Global target: *all new* buildings Net Zero by 2030, *all* buildings Net Zero by 2050.

C4O
CITIES

Climate Positive
Development Program

Participating Cities are:

Tshwane
eThekweni
Johannesburg
Cape Town





March 2018

Photo: B+P

Guiding principle

*Bringing ideas
to life*



“Looking back over the past 21 years, we have been true to **our core purpose of making people healthier and enhancing and protecting their lives.**

We aspire to be **a force for social good** and have a desire to make a meaningful impact on society.
We are here to change the world, not just tag along.”

*Adrian Gore,
Discovery CEO*

Project Background



| | |
|----------------------|-----------------------|
| Site Area: | 27 000m ² |
| Gross Floor Area: | 147 200m ² |
| Car Parking (B1-B9): | 170 000m ² |
| Landscaped Area: | 4 680m ² |

| | |
|---------------------|----------|
| Demolition Start: | Jan 2014 |
| Construction Start: | Nov 2014 |
| Phase 1 PC: | Oct 2017 |
| Phase 2 PC: | Feb 2018 |

GREEN STAR SA TARGETS:

- OFFICE V1 – DESIGN AND AS-BUILT RATING – Contractually Required
- INTERIORS V1 RATING



1 DISCOVERY PLACE

Corner of Rivonia and Katherine Street, Sandton



**5 Star Green Star SA-
Office Design v1**

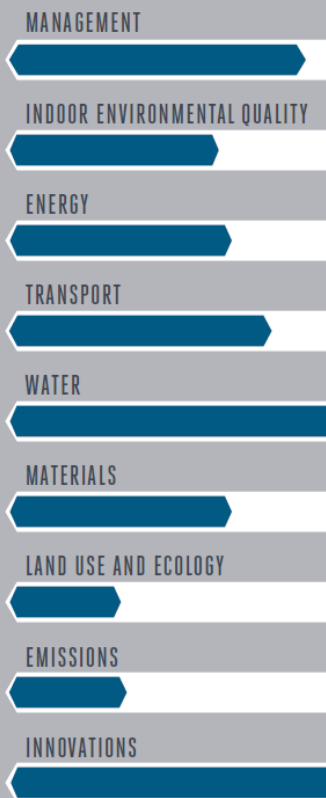
Achieved in September 2017



TOTAL POINTS:

74

POINTS
ALLOCATION:



Green Star Rating System

- Management
- IEQ
- Energy
- Transport
- Water
- Materials
- Land Use & Ecology
- Emissions

Category scores

Single score

Innovation
points

greenstar
RATING

Energy and CO₂ Emissions

68% less CO₂ **53%** less kWh/year

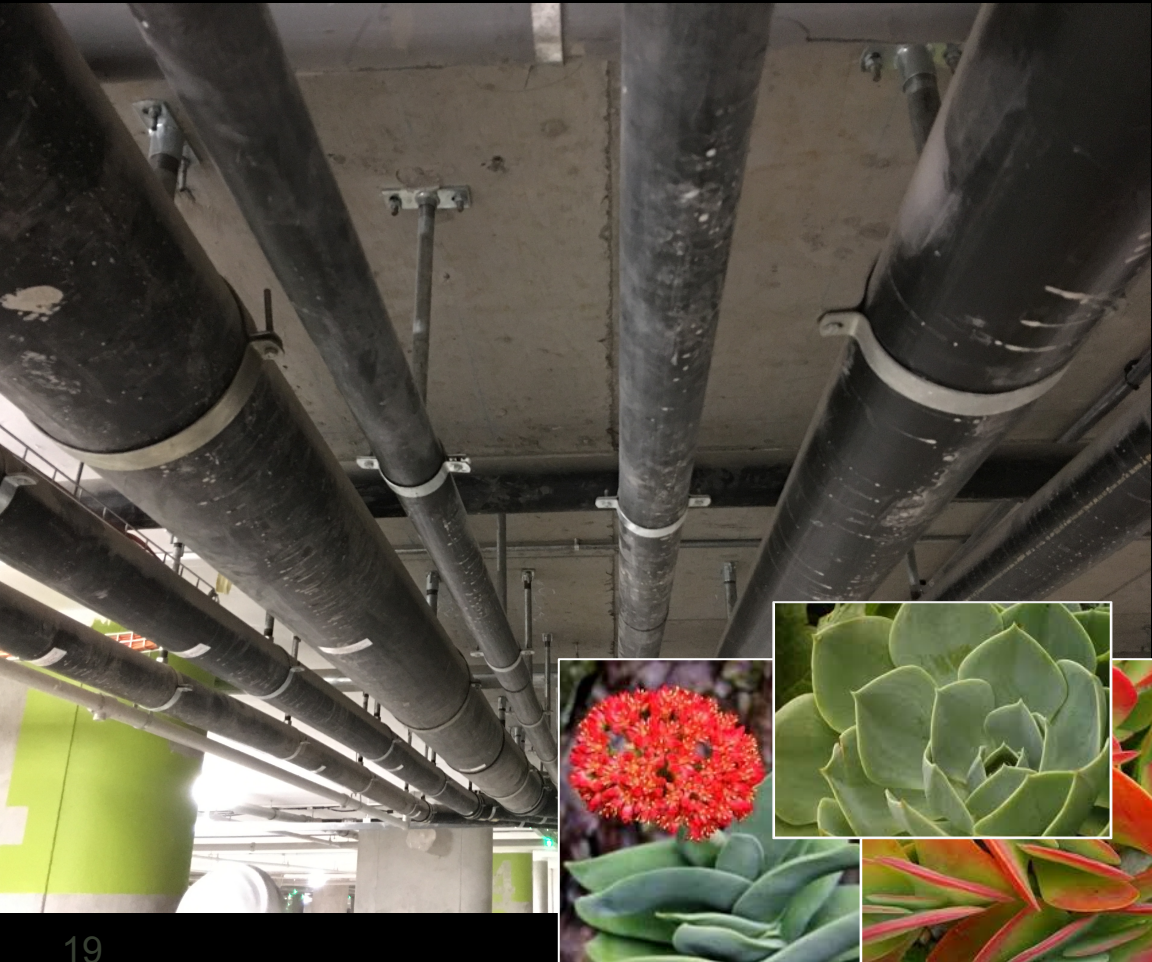


Energy Efficiency Strategies

- Comprehensive commissioning and building tuning
- High performance double-glazed curtain wall with shading
- High efficiency water and air cooled chillers
- CO₂ based demand control of fresh air
- Air-side economy cycle on all central air handling units
- CO monitoring in basements parking
- Daylight harvesting and occupancy sensing
- Efficient lighting throughout the building
- Effective thermal insulation
- Comprehensive energy metering
- Lighting power density of less than 1.5W/m²/100Lux

Water

72% less potable water use



Water Efficiency Strategies

- Use of efficient water fittings (taps, shower heads, WCs and urinals)
- Grey and rain water system
- Comprehensive metering of water consumption
Potable water consumption for landscape irrigation is reduced by more than 90%
- Water-wise, indigenous landscape on podium and roof level 8
- Xeriscaping garden is installed on roof levels 9 and 10
- Combination of water and air-cooled chillers
- The fire system is designed to recirculate water for testing



Roof levels 9 and 10 are xeriscaped with indigenous succulents

Indoor Environment Quality



Indoor Environment Quality Strategies

- Ample amount of fresh air, exceeding requirements of SANS 10400-O
- CO₂ levels within the building are monitored and controlled
- All paints, carpets, adhesives and sealants in the building have low or no Volatile Organic Compounds (VOC)
- Smoking is prohibited inside the building
- Daylight glare control through installation of blinds
- Extensive external views
- All fluorescent luminaires feature high frequency ballasts to avoid flickering
- Individual thermal comfort control for building users

Occupants Wellbeing



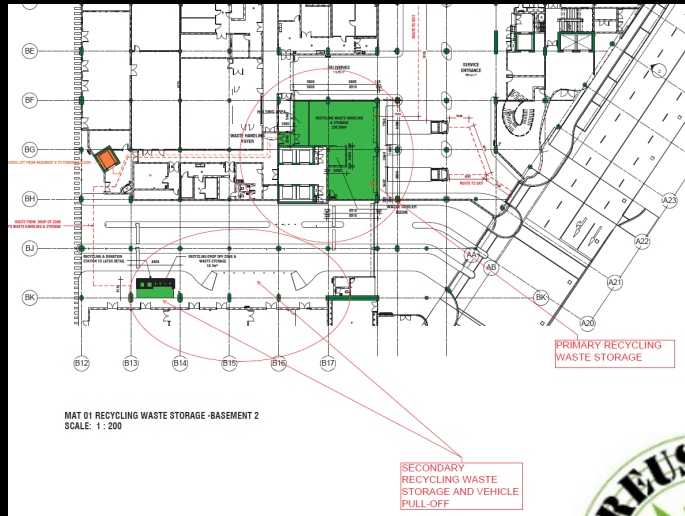
Strategies to Enhance Wellbeing

- Visually attractive staircases with signage explains the benefits of using them
- The bespoke Vitality Level incorporates fully equipped gym, 600m running track, yoga decks, soccer and a multipurpose courts, all nestled in indigenously planted landscape
- The activity based work spaces include areas for reflection, collaboration, networking, and private conversations
- All food outlets and restaurants encourage consuming of healthy food and drinks
- Medical rooms, a beauty salon and a hair styling studio also offer services within the building

Environment and Waste

| | |
|---|---|
| Project DISCOVERY HEAD OFFICE | |
| Client | Contractor Tiber & WBHO JV  |
| Fitment | Sub-Contractor |
| Discipline | |

**METHOD STATEMENT
(Number 07)
(WASTE MANAGEMENT)**



Environmental Protection Strategies

- A project specific Environmental Management Plan (EMP)
- HVAC refrigerants and building thermal insulants have Ozone Depletion Potential (ODP) of zero
- Refrigerant leak detection system is installed on HVAC system's chillers
- Discharge to sewer is reduced by more than 50%

Waste Management

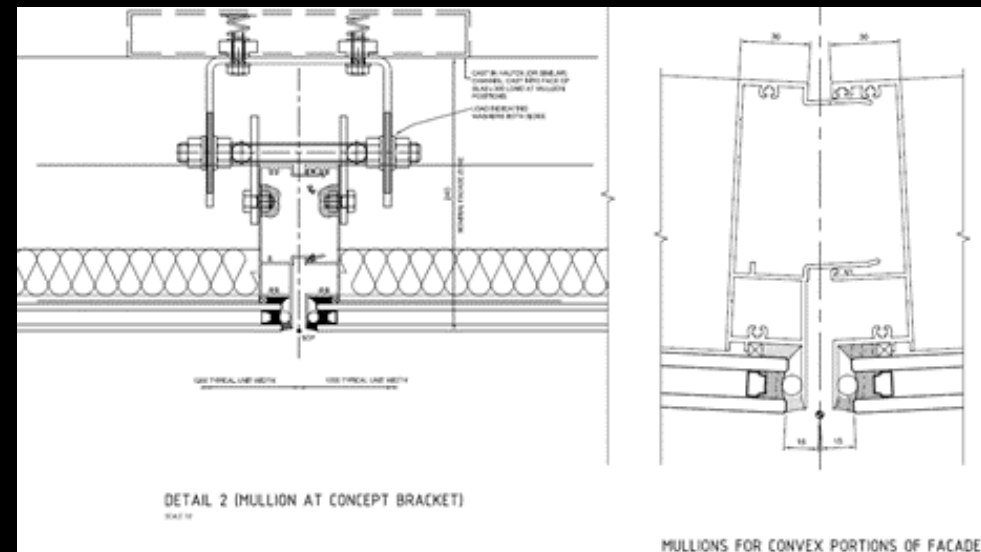
- Waste Management Plan
- **More than 70%** of construction waste was re-directed from landfill through recycling and re-use
- Provision of recycling waste storage facilities

Materials

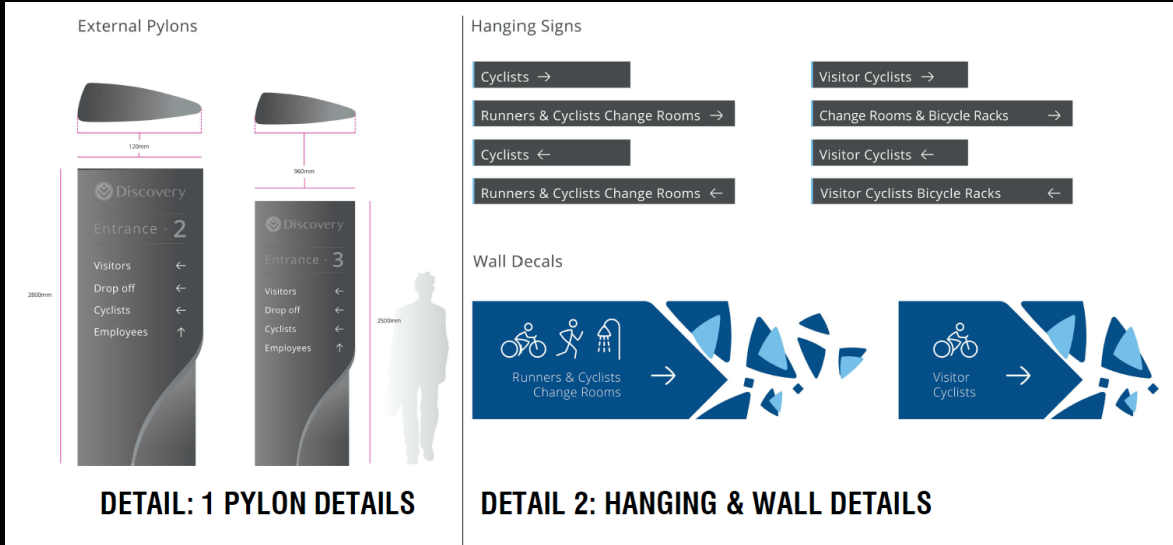


Sustainable Materials Strategy

- Concrete with reduced cement content
- Steel with post-consumer recycled content
- Locally sourced materials
- Façade is designed for disassembly

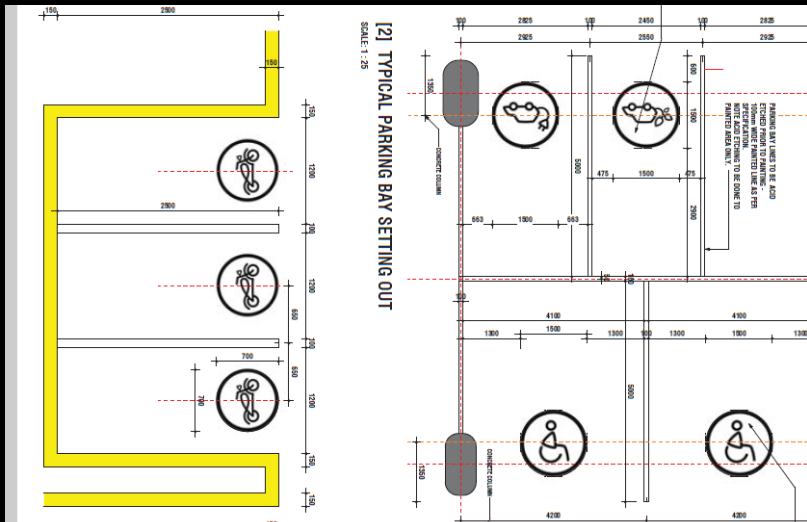


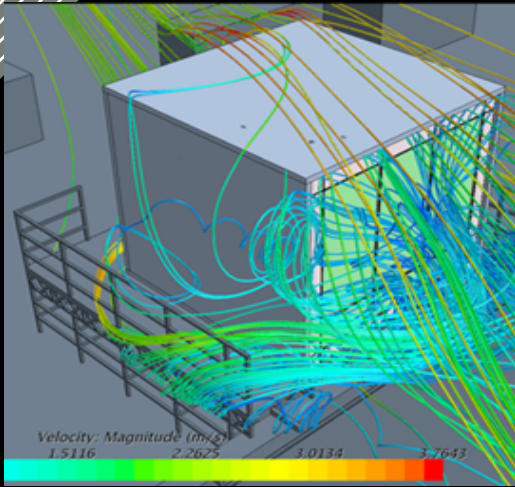
Transport



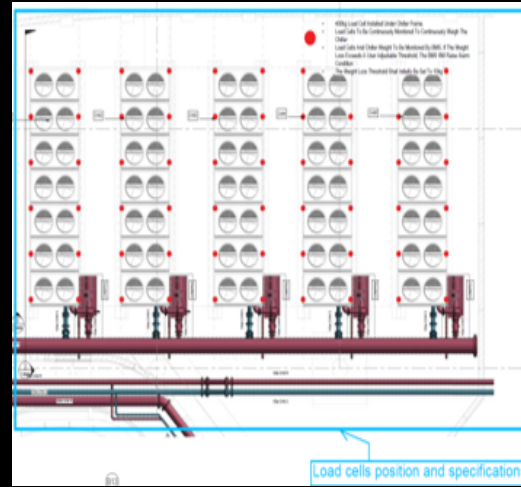
Alternative Transport Options

- 446 alternative parking bays for fuel efficient vehicles
- 115 Motorcycle parking bays are provided in preferred location
- 220 bicycle racks are provided in close proximity to the vertical circulation core for easy access. Cyclists facilities include showers, change area and lockers
- The building is in close proximity to Gautrain Station and other public transport options





façade analysis



refrigerant leak detection



australian tour



learning resources



design for active occupants



early appointment of FM



hybrid minibus



tropiglass research



Thank you



*Bringing ideas
to life*



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