



2 Management and Governance



The management of buildings, infrastructure and public spaces is an ongoing responsibility that is vital to ensuring their sustainability through the full lifecycle; that is beyond the design and construction phases to include the operation and decommissioning or demolition stages too. The built environment's cost and environmental impact is mostly in the operational phase of its lifecycle. Being conscious of how the building will be managed and operated (and ultimately repurposed or decommissioned/demolished) as it is being designed and constructed ensures that the systems and infrastructure required to support good management practices are in place. Doing this well is important because it is difficult to implement environmentally sustainable management practices once the building is occupied.

Management involves practices for the design process and teams as well as the construction process and for the maintenance and upkeep of structures and systems, while **governance** refers to the institutional make-up of the municipality with regard to the local government, partnering organisations (CBOs and NGOs), and business.



2.1 What changes do we need?

Environmentally sustainable management practices affect every step of the building process from the design concept and building contracts, through to building operation and refurbishments or demolition. Each of these stages of building development need to include all team members working together in decision-making processes from start to finish. Good management and governance practices facilitate and enable proactive maintenance and sufficient monitoring and evaluation.

These practices include engaging in a holistic approach with a multi-disciplinary team who have a shared vision for the outcome of the project. It might require an independent peer review for building performance or appointing a responsible facilities manager who can monitor and evaluate performance. Good management should also include educating occupants and users on green initiatives to encourage changes in behaviour that reduce resource demand and benefit the natural environment.



2.2 How do we design our buildings?

2.2.1 Provide for a holistic design approach with clear vision and team involvement

The successful implementation of green building principles begins at the conceptualisation of the project. For optimal benefit to be gained from the holistic design approach, these principles should be understood and adopted by the whole team (town planners, architects, engineers, landscape architects, construction contractors, and the local community) which would facilitate green building principles and practices being implemented in all aspects of the design, construction, and management.

It can be useful to develop a clear vision of the project that represents the purpose and desired outcome. Where possible, this should be done with the involvement of all team members to ensure the team's ongoing commitment throughout the project's lifecycle. It is advisable to include an experienced GBCSA Accredited Professional (AP) as part of the team to facilitate these discussions and engagements. This is to ensure the incorporation of green building practices throughout the building process, and provide input and guidance when weighing up the various green initiatives that would be best suited to the project (climatically, socially and economically).

2.2.2 Encourage an independent peer review

Independent peer review is encouraged during the design phase to comment on the specifications and choices, especially with regard to optimisation of equipment and design of the future systems,

and during the building's first year of occupation as a means to verify a system's performance. An independent review can be conducted by an experienced sustainability consultant who reports directly to the client and, although part of the design phase of the building, is not part of the design team and can therefore remain impartial and unbiased. An experienced sustainability consultant can help ensure that the green building principles incorporated in the design and construction of a building result in measurable performance improvements and cost savings, especially with regard to the energy efficiency of mechanical and lighting systems.

2.2.3 Enlist the services of an Independent Commissioning Agent

An independent commissioning agent can verify the appropriateness of the systems to be installed in the building, and will prepare for and oversee their commissioning so that they operate as intended by the original design.





2.3 How do we construct our buildings?

2.3.1 Adopt and Implement good management practices

During the planning phase it is necessary to consider how the negative environmental impacts of construction can be reduced or remediated. This can be done by ensuring that good management practices are included in the contractual requirements of both the main contractor and related sub-contractors and then implemented on site.

Good environmental management practices on construction sites include:

- **An Environmental Management Plan (EMP)** to stipulate controls and measures for environmental protection and reduced degradation of the site, especially with regard to water, soil, vegetation and pollution.
- **A Waste Management Plan (WMP)** to monitor waste streams on site and, where possible, to ensure that reuse and recycling of construction waste takes place. This is to reduce the amount of waste going to landfill.
- **A Demolition Plan** (where applicable) to allow for the reuse of building elements, such as windows and doors, and recycling of building materials, such as concrete and steel rebar.
- **Use of good Personal Protective Equipment (PPE)** on site to ensure the health and safety of construction workers.

2.4 How do we manage our buildings?

Good maintenance practices are essential to ensure that well-designed, well-constructed buildings also perform well, and that this enhanced building performance is maintained and even exceeded throughout the building's occupation and changes in functional use.

2.4.1 Appoint a responsible building / facility manager

The first step in implementing good management practices is to ensure that a responsible and knowledgeable building or facilities manager is appointed to take care of building operations and maintenance. This person should preferably also have a prior knowledge of green building principles and practices or be willing and able to learn about these principles and their implementation. Depending on the building size and use, a designated or shared resource may be most appropriate.

2.4.2 Implement an integrated building management system (BMS)

Integrated building management is common to all intelligent buildings, and refers to a host of monitoring devices and control systems that regulate the utilities and services in a building. They include both manned and automated systems, and may be either passive or mechanical systems for



lighting, ventilation, heating, cooling, security and communications. A Building Management System (BMS) incorporates the use of sensors and meters to monitor water and energy use and thermal comfort in the building and relays this information to a central computerised system. This allows for timeous responses to faults or unaccounted for surges in resource use which in turn improves the building's efficiency and performance.

A BMS is used to improve building performance through measuring and reporting on the resource use of the building. This can then be used as baseline measurements against which progress can be measured.

2.4.3 Allow for building tuning within the first year of occupation

Within the first year of a building's occupation, it is beneficial to undertake monthly and quarterly monitoring to report on the various mechanical systems in the building, such as lifts, irrigation systems, automated water systems, the air conditioning system and automated lighting systems. At the end of this first year, the sub-contractors responsible then return to re-commission these mechanical systems in accordance with the quarterly reports that stipulate any changes needed to ensure optimum comfort for the building inhabitants and resource efficiency for improved building performance.

2.4.4 Incorporate green building guidelines when undertaking retrofits and refurbishments

Retrofitting and refurbishing is a necessary part of a building's lifecycle as the building ages or changes tenants and use. Retrofitting involves replacing or

making changes to the systems within the building or the building structure to fit a new function. Refurbishments predominantly involve improving the building aesthetically to fit the requirements of new tenants but can also include upgrades to certain building systems. Both of these processes offer the opportunity to improve an existing building's water and energy efficiency, indoor environmental quality, and building management. Ultimately, this can lead to reduced environmental impact.

To undertake a green retrofit or refurbishment, consider applying the strategies included in these guidelines. Designing major renovations and retrofits for existing buildings to include sustainability initiatives will reduce operation costs and environmental impacts, and can increase building adaptability, durability, and resilience.



Fast Fact:

Building Tuning

Green building is a process and not a single event. Building tuning allows the building systems to be adjusted to ensure that they perform optimally under the operational conditions they find themselves, and are correctly set for the climate and occupancy.



case study

Kirstenhof Office Park, Johannesburg

– Existing Building Retrofit



Kirstenhof Office Park is a multi-tenanted office park consisting of four blocks, each two stories high, connected by a core quad area which sits over a single, shared basement. The following sustainable building features were included in the retrofit:

- Energy efficient lighting that includes fluorescents fitted with high frequency ballasts.
- Flow restrictors on all taps & water efficient toilets with dual-flush functions.
- Occupant, thermal & transport mode surveys were conducted during the performance period.
- An operational waste & materials management plan that aims to decrease the amount of waste currently being sent to landfill.
- A stormwater management plan was developed to limit disruption to natural hydrology, minimise pollution & site deterioration.

Source: <https://www.gbcsa.org.za/hub/local/uploads/Project-study-392/kirstenhof-building-case-study-updated.pdf>



Green Economy Enabler

Green building retrofits

Retrofitting buildings to improve resource efficiency and reduce demand is vital to transition to low-emission development. This creates the opportunity for local jobs as building owners seek to improve their building's energy and water efficiency through installing new fixtures and fittings that use less and therefore save them money in the long term. As the market for improved energy efficiency in buildings grows, it will be necessary to continue to develop the knowledge and skills of the local labour market in this sector through short practical courses and apprenticeships

2.4.5 Establish an awareness and education programme for building users

Affecting and changing the behaviour of building occupants is vital for improved resource efficiency and thermal performance. For example, if occupants are made more aware of dressing appropriately for the season, the heating and cooling system can be adjusted to be warmer in summer and cooler in winter therefore saving energy and reducing greenhouse gas emissions.

A **Building Users Guide** can be generated by the building manager, architect or green building consultant to educate occupants about green features included in the building's design and systems and how occupants can help these design features and systems to perform well. This guide can include information regarding energy and water usage in the building, the recycling and/or composting system in place, green materials used in the building and management practices which have been put in place to enhance the occupants' comfort and experience in the building.

