



CHECKLIST

for

Green Building Guidelines

of

STEVE TSHWETE LOCAL MUNICIPALITY



Green Building Guidelines Checklist

This checklist has been developed as a quick guide or introduction to the Green Building Guidelines and they should be read in conjunction. It follows the same categories as the guidelines, and provides a quick overview of both the most appropriate time to consider each aspect or intervention and an indication of the financial implications thereof.

In applying the guidelines to either a new building, during a major a retrofit, or simply the normal maintenance cycle, it is hoped that these guidelines will provide assistance to a building owner or manager in appropriate good practice interventions.

Users are cautioned to not only target the low hanging fruit (no cost items) in isolation, as it is often more financially viable to package a range of interventions together in order to obtain an acceptable payback period. Choosing interventions from across the different costs scales thus allows the more expensive items with a longer payback period to be balanced out by those with low cost and rapid payback, enabling a better overall solution.



Costs

The following categories have been identified relating to cost:

Mandatory: these are items required by law and hence have to be included. They are not regarded as green building items, but the building user is likely to reap benefits from them.

No Cost: Items which can easily be incorporated into a building through good management practices or upfront planning at no additional cost.

Capital Cost: Items or interventions that will incur a capital cost in order to include in a building design or retrofit.

Capital Saving: Items or interventions that are likely to result in a capital saving through optimization or better design if included in a building design or retrofit.

Operational Cost: Items or interventions that are likely to result in an operational saving throughout the life of the building if included in the building design.

Project Phase

Whilst not set in stone, there are logical stages when a specific intervention fits best and these are indicated in the checklist as follows:

Inception: Generally forms part of the overall philosophy for a project (be it new build, retrofit or management plan).

Design Phase: Interventions that should be incorporated during the design of the building (new build or retrofit).

Construction Phase: Encompasses good construction management and practices.

Property Management: during the life cycle of the building; items which can or should form part of the operational and maintenance practices.

With this in mind we would however urge you to consider the different between cost and price – what is the true cost to the environment or our health, versus the actual price of the intervention. Also remember that the best time to do something is yesterday, but whatever you do today can still make a difference.

MANAGEMENT		Guidelines Page No.	Project Phase				Cost				
			Inception	Design Phase	Construction Phase	Property Management	Mandatory	No Cost	Capital Cost	Capital Savings	Operational Savings
How do we design our buildings?											
	Provide for a holistic design approach with clear vision and team involvement	13	✓	✓			★				
	Encourage an independent peer review	13		✓				★	★	★	
	Enlist the services of an Independent Commissioning Agent	13		✓	✓			★	★	★	
How do we construct our buildings?											
	Adopt and Implement good management practices, implement:	14									
	Environmental Management Plan (EMP)	14			✓			★		★	
	Waste Management Plan (WMP)	14			✓			★		★	
	Demolition Plan (where applicable)	14			✓		★		★		
	Use of good Personal Protective Equipment (PPE)	14			✓			★			
How do we manage our buildings?											
	Appoint a responsible building / facility manager	14		✓		✓		★			★
	Implement an integrated building management system (BMS)	14		✓		✓		★			★
	Allow for building tuning within the first year of occupation	15		✓		✓			★		★
	Incorporate green guidelines when undertaking retrofits and refurbishments	15				✓		★	★	★	★
	Establish an awareness and education programme for building users	17		✓		✓		★			

SPATIAL PLANNING AND LAND USE MANAGEMENT		Guidelines Page No.	Project Phase				Cost				
			Inception	Design Phase	Construction Phase	Property Management	Mandatory	No Cost	Capital Cost	Capital Savings	Operational Savings
How do we design our buildings?											
	Design to enable density thresholds	20									
	Choose a previously-developed site within the urban edge	20	✓					★			
	Appropriately maximize building height, bulk and set-backs	20	✓	✓				★			
	Promote increased social and land use diversity	20									
	Mixed use	20	✓	✓				★			
	Mixed Income	20	✓	✓				★			
	Flexible Base Building Designs	20	✓	✓				★			
	Promote a permeable urban form	20									
	Increase Accessibility	20	✓	✓				★			
	Design for pedestrians	21									
	Design an Interactive Street Façade	21	✓	✓				★			
	Design pedestrian entrances	21	✓	✓				★			
	Create safe and connected public open spaces	21									
	Enhance the building's surroundings	21	✓	✓					★		
	Building or Site Boundary Fences/Walls	22	✓	✓					★		

TRANSPORT PLANNING		Guidelines Page No.	Project Phase				Cost				
			Inception	Design Phase	Construction Phase	Property Management	Mandatory	No cost	Capital Cost	Capital Savings	Operational Savings
How do we design our buildings?											
	Consider transport during site selection	27	✓					★			
	Design for on-site facilities	27		✓					★		
	Provide preferential parking	28		✓				★			
	Reduce parking ratios	28	✓	✓						★	★
	Design for accessibility	28		✓				★			
How do we construct our buildings?											
	Co-ordinate staff transport requirements	28			✓			★			
	Plan and co-ordinate material delivery	29		✓	✓					★	
How do we manage our buildings?											
	Implement an eco-mobility plan	29				✓		★			

ENERGY		Guidelines Page No.	Project Phase				Cost				
			Inception	Design Phase	Construction Phase	Property Management	Mandatory	No Cost	Capital Cost	Capital Savings	Operational Savings
How do we design our buildings?											
Comply with Mandatory Requirements: SANS 10400-XA Energy Efficiency in buildings		35									
	Confirmation by a competent person, if compliance shown by Route 2 or 3	38	✓				★				
	Windows and overhangs	38	✓				★		★	★	
	Provision of suitable building insulation	39	✓				★		★	★	
	Building Sealing	40	✓				★			★	
	Insulation of hot water pipes	40	✓				★			★	
	Non-electrical resistance water heating for 50% of hot water provision	40	✓				★			★	
Include passive design elements		41									
	Considered building orientation	42	✓					★			★
	Considered building layout	42	✓					★			★
	Shading devices or roof overhangs	42	✓		✓				★	★	★
	High performance glass	43	✓		✓				★	★	★
	Wall and ceiling insulation	45	✓		✓				★	★	★
	Increasing the thermal mass in the building	45	✓						★	★	★
	Maximising natural light	47	✓								★
	Roof Materials	47	✓		✓				★		★
	Roof Design for the installation of Solar Water Geysers (SWGs)	48	✓				★				★
Include energy efficiency and demand-side management features		48									
	Energy sub-meters	48	✓		✓				★		★
	Building Management System (BMS) and building tuning	48	✓		✓				★		★
	Lighting in buildings	49									
	Use of Lighting Zoning to promote energy efficiency	50	✓		✓				★		★
	Motion Occupancy and Daylight Sensors	50	✓		✓				★		★
	Peak Energy Demand Reduction	50	✓		✓						★
	Swimming Pool Pump	50	✓		✓				★		★
	Good design of HVAC system	51									
	Use efficient and climatically appropriate mechanical cooling systems	51	✓							★	★
	Design buildings with raised floors to allow for underfloor air displacement systems	51	✓	✓					★		★
	Design to include passive or active chilled beams	52	✓	✓					★		★
Consider on-site electricity generation		53									
	Design for onsite energy generation through renewable sources (solar is most appropriate) or co-generation	53	✓	✓					★		★
How do we construct our buildings?											
	Implement site energy efficiency and demand management initiatives	53			✓						★
How do we manage our buildings?											
Energy efficiency through good operational practices		54									
	Energy audit and benchmarking	55							★		★
	Energy meters and monitoring	55							★		★
	Energy Management Plan	55						★			★
Energy efficiency through maintenance planning		55									
	Consider formal or informal energy benchmarking	55						★	★		★
	Energy consumption targets and monitoring	55							★		★
	Change thermostat set points	55						★			★
	Make use of a daytime cleaning service	56						★			★
	Clear and easily understood light switch labeling	56						★			★
	Energy efficient appliances	56						★			★
Energy efficiency through retrofitting or refurbishing		56									
	Repaint surfaces	56	✓		✓				★		★
	Electrical lighting retrofits	56	✓		✓				★		★
	Glazing Retrofits - blinds, shading, solar film	56	✓		✓				★		★

WATER		Guidelines Page No.	Project Phase				Cost				
			Inception	Design Phase	Construction Phase	Property Management	Mandatory	No Cost	Capital Cost	Capital Savings	Operational Savings
How do we design our buildings?											
	Design for on-site water management strategies	63									
	Water metering	63		✓				★			★
	Design for Onsite Stormwater management	63	✓	✓				★			★
	Water sensitive building location and orientation on site	64	✓				★				★
	Design for Rainwater harvesting	64		✓				★			★
	Design Greywater reuse systems	64		✓				★			★
	Good Landscaping Practices and Drip Irrigation	65		✓				★			★
	Water management in swimming pools	65		✓				★			★
	Specify Water-efficient fixtures and fittings	65									
	Water-efficient fixtures and fittings	66		✓				★			★
	Provision of hot water in line with regulations	66		✓			★				★
	Water efficient Fire management systems	67		✓						★	★
	Consider alternatives to waterborne sewerage systems	67	✓					★	★		★
How do we build our buildings?											
	Implement site water efficiency and demand management initiatives	67			✓			★			★
	Implement on-site water management strategies	68			✓			★			★
How do we manage our buildings?											
	Encourage water efficiency through behavioural changes	68						★			★
	Improved water management and efficiency through good operational practices	68									
	Conduct a Water Use Audit	68						★			★
	Adopt and implement a Water Management Plan	68								★	★
	Monitor Water meters	69						★			★
	Water-wise management of fire systems	69						★			★
	Irrigation practices and water conservation systems	69						★			★
	Maintenance of on-site stormwater management systems	69						★			★
	Improved water efficiency and demand management within the Maintenance Cycle	69									
	Leak prevention and detection	69	✓					★		★	★
	Install water flow inhibitors in all taps	69							★		★
	Maintaining site landscaping	69						★		★	★
	Opportunities for improved water efficiency when Retrofitting or Refurbishing	69									
	Install Water-efficient fixtures and fittings	69		✓					★		★

WASTE		Guidelines Page No.	Project Phase				Cost				
			Inception	Design Phase	Construction Phase	Property Management	Mandatory	No Cost	Capital Cost	Capital Savings	Operational Savings
How do we design our buildings?											
	Reduce construction waste	74		✓	✓					★	
	Design for recycling and composting practices	75		✓						★	★
How do we construct our buildings?											
	Implement best practice construction strategies	75									
	Waste Management Plan	75			✓			★			
How do we manage our buildings?											
	Improved waste management through good operational practices	77									
	Conduct a Waste Audit	77							★		★
	Adopt and implement a Waste Management Plan	77						★			★
	Improved Waste Management through behavioural change	77						★			★
	Identify Recycling Waste Storage areas	77						★			★
	Improved waste management and reduction when Retrofitting or Refurbishing	78									
	Onsite waste management plan	78						★			




INTERNAL ENVIRONMENTAL QUALITY


	Guidelines Page No.	Project Phase				Cost				
		Inception	Design Phase	Construction Phase	Property Management	Mandatory	No Cost	Capital Cost	Capital Savings	Operational Savings
How do we design our buildings?										
Design for improved ventilation and fresh air provision	81	✓				★	★			★
Provide sufficient fresh air	82	✓					★			★
Design for good daylighting and electrical lighting	83	✓					★		★	★
Appropriate lighting levels and zones	84	✓					★		★	★
Design for improved thermal comfort – heating and cooling	84	✓						★	★	★
Design for occupants comfort and satisfaction	85	✓					★			★
Reduction of internal pollutants and mould	86	✓					★			★
Reduction and monitoring of building-related emissions	87	✓					★			★
Promote the use of stairs	87	✓	✓					★	★	★
Universal access	88	✓	✓				★		★	★
Reduction and safe removal of hazardous materials (e.g. asbestos)	88	✓				★	★			
How do we construct our buildings?										
Environmental Management Plan	88			✓				★		
How do we manage our buildings?										
Opportunities for improved IEQ through good operational practices										
Encourage the use of green cleaning materials	90				✓		★			
Monitor outdoor air delivery	90				✓		★			
Give preference to natural ventilation	90				✓		★			
Opportunities for improved IEQ within the maintenance cycle										
Promote health and wellbeing of building occupants	91				✓		★			
Reduction of internal pollutants and mould	91				✓		★			
Reduction and monitoring of building-related emissions	92				✓		★			
Generator / boiler maintenance programme	92				✓					★
Opportunities for improved IEQ when retrofitting or refurbishing										
Reconfiguration of internal spaces	92	✓			✓		★			
Improved daylighting	92	✓			✓		★			★
Maximise views	92	✓			✓		★			
Consider opportunity for construction of an atrium	93	✓			✓		★			




POLLUTION

	Guidelines Page No.	Project Phase				Cost				
		Inception	Design Phase	Construction Phase	Property Management	Mandatory	No Cost	Capital Cost	Capital Savings	Operational Savings
How do we design our buildings?										
Reduce Air Pollution	96									
Green roofs and landscaping	96	✓	✓					*	*	*
Reduce harmful emissions: GHG emissions in air-conditioning	96		✓		✓	*				
Reduce the urban heat island effect	97									
Reduce impermeable surface cover	97		✓			*				
Increase soft landscaping and shading	97		✓		✓	*				
Roof colour and material	97		✓		✓	*				
Reduce the effects of noise pollution	97									
Site layout for noise reduction	97	✓	✓			*				
Noise barriers	97	✓	✓			*	*			
Materials for noise management within buildings	97		✓		✓		*			
Prevent light pollution	97									
Reduction of lights shining outwards from the building	97		✓		✓	*				
No internal lighting shining upwards into the night sky	98		✓		✓	*				
No external lights shining upwards into the night sky	98		✓		✓	*				
How do we construct our buildings?										
Reduce Air Pollution	99									
Cover and damp down construction materials	99			✓		*		*		
Reduce noise pollution	99									
Restrict loud construction activities to working hours	99			✓		*				
Prevent light pollution	99									
Ensure site lighting does not emit light upwards or into surrounding buildings	99			✓		*				
How do we manage our buildings?										
Conduct an Emissions Audit	99				✓		*			
Eliminate noise pollution	99				✓		*			

 BIODIVERSITY		Guidelines Page No.	Project Phase				Cost				
			Inception	Design Phase	Construction Phase	Property Management	Mandatory	No Cost	Capital Cost	Capital Savings	Operational Savings
How do we design our buildings?											
	Choose development sites with limited ecological value	103	✓				★				
	Improve the ecological value of a site	103	✓	✓				★			
	Well-informed site layout and building location	103	✓	✓			★		★	★	
	Consider biodiversity corridors and linked viable open spaces	105	✓	✓			★				
How do we construct our buildings?											
	Implement a construction environmental management plan (EMP)	105			✓			★			
	Protect ecologically sensitive areas	105	✓		✓			★			
	Rehabilitate damaged land	105			✓			★			
How do we manage our buildings?											
	Manage invasive vegetation on site: compliance with NEM:BA AIS	106				✓	★				
	Implement good landscaping practices	106				✓		★			
	Implement an integrated pest management plan	106				✓	★			★	

 BUILDING MATERIALS AND GREEN PROCUREMENT		Guidelines Page No.	Project Phase				Cost				
			Inception	Design Phase	Construction Phase	Property Management	Mandatory	No Cost	Capital Cost	Capital Savings	Operational Savings
How do we design our buildings?											
	Design for dematerialisation	110	✓	✓				★			
	Specify the use of recycled content	111		✓				★		★	
	Specify the local sourcing of materials and products	111		✓				★			
	Consider alternative building materials	111	✓	✓				★			
How do we construct our buildings?											
	Sustainably sourced, reused or recycled shutterboard	112			✓					★	
	Consider the use of local skills and labour	112	✓		✓			★			
	Identify opportunities for skills transfer and training	113	✓		✓			★			
How do we manage our buildings?											
	Implement green procurement policies	113									
	Locally sourced materials and products	113				✓		★			
	Low embodied energy and water products	113				✓		★			
	Environmentally friendly cleaning products and practices	113				✓		★			

 URBAN AGRICULTURE		Guidelines Page No.	Project Phase				Cost				
			Inception	Design Phase	Construction Phase	Property Management	Mandatory	No Cost	Capital Cost	Capital Savings	Operational Savings
How do we design our buildings?											
	Include useful plants in the design of landscaping and roof gardens	116		✓		✓		★			
	Consider opportunities for on-site food production	116	✓	✓		✓		★			
	Design space and systems for composting organic waste	116		✓		✓		★		★	
How do we manage our buildings?											
	Consider edible plants when planting on site	116				✓		★			
	Implement an organic waste management system	116				✓		★		★	
	Consider innovative approaches to promote urban agriculture	116				✓		★			