APPENDICES

APPENDICES


Pretoria

APENDIX A
DIRECT REFERENCE TO TABLES FOR CALCULATING URBAN SUSTAINABILITY

• De Schiller, S. and Evans, J.M., 2006, September. Assessing urban sustainability: microclimate and design qualities of a new development. In 23rd

Table 1. Scale of 'permeability'.

Level	Category	Definition
-2	Lack of permeability	Urban sectors with routes limited by railways or other urban barriers, very large city blocks.
-1	Limited permeability	Large city blocks, sub-divisions and plots with building complexes without through routes.
0	Normal	Typical city blocks (of about 100 m x 100 m for most cities of Argentina) without galleries, passages or other through routes.
+1	Permeable	Smaller city blocks or standard city blocks with pedestrian routes through the centre of the block.
+2	Very permeable	City block with various alternative through routes or open squares with open

Figure 10.01: Scale of Permeability Table (De Schiller, S. and Evans, J.M., 2006)

Table 2. Scale of 'vitality'.

Level	Category	Definition
-2	Lack of vitality	Notable lack of activity in urban spaces, very limited number of entrances, land uses that discourage pedestrian movement.
-1	Limited vitality	Limited street activity, limited number of entrances, activities and land use that does not attract users.
0	Normal	Normal urban street activity, for example medium density residential areas with normal number of entrances.
+1	Moderate vitality	Greater level of activity than the urban average, with activities that attract pedestrians.
+2	High Vitality	Lively areas with large number of pedestrians and constant activity throughout the day.

Figure 10.02: Scale of Permeability Table (De Schiller, S. and Evans, J.M., 2006)

Table 3. Scale of 'variety'.

Level	Category	Definition
-2	Lack of variety	Limited land uses and/or planning restrictions. Large buildings with single uses or groups of buildings with the same use.
-1	Limited variety	Scarce variation of uses and number of building types, restricting potential activities.
0	Normal	Normal variation of building types and range of urban activities within them.
+1	Moderate variety	Greater than average range of uses with a variety of building types and uses.
+2	Ample variety	Great variety of uses, different building types and complementary activities.

Figure 10.03: Scale of Permeability Table (De Schiller, S. and Evans, J.M., 2006)

Table 4. Scale of 'legibility'.

Level	Category	Definition
-2	Lack of legibility	Urban structure difficult to understand, with lack of elements to provide visual orientation. Lack of identity.
-1	Low legibility	Lack of clarity in the urban structure, few landmarks or elements to aid orientation.
0	Normal	Normal urban structure and street pattern, without notable spatial identity.
+1	Moderate legibility	Easy understanding of the street pattern, with clear spatial identity.
+2	High legibility	Easy understanding of the street pattern and urban structure, with elements to aid the recognition of uses and orientate movement.

Figure 10.04: Scale of Permeability Table (De Schiller, S. and Evans, J.M., 2006)

Table 5. Scale of 'robustness'.

Level	Category	Definition
-2	Lack of robustness	Very limited potential to adapt to changes or new uses, rigid subdivisions and lack of flexibility in building design.
-1	Limited robustness	Limited adaptability of the urban tissue, buildings with limited flexibility and variety.
0	Normal robustness	Average capacity of adaptation to changes with low potential to allow modifications of urban structure and building types.
+1	Moderate robustness	Better than average possibilities of change and development over time.
+2	High robustness	High potential to adapt to change flexible buildings and urban structure that be maintained over time.

Figure 10.05: Scale of Permeability Table (De Schiller, S. and Evans, J.M., 2006)

Table 6. Quality of urban design and quality of urban sustainability.

Quality [1]	**Urban design quality**	**Sustainable urban quality**
Permeability	Functional and visual connections in the urban tissue. Choice of alternative routes	Access to renewable resources of sun breeze and daylight. Access to promote social participation.
Vitality	Location and extent of active borders Frequency of entrances and indoor – outdoor relationship.	Social: Improve the quality of life conservation of cultural and social heritage Economic: promote commercial activity and exchange.
Variety	Variation of complementary uses day and night, indoors and outdoors.	Environmental: conservation of diversity. Social: inclusion of different social sectors.
Legibility	Comprehension of the urban structure and layout, relation with the city, visual identity, ease of identifying routes, activities and movement.	Social organization: promote self determination and appropriation of urban space, favour social responsibility participation and integration.
Robustness	Flexibility, ability to accept different uses and activities over time.	Flexible development, to favour change, renovation, reuse, revitalization and recycling.

Figure 10.06: Scale of Permeability Table (De Schiller, S. and Evans, J.M., 2006)

Table 7. Quality of urban design and microclimate.

Quality [1]	**Urban design quality.**	**Microclimatic quality.**
Permeability	Functional and visual connections in the urban tissue Choice of alternative routes	Access to renewable resources of sun, breeze and daylight. Lack of protection from wind and shade.
Vitality	Location and extent of active borders Frequency of entrances and indoor – outdoor relationship.	Environmental conditions that favour outdoor activities with a stimulating microclimate.
Variety	Variation of complementary uses day and night, indoors and outdoors.	Variety of microclimate conditions and opportunities to choose alternative outdoor environments for urban use.
Legibility	Comprehension of the urban structure and layout, relation with the city, visual identity, ease of identifying routes, activities and movement.	Ease of understanding microclimate potential and possibilities to achieve outdoor comfort and acceptance to perform open air activities.
Robustness	Flexibility, ability to accept different users and activities over time.	Possibilities to adapt, correct or modify environmental conditions in urban spaces.

Figure 10.07: Scale of Permeability Table (De Schiller, S. and Evans, J.M., 2006)

Green Star SA - Retail Centre v1

Credit Summary

Pretoria West Industrial Food Market

Comments:

Enter description of project aspects etc.

Category	Title	Credit No.	Points Available	Points Achieved	Points to be Confirmed	Percent of Available Points Achieved	Weighting	Weighted Score
Management								
	Green Star SA Accredited Professional	Man - 1	2	2	0			
	Commissioning Clauses	Man - 2	2	2	0			
	Building Tuning	Man - 3	2	2	0			
	Independent Commissioning Agent	Man - 4	1	0	0			
	Building Guides	Man - 5	2	2	0			
	Environmental Management	Man - 6	2	1	0			
	Waste Management	Man - 7	3	3	0			
	Waste and Recycling Management Plan	Man - 9	1	1	0			
	Building Management Systems	Man - 10	1	1	0			
	Green Lease	Man - 11	1	1	0			
		TOTAL	**17**	**15**	**0**	88%	10%	**8.8**

Category	Title	Credit No.	Points Available	Points Achieved	Points to be Confirmed	Percent of Available Points Achieved	Weighting	Weighted Score
Indoor Environment Quality								
	Ventilation Rates	IEQ - 1	3	3	0			
	Air Change Effectiveness	IEQ - 2	2	2	0			
	Carbon Dioxide Monitoring and Control	IEQ - 3	1	1	0			
	Daylight	IEQ - 4	2	2	0			
	Thermal Comfort	IEQ - 9	1	0	0			
	Hazardous Materials	IEQ - 11	1	1	0			
	Internal Noise Levels	IEQ - 12	na	na	-			
	Volatile Organic Compounds	IEQ - 13	2	2	0			
	Formaldehyde Minimisation	IEQ - 14	1	1	0			
	Mould Prevention	IEQ - 15	1	1	0			
	Places of Respite and Connection to Nature	IEQ - 18	1	0	0			
		TOTAL	**15**	**13**	0	87%	10%	**8.7**
Energy								
	Conditional Requirement	Ene - 0	0	Achieved	-			
	Greenhouse Gas Emissions	Ene - 1	20	12	0			
	Electrical Energy Sub-metering	Ene - 2	2	2	0			
	Maximum Electrical Demand Reduction	Ene - 5	3	1	0			
	Thermal Energy Sub-metering	Ene - 6	na	na	-			
		TOTAL	**25**	**15**	**0**	60%	25%	**15.0**
Transport								
	Provision of Car Parking	Tra - 1	2	2	0			
	Fuel-Efficient Transport	Tra - 2	na	na	-			
	Cyclist Facilities	Tra - 3	3	0	0			
	Commuting Mass Transport	Tra - 4	6	6	0			
	Trip Reduction - Mixed-Use	Tra - 6	1	1	0			
	Vehicle Operating Emissions	Tra - 7	2	0	0			
		TOTAL	**14**	**9**	**0**	64%	12%	**7.7**

Category	Title	Credit No.	Points Available	Points Achieved	Points to be Confirmed	Percent of Available Points Achieved	Weighting	Weighted Score
Water								
	Occupant Amenity Water	Wat - 1	5	0	3			
	Water Meters	Wat - 2	3	3	0			
	Landscape Irrigation	Wat - 3	3	2	0			
	Heat Rejection Water	Wat - 4	4	4	0			
	Fire System Water Consumption	Wat - 5	1	1	0			
		TOTAL	**16**	**10**	**3**	63%	15%	**9.4**
Materials								
	Recycling Waste Storage	Mat - 1	2	2	0			
	Building Reuse	Mat - 2	5	0	0			
	Recycled Content & Re-Used Materials	Mat - 3	3	0	0			
	Concrete	Mat - 5	3	3	0			
	Steel	Mat - 6	3	3	0			
	PVC Minimisation	Mat - 7	1	0	0			
	Sustainable Timber	Mat - 8	2	2	0			
	Design for Disassembly	Mat - 9	1	1	0			
	Dematerialisation	Mat - 10	1	1	0			
	Local Sourcing	Mat - 11	2	2	0			
		TOTAL	**23**	**14**	**0**	61%	13%	**7.9**

Category	Title	Credit No.	Points Available	Points Achieved	Points to be Confirmed	Percent of Available Points Achieved	Weighting	Weighted Score
Land Use & Ecology								
	Conditional Requirement	Eco - 0	0	Not Achieved	-			
	Topsoil	Eco - 1	1	1	0			
	Reuse of Land	Eco - 2	2	2	0			
	Reclaimed Contaminated Land	Eco - 3	2	0	0			
	Change of Ecological Value	Eco - 4	4	0	4			
	Urban Heat Island	Eco - 5	2	1	0			
		TOTAL	**11**	**4**	**4**	36%	7%	**2.5**
Emissions								
	Refrigerant / Gaseous ODP	Emi - 1	1	1	0			
	Refrigerant GWP	Emi - 2	2	2	0			
	Refrigerant Leaks	Emi - 3	na	na	-			
	Insulant ODP	Emi - 4	1	1	0			
	Watercourse Pollution	Emi - 5	3	2	0			
	Discharge to Sewer	Emi - 6	5	0	0			
	Light Pollution	Emi - 7	1	0	0			
	Legionella	Emi - 8	1	1	0			
	Boiler and Generator Emissions	Emi - 9	1	1	0			
	Kitchen Exhaust Emissions	Emi - 10	1	1	0			
		TOTAL	**16**	**9**	**0**	56%	8%	**4.5**

Sub-total weighted points achieved: 65

Innovation								
	Innovative Strategies & Technologies	Inn - 1	5	3	0			
	Exceeding Green Star SA Benchmarks	Inn - 2	5	1	0			
	Environmental Design Initiatives	Inn - 3	5	1	0			
		TOTAL	**5**	**5**	**0**	(Innovation is not weighted)		**5**

Total weighted points achieved: 70

Category	Title	Credit No.	Points Available	Points Achieved	Points to be Confirmed	Percent of Available Points Achieved	Weighting	Weighted Score

The GBCSA does not endorse any self-assessed rating achieved by the use of Green Star SA - Retail Centre v1. The GBCSA offers a formal certification process for ratings of Four Stars and above; this service provides for independent third party review of points claimed to ensure all points can be demonstrated to be achieved by the provision of the necessary documentary evidence. The use of Green Star SA - Retail Centre v1 without formal certification by the GBCSA does not entitle the user or any other party to promote the Green Star SA rating achieved.

Weighted Score	Rating
45-59	Four Star
60-74	Five Star
75+	Six Star