

F

figuur-
verwysings

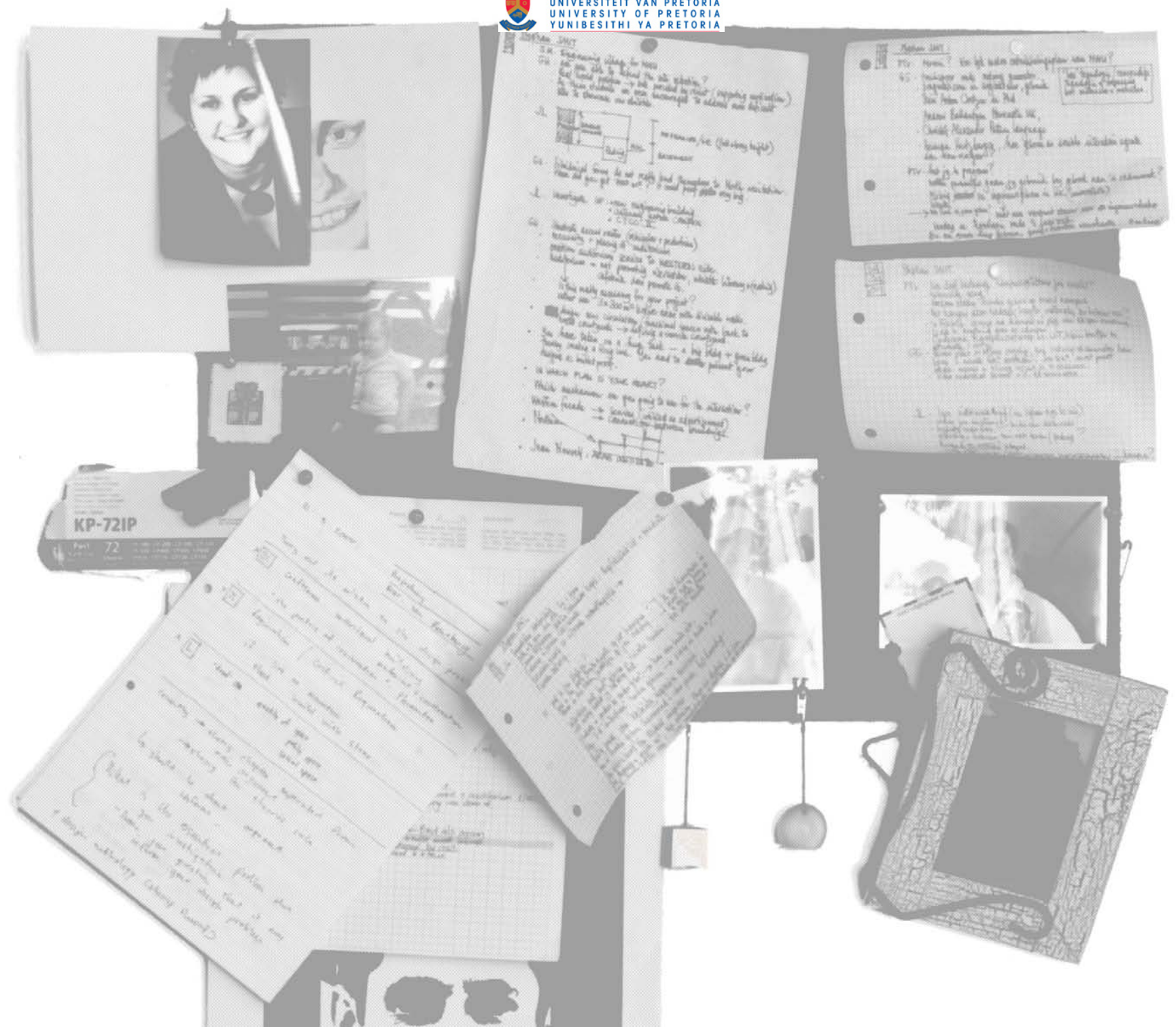
FIGUURVERWYSINGS

3.1 - 3.3	Outeur
3.4 - 3.6	Institusionele Argief en Museum, Noordwes Universiteit
3.7 - 3.23	Outeur
3.24	Institusionele Argief en Museum, Noordwes Universiteit
3.25 - 3.35	Outeur
3.36 - 3.37	Sustainable by Design
4.1a - 4.1b	Greatbuildingsonline.com
4.2a	Christian Richters
4.2b	Michel Denance
7.1 - 7.45a	Outeur
7.45b - 7.45c	Jacques Laubscher
7.46a - 7.59a	Outeur
7.59b	www.cousinssteel.co.za
7.60 - 8.52	Outeur

BEDANKINGS

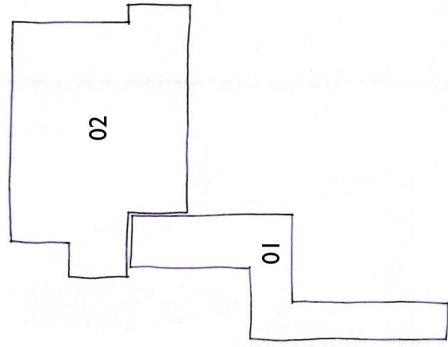
Orbic Argitekte | My ouers | Prof. Piet Vosloo vir leiding | Mnr. Jacques Laubscher vir entoesiasme | Al die vriende binne en buite die ateljee | Madel vir liefde | My Vader vir geloof

kyk wyd



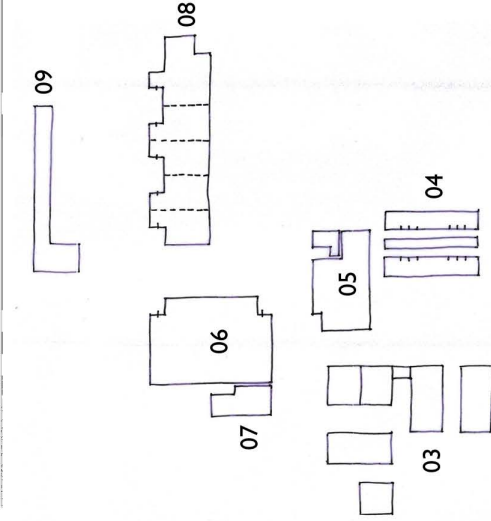
B

bylae



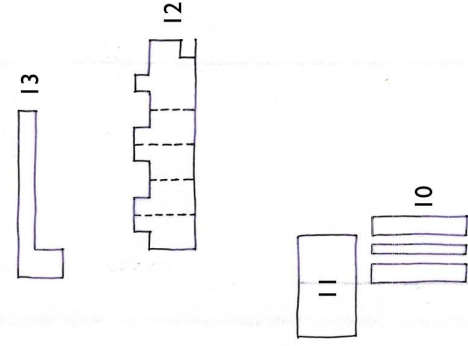
- 01 store/aanleg
vereis: 1/400m²
klas J2/J3/D4
voorsien: 9 DCP
- 02 parkering
vereis: 1/400m²
klas J4
voorsien: 4 DCP

keldervloer



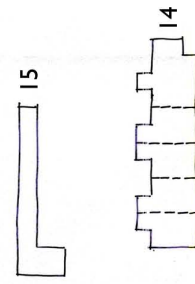
- 03 werkswinkels
almaal < 200m²
voorsien: 1 DCP per werkswinkel
- 04 store
klas J2/J3
vereis: 1/400m²
voorsien: 9 DCP
- 05 veelgebruik lesing/rekenaar lab
klas A3
vereis: 1/200m²
voorsien: 3 DCP
- 06 EXPO
klas A1
vereis: 1/200m²
voorsien: 5 DCP
- 07 EXPO diensruimte
klas J2/J3
vereis: 1/400m²
voorsien: 1 DCP
- 08 veelgebruik lesing
klas A3
vereis: 1/200m²
voorsien: 5 DCP
- 09 kantore
klas G1
vereis: 1/200m²
voorsien: 2 DCP

grondvloer



- 10 store
klas J2/J3
vereis: 1/400m²
voorsien: 9 DCP
- 11 veelgebruik lesing/rekenaar lab
klas A3
vereis: 1/200m²
voorsien: 3 DCP
- 12 veelgebruik lesing
klas A3
vereis: 1/200m²
voorsien: 5 DCP
- 13 kantore
klas G1
vereis: 1/200m²
voorsien: 2 DCP

eerstevloer



- 14 veelgebruik lesing
klas A3
vereis: 1/200m²
voorsien: 5 DCP
- 15 kantore
klas G1
vereis: 1/200m²
voorsien: 2 DCP

tweede vloer

24 | 08 | 09

STRUKTUUR ELEMENT GROOTES

BEREKENINGE:

AUDITORIUM

KAP:

STAAL, plat gerol

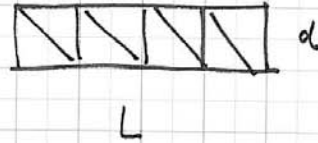
L/d : tipies 10-18

Span $\equiv L \equiv 26500$

vir d, sê $L/d = 15 \Rightarrow d = \frac{L}{15} = \frac{26500}{15}$

$= 1766 \text{ mm}$

sê 1800 mm →



Kap Spasiëring tipies 6000 h/h

gebruik 5230 →

Dak lat, koud gewalste staal, lip-kanal □

L/d : tipies ~~25-35~~ 25-35

Span $\equiv L \equiv 5230$

vir d, sê $L/d = 30 \therefore d = \frac{L}{30} = \frac{5230}{30}$

$= 174 \text{ mm}$

sê 175 mm →

DAK:

Dak lat spasiëring = f (dak plaatmetaal profie)

NOTAS:

Empiries bereken behoort 'n sagstaaal kap met 'n diepte van 1800mm die vereiste 26500mm kan span. Die SPAN/DIEPTE verhouding van 15 is binne die vermoë van 'n sgatestaal kap.

Met 'n kap spasiëring van 6000mm behoort 'n daklat met 'n diepte 175mm die dakplaat genoegsaam te ondersteun.

NOTAS:

Empiries bereken behoort 'n gewapende beton kolom met 'n grootte van 460mm X 460mm die dak op die vereiste hoogte te kan dra. Aangesien die HOOGTE/DIEPTE verhouding van die kolom in snit groter is as 10 is daar 'n gevaar dat die kolom mag swig weens 'n té slank ontwerp. Die beton kolomme kan egter half-pad deur die gallery blad ondersteun word en so die effektiwe hoogte verminder en die slankheid verbeter.

24/08/2009

Struktuur Element Grootes

Berekeninge:

AUDITORIUM

BETON: kolom wat dak kap dra.

veel-verreëping

$$h/d \approx 6 - 15, \text{ sê } 6$$

$$\text{as } h = 2000 \text{ tot } 6000$$

$$\text{dus vir } h_2 = 6715;$$

$$6715/d = 6$$

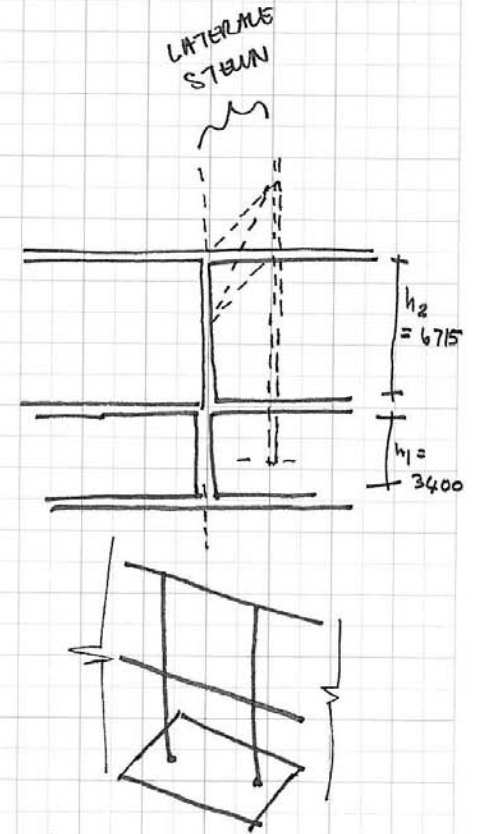
$$\therefore d = 1119 \text{ mm}$$

TE GROOT !!

$$\text{vir } h = 6715 \text{ en } d = 460$$

$$\text{is } h/d = 14,6 > 10 \text{ (span vir swig)}$$

VOORSIEN LATERALE STEUN !!
 VERSPANNING



OPMERKINGS:

Die SBAT (Sustainable Building Assessment Tool, Lite weergawe 1) is gebruik om die moontlike prestasie van die voorgestelde ontwerp te probeer bepaal.

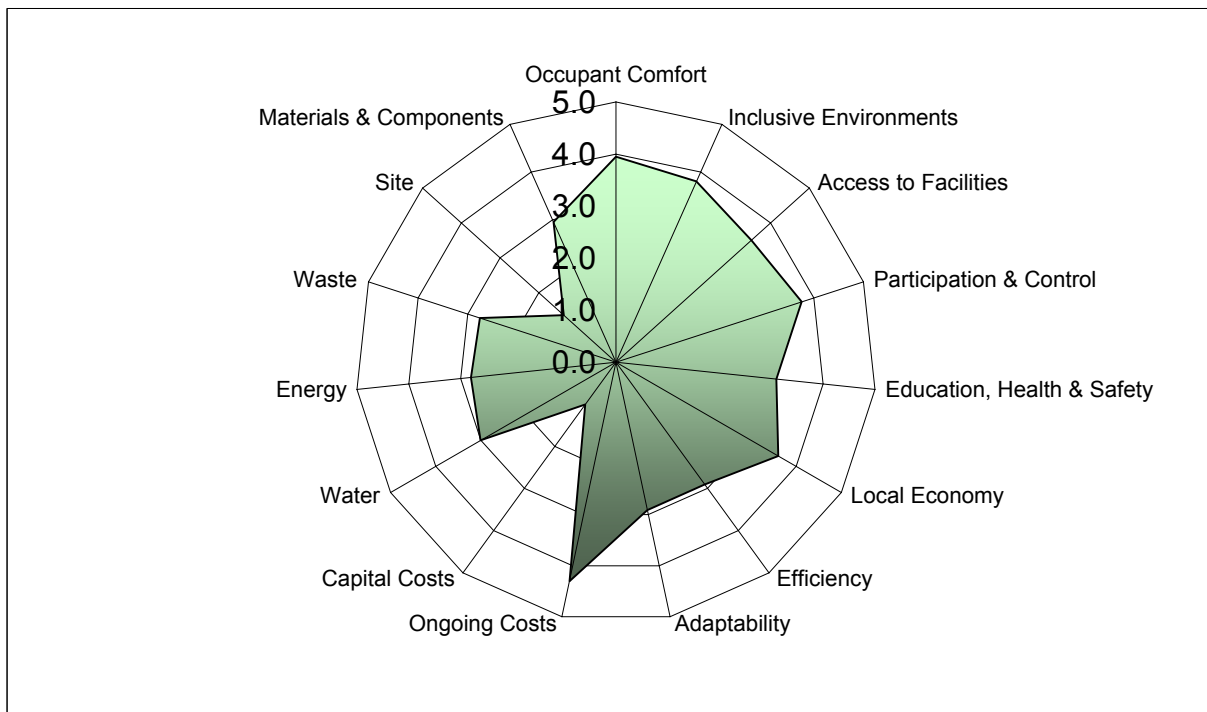
Die voorneme is nie om op hierdie stadium die sukses, akkuraatheid of vermoë van SBAT te bespreek nie. Die uitdaging is om ongeag die toepaslikheid of gebrek van sekere elemente in die opname die sin in die gereedskapstuk te probeer raak sien.

Met eerste oorweging van die resultaat is dit duidelik dat die ontwerp swak presteer wat omgewings aspekte betref. Spesifiek die hantering van afval, energie en water vertoon nie gunstig nie. Dit is immers teenstrydig met die doelstelling van hierdie studie? Die rede vir die swak prestasie is moontlik:

- die groot nie-deurdringbare oppervlak wat die half-kelder beslaan.
- die voorsiening van meganiese ventilasie aan die uitstalruimte en groter veelgebruik lesinglokale en gevolglike gebrek aan passiewe klimaatbeheer.
- die moontlike behoefte aan gesofistikeerde (ingevoerde) toerusting wat met ingenieurstudies geassosieer word.
- die gebrek aan voldoende hernubare energiebronne.
- die gebrek aan herwinnig van drekwat.
- die voorsiening van groot areas grasperk rondom die gebou.
- die groot area sirkulasie-ruimte in verhouding met die res van die ontwerp.

SUSTAINABLE BUILDING ASSESSMENT TOOL (SBAT- P) VI

PROJECT		ASSESSMENT	
Project title:	Kampusleer	Date:	25-09-2009
Location:	Potchefstroom, RSA	Undertaken by:	SJS
Building type:	Opvoeding		
Internal area (m2):	12585		



Social	3.6	Economic	2.9	Environmental	2.6
Overall	3.0	Classification			

Building Performance - Social

Criteria	Indicative performance measure	Measured	Points
SO 1 Occupant Comfort			4.0
SO 1.1 Daylighting	% of occupied spaces that are within distance 2H from window, where H is the height of the window or where there is good daylight from skylights	80	0.8
SO 1.2 Ventilation	% of occupied spaces have equivalent of opening window area equivalent to 10% of floor area or adequate mechanical system, with unpolluted air source	85	0.9
SO 1.3 Noise	% of occupied spaces where external/internal/reverberation noise does not impinge on normal conversation (50dbA)	70	0.7
SO 1.5 Thermal comfort	Temperature of occupied space does not exceed 28 or go below 19 °C for less than 5 days per year (100%)	80	0.8
SO 1.5 Views	% of occupied space that is 6m from an external window (not a skylight) with a view	80	0.8
SO 2 Inclusive Environments			3.8
SO 2.1 Public Transport	% of building (s) within 400m of disabled accessible public transport	0	0.0
SO 2.2 Information	High contrast, clear print signage in appropriate locations (100%)	100	1.0
SO 2.3 Space	% of occupied spaces that are accessible to ambulant disabled / wheelchair users	95	1.0
SO 2.4 Toilets	% of space with fully accessible toilets within 50m	95	1.0
SO 2.5 Fittings & Furniture	% of commonly used furniture and fittings (reception desk, kitchenette, auditorium) fully accessible	90	0.9
SO 3 Access to Facilities			3.5
SO 3.1 Children	All users can walk (100%) / use public transport (50%) to get to their childrens' schools and creches	0	0.0
SO 3.2 Banking	All users can walk (100%) / use public transport (50%) to get to banking facilities	100	1.0
SO 3.3 Retail	All users can walk (100%) / use public transport (50%) to get to food retail	100	1.0
SO 3.4 Communication	All users can walk (100%) / use public transport (50%) to get to communication facilities (post, telephone and internet)	100	1.0
SO 3.5 Exercise	All users can walk (100%) / use public transport (50%) to get to recreation / exercise facilities	50	0.5
SO 4 Participation & Control			3.8
SO 4.1 Environmental control	% of occupied spaces able to control their thermal environment (adjacent to openable windows/thermal controls)	75	0.8
SO 4.2 Involvement	% of users actively involved in the design process (workshops / meetings with models / large format drawings)	0	0.0
SO 4.3 Social spaces	Social informal meeting spaces (parks / staff canteens / cafes) provided locally (within 400m) (100%)	100	1.0
SO 4.4 Sharing facilities	5% of facilities shared with other users / organisations on a weekly basis (100%)	100	1.0
SO 4.5 User group	Active representative user group involved in the management of the building / facilities / local environment (100%)	100	1.0
SO 5 Education, Health & Safety			3.1
SO 5.1 Education	Two percent or more space/facilities available for education (seminar rooms / reading / libraries) per occupied spaces (75%). Construction training provided on site (25%)	100	1.0
SO 5.2 Safety	All well used routes in and around building well lit (25%), all routes in and around buildings (25%) visually supervised, secure perimeter and access control (50%), No crime (100%)	90	0.9
SO 5.3 Awareness	% of users who can access information on health & safety issues (ie HIV/AIDS), training and employment opportunities easily (posters/personnel)	100	1.0
SO 5.4 Materials	All materials/components used have no negative effects on indoor air quality (100%)	10	0.1
SO 5.5 Accidents	Method in place for recording all occupational accidents and diseases and addressing these	10	0.1

Building Performance - Economic

Criteria	Indicative performance measure	Measured	Points
EC 1 Local economy			3.6
EC 1.1	Local contractors % value of the building constructed by local (within 50km) small (employees<20) contractors	25	0.3
EC 1.2	Local materials % of materials (sand, bricks, blocks, roofing material) sourced from within 50km	75	0.8
EC 1.3	Local components % of components (windows, doors etc) made locally (in the country)	85	0.9
EC 1.4	Local furniture/ fittings % of furniture and fittings made locally (in the country)	85	0.9
EC 1.5	Maintenance % of maintenance and repairs by value that can, and are undertaken, by local contractors (within 50km)	90	0.9
EC 2 Efficiency			2.9
EC 2.1	Capacity % capacity of building used on a daily basis (actual number of users / number of users at full capacity*100)	60	0.6
EC 2.2	Occupancy % of time building is occupied and used (actual average number of hours used / all potential hours building could be used (24)*100)	35	0.4
EC 2.3	Space per occupant Space provision per user not more than 10% above national average for building type (100%)	10	0.1
EC 2.4	Communication Site/building has access to internet and telephone (100%), telephone only (50%)	100	1.0
EC 2.5	Material & Components Building design coordinated with material / component sizes in order to minimise wastage. Walls (50%), Roof and floors (50%)	85	0.9
EC 3 Adaptability			3.8
EC 3.1	Vertical heights % of spaces that have a floor to ceiling height of 3000mm or more	80	0.8
EC 3.2	External space Design facilitates flexible external space use (100%)	90	0.9
EC 3.3	Internal partition Non loadbearing internal partitions that can be easily adapted (loose partitioning (100%), studwall (50%), masonry (25%)	25	0.3
EC 3.4	Modular planning Building with modular structure, envelope (fenestration) & services allowing easy internal adaptaptation (100%)	90	0.9
EC 3.5	Furniture Modular, limited variety furniture - can be easily configured for different uses (100%)	90	0.9
EC 4 Ongoing costs			4.3
EC 4.1	Induction All new users receive induction training on building systems (50%), Detailed building user manual (50%)	70	0.7
EC4.2	Consumption & waste % of users exposed on a monthly basis to building performance figures (water (25%), electricity (25%), waste (25%), accidents (25%)	80	0.8
EC 4.2	Metering Easily monitored localised metering system for water (25%) and energy (75%)	100	1.0
EC4.3	Maintenance & Cleaning Building can be cleaned and maintained easily and safely using simple equipment and local non-hazardous materials (100%)	90	0.9
SO 4.5	Procurement % of value of all materials/equipment used in the building on a daily basis supplied by local (within the country) manufacturers	90	0.9
EC 5 Capital Costs			1.0
EC 5.1	Local need Five percent capital cost allocated to address urgent local issues (employment, training etc) during construction process (100%)	15	0.2
EC5.2	Procurement Tender / construction packaged to ensure involvement of small local contractors/manufacturers (100%)	50	0.5
EC 5.3	Building costs Capital cost not more than fifteen % above national average building costs for the building type (100%)	10	0.1
EC5.4	Sustainable technology 3% or more of capital costs allocated to new sustainable/indigenous technology (100%)	25	0.3
EC 5.5	Existing Buildings Existing buildings reused (100%)	0	0.0

Building Performance - Environmental

	Criteria	Indicative performance measure	Measured	Points
EN 1	Water			3.0
EN 1.1	Rainwater	% of water consumed sourced from rainwater harvested on site	65	0.7
EN 1.2	Water use	% of equipment (taps, washing machines, urinals showerheads) that are water efficient	50	0.5
EN 1.3	Runoff	% of carparking, paths, roads and roofs that have absorbant/permeable surfaces (grassed/thatched/looselaid paving/ absorbant materials)	50	0.5
EN 1.4	Greywater	% of water from washing/relatively clean processes recycled and reused	50	0.5
EN 1.5	Planting	% of planting (other than food gardens) on site with low / appropriate water requirements	85	0.9
EN 2	Energy			2.8
EN 2.1	Location	% of users who walk / use public transport to commute to the building	85	0.9
EN 2.2	Ventilation	% of building ventilation requirements met through natural / passive ventilation	50	0.5
EN 2.3	Heating & Cooling	% of occupied space which has passive environmental control (no or minimal energy consumption)	50	0.5
EN 2.4	Appliances & fittings	% of appliances / lighting fixtures that are classed as highly energy efficient (ie energy star rating)	80	0.8
EN 2.5	Renewable energy	% of building energy requirements met from renewable sources	15	0.2
EN 3	Waste			2.8
EN 3.1	Toxic waste	% of toxic waste (batteries, ink cartridges, flourescent lamps) recycled	90	0.9
EN 3.2	Organic waste	% of organic waste recycled	90	0.9
EN 3.3	Inorganic waste	% of inorganic waste recycled.	90	0.9
EN 3.4	Sewerage	% of sewerage recycled on site	0	0.0
EN 3.5	Construction waste	% of damaged building materials / waste developed in construction recycled on site	5	0.1
EN 4	Site			1.4
EN 4.1	Brownfield site	% of proposed site already disturbed / brownfield (previously developed)	5	0.1
EN 4.2	Neighbouring buildings	No neighbouring buildings negatively affected (access to sunlight, daylight, ventilation) (100%)	100	1.0
EN 4.3	Vegetation	% of area of area covered in vegetation (include green roofs, internal planting) relative to whole site	15	0.2
EN 4.4	Food gardens	Food gardens on site (100%)	10	0.1
EN 4.5	Landscape inputs	% of landscape that does not require mechanical equipment (ie lawn cutting) and or artificial inputs such as weed killers and pesticides	5	0.1
EN 5	Materials & Components			3.0
EN 5.1	Embodied energy	Materials with high embodied energy (aluminium,plastics) make up less than 1% of weight of building (100%)	90	0.9
EN 5.2	Material sources	% of materials and components by volume from grown sources (animal/plant)	5	0.1
EN 5.3	Ozone depletion	No materials and components used requiring ozone depleting processes (100%)	90	0.9
EN 5.4	Recyled / reuse	% of materials and components (by weight) reused / from recycled sources	25	0.3
EN 5.5	Construction process	Volume / area of site disturbed during construction less than 2X volume/area of new building (100%)	85	0.9