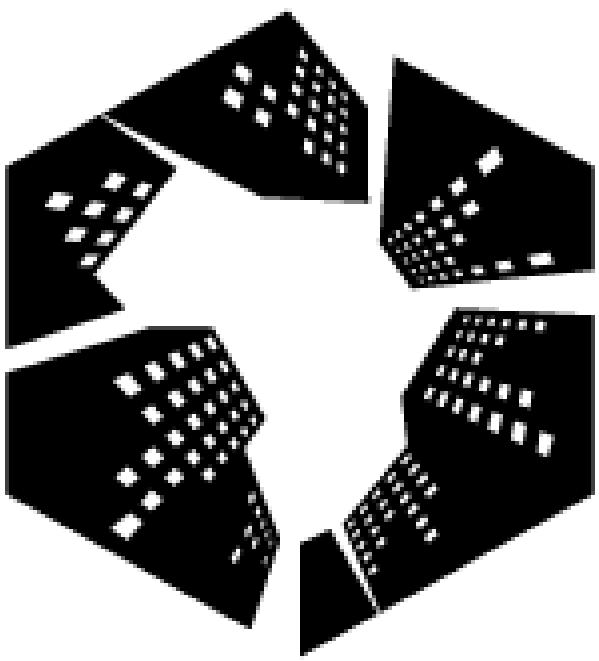
GREEN STAR SA-UGANDA

LOCAL CONTEXT REPORT

Applying Green Star SA in Uganda

Revision 2 – June 2016



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EXECUTIVE SUMMARY

OVERVIEW OF THE UGANDA LOCAL CONTEXT REPORT

This report applies to the Green Star SA – Office v1.1 tool as well as rating tools for Green Star SA - Retail Centre v1, Green Star SA – Multi Unit Residential v1 & Green Star SA - Public & Education Building v1, and considers the applicability of the tool in Uganda. Included in the report is a background analysis of Uganda, as well as a credit by credit analysis. This considers the applicability of each credit to the local context

The Green Building Council South Africa (GBCSA) is currently licensed by the Green Building Council of Australia (GBCA) to allow certification using the Green Star SA rating tools (Office v1 .1, Retail Centre v1, Multi Unit Residential v1, Public & Education Building v1) only in South Africa, Ghana, Namibia, Mauritius, Uganda, Nigeria, Kenya and Rwanda. Through this local context assessment, the GBCSA, in collaboration with the prospective Uganda Green Building Council will allow for certification in Uganda using all the Green Star SA rating tools (Office v1.1, Retail Centre v1, Multi Unit Residential v1, Public & Education Building v1) (with some minor adaptations recommended in this report)

The GBCSA would manage and allow the certification through its existing established processes, but call the certification Green Star SA - Uganda. The GBCSA will then use the opportunity to allow capacity to grow in Uganda through the prospective Uganda GBC, by allowing selected Ugandan professionals to be trained as Green Star SA - Uganda assessors who would join the GBCSA assessor teams on Ugandan projects. In addition, the GBCSA would deliver the Green Star SA Accredited Professional – New Buildings course in Uganda, in collaboration with the prospective Uganda Green Building Council, which would allow professionals in Uganda to take the Green Star SA Accredited Professional online examination. The details would be agreed upon in a Green Star license agreement between the GBCSA and the prospective Uganda GBC.

Office projects in Uganda must use the Green Star SA – Office v1.1 as the base reference tool for Office projects in Uganda (i.e. registration under Office v1 is no longer available) – except for Ene-0 and Ene-1, where Ugandan office projects can still apply the Office v1 Energy Modelling Protocol because it is less stringent than Office v1.1. Refer to the Ene-1 section of this report.

Refer to the GBCSA website for a list of changes between Office v1 and Office v1.1 here:

https://www.gbcsa.org.za/wp-content/uploads/2013/05/Green-Star-SA-Office-v1.1-summary-of-changes-updated-June-2015.pdf

RECOMMENDATIONS

A summary of recommended credits requiring Credit Interpretation Requests (CIR's), Technical Clarifications (TC's) or adaptations can be found below (all other credits are proposed to remain unchanged, but where projects do want to propose changes these must be applied for through the TC/ CIR process on the GBCSA website):

Credit	Discussion	Recommendation
IEQ-6	Note that in Green Star SA Office v1.1, the IEQ-6 High Frequency Ballasts credit has been omitted, and would be omitted in Uganda as well. The professionals at the workshop, however, indicated that while it is best practice to specify high frequency ballasts in the projects, although in some instances, these ballasts would be value engineered out of the project. Therefore, should a project in Uganda be registered under Green Star, if they meet the credit and documentation requirements of IEQ-6 High Frequency Ballasts according to Green Star SA Office v1, they would be awarded 0,5 points in the Innovation category under Innovation 3.	Innovation point opportunity
ENE-0	Office v1.1 rating tool be applied to all other credits, calculations and protocols except the Energy modelling protocol for the ENE-0 and ENE-1: Greenhouse Gas Emissions credit, where the Office v1 Energy modelling protocol will be applicable to Ugandan projects. ENE - Conditional Requirement should be kept in its current form with a mandatory CIR to confirm eligibility. Reference must be made to the Green Star SA Energy Calculator & Modelling Protocol Guide current at the time of project submission. Where project teams are uncertain of the validity of the energy modelling programme used, an enquiry can be issued to the GBCSA for confirmation of validity.	Mandatory CIR (Conditional Requirement, therefore all projects must submit a CIR and receive a final ruling before Round 1 can be submitted to the GBCSA)
ENE-1	Office v1.1 rating tool be applied to all other credits, calculations and protocols except the Energy modelling protocol for the ENE-0 and ENE-1: Greenhouse Gas Emissions credit, where the Office v1 Energy modelling protocol will be applicable to Ugandan projects.ENE-1 should be kept in its current form with a mandatory CIR to confirm compliance route applicability. Reference must be made to the Green Star SA Energy Calculator & Modelling Protocol Guide current at the time of project submission.	Mandatory CIR (Conditional Requirement, therefore all projects must submit a CIR and receive a final ruling before Round 1 can be submitted to the GBCSA)

	Where project teams are uncertain of the validity of the energy modelling programme used, an enquiry can be issued to the GBCSA for confirmation of validity.	
ENE-7	For ENE-7, the Green Star SA Multi Unit Residential v1 Hot Water Calculator would need to be adapted to reflect the relevant fuel factors in Uganda. This would be project-specific and a mandatory CIR would need to be submitted to confirm applicability.	Mandatory CIR
TRA-1	TRA-1 should be kept in its current form, with an adaptation to refer to the Ugandan local, provincial or national authority planning allowances for the minimum or maximum values of car parking spaces provided for the project. For projects where the mandatory local parking requirements do not exist or are optional (or recommended), the technical manual refers to a set of 'alternative requirements' in the Additional Guidance which would be applicable to the project.	Adaptation
WAT-1 / WAT-1 (PEB)	As the Green Star SA Potable Water Calculator takes into account South African rainfall per region, the Green Star SA Potable Water Calculator would need to be adapted to reflect the rainfall values in the different regions in Uganda. WAT-1 should be kept in its current form with a mandatory CIR to confirm applicability. The rainfall data should consist of 12 months of average monthly rainfall data in mm for the specific town/ city/ village.	Mandatory CIR
MAT-7	It is noted, that while the GBCA Best Practice PVC Guidelines may apply in Australia and South Africa, the professionals at the workshop believe that these guidelines are yet to be applied for all PVC products imported and/or manufactured in Uganda. Having a PVC credit in the tool inappropriately rewards projects for not having PVC when there might be other materials that are equally or more of an issue in that context. As such, PVC minimisation will be removed in the Uganda context. However, should a project in Uganda be registered under Green Star, if they meet the credit and	Innovation Point Opportunity

	documentation requirements of MAT-7 PVC Minimisation according to Green Star SA Office v1, they would be awarded 0.5 points in the Innovation category under Innovation 3.	
MAT-11	It is recommended to adapt the credit so that: • One point is awarded where 20% of the total contract value is represented by materials or products (used in the construction of the project) that have been sourced from within the member states of the East African Community (EAC) region borders as defined by the EAC on http://www.eac.int, current at the time of project registration or more recent. • An additional point is awarded where 10% of the total contract value is represented by materials or products (used in the construction of the project) that have been sourced from within the Ugandan borders. ▪ This promotes sourcing of materials in the East African region which would be beneficial to the Ugandan local context.	Adaptation
ECO-0	ECO- should be kept in its current form based on the need to encourage and recognise development on land that has limited ecological value and to discourage development on ecologically valuable sites. To determine "high ecological value" and "prime agricultural land", a project can submit for an Eligibility Ruling at any point, before or after project registration. Note that attention is drawn to Technical Clarification Number ECO0-T-OB1-0655 which states that If the project is a refurbishment/redevelopment that remains within the existing development footprint (and providing it is outside the required buffers of watercourses), there is no need to include confirmation from a registered ecologist. Confirmation is required and it could simply be included within the Short Report prepared by a suitably qualified professional with reference to supporting evidence (e.g. aerial photos, Google images). However, where confirmation that the site was not on land of high ecological value is to be stated by a suitably qualified registered ecologist, the suitable registered ecologist would be defined according to Regulation 20 (1) of the National Environment (Conduct & Certification of Environmental Practitioners) Regulations, 2003.	Mandatory CIR (Conditional Requirement, therefore all projects must submit a CIR and receive a final ruling before Round 1 can be submitted to the GBCSA)

	A mandatory CIR will be required to assess the project's compliance with this Conditional Requirement based on site ecological maps, to ensure approval of this conditional requirement prior to the Round 1 submission.	
ECO-4	ECO-4 should be kept in its current form but adaptations to the bio-regions in the calculator are required to correctly represent the equivalent ecological value of the different bio-regions in Uganda A mandatory CIR must be submitted to the GBCSA by projects targeting this credit to determine which South African bio-region is most applicable to the project.	Mandatory CIR
INN-1	INN-1 should be kept in its current form with reference being made instead to the Ugandan context, as opposed to the South African context.	Adaptation
INN-2	INN-2 should be kept in its current form with reference being made instead to improvement on an existing Green Star SA / Green Star SA - Uganda credit	Adaptation
INN-3	INN-3 should be kept in its current form with the applicable adaptations made to incorporate the minor changes made in the Green Star SA - Uganda rating tool.	Adaptation

Table 1: Summary of Green Star new building credits requiring CIR's or adaptations for use in Uganda

It is recommended that the balance of the credits remain in their current format with no adjustments made. This recommendation is based on the results of the workshop held with the Green Star SA-Uganda Local Context Report Technical Committee with regards to the legislation, policies and market practices in sustainability specific to the Ugandan context.

No adaptations shall be made to the Spatial Differentiation, Space Use and Timing of Certification eligibility criteria of the Green Star SA rating tools. Recommendations for the Conditional Requirements eligibility criterion are included in the credit-by-credit review.

GREEN STAR SA CATEGORY WEIGHTING SYSTEM

It has been agreed with the prospective Uganda Green Building Council that the category weighting system should remain the same as that of the Green Star SA rating tools, until such a time as the prospective Uganda Green Building Council has the capacity to facilitate a revision of the category environmental weighting system.

CONTENTS

INTRODUCTION

01

OVERVIEW OF THE CREATION OF A UGANDA GREEN BUILDING COUNCIL

Ugandan professionals have shown interest in creating a green building council, the Uganda Green Building Council (UGBC), which the prospective founding board members of the UGBC intend to register at a Prospective Membership Level with the World Green Building Council (similar to what has been done to date in Egypt, Ghana, Uganda, Mauritius, Namibia and Nigeria).

With preliminary discussions currently in progress between the prospective founding board members of the UGBC (for additional information, contact Trudy Muwanga on trudy@pmmuganda.com), the green building council in the country has not yet been formally established and has therefore not yet produced an environmental rating tool that would be used for office, retail centre, multi-unit residential, public and education building projects in Uganda.

The members, however, recognise that the property industry is well-placed to deliver significant long-term environmental improvements using a broad range of measures and believe in the potential for projects within the country to be voluntarily and independently rated in the interim.

OVERVIEW OF THE DEVELOPMENT OF THE GREEN STAR SA-UGANDA ENVIRONMENTAL RATING TOOL

As a member of the World Green Building Council and its Africa Network of Green Building Councils (ANGBC), the Green Building Council South Africa (GBCSA) allows the rating of Ugandan buildings under the Green Star SA rating system.

The Green Star SA rating system is a natural touch point for green building movements and councils in other parts of Africa. The Green Building Council South Africa works in collaboration with emerging green building councils throughout Africa and allows the adaptation of the Green Star SA tools for certification in the respective countries. To date, Local Context Reports have been developed for Nigeria, Kenya, Uganda, Ghana, Rwanda, Namibia and Mauritius.

It is important that the environmental rating tool best reflects the local context of the country therefore, as intellectual property owners of the Green Star brand, it is a prerequisite that consent from the Green Building Council South Africa (GBCSA) must be obtained for the use of Green Star SA in Uganda through contextualisation.

OBJECTIVE OF THE UGANDA LOCAL CONTEXT REPORT - NEW BUILDINGS

This report applies to the Green Star SA – Office v1.1 tool as well as rating tools for Green Star SA - Retail Centre v1, Green Star SA – Multi Unit Residential v1 & Green Star SA - Public & Education Building v1, and considers the applicability of the tool in Uganda. Included in the report is a

background analysis of Uganda, as well as a credit by credit analysis. This considers the applicability of each credit to the local context.

A workshop with the Green Star SA-Uganda Local Context Report Technical Committee consisting of industry professionals and academics was held in Kampala on 17 September 2015 through the sponsorship of Stanlib and Chestnut Uganda Limited. The objective of this workshop was to discuss each credit in the Green Star SA v1 and v.1.1 New Buildings rating tools and to interrogate the applicability of these credits to the Ugandan context.

The technical committee comprised of the following individuals and organisations listed below. Acknowledgement is made of their invaluable feedback and insight which is greatly appreciated.

NAME	COMPANY
Eric Noir	Design For Abundance
Phionah Sasira	Eco Innovations International Ltd
Richard Drakuma	GEM Engineering
Daphine Ampumuza	Knight-Frank
Nancy Birungi	Knight-Frank
Marc Nduru	Knight-Frank
Trudy Muwanga	PMM Uganda
Tina Muwanga	TMA Architects
Sam Semuwemba	TMA Architects
Derrick Galitho	WEB Limited Group
John Mulatya	WEB Limited Group

The comments from the workshop and views expressed by the Green Star SA-Uganda Local Context Report Technical Committee have been included in this report.

METHODOLOGY

The context report therefore addresses climatic conditions and ecology, water and energy patterns, building regulations and any other Uganda -specific circumstances which may be in conflict with certain Green Star SA requirements. The context report also analyses the Green Star SA Design and As Built rating tools credit-by-credit, identifying any ramifications that may result from the application of the Green Star SA rating tools to the Ugandan context.

BACKGROUND

02

OVERVIEW OF UGANDA

The Republic of Uganda is a sovereign state in the East African Community (EAC) region spanning 241 038 square kilometres with an estimated population in 2015 of 37.1 million people. Uganda (with geographic coordinates of 1 00 N, 32 00 E) lies on the equator with Kenya to the east, South Sudan to the north, the Democratic Republic of Congo to the west, Rwanda to the south-west and Tanzania to the south (Figure 1). The southern part of the country includes a portion of Lake Victoria, shared with Uganda and Tanzania, situating the country in the African Great Lakes region.

Figure 1. Uganda (The World Factbook, 2015)

Figure 2. Regional context of Uganda (BBC, 2015)

ENVIRONMENTAL CONCERNS IN UGANDA

The most prominent environmental concerns in Uganda include draining of wetlands for agricultural use; deforestation; overgrazing; soil erosion; water hyacinth infestation in Lake Victoria and widespread poaching.

Table 2. Environmental statistics (UN Statistics, 2014)

Environment		
Threatened species	2014	189
Forested area (% of land area)	2012	14.1
Proportion of terrestrial and marine areas protected (%)	2014	16.0
Population using improved drinking water sources (%)	2012	75.0
Population using improved sanitation facilities (%)	2012	34.0
CO2 emission estimates (000 metric tons and metric tons per capita)	2011	3799/0.1
Energy supply per capita (Gigajoules)	2012	12.0

The total renewable water sources span 66 cubic kilometres.

21% of total installed electrical capacity is generated from fossil fuels; 59.9% of total installed electrical capacity is generated from hydroelectric plants and 19.2% of total installed electrical capacity is generated from other renewable sources. In comparison to South Africa, where 90.4% of the total installed electrical capacity is generated from fossil fuels, Uganda is one of the lowest carbon emitters in the African region.

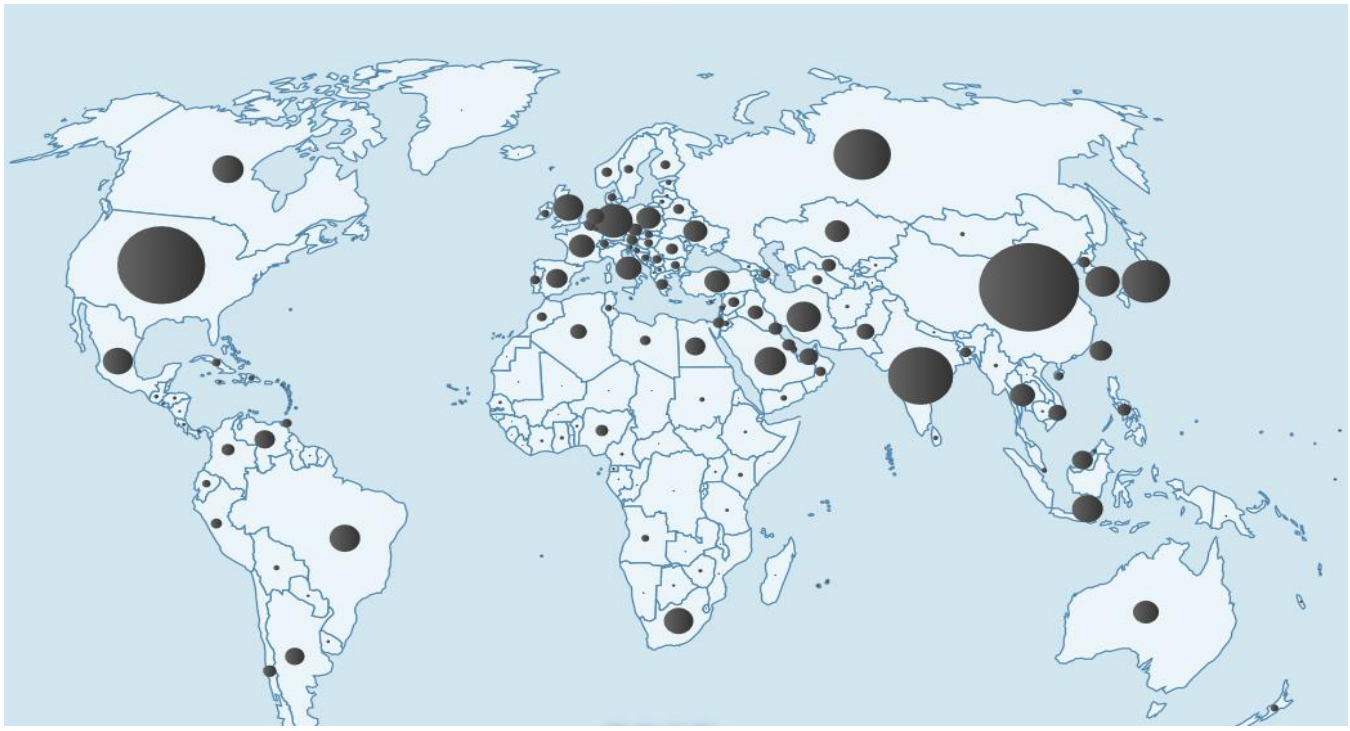

Figure 3. World Carbon Emitters of MtCO2 (Global Carbon Atlas, 2013)

The international environmental agreements that Uganda has signed and ratified include those related to biodiversity, climate change through the Kyoto Protocol, desertification, endangered species, hazardous wastes, law of the sea, marine life conservation, ozone layer protection and wetlands.

LOCAL CONTEXT REPORT

03

APPLYING GREEN STAR SA CREDIT BY CREDIT

This report applies to the Green Star SA – Office v1.1 tool as well as rating tools for Green Star SA - Retail Centre v1, Green Star SA – Multi Unit Residential v1 & Green Star SA - Public & Education Building v1, and considers the applicability of the tool in Uganda. Each credit's applicability to the Ugandan context is discussed and recommendations are made of where the project team must submit a Credit Interpretation Request (CIR) to the GBCSA where an alternative standard may be better suited.

CREDIT BY CREDIT REVIEW

For each credit reviewed as part of this report, the credits are colour coded in accordance with the changes required for applicability to the local context:

The credit should be kept in its current form and no adjustments need to be made.
The credit requires a mandatory CIR or TC or adaptation to ensure relevance to the Ugandan context.
The credit should be omitted and made 'not applicable' for the Ugandan application of the tool.

Ugandan projects would also be required to use the latest Green Star SA TCs, CIRs and Errata relevant to rating tools, published on the GBCSA's website, which represent the current version of that specific tool.

ELIGIBILITY CRITERIA

No adaptations shall be made to the Spatial Differentiation, Space Use and Timing of Certification eligibility criteria of the Green Star SA rating tools. Recommendations for the Conditional Requirements eligibility criterion are included in the credit by credit review.

GREEN STAR SA CATEGORY WEIGHTING SYSTEM

It has been agreed with the Uganda Green Building Council that the category weighting system should remain the same as that of the Green Star SA rating tools, until such a time as the UGBC has the capacity to facilitate a revision of the category environmental weighting system.

MANAGEMENT

	AIM OF CREDIT	DISCUSSION	RECOMMENDATION
	MAN-1: Green Star SA Accredited Professional To encourage and recognise the engagement of professionals who can assist the project team with the integration of Green Star aims and processes throughout design and construction phases.	It is important that project members understand the eligibility criteria and credit criteria of the Green Star SA rating tools and process. Therefore, until such a time that the UGBC establishes a rating tool and course delivery system, it is recommended that professionals be trained under the current South African system. As such, the credit in its current form is equally relevant and applicable in Uganda as it is in South Africa **References** For further information about the Green Star SA Technical Clarification MAN1-T-OB1-0030 Timing of Design Phase, refer to: http://old.gbcsa.org.za/greenstar/tech_results.php?a=credit&type=1&credit=2	MAN-1 should be kept in its current form and no adjustments need to be made.
	MAN-2: Commissioning Clauses To encourage and recognise commissioning and handover initiatives that ensure that all building services can operate to optimal design potential.	The Chartered Institute of Building Services Engineers (CIBSE) is an international professional engineering association based in London that represents building services engineers and is recognised both in the United Kingdom and internationally. CIBSE publishes Guidance and Codes which are internationally recognised as authoritative, setting the standards for best practice in the building services profession. For mechanical systems, ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) is an internationally-recognised society with more than a century of experience advancing the arts and sciences of HVAC&R and related human factors. This makes ASHRAE a suitable alternative for the commissioning of mechanical systems that are in line with Green Star's aim of cutting edge practice.	MAN-2 should be kept in its current form and no adjustments need to be made.

		As in South Africa, Uganda does not legislatively adhere to CIBSE and ASHRAE commissioning codes as standard practice. Adoption of these standards, however, has been proven to be achievable in this context. Therefore, the credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	
	MAN-3: Building Tuning To encourage and recognise commissioning initiatives that ensure optimum occupant comfort and energy efficient services performance throughout the year.	Building tuning to this standard is not normally conducted in Uganda The requirements of this credit, however, would be achievable in this context. As such, the credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	MAN-3 should be kept in its current form and no adjustments need to be made.
	MAN-4: Independent Commissioning Agent To ensure buildings are designed with regard to future maintenance and are correctly commissioned before handover.	An independent commissioning agent is appointed to ensure that all systems are working efficiently and that all corrective measures are taken in cases where systems are faulty. This independent commissioning agent would be an experienced professional whose responsibility is to be an objective advocate of the building owner, to be involved from the beginning of schematic design through practical completion and to provide commissioning advice to the project team. None of the professionals present at the workshop were aware of anyone providing independent commissioning services in Uganda. However, as an independent experienced Ugandan contactor could be appointed to fulfil this role, it was agreed that achieving this credit would be possible in the Ugandan context and that the credit is relevant in its current form.	MAN-4 should be kept in its current form and no adjustments need to be made.
	MAN-5: Building User's Guide To encourage and recognise information management that enables building users to optimise the building's environmental performance.	Informing the users on how the building should function is an important aspect of making sure that a green building performs to its optimum, therefore the credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	MAN-5 should be kept in its current form and no adjustments need to be made.

	MAN-6: Environmental Management To encourage and recognise the adoption of a formal environmental management system in line with established guidelines during construction.	Environmental management in construction should not be a region-specific practice but should be practiced across all regions in order to minimise the disturbance that construction activities have on the environment. With regards to the comprehensive, project-specific Environmental Management Plans (EMPs) throughout the construction phase of the projects: **NEMA Environmental Management Plan** At present, EMPs are provided on projects where the National Environment Management Authority (NEMA) of Uganda requires projects to submit a statement of intent before construction. These EMPs ask for information on waste management provisions and general information on the site, after which the project may be required to undertake a screening or an initial environmental impact assessment (EIA). Subsequent to the initial EIA, the project team may then be required to produce a more comprehensive environmental management plan, including mandatory environmental measures to mitigate impact during construction. It is advised, therefore, that the EMPs as required by NEMA could be amended by the project teams to meet Section 3 of the New South Wales (NSW) Environmental Management Systems Guidelines checklist requirements of this credit. **Provincial Government of the Western Cape Environmental Management Plan** In projects where Ugandan professionals tend to use South African standards in building design, projects may prefer to reference the relevant sections of the Provincial Government of the Western Cape Environmental Management Plan Guidelines (2005) – refer to Table Man-6.1 of the Additional Guidance in the "Green Star SA Public & Education Building v1" First Edition rating tool published in March 2013. In such an instance, it is viewed that referencing Table Man-6.1 of the Additional Guidance in the "Green Star SA Public & Education Building v1"	MAN-6 should be kept in its current form, with an adaptation to include referencing the relevant sections of the Provincial Government of the Western Cape Environmental Management Plan Guidelines (2005) – refer to Table Man-6.1 of the Additional Guidance in the "Green Star SA Public & Education Building v1" First Edition rating tool published in March 2013 - as equivalent to referencing Section 3 of the New South Wales (NSW) Environmental Management Systems Guidelines (2009).

		rating tool is equivalent to referencing Section 3 of the New South Wales (NSW) Environmental Management Systems Guidelines (2009). With regards to the ISO14001 accreditation of the contractor: **ISO14001 accreditation** Although it was noted that there are currently no ISO14001 certified contractors in Uganda, ISO14001 is an international standard that is not region specific. The necessary market transformation could come to effect through this credit in order to achieve the second point. As such, the credit in its current form is equally relevant and applicable in Uganda as it is in South Africa, with an adaptation to include referencing the relevant sections of the Provincial Government of the Western Cape Environmental Management Plan Guidelines (2005) - refer to Table Man-6.1 of the Additional Guidance in the Green Star SA Public & Education Building v1 rating tool published in March 2013. **References** For further information on all environmental laws of Uganda with regards to environmental management in building construction, according to The National Environmental Act, Cap 153, refer to: http://www.nemaug.org/index.php/publications/environmental-laws	
	MAN-7: Waste Management To encourage and recognise management practices that minimise the amount of construction waste going to disposal.	At present, basic waste management process are followed on some projects in Uganda. In spite of this, it is believed that a waste management programme could be instated for projects in Uganda to recycle at least 30% of construction waste. Waste recycling is an income source for contractors and it is environmentally beneficial. This credit will encourage the development and growth of these facilities in the country. Therefore, the credit in its current form is equally relevant and applicable in Uganda as it is in South Africa **References**	MAN-7 should be kept in its current form and no adjustments need to be made.

		For further information about the environmental laws of Uganda with regards to waste management, according to The National Environment (Waste Management) Regulations, S.I. No 52/1999, refer to: http://www.nemaug.org/index.php/publications/environmental-laws	
	MAN-8: Airtightness Testing To encourage and recognise measures to reduce uncontrolled air leakage in buildings, and reward the testing and achievement of good air tightness testing levels.	Infiltration is uncontrolled air leakage through cracks and gaps in the building fabric. It is affected strongly by design decisions and construction quality. Pressure and temperature differences between the inside and the outside of the building lead to infiltration, which will rise and fall uncontrollably; this is largely in response to fluctuations in external wind speed and air temperature. Significant amounts of energy are wasted through leaky construction of buildings. In naturally ventilated buildings this leads to excessive use of heating in winter (as well as user comfort issues associated with draughts). In air conditioned buildings, this leads to excessive use of both heating in winter and cooling in summer. As such, the credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	MAN-8 should be kept in its current form and no adjustments need to be made.
	MAN-9: Waste Recycling Management Plan – RETAIL CENTRE To encourage and recognise management systems and building infrastructure that facilitate the reduction of the overall operational waste generation and disposal.	Refer to the discussion on the management of other recyclable waste generated in Uganda in MAN-7. It is believed that through the development of management systems that facilitate the reduction of the overall operational waste generation and disposal, this credit will encourage the development and growth of these facilities in retail centres in the country. As such, the credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	MAN-9 should be kept in its current form and no adjustments need to be made.
	MAN-10: Building Management System – RETAIL CENTRE & PEB To encourage and recognise the incorporation of Building Management Systems to actively control and maximise the effectiveness of building services.	Building Management Systems are computer based control systems installed in buildings to control and monitor the building's mechanical and electrical equipment as well as the water systems. Ideally the BMS, especially on large building projects, is a central integrated system monitoring and controlling the building. However on smaller projects where a single BMS system is not appropriate there is still benefit in installing smaller separate control systems that are linked to a central location to enable effective monitoring and control by the building facilities management team.	MAN-10 should be kept in its current form and no adjustments need to be made.

		Although BMS's are not commonly installed in retail centres, public and education buildings in Uganda, it is believed that the expertise exists within the country to incorporate Building Management Systems to actively control and maximise the effectiveness of building services. As such, the credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	
	MAN-11: Green Lease - RETAIL CENTRE To encourage and recognise initiatives taken by the building owner to encourage improved environmental behaviour by tenants of the retail centre	Through the establishment of a contractually-binding tenancy lease agreement that requires the tenants of a retail centre to participate in the following environmental initiatives: • Electrical energy monitoring and reporting (minimum quarterly) and have submitted an energy management plan at the beginning of each year; • Water monitoring and reporting (minimum quarterly) and have submitted a water management plan at the beginning of each year; • Waste reduction/recycling monitoring and reporting (minimum quarterly) and have submitted a waste management plan at the beginning of each year; • The preparation of a procurement policy at the beginning of each year regarding the use of environmentally friendly consumables (cleaning products, toiletry products, paper and plastic consumable products) AND • The building owner being required to report back to the tenants on the buildings' performance relating to energy, water, waste and procurement policies on an annual basis, market transformation within retail centres in Uganda would occur through this credit. The professionals at the workshop were currently in the process of developing green leases for a retail centre project, therefore this credit in its current form is equally relevant and applicable in Uganda as it is in South Africa. **References** For further information about the development of a green lease, according to the Green Building Council of South Africa Green Lease Toolkit, refer to: https://www.gbcsa.org.za/knowledge/publications/ :	MAN-11 should be kept in its current form and no adjustments need to be made.

	MAN-12: Common Property Rules – MULTI UNIT RES To encourage and recognise developers who embed legal and contractual environmental management initiatives within the formal management structures of the development.	Through the establishment of legal and contractual environmental management initiatives embedded within the formal management structures of the development, it is believed that within the rules of the development, the Management Entity committing to environmental initiatives would be beneficial to the common property areas of multi-unit residential developments. This credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	MAN-12 should be kept in its current form and no adjustments need to be made.
	MAN-13: Learning Resources - PEB To encourage and recognise sustainability initiatives implemented in the development as learning resources for building users and visitors.	This credit has been developed to educate building occupants on how the sustainability initiatives implemented in the building work, and the associated environmental benefits of these initiatives. Making sustainable building initiatives and features visible and interactive can provide a valuable education and learning opportunity for building users to develop awareness about the building's impacts on the natural environment and resources. By incorporating important concepts such as energy, water and material efficiency, public and education buildings can become interactive learning tools in public and education buildings. The professionals at the workshop were not aware of the implementation of interactive learning resources such as these in public and education buildings and commended the positive impact and affluence towards sustainability that these resources would have on the occupants. As such, this credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	MAN-13 should be kept in its current form and no adjustments need to be made.
	MAN-14: Life Cycle Costing - PEB To recognise and encourage the development of a Life Cycle Cost (LCC) analysis to consider environmentally sustainable attributes in assessing improved design, specification and through-life maintenance and operation.	Life-cycle cost (LCC) refers to the total cost of ownership over the life of an asset. Costs considered include the financial cost which is relatively simple to calculate and also the environmental and social costs which are more difficult to quantify and assign numerical values. Building systems / initiatives with the best environmental outcome do not always necessarily reflect the lowest capital expenditure cost. However, when compared in terms of life cycle costs, these sustainable initiatives often perform better than or close to the conventional solutions.	MAN-14 should be kept in its current form and no adjustments need to be made.

		Thus by encouraging Life Cycle Costing as a decision making tool, environmentally preferable initiatives are given the opportunity to be considered equitably, avoiding the initial capital expenditure barrier. The business case for sustainability is a challenge encountered irrespective of what region in Africa the project may occur. Therefore, this credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	
	MAN-15: Maintainability - PEB To encourage and recognise building design that facilitates on-going maintenance, and minimises the need for on-going building maintenance throughout a building's lifecycle.	Public buildings can be complex structures with a variety of attributes which require a significant amount of maintenance. The design of these types of buildings should reflect the need for such maintenance by providing suitable access to facilities managers. When designed and managed accordingly, public buildings can minimise maintenance and operational costs, while also minimally impacting their occupants. As such, this credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	MAN-15 should be kept in its current form and no adjustments need to be made.

INDOOR ENVIRONMENT QUALITY

	AIM OF CREDIT	DISCUSSION	RECOMMENDATION
	IEQ-1: Ventilation Rates To encourage and recognise designs that provide ample amounts of outside air to counteract build-up of indoor pollutants.	There is currently no legislation on the minimum amount of outside air to be designed for in new buildings in Uganda. As this is the case, it is recommended that IEQ-1 be kept in its current form.	IEQ-1 should be kept in its current form and no adjustments need to be made.
	IEQ-2: Air Change Effectiveness To encourage and recognise systems that effectively deliver optimum air quality to any occupant throughout the occupied area.	The effective distribution of air in a space is an important element in providing a good indoor environment. There are a number of ways of achieving this credit which do not require any skills outside of a mechanical engineer's expertise in Uganda. As in South Africa, it may be a challenge to prove compliance using Computational Fluid Dynamics (CFD) modelling skills, required in cases where displacement ventilation has not been adopted in Uganda. Nevertheless, the credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	IEQ-2 should be kept in its current form and no adjustments need to be made.
	IEQ-1: Ventilation **(Green Star SA Office v1.1)**	Note that in Green Star SA Office v1.1, the IEQ-1 and IEQ-2 credits from Green Star SA Office v1 have been combined as per the Green Star SA v1 Public & Education Building rating tool. In addition, the ventilation rates have been updated. Should a project in Uganda be registered under Green Star SA Office v1.1, the credit in this form is equally relevant and applicable in Uganda as it is in South Africa.	IEQ-1 (Green Star SA Office v1.1) should be kept in its current form and no adjustments need to be made.
	IEQ-3: Carbon Dioxide Monitoring and Control To encourage and recognise the provision of response monitoring of Carbon Dioxide levels to ensure delivery of optimum quantities of outside air.	For IEQ-3, professional teams are to refer to the discussion in this report on ventilation rates in IEQ-1 with regards to the reference set points (in parts-per-million). The professionals at the workshop indicated that they were not aware of any buildings in Uganda which currently monitored carbon dioxide levels in office	IEQ-3 should be kept in its current form and no adjustments need to be made.

		spaces. They did however understand how such a system would work and such expertise would be available in Uganda. Therefore, the credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	
	IEQ-4: Daylight To encourage and recognise designs that provide good levels of daylight for building users.	The professionals at the workshop indicated that they designed to maximise natural light, but were not aware of any buildings in Uganda which had undertaken daylight modelling. Expertise in daylight modelling however could be sourced through skill transfer initiatives between Uganda and South Africa. The credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	IEQ-4 should be kept in its current form and no adjustments need to be made.
	IEQ-5: Daylight Glare Control To encourage and recognise buildings that are designed to reduce the discomfort of glare from natural light.	Glare can easily be controlled through louvers, blinds or types of glass. This should be considered good practice in Uganda as it is in South Africa. The credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	IEQ-5 should be kept in its current form and no adjustments need to be made.
	IEQ-6: High Frequency Ballasts To encourage and recognise buildings that increase workplace amenity by avoiding low frequency flicker that may be associated with fluorescent lighting.	Note that in Green Star SA Office v1.1, the IEQ-6 High Frequency Ballasts credit has been omitted, and would be omitted in Uganda as well. The professionals at the workshop, however, indicated that while it is best practice to specify high frequency ballasts in the projects, although in some instances, these ballasts would be value engineered out of the project. Therefore, should a project in Uganda be registered under Green Star, if they meet the credit and documentation requirements of IEQ-6 High Frequency Ballasts according to Green Star SA Office v1, they would be awarded 0,5 points in the Innovation category under Innovation 3.	Innovation point opportunity IEQ-6 should be kept in its current form and no adjustments need to be made.
	IEQ-7: Electric Lighting Levels To encourage and recognise base building provided office lighting that is not over designed.	Lighting luminance levels are an important factor in determining occupant wellbeing and health in an office. Lighting that is too dim or too bright can cause discomfort and strain for office occupants.	IEQ-7 should be kept in its current form and no adjustments need to be made.

		A building owner and lighting designer usually provide office-standard lighting before the office space has a tenant and the usage of the space is known. This often results in ceiling mounted light fittings being used to provide an illumination level suitable for reading almost everywhere, even though only about 5–10 percent of the office space will require this lighting level. Therefore, the credit in its current form is equally relevant and applicable in Uganda as it is in South Africa	
	IEQ-8: External Views To encourage and recognise designs that provide occupants with a visual connection to the external environment.	There is increasing evidence that eyestrain and related health problems can be significantly reduced in situations where the eyes can be refocused periodically on a distant object. This is easier to achieve where there is a nearby window with a view out. This is especially important where occupants spend significant periods of time in front of computer monitors or closely studying paperwork as in a typical office. Therefore, this credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	IEQ-8 should be kept in its current form and no adjustments need to be made.
	IEQ-9: Thermal Comfort To encourage and recognise buildings that achieve a high level of thermal comfort.	While some professionals are not aware of the thermal comfort assessment methods, namely ASHRAE Standard 55-2004 Acceptability Limits or Predicted Mean Vote (PMV) levels calculated in accordance with ISO7330 using standard clothing and metabolic rate values, it was confirmed by the professionals at the workshop that these forms of assessing thermal comfort could be used within the Ugandan context to compile the thermal comfort report or short report. As this credit aims to encourage projects to design for comfort, rather than temperature, the credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	IEQ-9 should be kept in its current form.
	IEQ-10: Individual Comfort Control To encourage and recognise designs that facilitate individual control of thermal comfort.	Most projects in Uganda do not provide individual thermal comfort control every 30m2 owing to the cost limitations of the user controls. However, if one negates the impacts of costs, this credit is achievable in this context and should be considered best practice. The credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	IEQ-10 should be kept in its current form and no adjustments need to be made.

	IEQ-11: Hazardous Materials To encourage and recognise actions taken to reduce health risks to occupants from the presence of hazardous materials.	The effects on the health of human beings that hazardous materials have can be irreversible. The correct disposal of such materials can save lives and should not be compromised in any regional context. The Occupational Safety and Health Act, 2006 of Uganda does not refer to the disposal of hazardous materials such as asbestos, lead or polychlorinated biphenyls (PCBs) in existing sites. It is therefore recommended that where project teams target this credit, a mandatory CIR is issued to demonstrate compliance with the credit criteria using guidance as stipulated by the South African Occupational Health and Safety Act (OH&S). Note that one point is awarded where a comprehensive hazardous material survey has been carried out on the project site as defined by the relevant legislation; and whenever asbestos, lead or polychlorinated biphenyls (PCBs) were found, they have been removed in accordance with the standards listed in Table IEQ-11.1 or equivalent, or removed in accordance with more stringent standards or legislation available used in Uganda. **References** For further information on all occupational health and safety laws of Uganda, according to The Occupational Safety and Health Act, 2006, refer to: http://www.ullii.org	For IEQ-11, a mandatory CIR should be issued by the project team to demonstrate compliance with the credit criteria using guidance as stipulated by the South African Occupational Health and Safety Act (OH&S).
	IEQ-12: Internal Noise Levels To encourage and recognise buildings that are designed to maintain internal noise levels at an appropriate level.	The professionals at the workshop were not aware of the SANS 10103:2 standard. Whilst there are guidelines on external noise pollution, the professionals noted that there is no specific standard for noise levels in new buildings in Uganda. Green Star SA addresses the required internal noise levels which would be optimal for indoor environment quality. The credit in its current form is, therefore, equally relevant and applicable in Uganda as it is in South Africa **References**	IEQ-12 should be kept in its current form and no adjustments need to be made.

		For further information on all environmental laws of Uganda with regards to noise levels, according to The National Environment (Noise Standards And Control) Regulations, 2003, refer to: http://www.nemaug.org/index.php/publications/environmental-laws	
	IEQ-13: Volatile Organic Compounds To encourage and recognise specification of interior finishes that minimise the contribution and levels of Volatile Organic Compounds (VOCs) in buildings.	From the workshop, it seemed that it would be necessary for the Ugandan industry to achieve market transformation by requiring the current paint suppliers to provide their manufacturer data sheets specifying the VOCs level in paints, adhesives and sealants and carpets. In the workshop, it was acknowledged that the health implications of exposure to VOCs are consistent with 'sick building syndrome' effects include eye, nose and skin irritation, headache and lethargy. Therefore, this credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	IEQ-13 should be kept in its current form and no adjustments need to be made.
	IEQ-14: Formaldehyde Minimisation To encourage and recognise the specification of products with low formaldehyde emission levels.	From the workshop, it seemed that it would be necessary for the Ugandan industry to achieve market transformation by requiring the current composite wood product suppliers to provide their manufacturer data sheets specifying the formaldehyde levels in the composite wood products, In the workshop, it was acknowledged that formaldehyde resins, used to bond the constituent parts together in some particleboards and all fibreboards, have been reported to: • Be an irritant at low levels to eyes, mucous membranes, nose and throat; • Lead to sensitise skin (dermatitis) and respiratory system (asthma and rhinitis); • Cause an increased risk of cancer; • Lead to reproductive hazards with the ability to damage a foetus; and • Emit vapour even after it has hardened, in the case of formaldehyde resin. Therefore, this credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	IEQ-14 should be kept in its current form and no adjustments need to be made.

	IEQ-15: Mould Prevention To encourage and recognise the design of services that eliminate the risk of mould growth and its associated detrimental impact on occupant health.	In the workshop, it was acknowledged that when quantities of mould grow beyond usual limits or when particular species are introduced into a building, the mould can cause irritation, allergic responses and infections particularly in the eyes and respiratory system. Also of concern are mould toxins, which can potentially affect the skin immune system, respiratory system and nervous system. As such, the credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	IEQ-15 should remain in its current format and no adjustments need to be made.
	IEQ-16: Tenant Exhaust Riser To encourage and recognise the design of buildings with a general exhaust riser that can be used by tenants to remove indoor pollutants from printing and photocopy areas.	Many projects are not aware of the pollutants emitted by printing equipment and hence do not provide a means to exhaust the pollutants. This credit however provides awareness and can be easily achieved to provide a healthy indoor environment. As such, the credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	IEQ-16 should be kept in its current form and no adjustments need to be made.
	IEQ-17: Environmental Tobacco Smoke (ETS) Avoidance To encourage and recognise the air quality benefits to occupants by prohibiting smoking inside the building.	Uganda passed the Tobacco Control Act, 2015, which seeks to provide for 100% smoke free environments as a way of discouraging smokers and protecting none smokers from the dangers of second hand smoke. Tobacco smoke is unhealthy for human beings when inhaled and this credit would align with the requirements of this credit. As such, the credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	IEQ-17 should be kept in its current form and no adjustments need to be made.
	IEQ-18: Places of Respite and Connection to Nature – RETAIL CENTRE To encourage and recognise developments that create approximately designed areas where retail centre staff and visitors can relax in a place of respite which has a connection to nature.	Places of respite which have a connection to nature provide retail centre staff and visitors with approximately designed areas in which to relax and decrease stress levels commonly induced by excessive time spent confined indoors. Where the place of respite is outdoors, the area should have low noise exposure (from traffic and building services, shading to at least 35% of its area; and be screened from significant prevailing winds. Where the place of respite is indoors, the area should have a Daylight Factor (DF) of at least 2.5% and meet the credit criteria of IEQ-01.	IEQ-18 should be kept in its current form and no adjustments need to be made.

		As such, the credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	
	IEQ-19: Private Outdoor Space - MULTI UNIT RES To encourage and recognize dwelling designs which improve the health and wellbeing of the occupants by providing private outdoor space.	Private outdoor spaces accessible for private use by the dwelling occupants only, directly adjacent to, and accessible from, the associated dwelling and at least 1m2 per occupant or at least 6m2 improve the health and wellbeing of the occupants in multi-unit residential developments as it provides the occupants with private places of respite in nature. This is an important consideration for multi-unit residential developments which can easily be achieved within the Ugandan context. The credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	IEQ-19 should be kept in its current form and no adjustments need to be made.
	IEQ-22: Universal Access - MULTI UNIT RES To recognize design that provides universal access, to and within dwellings, to meet the changing needs of occupants.	Facilities for persons with disabilities within multi-unit residential developments are often neglected resulting in difficulties for occupants within the developments who have differing needs. From the workshop, it was noted that there is currently no building code standards, regulations or legislations addressing the design of facilities for persons with disabilities within multi-unit residential developments. It was therefore recommended that projects comply with the guidelines in SANS 10400-S. As such, the credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	IEQ-22 should be kept in its current form and no adjustments need to be made.
	IEQ-23: Stairs - PEB To encourage and recognise designs that promotes the wellbeing of occupants by encouraging the use of stairs as an alternative to vertical transportation by lift.	Lifts in multi storey buildings is often the main form of vertical transport. This can largely be attributed to the fact that stairs are 'hidden' away and used for emergencies only. By making stairs more prominent their use could be more attractive with added health benefits as a result. Provision of attractive stairs promotes the use of stairs and thereby giving occupants the option to improve their physical well-being. Provided that cognisance is made for the provision for persons with disabilities, designs that promote the use of stairs within public and education buildings can easily be achieved within the Ugandan context.	IEQ-23 should be kept in its current form and no adjustments need to be made.

		The credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	

ENERGY

<table>
<tr><th></th><th>AIM OF CREDIT</th><th>DISCUSSION</th><th>RECOMMENDATION</th></tr>
<tr><td></td><td><u>ENE-: Conditional Requirement</u>
To encourage and recognise designs that minimise the greenhouse gas emissions associated with operational energy consumption, and maximise potential operational energy efficiency of the base building.</td><td>There are no energy efficiency requirements legislated by the current Ugandan building code standards. As such, it is recommended that Compliance Route 1 (SANS 204 compliance), Route 2 (ASHRAE) and Route 3 (Energy Modelling) remain options and are made available to projects in Uganda seeking Green Star SA-Uganda certification.

Where applicable, changes to the Green Star SA Energy Calculator and Modelling Protocol Guide should be motivated by the registered project through the mandatory CIR.

For the mandatory CIR, should the project team elect to use an alternative standard to SANS 204 for Compliance Route 1, the following aspects would need to be addressed and the equivalent, or more stringent, attributes clearly demonstrated:

<table>
<tr><td>Section 4.1: Model Notional SANS204 Building</td><td>Title</td></tr>
<tr><td>Section 4.1: Model Notional SANS204 Building</td><td>“generally as defined by SANS 204-3:2008 … deemed to comply clauses”</td></tr>
<tr><td>Section 5.1: General modelling parameters</td><td>N/A</td></tr>
<tr><td>Section 5.2: Building Envelope</td><td>“Fabric based on SANS204-3”</td></tr>
<tr><td>Section 5.2: Building Envelope</td><td>“Windows U value 5.6 and SHGF 0.77 (clear single glazing, timber framed). Windows to be distributed on all sides of the building such as to achieve compliance with the SANS204-3 formula. Roof lights at 10% of floor area, with U value 2.5 and SHGF 0.35. Walls insulated to R = 2.2. Roof insulated to R = 2.7 to 3.7 depending on climatic zone”</td></tr>
<tr><td>Section 5.3: Internal Design Criteria</td><td>“Notional SANS 204 building”</td></tr>
<tr><td>Section 5.3: Internal</td><td>“24^{o}C in summer and 20^{o}C in winter”</td></tr>
</table>
</td><td>Office v1.1 rating tool be applied to all other credits, calculations and protocols except the Energy modelling protocol for the ENE-0 and ENE-1: Greenhouse Gas Emissions credit, where the Office v1 Energy modelling protocol will be applicable to Ugandan projects.

Conditional Requirement, therefore all projects must submit a CIR and receive a final ruling before Round 1 can be submitted to the GBCSA

ENE- Conditional Requirement should be kept in its current form with a mandatory CIR to confirm eligibility.

Reference must be made to the Green Star SA Energy Calculator & Modelling Protocol Guide current at the time of project submission.

Where project teams are uncertain of the validity of the energy modelling programme used, an enquiry can be issued to the GBCSA for confirmation of validity.</td></tr>
</table>

Design Criteria	
Section 5.4: HVAC Systems Simulation	“Notional SANS 204 building”
Section 5.4: HVAC Systems Simulation	“Heating is to be provided … as per the actual design”
Section 5.4: HVAC Systems Simulation	“per SANS 204-3:2008” (occurs twice)
Section 5.4: HVAC Systems Simulation	“To satisfy SANS204-3”
Section 6.1: Extract and Miscellaneous Fans	“per SANS 204-3:2008” occurs twice
Section 10: Fuel factors	“An average fuel factor for South African mains electricity is used by the calculator, which is defined as 1.2kgCO2/kWh … it will be necessary to revise the fuel factors in future Green Star SA tool and versions.”

The Conditional Requirement will not be met unless:

- The software used for modelling complies with the requirements and verification methods detailed in the Green Star SA Energy Calculator and Modelling Protocol Guide of the rating tool, current at the time of project registration or more recent;
- Energy modelling for the project was undertaken using the methodology, as detailed in the Green Star SA Energy Calculator and Modelling Protocol Guide of the rating tool, current at the time of project registration or more recent; and
- Each variable in the Greenhouse Gas Emissions Modelling Report (e.g. building form, materials or air-conditioning system) is referenced consistently throughout the rest of the submission (i.e. in related credits such as IEQ-1 ‘Ventilation Rates’ or ENE-5 ‘Peak Energy Demand Reduction’) and is clearly justified by the documented design or the as-built evidence (dependent on the stage of assessment).

Where professional teams are uncertain of the validity of the energy modelling programme used, an enquiry can be issued to the GBCSA for confirmation of validity.

	ENE-1: Greenhouse Gas Emissions To encourage and recognise designs that minimise the greenhouse gas emissions associated with operational energy consumption.	See above (ENE-). Routes 1, 2 and 3 specify the reduction of energy consumption in buildings. These building codes also specify passive design systems that help reduce the energy demand. Further to this, however, it is noted that on-site energy generation has not been commonly adopted in Uganda owing to the cost of installation. As such, ENE-1 should be kept in its current form with a mandatory CIR to confirm applicability.	Office v1.1 rating tool be applied to all other credits, calculations and protocols except the Energy modelling protocol for the ENE-0 and ENE-1: Greenhouse Gas Emissions credit, where the Office v1 Energy modelling protocol will be applicable to Ugandan projects. Conditional Requirement, therefore all projects must submit a CIR and receive a final ruling before Round 1 can be submitted to the GBCSA ENE-1 should be kept in its current form with a mandatory CIR to confirm compliance route applicability. Reference must be made to the Green Star SA Energy Calculator & Modelling Protocol Guide current at the time of project submission. Where project teams are uncertain of the validity of the energy modelling programme used, an enquiry can be issued to the GBCSA for confirmation of validity.
	ENE-2: Energy Sub-metering To encourage and recognise the installation of energy sub-metering to facilitate on-going management of energy consumption.	Sub-metering is not a very common practice in Uganda. Most buildings meter consumption per tenant and not necessary per major energy use. This credit should therefore remain to encourage responsible energy monitoring. The credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	ENE-2 should be kept in its current form and no adjustments need to be made.

	ENE-3: Lighting Power Density To encourage and recognise designs that provide artificial lighting with minimal energy consumption.	The professionals at the workshop noted that efficient lighting design in Uganda could be as low as 8W/m 2 for office plates. Whilst most lighting was designed to 15W/m2, lower levels are achievable using currently available technology. The credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	ENE-3 should be kept in its current form and no adjustments need to be made.
	ENE-4: Lighting Zoning To encourage and recognise lighting design practices that offer greater flexibility for light switching, making it easier to light only occupied areas.	Efficient lighting and use thereof is considered an important aspect of energy efficiency in buildings in Uganda, but not practised widely enough. Lighting zoning for spaces of no more than 100m2 in size is not commonly practiced but can be easily achieved. The credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	ENE-4 should be kept in its current form and no adjustments need to be made.
	ENE-5: Peak Energy Demand Reduction / ENE-5 Maximum Electrical Demand Reduction - PEB To encourage and recognise designs that reduce peak demand on energy supply infrastructure.	Running on stand-by generation is common in Uganda such that a large majority of buildings are supplied by electricity from stand-by generation. As such, Ugandans understand the need to reduced peak demand on energy supply infrastructure. In achieving this credit, project teams should however be aware that: (1) Load lopping cannot be used. (2) Stand-by generators can only be used where they are “designed and integrated for the purpose of peak energy demand reduction and can be activated automatically and without causing a blackout”, as stated in the Green Star SA technical manual. The credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	ENE-5 / ENE-5 (PEB) should be kept in its current form and no adjustments need to be made.
	ENE-6: Thermal Energy Sub-Metering – RETAIL CENTRE To encourage and recognise the installation of thermal energy sub metering to facilitate ongoing management of thermal energy consumption.	Sub-metering of thermal energy consumption is not a very common practice in Uganda. Most retail buildings meter energy consumption per tenant and not all substantive thermal energy uses where flow temperature, return temperature and mass flow rate are measured. This credit should therefore remain to encourage responsible thermal energy monitoring.	ENE-6 should be kept in its current form and no adjustments need to be made.

		The credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	
	ENE-7: Hot Water Energy Use - MULTI UNIT RES To encourage and recognise dwelling designs that reduce greenhouse gas emissions associated with domestic hot water production.	Several designs within multi-unit residential developments can be incorporated to reduce greenhouse gas emissions associated with domestic hot water production. This could include the use of more efficient domestic hot water fixtures and fittings, the installation of solar or other forms of renewable energy hot water geysers or heat recovery plants. The reduction of greenhouse gas emissions associated with domestic hot water production should be a priority irrespective of region, such that the credit in its current form is equally relevant and applicable in Uganda as it is in South Africa. The Green Star SA Multi Unit Residential v1 Hot Water Calculator would however need to be adapted to reflect the relevant fuel factors in Uganda. This would be project-specific and a mandatory CIR would need to be submitted to confirm applicability.	For ENE-7, the Green Star SA Multi Unit Residential v1 Hot Water Calculator would need to be adapted to reflect the relevant fuel factors in Uganda. This would be project-specific and a mandatory CIR would need to be submitted to confirm applicability.
	ENE-8: Common Property Energy Use - MULTI UNIT RES To encourage and recognise designs that reduce energy use associated with common property lifts, car park ventilation and lighting.	It is important that the energy use associated with common property lifts, car park ventilation and common property lighting in multi-unit residential developments is reduced. For car park ventilation, it is noted that the current building code standard used in Uganda for naturally and mechanically ventilated spaces is not more stringent than SANS 10400-O. The credit in its current form is equally relevant and applicable in Uganda as it is in South Africa, therefore ENE-8 should be kept in its current form and no adjustments need to be made.	The current building code standard used in Uganda for naturally and mechanically ventilated spaces is not more stringent than SANS 10400-O, therefore ENE-8 should be kept in its current form and no adjustments need to be made.
	ENE-9: Low Emission Energy Generation - MULTI UNIT RES To encourage and recognise designs that incorporate on-site energy generation systems utilising renewable or low emission energy sources.	It is encouraged that designs incorporate on-site energy generation systems utilising renewable or low emission energy sources. With the prevalence of geothermal energy or high heat sources in Uganda, the potential exists for co-generation or tri-generation to encourage systems utilising renewable or low emission energy sources. Up to four points can be achieved in the Ugandan context, such that the credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	ENE-9 should be kept in its current form and no adjustments need to be made.

		The credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	
	ENE-10: Energy Efficient Appliances - MULTI UNIT RES To encourage and recognise initiatives which reduce energy consumption associated with major appliances.	It is encouraged that initiatives are implemented which reduce energy consumption associated with major appliances. As such, points are awarded where a minimum of two applicable appliances are provided within the scope of the main contract; and applicable appliance provided is certified with a minimum 'B' rating of the European "Energy Rating" labelling system. Appliances certified with a minimum 'B' rating of the European "Energy Rating" system can be made available in the Uganda market. This credit should therefore remain to encourage the use of energy efficient appliances. The credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	ENE-10 should be kept in its current form and no adjustments need to be made.
	ENE-11: Unoccupied Spaces - PEB To encourage and recognise designs that minimise or eliminate energy use for spaces when unoccupied.	Depending on the climate of the location, HVAC systems use between 10% and 30% of the total electricity used in buildings. Therefore, by reducing the amount of energy spent on heating and cooling in a building, users can reduce both greenhouse gas emissions and operational costs significantly. For natural ventilation, it is noted that the current building code standard used in Uganda for naturally and mechanically ventilated spaces is not more stringent than SANS 10400-O. The credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	The current building code standard used in Uganda for naturally and mechanically ventilated spaces is not more stringent than SANS 10400-O, therefore ENE-11 should be kept in its current form and no adjustments need to be made.

TRANSPORT

	AIM OF CREDIT	DISCUSSION	RECOMMENDATION
	TRA-1: Provision of Car Parking To encourage and recognise developments that facilitate the use of alternative modes of transportation for commuting to work.	This credit refers to South African local, provincial or national authority planning allowances for the minimum or maximum values of car parking spaces provided for the project. In the context of Uganda, this credit would refer to the Ugandan local, provincial or national authority planning allowances for car parking spaces. However, for projects where such guidelines are not available, the technical manual refers to a set of 'alternative requirements' in the Additional Guidance: These alternative requirements state that when the mandatory requirements do not exist or are optional (or recommended), the project has the following two options: • Clearly demonstrate that car parking is not provided in excess of one car parking space per 100 m2 of net lettable area (NLA) to achieve one point or one parking space per 200 m2 to achieve two points; or • Submit a CIR to substantiate an argument for equivalent yet alternative compliance with the Credit Criteria. As such, TRA-01 should remain in its current form with emphasis on the 'alternative requirements' section of the Additional Guidance for projects where the mandatory local parking requirements do not exist or are optional (or recommended).	TRA-1 should be kept in its current form, with an adaptation to refer to the Ugandan local, provincial or national authority planning allowances for the minimum or maximum values of car parking spaces provided for the project. For projects where the mandatory local parking requirements do not exist or are optional (or recommended), the technical manual refers to a set of 'alternative requirements' in the Additional Guidance which would be applicable to the project.
	TRA-2: Fuel-Efficient Transport To encourage and recognise developments that facilitate the use of more fuel efficient vehicles for work commuting.	With the growing awareness of environmental sustainability, more people are considering other options for travelling to work in Uganda. Incentives to choose fuel-efficient options are a good tool to encourage tenants to be fuel efficient. The credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	TRA-2 should remain in its current form and no adjustments need to be made.
	TRA-3: Cyclist Facilities To encourage and recognise developments that facilitate the use of bicycles by occupants and visitors.	Tenants who cycle to work are still very few in Uganda but this credit aims at providing fuel-efficient alternatives and allowing for the adoption of such practices	TRA-3 should remain in its current form and no adjustments need to be made.

		by the users. As such, this credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	
	TRA-4: Commuting Mass Transport To encourage and recognise developments that facilitate the use of mass transport for work commuting.	When a development is poorly located, in relation to the proximity of transport nodes and their frequency of service, then it is unlikely that building occupants will use mass transport to travel to the development. Conversely, developments that are within close proximity of good transport nodes with frequent service can encourage building occupants to use mass transport. It is therefore recommended that TRA-4 should remain as is in order to accommodate both the contract and uncontracted commuting mass transport infrastructure in Uganda.	TRA-4 should remain in its current form and no adjustments need to be made.
	TRA-5: Local Connectivity To encourage and recognise office buildings that are integrated with or built adjacent to community amenities and/or dwellings in order to reduce the overall number of automobile trips taken by building users.	Similar to TRA-4, the choice of site often depends on the availability of a suitable site. When faced with multiple options for a site, projects should be encouraged to choose sites that contribute to greater local connectivity by being located in close proximity to amenities thus allowing the tenants the option to walk instead of drive. The current building code standard used in Uganda for pedestrian facilities is not more stringent than SANS 10246, therefore TRA-5 should be kept in its current form and no adjustments need to be made. The credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	The current building code standard used in Uganda for pedestrian facilities is not more stringent than SANS 10246, therefore TRA-5 should be kept in its current form and no adjustments need to be made.
	TRA-6: Trip Reduction – Mixed Use – RETAIL CENTRE To encourage & recognise retail centres that are built in mixed use areas in order to reduce the overall number of car trips taken by patrons.	Similar to TRA-5, the choice of site often depends on the availability of a suitable site. When faced with multiple options for a site, this credit aims to encourage retail developments that incorporate effective car-based trip reduction measures such as the provision of quality pedestrian, cycling and public transport access. Mixed use development or retail centres within mixed use areas, and within walking distance, encourage shoppers and retail employees living nearby, to make a modal switch from using cars to walking or cycling. Besides reducing congestion and pollution, walking and cycling can also bring health benefits to the public and should be encouraged. The credit in its current form is equally relevant and applicable in Uganda as it is in South Africa, therefore TRA-6 should be kept in its current form and no adjustments need to be made.	TRA-6 should remain in its current form and no adjustments need to be made.

	TRA-7: Vehicle Operating Emissions – RETAIL CENTRE & PEB To encourage & recognise retail centres that reduce vehicular emissions resulting from traffic congestion by upgrading road infrastructure around the centre.	Usually, 'delay' and 'number of stops' are used to determine the existing, existing plus development and post road improvements operational condition of an intersection. The higher the delay and number of stops the higher the CO 2 emissions per vehicle will be. Traffic impact studies must be conducted in accordance with the Department of Transport's guideline document or, if available, the specific local authority's guideline by a competent person, usually a professional traffic engineer. The guideline document recommends that a traffic impact study must be conducted for any development generating more than a 150 vehicle trips during the peak hour. The local authorities can request a study for a development generating fewer trips if in their opinion the road network is already at capacity. The purpose of such a study is to mitigate the impact a new development will have on the existing road network. Car emissions are a major source of air pollutants, such as oxides of nitrogen, particles and ozone. Poor air quality has been shown to aggravate asthma, bronchitis and cardiac problems. Carbon dioxide from vehicle emissions is also known as a contributing factor to global climate change. Road infrastructure improvements are necessary to reduce the traffic impact of the development to acceptable levels. The credit in its current form is equally relevant and applicable in Uganda as it is in South Africa, therefore TRA-7 should be kept in its current form and no adjustments need to be made.	TRA-7 should remain in its current form and no adjustments need to be made.

WATER

	AIM OF CREDIT	DISCUSSION	RECOMMENDATION
	WAT-1: Occupant Amenity Water / WAT-1: Potable Water – PEB To encourage and recognise designs that reduce potable water consumption by building occupants.	Water-efficient fixtures and fittings are available in the market place and have been installed in some buildings in Uganda. In addition, there are some buildings which include rainwater harvesting and blackwater treatment for reuse within the building, typically for irrigation. Due to water supply infrastructure issues, some buildings also include holding tanks for potable water and sewerage. At present there is no national certification system which would allow different fixtures and fittings to be rated. Therefore, this credit in its current form is equally relevant and applicable in Uganda as it is in South Africa. However, as the Green Star SA Potable Water Calculator takes into account South African rainfall per region, the Green Star SA Potable Water Calculator would need to be adapted to reflect the rainfall values in the different regions in Uganda. This would be project-specific and a mandatory CIR would need to be submitted to confirm applicability.	As the Green Star SA Potable Water Calculator takes into account South African rainfall per region, the Green Star SA Potable Water Calculator would need to be adapted to reflect the rainfall values in the different regions in Uganda. WAT-1 should be kept in its current form with a mandatory CIR to confirm applicability. The rainfall data should consist of 12 months of average monthly rainfall data in mm for the specific town/ city/ village.
	WAT-2: Water Meters To encourage and recognise the design of systems that both monitors and manages water consumption.	A fairly common practice in most tenanted buildings is the metering of collective water consumption of tenants via a building water meter. The effective monitoring and management of consumption can however best take place where water meters are used to monitor major water uses in a building, which is not common practice in Uganda. As such, this credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	WAT-2 should remain in its current form and no adjustments need to be made.
	WAT-3: Landscape Irrigation To encourage and recognise the design of systems that aim to reduce the consumption of potable water for landscape irrigation.	The professionals at the workshop noted that water-efficient irrigation was not a focus in office building design in Uganda. The use of low water use plants or water efficient irrigation is however represents best practice which is not region specific, irrespective of the climate of the particular site. It is encouraged that projects install systems that aim to reduce the consumption of potable water for landscape irrigation, therefore, this credit in its current form is equally relevant and applicable in Uganda as it is in South Africa	WAT-3 should remain in its current form and no adjustments need to be made.

	WAT-4: Heat Rejection Water To encourage and recognise design that reduces potable water consumption from heat rejection systems.	As in South Africa, cooling towers are used in Uganda in the more applicable climates, while some projects choose not to use cooling towers. Cooling towers however use a significant amount of water during their operation which is subsequently evaporated into the atmosphere. As this water is commonly potable water, the use of this method should be discouraged. Therefore, the credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	WAT-4 should remain in its current form and no adjustments need to be made.
	WAT-5: Fire System Water Consumption To encourage and recognise building design which reduces consumption of potable water for the building's fire protection and essential water storage systems.	Although many tenants and owners neglect to carry out routine tests on the fire system, this is a requirement by many insurance companies. When these tests are carried out therefore, they should be done in a water-efficient manner. The credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	WAT-5 should remain in its current form and no adjustments need to be made.
	WAT-7: Potable Water Efficient Appliances - MULTI UNIT RES To encourage and recognise initiatives which reduce water consumption associated with major appliances.	Various initiatives can be implemented in multi-unit residential developments to reduce the water consumption associated with major appliances. These initiatives could include the provision of clothes washes for a minimum of 90% of dwellings or the provision of communal laundry area(s). These initiatives could also include the provision of dishwashers where all dishwashers provided achieve a minimum water efficiency of 7.2 litres/kg. Potable water efficient appliances can be made available in the Ugandan market. This credit should therefore remain to encourage the use of potable water efficient appliances. The credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	WAT-7 should remain in its current form and no adjustments need to be made.
	WAT-8: Swimming Pool / Spa Water Efficiency - MULTI UNIT RES To encourage and recognise designs that reduce potable water consumption associated with swimming pools and spas.	Swimming pools lose water through evaporation and also through filter cleaning and backwashing. Therefore, to achieve this credit, for any pool within the multi-unit residential development, a pool blanket is provided; and the pool filtration system avoids the requirement for backwashing (i.e. is not sorptive media or sand based filtration); and for any spa within the development, a spa cover is provided. Alternatively, no pool(s) and or spa(s) are provided in the development.	WAT-8 should remain in its current form and no adjustments need to be made.

		The professionals at the workshop noted that the applicable provisions could be made where the development had a pool or spa. As such, the credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	

MATERIALS

	AIM OF CREDIT	DISCUSSION	RECOMMENDATION
	MAT-1: Recycling Waste Storage To encourage and recognise the inclusion of storage space that facilitates the recycling of resources used within buildings to reduce waste going to disposal.	The professionals at the workshop were not aware of any projects in Uganda that specifically provided space for recycling waste storage. In addition, they noted that they were unaware of any companies that provided recycling for office buildings in Uganda (refer to MAN-7 for further information on recycling in Uganda). Despite the lack of companies, it is still recommended that space be provided in sustainable buildings to begin driving the marketplace towards recycling. It is noted that Ugandan building code standard requires an area for refuse disposal but does not refer to a specific space for recycling. The credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	MAT-1 should remain in its current form and no adjustments need to be made.
	MAT-2: Building Reuse To encourage and recognise developments that reuse existing buildings to minimise materials consumption.	The professionals at the workshop noted that buildings in Uganda were often demolished to make way for new buildings. The prevention of this waste that occurs during the demolition of buildings should however be encouraged. As such a reward for the reuse of buildings would be well placed in the Ugandan context. The credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	MAT-2 should remain in its current form and no adjustments need to be made.
	MAT-3: Reused Materials To encourage and recognise designs that prolong the useful life of existing products and materials.	Irrespective of region, projects should strive to prolong the useful life of existing products and materials as much as possible. This ensures that the waste generated from the demolition and construction processes of projects is minimal. As such, this credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	MAT-3 should remain in its current form and no adjustments need to be made.
	MAT-4: Shell and Core or Integrated Fit-out To encourage and recognise base building delivery mechanisms that eliminate the need for immediate tenant refits.	The majority of projects in Uganda are delivered as speculative spaces which are neither shell and core nor integrated fitout. Spaces are typically provided with ceilings, lighting, finishes and air conditioning. Note that they are typically not provided with carpet. It should be noted that many of the individuals contacted for this research were confused by the term “integrated fitout”. Many believed that if the speculative (not	MAT-4 should remain in its current form and no adjustments need to be made.

		actual) tenancy works were integrated with the base building construction this would constitute integrated fitout. Project teams must therefore be made familiar with the two terms: “integrated fit-out” and “shell and core”. This will help them be aware of the wasteful expenditure that is associated with refits as well as the unnecessary consumption of resources, which happens as much in Uganda as in South Africa. This credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	
	MAT-5: Concrete To encourage and recognise the reduction of embodied energy and resource depletion occurring through use of concrete.	The structural engineers contacted for the purpose of this research were not aware of any projects in Uganda which used either industrial waste product(s) or oversized aggregate as a substitute to reduce the absolute quantity of Portland cement, as an average across all concrete mixes (i.e. in-situ, precast and stressed concrete). In addition, they were concerned as to whether either of these concrete mixes could be considered in Uganda owing to an inability to check the standard of the concrete being produced. This was initially the case in South Africa as well and should not serve as deterrence, as an opportunity in the Ugandan market exists for industrial waste product(s) or oversized aggregate to be used in the production of concrete as a feasible alternative to cement. It is recommended, therefore, that this credit should remain as it is to drive market transformation towards the use of more sustainable concrete. This credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	MAT-5 should remain in its current form and no adjustments need to be made.
	MAT-6: Steel To encourage and recognise the reduction in embodied energy and resource depletion associated with reduced use of virgin steel.	The structural engineers contacted for the purpose of this research tended not to pay attention to the recycled content of the structural steel and were not aware of any projects in Uganda which used recycled steel products. This needs to be rectified and awareness of the environmental benefits should be promoted through this credit.	MAT-6 should remain in its current form and no adjustments need to be made.

		It is noted that a large proportion of the steel used in construction is imported into Uganda, therefore this credit could result in market transformation through the import of steel with a post-consumer recycled content equal to or greater that 40%. This would encourage the reduction in embodied energy and resource depletion associated with reduced use of virgin steel. As such, this credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	
	MAT-7: PVC Minimisation To encourage and recognise the reduction in use of Poly Vinyl Chloride (PVC) products in buildings.	It is noted~~,~~ that while the GBCA Best Practice PVC Guidelines may apply in Australia and South Africa, the professionals at the workshop believe that these guidelines are yet to be applied for all PVC products imported and/or manufactured in Uganda. Having a PVC credit in the tool inappropriately rewards projects for not having PVC when there might be other materials that are equally or more of an issue in that context. As such, PVC minimisation will be removed in the Uganda context. However, should a project in Uganda be registered under Green Star, if they meet the credit and documentation requirements of MAT-7 PVC Minimisation according to Green Star SA Office v1, they would be awarded 0.5 points in the Innovation category under Innovation 3.	Innovation Point Opportunity MAT-7 should remain in its current form and no adjustments need to be made.
	MAT-8: Sustainable Timber To encourage and recognise the specification of reused timber products or timber that has certified environmentally-responsible forest management practices.	The professionals at the workshop were not aware of any projects in Uganda that specified the use of reused timber products or timber that has certified environmentally-responsible forest management practice. They were also not aware of Forestry Stewardship Certification (FSC).and current holders, within the Ugandan market, of the FSC Chain of Custody and Management Certificate. It is hoped that market transformation related to the sustainability of timber products used in Uganda can be achieved through this credit. The FSC scheme provides a credible guarantee that the timber products come from a well-managed forest that has been independently certified for its timber resource sustainability, forest ecosystem maintenance, and financial and socioeconomic viability. As such, this credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	MAT-8 should remain in its current form and no adjustments need to be made.

	MAT-9: Design for Disassembly To encourage and recognise designs that minimise the embodied energy and resources associated with demolition.	Many professionals are not often allocated a budget that gives them the creative leeway to design structures and buildings for disassembly. This credit therefore provides an incentive for project teams to be more creative in the design of the building while understanding the environmental benefits of this credit. As such, the credit is equally relevant and applicable in Uganda as it is in South Africa in its current form.	MAT-9 should remain in its current form and no adjustments need to be made.
	MAT-10: Dematerialisation To encourage and recognise designs that produce a net reduction in the total amount of material used.	This credit is achievable in the Ugandan context but very few projects focus on the net reduction of materials used. The credit is equally relevant and applicable in Uganda as it is in South Africa in its current form.	MAT-10 should remain in its current form and no adjustments need to be made.
	MAT-11: Local Sourcing To encourage and recognise the environmental advantages gained, in the form of reduced transportation emissions, by using materials and products that are sourced within close proximity to the site.	The professionals at the workshop noted that a significant proportion of building components, materials and finishes used in Ugandan projects are imported into the country from overseas. This is in spite of the intra-regional availability of some of these components, materials and finishes with equivalent performance specifications in the East African Community (EAC). It is strongly encouraged that local materials manufactured within the EAC should be explored instead, and awareness should be raised of the embodied energy in materials sourced from far away distances to discourage importing from overseas. As such, to stimulate the growth of industry in Uganda and East Africa, and to encourage and recognise the environmental advantages gained, in the form of reduced transportation emissions, by using materials and products that are sourced within close proximity to the site - the sourcing of products manufactured intra-regionally is viewed as both an environmental and socio-economic driver of sustainable market transformation. For the Ugandan local context, therefore, it is recommended to adapt the credit so that: • One point is awarded where 20% of the total contract value is represented by materials or products (used in the construction of the project) that have been sourced from within the member states of the East African Community (EAC) region borders as defined by the EAC on	It is recommended to adapt the credit so that: • One point is awarded where 20% of the total contract value is represented by materials or products (used in the construction of the project) that have been sourced from within the member states of the East African Community (EAC) region borders as defined by the EAC on http://www.eac.int, current at the time of project registration or more recent. • An additional point is awarded where 10% of the total contract value is represented by materials or products (used in the construction of the project) that have been sourced from within the Ugandan borders. This promotes sourcing of materials in the East African region which would be

		http://www.eac.int, current at the time of project registration or more recent. • An additional point is awarded where 10% of the total contract value is represented by materials or products (used in the construction of the project) that have been sourced from within the Ugandan borders. Only materials or products permanently installed in the building are eligible and must have been extracted, harvested, recovered, as well as manufactured within the above mentioned radii of the site in order to qualify for the credit. Mechanical, electrical and plumbing components and specialty items such as elevators and equipment are excluded from this credit. This promotes sourcing of materials in the East African region which would be beneficial to the Ugandan local context. By adapting the credit accordingly, it is hoped that project teams will be strongly encouraged to source more of the building components, materials and finishes locally, significantly fostering intraregional economic development for Uganda and the EAC.	beneficial to the Ugandan local context. .
	MAT-12: Efficient Dwelling Size - MULTI UNIT RES To encourage and recognise multi-unit residential developments with efficiently sized dwelling units and reduced material consumption.	This credit aims to encourage more efficient use of space in dwelling unit design, and to discourage the over-sizing of residential units. Through designing more efficient spaces, various benefits can be achieved. These include reduction in the use of materials and resources, densification, efficiencies of space use and smarter design. All the benefits listed above are key in moving the residential market forward towards better design principles and more efficiently sized residential developments. The credit in its current form, therefore, is equally relevant and applicable in Uganda as it is in South Africa, with the availability of building resources and compliance with the credit criteria completed automatically by the 'Efficient Dwelling Size Calculator" within the rating tool spreadsheet.	MAT-12 should remain in its current form and no adjustments need to be made.

	MAT-13: Masonry - MULTI UNIT RES & PEB To encourage and recognise designs that minimise the embodied energy and resources associated with a reduction of virgin material in masonry units.	Similarly to Uganda, fired clay masonry units (i.e. bricks and pavers) are one of the most predominant building materials in South Africa, particularly for residential developments. The clay masonry manufacturing industry has an installed annual capacity, within normal working hours, of in excess of 5 billion brick equivalent units. Approximately 13 million tons of clay is extracted annually, processed and fired to supply clay masonry products for new and renovated buildings within the sub-Saharan African region. Sub-Saharan Africa has always had an abundance of brick making clays and good levels of sunshine, which has meant that clay brick manufacturing has traditionally often been manufactured by means of "field ovens" or "clamp kilns". Easy availability of thermal coal resulted in the use of this fuel source to vitrify the clay and form the finished products. Many different firing methods using thermal coal were developed and installed over time. Some of these methods remain common today, and are listed as critical activities in terms of the recently promulgated Air Quality Act and subject to stringent emissions controls. Reducing the mass of a masonry unit impacts on haulage, with lighter loads and reduced transport related greenhouse gas emissions. It also leads to reduced loading on structures, which can lead to reductions in the size of structural members. This would have a significant impact on the masonry used in multi-unit residential, public and education buildings such that the credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	MAT-13 should remain in its current form and no adjustments need to be made.

LAND USE AND ECOLOGY

	AIM OF CREDIT	DISCUSSION	RECOMMENDATION
	ECO-: Conditional Requirement To encourage and recognise development on land that has limited ecological value and to discourage development on ecologically valuable sites.	The professionals at the workshop were of the opinion that the criteria listed in the updated version of this credit (revised April 2010) were suitable for application to the Ugandan context. Owing to the nature of the wording of the credit criteria however, the Ugandan professionals sought clarification on specific terms contained in the conditional requirement credit criteria. It is therefore recommended that technical clarifications be submitted where applicable and that a mandatory CIR be required to assess the project's compliance with this Conditional Requirement based on site ecological maps, to ensure approval of this conditional requirement prior to the Round 1 submission. It was consequently concluded that: Eco- Conditional Requirement The Eco-Conditional Requirement is met where the project development footprint • Is not located on prime agricultural land. Refurbishments/redevelopments that remain within the existing development footprint are exempt from this criterion; • Is not located on vegetation of high ecological value or within a 100 metre buffer of vegetation of high ecological value. Refurbishments/redevelopments that remain within the existing development footprint are exempt from this criterion; • Is not located on land with confirmed presence or high probability of threatened red listed species according to IUCN Red List of Threatened Species (www.iucnredlist.org), or within a defined buffer relevant to the specific threatened red listed species or habitat found. Refurbishments/redevelopments that remain within the existing development footprint are exempt from this criterion; and • Is not located within the required buffer zones of watercourses: o The project development footprint must not fall within the 100 year floodplain.	Conditional Requirement, therefore all projects must submit a CIR and receive a final ruling before Round 1 can be submitted to the GBCSA ECO-Conditional Requirement should be kept in its current form based on the need to encourage and recognise development on land that has limited ecological value and to discourage development on ecologically valuable sites. To determine "high ecological value" and "prime agricultural land", a project can submit for an Eligibility Ruling at any point, before or after project registration. A mandatory CIR will be required to assess the project's compliance with this Conditional Requirement based on site ecological maps, to ensure approval of this conditional requirement prior to the Round 1 submission.

		○ Watercourses of high ecological value: A project's development footprint can be located on land within 100 metres of a watercourse of high ecological value only if the building is a refurbishment that remains within the existing development footprint and the Watercourse Protection Measures (outlined below) have been completed.; or ○ Watercourses not of high ecological value: A project's development footprint can be located on land within 100 metres of a watercourse that is not of high ecological value only if the Watercourse Protection Measures (outlined below) have been completed. Watercourse Protection Measures <u>Watercourse Protection Measures</u> • A site-specific Watercourse Management Plan has been produced, exhibited and, for an As Built submission, implemented; and • All points are achieved in EMI-05 Watercourse Pollution and in EMI-07 Light Pollution. The project must abide by all measures in the Environmental Impact Assessment for the project if one is required, and the GBCSA reserves the right to provide the final ruling on a project's compliance with this conditional requirement. The project must also abide with The National Environment (Wetlands, River Banks And Lake Shores Management) Regulations, No. 3/2000. <u>Suitably qualified registered ecologist</u> Where confirmation that the site was not on land of high ecological value is to be stated by a suitably qualified registered ecologist, the suitable registered ecologist would be defined according to Regulation 20 (1) of the National Environment (Conduct & Certification of Environmental Practitioners) Regulations, 2003. <u>Technical Clarification Number ECO0-T-OB1-0655</u>	

		Note that attention is drawn to Technical Clarification Number ECO0-T-OB1-0655 which states that: "If the project is a refurbishment/redevelopment that remains within the existing development footprint (and providing it is outside the required buffers of watercourses), there is no need to include confirmation from a registered ecologist. Confirmation is required and it could simply be included within the Short Report prepared by a suitably qualified professional with reference to supporting evidence (e.g. aerial photos, Google images)." As such, ECO-00 should be kept in its current updated form based on the need to encourage and recognise development on land that has limited ecological value and to discourage development on ecologically valuable sites. To determine "high ecological value" and "prime agricultural land", a project can submit for an Eligibility Ruling at any point, before or after project registration. A mandatory CIR will be required to assess the project's compliance with this Conditional Requirement based on site ecological maps, to ensure approval of this conditional requirement prior to the Round 1 submission. **References** For further information on all environmental laws of Uganda with regards to the protection of wetlands; their conservation and wise use; inventorying of wetlands; and wetland use permits for regulated activities, according to The National Environment (Wetlands, River Banks And Lake Shores Management) Regulations, No. 3/2000, refer to: http://www.nemaug.org/index.php/publications/environmental-laws For further information on all environmental laws of Uganda with regards to environmental impact assessments, according to The Environmental Impact Assessment Regulation, S.I. No. 13/1998, refer to: http://www.nemaug.org/index.php/publications/environmental-laws	

		For further information on requirements / conditions for registration / certification for environmental practitioners of Uganda, according to Regulation 20 (1) of the National Environment (Conduct & Certification of Environmental Practitioners) Regulations, 2003, refer to: http://www.nemaug.org/images/docs/Requirements%20For%20Registration%20as%20an%20Environment%20Practioner.pdf	
	ECO-1: Topsoil To encourage and recognise construction practices that preserve the ecological integrity of topsoil.	Preserving topsoil is equally important in Uganda as it is in South Africa because of the slow process of soil formation. The credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	ECO-1 should be kept in its current form and no adjustments need to be made.
	ECO-2: Reuse of Land To encourage and recognise the reuse of land that has previously been developed and where the site is within an existing municipally approved urban edge.	Urban sprawl is a risk that all cities and countries face whenever more and more greenfield sites are developed upon, with equal prevalence in Uganda as in South Africa. An incentive for projects to re-develop previously developed land or brownfield sites can contribute towards reducing the threat on sensitive ecosystems and natural resources through the development on greenfield sites. As such, the credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	ECO-2 should be kept in its current form and no adjustments need to be made.
	ECO-3: Reclaimed Contaminated Land To encourage and recognise developments that reclaim contaminated land that otherwise would not have been developed.	The professionals at the workshop noted that this credit was applicable to the Ugandan context. There is however, no definition of contaminated land in Uganda, and contaminated lands are not identified by a local authority. It is therefore recommended that for ECO-3, projects teams targeting this credit are aware of the definitions contained in the Additional Guidance of the Green Star SA technical manual. Contamination is defined as: the presence in or under any land, site, buildings or structures of a substance or micro-organism above the concentration which is normally present in or under that land which substances directly or indirectly affect or may affect the quality of soil or the environment adversely. Existing building contamination is addressed in credit IEQ-11 Hazardous Materials while this credit deals with reclaimed contaminated land only.	ECO-3 should be kept in its current form and no adjustments need to be made.

		It is noted that minor local contamination will occur on most previously used sites and such minor decontamination is not addressed by this credit. For the purpose of this credit, existing contamination must be 'significant'. This means that there must be substantial recommendations for containment and/or removal in the site contamination report. Encapsulation is only an acceptable form of remediation if there are technically no other remediation options. Remediation of the environment refers to the clean-up or making safe of a site or water body that is contaminated by toxic substances, whether they are natural or man-made. Treatment means: any method, technique or process that is designed to change the physical, biological or chemical character or composition of a waste, or to remove, separate, concentrate or recover a hazardous or toxic component of a waste or to destroy or reduce the toxicity of the waste in order to minimise the impact of the waste on the environment. To be deemed no longer contaminated, the site must meet the regulated levels deemed suitable by the relevant competent authority. The environmental auditor or waste management control officer who certifies that the site has been duly decontaminated must meet the requirements of standards set at national level. Please note the contamination resulting from this development (e.g. with asbestos from demolition of the existing buildings) cannot contribute to this credit. The statement 'prior to construction' as stated in the Credit Criteria refers to construction of actual building structures, not to the beginning of any construction works on the project (e.g. land clearing). Therefore, if remediation occurs during earthworks or any other stages during the construction phase of a project prior to the building of any structure, it is still considered as 'prior to construction'. The submission must clearly demonstrate that: • The site was designated as significantly contaminated at the time of purchase, where 'significant contamination' is defined as any contamination (regardless	

		of extent, concentration, toxicity or otherwise) requiring remediation as determined by the relevant national or local authorities; • The site was correctly and appropriately decontaminated prior to the beginning of the construction phase of the project in accordance with the relevant national legislation and standards, including but not limited to the National Environmental Management: Waste Act (2008); and • As a result of decontamination, the site was certified as uncontaminated and satisfactory for use. As such, the credit in its current form is equally relevant and applicable in Uganda as it is in South Africa. **References** For further information on all environmental laws of Uganda with regards to soil quality parameters, according to The National Environment (Minimum Standards For Management Of Soil Quality) Regulations, 2001, refer to: http://www.nemaug.org/index.php/publications/environmental-laws	
	ECO-4: Change of Ecological Value To encourage and recognise developments that maintain or enhance the ecological value of their sites.	It is noted that this credit is applicable to the Ugandan context. However, as the Green Star SA Ecological Value Calculator takes the ecological value weighting of the site into account, the Green Star SA Ecological Value Calculator would need to be adapted to reflect the equivalent ecological value of the different bio-regions in Uganda. This would be project-specific and a mandatory CIR would need to be submitted to the GBCSA by projects targeting this credit to determine which South African bio-region is most applicable to the project.	ECO-4 should be kept in its current form but adaptations to the bio-regions in the calculator are required to correctly represent the equivalent ecological value of the different bio-regions in Uganda A mandatory CIR must be submitted to the GBCSA by projects targeting this credit to determine which South African bio-region is most applicable to the project.
	ECO-5: Urban Heat Island – RETAIL CENTRE To recognise and reward initiatives taken to reduce the heat island effect of the buildings which impact on microclimates, human and wildlife habitats.	Around half of the world's human population lives in urban areas. In the near future it is expected that the global rate of urbanization will increase significantly, as urban agglomerations emerge and population migration from rural to urban/suburban areas continues. Thereby, it is not surprising that the negative impacts related to urbanisation are an increasing concern. Urbanisation negatively impacts the	ECO-5 should be kept in its current form and no adjustments need to be made.

		environment mainly by the production of pollution, the modification of the physical and chemical properties of the atmosphere, and the covering of the soil surface. Considered to be a cumulative effect of all these impacts is the Urban Heat Island (UHI), defined as the rise in temperature of any man-made area, resulting in a well-defined, distinct "warm island" among the "cool sea" represented by the lower temperature of the area's nearby natural landscape. Though heat islands may form on any rural or urban area, and at any spatial scale, the surfaces of cities are prone to release large quantities of heat. The UHI negatively impacts not only residents of urban-related environs, but also humans and their associated ecosystems located far away from cities. In fact, UHIs have been indirectly related to climate change due to their contribution to the greenhouse effect, and therefore, to global warming. Therefore, the credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	
	ECO-6: Outdoor Communal Facilities - MULTI UNIT RES To encourage and recognise designs which enable residents to engage in a broad range of outdoor activities in common areas.	There is a growing body of evidence that demonstrates how communal green spaces can offer lasting economic, social, cultural and environmental benefits. Projects catering for residents assembly type activities offer a unique opportunity to promote the concept of shared land use by providing such communal facilities thus encouraging multi-unit residential developments with real character and a sense of place. Additional benefits include increasing the value of homes; improving the image of the development and attracting investment; contributing to the protection of biodiversity; and promoting exercise and other activities beneficial to the health of residents. Outdoor communal facilities are not only a good way to use the available space in a multi-unit residential type development in the most efficient way, but can contribute significantly to the well-being, and sense of community experienced by the residents. This is relevant for the Ugandan context as it is for the South African context, as such ECO-06 should be kept in its current form and no adjustments need to be made.	ECO-6 should be kept in its current form and no adjustments need to be made.

	ECO-7: Urban Consolidation - MULTI UNIT RES To encourage and recognise designs which make use of compact development patterns to increase land utilisation efficiency.	Urban consolidation is the process of increasing or maintaining the density of housing in established residential areas, with the aim of urban consolidation to reduce development on the fringe areas of the city. By making use of compact development patterns, land utilisation efficiency is increased as well as local connectivity (refer to TRA-5), trip reductions within mixed use developments (TRA-6) and the sharing of precinct bulk infrastructure, mass commuting transport systems and local amenities. The credit aims to encourage and recognise the efficient use of land by multi-unit residential developments. As such, the credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	ECO-7 should be kept in its current form and no adjustments need to be made.
	ECO-8: Community Facilities - PEB To encourage and recognise integrated planning and shared land use in developments through the provision of on-site outdoor facilities for use by the local community.	There is a growing body of evidence that demonstrates how communal green spaces can offer lasting economic, social, cultural and environmental benefits. Projects catering for public assembly type activities offer a unique opportunity to promote the concept of shared land use by providing such community facilities thus encouraging neighbourhoods with real character and a sense of place. Additional benefits include increasing the value of homes; improving the image of an area and attracting investment; contributing to the protection of biodiversity; and promoting exercise and other activities beneficial to the health of residents. Outdoor community facilities are not only a good way to use the available space in a public building type development in the most efficient way, but can contribute significantly to the well-being, and sense of community experienced by local residents. This is relevant for the Ugandan context as it is for the South African context, as such ECO-08 should be kept in its current form and no adjustments need to be made.	ECO-8 should be kept in its current form and no adjustments need to be made.

EMISSIONS

	AIM OF CREDIT	DISCUSSION	RECOMMENDATION
	EMI-1: Refrigerants/Gaseous Ozone Depleting Potential (ODP) To encourage and recognise the selection of refrigerants and other gases that do not contribute to long-term damage to the Earth's stratospheric ozone layer.	The professionals at the workshop were well versed in zero ODP refrigerants, and whilst they were not always used, they are available in Uganda. As such, this credit in its current form is equally relevant and applicable in Uganda as it is in South Africa. **References** For further information on all environmental laws of Uganda with regards to the elimination of substances and products that deplete the ozone layer, according to The National Environment (Management Of Ozone Depleting Substances And Products) Regulations 2001, refer to: http://www.nemaug.org/index.php/publications/environmental-laws	EMI-1 should be kept in its current form and no adjustments need to be made.
	EMI-2: Refrigerants/Gaseous Global Warming Potential (GWP) To encourage and recognise the selection of refrigerants that reduce the potential for increased global warming from the emission of refrigerants to the atmosphere.	The professionals at the workshop were well versed in low GWP refrigerants, and whilst they were not always used, they are available in Uganda. As such, this credit in its current form is equally relevant and applicable in Uganda as it is in South Africa. **References** For further information on all environmental laws of Uganda with regards to the elimination of substances and products that deplete the ozone layer, according to The National Environment (Management Of Ozone Depleting Substances And Products) Regulations 2001, refer to: http://www.nemaug.org/index.php/publications/environmental-laws	EMI-2 should be kept in its current form and no adjustments need to be made.
	EMI-3: Refrigerant Leaks To encourage and recognise building systems design that minimises environmental damage from refrigerant leaks.	The professionals at the workshop were aware of systems to monitor for refrigerant leaks and pump down refrigerants. Monitoring systems were sometimes installed, but the professionals knew of no projects which incorporated pump down.	EMI-3 should be kept in its current form and no adjustments need to be made.

		It was concluded that it is possible to include a system of this type within the building system designs, with adequate care being taken to verify that the building system designs meets all of the requirements of the credit. With a large proportion of air conditioners used in Uganda being imported, these products are available internationally such that this credit in its current form is equally relevant and applicable in Uganda as it is in South Africa. **References** For further information on all environmental laws of Uganda with regards to the provision for a system of data collection to facilitate compliance with relevant reporting requirements under the Montreal Protocol on Substances that Deplete the Ozone Layer and the promotion of the use of ozone friendly substances, products, equipments and technology, according to The National Environment (Management Of Ozone Depleting Substances And Products) Regulations 2001, refer to: http://www.nemaug.org/index.php/publications/environmental-laws	
	EMI-4: Insulant ODP To encourage and recognise the selection of insulants that do not contribute to long-term damage to the Earth's stratospheric ozone layer.	The professionals at the workshop were well versed in zero ODP insulants, and whilst they were not always used, they are available in Uganda. As such, this credit in its current form is equally relevant and applicable in Uganda as it is in South Africa. **References** For further information on all environmental laws of Uganda with regards to the elimination of substances and products that deplete the ozone layer, according to The National Environment (Management Of Ozone Depleting Substances And Products) Regulations 2001, refer to: http://www.nemaug.org/index.php/publications/environmental-laws	EMI-4 should be kept in its current form and no adjustments need to be made.

	EMI-5: Watercourse Pollution To encourage and recognise developments that minimise stormwater run-off to, and the pollution of the natural watercourses.	The recently revised Green Star SA EMI-5 credit provides detailed information for designing stormwater attenuation and filtration systems according to best practice standards. Therefore the revised EMI-5 credit should equally apply in Uganda as it is applied in South Africa. It is noted that where a project's development footprint is located on land within 100 metres of a watercourse of high ecological value, the Watercourse Protection Measures (outlined below) would to have been completed in order to meet the ECO- Conditional Requirement. Watercourse Protection Measures • A site-specific Watercourse Management Plan has been produced, exhibited and, for an As Built submission, implemented; and • All points are achieved in EMI-5 Watercourse Pollution and in EMI-7 Light Pollution. The credit in its current form is therefore equally relevant and applicable in Uganda as it is in South Africa. **References** For further information on all environmental laws of Uganda with regards to the protection of wetlands; their conservation and wise use; inventorying of wetlands; and wetland use permits for regulated activities, according to The National Environment (Wetlands, River Banks And Lake Shores Management) Regulations, No. 3/2000, refer to: http://www.nemaug.org/index.php/publications/environmental-laws	EMI-5 should be kept in its current form and no adjustments need to be made.
	EMI-6: Discharge to Sewer To encourage and recognise developments that minimise discharge to the municipal sewerage system.	Refer to discussion on recycled water systems and water efficient fixtures and fittings in WAT-1. Even though a connection to the municipal sewer may be provided in certain instances, there is no legislative requirement for the municipal sewer to be	EMI-6 should be kept in its current form and no adjustments need to be made.

		used, therefore the treated water can be used for greywater flushing and other uses that are not directly or indirectly to human consumption. The credit in its current form is equally relevant and applicable in Uganda as it is in South Africa. **References** For further information on all environmental laws of Uganda with regards to the discharge of effluent; and wetland use permits for regulated activities, according to The National Environment (Standards for Discharge of Effluent into Water or on Land) Regulations, S.I. No 5/1999, refer to: http://www.nemaug.org/index.php/publications/environmental-laws	
	EMI-7: Light Pollution To encourage and recognise developments that minimise light pollution into the night sky.	The professionals at the workshop noted that this credit was achievable in the Ugandan context and that the CIBSE standard referenced was the appropriate one. It is noted that where a project's development footprint is located on land within 100 metres of a watercourse of high ecological value, the Watercourse Protection Measures (outlined below) would to have been completed in order to meet the ECO- Conditional Requirement. Watercourse Protection Measures • A site-specific Watercourse Management Plan has been produced, exhibited and, for an As Built submission, implemented; and • All points are achieved in EMI-5 Watercourse Pollution and in EMI-7 Light Pollution. The credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.	EMI-7 should be kept in its current form and no adjustments need to be made.

<table>
<tr>
<td></td>
<td><u>EMI-8: Legionella</u>
To encourage and recognise building systems design that eliminates the risk of Legionnaires' disease (Legionellosis).</td>
<td>Refer to the discussion on the provision of cooling towers in WAT-4. This credit in its current form is equally relevant and applicable in Uganda as it is in South Africa.</td>
<td>EMI-8 should be kept in its current form and no adjustments need to be made.</td>
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<tr>
<td></td>
<td><u>EMI-9: Boiler and Generator Emissions</u>
To encourage and recognise the use of boilers and generators that minimise harmful emissions.</td>
<td>Many projects do not comply with this credit because of the high cost associated with the type of generator.

However technical clarification number EMI9-T-OB1-0082 and Credit Interpretation Request (CIR) EMI0-OB1-0080 should apply for this credit, as is the case in South Africa.

<table>
<tr><th>Engine Power</th><th>Tier</th><th>Year</th><th>CO
g/kWh</th><th>HC
g/kWh</th><th>NMHC + NOx
g/kWh</th><th>NOx
g/kWh</th><th>PM
g/kWh</th></tr>
<tr><td>< 8kW</td><td>Tier 2</td><td>2005</td><td>8.0</td><td>-</td><td>7.5</td><td>-</td><td>0.8</td></tr>
<tr><td>< 8kW</td><td>Tier 4</td><td>2008</td><td>8.0</td><td>-</td><td>7.5</td><td>-</td><td>0.4</td></tr>
<tr><td>8≤ kW < 19</td><td>Tier 2</td><td>2005</td><td>6.6</td><td>-</td><td>7.5</td><td>-</td><td>0.8</td></tr>
<tr><td>8≤ kW < 19</td><td>Tier 4</td><td>2008</td><td>6.6</td><td>-</td><td>7.5</td><td>-</td><td>0.4</td></tr>
<tr><td>19 ≤ kW < 37</td><td>Tier 2</td><td>2004</td><td>5.5</td><td>-</td><td></td><td>-</td><td></td></tr>
<tr><td>19 ≤ kW < 37</td><td>Tier 4</td><td>2008</td><td>5.5</td><td>-</td><td></td><td>-</td><td></td></tr>
<tr><td>37 ≤ kW < 75</td><td>Tier 3</td><td>2008</td><td>5.0</td><td>-</td><td>4.7</td><td>-</td><td>-</td></tr>
<tr><td>37 ≤ kW < 56</td><td>Tier 4</td><td>2008</td><td>5.0</td><td>-</td><td>4.7</td><td>-</td><td>0.3</td></tr>
<tr><td>75 ≤ kW <130</td><td>Tier 3</td><td>2007</td><td>5.0</td><td>-</td><td></td><td>-</td><td></td></tr>
<tr><td>56 ≤ kW <130</td><td>Tier 4</td><td>2012-2014</td><td>5.0</td><td>0.19</td><td>-</td><td>0.40</td><td>0.02</td></tr>
<tr><td>130 ≤ kW < 225</td><td>Tier 3</td><td>2006</td><td>3.5</td><td>-</td><td>4.0</td><td>-</td><td></td></tr>
<tr><td>130 ≤ kW < 560</td><td>Tier 4</td><td>2011-2014</td><td>5.0</td><td>0.19</td><td>-</td><td>0.40</td><td>0.02</td></tr>
<tr><td>225 ≤ kW < 450</td><td>Tier 3</td><td>2006</td><td>3.5</td><td>-</td><td>4.0</td><td>-</td><td></td></tr>
<tr><td>450 ≤ kW < 560</td><td>Tier 3</td><td>2006</td><td>3.5</td><td>-</td><td>4.0</td><td>-</td><td>-</td></tr>
<tr><td>≥ 560 kW</td><td>Tier 2</td><td>2006</td><td>3.5</td><td>-</td><td>6.4</td><td>-</td><td>0.2</td></tr>
</table>

It is recommended that for EMI-9, projects teams targeting this credit are aware of the applicable conversion factors contained in the Additional Guidance of the Green Star SA technical manuals. It is also noted that these generator requirements apply irrespective of whether the engine is to be used as an</td>
<td>EMI-9 should be kept in its current form and no adjustments need to be made.</td>
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</table>

		emergency/back-up unit or for the purposes of minimising peak electrical infrastructure load for less than 300 hours per year. The credit is equally relevant and applicable in Uganda as it is in South Africa in its current form.	
	EMI-10: Kitchen Exhaust Emissions – RETAIL CENTRE To encourage and reward designs that avoid kitchen exhaust fumes being expelled directly into the adjacent spaces that people occupy.	Kitchen exhaust emissions expelled by retail tenants directly into the adjacent spaces have a negative and unhealthy impact on the people occupying these spaces. This credit is achieved where developer is in control of the design of the kitchen exhaust ducting or external risers and ensures that the exhaust points are located not closer than 10m to a neighbouring usable space or walkway, or fresh air intake (of that development or another development). The professionals at the workshop noted that this would result in market transformation of retail centres in Uganda of which major nationals are the primary tenants and that credit is equally relevant and applicable in Uganda as it is in South Africa in its current form.	EMI-10 should be kept in its current form and no adjustments need to be made.

INNOVATION

	AIM OF CREDIT	DISCUSSION	RECOMMENDATION
	INN-1: Innovative Strategies and Technologies To encourage and recognise pioneering initiatives in sustainable design, process or advocacy.	This credit should be kept in its current form with reference being made instead to the Ugandan context, as opposed to the South African context. As such, up to two points can be awarded for an innovation initiative where the initiative is a technology or process that is considered a 'first' in Uganda or in the World; or the project substantially contributes to the broader market transformation towards sustainable development in Uganda or in the World. Points are awarded as follows: ▪ One point is awarded when either of the above is true for the Ugandan market; or ▪ Two points are awarded when either of the above is true for the Global market. Up to five innovation initiatives can be awarded points under this credit, but no individual initiative can achieve more than two points in this credit. Qualifying initiatives may achieve additional points in other Innovation Credits, however the maximum points available for any one building assessment under INN-1, INN-2 and INN-3 is five (in total).	INN-1 should be kept in its current form with reference being made instead to the Ugandan context, as opposed to the South African context.
	INN-2: Exceeding Green Star SA Benchmarks To encourage and recognise projects that achieve environmental benefits in excess of the current Green Star SA benchmarks.	This credit should be kept in its current form with reference being made instead to the Ugandan context, as opposed to the South African context. As such, up to two points can be awarded for an innovative initiative where there has been a substantial improvement on an existing Green Star SA / Green Star Africa - Uganda credit, as follows: • One point for a solution that results in the elimination of the specific negative environmental impact of the project targeted by an existing credit; and • Two points for a solution that results in a substantial (e.g. 5% or greater above 'neutral') restorative environmental impact targeted by an existing credit.	INN-2 should be kept in its current form with reference being made instead to awarding points to an innovative initiative where there has been a substantial improvement on an existing Green Star SA / Green Star SA-Uganda credit.

		Up to five innovation initiatives can be awarded points under this credit, but no individual initiative can achieve more than two points in this credit. Qualifying initiatives may achieve additional points in other Innovation Credits, however the maximum points available for any one building assessment under INN-1, INN-2 and INN-3 is five (in total).	
	INN-3: Environmental Design Initiatives To encourage and recognise sustainable building initiatives that are currently outside of the scope of this Green Star SA rating tool but which have a substantial or significant environmental benefit.	This credit should be kept in its current form with reference being made instead to the Ugandan context, as opposed to the South African context. As such, one point can be awarded where an initiative in the project viably addresses a valid environmental concern outside of the current scope of this Green Star SA / Green Star Africa - Uganda tool. Up to five innovation initiatives can be awarded points under this credit, but no individual initiative can achieve more than two points in this credit. Qualifying initiatives may achieve additional points in other Innovation Credits, however the maximum points available for any one building assessment under INN-1, INN-2 and INN-3 is five (in total).	INN-3 should be kept in its current form with reference being made instead to awarding points where an initiative in the project viably addresses a valid environmental concern outside of the current scope of this Green Star SA / Green Star SA- Uganda tool.

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