

GREEN STAR ZIMBABWE

EXISTING BUILDING PERFORMANCE

LOCAL CONTEXT REPORT for use in ZIMBABWE

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Report Acknowledgement

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EXECUTIVE SUMMARY

This report applies to the Green Star – Existing Building Performance (V1) tool and considers the applicability of the tool in Zimbabwe. Included in the report is a background analysis of Zimbabwe, 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 rating tools only in South Africa, Ghana, Namibia, Uganda, Nigeria, Kenya and Rwanda. Through this local context assessment, the GBCSA, in collaboration with the prospective Zimbabwe Green Building Council will allow for certification in Zimbabwe using all the Green Star – Existing Building Performance tool – 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 - Zimbabwe. The GBCSA will then use the opportunity to allow capacity to grow in Zimbabwe through the prospective Zimbabwe GBC, by allowing selected Zimbabwe professionals to be trained as Green Star - Zimbabwe assessors who would join the GBCSA assessor teams on Zimbabwe projects. In addition, the GBCSA would deliver the Green Star Accredited Professional – Existing Building Performance course in Zimbabwe, in collaboration with the prospective Zimbabwe Green Building Council, which would allow professionals in Zimbabwe to take the Green Star Accredited Professional online examination. The details would be agreed upon in a Green Star license agreement between the GBCSA and the prospective Zimbabwe GBC.



RECOMMENDATIONS

A summary of recommended credits requiring Credit Interpretation Requests (CIRs), Technical Clarifications (TCs) 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: www.gbcsa.org.za)

	CREDIT	REQUIREMENT
1	MAN-1: ACCREDITED PROFESSIONAL	Shall be not applicable (n/a) until there are five Green Star Zimbabwe certified buildings in Zimbabwe.
2	IEQ-1: INDOOR AIR QUALITY	Project team will need to submit CIR should the project team use an alternative compliance path than SANS 10400-0:2011.
3	IEQ-2: LIGHTING COMFORT	Project team will need to submit CIR should the project team use an alternative compliance path than SANS 10114-1:2005.
4	IEQ-5: ACOUSTIC QUALITY	Project team will need to submit CIR should the project team use an alternative compliance path than SANS 10101:2008 and SANS 10218:2012.
5	ENE-1: ENERGY CONSUMPTION	Project team must submit CIR indicating compliance path selected and source of data or industry benchmarks used where Compliance Path 2, 3 or 4 have been selected.
6	ENE-2: PEAK ELECTRICITY DEMAND	Project team must submit CIR indicating compliance path selected and source of historical data where Compliance Path 2 has been selected.
7	WAT-1: POTABLE WATER	Project team must submit CIR indicating compliance path selected and source of data or industry benchmarks used where Compliance Path 1 or 2 have been selected.
8	EMI-2: LEGIONELLA	Project team must submit CIR demonstrating compliance with the requirements of EB-EMI-2 should the project team elect to use an alternative compliance path from that of SANS 10101:2008 and SANS 10218:2012.
9	INN-1: INNOVATIVE STRATEGIES AND TECHNOLOGIES	EB-INN-1 should remain as is, with reference to Zimbabwe instead of South Africa.
10	INN-2: EXCEEDING GREEN STAR BENCHMARKS	EB-INN-2 should remain as is, with reference to Zimbabwe instead of South Africa.
11	INN-3: ENVIRONMENTAL INITIATIVES	EB-INN-1 should remain as is, with reference to Zimbabwe instead of South Africa.

ACRONYMS

ACRONYM	TERM
CABS	Central African Building Society
CBD	Central Business District
CIR	Credit Interpretation Request
EBP	Existing Building Performance tool
ECO	Land Use and Ecology category
EMI	Emissions category
EMP	Environmental Management Plan
ENE	Energy category
FSC	Forest Stewardship Council
GBCA	Green Building Council of Australia
GBCSA	Green Building Council South Africa
GBCZw	Green Building Council of Zimbabwe
GS	Green Star
GWP	Global Warming Potential
IEQ	Indoor Environmental Quality category
INN	Innovation category
MAN	Management category
MAT	Material category
ODP	Ozone Depleting Potential
SADC	Southern African Development Community
TRA	Transport category
WAT	Water category
WMP	Waste Management Plan

1. INTRODUCTION

1.1 OVERVIEW OF THE CREATION OF A ZIMBABWE GREEN BUILDING COUNCIL

Zimbabwe has an emerging Green Building Council of Zimbabwe (GBCZw). The GBCZw is in its infancy and has not yet produced a rating tool (i.e. Existing Building Performance tool). Until such time that the GBCZw is established and with permission from the Green Building Council of Australia, the Green Building Council of South Africa (GBCSA) has expressed willingness to allow the rating of Zimbabwean buildings under the Green Star rating system. This would entail collaboration between the GBCSA and the emerging GBCZw to facilitate the use of the South African rating tools in Zimbabwe while allowing Zimbabwean professionals the opportunity to participate in the tool's development, through a formal consultation process. The GBCSA would manage and allow the certification through its existing established processes.

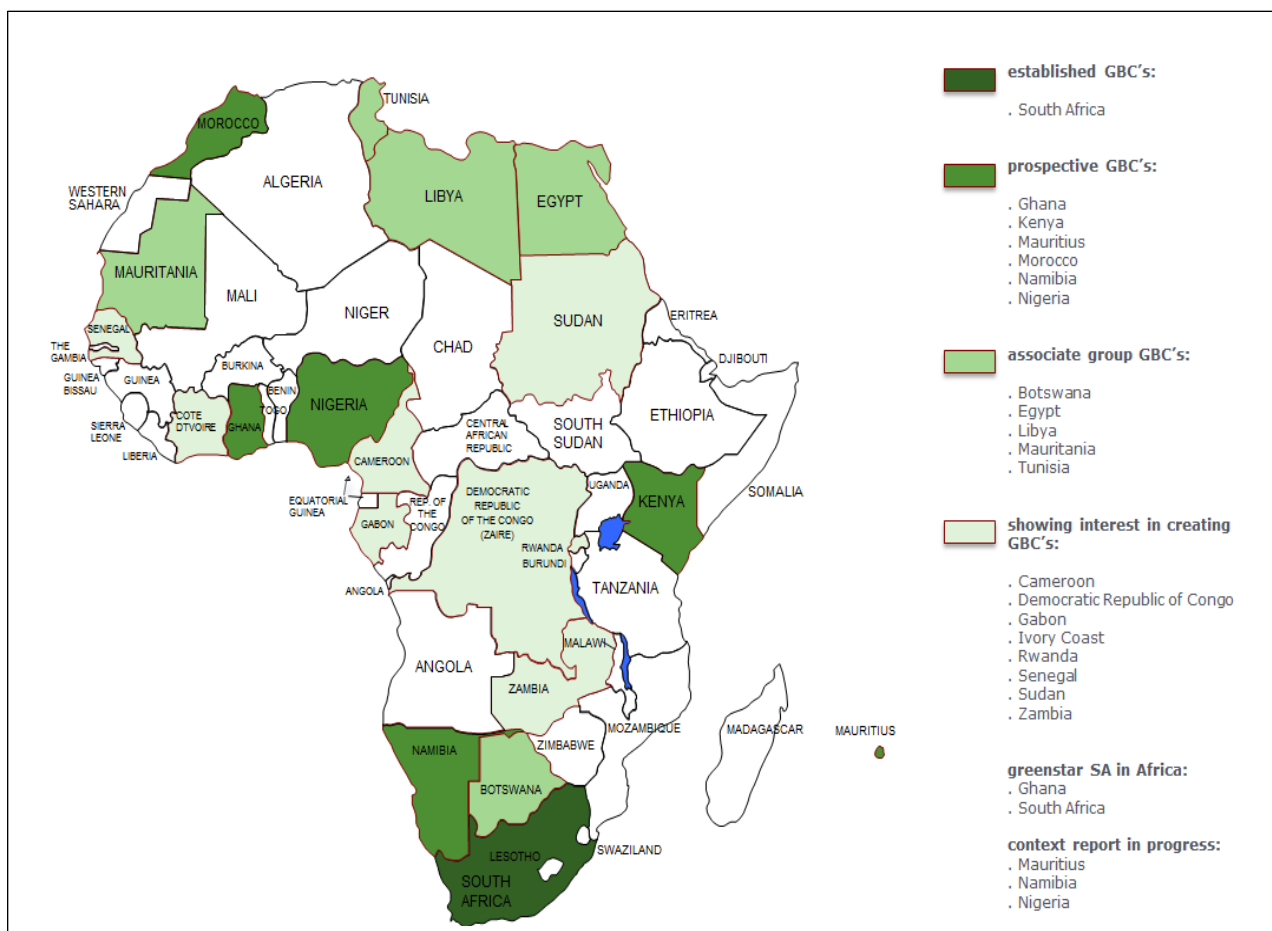


Figure 1: Image of Africa and the status of Green Building councils on the continent

As intellectual property owners of the Green Star brand, consent from the GBCA must be obtained. This context report addresses ecology, energy patterns, building regulations and any other Zimbabwe-specific circumstances which may be in conflict with certain Green Star requirements. The context report also analyses the Green Star – Existing Building Performance (V1) tool, credit-by-credit, identifying any ramifications that may result from the application of these Green Star tools to the Zimbabwe context.

1.2 OVERVIEW OF THE DEVELOPMENT OF THE GREEN STAR – ZIMBABWE 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 Zimbabwean buildings under the Green Star SA rating system.

The Green Star 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 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 GBCSA must be obtained for the use of Green Star in Zimbabwe through contextualisation.

1.3 OBJECTIVE OF THE ZIMBABWE LOCAL CONTEXT REPORT – EXISTING BUILDING PERFORMANCE

This report applies to the Green Star – Existing Building Performance (V1) tool, and considers the applicability of the tool in Zimbabwe. Included in the report is a background analysis of Zimbabwe, as well as a credit by credit analysis. This considers the applicability of each credit to the local context.

1.4 METHODOLOGY

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

2. BACKGROUND

Zimbabwe is in the process of establishing its own Green Building Council of Zimbabwe (GBCZw), duly registered with the World Green Building Council. The GBCZw, still in its infancy, is in the process of coming up with its own rating tool and has consequently reached out to the Green Building Council of South Africa (GBCSA) to allow buildings in Zimbabwe to be rated under the Green Star Existing Building Performance (EBP) rating tool with permission from the Green Building Council of Australia (GBCA). GBCSA would manage and provide certification through its already established processes. The GBCZw aims to provide the property industry with an objective measurement for green buildings and to recognise and reward environmental leadership in the property industry. Each rating tool will reflect a different market sector (e.g. office, retail, multi-unit residential, etc.).

This report includes a brief background description of the conditions relevant to the Green Star Existing Building Performance. Credit-by-credit analysis is also done to assess the applicability of each credit followed by credit adaptation recommendations.

The GBCZw is a Private Voluntary Organisation registered under the PVO Act of Zimbabwe Chapter 17:05. The organisation was officially launched in Zimbabwe on the 30th of September 2016 at Rainbow Towers in Harare and its main objective is to spearhead the Green Building concept in Zimbabwe through advocating for sustainability in the built environment. One of the aims of the Council include training of Accredited Professionals (APs) who will coordinate the rating and certification of buildings and recruitment of as many members as possible who will help GBCZw to lobby for by-laws that promote sustainability in the built environment.

2.1 INTRODUCTION

Zimbabwe gained its independence in 1980, and it now exists in a regional block (Southern African Development Community (SADC)); hence the deliberate measure to form its own Green Building Council so as to cope with regional and international trends with regards to the built environment. Zimbabwe is a landlocked country located in the southern portion of the African continent (between the Zambezi and Limpopo rivers). It borders South Africa to the south, Botswana to the west, Zambia to the northwest and Mozambique to the east. The total surface area of Zimbabwe is approximately 390.76 km². In combination with its relatively small size, it's also relatively sparsely populated with only 43.28 individuals per km². The population of Zimbabwe is over 16 million with an urban population which lies at approximately 32% and a rate of urbanization of 2.19% per annum (World Bank, 2016). The largest cities in Zimbabwe are Harare, the capital city, and Bulawayo, with populations of 1.49 million and 653 000, respectively (Figure 1).

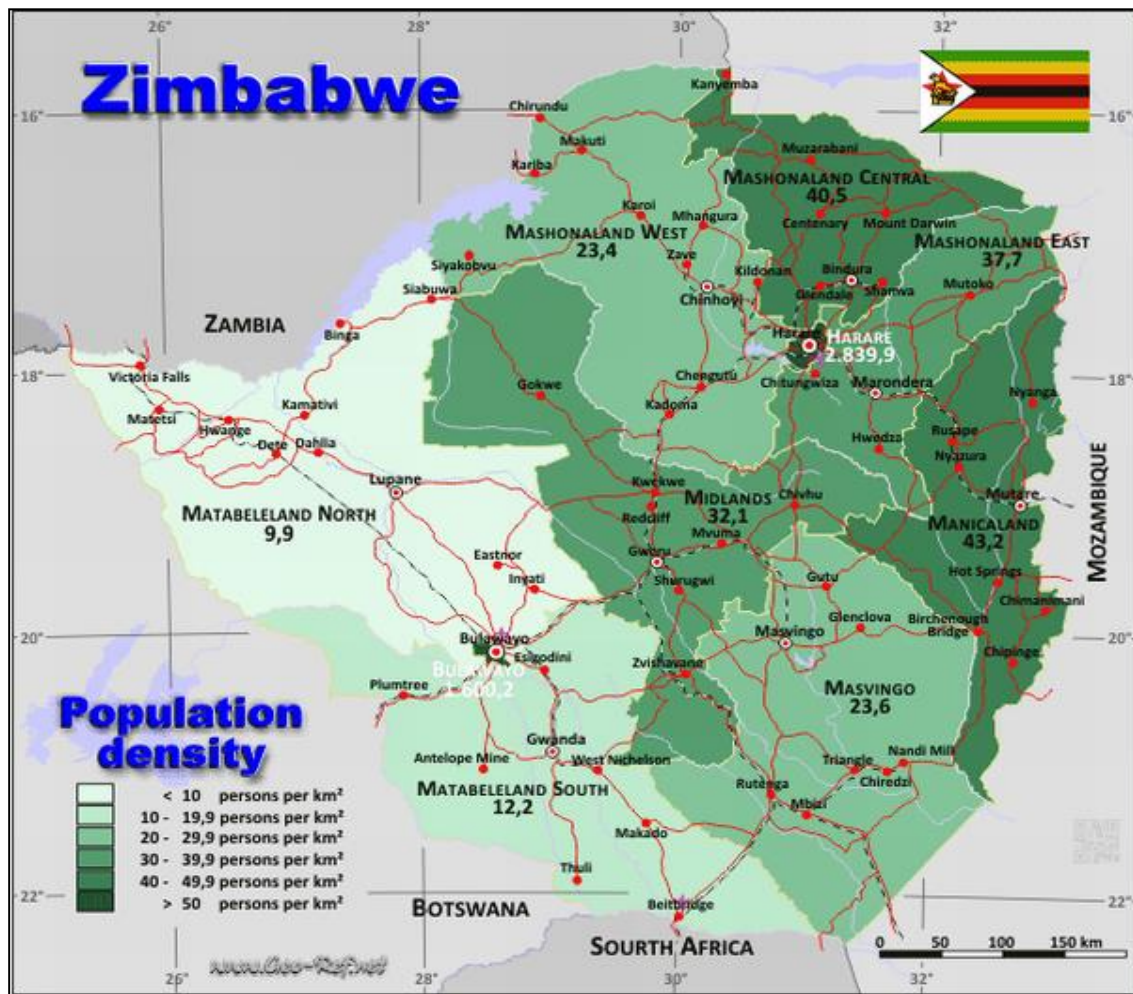


Figure 1: Zimbabwe Population density and Location in Southern Africa (Source: geo-ref.net)

2.2 CLIMATE

Zimbabwe is divided into five agro-ecological regions, known as natural regions (Figure 2), on the basis of the rainfall regime, soil quality and vegetation among other factors. The quality of the land resources declines from Natural Region (NR) I through to NR V (Moyo, 2000; Vincent and Thomas, 1961). Table 1 describes these natural regions in detail and evidently NR I only comprises 1.56% of the country's total surface area.

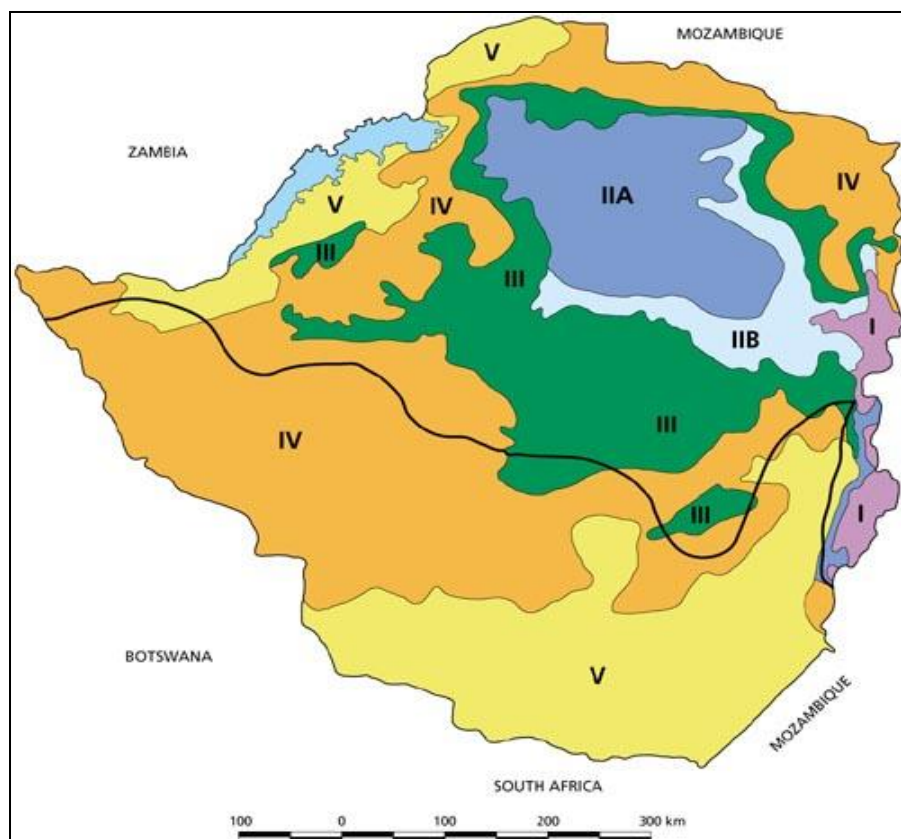


Figure 2: Natural Regions of Zimbabwe (Source: fao.org)

Table 1: Description of Natural Regions in Zimbabwe (Source: Adapted from Moyo, 2000; Vincent and Thomas, 1961)

Natural Region	Area (000 ha)	% of total land area (%)	Annual rainfall (mm)
I	613	1.56	> 1 000. Rain in all months of the year, relatively low temperatures
II	7 343	18.68	700-1 050. Rainfall confined to summer
III	6 855	17.43	500-800. Relatively high temperatures and infrequent, heavy falls of rain, and subject to seasonal droughts and severe mid-season dry spells
IV	13 010	33.03	450-650. Rainfall subject to frequent seasonal droughts and severe dry spells during the rainy season
V	10 288	26.2	< 450. Very erratic rainfall. Northern low veldt may have more rain but the topography and soils are poor

The Zimbabwean climate is markedly varied by altitude. There is a dry season, including a short cool season during the period May to September when the whole country has very little rain. The rainy season is typically a time of heavy rainfall between November and March. The whole country is influenced by the Inter-Tropical Convergence Zone during January; and in years when it is poorly defined there is below-average rainfall and a likelihood of serious drought in the country. Altitude and relief greatly affect both temperature and rainfall in Zimbabwe, which means the higher areas in the east and the Highveld receive more rainfall and are cooler than the relatively lower areas. Temperatures on the Highveld vary from 12–13° C (54–55° F) in winter to 24° C (75° F) in summer. In the Lowveld, temperatures are usually 6° C (11° F) higher, while summer temperatures in the Zambezi and Limpopo valleys average between 32° and 38° C (90–100° F). Rainfall clearly decreases from east to west. The eastern mountains receive more than 100 cm (40 in) of rainfall annually, while Harare has 81 cm (32 in) of rainfall and Bulawayo 61 cm (24 in). The south and southwest receive little rainfall and seasonal shortages of water are common. The summer rainy season lasts from November to March and is followed by a transitional season, during which both rainfall and temperatures decrease. The cool dry season follows, lasting from mid-May to mid-August, and finally, there is a warm, dry season, which lasts until the onset of the rains.

2.3 THE PROPERTY SITUATION IN ZIMBABWE

The property industry in Zimbabwe, as is the case in many other previously colonised countries, is complex. It involves a range of actors, investment decisions, material pricing, and technological considerations in infrastructure and superstructures. There are various property players in the market covering the whole real estate spectrum; however notable players include the national government and private firms like Old Mutual, Mashonaland Holdings, ZPI and First Mutual Properties. Commercial banks including CBZ, CABS and FBC are becoming increasingly more involved in the property market – particularly in the residential sector.

Although the Zimbabwean property market has been strongly subdued as a result of the economic challenges the country is facing, there are a lot of projects that the government and the private sector plan to initiate in the near future. Major projects that are on the cards are the proposed expansion of the Central Business District (CBD) in Harare that will see some residential areas being incorporated into the CBD; the Mall of Zimbabwe that is due to be built in Borrowdale, Harare; the Russia-Zimbabwe deal could see new plant construction and employment creation; the construction of the multipurpose and multi-storey complex adjacent to the Joina City Mall in Harare; and the recent calls by the Minister of Tourism and Hospitality to transform Victoria Falls in to Zimbabwe's Disneyland.

Low income housing projects have also been on the increase in the bid to offset the 1 million housing backlog the country has been facing. It seems investors are moving effectively to cover up the gap which may provide financial stimulation and economic growth to the country. The Central African Building Society (CABS), for example, has successfully completed the construction of thousands of low income housing units, opening the door for other players to contribute to the housing shortage. The case of affordability has been the major setback in such projects, since the market was illiquid and potential buyers could not afford such houses. The recent announcement by CABS to extend their mortgage tenure to 20 years, however, can provide a solution to the problem by enhancing the potential for the market to kick back.

2.4 RELEVANT GOVERNMENT MINISTRIES AND BODIES

The following bodies are identified to have a significant role to play in the Zimbabwean built environment.

Ministry of Local Government, Public Works and National Housing

Facilitating planned and sustainable urban growth and development in Zimbabwe; and more particularly in providing affordable housing and related infrastructure to the people of Zimbabwe.

Ministry of Environment, Water and Climate

The government ministry responsible for water resource management, rural development, climate factors and environmental considerations in Zimbabwe.

Ministry of Energy and Power Development

The ministry aims to achieve universal access to sustainable energy in Zimbabwe by 2030. Their vision is to ensure the provision of an adequate and sustainable energy supply by formulating and implementing effective policies and regulatory frameworks.

Ministry of Transport and Infrastructure Development

Responsible for all the aspects related to the management of transport, communications, meteorological and seismological infrastructure and services within the country.

Real Estate Institute of Zimbabwe

Unites into one body all persons practicing various disciplines of the profession of real estate, such as estate agencies, valuation, auctioneering and property management teams, and researchers. Also facilitates the advancement of that knowledge, which from time to time constitutes the professions of estate agencies, valuation, auctioneering and property management firms, as well as to maintain and promote the usefulness of these professions for the public advantage.

Legislation

Zimbabwe's legal system is based on Roman Dutch law, and thus contracts for the design or carrying out of building works are governed by common law. The relevant local authorities have powers to designate the design and carrying out of building works in their jurisdictions. The local authorities have stipulated building standards through model building by-laws which parties must incorporate in their agreements for the design or carrying out of building works (DLA Piper, 2018).

The country's laws governing the construction industry have however been last revised over three decades ago (1975). This is despite several changes to the economic landscape, driven by technological innovations that have subsequently changed the construction and property sector globally. The GBCZw will actively lobby for the revision of the model building by-laws and institute new building codes that are commensurate with global technological advancements.

Contributors:

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3. LOCAL CONTEXT REPORT

3.1 APPLYING GREEN STAR CREDIT BY CREDIT

This report applies to the Green Star Africa Zimbabwe – Existing Building Performance v1 tool commissioned by the Green Building Council of Zimbabwe. Note that reference within this local context report is made to the Green Star Africa Existing Building Performance v1 technical manual available for purchase at <https://gbcsa.org.za/certify/technical-library/> on the Green Building Council of South Africa’s website. Each credit’s applicability to the Zimbabwean context was discussed at the Local Context Report workshop for Existing Building Performance with the Zimbabwean professionals held in May 2017 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 (this would be until such a time that the GBCZw has the Zendesk platform where CIR’s and TC’s are evaluated).

3.2 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 Zimbabwean context.
	The credit should be omitted and made ‘not applicable’ for the Zimbabwean application of the tool.

Zimbabwean projects would also be required to use the latest Green Star Africa TCs, CIRs and Errata relevant to rating tools, published on the GBCSA’s website at <https://gbcsa.org.za/certify/technical-library/>, which represent the current version of that specific tool.

3.3 ELIGIBILITY CRITERIA

No adaptations shall be made to the Building Characteristics, Building Use, Conditional Requirements or Timing of Certification Criteria eligibility criteria of the Green Star Africa rating tools although it is noted that the Building Characteristics eligibility criterion may not be feasible for all projects in Zimbabwe and that a project-by-project review may be permitted. Recommendations for the Conditional Requirements eligibility criteria are included in the credit by credit review.

3.4 GREEN STAR WEIGHTING SYSTEM

It has been agreed with the Green Building Council of Zimbabwe that the weighting system of points should remain the same as that of the Green Star Africa SA rating tools, until such a time as the GBCZw elects to facilitate a revision of the weighting system of points.

3.5 MANAGEMENT

AIM OF CREDIT	DISCUSSION	RECOMMENDATION
<p>EB-MAN-1: Accredited Professional To ensure the involvement of qualified individuals who will direct and assist the owner/ facilities management team with the integration of Green Star Africa SA aims and processes throughout the performance period.</p>	<p>At the time of the workshop, the consultants agreed that is important that a Green Star Accredited Professional is a part of the professional team as the Green Star Accredited Professional brings the knowledge and experience that would be required for a successful Green Star submission.</p> <p>It is however noted that the Green Star Accredited Professional course for Existing Building Performance is not currently offered in Zimbabwe and that it would be important that the accredited professional course be presented in the country upon approval of the Local Context Report.</p> <p>As this credit is an Eligibility Criterion, it was agreed that this credit should remain as is. GBCSA is to however advise on presentation of the course at discounted fees to assist the GBCZw to meet the requirements of this credit using local professionals.</p>	<p>EB-MAN-1 should remain as is and no contextualisation needs to be made. GBCSA is to however advise on presentation of the course at discounted fees to assist the GBCZw to meet the requirements of this credit using local professionals.</p>
<p>EB-MAN-2: Certified Buildings To reward buildings that have shown previous environmental achievement through Green Star Africa Zimbabwe Design / As Built or Interiors certification.</p>	<p>At the time of the workshop, the consultants noted that there are no Green Star certified building in Zimbabwe. As such, it was agreed that this credit should be made “Not Applicable” until such a time that there is are at least 5 certified buildings in Zimbabwe using any of the Green Star Design / As Built or Interiors certification.</p> <p>As such, this credit should be made “Not Applicable” until there at least 5 certified Design / As Built or Interiors buildings in Zimbabwe upon which the credit shall be applicable.</p>	<p>EB-MAN-2 shall be “Not Applicable” until there are at least 5 Green Star certified buildings in Zimbabwe. Thereafter, the credit shall be deemed applicable.</p>

EB-MAN-3: Building Management To recognise management and operating processes and procedures used to optimise building environmental performance.	<p>While there are not a lot of buildings in Zimbabwe that install rigorous building management systems, the consultants at the workshop noted that the capabilities and skill sets do exist within the electrical engineering teams and the building management systems that would comply with the requirements of the credit.</p> <p>It was noted that this credit should remain as is to encourage market transformation.</p> <p>As such, it was agreed that this credit should remain as is and no contextualisation needs to be made.</p>	EB-MAN-3 should remain as is and no contextualisation needs to be made.
EB-MAN-4: Green Cleaning Performance To encourage high performance cleaning practices, which reduce the exposure of building occupants and maintenance personnel to potentially hazardous chemicals, biological and particulate contaminants that compromise indoor environmental quality, human health, building fabric and the natural environment.	<p>The consultants at the workshop noted that most tenants and building owners did not have green cleaning policies and comment was made on whether or not the cleaning agents companies would be able to source the required ingredients. A counter comment was that the cleaning companies would start to comply once tenants and building owners start asking them and/or making it a requirement to disclose the ingredients in the cleaning agents.</p> <p>It was noted that this credit should remain as to encourage market transformation and to encourage cleaning agent companies to use less hazardous chemicals, biological or particulate contaminants that compromise indoor environmental quality, human health, building fabric and the natural environment in their cleaning agents.</p> <p>As such, it was agreed that this credit should remain as is and no contextualisation needs to be made.</p>	EB-MAN-4 should remain as is and no contextualisation needs to be made.

<p>EB-MAN-5: Green Leasing</p> <p>To recognise and encourage collaboration between the building owner and tenants in order to manage and operate the building along environmentally sustainable principles whilst realising mutual benefit.</p>	<p>The consultants at the workshop noted that it was often times a difficult exercise to encourage building owners and tenants to enter into a green leasing contract as the building owners did not want to discourage tenants from signing the leasing contracts by including green leasing clauses and the tenants were not certain if they would be able to comply with the requirements of the green lease.</p> <p>Comment was then made that a green lease provides guidelines and actually reduces the operational costs of the tenant had the tenant not signed a green lease which actually makes a green lease favourable to a tenant. Comment was also made that a green lease actually demonstrates the commitment of the building owner to the tenant.</p> <p>It was agreed that while it is currently difficult, more building owners and tenants will start entering into green leases which will encourage more building owners and tenants to do the same. It was noted that this credit should remain as is to encourage market transformation.</p> <p>As such, it was agreed that this credit should remain as is and no contextualisation needs to be made.</p> <p><u>References:</u> GBCSA Green Lease Toolkit https://www.gbcsa.org.za/the-green-lease-toolkit/</p>	<p>EB-MAN-5 should remain as is and no contextualisation needs to be made.</p>

<p>EB-MAN-6: Ongoing Monitoring and Management</p> <p>To recognise operational practices which facilitate effective ongoing monitoring and metering of water and energy consumption.</p>	<p>The consultants at the workshop noted that water and energy consumption tends to be the highest costs, especially in existing buildings which were not designed with green building principles in mind. Comment was made that ongoing monitoring and management would be helpful as metering would ensure that irregular changes in consumption are identified and addressed.</p> <p>As such, it was agreed that this credit should remain as is and no contextualisation needs to be made.</p>	<p>EB-MAN-6 should remain as is and no contextualisation needs to be made.</p>
<p>EB-MAN-7: Learning Resources</p> <p>To encourage and recognise initiatives undertaken to facilitate sustainability awareness and education amongst building occupants and visitors.</p>	<p>The installation of learning resources gives building occupants and visitors' insight on their energy and water consumption, as well as insight on an additional sustainability initiative, which increases and facilitates the sustainability awareness of the building owners, tenants and building occupants and visitors and encourages behavioral change.</p> <p>Where ongoing metering and monitoring and building management systems have been installed, the consultants at the workshop commented that a credit like this would be achievable and would also be helpful in encouraging those seeing the visual displays to decrease consumption.</p> <p>As such, it was agreed that this credit should remain as is and no contextualisation needs to be made.</p>	<p>EB-MAN-7 should remain as is and no contextualisation needs to be made.</p>

3.6 INDOOR ENVIRONMENT QUALITY

AIM OF CREDIT	DISCUSSION	RECOMENDATION
<p>EB-IEQ-1: Indoor Air Quality To recognise the monitoring and control of indoor pollutants and thus help sustain the comfort and well- being of building occupants.</p>	<p>The consultants at the workshop noted that there are no building codes in Zimbabwe. It is best practice to use the British Standards but, as such, there are no building code regulations on the ventilation in buildings, it does not indicate minimum outside air intake rates for habitable rooms (or useable area as defined in the Green Star technical manual), reference is made to a minimum three air changes in water closets and urinals.</p> <p>It was agreed that until such a time as there are building codes where the requirements address indoor air quality are more stringent than those of the requirements of SANS 10400-O:2011, a mandatory CIR would be required to be submitted by the professional team demonstrating compliance with the requirements of this credit should the project team elect to use an alternative compliance path from that of SANS 10400-O:2011.</p> <p><u>References:</u> SANS 10400-O:2011: http://store.sabs.co.za/catalog/product/view/id/220107/s/sans-10400-o-2011-ed-3-00/</p>	<p>The project team will need to submit a mandatory CIR demonstrating compliance with the requirements of EB-IEQ-1 should the project team elect to use an alternative compliance path from that of SANS 10400-O:2011.</p>
<p>EB-IEQ-2: Lighting Comfort To recognise operational practices that provide occupants with a high degree of lighting comfort by addressing discomfort</p>	<p>The consultants at the workshop noted that there are no building codes in Zimbabwe. It is best practice to use the British Standards but, as such, there are no building code regulations on the artificial lighting in buildings, it does not indicate minimum or maximum lighting levels or minimum or maximum lighting comfort requirements for habitable</p>	<p>The project team will need to submit a mandatory CIR demonstrating compliance with the requirements of EB-IEQ-2 should the project team elect to</p>

<p>caused by lighting flicker as well as excessive lighting levels</p>	<p>rooms (or useable area as defined in the Green Star technical manual), reference is made to the positioning of lighting.</p> <p>It was agreed that until such a time as there are building codes addressing lighting comfort are more stringent than those of the requirements of SANS 10114-1:2005, a mandatory CIR would be required to be submitted by the project team demonstrating compliance with the requirements of this credit should the project team elect to use an alternative compliance path from that of SANS 10114-1:2005.</p> <p><u>References:</u> SANS 10114-1:2005: http://store.sabs.co.za/catalog/product/view/id/202385/s/sans-10114-1-2005-edition-3/</p>	<p>use an alternative compliance path from that of SANS 10114-1:2005.</p>
<p>EB-IEQ-3: Thermal Comfort To recognise operational practices that monitor and maintain a high level of thermal comfort for building occupants.</p>	<p>Indoor environment quality through thermal comfort is important as this has an impact on the health, wellbeing and productivity of all building occupants. The consultants at the workshop noted that monitoring and maintaining thermal comfort was something that building owners or tenants did not tend to do often enough and that the challenge would be when consultants installed air conditioning that was not correctly designed or did not include comprehensive warranty. Another challenge was that some facilities managers did not keep maintenance records or have a maintenance policy in place.</p> <p>Although the consultants commented that the Green Star rating tool tended to be more focused on mechanical ventilation which is not always as applicable in other African countries and comment was made that most buildings in Zimbabwe use natural ventilation, it was agreed that this credit should remain as is.</p>	<p>EB-IEQ-3 should remain as is and no contextualisation needs to be made.</p> <p>Where project teams would like additional information on meeting the requirements of this credit where the building is naturally ventilated, contact can be made to the GBCSA technical team for guidance.</p>

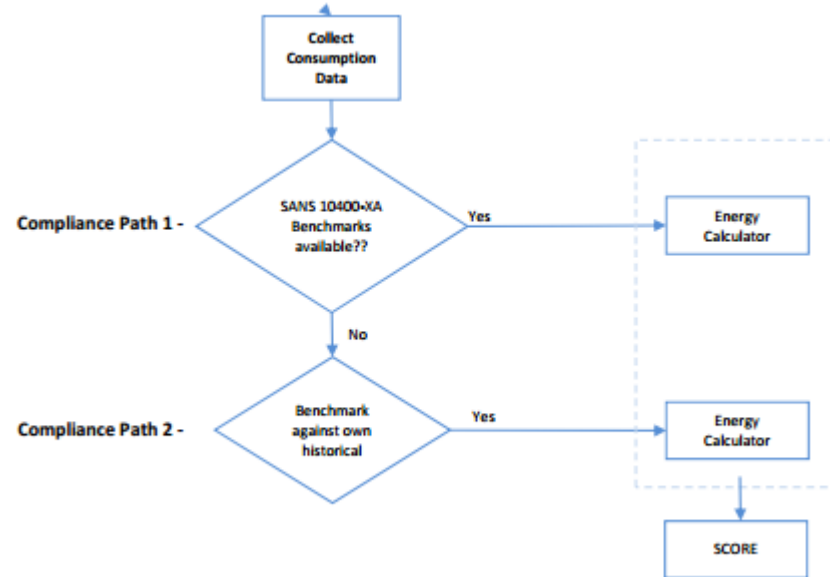
	Where project teams would like additional information to target the requirements of this credit where the building is naturally ventilated, the Project Team is to put together a motivation for how natural ventilation is being operated and monitored by the FM team to maintain a high level of comfort for the buildings occupants.	
EB-IEQ-4: Occupant Survey To encourage the assessment of building occupants' satisfaction as it relates to comfort	Occupant surveys ensures that an assessment can be made of the comfort of the building. The consultants commented that this would be a favourable assessment to conduct as it would assist the facilities manager and building owner and tenant to determine improvements that would need to be made to the building. As such, it was agreed that this credit should remain as is and no contextualisation needs to be made.	EB-IEQ-4 should remain as is and no contextualisation needs to be made.
EB-IEQ-5: Acoustic Quality To encourage operational practices that monitor acoustic comfort factors and strive to improve performance to ensure acoustic comfort for building occupants and minimize impact on surrounding buildings.	The consultants at the workshop noted that there are no building codes in Zimbabwe. It is best practice to use the British Standards but, as such, there are no building code regulations on noise. It was agreed that until such a time as there are building codes addressing acoustic quality are more stringent than those of the requirements of SANS 10103:2008 and SANS 10218:2012, a mandatory CIR would be required to be submitted by the project team demonstrating compliance with the requirements of this credit should the project team elect to use an alternative compliance path from that of SANS 10101:2008 and SANS 10218:2012. <u>References:</u> SANS 10103:2008: http://store.sabs.co.za/catalog/product/view/id/217983/s/sans-10103-2008-ed-6-00/	The project team will need to submit a mandatory CIR demonstrating compliance with the requirements of EB-IEQ-5 should the project team elect to use an alternative compliance path from that of SANS 10101:2008 and SANS 10218:2012.

	<p>SANS 10218:2012:</p> <p>http://store.sabs.co.za/catalog/product/view/id/219237/s/sans-10218-1-2004-ed-2-02/</p> <p>http://store.sabs.co.za/catalog/product/view/id/219241/s/sans-10218-2-2004-ed-1-01/</p>	
<p>EB-IEQ-6: Daylight and Views</p> <p>To recognise the introduction of naturally lit spaces which provide occupants in regular occupied spaces with access to appropriate daylight and quality views for the activities being performed during the performance period.</p>	<p>Circadian rhythms are defined as physical, mental and behavioral changes that follow a 24-hour cycle, responding primarily to light and darkness in an organism's environment. Circadian rhythms are best stimulated by naturally lit spaces and assurance of this can be achieved through providing daylight and outdoor views.</p> <p>The consultants commented that while the building fabric of existing buildings may not always allow changes to be made to the façade and provision of daylight and outdoor views, this credit would allow building owners and tenants to consider rearranging floor layouts and seating to encourage daylight and views for the building occupants.</p> <p>As such, it was agreed that this credit should remain as is and no contextualisation needs to be made.</p>	<p>EB-IEQ-6 should remain as is and no contextualisation needs to be made.</p>

3.7 ENERGY

AIM OF CREDIT	DISCUSSION	RECOMMENDATION
<p>EB-ENE-1: Energy Consumption (GHGE)</p> <p>To encourage the reduction of greenhouse gas emissions associated with the use of energy in building operations.</p>	<p>Through benchmarking the energy consumption of the existing building, the performance can be improved decreasing electricity consumption usage and electricity consumption costs. To achieve the aim of this credit, EB-ENE-1 has four compliance paths, as illustrated in Figure 1.</p> <p style="text-align: center;">Figure 1. Compliance path flow diagram</p> <pre> graph TD Start[Collect Consumption Data] --> D1{Office Building?} D1 -- Yes --> B1[GBCSA 'EWP' Energy Benchmarking Tool] B1 --> S1[SCORE] D1 -- No --> D2{Comparable building data available?} D2 -- Yes --> EC2[Energy Calculator] D2 -- No --> D3{Historical data available?} D3 -- Yes --> EC3[Energy Calculator] D3 -- No --> D4{Industry Benchmarks available?} D4 -- Yes --> EC4[Energy Calculator] EC2 --> S2[SCORE] EC3 --> S2 EC4 --> S2 subgraph Group [] EC2 EC3 EC4 end </pre>	<p>To demonstrate compliance with the requirements of EB-ENE-1 in Zimbabwe, a mandatory CIR is to be submitted by the project team clearly indicating compliance path selected and source of data or industry benchmarks used where Compliance Path 2, 3 or 4 have been selected.</p> <p>For Compliance Path 1, a mandatory CIR should also be put through to determine which postal code should be used for the area that the building is in and which area/postal code it relates to in South Africa. In this regard there should potentially be a climatic map within the beginning of the LCR indicating climatic zones and how they relate to the South African climate zones.</p>

	<p>The consultants at the workshop noted that reference is made to SANS benchmarks for Compliance Path 2 and that reference is made to South African greenhouse gas emission factors in Table 3 for Compliance Path 4. There are no building codes that address the energy performance of buildings, therefore until such a time as it does, it was agreed that reference would be made to the SANS standards.</p> <p>To demonstrate compliance with the requirements of EB-ENE-1 in Zimbabwe, a mandatory CIR is to be submitted by the project team clearly indicating compliance path selected and source of data or industry benchmarks used where Compliance Path 2, 3 or 4 have been selected.</p>	
<p>EB-ENE-2: Peak Electricity Demand To recognise operational practices that reduce peak demand on electricity supply infrastructure.</p>	<p>Decreasing peak electricity demand reduces the peak demand on the electricity supply infrastructure. To achieve the aim of this credit, EB-ENE-2 has two compliance paths, as illustrated in Figure 2.</p>	<p>To demonstrate compliance with the requirements of EB-ENE-2 in Zimbabwe, a mandatory CIR is to be submitted by the project team clearly indicating compliance path selected and source of historical data where Compliance Path 2 has been selected.</p>



The consultants noted that reference is made to SANS 10400-XA. There are no building codes that currently address the energy performance of buildings, therefore until such a time as it does, it was agreed that reference would be made the SANS standards.

To demonstrate compliance with the requirements of EB-ENE-2 in Zimbabwe, a mandatory CIR is to be submitted by the project team clearly indicating compliance path selected and source of historical data where Compliance Path 2 has been selected.

3.8 TRANSPORT

	AIM OF CREDIT	DISCUSSION	RECOMMENDATION
	<p>EB-TRA-1: Alternative Transportation</p> <p>To measure and assess transportation modes of regular building occupants and promote/encourage green travel plans for commuting and as a result reduce pollution and land development impacts from automobile use.</p>	<p>The consultants commented that the modes of transportation within the cities in Zimbabwe are limited and that most building occupants use cars or non-motorised modes of transport to get to their buildings. The consultants agreed that a credit like this would be helpful to assist building owners to collate green travel plans for commuting.</p> <p>As such, it was agreed that this credit should remain as is and no contextualisation needs to be made.</p>	<p>EB-TRA-1 should remain as is and no contextualisation needs to be made.</p>

3.9 WATER

AIM OF CREDIT	DISCUSSION	RECOMMENDATION
<p>EB-WAT-1: Potable Water To recognise efficient potable water use associated with building operations thus reducing the burden on potable water supply and wastewater systems</p>	<p>The consultants at the workshop noted that there are no building codes in Zimbabwe. It is best practice to use the British Standards to design potable water supply and waste water systems namely using British Standard Code of Practice C.P. 310.</p> <p>British Standard Code of Practice C.P. 310 was withdrawn and replaced with BS 6700:1987, which was withdrawn and replaced with BS 6700:1997, which has since been withdrawn and replaced with the following British Standards:</p> <p>BS EN 806-1:2000 Specifications for installations inside buildings conveying water for human consumption. General</p> <p>BS EN 806-2:2005 Specifications for installations inside buildings conveying water for human consumption. Design</p> <p>BS EN 806-3:2006 Specifications for installations inside buildings conveying water for human consumption. Pipe sizing.</p> <p>BS EN 806-4:2010 Specifications for installations inside buildings conveying water for human consumption. Installation</p> <p>BS EN 806-5:2012 Specifications for installations inside buildings conveying water for human consumption. Operation and maintenance</p> <p>BS 8558:2015 Guide to the design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages. Complementary guidance to BS EN 806</p>	<p>To demonstrate compliance with the requirements of EB-WAT-1 in Zimbabwe, a mandatory CIR is to be submitted by the project team clearly indicating compliance path selected and source of data or industry benchmarks used where Compliance Path 1 or 2 have been selected.</p> <p>For Compliance Path 1, a mandatory CIR should also be put through to determine which postal code should be used for the area that the building is in and which area/postal code it relates to in South Africa. In this regard there should potentially be a climatic map within the beginning of the LCR indicating climatic zones and how they relate to the South African climate zones.</p>

	<p>It was noted that BS EN 806-2:2005 specifies requirements for and gives recommendations on the design, installation, alteration, testing, maintenance and operation of potable water installations within buildings and, for certain purposes, pipework outside buildings but within the premises and that BS EN 806-5:2012 specifies requirements and gives recommendations for the operation and maintenance of potable water installations within buildings and for pipework outside buildings but within the premises in accordance with EN 806-1. Project teams are to be familiar with these BS.</p>	
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	<p>There are four Compliance Paths to achieving the requirements of EB-WAT-1 where the consultants noted that Compliance Path 1 is based on the GBCSA Water Benchmarking Tool and that Compliance Path 2 is based on the potable water calculator as seen in Table 1.</p>	
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Compliance Path 1	<ul style="list-style-type: none"> • Completed GBCSA 'EWP' Tool Benchmarking Calculator (Offices) <ul style="list-style-type: none"> ◦ Detailed input page to be completed and vacancies to be accounted for. • 12 consecutive months of water consumption data (utility bills or meter readings signed off by contractor or facilities person responsible for meter readings)
Compliance Path 2	<ul style="list-style-type: none"> • Completed EBP Water Calculator • 12 consecutive months of water consumption data for all buildings (utility bills or meter readings signed off by contractor or facilities person responsible for meter readings) • Short Report on Normalising Methodology (where applicable) signed off by suitably qualified professional.
Compliance Path 3	<ul style="list-style-type: none"> • Completed EBP Water Calculator • 12 consecutive months of water consumption data for the baseline period and the Performance Period (utility bills or meter readings signed off by contractor or facilities person responsible for meter readings) • Short Report on Normalising Methodology (where applicable) signed off by suitably qualified professional.
Compliance Path 4	<ul style="list-style-type: none"> • Completed EBP Water Calculator • 12 consecutive months of water consumption data (utility bills or meter readings signed off by contractor or facilities person responsible for meter readings) • Attach an extract from the publication / document detailing the benchmark used. • Short Report on Normalising Methodology (where applicable) signed off by suitably qualified professional.
Additional Points	<ul style="list-style-type: none"> • Historical water consumption data (utility bills or meter readings signed off by contractor)

Therefore to demonstrate compliance with the requirements of EB-WAT-1 in Zimbabwe, a mandatory CIR is to be submitted by the project team clearly indicating compliance path selected and source of data or industry benchmarks used where Compliance Path 2, 3 or 4 have been selected. For Compliance Path 1, the mandatory CIR should indicate which postal code will be used when aligning with a South African postal code.

References:

BS EN 806-2:2005:

<http://shop.bsigroup.com/ProductDetail/?pid=000000000030011044>

BS EN 806-5:2012

<http://shop.bsigroup.com/ProductDetail/?pid=000000000030200074>

3.10 MATERIALS

AIM OF CREDIT	DISCUSSION	RECOMMENDATION
<p>EB-MAT-1: Procurement and Purchasing To recognise procurement and purchasing practices which encourage use of products that is environmentally preferable.</p>	<p>The consultants commented that it is challenging to implement a green procurement strategy in Zimbabwe as most of the local material suppliers do not disclose or report on the content of the materials that they supply. It was noted that although most of the materials are imported from South Africa or from China, the intention is to stimulate the local economy and not to disadvantage the local suppliers and comment was made that by introducing this credit, more local suppliers would, through market transformation, embark on public disclosure.</p> <p>It was commented that the information is available from both local and international suppliers, there was just never a need to disclose it.</p> <p>Encouraging life cycle assessments and the selection of environmentally preferable products during manufacturing, use and disposal; quality assurance control process; and addressing responsibilities and accountability within the materials industry in Zimbabwe was seen as beneficial to Zimbabwe.</p> <p>As such, it was agreed that this credit should remain as is and no changes would need to be made.</p>	<p>EB-MAT-1 should remain as is and no contextualisation needs to be made.</p>
<p>EB-MAT-2: Solid Waste Management To reward operational practices which reduce the amount of solid waste going to landfill. Such waste may be from typical building operations, including</p>	<p>The consultants commented that more organisations in Zimbabwe do have a solid waste and materials management policy implemented in their buildings, however that there are a few recycling companies within Zimbabwe who would collect the waste that was separated at source.</p>	<p>EB-MAT-2 should remain as is and no contextualisation needs to be made.</p>

<p>ongoing and durable goods, and from refurbishments, construction or demolition works.</p>	<p>Comment was made that through the implementation of the first Green Star Africa Zimbabwe projects, there has been market transformation where more organisations are conscious of the products that they procure and how they dispose of the products and packaging.</p> <p>It was agreed that through the implementation of a solid waste and materials management policy, a waste and materials stream audit and an operational waste and materials management plan, market transformation would lead to more companies within Zimbabwe collecting the disposed waste and redirecting it from landfill through repurpose, reuse or recycling.</p> <p>As such, it was agreed that this credit should remain as is and no contextualisation needs to be made.</p>	
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3.11 LAND USE AND ECOLOGY

AIM OF CREDIT	DISCUSSION	RECOMMENDATION
<p>EB-ECO-1: Grounds-Keeping Practices To encourage environmentally sensitive maintenance and landscaping management practices for landscapes, hard surfaces and building exterior that reduce the environmental impact and improve ecological value and services.</p>	<p>The consultants commented that most of the organisations within Zimbabwe did not have a Landscape Management Plan in line with the Green Star Policy and Programme/Plan model reviewing plant maintenance, invasive species management, landscape waste management, soil management, and irrigation and water use.</p> <p>Comment was made that this would result in market transformation as more organisations would draft Landscape Management Plans and develop Ecological Policies.</p> <p>The consultants commented that this credit would be relevant for those buildings that had large landscaped areas and that the guidelines in the Green Star technical manual provided an outline of what would be expected from the organisations.</p> <p>As such, it was agreed that this credit should remain as is and no contextualisation needs to be made.</p>	<p>EB-ECO-1 should remain as is and no contextualisation needs to be made.</p>
<p>EB-ECO-2: Community Facilities To encourage and recognise integrated and shared land use and community development through the provision of on-site facilities for use by the local community.</p>	<p>The consultants commented that this credit may be difficult to target in some existing buildings that do not have the space provisions or security measures (specifically financial institutions) to be able to achieve this credit.</p> <p>Comment was made that not all credits within the Green Star rating tool do need to be targeted if the project team is unable to find a functional or practical way in which to target the credits, however it was noted that 20m² of useable area would not be difficult to achieve – the concern was that the spaces, specifically those indoors, needed to be freely accessible to the relevant stakeholders of the local community.</p>	<p>EB-ECO-2 should remain as is and no contextualisation needs to be made.</p>

	<p>It was agreed however that this community facilities would offer lasting economic, social, cultural and environmental benefits. These benefits would 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.</p> <p>As such, it was agreed that this credit should remain as is and no contextualisation needs to be made.</p>	
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3.12 EMISSIONS

	AIM OF CREIT	DISCUSSION	RECOMMENDATION
	EB-EMI-1: Refrigerants To encourage operational practices that minimise the environmental impacts of refrigeration equipment.	<p>The consultants noted that, where air conditioning and gaseous fire suppression were already installed in existing buildings, there are some instances where the refrigerants specified were ozone depleting such as R22. The consultants did note however that although it was not legislative to phase out R22 (like with what has been done in South Africa), this credit would lead market transformation and align with green building design principles as well as align with Zimbabwe being a signatory to the Kyoto Protocol.</p> <p>The consultants commented that there is not always availability of the latest air conditioning units from within Zimbabwe and that most of the air conditioning units are imported and it was concluded that it would be best that the Zimbabwean consultants asked for refrigerant specifications before installing new air conditioning units in existing buildings. The credit is applicable in Zimbabwe.</p> <p>As such, it was agreed that this credit should remain as is and no contextualisation needs to be made.</p>	EB-EMI-1 should remain as is and no contextualisation needs to be made.
	EB-EMI-2: Legionella To recognise and encourage implementation and utilisation of a water management process with intention to minimize risks associated with Legionnaires' disease.	<p>The consultants noted that, where air conditioning was installed in existing buildings, evaporative cooling towers did tend to be used in the more applicable regions within Zimbabwe.</p> <p>Reference is made to SANS 893 Part 1 and SANS 893 Part 2 for the maintenance of these evaporative cooling towers and the consultants confirmed that there were no standards addressing the prevalence of legionellus in Zimbabwe. The consultants agreed that such a credit would lead to market transformation in Zimbabwe which would encourage the implementation and utilisation of a water management process.</p>	The project team will need to submit a mandatory CIR demonstrating compliance with the requirements of EB-EMI-2 should the project team elect to use an alternative compliance path from that of SANS 10101:2008 and SANS 10218:2012.

	<p>It was agreed that the credit should remain as is and that a mandatory CIR would be required to be submitted by the project team demonstrating compliance with the requirements of this credit should the project team elect to use an alternative compliance path from that of SANS 893 Part 1 and SANS 893 Part 2.</p>	
<p>EB-EMI-3: Storm Water To recognise site-related practices which limit the disruption of natural hydrology, minimize pollution and site deterioration.</p>	<p>It was noted at the workshop, that NEMA specifies the requirements for storm water runoff but that these requirements are mandated for new construction projects than for existing buildings.</p> <p>The consultants agreed that it would be of use to have a Storm Water Run Off Management Plan to ensure that the site and hard surfaces are managed to control storm water runoff and to filter litter or pollutants to reduce peak flows, erosion and contamination of ground water, streams and rivers.</p> <p>Comment was made that it would also be applicable for building owners to decrease the amount of hardscape through landscape and permeable paving and that this would be beneficial to the municipal sewerage system as it would decrease the intensity of storm water runoff entering the municipal sewerage system.</p> <p>As such, it was agreed that this credit should remain as is and no contextualisation needs to be made.</p>	<p>EB-EMI-3 should remain as is and no contextualisation needs to be made.</p>

3.13 INNOVATION

AIM OF CREDIT	DISCUSSION	RECOMMENDATION
<p>EB-INN-1: Innovative Strategies & Technologies</p> <p>This credit is to encourage and recognise pioneering initiatives, processes or strategies in sustainable building management and operations.</p>	<p>This credit encourages and recognises pioneering initiatives, processes or strategies in sustainable building management and operations.</p> <p>It rewards projects that have an innovative initiative where the initiative improving environmental performance is a technology or process that is considered a ‘first’ or ‘early adopter’ in South Africa or in the world or the initiative substantially contributes to the broader market transformation towards sustainable development in South Africa or in the World.</p> <p>For this credit, all reference to South Africa is to be changed to Zimbabwe. It was also recommended that an innovation credits register be created for projects within Zimbabwe that target Green Star.</p> <p>As such, the credit should remain as is with reference made to Zimbabwe instead of South Africa.</p>	<p>EB-INN-1 should remain as is with reference made to the first ten innovations of this kind achieved in Zimbabwe instead of South Africa.</p>
<p>EB-INN-2: Exceeding Green Star Benchmarks</p> <p>To encourage and recognise projects which achieve environmental benefits in excess of the current Green Star Africa SA benchmarks.</p>	<p>This credit encourages and recognises projects which achieve environmental benefits in excess of the current Green Star benchmarks.</p> <p>It rewards projects where there has been a substantial improvement on an existing Green Star credit through a solution that results in the elimination of the specific negative environmental impact of the project targeted by an existing credit and/or a solution that results in a substantial (e.g. 5% or greater above ‘neutral’) restorative environmental impact targeted by an existing credit.</p> <p>As such, the credit should remain as is with reference made to Zimbabwe instead of South Africa.</p>	<p>EB-INN-2 should remain as is with reference made to the Green Star Existing Building Performance v1 tool. It relates to benchmarks that exceed the benchmarks set out by the tool. Project teams that exceed this benchmark set out in the tool (regardless of the number of projects that achieve these benchmarks) will get awarded these innovation points.</p>

<p>EB-INN-3: Environmental Initiatives</p> <p>To encourage and recognise sustainable initiatives, processes or strategies that are currently outside of the scope of this Green Star rating tool but which have a substantial or significant environmental benefit.</p>	<p>This credit encourages and recognises sustainable initiatives, processes or strategies that are currently outside of the scope of the Green Star Existing Building Performance v1 rating tool but which have a substantial or significant environmental benefit.</p> <p>It rewards an initiative implemented in the building that viably addresses a valid environmental concern outside of the current scope of this Green Star Existing Building Performance v1 tool.</p> <p>For this credit, all reference to South Africa is to be changed to Zimbabwe. It was also recommended that an innovation credits register be created for projects within Zimbabwe that target Green Star.</p> <p>As such, the credit should remain as is with reference made to Zimbabwe instead of South Africa.</p>	<p>EB-INN-3 should remain as is with reference made to Green Star Africa Zimbabwe instead of Green Star Africa SA.</p> <p>For INN-3, any aspects not addressed in the existing EBP technical manual can be proposed and substantiated.</p> <p>The Zimbabwean LCR is what is added to the Green Star Existing Building Performance v1 technical manual to give context and therefore the technical manual doesn't get changed to remove all the South African references.</p>

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