

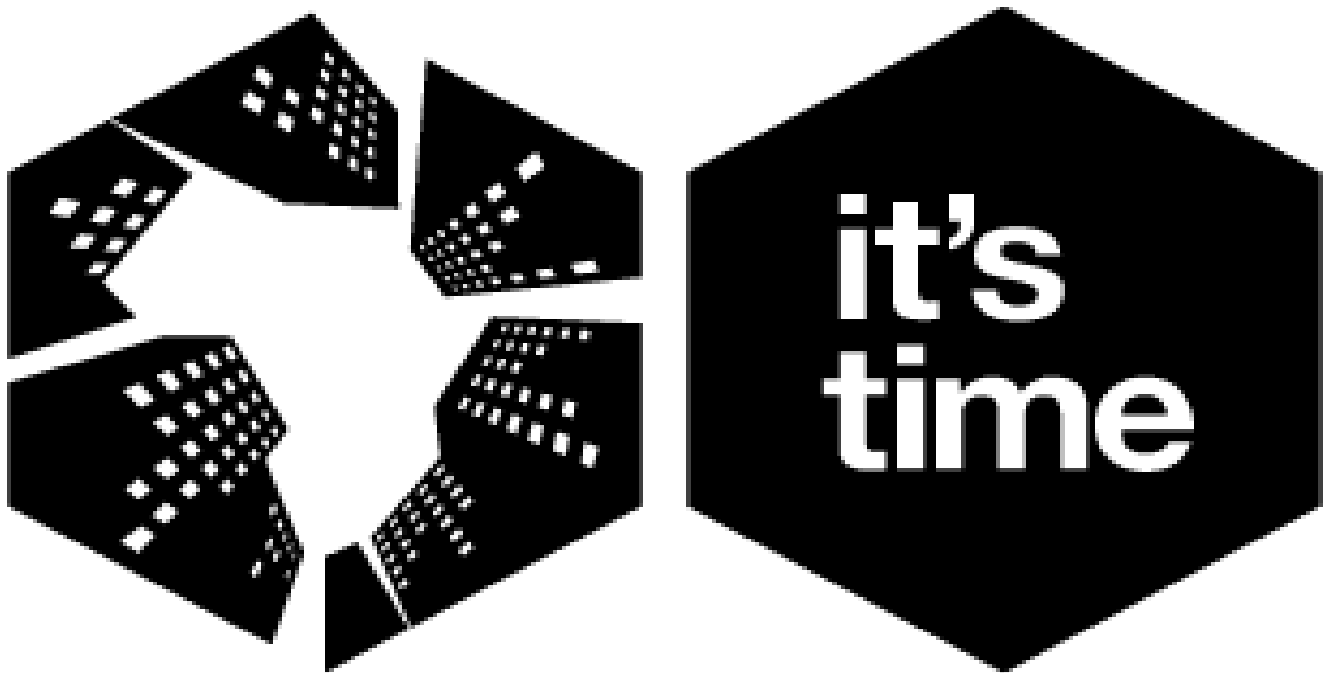
# **GREEN STAR SA NAMIBIA**

---



## **LOCAL CONTEXT REPORT**

Applying Green Star SA in Namibia  
Revision 9 – 18 November 2016





Report Acknowledgement		
<b>Revision 8</b>		
Issued:	10 May 2013	
Draft Report Prepared by:	WSP Green by Design	
Reviewed & Approved by:	Green Building Council of South Africa (GBCSA)	
Review & Final Author:	Nico Olivier and Manfred Braune	
Technical Working Group:	GBCSA	
<b>Revision 9</b>		
Issued:	18 November 2016	
Draft Report Prepared by:	GBCSA	
Reviewed & Approved by:	GBCSA	
Review & Final Author:	Tyrel Momberg and Manfred Braune	

	<b>Report Issued by:</b>	Green Building Council South Africa
		2nd Floor, The Old Warehouse Building,
		Black River Office Park, Observatory,
		Cape Town, South Africa, 7925
		P.O.BOX 155, Rondebosch, 7700, South Africa
		+27 216595943 info@gbcsa.org.za www.gbcsa.org.za
	<b>In collaboration with &lt;Namibia &gt; GBC:</b>	Green Building Council of Namibia (GBCN)
		<a href="http://www.gbcna.org/">http://www.gbcna.org/</a>

## **EXECUTIVE SUMMARY**

### **OVERVIEW OF THE NAMIBIA 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 tools in Namibia. Included in the report is a background analysis of Namibia, 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 Namibian Green Building Council will allow for certification in Namibia 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- Namibia. The GBCSA will then use the opportunity to allow capacity to grow in Namibia through the Namibia GBC, by allowing selected Namibian professionals to be trained as Green Star SA - Namibia assessors who would join the GBCSA assessor teams on Namibia projects. In addition, the GBCSA would deliver the Green Star SA Accredited Professional – New Buildings course in Namibia ,in collaboration with the Namibia Green Building Council, which would allow professionals in Namibia 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 Namibia GBC.

The original report (revision8, issued in 2013 ) covered various changes to the Green Star SA- tool to accommodate for the local context. These changes included:

- CIRs recommended/required for credits Ene- 0, Ene-1, TRA-4 & ECO-0
- Adaptations recommended for credits WAT-1, WAT-3, MAT-7, MAT-11 & ECO-4
- Reference to the local context – such as Namibian rainfall data (Wat-1) and bio regions (Eco-4)
- No adjustment of the environmental weightings.
- The addition of a water conditional requirement – for a minimum level of water efficiency

<b>Revision 9: Summary of Changes made to the Local Context Report Revision 8</b>	
1.	Credits, where relevant and applicable to Namibia, were added to the report for Green Star SA - Retail Centre v1, Green Star SA – Multi Unit Residential & Green Star SA - Public and Education Building v1 tools.
2.	<p>Office projects in Namibia now must use the Green Star SA – Office v1.1 as the base reference tool (i.e. registration under Office v1 is no longer available) – except for Ene-0 and Ene-1, where Namibian 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.</p> <p>Refer to the GBCSA website for a list of changes between Office v1 and Office v1.1 here:  <a href="https://www.gbcsa.org.za/wp-content/uploads/2013/05/Green-Star-SA-Office-v1.1-summary-of-changes-updated-June-2015.pdf">https://www.gbcsa.org.za/wp-content/uploads/2013/05/Green-Star-SA-Office-v1.1-summary-of-changes-updated-June-2015.pdf</a></p>

Where projects wish to apply other standards than those in the Green Star SA tool, a CIR must be submitted to the GBCSA.

## 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):

<b>Credit</b>	<b>REQUIREMENT</b>
<b>IEQ-06: High Frequency Ballasts</b>	<p>Note that in Green Star SA Office v1.1, the IEQ-6 High Frequency Ballasts credit has been omitted, and would be omitted in Namibia as well.</p> <p>Therefore, should a project in Namibia 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.</p> <p>Innovation point opportunity</p>
<b>ENE-00: Conditional Requirement</b>	<p>Conditional Requirement, therefore all projects must submit a CIR and receive a final ruling before Round 1 can be submitted to the GBCSA.</p> <p>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 Namibian projects.</p> <p>Changes to the Green Star SA – Office v1 Energy Modelling protocol should be motivated by the registered project via the mandatory CIR.</p>
<b>ENE-01: Greenhouse Gas Emissions</b>	<p>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 Namibian projects.</p> <p>Changes to the Green Star SA – Office v1 Energy Modelling protocol should be motivated by the registered project via the mandatory CIR.</p>
<b>TRA-04: Commuting Mass Transport</b>	<p>TRA-4 should remain as is in order to accommodate the future creation of mass public transport infrastructure in and around Windhoek. However for regions outside of the capital city where there is no mass public transport, projects may submit a CIR in order for the credit to be deemed not applicable.</p>

<b>WAT-01: Occupant Amenity Water</b>	At least one point should be achieved for this credit as a conditional requirement. The water calculator requires adaption to represent the rainfall regions of Namibia.
<b>WAT-03: Landscape Irrigation</b>	It is recommended that the first available point for 50% reduction be removed and 2 points be awarded for a 90% reduction of water for irrigation. The additional point should remain as in the SA Office V1.1. A CIR can be issued for the Windhoek context where there are more possibilities available.
<b>MAT-07: PVC Minimisation</b>	It is recommended that MAT-07 is omitted.
<b>MAT-11: Local Sourcing</b>	It is recommended to amend the credit so that the first point is awarded for sourcing 20% from within Namibian borders and the distance for the second point be amended to 100kms
<b>ECO-00: Conditional Requirement</b>	ECO-00 should be kept in its current form. A mandatory CIR will be required.
<b>ECO-04: Change of Ecological Value</b>	ECO-04 should be kept in its current form but adaptations to the bio-regions in the calculator are required to correctly represent the Namibian environment. A mandatory CIR is required.

**Table 1:** Credits requiring Credit Interpretation Requests (CIR's), Technical Clarifications (TC's) or adaptations

After discussion with the newly established Green Building Council of Namibia it has been decided that the weighting system should remain the same as Green Star SA – Tools with further adaption and discussion once the GBCN is better established.

## ACRONYMS

ACRONYM	TERM
CIR	Credit Interpretation Request
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
GBCN	Green Building Council of Namibia
GBCSA	Green Building Council of South Africa
GS	Green Star
GWP	Global Warming Potential
IEQ	Indoor Environmental Quality category
INN	Innovation category
MAN	Management
MAT	Material category
ODP	Ozone Depleting Potential
TRA	Transport category
WAT	Water category
WMP	Waste Management Plan

## CONTENTS

<b>EXECUTIVE SUMMARY .....</b>	<b>3</b>
OVERVIEW OF THE NAMIBIA LOCAL CONTEXT REPORT .....	3
RECOMMENDATIONS .....	4
ACRONYMS .....	6
CONTENTS .....	7
<b>1. INTRODUCTION .....</b>	<b>9</b>
1.1. OVERVIEW OF THE CREATION OF A NAMIBIA GREEN BUILDING COUNCIL .....	9
1.2. OVERVIEW OF THE DEVELOPMENT OF THE GREEN STAR SA-NAMIBIA ENVIRONMENTAL RATING TOOL .....	10
1.3. OBJECTIVE OF THE NAMIBIA LOCAL CONTEXT REPORT–NEW BUILDINGS .....	10
1.4. METHODOLOGY .....	11
<b>BACKGROUND .....</b>	<b>12</b>
<b>2. BACKGROUND .....</b>	<b>13</b>
2.1. OVERVIEW OF NAMIBIA .....	13
2.2. ENVIRONMENTAL CONCERNS IN NAMIBIA .....	14
<b>LOCAL CONTEXT REPORT .....</b>	<b>18</b>
<b>3. LOCAL CONTEXT REPORT .....</b>	<b>19</b>
3.1. APPLYING GREEN STAR SA CREDIT BY CREDIT .....	19
3.2. CREDIT BY CREDIT REVIEW .....	19
3.3. ELIGIBILITY CRITERIA .....	19
3.4. GREEN STAR SA CATEGORY WEIGHTING SYSTEM .....	19
3.5. MANAGEMENT .....	20
3.6. INDOOR ENVIRONMENTAL QUALITY .....	26
3.7. ENERGY .....	31
3.8. TRANSPORT .....	35
3.9. WATER .....	38
3.10. MATERIALS .....	40
3.11. LAND USE AND ECOLOGY .....	44
3.12. EMISSIONS .....	47
3.13. INNOVATION .....	50
<b>4. REFERENCES .....</b>	<b>51</b>



# INTRODUCTION

01

# 1. INTRODUCTION

## 1.1. OVERVIEW OF THE CREATION OF A NAMIBIA GREEN BUILDING COUNCIL

Namibia has an emerging Green Building Council of Namibia (GBCN), duly registered with the World Green Building Council. The GBCN is in its infancy and has not yet produced a rating tool (i.e. 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). Until such time that the GBCN 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 Namibian buildings under the Green Star SA rating system. This would entail collaboration between the GBCSA and the emerging GBCN to facilitate the use of the South African rating tools in Namibia while allowing Namibian 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.

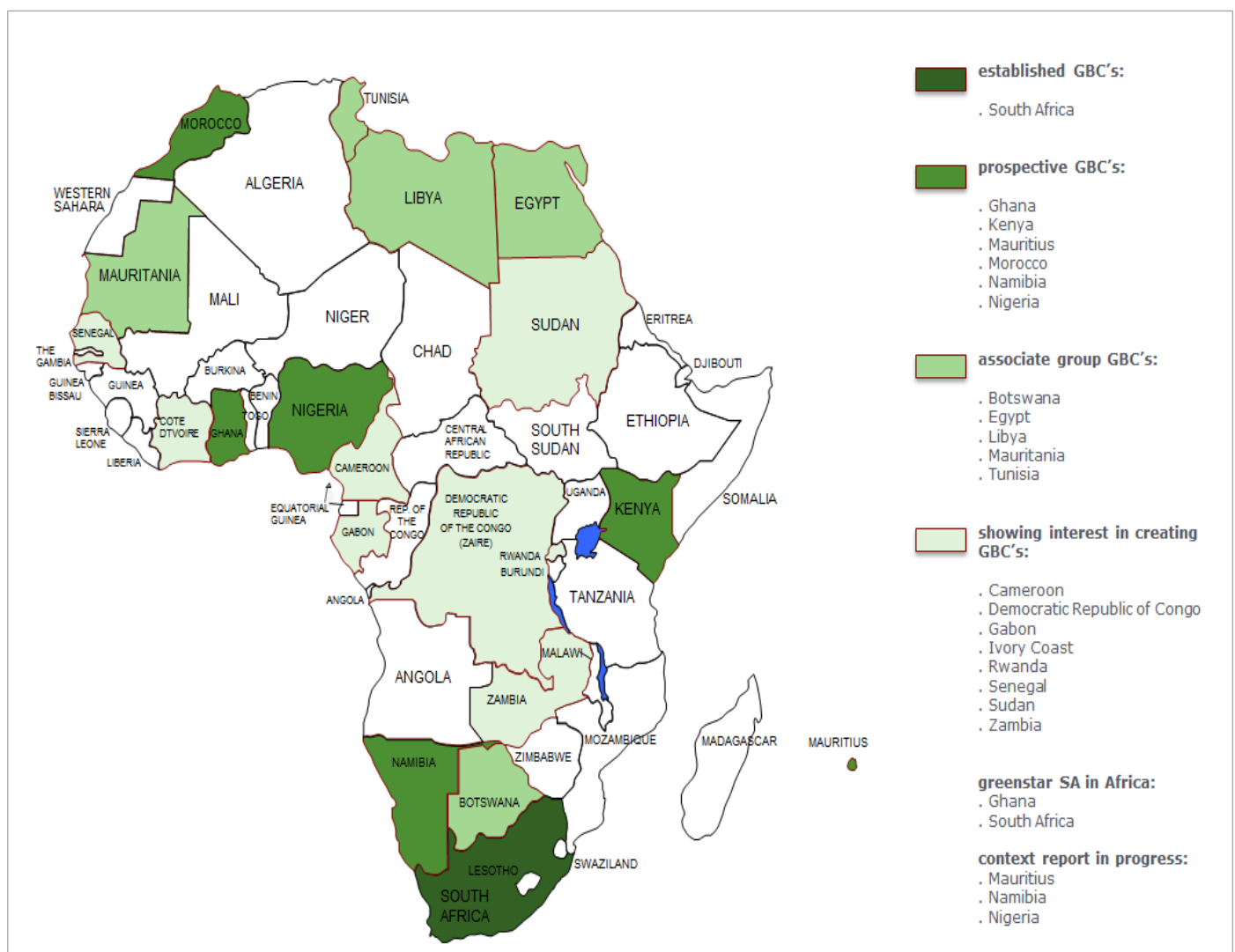


Figure 1: Image of Africa and the status of Green Building councils on the continent

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 Namibia-specific circumstances which may be in conflict with certain Green Star SA requirements. The context report also analyses 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, credit-by-credit, identifying any ramifications that may result from the application of these Green Star SA tools to the Namibian context.

## **1.2. OVERVIEW OF THE DEVELOPMENT OF THE GREEN STAR SA-NAMIBIA 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 Namibian 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 Namibia through contextualisation.

## **1.3. OBJECTIVE OF THE NAMIBIA 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 Namibia. Included in the report is a background analysis of Namibia, 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 Namibia -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 Namibian context.

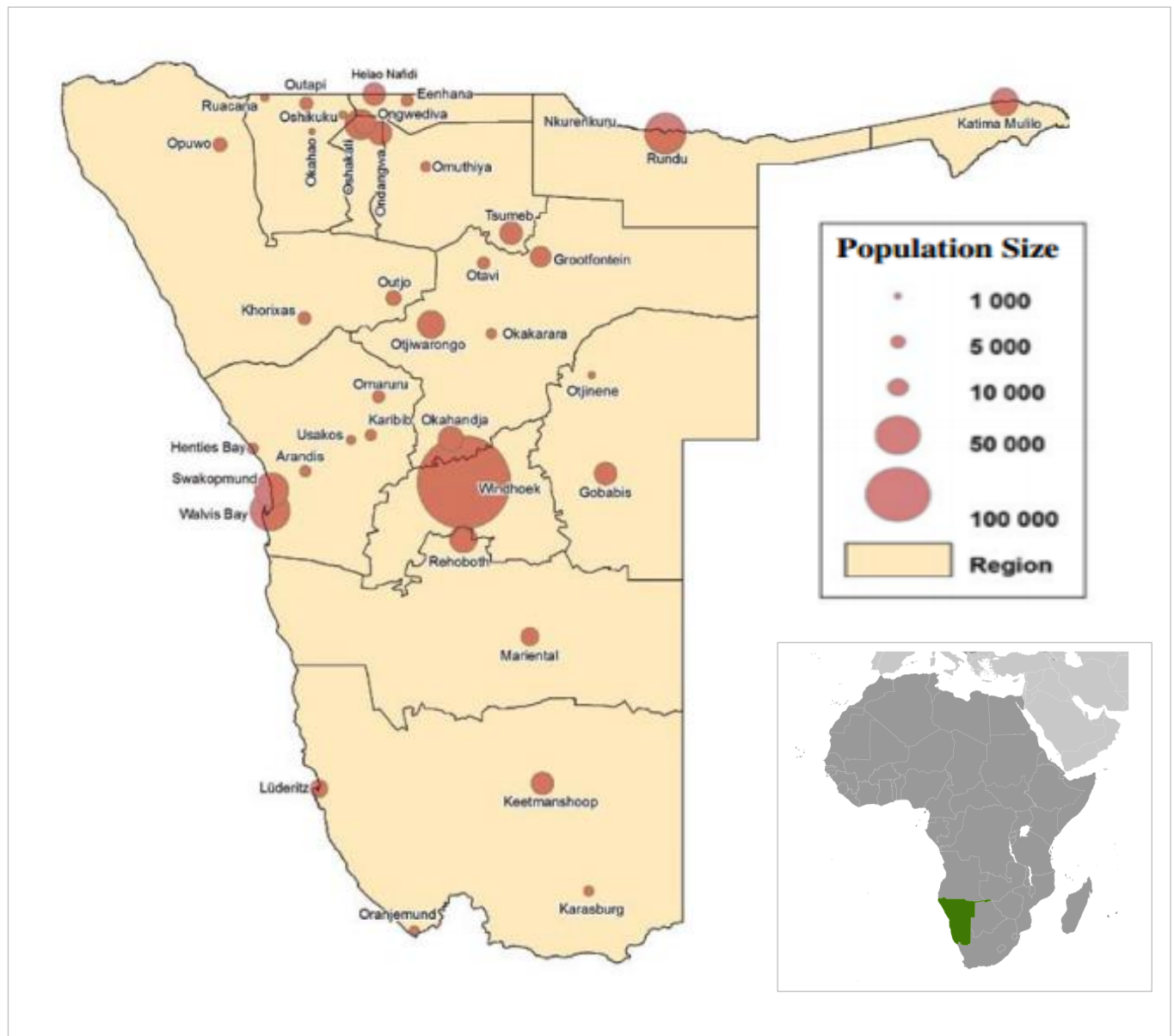
# **BACKGROUND**

02

## 2. BACKGROUND

### 2.1. OVERVIEW OF NAMIBIA

The Republic of Namibia is a large, sparsely inhabited country on the west coast of Southern Africa. It has 2.1 million residents located mostly in major urban centres (Commission, 2011). It borders South Africa on the south. The largely desert region has the least rainfall in sub-Saharan Africa and spans an area of 825 418 km<sup>2</sup>. Namibia only gained independence from South Africa in 1990 after the Namibian War of Independence and still maintains much dependence on South Africa (CIA, 2013).

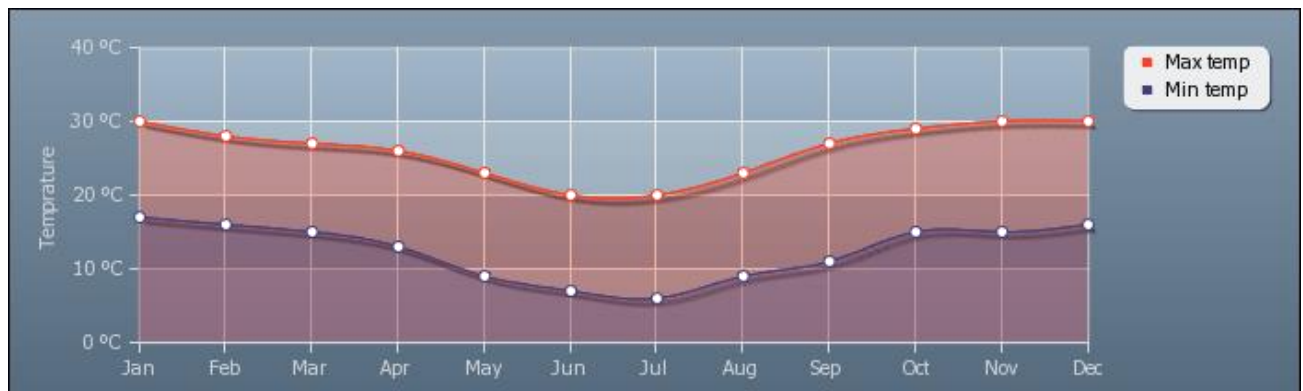


**Figure 3:** Namibian population locality (Commission, 2011)

## 2.2. ENVIRONMENTAL CONCERNS IN NAMIBIA

### CLIMATE

Windhoek is the capital of Namibia where the climate is typically hot, dry; with sparse and erratic rainfall. Due to its high altitude the city experiences a marked day-night temperature swing. The hottest month of the year in Windhoek is January where the daily average maximum temperatures is 31°C with the average minimum 17°C, while the coldest month June has average maximum temperatures of 22°C with minimum temperatures of 7°C. The wettest month for Windhoek is January with an average of 84.7mm of precipitation falling while the driest month is July with 0.6mm falling.



**Figure 4:** Average temperatures in Windhoek (Unknown, 2011)

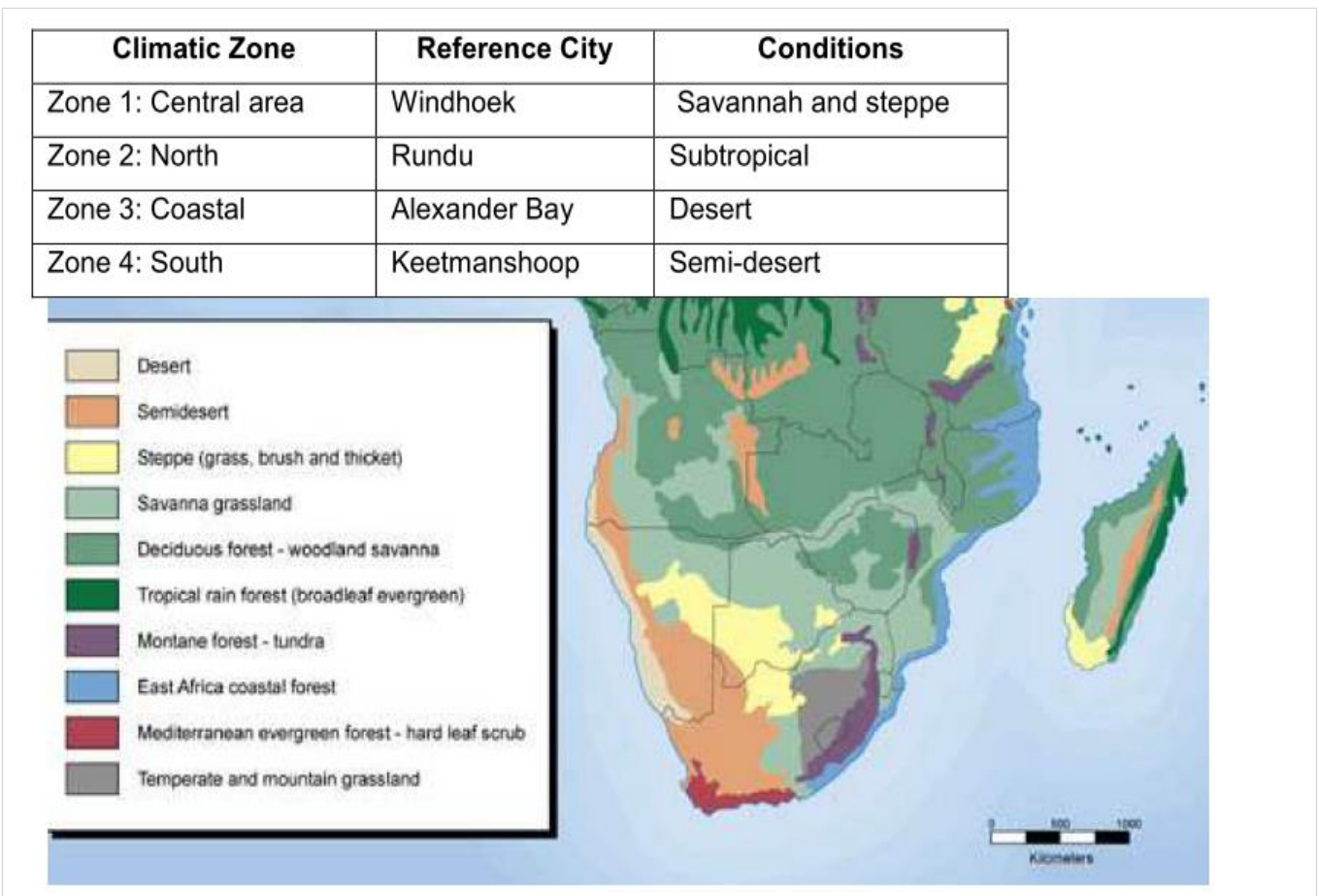


**Figure 5:** Average precipitation in Windhoek (Unknown, 2011)



**Figure 6:** Average monthly sun hours in Windhoek (Unknown, 2011)

However, Namibia experiences a broad range of climates in its numerous climatic regions many of which similar to those found in South Africa.



**Figure 7:** Southern African climatic zones (Programme, 2010)

#### RELEVANT GOVERNMENT BODIES

##### **Ministry of Mines and Energy (MME):**

The MME's responsibilities include the provision of affordable energy supply whilst taking advantage of Namibia's Natural Resources and the promotion of sustainable, competitive and efficient energy generation strategies (Programme, 2010).

##### **Ministry of Environment and Tourism**

Address issues involving the reduction of Greenhouse gas emissions, climate change adaptation and sustainable development (Programme, 2010)

##### **Legislation:**

Namibia currently follows the South African SANS 10400 building code and has adopted SANS 204 which focuses on energy efficiency in buildings (Institute, 2011). These codes and standards are currently under review and adaptation by the Namibian Standards council but are not expected to change in the near future.

The fact that Namibia uses the same building code as South Africa makes it easy to apply the Green Star SA - Tools rating tool to the Namibian context. Namibian professionals follow South African-based legislation and will not have difficulty adopting the Green Star SA rating tools.



**Relevant facts about Namibia:**

<b>Air and climate</b>		
<b>Emissions of:</b>		<b>Year</b>
CO2 (million tonnes)	3.0	2006
CO2 per capita (tonnes)	1.0	2006
GHG (million tonnes CO2 eq.)	6.0	1994
GHG per capita (tonnes CO2 eq.)	4.0	1994
Ozone depleting CFCs (ODP tonnes)	0.0	2007
GHG from energy (%)	34.0	1994
<b>Biodiversity</b>		
		<b>Year</b>
Proportion of terrestrial marine areas protected (%)	14.0	2008
Number of threatened species	82	2008
Fish catch (tonnes)	509,395	2006
Change in fish catch from previous year (%)	8.0	2006
<b>Economy</b>		
GDP growth rate from previous year (%)	5	2006
GDP per capita (\$US)	3,573	2007
% Value added agriculture, hunting, forestry, fishing	11	2007
% Value added mining, manufacturing, utilities	27	2007
% Value added other	62	2007
<b>Energy</b>		
Energy consumption (1000t oil eq.)	1,227	2006
Energy consumption per capita (kg oil eq.)	599	2006
Energy intensity (kg oil eq.) per \$1,000 (PPP) GDP	154	2006
Renewable electricity production (%)	94.0	2006
<b>Land and Agriculture</b>		
Total area (km <sup>2</sup> )	824,116	2007
Agricultural land (km <sup>2</sup> )	388,050	2007
Arable land (% of agric. land)	2.0	2007
Permanent crops (% of agric. land)	0.0	2007
Permanent pasture and meadows (% of agric. land)	98.0	2007
Change in agricultural land area since 1990 (%)	0.0	2007
Forest area (km <sup>2</sup> )	75,122	2007
Change in forest since 1990 (%)	14.0	2007
<b>Population</b>		
Population (1000)	2,130	2008
Population growth rate from previous year (%)	2.0	2008

Water and Sanitation		Year
Long-term average renewable freshwater resources (mill m <sup>3</sup> /year)	45,460	N / A
Urban population with access to improved drinking water source (%)	99	2006
Rural population with access to improved drinking water source (%)	66	2006
Rural population with access to improved sanitation (%)	18	2006

Figure 8: Namibian facts (UNStats, 2012)

# LOCAL CONTEXT REPORT

03

## 3. LOCAL CONTEXT REPORT

### 3.1. 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 Namibia. Each credit's applicability to the Namibian 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.

### 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 Namibian context.
	The credit should be omitted and made 'not applicable' for the Namibian application of the tool.

Namibian 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.

### 3.3. 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.

### 3.4. GREEN STAR SA CATEGORY WEIGHTING SYSTEM

It has been agreed with the Namibia 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 Namibia Green Building Council has the capacity to facilitate a revision of the category environmental weighting system.

### 3.5. MANAGEMENT

	AIM OF CREDIT	DISCUSSION	RECOMMENDATION
	<p><b><u>MAN-01: Green Star SA Accredited Professional</u></b> 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.</p>	<p>It is vital that project members understand the intricacies of the Green Star SA and its process - so until such time that the Namibian Green Building Council establishes a rating tool and course delivery system it is recommended that professionals be trained under the current South African system.</p> <p>It is possible that Green Star SA courses can be given in Namibia by the GBCSA, as has been done elsewhere in Africa already. The credit is relevant in its current form.</p> <p>Resource: (Namibia, 2013)</p>	<p>MAN-01 should be kept in its current form and no adjustments need to be made.</p>
	<p><b><u>MAN-02: Commissioning Clauses</u></b> To encourage and recognise commissioning and handover initiatives that ensure that all building services can operate to optimal design potential.</p>	<p>The Chartered Institute of Building Services Engineers (CIBSE) is a standard setter and authority on building services engineering in the UK and globally.</p> <p>CIBSE publishes Guidance and Codes which are internationally recognised as authoritative, setting the standards for best practice in the profession. CIBSE commissioning codes are an ideal tool for making sure that Green Star certified buildings are among the best commissioned buildings in the world.</p> <p>For mechanical systems, ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers) is a worldwide building technology society with more than a century of experience advancing the arts and sciences of HVAC&amp;R and related human factors.</p> <p>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.</p> <p>As in South Africa, Namibia does not strictly adhere to CIBSE and ASHRAE commissioning codes as standard practice, and adoption of these codes put Green Star SA certified buildings ahead of the rest. However, adoption of these standards has been proven to be achievable in this context.</p> <p>Resource: (Namibia, 2013)</p>	<p>MAN-02 should be kept in its current form and no adjustments need to be made.</p>

	AIM OF CREDIT	DISCUSSION	RECOMMENDATION
	<p><b><u>MAN-03: Building Tuning</u></b></p> <p>To encourage and recognise commissioning initiatives that ensure optimum occupant comfort and energy efficient services performance throughout the year.</p>	<p>This credit addresses the impact of ‘teething problems’ in a newly completed building that is now occupied and operated during 12-month defects liability period. It is an essential method to allow the building systems to be tuned and optimised to best match occupant needs and system performance throughout all climatic variations. It is relevant and applicable in the Namibian context in its current form.</p>	<p>MAN-03 should be kept in its current form and no adjustments need to be made.</p>
	<p><b><u>MAN-04: Independent Commissioning Agent</u></b></p> <p>To ensure buildings are designed with regard to future maintenance and are correctly commissioned before handover.</p>	<p>An independent commissioning agent is there to ensure that all systems are working efficiently and that all corrective measures are taken in cases where systems are faulty.</p> <p>This individual will be an experienced professional whose responsibility it is to be an objective advocate of the building owner, be involved from the beginning of schematic design through practical completion and provide commissioning advice to the project team.</p> <p>Many projects do not use the services of a commissioning agent and it is important that this be a requirement for leading projects. This is equally relevant and applicable in Namibia as it is in South Africa.</p> <p>Resource: (Namibia, 2013)</p>	<p>MAN-04 should be kept in its current form and no adjustments need to be made.</p>
	<p><b><u>MAN-05: Building User’s Guide</u></b></p> <p>To encourage and recognise information management that enables building users to optimise the building’s environmental performance.</p>	<p>A building users’ guide is not something usually provided in the construction of a building in Namibia, as is the case in South Africa. The guide provides a valuable resource for familiarising the users about the building systems and how to use the building in order for it to function efficiently.</p> <p>Informing the users on how the building should function is an important aspect of making sure that the building performs to its optimum, and the credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p> <p>Resource: (Namibia, 2013)</p>	<p>MAN-05 should be kept in its current form and no adjustments need to be made.</p>

	<p><b><u>MAN-06: Environmental Management</u></b></p> <p>To encourage and recognise the adoption of a formal environmental management system in line with established guidelines during construction.</p>	<p>Environmental management in construction should not be a region-specific practice but should be practiced globally in order to minimise the disturbance to the environment.</p> <p>Green Star SA refers to the National Environmental Management Act No. 107 of 1998. The Namibian Environmental Management Act No. 7 of 2007 is similar to the South African National Environmental Management Act 1998 (Act No 107 of 1998) (SA: NEMA) in that it allows provision for the appointment of an Environmental Commissioner and Environmental Officers, as well as a process of assessment and control of activities, which may have significant impacts on the environment. It also provides for incidental matters. There are however no guidelines for the composition of an EMP and therefore the New South Wales Environmental Management system guidelines 2009 used in Green Star SA – Office v1.1 are equally applicable in the Namibian context. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p> <p>Resource: (Namibia, 2013),</p>	<p>MAN-06 should be kept in its current form and no adjustments need to be made.</p>
	<p><b><u>MAN-07: Waste Management</u></b></p> <p>To encourage and recognise management practices that minimise the amount of construction waste going to disposal.</p>	<p>Basic waste management processes are generally followed by some projects in Namibia to generate some cash. Waste recycling is an income source for contractors and it is environmentally beneficial. Although limited, there are recycling possibilities in Namibia this credit will encourage the development of these facilities and encourage growth in the area. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p> <p>Resource: (Namibia, 2013)</p>	<p>MAN-07 should be kept in its current form and no adjustments need to be made.</p>
	<p><b><u>MAN-08: Air tightness Testing</u></b></p> <p>To encourage and recognise measures to reduce uncontrolled air leakage in buildings, and reward the testing and achievement of good air tightness testing levels.</p>	<p>Many projects locally, and in Namibia due to the adoption of the South African code, do not conduct an air tightness test. Namibian winter temperatures often reach a minimum of 7°C causing a significant difference between inside and outside temperatures. In such cases, air leakage can cause serious energy losses.</p> <p>This makes air-tightness a particularly important aspect of energy efficient buildings, and the credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p> <p>Resource: (Namibia, 2013)</p>	<p>MAN-08 should be kept in its current form and no adjustments need to be made.</p>

<p><b><u>MAN-9: Waste Recycling Management Plan – RETAIL CENTRE</u></b></p> <p>To encourage and recognise management systems and building infrastructure that facilitate the reduction of the overall operational waste generation and disposal.</p>	<p>Refer to the discussion on the management of other recyclable waste generated in Namibia in MAN-7.</p> <p>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.</p> <p>As such, the credit in its current form is equally relevant and applicable in Namibia as it is in South Africa.</p>	<p>MAN-9 should be kept in its current form and no adjustments need to be made.</p>
<p><b><u>MAN-10: Building Management System – RETAIL CENTRE &amp; PEB</u></b></p> <p>To encourage and recognise the incorporation of Building Management Systems to actively control and maximise the effectiveness of building services.</p>	<p>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.</p> <p>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.</p> <p>It is believed that the expertise exists within Namibia to incorporate Building Management Systems to actively control and maximise the effectiveness of building services.</p> <p>As such, the credit in its current form is equally relevant and applicable in Namibia as it is in South Africa.</p>	<p>MAN-10 should be kept in its current form and no adjustments need to be made.</p>



<p><b><u>MAN-11: Green Lease - RETAIL CENTRE</u></b></p> <p>To encourage and recognise initiatives taken by the building owner to encourage improved environmental behaviour by tenants of the retail centre</p>	<p>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:</p> <ul style="list-style-type: none"> <li>• Electrical energy monitoring and reporting (minimum quarterly) and have submitted an energy management plan at the beginning of each year;</li> <li>• Water monitoring and reporting (minimum quarterly) and have submitted a water management plan at the beginning of each year;</li> <li>• Waste reduction/recycling monitoring and reporting (minimum quarterly) and have submitted a waste management plan at the beginning of each year;</li> <li>• 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).</li> </ul> <p>AND</p> <ul style="list-style-type: none"> <li>• 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 Namibia would occur through this credit.</li> </ul> <p>It is believed that this credit in its current form is equally relevant and applicable in Namibia as it is in South Africa.</p> <p><b>References</b></p> <p>For further information about the development of a green lease, according to the Green Building Council of South Africa Green Lease Toolkit, refer to:  <a href="https://www.gbcsa.org.za/knowledge/publications/">https://www.gbcsa.org.za/knowledge/publications/</a></p>	<p>MAN-11 should be kept in its current form and no adjustments need to be made.</p>
<p><b><u>MAN-12: Common Property Rules – MULTI UNIT RES</u></b></p> <p>To encourage and recognise developers who embed legal and contractual environmental management initiatives within the formal management structures of the development.</p>	<p>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.</p> <p>This credit in its current form is equally relevant and applicable in Namibia as it is in South Africa.</p>	<p>MAN-12 should be kept in its current form and no adjustments need to be made.</p>

	<p><b><u>MAN-13: Learning Resources - PEB</u></b></p> <p>To encourage and recognise sustainability initiatives implemented in the development as learning resources for building users and visitors.</p>	<p>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.</p> <p>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.</p> <p>As such, this credit in its current form is equally relevant and applicable in Namibia as it is in South Africa.</p>	<p>MAN-13 should be kept in its current form and no adjustments need to be made.</p>
	<p><b><u>MAN-14: Life Cycle Costing - PEB</u></b></p> <p>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.</p>	<p>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.</p> <p>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.</p> <p>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.</p> <p>The business case for sustainability is a challenge encountered irrespective of what region in Africa the project may occur.</p> <p>Therefore, this credit in its current form is equally relevant and applicable in Namibia as it is in South Africa.</p>	<p>MAN-14 should be kept in its current form and no adjustments need to be made.</p>

	<p><b><u>MAN-15: Maintainability - PEB</u></b></p> <p>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.</p>	<p>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.</p> <p>When designed and managed accordingly, public buildings can minimise maintenance and operational costs, while also minimally impacting their occupants.</p> <p>As such, this credit in its current form is equally relevant and applicable in Namibia as it is in South Africa.</p>	<p>MAN-15 should be kept in its current form and no adjustments need to be made.</p>
--	---	---	--

### 3.6. INDOOR ENVIRONMENTAL QUALITY

	AIM OF CREDIT	DISCUSSION	RECOMMENDATION
	<p><b><u>IEQ-01: Ventilation Rates</u></b></p> <p>To encourage and recognise designs that provide ample amounts of outside air to counteract build-up of indoor pollutants.</p>	<p>Namibia makes use of the South African building code, SANS 10400. The ventilation rates for office spaces have been modified in the SANS 10400 and points will be earned for minimum fresh air rates of 10 litres/second/person. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p> <p>Standard: SANS 10400-O utilised in both South Africa and Namibia</p> <p>Resource: (Programme, 2010)</p>	<p>IEQ-01 should be kept in its current form and no adjustments need to be made.</p>
	<p><b><u>IEQ-02: Air Change Effectiveness</u></b></p> <p>To encourage and recognise systems that effectively deliver optimum air quality to any occupant throughout the occupied area.</p>	<p>IEQ-2: Air Change Effectiveness credit omitted from Office v1.1.</p>	<p>IEQ-2 credit is omitted.</p>

	<p><b><u>IEQ-03: Carbon Dioxide Monitoring and Control</u></b></p> <p>To encourage and recognise the provision of response monitoring of Carbon Dioxide levels to ensure delivery of optimum quantities of outside air.</p>	<p>SANS 10400 currently does not have a requirement for monitoring CO<sub>2</sub> levels. This is considered best practice in South Africa and should equally apply in Namibia, where it would be applicable and relevant. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p> <p>Standard: SANS 10400-O utilised in both South Africa and Namibia</p> <p>Resource: (Namibia, 2013)</p>	<p>IEQ-03 should be kept in its current form and no adjustments need to be made.</p>
	<p><b><u>IEQ-04: Daylight</u></b></p> <p>To encourage and recognise designs that provide good levels of daylight for building users.</p>	<p>The requirements for daylight in Namibia are as per SANS 10400-O which is used in South Africa. These are not stringent and should be improved in order to be considered best practice. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p> <p>Standard: SANS 10400-O utilised in both South Africa and Namibia</p> <p>Resource: (Namibia, 2013)</p>	<p>IEQ-04 should be kept in its current form and no adjustments need to be made.</p>
	<p><b><u>IEQ-05: Daylight Glare Control</u></b></p> <p>To encourage and recognise buildings that are designed to reduce the discomfort of glare from natural light.</p>	<p>Glare can easily be controlled through louvers, blinds or types of glass. This should be considered good practice in Namibia as it is in South Africa. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p>	<p>IEQ-05 should be kept in its current form and no adjustments need to be made.</p>
	<p><b><u>IEQ-06: High Frequency Ballasts</u></b></p> <p>To encourage and recognise buildings that increase workplace amenity by avoiding low frequency flicker that may be associated with fluorescent lighting.</p>	<p>Note that in Green Star SA Office v1.1, the IEQ-6 High Frequency Ballasts credit has been omitted, and would be omitted in Namibia as well.</p> <p>Electronic ballasts are flicker-free, energy efficient and have a prolonged lifespan. These are readily available in Namibia. Namibia does still have many older buildings with old magnetic ballast, therefore, should a project in Namibia 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.</p> <p>Resource: (Namibia, 2013)</p>	<p>Innovation point opportunity</p>
	<p><b><u>IEQ-07: Electric Lighting Levels</u></b></p> <p>To encourage and recognise base building provided office lighting that is not over designed.</p>	<p>The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p> <p><b><u>Standard:</u></b> SANS 10114-2: 2005 and the Occupational Health &amp; Safety Act (OHS Act 1993), both of which are utilised in Namibia.</p> <p>Resource: (Namibia, 2013)</p>	<p>IEQ-07 should be kept in its current form and no adjustments need to be made.</p>

<p><b><u>IEQ-08: External Views</u></b> To encourage and recognise designs that provide occupants with a visual connection to the external environment.</p>	<p>This credit is not context-specific and projects should aim to provide external views to the occupants. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p>	<p>IEQ-08 should be kept in its current form and no adjustments need to be made.</p>
<p><b><u>IEQ-09: Thermal Comfort</u></b> To encourage and recognise buildings that achieve a high level of thermal comfort.</p>	<p>Some professionals are not aware of thermal comfort awareness but this is generally well known in Namibia. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p>	<p>IEQ-09 should be kept in its current form.</p>
<p><b><u>IEQ-10: Individual Comfort Control</u></b> To encourage and recognise designs that facilitate individual control of thermal comfort.</p>	<p>Most projects in Namibia do not provide thermal comfort control at every 60m<sup>2</sup> because it is often costly to provide the infrastructure. Costs aside, this credit is achievable in this context and should be considered best practice. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p>	<p>IEQ-10 should be kept in its current form and no adjustments need to be made.</p>
<p><b><u>IEQ-11: Hazardous Materials</u></b> To encourage and recognise actions taken to reduce health risks to occupants from the presence of hazardous materials.</p>	<p>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 context, and specifically in Namibia, where the same OHS Act as South Africa is used. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p> <p>Standard: South African Occupational Health &amp; Safety Act (OHS Act 1993), which is utilised in Namibia.</p> <p>Resource: (Namibia, 2013)</p>	<p>IEQ-11 should be kept in its current form and no adjustments need to be made.</p>
<p><b><u>IEQ-12: Internal Noise Levels</u></b> To encourage and recognise buildings that are designed to maintain internal noise levels at an appropriate level.</p>	<p>Noise attenuation is only common practice in Namibia in HVAC plant rooms but should be addressed to the required comfort levels as per 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 &amp; Green Star SA - Public &amp; Education Building v1 technical manuals, as well as for other plant rooms and office noise generated. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p>	<p>IEQ-12 should be kept in its current form and no adjustments need to be made.</p>
<p><b><u>IEQ-13: Volatile Organic Compounds</u></b> To encourage and recognise specification of interior finishes that minimise the contribution and levels of Volatile Organic Compounds (VOCs) in buildings.</p>	<p>In Namibia some suppliers of carpets, adhesives and sealants provide these products with low VOC content. Only recently have more paint manufacturers begun to supply low VOC paint. Suppliers do respond to the growing demand in low VOC products and this credit should therefore provide the impetus. However in all of these, no standard is set or adhered to. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p>	<p>IEQ-13 should be kept in its current form and no adjustments need to be made.</p>

	<p><b><u>IEQ-14: Formaldehyde Minimisation</u></b> To encourage and recognise the specification of products with low formaldehyde emission levels.</p>	<p>Emphasis is not normally placed on specifying materials with low formaldehyde in Namibia. No formaldehyde in wood should be considered good practice but unfortunately not many suppliers in Namibia provide low formaldehyde products, but the inclusion of this credit will hopefully encourage growth in the industry. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form. Resource: (Namibia, 2013)</p>	<p>IEQ-14 should be kept in its current form and no adjustments need to be made.</p>
	<p><b><u>IEQ-15: Mould Prevention</u></b> To encourage and recognise the design of services that eliminate the risk of mould growth and its associated detrimental impact on occupant health.</p>	<p>As Namibia is mostly a dry desert region it has very low relative humidity levels throughout the year, except along the coast. However, there are areas within the country that receive relatively high levels of humidity at certain periods of the year and therefore mould prevention would be relevant in these areas. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form. Resource: (Unknown, 2011)</p>	<p>IEQ-15 should remain in its current format and no adjustments need to be made.</p>
	<p><b><u>IEQ-16: Tenant Exhaust Riser</u></b> 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.</p>	<p>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 provides awareness and can be easily achieved to provide a healthy indoor environment. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p>	<p>IEQ-16 should be kept in its current form and no adjustments need to be made.</p>
	<p><b><u>IEQ-17: Environmental Tobacco Smoke (ETS) Avoidance</u></b> To encourage and recognise the air quality benefits to occupants by prohibiting smoking inside the building.</p>	<p>Tobacco smoke is unhealthy for human beings when inhaled. This credit can be easily achieved and is an important factor for occupant well-being. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form. <b><u>Standard:</u></b> South African Tobacco Products Control Act 1993 is similar to the Namibian Tobacco Products Control Act, 2010. This act is not as of yet enforced in Namibia but the intention is to enforce in the near future. Resource: (Namibia, 2013)</p>	<p>IEQ-17 should be kept in its current form and no adjustments need to be made.</p>

<p><b><u>IEQ-18: Places of Respite and Connection to Nature – RETAIL CENTRE</u></b></p> <p>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.</p>	<p>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.</p> <p>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.</p>	<p>IEQ-18 should be kept in its current form and no adjustments need to be made.</p>
<p><b><u>IEQ-19: Private Outdoor Space - MULTI UNIT RES</u></b></p> <p>To encourage and recognize dwelling designs which improve the health and wellbeing of the occupants by providing private outdoor space.</p>	<p>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.</p> <p>The credit in its current form is equally relevant and applicable in Namibia as it is in South Africa.</p>	<p>The credit should be kept in its current form and no adjustments need to be made.</p>
<p><b><u>IEQ-22: Universal Access - MULTI UNIT RES</u></b></p> <p>To recognize design that provides universal access, to and within dwellings, to meet the changing needs of occupants.</p>	<p>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.</p> <p>As such, the credit in its current form is equally relevant and applicable in Namibia as it is in South Africa.</p>	<p>IEQ-22 should be kept in its current form and no adjustments need to be made.</p>
<p><b><u>IEQ-23: Stairs - PEB</u></b></p> <p>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.</p>	<p>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.</p> <p>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 Namibian context.</p> <p>The credit in its current form is equally relevant and applicable in Namibia as it is in South Africa</p>	<p>The credit should be kept in its current form and no adjustments need to be made.</p>



### 3.7. ENERGY

	AIM OF CREDIT	DISCUSSION	RECOMMENDATION
	<p><b><u>ENE-00: Conditional Requirement</u></b></p> <p>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.</p>	<p>Few professionals are competent in modelling, but as was the case in South Africa, market transformation is needed in this regard in Namibia and can be achieved through this credit. The ASHRAE guide is achievable and easily understood by most projects. Compliance route 3 following the SANS 204 Deemed to comply clauses is another way that Namibian project teams can achieve compliance because of their familiarity with the South African code. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p> <p>Standard: SANS 204 is currently used in Namibia. There are plans for an adapted version to be issued in the future but until such a point that the standard review is complete South African standards are used.</p> <p>Resource: (Africa S. E., 2008)</p>	<p>Conditional Requirement, therefore all projects must submit a CIR and receive a final ruling before Round 1 can be submitted to the GBCSA. 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 <b>Office v1 Energy modelling protocol will be applicable to Namibian projects.</b></p> <p>Changes to the Green Star SA – Office v1 Energy Modelling protocol should be motivated by the registered project via the mandatory CIR.</p>
	<p><b><u>ENE-01: Greenhouse Gas Emissions</u></b></p> <p>To encourage and recognise designs that minimise the greenhouse gas emissions associated with operational energy consumption.</p>	<p>See above (Ene-00). Further to this, on-site energy generation has not been commonly adopted due to the cost. SANS 204 specifies the reduction of energy consumption in buildings. The building codes also specify passive design systems that help reduce the energy demand. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p> <p>Standard: SANS 204 is currently being adapted to suit the Namibian context for implementation in the future.</p> <p>Resource: (Africa S. E., 2008)</p>	<p>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 <b>Office v1 Energy modelling protocol will be applicable to Namibian projects.</b></p>



			Changes to the Green Star SA – Office v1 Energy Modelling protocol should be motivated by the registered project via the mandatory CIR.
	<b><u>ENE-02: Energy Sub-metering</u></b> 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 Namibia. Most buildings meter consumption per tenant and not necessary per major energy use. This credit should remain to encourage responsible energy use. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.	ENE-02 should be kept in its current form and no adjustments need to be made.
	<b><u>ENE-03: Lighting Power Density</u></b> To encourage and recognise designs that provide artificial lighting with minimal energy consumption.	Lighting power density as prescribed in the technical manual is achievable but in many cases in Namibia not designed as low as 1.5W/m <sup>2</sup> . The high cost is normally the only reason that many projects do not go as low as 1.5W/m <sup>2</sup> but is very energy efficient and needed in Namibia. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form. Resource: (Namibia, 2013)	ENE-03 should be kept in its current form and no adjustments need to be made.
	<b><u>ENE-04: Lighting Zoning</u></b> 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 Namibia, but not practised widely enough. Lighting zoning for spaces of no more than 100m <sup>2</sup> in size is not commonly practiced but can be easily achieved. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.	ENE-04 should be kept in its current form and no adjustments need to be made.
	<b><u>ENE-05: Peak Energy Demand Reduction</u></b> To encourage and recognise designs that reduce peak demand on energy supply infrastructure.	Standby generator sets are commonly used for back-up power in case of power outages. On-site energy generation is not a common system. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.	ENE-05 should be kept in its current form and no adjustments need to be made.

	<p><b><u>ENE-6: Thermal Energy Sub-Metering – RETAIL CENTRE</u></b></p> <p>To encourage and recognise the installation of thermal energy sub metering to facilitate ongoing management of thermal energy consumption.</p>	<p>This credit should remain to encourage responsible thermal energy monitoring.</p> <p>The credit in its current form is equally relevant and applicable in Namibia as it is in South Africa.</p>	<p>ENE-6 should be kept in its current form and no adjustments need to be made.</p>
	<p><b><u>ENE-7: Hot Water Energy Use - MULTI UNIT RES</u></b></p> <p>To encourage and recognise dwelling designs that reduce greenhouse gas emissions associated with domestic hot water production.</p>	<p>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.</p> <p>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 Namibia as it is in South Africa.</p> <p>The Green Star SA Multi Unit Residential v1 Hot Water Calculator would however need to be adapted to reflect the relevant fuel factors in Namibia. This would be project-specific and a mandatory CIR would need to be submitted to confirm applicability.</p>	<p>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 Namibia.</p> <p>This would be project-specific and a mandatory CIR would need to be submitted to confirm applicability.</p>
	<p><b><u>ENE-8: Common Property Energy Use - MULTI UNIT RES</u></b></p> <p>To encourage and recognise designs that reduce energy use associated with common property lifts, car park ventilation and lighting.</p>	<p>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.</p> <p>The credit in its current form is equally relevant and applicable in Namibia as it is in South Africa, therefore ENE-8 should be kept in its current form and no adjustments need to be made.</p>	<p>ENE-8 should be kept in its current form and no adjustments need to be made.</p>

	<p><b><u>ENE-9: Low Emission Energy Generation - MULTI UNIT RES</u></b></p> <p>To encourage and recognise designs that incorporate on-site energy generation systems utilising renewable or low emission energy sources.</p>	<p>It is encouraged that designs incorporate on-site energy generation systems utilising renewable or low emission energy sources.</p> <p>The credit in its current form is equally relevant and applicable in Namibia as it is in South Africa.</p>	<p>ENE-9 should be kept in its current form and no adjustments need to be made.</p>
	<p><b><u>ENE-10: Energy Efficient Appliances - MULTI UNIT RES</u></b></p> <p>To encourage and recognise initiatives which reduce energy consumption associated with major appliances.</p>	<p>It is encouraged that initiatives are implemented which reduce energy consumption associated with major appliances.</p> <p>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. This credit should therefore remain to encourage the use of energy efficient appliances.</p> <p>The credit in its current form is equally relevant and applicable in Namibia as it is in South Africa.</p>	<p>ENE-10 should be kept in its current form and no adjustments need to be made.</p>
	<p><b><u>ENE-11: Unoccupied Spaces - PEB</u></b></p> <p>To encourage and recognise designs that minimise or eliminate energy use for spaces when unoccupied.</p>	<p>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.</p> <p>The credit in its current form is equally relevant and applicable in Namibia as it is in South Africa.</p>	<p>ENE-11 should be kept in its current form and no adjustments need to be made.</p>

### 3.8. TRANSPORT

	AIM OF CREDIT	DISCUSSION	RECOMMENDATION
	<b><u>TRA-01: Provision of Car Parking</u></b> To encourage and recognise developments that facilitate the use of alternative modes of transportation for commuting to work.	In Namibia, people are likely to find other options for travelling to work such as car-pooling or using public transport if parking is limited. This credit will encourage tenants consider public transport and be more fuel-efficient. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form. Standards: South African standards reference the DOT parking guidelines or 4 bays per 100m <sup>2</sup> . The same parking requirement is used in Namibia. Resource: (Namibia, 2013)	TRA-01 should remain in its current form and no adjustments need to be made.
	<b><u>TRA-02: Fuel-Efficient Transport</u></b> 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 Namibia. Incentives to choose fuel-efficient options are a good tool to encourage tenants to be fuel efficient. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.	TRA-02 should remain in its current form and no adjustments need to be made.
	<b><u>TRA-03: Cyclist Facilities</u></b> 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 Namibia but this credit aims at providing fuel-efficient alternatives and allowing for the adoption of such practices by the users. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.	TRA-03 should remain in its current form and no adjustments need to be made.

	<p><b><u>TRA-04: Commuting Mass Transport</u></b></p> <p>To encourage and recognise developments that facilitate the use of mass transport for work commuting.</p>	<p>Research indicates that the only city with public transport infrastructure in place at the moment is Windhoek. This public transport is in the form of a bus service operated by the City of Windhoek to service commuters from the residential areas to the downtown area of the city. The remainder of the public transport is provided by informal taxis. (Windhoek, 2013)</p> <p>These taxi's do however differ from the South African version of mini-bus taxi's as they are provided using standard sedan cars and have no formalised union, operations procedure or routes. They can still be considered as public rather than private transport as they operate as shared taxi's that will stop to pick up and drop off passengers along their informal route. (Wikitravel, 2012)</p> <p>Throughout the rest of Namibia populations are too small to accommodate the provision of public transport infrastructure at the moment (the largest city after Windhoek is Rundu of population 58 172) and for that reason there are no formalised public transport systems available. (Geonames, 2013), (Namibia, 2013)</p>	<p>TRA-4 should remain as is in order to accommodate the future creation of mass public transport infrastructure in and around Windhoek. However for regions outside of the capital city where there is no mass public transport, projects may submit a CIR in order for the credit to be deemed not applicable.</p>
	<p><b><u>TRA-05: Local Connectivity</u></b></p> <p>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.</p>	<p>As above, 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 fuel-efficiency by being located in close proximity to amenities thus allowing the tenants the option to walk instead of drive. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p>	<p>TRA-05 should remain in its current form and no adjustments need to be made.</p>

	<p><b><u>TRA-6: Trip Reduction- Mixed Use - RETAIL CENTRE</u></b></p> <p>To encourage &amp; recognise retail centres that are built in mixed use areas in order to reduce the overall number of car trips ten by patrons.</p>	<p>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.</p> <p>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.</p> <p>The credit in its current form is equally relevant and applicable in Namibia as it is in South Africa.</p>	<p>TRA-6 should remain in its current form and no adjustments need to be made.</p>
	<p><b><u>TRA-7: Vehicle Operating Emissions – RETAIL CENTRE &amp; PEB</u></b></p> <p>To encourage &amp; recognise retail centres that reduce vehicular emissions resulting from traffic congestion by upgrading road infrastructure around the centre.</p>	<p>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.</p> <p>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.</p> <p>The credit in its current form is equally relevant and applicable in Namibia as it is in South Africa.</p>	<p>TRA-7 should remain in its current form and no adjustments need to be</p>

### 3.9. WATER

	AIM OF CREDIT	DISCUSSION	RECOMMENDATION
	<b><u>WAT-01: Occupant Amenity Water</u></b> To encourage and recognise designs that reduces potable water consumption by building occupants.	Namibia has experienced water shortages in recent years and is predominantly made up of dry arid regions. The recent discovery of an aquifer on the northern part of Namibia has geologists predicting that it could satisfy northern Namibia's basic drinking and irrigation needs for 400 years if used efficiently. Securing water in Namibia for the longest possible time is of utmost importance and the requirements for this credit must be raised slightly, and a minimum achievement of one point in this credit is recommended as a conditional requirement of using Green Star SA in Namibia. The water calculator requires adaption to represent the rainfall regions of Namibia. Besides this, the credit is equally relevant and applicable in Namibia as it is in South Africa in its current form. Resource: (McGrath, 2012), (Namibia, 2013)	At least one point should be achieved for this credit as a conditional requirement. The water calculator requires adaption to represent the rainfall regions of Namibia.
	<b><u>WAT-02: Water Meters</u></b> To encourage and recognise the design of systems that both monitors and manages water consumption.	A fairly common practice in most office buildings is the metering of collective water consumption of tenants via a building water meter. The effective monitoring and management of consumption can best take place where water meters are used to monitor major water uses in a building, which is not common practice in Namibia. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.	WAT-02 should remain in its current form and no adjustments need to be made.
	<b><u>WAT-03: Landscape Irrigation</u></b> To encourage and recognise the design of systems that aim to reduce the consumption of potable water for landscape irrigation.	Due to the water shortage in Namibia, the use of potable water for irrigation should be strongly discouraged. Xeriscaping, stormwater harvesting, or recycled water for irrigation can be possible routes for compliance. In Windhoek there are also more options in terms of water use quality. As blackwater is treated for potable consumption in the cities there is semi-purified water available for irrigation. Some minor changes are proposed to the points allocation, as indicated in the cell on the right. Besides this, the credit is equally relevant and applicable in Namibia as it is in South Africa in its current form. Resource: (Namibia, 2013)	It is recommended that the first available point for 50% reduction be removed and 2 points be awarded for a 90% reduction of water for irrigation. The additional point should remain as in the SA Office V1.1. A CIR can be issued for the Windhoek context where there are more possibilities available.

	<p><b><u>WAT-04: Heat Rejection Water</u></b></p> <p>To encourage and recognise design that reduces potable water consumption from heat rejection systems.</p>	<p>As in South Africa, cooling towers are used in Namibia, while some projects choose not to use cooling towers. Cooling towers use a lot of water during their operation, as this is normally potable water the use of this method should be discouraged. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p>	<p>WAT-04 should remain in its current form and no adjustments need to be made.</p>
	<p><b><u>WAT-05: Fire System Water Consumption</u></b></p> <p>To encourage and recognise building design which reduces consumption of potable water for the building's fire protection and essential water storage systems.</p>	<p>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 they should be done in a water-efficient manner. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p> <p>Standard: SANS 10400-O utilised in both South Africa and Namibia</p> <p>Resource: (Namibia, 2013)</p>	<p>WAT-05 should remain in its current form and no adjustments need to be made.</p>
	<p><b><u>WAT-7: Potable Water Efficient Appliances - MULTI UNIT RES</u></b></p> <p>To encourage and recognise initiatives which reduce water consumption associated with major appliances.</p>	<p>Various initiatives can be implemented in multi-unit residential developments to reduce the water consumption associated with major appliances.</p> <p>These initiatives could include the provision of clothes washes for a minimum of 90% of dwellings or the provision of communal laundry area(s).</p> <p>These initiatives could also include the provision of dishwashers where all dishwashers provided achieve a minimum water efficiency of 7.2 litres/kg.</p> <p>The credit in its current form is equally relevant and applicable in Namibia as it is in South Africa.</p>	<p>WAT-7 should remain in its current form and no adjustments need to be made.</p>
	<p><b><u>WAT-8: Swimming Pool / Spa Water Efficiency - MULTI UNIT RES</u></b></p> <p>To encourage and recognise designs that reduce potable water consumption associated with swimming pools and spas.</p>	<p>Swimming pools lose water through evaporation and also through filter cleaning and backwashing.</p> <p>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.</p> <p>The credit in its current form is equally relevant and applicable in Namibia as it is in South Africa.</p>	<p>WAT-8 should remain in its current form and no adjustments need to be made.</p>



### 3.10. MATERIALS

	AIM OF CREDIT	DISCUSSION	RECOMMENDATION
	<b><u>MAT-01: Recycling Waste Storage</u></b> 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 sorting of waste is common practice for most banks as part of their corporate identity and remains an important component of resource efficiency, but not too many other tenants in Namibia. This should be encouraged in the design and operation of all commercial buildings. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.	MAT-01 should remain in its current form and no adjustments need to be made.
	<b><u>MAT-02: Building Reuse</u></b> To encourage and recognise developments that reuse existing buildings to minimise materials consumption.	Many projects are refurbishments but many other projects prefer to completely do away with the old and bring in the new. The prevention of the production waste that occurs during the demolition of buildings should be encouraged. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.	MAT-02 should remain in its current form and no adjustments need to be made.
	<b><u>MAT-03: Reused Materials</u></b> To encourage and recognise designs that prolong the useful life of existing products and materials.	Globally, projects should strive to reuse materials as much as possible, and is the same in Namibia. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.	MAT-03 should remain in its current form and no adjustments need to be made.
	<b><u>MAT-04: Shell and Core or Integrated Fit-out</u></b> To encourage and recognise base building delivery mechanisms that eliminate the need for immediate tenant refits.	Project teams must 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 consumption of resources unnecessarily, which happens as much in Namibia as in South Africa. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.	MAT-04 should remain in its current form and no adjustments need to be made.

	<p><b><u>MAT-05: Concrete</u></b></p> <p>To encourage and recognise the reduction of embodied energy and resource depletion occurring through use of concrete.</p>	<p>The fact that engineers and contractors in Namibia rarely recycle aggregate or use concrete with a fly ash mix is reason enough to encourage them to consider the options available and the environmental benefits associated with them. There is currently no slag available locally in Namibia but there is hope that this credit will encourage the production of slag from the coal fired power stations. Slag is available and sourced from South Africa in the interim. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p> <p>Resource: (Namibia, 2013)</p>	<p>MAT-05 should remain in its current form and no adjustments need to be made.</p>
	<p><b><u>MAT-06: Steel</u></b></p> <p>To encourage and recognise the reduction in embodied energy and resource depletion associated with reduced use of virgin steel.</p>	<p>Structural engineers in Namibia seldom pay attention to the recycled content of the structural steel. This needs to be rectified and awareness of the environmental benefits should be promoted through this credit. As steel is largely imported from South Africa this application of this credit should not create any problems. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p> <p>Resource: (Namibia, 2013)</p>	<p>MAT-06 should remain in its current form and no adjustments need to be made.</p>
	<p><b><u>MAT-07: PVC Minimisation</u></b></p> <p>To encourage and recognise the reduction in use of Poly Vinyl Chloride (PVC) products in buildings.</p>	<p>MAT-7: PVC Minimisation credit omitted from Office v1.1</p>	<p>Mat-7 credit is omitted.</p>
	<p><b><u>MAT-08: Sustainable Timber</u></b></p> <p>To encourage and recognise the specification of reused timber products or timber that has certified environmentally-responsible forest management practices.</p>	<p>In Namibia many professionals are still unfamiliar with the term Forest Stewardship Council (FSC) and are therefore still specifying or using unsustainable timber. This must be remedied through awareness. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p> <p>Resource: (Namibia, 2013)</p>	<p>MAT-08 should remain in its current form and no adjustments need to be made.</p>
	<p><b><u>MAT-09: Design for Disassembly</u></b></p> <p>To encourage and recognise designs that minimise the embodied energy and resources associated with demolition.</p>	<p>Many professionals are not often given a budget that gives them room for creativity. This credit provides an incentive for project teams to be more creative in the design of the building while understanding the environmental benefits of this credit. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p>	<p>MAT-09 should remain in its current form and no adjustments need to be made.</p>

	<p><b><u>MAT-10: Dematerialisation</u></b></p> <p>To encourage and recognise designs that produce a net reduction in the total amount of material used.</p>	<p>This credit is achievable in the Namibian context but very few projects focus on the net reduction of materials used. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p>	<p>MAT-10 should remain in its current form and no adjustments need to be made.</p>
	<p><b><u>MAT-11: Local Sourcing</u></b></p> <p>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.</p>	<p>Many of the building components, materials and finishes used in Namibia are imported from South Africa. Local materials should be explored and awareness should be raised of the embodied energy in materials sourced from far away. However as Namibia is so sparsely populated the sourcing of local materials within the current Green Star SA distances may prove difficult to achieve. To encourage the growth of industry in Namibia the sourcing of products made internally should be encouraged. It is recommended to amend the credit so that the first point is awarded for sourcing 20% from within Namibian borders and the distance for the second point be amended to 100kms. Besides this, the credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p> <p>Resource: (Namibia, 2013)</p>	<p>It is recommended to amend the credit so that the first point is awarded for sourcing 20% from within Namibian borders and the distance for the second point be amended to 100kms</p>
	<p><b><u>MAT-12: Efficient Dwelling Size - MULTI UNIT RES</u></b></p> <p>To encourage and recognise multi-unit residential developments with efficiently sized dwelling units and reduced material consumption.</p>	<p>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.</p> <p>All the benefits listed above are key in moving the residential market forward towards better design principles and more efficiently sized residential developments.</p> <p>The credit in its current form, therefore, is equally relevant and applicable in Namibia 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.</p>	<p>MAT-12 should remain in its current form and no adjustments need to be made.</p>

	<p><b><u>MAT-13: Masonry - MULTI UNIT RES &amp; PEB</u></b></p> <p>To encourage and recognise designs that minimise the embodied energy and resources associated with a reduction of virgin material in masonry units.</p>	<p>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.</p> <p>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 Namibia as it is in South Africa.</p>	<p>MAT-13 should remain in its current form and no adjustments need to be made.</p>
--	--	--	---

### 3.11. LAND USE AND ECOLOGY

	AIM OF CREDIT	DISCUSSION	RECOMMENDATION
	<b><u>ECO-00: Conditional Requirement</u></b> To encourage and recognise development on land that has limited ecological value and to discourage development on ecologically valuable sites.	This credit may in fact be more important in the Namibian context due to the shortage of high ecological areas in the country. The conditions required for compliance that particularly affect Namibia are water courses and prime agricultural land due to the scarcity of water and the dry-arid regions, inhospitable for farming that are characteristic of the Namibian landscape. Resource: (McGrath, 2012), (Namibia, 2013)	ECO-00 should be kept in its current form. A mandatory CIR will be required.
	<b><u>ECO-01: Topsoil</u></b> To encourage and recognise construction practices that preserve the ecological integrity of topsoil.	Preserving topsoil is equally important in Namibia as it is in South Africa because of the slow process of soil formation. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.	ECO-01 should be kept in its current form and no adjustments need to be made.
	<b><u>ECO-02: Reuse of Land</u></b> 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, even those in Namibia. An incentive for projects to redevelop previously developed land can help toward reducing the threat on sensitive ecosystems and natural resources. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.	ECO-02 should be kept in its current form and no adjustments need to be made.
	<b><u>ECO-03: Reclaimed Contaminated Land</u></b> To encourage and recognise developments that reclaim contaminated land that otherwise would not have been developed.	Making safe sites that could otherwise be considered a danger to the local natural environment and reducing the demand for undeveloped sites that may be of ecological importance is a valuable step in Namibia. Providing an incentive to choose and rehabilitate a contaminated site instead of virgin land is a worthwhile approach. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.	ECO-03 should be kept in its current form and no adjustments need to be made.
	<b><u>ECO-04: Change of Ecological Value</u></b> To encourage and recognise developments that maintain or enhance the ecological value of their sites.	The credit should be updated to adequately reflect the various bioregions in Namibia. Besides this, the credit is equally relevant and applicable in Namibia as it is in South Africa in its current form. Resource: (Namibia, 2013)	ECO-04 should be kept in its current form but adaptations to the bio-regions in the calculator are required to correctly represent the Namibian environment. A mandatory CIR is required.

<p><b><u>ECO-5: Urban Heat Island – RETAIL CENTRE</u></b></p> <p>To recognise and reward initiatives taken to reduce the heat island effect of the buildings which impact on microclimates, human and wildlife habitats.</p>	<p>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 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.</p> <p>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.</p> <p>The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p>	<p>ECO-5 should be kept in its current form and no adjustments need to be made.</p>
<p><b><u>ECO-6: Outdoor Communal Facilities - MULTI UNIT RES</u></b></p> <p>To encourage and recognise designs which enable residents to engage in a broad range of outdoor activities in common areas.</p>	<p>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.</p> <p>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.</p> <p>The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p>	<p>ECO-6 should be kept in its current form and no adjustments need to be made</p>

	<p><b><u>ECO-7: Urban Consolidation - MULTI UNIT RES</u></b></p> <p>To encourage and recognise designs which make use of compact development patterns to increase land utilisation efficiency.</p>	<p>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.</p> <p>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.</p> <p>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 Namibia as it is in South Africa.</p>	<p>ECO-7 should be kept in its current form and no adjustments need to be made.</p>
	<p><b><u>ECO-8: Community Facilities - PEB</u></b></p> <p>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.</p>	<p>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.</p> <p>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.</p> <p>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.</p> <p>This is relevant for the Namibian 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.</p>	<p>ECO-8 should be kept in its current form and no adjustments need to be made.</p>

### 3.12. EMISSIONS

	AIM OF CREDIT	DISCUSSION	RECOMMENDATION
	<b><u>Emi-1: Refrigerants/Gaseous Ozone Depleting Potential (ODP)</u></b> 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.	Many mechanical engineers in Namibia are familiar with the different refrigerants available but do not always use those with a zero ozone depleting potential. This should be encouraged. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.	EMI-01 should be kept in its current form and no adjustments need to be made.
	<b><u>Emi-2: Refrigerants/Gaseous Global Warming Potential (GWP)</u></b> To encourage and recognise the selection of refrigerants that reduce the potential for increased global warming from the emission of refrigerants to the atmosphere.	Many mechanical engineers in Namibia are familiar with the different refrigerants available but do not always specify those with a low global warming potential, but should be encouraged. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.	EMI-02 should be kept in its current form and no adjustments need to be made.
	<b><u>Emi-3: Refrigerant Leaks</u></b> To encourage and recognise building systems design that minimises environmental damage from refrigerant leaks.	Namibia uses the South African National Standards for their buildings and many of the professionals are familiar with the concept of refrigerant leakage, but do not typically implement any design measures to address this. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form. Resource: (Programme, 2010)	EMI-03 should be kept in its current form and no adjustments need to be made.
	<b><u>Emi-4: Insulant ODP</u></b> To encourage and recognise the selection of insulants that do not contribute to long-term damage to the Earth's stratospheric ozone layer.	Professionals in Namibia are familiar with the term Ozone Depleting Potential and some are aware that the manufacture or composition of thermal insulants sometimes contains ozone-depleting substances, but do not typically specify such products. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.	EMI-04 should be kept in its current form and no adjustments need to be made.



<p><b><u>Emi-5: Watercourse Pollution</u></b> To encourage and recognise developments that minimise stormwater run-off to, and the pollution of the natural watercourses.</p>	<p>The recently revised GSSA EMI-05 credit provides detailed information for designing stormwater attenuation and filtration systems according to best practice standards. The revised EMI-05 credit should equally apply in Namibia as it is applied in South Africa. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p> <p><b><u>Standard:</u></b> National Environmental Management Act No. 107 of 1998 similar to The Namibian Environmental Management Act No. 7 of 2007</p>	<p>EMI-05 should be kept in its current form and no adjustments need to be made.</p>
<p><b><u>Emi-6: Discharge to Sewer</u></b> To encourage and recognise developments that minimise discharge to the municipal sewerage system.</p>	<p>Typically, grey and black water treatment is not carried out in office buildings due to costs and availability of municipal sewer line. It is often the case that the wastewater department requires the building to connect to the municipal sewer, even though on-site treatment is proposed. Even though a connection to the municipal sewer is provided, there is no requirement for it to be used therefore the treated water can be used for anything that is not related to human consumption. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p> <p><b><u>Standard:</u></b> South African Water Supply and Drainage for Building part 1 similar to the Namibian Water Supply and sanitation policy, 2008</p>	<p>EMI-06 should be kept in its current form and no adjustments need to be made.</p>
<p><b><u>Emi-7: Light Pollution</u></b> To encourage and recognise developments that minimise light pollution into the night sky.</p>	<p>This credit is achievable as the professionals in Namibia are as familiar with the standards as South African professionals. The CIBSE standard referred to can be easily understood and referenced by the Namibian professionals. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p>	<p>EMI-07 should be kept in its current form and no adjustments need to be made.</p>
<p><b><u>Emi-8: Legionella</u></b> To encourage and recognise building systems design that eliminates the risk of Legionnaires' disease (Legionellosis).</p>	<p>Evaporative cooling systems are as common in Namibia as they are in South Africa. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p>	<p>EMI-08 should be kept in its current form and no adjustments need to be made.</p>
<p><b><u>Emi-9: Boiler and Generator Emissions</u></b> To encourage and recognise the use of boilers and generators that minimise harmful emissions.</p>	<p>Many projects do not comply with this credit because of the high cost associated with the type of generator. 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. The credit is equally relevant and applicable in Namibia as it is in South Africa in its current form.</p>	<p>EMI-09 should be kept in its current form and no adjustments need to be made.</p>

<p><b><u>EMI-10: Kitchen Exhaust Emissions – RETAIL CENTRE</u></b></p> <p>To encourage and reward designs that avoid kitchen exhaust fumes being expelled directly into the adjacent spaces that people occupy.</p>	<p>Kitchen exhaust emissions expelled by retail tenants directly into the adjacent spaces have a negative and unhealthy impact on the people occupying these spaces.</p> <p>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).</p> <p>This credit is therefore equally relevant and applicable in Namibia as it is in South Africa in its current form.</p>	<p>EMI-10 should be kept in its current form and no adjustments need to be made.</p>
---	---	--

### **3.13. INNOVATION**

The innovation credits should remain as they are except reference must be made to Namibia and not South Africa. This is an important category because it addresses what could possibly be important factors not addressed by the tool while encouraging innovation.

## 4. REFERENCES

- Africa, G. B. (2008). *Technical Manual Green Star SA - Office v1* (v1 ed.). Cape Town.
- Africa, S. E. (2008). Revision of Namibian Building codes to incorporate Renewable Energy and Energy Efficiency . Renewable energy and efficiency capacity building project.
- CIA. (2013). *Central Intelligence Agency, The World Fact Book*. Retrieved January 16, 2013
- Commission, N. P. (2011). *Government of Namibia*. Retrieved January 16, 2013, from [http://www.gov.na/documents/10180/34849/2011\\_Preliminary\\_Result.pdf/0ea026d4-9687-4851-a693-1b97a1317c60](http://www.gov.na/documents/10180/34849/2011_Preliminary_Result.pdf/0ea026d4-9687-4851-a693-1b97a1317c60)
- GBCSA. (2012, April). *gbcса.org.za*. Retrieved January 12, 2013, from [http://www.gbcса.org.za/system/data/uploads/additional\\_info/1/GBCSA\\_PVC\\_Communique.pdf](http://www.gbcса.org.za/system/data/uploads/additional_info/1/GBCSA_PVC_Communique.pdf)
- Geonames. (2013, 01 07). *Namibia - Largest cities*. Retrieved 05 09, 2013, from Geonames: <http://www.geonames.org/NA/largest-cities-in-namibia.html>
- Institute, R. E. (2011). *Baseline Study on Energy Efficiency in Buildings in Namibia*. Windhoek: UN development programme.
- McGrath, M. (2012). *BBC News science and environment* . Retrieved December 2012, from <http://www.bbc.co.uk/news/science-environment-18875385>
- Namibia the cardboard box travel shop*. (2013). Retrieved January 14, 2013, from [http://www.namibian.org/travel/info/public\\_transport.html](http://www.namibian.org/travel/info/public_transport.html)
- Namibia, G. B. (2013, March 11). Local Context Report Engagement.
- Programme, U. N. (2010). *Namibia Energy Efficiency Programme (NEEP) in Buildings* . Namibia: UNDP Environmental Finance Services.
- Ruppel, O. (2011). *Environmental Law and Policy in Namibia*. Windhoek: Hahns Seidel Foundation Namibia.
- Unknown. (2011). *World Weather and Climate Information*. Retrieved December 2012, from <http://www.weather-and-climate.com/average-monthly-Rainfall-Temperature-Sunshine,Windhoek,Namibia>
- UNStats. (2012). *United Nations Statistics Division*. Retrieved January 15, 2013, from [www.unstats.un.org/unsd](http://www.unstats.un.org/unsd)
- Wikitravel. (2012, 07 17). *Windhoek*. Retrieved 05 09, 2013, from Wikitravel: <http://wikitravel.org/en/Windhoek>
- Windhoek, C. o. (2013, 05 09). *Department of Transport*. Retrieved 05 09, 2013, from City of Windhoek: [http://www.windhoekcc.org.na/depa\\_transport.php](http://www.windhoekcc.org.na/depa_transport.php)