

Building Planning and Design Standard (BPDS)

VERSION 4.3 NOVEMBER 2018



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EarthCheck is the world's leading scientific benchmarking, certification and advisory group for travel and tourism. Since 1987, we have helped businesses, communities and governments in more than 70 countries to deliver over half a billion dollars in efficiency gains while reducing their footprint on the environment.

EarthCheck products and services are built on the Agenda 21 principles for Sustainable Development and align to the United Nations Sustainable Development Goals. EarthCheck provides frameworks, tools and Standards for the public and private sector to achieve sustainable development outcomes. EarthCheck uses world leading science, demonstrated methodologies and performance driven approaches to innovation.

EarthCheck Planning and Design science is aligned with the international best practice for the built environment. Design Standards provide a holistic sustainability framework to guide development and refurbishment projects towards asset efficiency and business improvement.

Design Certification ensures that projects that proceed onto EarthCheck's operational programs have tools, data and resources that align to the Intergovernmental Panel for Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories, the World Business Council for Sustainable Development (WBCSD) Greenhouse Gas Protocol, and the International Standardisation Organisation for (ISO) range of standards, including ISO 9001, 14000, 50001, 26000. This alignment provides organisations with a springboard to operational sustainability excellence.

EarthCheck partners with world-class organisations to deliver leading environmental and social outcomes which maximise benefits for all project stakeholders. The EarthCheck brand signifies better environmental and social performance, improved community interactions and savings through more efficient use of resources. It provides recognition and promotional support to an increasing aware and demanding global consumer market.

KEEPING EARTHCHECK STANDARDS CURRENT

The EarthCheck Standards are living documents which reflect the progress within the science and technology pertaining to Certification for a sustainable travel and tourism industry.

To maintain their currency, all EarthCheck Standards are periodically reviewed, and new editions are published. Standards may also be withdrawn. Standard updates are governed by the 'EarthCheck Code of Good Practice' which is aligned to the ISO Code of Good Practice for Standardisation (ISO/IEC Guide 59:1994) and is adhered to in order to ensure a degree of order, coherence and effectiveness in worldwide standardisation processes.

The EarthCheck Code of Good Practice for setting environmental and social standards is a tool to evaluate and strengthen the EarthCheck Standards that fulfil triple bottom line objectives.

EarthCheck welcomes suggestions for improvement to the Standards, and encourages organisations to notify us of any apparent inaccuracies. Please address your comments to <u>design@earthcheck.org</u>.

DISCLAIMER

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1. INTRODUCTION

1.1 What is the EarthCheck Building Planning and Design Standard

The purpose of the EarthCheck Building Planning and Design Standard is to facilitate environmentally, socially and economically sustainable design and construction management of individual buildings and associated infrastructure. The Standard sets out the requirements to undertake an integrated assessment of the expected environmental, social and economic performance of a project.

1.2 Advantages of EarthCheck's BPDS

EarthCheck is the world's leading environmental benchmarking and certification program designed specifically for the travel and tourism industry. The EarthCheck program is built on Agenda 21 principles. Our current portfolio boasts a wealth of over 1,500 clients in 70 countries. EarthCheck collects annual operational data for all its clients, which has allowed the organisation to build the largest database for operational tourism assets in the world. Operational performance data is benchmarked, which enables the identification of industry baselines and best practice operational performance world-wide.

EarthCheck's BPDS has been developed to guide the achievement of best practice operational performance for buildings. Through reverse engineering, the Standard aids design teams to achieve location and asset specific best practice operational performance targets. EarthCheck's Planning and Design Standards provide guidelines, tools and indicators to assist designers, architects and developers in the planning and design phases of sustainable buildings. The Standard is designed to ensure achievement of superior expected performance, meeting or exceeding current global best practice.

EarthCheck BPDS is a global tool, developed to deliver performance driven - sustainably planned, designed and constructed projects. EarthCheck's BPDS is part of a suite of tools and standards which provide an integrated program for sustainable business performance improvement. Upon commissioning, EarthCheck BPDS certified projects are encouraged to join EarthCheck's operational sustainability framework that drives ongoing performance improvements.

For further information on the EarthCheck operational sustainability programs visit the EarthCheck website

1.3 The BPDS Past and Present

The EarthCheck Building Planning and Design Standard (BPDS) was developed by the University of New South Wales and University of Queensland (Australia), in conjunction with the Sustainable Tourism Cooperative Research Centre (STCRC) of Australia. This Standard underpins the global affiliation, benchmarking and certification program of EarthCheck for the planning and design of sustainable buildings and associated infrastructure.

The EarthCheck BPDS is periodically reviewed and updated by a global network of leading academics, industry members and sustainable design practitioners.

EarthCheck retains the right to use information provided by project proponents to build on and improve global standards for sustainable planning, design and construction of assets.

1.4 Using the BPDS throughout project stages

The BPDS can be used for development projects during all project stages. It is not necessary for the project to be under construction at the time of the EarthCheck Certification process. Projects that have begun the construction process will be subject to providing more detailed evidence in regard to the construction phase of the project, related to matters of social and environmental sustainability.

- Design Stage: projects may commence the assessment process during the early planning and design stage and use the assessment process to guide planning & design into technical design and works preparation. The earliest that certification can be obtained is during the developed design stage, upon submission of detailed design and performance modelling. A project that seeks certification before construction commencement must still meet construction and post-construction sustainability requirements as outlined in the Standard, through formal commitments.
- Construction Stage: project in the construction stage must demonstrate compliance with all design requirements and provide detailed documentation on sustainability measures being implemented during the construction phase. The project must still meet post-construction sustainability requirements as outlined in the Standard, through formal commitments.
- Post-Construction Stage: projects may obtain retrospective planning and design certification. The
 project must still meet planning, design, construction and post-construction sustainability requirements
 as outlined in the Standard.

2. SCOPE OF THE BUILDING PLANNING & DESIGN STANDARD

The Building Planning and Design standard can be applied the following asset classes

Accommodation – Bed & Breakfast	Administration Offices
Accommodation – Business Hotel	Retail & Mall/Shopping Centre
Accommodation – Hostel	Airports
Accommodation – Motel	Exhibition Hall & Convention Centres
Accommodation – Ryokan	Marinas
Accommodation – Serviced Apartment	Resorts & Mix Use Precincts*
Accommodation – Vacation Hotel	Restaurant / Pubs
Accommodation – Villas	Spa
Accommodation – Residential Apartments	Beverage Producer
Accommodation – Residential Houses	Theme Parks

*Note: for mixed use precincts please refer to the EarthCheck Precinct Planning & Design Standard.

3. THE BPDS FRAMEWORK

3.1 Key Performance Areas

The following 10 Key Performance Areas (KPA) addressed in this Standard aim to provide and integrated approach to sustainable planning and design. The KPAs ensure that projects are planned, designed and constructed to meet or exceed best practice performance benchmarks and deliver improved environmental, economic and social outcomes.

Key Performance Areas Sustainability Approach Energy Water Solid Waste Land Use Planning & Biodiversity Sustainable Materials & Resource Conservation Indoor Environmental Health & Pollution Control Transport Social, Cultural and Economic Well-being Innovation

Each KPA has a series of criteria that are measured through qualitative and quantitative indicators.

3.2 Assessment Criteria

The Standard sets out criteria for EarthCheck BPDS Certification. The criteria address planning and design requirements, construction requirements and operational requirements.

Planning and Design Requirements are the most common type of criteria set out in this Standard. They relate to the requirements of the developer to have been environmentally and socially responsible during the planning and design phase of the project.

Construction Requirements relate to the requirements for the developer to commit (if the construction phase has not yet commenced) or provide evidence of the developer or contractor (if the construction phase has commenced) undertaking the construction process in an environmentally and socially responsible manner.

Operational Requirements relate to ongoing sustainability commitments and requires the developer and/or the Asset Management Company to provide commitments to ensure that, upon project commissioning, there will be strategies in place to deliver ongoing sustainable environmental, social and economic outcomes and achieve ongoing performance improvements.

3.3 Credits

Each KPA is measured using a set of criteria. In turn, each criterion has specific qualitative and quantitative indicators that require compliance for credit(s) to be awarded. Qualitative and quantitative indicators are described in the 'Compliance Checklist Item' table below each Criterion.

When multiple compliance checklist items are assigned to one or more credit(s), all checklist items must be provided for the credit(s) to be awarded, unless otherwise noted.

Mandatory Criteria must be addressed by the project proponent and does not count to final scoring since they are compulsory. Some mandatory criteria require meeting EarthCheck best practice performance benchmarks. Benchmark data will be provided to the project team by EarthCheck upon registration of the project to the EarthCheck Design Certification program.

Performance benchmarks will use asset specific *activity measures*. *Activity measures* are defined as a measure that reflects the key activity of the project, taking into account asset type, operational activities and the type of impact. Activity measures include: m2, visitors, residents, guest nights, etc.

EarthCheck Sustainable Design Accredited Professionals (ESDAP) are available to drive the project towards successful certification. One extra credit, complementary to the potential 130 total credits, is provided when acquiring the services of an ESDAP.

For further ESDAP availability to your region email design@earthcheck.org

3.4 Checklist Items & Credit Apportionment

Evidence required to meet each qualitative and quantitative indicator is provided in the 'Evidence Required' section of each Criterion throughout the Standard. The Standard sets out the documentation requirements that can be objectively assessed subject to a development's level of environmental and social risk.

EarthCheck understands that not all documentation can be sourced directly from the developer and it is highly encouraged that the developer works closely with all parties involved in the development's design, construction and eventual operation to provide the required documentation that will be used as evidence against the Standard's criteria.

The table below provides a summary of the KPAs and respective credits available for each key criterion.

Key Pe	erformance Areas	Credits Available
Sustai	nability Approach	11
1	Sustainability Policy	Mandatory
2	Project Brief	Mandatory
3	Multidisciplinary team	Mandatory
4	Sustainable Construction	4
5	Compliance	Mandatory
6	Risk Management	5
7	Consultation	2
Energ	у	30
8	Energy Consumption	Mandatory + 4
9	Energy Metering & Management	Mandatory + 2
10	Greenhouse Gas Emissions	Mandatory + 4
11	Renewable Energy	Mandatory + 11
12	Energy Efficiency	4
13	Passive & Active Design	5

Wate	er	24
14	Water Consumption	Mandatory + 10
15	Water Metering & Management	Mandatory + 2
16	Water Efficiency	4
17	Water Recycling and Reuse	5
18	Waste Water Management	Mandatory +3
Soli	d Waste	2
19	Waste Generation	Mandatory
20	Waste Management	2
Land	d Use Planning & Biodiversity	10
21	Siting	3
22	Biodiversity	Mandatory + 4
23	Landscaping	3
Sust	tainable Materials & Resource Conservation	14
24	Resource Conservation	6
25	Sustainable Materials	4
26	Lifecycle Analysis	4
Indo	or Environmental Health & Pollution Control	7
27	Air	5
28	Noise	1
29	Light	1
Tran	sport	8
30	Transport Availability	2
31	Transport Support Facilities	4
32	Sustainable Transport	2
Soci	al, Cultural and Economic Well-being	16
33	Heritage & Culture	5
34	Accessibility & Inclusion	4
35	Training & Education	3
36	Employment	2
37	Economic Development	2
Inno	vation	8
38		1
39	Energy	1
40	Water	1
41	Solid Waste & Material Recycling	1
42	Sustainable Materials	1
43	Indoor Environmental Health	1
44	Transport	1
45	Social, Cultural & Economic Wellbeing	1
	Total Credits	130

3.5 Guidance and Support Resources

EarthCheck has developed templates and calculators to support project teams in meeting the criteria requirements. These support documents will be noted as available in the 'Guidance' or 'Resources' section at the end of each Criterion's section.

All support resources & templates will be provided to the team electronically via the online project management platform: Podio.

4. PROJECT CERTIFICATION PROCESS Project Interest & Conduct a Free Diagnostic Questionnaire 1. Register the Project in the EarthCheck BPDS Certification Program 2. 3. Promote your Certification ambitions utilising EarthCheck Corporate logo on project communication and collateral Meet with EarthCheck & commence the EarthCheck BPDS Certification Process 4. Phase 1 - EarthCheck Assessor Phase 1 - Podio workspace is reviews submitted evidence created and project proponent delivering feedback iteratively commences evidence submission Phase 2 Project proponent _ Phase 2 - Project proponent defines addresses Assessor's comments roadmap to achieve Certification based with new evidence on Assessor's feedback and desired achievement targets Phase 3 - Project proponent Phase 3 - EarthCheck issues Final Certification Report & Certificate of achieves desired rating outcomes and requests EarthCheck Assessor Achievement Review for Certification. Project proponent receives Certificate of Opportunity to acquire an EarthCheck Achievement and dated Certification Design Certified Plaque for the Project Logo which can be used for promotion Opportunity to join the EarthCheck Certified program to monitor and deliver operational sustainability performance

Diagnostic Questionnaire

The diagnostic questionnaire aims to provide an early-familiarisation to the Standard requirements. The diagnostic questionnaire provides project proponents with a tool to review early compliance against each criterion of the Standard, allowing the project team to conduct a gap analysis to determine project strengths, opportunities for improvement and areas not yet identified as material to the project.

The diagnostic questionnaire should be used as a filter mechanism for project proponents to determine whether a project will be able to comply with the BPDS Standard requirements. The responses to the questionnaire will enable project proponents to develop an EarthCheck Certification action plan prior to registration. It is highly recommend project proponents work with an EarthCheck Accredited Professional (AP) to ensure this process in correctly undertaken. Please contact EarthCheck for further information on EarthCheck APs in your country.

Once the project proponent has determined it is ready to proceed with the Certification, it registers the project in the EarthCheck Design program.

Assessment Phases

Phase 1 - Assessment & Benchmarking

EarthCheck will appoint an Independent, Third Party Assessor, who will commence reviewing and assessing the provided project documentation and identify where & if gaps in documentation and planning exist. The assessment process includes review of qualitative and quantitative evidence submitted to comply with the Standard's criteria.

Throughout the assessment process, the Developers are entitled to use the nondated and un-certified EarthCheck logo as in evidence to the right. Please refer to the Logo Use Policy provided for further information.

Phase 2 – Interim Benchmark Assessment Report

Once a project meets all the mandatory benchmark criteria, an interim Benchmark

Assessment Report will be generated by the project Assessor to provide a snapshot of the assessment progress. The Developer can use the Interim Benchmark Assessment Report development to promote the environmental and social achievements related to their project's sustainable design and construction management to this stage.

The Interim Benchmark Assessment Report will enable project teams to identify opportunities for improvement and determine the most effective strategies to achieve certification.

Phase 3 – Certification

EarthCheck BPDS has been developed as a performance driven tool, which ensures projects that achieve certification are designed to meet or exceed, best practice performance benchmarks for the building type and location.

To award certification, EarthCheck requires that projects meet all mandatory criteria and a minimum of 50 credits in the Key Performance Areas. Three outcomes may be achieved depending on the amount of credits fulfilled by the project:

EarthCheck Design Certified: Silver (50-70 credits required)



EarthCheck Design Certified Silver represents a project that will meet or exceed best practice performance benchmarks and deliver positive outcomes in several Key Performance Areas.

EarthCheck Design Certified: Gold (71-90 credits required)

EarthCheck Design Certified Gold represents a project that will exceed best practice performance benchmarks and excel in several Key Performance Areas.

EarthCheck Design Certified: Platinum (91+ credits required)

EarthCheck Design Certified Platinum represents a project that will exceed best practice performance benchmarks, excel in several Key Performance Areas, and have net benefits in several Key Performance Areas.

The third party Assessor will issue the project proponent with a final report identifying areas of compliance with the Standard. The final report will be issued with a dated, EarthCheck 'Certified' logo for use in corporate materials and communications. After Certification, the Developers are entitled to use the dated and certified EarthCheck logo as in evidence to the right.

Achieving EarthCheck BPDS certification ensures buildings owners and operators that the asset is designed to meet or exceed industry best practice benchmarks. This guarantees operational cost savings whilst delivering valuable social, cultural, environmental and economic outcomes.

5. POST DESIGN CERTIFICATION

Post design certification projects are encouraged to join the EarthCheck Certified Program, which provides a business improvement framework to benchmark operational Environmental, Cultural, Social and Economic performance, and support asset managers to find ways to continuously improve asset performance.

For further information on the EarthCheck Certified Program please contact EarthCheck at info@earthcheck.org.

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KEY PERFORMANCE AREA:

SUSTAINABILITY APPROACH

Objective

Ensure sustainable design practice is integrated into the project at an early stage as well as through the construction and operational stages.

An inclusive design approach, which prioritises sustainability, increases the probability that triple bottom line outcomes are achieved in the project. Without this approach from the outset it is difficult to retrofit sustainability in the project as it advances. In addition, the use of benchmarks as design targets establishes a performance basis for design, ensuring a reduction in greenhouse gas emissions and other key factors such as energy and water use.

KPA Criteria

<u>Susta</u>	inability Approach Criteria	Credits Available
1.	Sustainability Policy	Mandatory
2.	Project Brief	Mandatory
3.	Multidisciplinary team	Mandatory
4.	Sustainable Construction	4
5.	Compliance	Mandatory
6.	Risk Management	5
7.	Consultation	2

1. SUSTAINABILITY POLICY

Objective

Ensure the developer's executive commitment to a Sustainable Building Planning and Design Approach and have it contained in a formal policy statement. The Policy must clarify and declare the management, planning and design intentions; and have a well-documented commitment to the goals and objectives of the development process.

Criteria Requirements	
Compliance Checklist Item	Credit
1.1 An accurate scope statement addressing the extent of the development and its operational impacts or contributions.	
1.2 Declare the intent to make appropriate changes and improvements in design to meet Mandatory Criteria.	
1.3 Commitment to legal compliance with relevant environmental legislation and regulations, and with other requirements to which the design and construction should conform.	
1.4 Commitment to give preference to indigenous design and management strategies, construction practices and products/services of local origin.	
1.5 Commitment to upholding workers' rights and employment of persons living in nearby communities for management, construction and resource procurement purposes.	Mandatory
1.6 The Policy must be signed by the Chief Executive Officer and/or General Manager of the development company.	-
1.7 Commitment to promote the Policy and vision in the design and construction phase. The Policy must be communicated to all key stakeholders (e.g. design team, construction contractor, consultants, community, local government) and displayed publicly on site during construction.	
1.8 Commit to sustainable procurement of local building products, goods, other consumables and services.]

Evidence Required

A written Sustainable Building Design and Construction Management Policy ("Sustainability Policy") for the project that addresses the checklist items and takes account of contextual factors such as location, climate and socio-economic setting, compared with the scope and scale of the proposed project and associated infrastructure development. The policy shall have regard to all key performance areas of the Standard.

- Documentation that shows the Policy being communicated to key stakeholders (e.g. email communications with the Policy attached to the communication, meeting minutes, etc.)
- Photographs of the Policy being displayed in public places where staff and contractors transit during the construction.

Resources

Refer to the Sample Policy template.

2. PROJECT BRIEF

Objective

The project brief must provide a high level overview of the scope, scale and objectives of the project. The brief must describe the sustainability goals, objectives, targets and methods that will be implemented during design, construction and post-construction.

Criteria	
Requirements	

Compliance Checklist Item	Credit
2.1 Project summary, including vision and sustainability goals of the planning & design strategy	
2.2 Project concept, scope, scale and development timeframes of building and delivery	Mandatory
2.3 Systems and Key Features	
2.4 Social, cultural and economic context of the project site and surrounding community.	

Evidence Required

- A project brief that provides a narrative regarding:
 - Project vision and objectives
 - Sustainability targets
 - Local environmental, social, cultural and economic context
 - Investors Brief/Prospectus
- Schematic Designs
- Plan Layouts
- Architectural Drawings
- Building Renderings

Resources

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Refer to the Project Brief template.

3. MULTIDISCIPLINARY TEAM

Objective

The project team must be multidisciplinary to enable identifying and deploying integrated approaches to sustainable design solutions across specialist teams, including the construction team when appropriate. A multidisciplinary approach will enable projects to cohesively implement optimal solutions to minimise the building footprint and maximise the efficiency and capacity of building systems.

Criteria	
Requirements	

Compliance Checklist Item	Credit
3.1 A multidisciplinary team involved in the design phase.	
3.2 Key project members participate in BPDS Standard induction and mobilisation meetings.	Mandatory
3.3 Key project members understand specific BPDS environmental and social design and construction management aspects.	

Evidence Required

- A Project Team list highlighting roles, responsibilities and contact details.
- Strategy/Program that details how the team will adopt an integrative approach to ensure optimal and effective outcomes are implemented (i.e. project schedules, meeting agendas, action plans, project objectives, etc.).
- Project Team defines an action plans and targets to achieve certain outcomes or implement a particular solution.
- Key project members need to show evidence that they undertake professional development in sustainable built environment within 12 months of project commencement date.

4. SUSTAINABLE CONSTRUCTION

Objective

Commitment to implement sustainable construction processes. This requires construction process data collection and the implementation of a construction environmental management plan (CEMP), which should be a contractual responsibility of the building contractor(s).

Criteria		
Requirements		

Compliance Checklist Item	Credit
4.1 Construction contractor must have a Sustainability and/or Environment Policy.	
4.2 A Construction Environmental Management System (CEMS) must be implemented.	1
4.3 Commitment to minimise resource consumption, use of environmentally harmful substances, waste generation and pollution throughout the construction.	
4.4 Commitment to periodic monitoring and reporting of environment, health and safety performance of the construction process.	1
4.5 Ensure that the construction footprint is limited and construction activities are controlled, to reduce impact to the site's natural environmental, adjacent natural environments and communities.	1
4.6 Commitment to hire local workforce.	1

Evidence Required

Note: If a project is seeking Certification prior to the commencement of the construction stage, evidence must be provided to demonstrate the Contractor(s) will have contractually binding obligations to deliver on the above criteria. Contractual specifications must include the above criteria in the form of clauses. If the project is already in the construction phase, the project team must provide the 'live' documentation, including construction performance and EMS reports and photographic evidence.

- 4.1 Contractor sustainability/environment policy signed by CEO/GM. The policy must address all of the criteria above and define the objectives to deliver sustainable construction.
- 4.2 Contractual agreement or equivalent showing that the contractor must implement a CEMS, which adheres and complies with EIA/EIS conditions and other relevant regulation. The CEMS must also require other onsite contractors and sub-contractors to adhere to the main contractor's CEMS.

Refer to the sample CEMS for guidance.

- 4.3 Plan and procedures that detail measures taken to reduce resource consumption and minimise waste sent to landfill by reusing or recycling material.
- 4.4 Monitor performance and provide periodic performance reports (i.e. weekly, bi-weekly) against established targets. Commitment to report total consumption of energy and water, and waste generation at the conclusion of the construction.

- 4.5 Provide site layouts that demonstrate the designated construction area. Describe measures and activities in place to reduce the construction footprint and impact on offsite environments.
- 4.6 Demonstrate a commitment to prioritise the employment of local workforce, within a 20km radius of the project site.

Include local staff employment targets/actual figures (i.e. % staff)

Note: projects located in remote areas, where local workforces are not available, are able to claim this credit by demonstrating that workforce is or will be sourced from the most proximate area to the project site.

Resources

4.2 Refer to the sample CEMS framework for guidance on developing a CEMS.

5. LEGISLATIVE COMPLIANCE

Objective

Comply with relevant environmental legislation and regulations, and with other requirements to which the design and construction should conform; including but not limited to environmental, social, cultural, quality, health and safety.

Criteria	
Requirements	
Compliance Checklist Item	Credit
5.1 Environmental Impact Assessment (EIA) or Environmental Impact Statements (EIS).	
5.2 Land use planning controls & development approval conditions	
5.3 Pollution control regulations & development approval conditions	Mandatory

5.4 Public health and occupational health and safety (OHS) requirements

5.5 Resource usage regulations & development approval conditions

Evidence Required

- A copy of the Environmental Impact Assessment (EIA) & Environmental Impact Statement (EIS)
- A copy of the authority approval letter & conditions for development
- An up to date Register of relevant legislation, regulations, Standards and codes to which design and construction should comply with.
- Copies of the records to demonstrate legal compliance, including but not limited to: permits, licenses, standards compliance, and correspondence with regulatory authorities.

6. **RISK MANAGEMENT**

Objective

Identify and qualify environmental, social and climate risks deemed material to the project's development and future operations. Material risks must have suitable risk mitigation and management measures appropriate to the project scope. The development shall not jeopardize the provision of basic services, such as water, energy, or sanitation, to neighbouring communities.

Criteria		
Requirements		
Compliance Checklist Item	1	Credit
6.1 The project takes due ac natural environment, includir	count of exposure to current and future risks derived from the	1

tsunami.	
6.2 The project takes due account of impacts to current and future cultural and socially sensitive areas or issues.	1
6.3 Measures have been set in place for each area of identified high and extreme risks as determined by the likelihood of occurrence and consequence.	1
6.4 Additional Credit: Climate change adaptation plan has been developed and measures have been implemented to address risks	2

Evidence Required

A site specific risk assessment carried out using best practice risk management standards and scientific evidence, which considers:

- Actual and/or potential ecological and/or social impacts; or
- Environmentally and/or culturally sensitive area; or
- The well-being of the local community and its native and/or indigenous inhabitants.

Guidance

- Risk assessments: Must be undertaken using best practice risk management standards (i.e. <u>ISO</u> <u>31000</u>)
- Risk Assessment and Evaluation Tools:
 - World Resource Institute <u>Aqueduct Water Atlas</u> provides detailed maps with data regarding current and projected change in water stress, seasonal variability, water supply and water demand.

- Ecolab's <u>Water Risk Monetizer</u> provides actionable information to help businesses understand and quantify water-related risks in financial terms to inform decisions that enable growth and enhance the vitality of communities.
- Maplecroft's <u>Climate Change Vulnerability Index</u> enables organisations to identify areas of
 risk within their operations, supply chains and investments. It evaluates 42 social, economic
 and environmental factors to assess national vulnerabilities across three core areas. These
 include: exposure to climate-related natural disasters and sea-level rise; human sensitivity,
 in terms of population patterns, development, natural resources, agricultural dependency
 and conflicts; thirdly, the index assesses future vulnerability by considering the adaptive
 capacity of a country's government and infrastructure to combat climate change.

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A Climate Change Adaptation Plan which demonstrates how the identified material climate risks will be managed through appropriate design adjustments.

Guidance

Climate Change Adaptation Plan: must be developed in accordance to best practice standards (i.e. <u>AS</u> <u>5334-2013</u>).

To understand future climate risks, the project team may use the Global Circulation Models (GCM) climate change scenarios. GCMs, possibly in conjunction with nested regional models, have the potential to provide geographically and physically consistent estimates of regional climate change which are required in impact analysis. The GCMs are endorsed by the International Panel of Climate Change (IPCC) and can be accessed here: http://www.ipcc-data.org/guidelines/pages/scen_selection.html

7. CONSULTATION

Objective

The project must establish effective consultation mechanisms and strategies to ensure the community and relevant stakeholders contribute to the design, development and future operations of the project; ensuring the key environmental, economic, social and cultural issues are heard, considered and where appropriate addressed.

Criteria		
Requirements		
Compliance Checklist Item		Credit
7.1 Demonstrate adherence	to Statutory consultation requirements.	
7.2 All key stakeholders, the been given the opportunity to	e community and community groups are identified and have participate in the planning and design stages of the project.	
7.3 Methods, timeframes and outcomes of the consultation process have been defined and transparently shared with all key stakeholders.		1
7.4 Describe changes, if any from the consultation process	r, to the design and/or expected building operations resulting	

7.5 Additional Credit: Substantial changes to the original design or inclusion of addition infrastructure to support the needs of the community and improve general quality of life.

Evidence Required

A Stakeholder/Community consultation plan which provides detailed information in regards to:

- The process and methods used during the project planning and design stages;
- Outcomes of the consultation process; and
- Any expected post-design consultation.

Resources

Refer to the Stakeholder/Community Consultation report template.

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Based on feedback from the consultation process, the project team identifies community needs that can be addressed through the inclusion of support or additional infrastructure. Additional infrastructure can be qualified as any built assets that improve the quality of life of the community through improvements in safety, health, leisure, comfort, education, etc. Additional infrastructure must be additional to any community contributions mandated in development approval conditions.

KEY PERFORMANCE AREA: ENERGY

Objective

To ensure a 'whole of systems' view is adopted to minimise consumption, manage energy use and promote self-sufficiency. Principles of sustainable energy design include passive solar design (PSD), use of efficient active systems, urban form design, renewable energy use and other emerging technologies.

Energy consumption is directly correlated with Green House Gas (GHG) emissions, and GHG emissions are addressed in the Energy KPA.

KPA Criteria

Energy Credits	Credits Available
8. Energy Consumption	4
9. Energy Metering & Management	2
10. Predicted Emissions	4
11. Renewable Energy	11
12. Energy Efficiency	4
13. Passive Design	5

8. ENERGY CONSUMPTION

Objective		

Minimise energy consumption.

Criteria	
Requirements	

Compliance Checklist Item	Credits
8.1 Meet or exceed EarthCheck best practice energy consumption benchmarks.	Mandatory
8.2 Additional Credit: One additional credit is awarded for every 10% reduction in energy consumption when compared with EarthCheck best practice energy consumption benchmark.	4

Evidence Required

8.1 Demonstrate the project meets or exceeds the EarthCheck best practice energy consumption benchmarks for the building type and location: Energy calculation formula:

Predicted Energy Consumption (MJ) pa Relevant Activity Measure = MJ/Activity Measure

Energy modelling inputs and outputs detailing energy performance and consumption include but are not limited to:

- Modelling software, including justification to the selection and suitability of software
- Model inputs:
 - Location data
 - Building envelope
 - Internal gains
 - Operating Schedules
 - Energy Systems
- Assumptions
- Model outputs

Provide expected energy consumption model outputs segregated by energy source, load type and functional areas:

Energy sources:

- Renewable (onsite generation)
- Electricity (renewable or grid)
- Fuels (i.e. Diesel, LPG, Natural Gas)

Loads

- Lighting
- HVAC
- Kitchens
- Small power

Functional Areas

- Restaurants
- Accommodation
- Events/Entertainment/Meetings
- Retail
- Offices

- Mechanical Loads
- Pumps
- Hot Water
- Other significant loads
- Public spaces
- Pools
- Spa
- Foyer/Lobby

Note: energy modelling software that includes thermal analysis will comply with requirement of Criteria 13.1.

|--|--|--|--|

8.2 Energy modelling outputs demonstrating expected reductions in energy consumption compared against the EarthCheck Best Practice benchmarks.

9. ENERGY METERING & MANAGEMENT

Objective

Measure and manage energy consumption to minimise operational energy consumption and associated carbon dioxide emissions.

Criteria	
Requirements	

An Energy Metering & Management Strategy or Plan which includes the checklist items below:

Compliance Checklist Item	Credits
9.1 Commitment to measuring and monitoring energy performance through effective metering and sub-metering of critical areas and/or equipment of the building.	Mandatory
9.2 Commitment to having software solutions that will enable the effective management of energy consumption during operations.	1
9.3 Peak demand reduction.	1

9.1	Metering and sub-metering are in place to enable measurement and monitoring of energy performance
	of critical pieces of equipment and/or functional areas. Critical pieces of equipment or functional areas
	are those that account for more than 5% of total energy load. See guidance section for examples.

- 9.2 Meters and sub-meters are linked to the Building Management System (BMS) or other specialised software.
- 9.3 Based on energy modelling set targets to reduce peak demand. Credit awarded for more than 10% reduction in peak demand compared to best practice energy performance benchmarks.

Guidance

Equipment

Evidence Required

- Boilers/Chillers
- Fans (major)
- Kitchens/Cold Storage
- Pool Pumps
- Transport systems
- Lighting & Small Power
- Other

Functional Areas

- Restaurants/Bars
- Accommodation
- Retail
- Offices
- Public spaces
- Spa & Wellness
- Events/Entertainment/Meetings
- Pools
- Foyer/Lobby
- Other

10. GREENHOUSE GAS EMISSIONS

Objective

Minimise or avoid greenhouse gas emissions.

Criteria	
Requirements	

Compliance Checklist Item	Credits
10.1 Provide expected greenhouse gas emissions that meet EarthCheck best practice greenhouse gas emissions benchmark.	Mandatory
10.2 Additional Credit: One (1) credit is awarded for every 25% reduction in greenhouse gas emissions when compared with EarthCheck best practice greenhouse gas emissions benchmark.	4

Evidence Required

10.1 Demonstrate the project meets or exceeds the EarthCheck best practice greenhouse gas emissions benchmarks for the building type and location:

Green House Gas Emissions calculation formula:

$\frac{Predicted \ ^{CO_2}emissions \ (kg) \ pa}{Relevant \ Activity \ Measure} = kgs/Activity \ Measure$

Guidance

- 10.2 Populate the GHG emissions calculator providing:
 - Energy consumption model outputs by energy source (i.e. gas, diesel, electricity)
 - Onsite wastewater treatment plant specifications (if applicable)

Refer to the Green House Gas Emissions Calculator template.

Evidence	Required	for
Additional C	Credit	

10.2 Greenhouse gas emission reductions credits can be met through the following mechanisms:

- Reducing energy demand evidence provide through expected energy consumption modelling outputs.
- Onsite renewable energy production (provide evidence of expected onsite renewable energy generation outputs see Credit 11.1).

- Committing to source energy from a green power supplier.*
- Committing to offset carbon emissions through carbon offset purchases.*

A combination of any or all of the above can be used to obtain the credits.

*For credits to be awarded, formal commitments need to be demonstrated with either a carbon offset credit provider or with the green power provider. Formal commitment can be demonstrated via contractual purchase agreements or signed commitment letter from the Asset Management Company or Operational Team (GM/CEO).

11. RENEWABLE ENERGY

Objective

Promote the adoption of renewable energy to increase building energy independence and reduce greenhouse gas emissions.

Requirements	
Criteria	

Compliance Checklist Item	Credits
11.1 Evaluate the project's potential to incorporate renewable energy based on available rooftop area and other project structures.	Mandatory
11.2 Project rooftop areas and structures are designed to maximise potential generation from solar energy and readiness for current and future technologies to be installed.	1
11.3 Half (.5) of a credit is awarded for every 5% of total energy demand that is met by on- site renewable energy generation.	10

Evidence Required

- 11.1 Feasibility study which includes selected technology, scale of system, system output assumptions and return on investment. The study must be undertaken by an energy specialist and signed-off by the project's PM.
- 11.2 Demonstrate that measures have been taken to ensure that rooftop areas and other structures have been designed to maximise readiness for solar energy adoption by considering structural, electrical, roof layouts and shading elements. Detailed drawings and explanations must be provided.
- 11.3 Total calculation of renewable energy generation figures based on the expected equipment/system outputs per year. Output data must match feasibility study assumptions and statements.

12. ENERGY EFFICIENT EQUIPMENT

Objective

Reduce operational energy consumption by procuring energy efficient equipment.

Criteria	
Requirements	
	1

Compliance Checklist Item	Credits
12.1 Heating, Ventilation and Air Conditioning (HVAC)	1
12.2 Interior and exterior lighting	1
12.3 Hot Water Systems & Pumps	1
12.4 Kitchens and Refrigeration Rooms	.5
12.5 Appliances & Hardware	.5

Evidence Required

Energy efficiency checklist items require the following evidence to be deemed compliant:

- Equipment/product specifications
- Equipment efficiency rates compliant to ASHRAE 90.1.
- Smart controls for equipment and management of functional areas.
- For appliances the project must demonstrate use of country specific energy efficiency criteria for procurement of equipment and appliances with at least 4 Star Rating (out of 5 Star Rating System). In the absence a national energy efficiency rating schemes, evidence must be provided to ensure equipment purchased is equivalent to the requirements of an existing rating scheme.

Half a credit (.5) is awarded when 75% of appliance-cost procured meet the designated Star Rating.

Appliances and Hardware includes but is no limited to: Computers, Televisions, Washing Machine, Drying Machines, Dish Washers, Fridges, Freezers, etc.

13. PASSIVE DESIGN STRATEGIES

Objective

Reduce operational energy consumption by implementing passive design strategies.

Criteria		
Requirements		
Compliance Checklist Item		Credits
13.1 Passive Design Measure	es	5
Evidence Required		

13.1 Drawings/Layouts/Plans and support explanations describing how passive design measures have been implemented. One (1) credit is awarded for every two (2) passive design measures implemented. Provide thermal performance modelling/simulation results, including model inputs and outputs, and a description of how and why the passive design considerations were selected.

Guidance

Passive Design Measures Include:

- Building massing
- Building materials
- Building orientation
- Building façade
- Fenestrations

- Natural lighting
- Natural ventilation
- Insulation
- Glazing
- Landscaping & natural shading*

*Note: for further information on landscaping and shading refer to Credit 23.1

KEY PERFORMANCE AREA: WATER

Objective

To ensure a 'whole of systems' view is adopted to minimise consumption, manage use and recycle and reuse water resources. The developer shall ensure that the development's design establishes the efficient use of freshwater supply and that potable water consumption from all sources is modelled in the design phase to minimise potable water demand and maximise water reuse.

KPA Criteria

Water Credits

Credits Available

14. Water Consumption	10
15. Water Metering & Management	2
16. Water Efficiency	4
17. Water Recycling & Reuse	4
18. Wastewater Management	3

14. WATER CONSUMPTION

Objective		

Reduce consumption of potable water.

Criteria	
Requirements	

Compliance Checklist Item	Credits
14.1 Expected water consumption model outputs segregated by functional spaces or project areas that, meet EarthCheck best practice water consumption performance.	Mandatory
14.2 Additional Credit: One additional credit is awarded for every 10% reduction in potable water consumption when compared with the EarthCheck best practice potable water consumption benchmark.	10

Evidence Required

14.1 Demonstrate the project meets or exceeds the EarthCheck best practice water consumption benchmark for the building type and location:

Water Consumption Calculation Formula:

Predicted Water Consumption (kL) pa Relevant Indicator Measure = kL/Indicator Measure

Water modelling outputs detailing water consumption use & breakdown for functional areas. Drawings including schematics that summarise the water features / water cycle of the site. Plumbing and drainage systems report including, but not limited to:

- Water Supplies (sources, quality & systems)
- Hot Water
- Sanitary plumbing & drainage system
- Rainwater system
- Fire Water Supply System

Evidence Required for Additional Credit

14.1 Water modelling outputs demonstrating expected reductions in water consumption when compared to the EarthCheck Best Practice Figure.

Note: Credits can be obtained by demonstrating how potable water reductions will be achieved through rainwater harvesting and reuse, and/or treatment and reuse of stormwater, greywater and/or wastewater.

Guidance		

The figures below provide industry-wide averages for usage patterns of water fixtures which can be used to support consumption calculations. Projects may use personalised non-standard figures to calculate water consumption demonstrating that the standard rates do not reflect the project's expected use.

Further guidance on how to calculate water consumption is provided in the water calculator template.

Areas	Use or Appliance:	Average use per person/day:	
Work Space	Shower	1 time (5 minutes) (% use to be determined on a project-by-project basis)	
	Water Closet	6 times (used by 100% of female staff)	
	Water Closet	1 time (used by 100% of male staff)	
	Urinals	5 times (used by 100% of male staff)	
	Tap Flows	6 times (20 second per wash)	
	Water Closet	3 times	
Dwellings	Shower	1 time (5 minutes)	
	Bath (half full)	1 time	
	Tap Flows	5 times (20 second per wash)	
	Water Closet	2 times (used by 50% of female visitors)	
Dublic Occase	Water Closet	1 time (used by 10% of male visitors)	
Public Spaces	Urinals	1 time (used by 50% of male visitors)	
	Tap Flows	2 times (20 second per wash)	
Pool	Shower	1 time (5 minutes) (used by 50% of visitors)	
	Water Closet	1 time (used by 50% of female visitors)	
	Water Closet	1 time (used by 10% of male visitors)	
	Urinals	2 time	
	Tap Flows	3 times (20 second per wash)	

15. WATER METERING & MANAGEMENT

Objective			
Objective			

Measure, monitor and manage water use to minimise consumption.

Criteria	
Requirements	

A Water Metering & Management Strategy or Plan which includes the checklist items below:

Compliance Checklist Item	Credits
15.1 Commitment to measuring and monitoring water performance through effective metering and sub-metering of critical areas and/or equipment of the building.	Mandatory
15.2 Commitment to having software solutions that will enable the effective management of water consumption during operations.	1
15.3 Water leak monitoring and management system in place.	1

Evidence Required	

- 15.1 Metering and sub-metering are in place to enable measurement and monitoring of water performance of critical pieces of equipment and/or functional areas. Critical pieces of equipment or functional areas are those that account for more than 10% of total water demand. See guidance section for examples.
- 15.2 Meters and sub-meters are linked to the Building Management System (BMS) or other specialised software.
- 15.3 Provide specifications of water leak monitoring systems in place that will enable the development of leak management plans.

Guidance

Functional Areas/Systems with highest water consumption

- HVAC Systems
- Cooling Towers
- Kitchens
- Guest Rooms

- Pools
- Irrigation
- Spa & Wellness
- Laundries
16. WATER EFFICIENT EQUIPMENT

Obiective			

Minimise water demand by procuring water efficient equipment.

Criteria Requirements	
Compliance Checklist Item	Credits
16.1 Heating & Cooling Systems	1
16.2 Fixtures & Appliances	2
16.3 Irrigation Systems	1
Evidence Required	

Water efficiency checklist items require the following evidence to be deemed compliant:

• Demonstrate use of country specific water efficiency criteria for procurement of equipment and appliances. In the absence a national water efficiency rating schemes, evidence must be provided to ensure equipment purchased is equivalent to the requirements of an existing international rating scheme.

For credits to be awarded all fixtures and appliances must demonstrate compliance with the highest efficiency rating level of the selected water efficiency rating scheme.

- Equipment/product specification.
- Smart controls are required for equipment, management of functional areas and/or site requirements including: cooling towers, chillers, boilers, irrigation systems and public WCs/urinals/taps.

Provide controls selection, equipment or system description and expected outcomes.

Resources

Flow rates for water efficient fixtures are provided in the water calculator template.

Guidance

Fixtures & Appliances include but are not limited to:

- Water Closets/Cisterns
- Urinals
- Basin/Sink Taps
- Showerheads

- Baths
- Kitchen taps
- Dishwashers
- Washing Machines/Laundries

17. WATER RECYCLING & REUSE

Objective

Reduce potable water demand by implementing water recycling and reuse strategies. Support the maintenance of local hydrological cycles and natural groundwater balances.

Criteria	
Requirements	

Compliance Checklist Item	Credits
17.1 Meet or exceed the EarthCheck best practice water recycling benchmarks for the building type and location.	Mandatory
17.2 Water Sensitive Urban Design (WSUD) Features	
17.3 Additional Credit: Rainwater Harvesting	1
17.4 Additional Credit: Natural Systems Recharge	

Evidence Required

17.1 Demonstrate the project meets or exceeds the EarthCheck best practice water recycling benchmark for the building type and location:

Recycled water calculation formula:

Predicted total recycled water consumption (kL) pa Total water consumption (kL) pa

Support narrative, drawings, equipment specifications, calculations and assumptions describing which measures have been implemented to capture and/or recycle and reuse non-potable water.

17.2 Design layouts & detailed description of WSUD elements. See guidance for examples of WSUD measures. One (1) credit is awarded for every four (4) WSUD measure implemented

Note: additional measure not listed may also be considered.

- 17.3 One (1) credit is awarded for projects that harvest and re-use 100% of rainwater harvesting capacity.
- 17.4 One (1) additional credit will be given to projects which demonstrate that rainwater, stormwater and/or grey water will be collected and treated to Standards that meet local water quality requirements before being deposited back into natural systems, including surface water bodies.

One (1) additional credit will be given to projects that deposit treated water back into aquifer systems.

Support narrative, drawings, equipment specifications, calculations and assumptions describing collection, treatment and discharge mechanisms.

Guidance

17.1 For further guidance and support on data required for recycled water consumption refer to the water calculator template.

17.2 Water Sensitive Design elements:

- Stormwater collection and reuse;
- Rainwater collection and reuse;
- Grey water collection and reuse;
- Stormwater flows designed to maintain exiting drainage patterns and ensure that there is no erosion;
- Absorption wells
- System in place to ensure stormwater does not become contaminated with litter, oil and grease, or silt wastewater;
- Grassed or landscaped swales';
- Pervious hardscapes and paving;
- Infiltration trenches and bio-retention systems.

18. WASTE WATER MANAGEMENT

Uniective		

Ensure waste water is managed and reused effectively.

Criteria	
Requirements	

Compliance Checklist Item	Credits
18.1 Predicted volume of wastewater generated	Mandatory
18.2 Waste water management processes and contamination avoidance.	.5
18.3 Treatment and reuse of waste water.	2
18.4 Treatment and reuse of waste water sludge.	.5

Evidence Required	

- 18.1 Provide the predicted volume of wastewater generated.
- 18.2 Describe the waste water management equipment and procedures in place, which demonstrate that local waste water regulations are being met to avoid contamination of local groundwater and surface water through controlled waste water discharge.

Provide a description of the local waste water treatment reticulation systems and treatment facilities.

- 18.3 Two (2) credits will be granted when 100% of waste water is treated and reused. Treatment may be onsite or undertaken through the public waste water reticulation system. In the cases where the local authority collects, treats and reuses waste water, a narrative must be provided to describe the Authority responsible for collection, the treatment plant and how waste water is reused.
- 18.4 Quantity of expected sludge generated must be provided. The building operator commits to identifying a sustainable solution for 100% of waste water sludge. The solutions must be described as well as the potential service providers that will collect/manage the sludge must be identified.

KEY PERFORMANCE AREA: SOLID WASTE

Objective

The developer shall ensure the design aims to reduce the amount of solid waste generated in operations and implement solid waste management process to reduce, recycle or reuse solid waste.

KPA Criteria

Solid Waste Credits

19. Waste Generation
 20. Waste Management

Credits Available

Mandatory 2

19. WASTE GENERATION

Objective	

Minimise waste sent to landfill during operations.

Criteria Requirements		
Compliance Checklist Item		Credits
19.1 Expected solid waste generation	eneration outputs that, in aggregate, meet EarthCheck best n.	Mandatory
Evidence Required		
19 Demonstrate the project m for the building type and loc	eets or exceeds the EarthCheck best practice waste generatio cation:	n benchmarks

Waste Production Calculation Formula:

$\frac{Predicted waste send to landfill (kg or m³) pa}{Relevant Indicator Measure} = kg or m³/Indicator Measure$

Support evidence and assumptions used to calculate predicted waste sent to landfill.

20. WASTE MANAGEMENT

Obiective		

Maximise reuse and recycling of materials and minimise waste sent to landfill during operations.

Criteria	
Requirements	

Demonstrate the building intends to maximise reuse and recycling of materials and minimise waste sent to landfill through consideration of the checklist items below:

Compliance Checklist Item	Credits
20.1 Building design accommodates waste minimisation strategies and encourages and/or facilitates reuse and recycling of waste.	1
20.2 The building operator commits to ongoing waste reduction and management post-commissioning.	1

Evidence Required

20.1 Layouts and designated areas which will be used for onsite waste collection, segregation, treatment (i.e. composting, biogas) and disposal, and description which demonstrate that the project will have sufficient capacity to cope with expected waste generation.

The above evidence must address safe collection and disposal of batteries and electronic waste.

20.2 The requirement in criteria 20.2 is an operational requirement and must be addressed by the Asset Management Company. The Asset Management Company or the Operational team is responsible for providing the evidence in the form of a formal commitment plan with targets and objectives on how the criteria will be met. Documents must be accompanied by a signed letter from the Asset Management Company or Operational Team (GM/CEO) which declares the intents stated in the plan are true and will be delivered.

KEY PERFORMANCE AREA: LAND USE PLANNING & BIODIVERSITY

Objective

Minimise development's impact. Protect and enhance the ecological and cultural values present in the site through strategic site selection, building footprint management, and protection and enhancement of biodiversity and cultural assets.

KPA Criteria

Land Use Planning Credits	Credits Available	
21. Site Development	3	
22. Biodiversity	4	
23. Landscaping	3	

21. SITE DEVELOPMENT

Objective

Limit ecological impact of the project through prioritised site development in contaminated, previously developed or low ecological value areas.

Criteria	
Requirements	

Compliance Checklist Item	Credits
21.1 The area of least ecological value within the site must be selected for the project development.	1
21.2 The project must re-use/refurbish/recycle existing infrastructure should they be present within site boundaries.	1
21.3 Additional Credit: The project remediates a contaminated site for development.	1

Evidence Required

- 21.1 An EIS/Ecological Assessment/Site Survey, completed by a suitably qualified ecologist, that describes the location(s) of contaminated, previously developed and undisturbed land. The documents must also demonstrate the location(s) of ecologically valuable habitats, including listed flora and fauna species. Valuable species and ecological habitats are to be determined by:
 - The International IUCN list of threatened species for species with a classification of Vulnerable or higher; and/or
 - National/Local Environmental Protection and Biodiversity regulations.

Site drawings/building plans/photos must demonstrate how the development will exclude building on ecologically valuable areas.

A minimum of 75% of the project must be developed on contaminated, previously developed and/or areas of least ecological value for the credit to be awarded.

21.2 Site drawings/building plans/photos that demonstrate that previously developed areas will be used to the fullest extent possible and that existing site infrastructure will be re-used/refurbished/recycled. A report must be provided to describe usage or solutions for existing infrastructure.

Evidence Required Additional Credit

- 21.3 Site plans/photos that show contaminated land and proposed remediation areas, plans and mechanisms. Evidence includes:
 - Contamination report

for

• Detailed remediation plans in accordance to the relevant planning regulations

22. BIODIVERSITY

To have no net biodiversity loss and increase biodiversity values.

Criteria	
Requirements	

Compliance Checklist Item	Credits
22.1 The project must ensure there is no net biodiversity loss resulting from the development.	Mandatory
22.2 Additional Credit: The project demonstrates net biodiversity gains through site remediation, habitat creation and/or biodiversity offsetting.	4

Evidence Required

- 22.1 An EIS/Ecological Assessment/Site Survey, completed by a suitably qualified ecologist, which demonstrates the location(s) of ecologically valuable habitats, including listed flora and fauna species. Valuable species and ecological habitats are to be determined by:
 - The International IUCN list of threatened species for species with a classification of Vulnerable or higher; and/or
 - National/Local Environmental Protection and Biodiversity regulations.

Site drawings/building plans/photos must demonstrate how these areas and species will be protected, resulting in no net loss of biodiversity.

Should the project be unable to avoid loss of biodiversity values (habitat & species), the project must offset those losses through biodiversity offsetting resulting in an equal compensation of biodiversity values.

Biodiversity offsets must be done through a land bank or a land trust. The land must be protected in perpetuity and evidence of a signed agreement with the land bank/trust must be provided.

Guidance

- Methodologies for Measurement of Biodiversity:
 - Simpson's Diversity Index
- Biodiversity Offsets Information:
 - <u>The Business and Biodiversity Offsets Programme (BBOP)</u> is a collaboration of leading organizations, companies, financial institutions, government agencies and civil society organizations developing best practice on biodiversity offsets and conservation banking worldwide.
 - <u>No Net Loss and Loss-Gain Calculations in Biodiversity Offsets</u> helps auditors, developers, conservation groups, communities, governments and financial institutions that wish to consider and develop best practice related to biodiversity offsets.

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al Cre	dit

22.2 This credit is awarded by demonstrating:

- That the site has been through a remediation process which will result in the creation of new habitat for endemic flora and fauna.
- Artificial habitat /ecosystem enhancement is created to play a supporting role in enhancing ecosystem services and/or species diversity.
- That additional procurement of land with high ecological value (biodiversity offsets) has taken place in a manner that results in net gains of biodiversity values. The land must be protected in perpetuity through long term conservation covenants.

Biodiversity offsets must be done through a land bank or a land trust. The land must be protected in perpetuity and evidence of a signed agreement with the land bank/trust must be provided.

One (1) credit is awarded for every 25% increase in biodiversity value, measured as additional habitat area in reference to original site area of ecologically valuable habitat.

23. LANDSCAPING

Objective

Ensure the site landscape plan enhances ecological and cultural site values and reduces the building footprint.

Criteria	
Requirements	

To enhance ecological and cultural site values through strategic landscaping that considers the checklist items below:

Compliance Checklist Item	Credits
23.1 Enhance the sites' ecological value through selection of local species.	1
23.2 Enhance the sites cultural & heritage assets.	1
23.3 Reduce the heat island effect through appropriate microclimate controls.	1

Evidence	Reo	wired
LVIUEIICE	Ney	uncu

23.1 A Landscape Plan that demonstrates at least 80% of soft landscape design will use indigenous species that contribute to enhance biodiversity values, avoid soil erosion, reduce stormwater runoff and minimise operational maintenance requirements.

Refer to the Landscape Plan Guidance Checklist for minimum requirements of the landscape plan.

23.2 Landscape Plan that demonstrates soft and hard landscape design will contribute to protect, enhance and promote cultural & heritage assets.

A narrative must be provided to describe how the landscape design will enhance and promote cultural and heritage assets to future facility users through active and passive interaction; leading to greater understanding, education and appreciation of local culture and heritage.

- 23.3 Landscape plan view that demonstrates soft and hard landscape design will reduce the heat island effect by ensuring that, at least 80% of the site area consists of the following:
 - Trees & Vegetation
 - Green Roofs
 - Water bodies

- Roofs*
- Hardscapes*
- Pavements*

*Specifications/material schedules for roofs, pavements, and hardscapes must be provided. Hardscapes must have high reflectance values or use alternative measures to reduce heat emissivity.

The plan view must drawn to a legible scale and include mature tree canopy crown sizes and area shaded by vegetation. Areas for each soft and hard landscape must be provided (i.e. 45% site covered by tree shading).

Note: roofs and hardscapes covered by solar panels can be counted towards total site area.

Guidance		
•	Solar Reflectance in accordance with local climate condit	Index (SRI) values for roofs, pavements and hardscapes must be calculated ASTM E1980-11. SRI values must be selected using best practice values for ions.
Resources	;	
Refer to the Landscape Plan guidance checklist.		

KEY PERFORMANCE AREA: SUSTAINABLE MATERIALS & RESOURCE CONSERVATION

Objective	

Reduce consumption of natural resources and the impact on ecosystem biodiversity through procurement of sustainable materials. Purchasing supplies of materials from sources using environmentally sound ingredients and processes can be a major contribution to resource and biodiversity conservation.

Reduce material consumption through consideration and procurement of reclaimed, recycled, and green materials.

KPA Criteria

Land Use Planning Credits		Credits Available
24.	Resource Conservation	6
25.	Sustainable Materials	4
26.	Lifecycle Analysis	4

24. **RESOURCE CONSERVATION**

Objective

Maximise resource conservation through sustainable procurement.

Criteria	
Requirements	

Maximise resource conservation by considering the checklist items below:

Compliance Checklist Item	
24.1 Local material procurement	2
24.2 Reused and recycled components	
24.3 Material modularity and pre-constructability	

- 24.1 A list of purchased building and/or fitout material with details of the manufacturer location. Material manufacturing must be located within 500km radius of project site. One (1) credit is given for every 25% of material-cost manufactured locally. Percentage is calculated based on material cost as a proportion to total project material cost (excluding cost of labour).
- 24.2 A list of purchased building and/or fitout material with details noting the material is reused or recycled. One (1) credit is given for every 25% of material-cost which have been reused or recycled. Percentage is calculated based on material cost as a proportion to total project material cost (excluding cost of labour).
- 24.3 A list of purchased building and/or fitout material with details noting modularity and preconstructability. The credit is given if 25% of the material-cost corresponds to material noting modularity and pre-constructability.

25. SUSTAINABLE MATERIALS

Objective	

Procure sustainable building materials with reduced environmental impact.

Criteria		
Requirements		
Compliance Checklist Item		Credits
25.1 Green Rating/Eco-label Schemes		4

Evidence Required

25.1 Provide a list of product manufacturers and product specifications.

One (1) credit is granted for every two (2) material categories in which the proportion (cost) of the material with green rating or eco-label is at least 90% of the total cost of that material. Listed materials are categorised in the Guidance section.

Material Categories

- Wood/Timber, composites, panels
- Concrete / Concrete boards
- Stone and gravel
- Gypsum
- Floorings

- Glass
- Plastics and rubbers
- Brick (including clay tiles and other ceramics)
- Fitouts
- Paints

If no formal rating is available for a specific material, evidence must be provided that the supplier of that material/product has one of the below:

- 1. A product life-cycle assessment conforming to ISO 14044
- 2. A third party accreditation

Examples of Eco-label products can be found at <u>www.ecolabelindex.com</u> and also <u>www.ecospecifier.com.au</u>.

26. LIFE CYCLE ANALYSIS

Objective

Adopt Lifecycle Analysis to reduce the environmental impact of the materials and products used in a development.

Criteria	
Requirements	
Compliance Checklist Item	Credits

26.1 Implement a whole of lifecycle process that includes the comparison of lifecycle analysis results to a reference case.

26.2 The development and/or identified aspects of the development undergo a 3rd Party, peer reviewed assessment.

Evidence Required	

- 26.1 The project must demonstrate the use of a Life Cycle Tool to undertake a whole-of-building LCA Analysis in accordance with International Standard ISO 14040:2006. The LCA must use a reference case to demonstrate cumulative impact reduction. One (1) credit is awarded for every 25% reduction in cumulative impact.
- 26.2 An LCA practitioner must review and verify the LCA Analysis and outcomes.

KEY PERFORMANCE AREA: INDOOR ENVIRONMENT HEALTH & POLLUTION CONTROL

Objective

Eliminate all sources of pollution within the development and into the natural environment.

KPA Criteria

Pollution Credits

Credits Available

27.	Air	5
28.	Noise	1
29.	Light	1

27. AIR

Objective	

Reduce or eliminate internal and external air pollution and improve indoor air quality.

Criteria	
Requirements	

Compliance Checklist Item	Credits
27.1 Refrigerants must have an Ozone Depleting Potential (ODP) of zero and a Global Warming Potential (GWP) less than 10.	
27.2 The project has installed an automated refrigerant leak detection system for key equipment.	Mandatory
27.3 Adequate ventilation rates for the facilities.	1
27.4 Minimisation of indoor pollutants	3
27.5 Additional Credit: The project does not use refrigerants.	1

Evidence Required

- 27.1 A list of selected refrigerants and respective specifications of ODP & GWP.
- 27.2 Details of the automated leak detection system and airtight storage containment in case of spill.
- 27.3 Mechanically and naturally ventilated areas must comply with ASHRAE 62.1-2013.
- 27.4 Volatile organic compounds (VOCs) limits for sealants, coatings, paints and adhesives must meet minimum VOC content (expressed as grams of VOC per litre of substance in a ready to use condition) requirements established in local or national regulations.

In the absence of local/state/national VOC content regulations, the project must meet the Hong Kong VOC Regulation, California Air Resources Board (CARB) 2007 Suggested Control Measure (SCM) for Architectural Coatings or the European Decopaint Directive.

VOC content limits must also be applied to furniture.

One (1) credit is awarded if over 90% of the applied products meet the above requirements.

One (1) credit is awarded for demonstration that engineered wood products, to be used for internal fitout, contain no formaldehyde.

One (1) credit is awarded for commitment to avoid procuring hazardous substances for human health and the environment during operations; including cleansers, disinfectants, pesticides etc.

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27.5 Specifications of the selected equipment.

Guidance		

Refrigerants

- The <u>OzonAction Branch</u> of the United Nations Environment Programme provides information about refrigerants and their respective ODG and GWP.
- The Australian Institute of Refrigeration, Air-conditioning and Heating (AIRAH) <u>Refrigerant</u> <u>Selection Guide (2003)</u>

Volatile Organic Compounds (VOCs)

- <u>US EPA</u> provides information on the sources of VOCs and negative health impacts.
- Hong Kong VOC Regulation
- European Decopaint Directive
- <u>California Air Resources Board (2007)</u>

28. NOISE

Objective		

Reduce noise pollution from building facilities that may affect guests, the community and the environment.

Criteria	
Requirements	

Compliance Checklist Item	Credits
28.1 Noise from HVAC and mechanical equipment and functional areas within the facility are built to minimise noise pollution to external environments and guests.	1

Evidence Required	

28.1 Demonstrate that noise pollution will be minimised or avoided from systems, equipment and functional areas including:

- HVAC
- Kitchens
- Elevators
- Pool & pumps
- Entertainment Facilities

An acoustic report/plan which identifies the relevant spaces for low and high levels of noise, and the noise and reverberation targets for each area.

Or demonstrate the implementation of National or International Noise Attenuation or Acoustics Standards.

29. LIGHT

Objective		
		_

Reduce light pollution that may affect guests, the community and the environment.

Criteria		
Requirements		
Compliance Checklist Iten	1	Credits
29.1 External lighting is developed to minimise night time light pollution.		1

Evidence Required	

29.1 Demonstrate that light pollution will be avoided by having no:

- Upward lighting, unless necessary by regulation (i.e. heliport)
- Direct lighting into guest rooms
- Lighting towards neighbouring properties
- Lighting towards natural environments

Provide a lighting engineer report or demonstrate the implementation of National or International Lighting or Illumination Standards.

Key Performance Area: Transport

Objective

Promote development of infrastructure in a manner that takes advantage of existing public transport facilities, minimises impact on the local environment and reduces local road traffic congestion.

Encourage the adoption of efficient, low-pollution transport technologies upon project commissioning and during operations.

KPA Criteria

Transport Credits

Credits Available

28.	Transport Availability	2
		4
29.	Transport Support Facilities	
		2
30.	Sustainable Transport	

30. TRANSPORT AVAILABILITY

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Ensure that public transport is available in close proximity to the project site.

Criteria		
Requirements		
Compliance Checklist Item		Credits
30.1 Public transport is availab	ble in close proximity to the project site.	
30.2 Public transport modes	and facilities are suitable for the current and future public	1

30.3 Additional Credit: The project contributes to the development of public transport facilities.

Evidence Required

transport demand.

- 30.1 Public transport is available in close proximity to the project site. The credit is granted if the public transport facilities are less than 500 metres walking distance from the project site entrance.
- 30.2 A public transport study or report showing that the currently available transport modes and facilities are suitable for current and future transport demand. The report must include how the below address current and future transport demand:
 - Transport type(s)
 - Frequency of service

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30.3 Report brief justifying the development of public transport facilities and evidence of communication and approval from the respective transport authority.

31. TRANSPORT SUPPORT FACILITIES

Objective

Promote the adoption of sustainable transport modes, reduce vehicle emissions and encourage healthy lifestyles through provision of support facilities.

Criteria		
Requirements		

Compliance Checklist Item	Credits
31.1 Minimise vehicle parking footprint and associated vehicle emissions.	1
31.2 Cycle and walking paths are developed and connected with existing pathway networks.	1
31.3 Bicycle parking facilities are provided for workers and guests.	1
31.4 Shower and change room facilities are provided to encourage workers to adopt sustainable transport modes such as walking or cycling.	1

Evidence Required

31.1 Parking plans and additional evidence that demonstrates that:

- Environmental footprint and social impacts of carparks are minimised by limiting available car parks within building
- Off-street parking is limited
- Car park locations do not affect health and safety of pedestrians and/or cyclists.
- 31.2 Plans showing the location of existing cycles and walking paths and how new paths will be built and connected to existing pathways.
- 31.3 Plans showing location and quantity of secure and dedicated bicycle parking facilities and listed assumptions to justify both.
- 31.4 Plans showing location and quantity of showers and changing rooms and listed assumptions to justify both.

32. SUSTAINABLE TRANSPORT

Objective

Promote and adopt of low-emissions transport modes to reduce vehicle congestion and vehicle emissions.

Criteria	
Requirements	

Compliance Checklist Item	Credits
32.1 Promote use of low emission vehicles by providing electrical vehicle recharging stations within parking facilities.	1
32.2 Promote vehicle sharing schemes.	.5
32.3 Adopt low-emissions transport vehicles.	.5

Evidence Required

- 32.1 Parking plans that show location and quantity of electrical vehicle charging stations and listed assumptions to justify both.
- 32.2 A formal commitment letter signed by the Asset Management Company or Operational (GM/CEO) which declares a commitment to promote a staff vehicle sharing scheme.
- 32.3 A formal commitment letter signed by the Asset Management Company or Operational (GM/CEO) which declares a commitment to procure low emission transport vehicles where possible.

The following thresholds have been set for low emission vehicles:

- Passenger vehicles which emit less than 95 g of CO₂ emissions per kilometre.
- Light Commercial Vehicles which emit less than 147 g of CO₂ emissions per kilometre.

Where local vehicle emission standards are in place, the project must meet the most stringent of the vehicle emission standards.

Guidance

Operational Requirements

The requirements in criterion 32.2 & 32.3 are Operational requirements and must be addressed by the Asset Management Company. The Asset Management Company or the Operational team is responsible for providing the evidence in the form of a formal commitment letter signed by (GM/CEO) which declares the intents stated in criterion 32.2 & 32.3.

Emission Standards for Vehicles

The emission thresholds defined above are based on the <u>European Union (EU) vehicle CO₂ emission</u> <u>targets.</u> The EU vehicle emission standards have been recognised and adopted by the United Nation's World Forum for Harmonization of Vehicle Regulations; effectively transforming them into the globally accepted vehicle emission standards.

Passenger cars are defined as: Vehicles used for the carriage of passengers and comprising not more than eight seats in addition to the driver's seat.

Light commercial vehicles are defines as: Vehicles used for the carriage of goods and having a maximum mass not exceeding 3.5 tonnes.

KEY PERFORMANCE AREA: SOCIAL, CULTURAL & ECONOMIC CONSIDERATIONS

Objective

Identify the local community's social, cultural and economic elements and values. Recognise their importance and incorporate measures in the planning, design and future operations of the project that ensure the development contributes to maintain a positive, productive and cohesive sustainable local community.

Actively support initiatives for social and community development including, among others, education, health and sanitation.

KPA Criteria

Social & Cultural Credits	Credits Available
33. Heritage & Culture	5
34. Accessibility & Inclusion	4
35. Training & Education	3
36. Employment	2
37. Economic Development	2

33. HERITAGE & CULTURE

Objective

Protect, enhance and promote heritage and cultural values.

Criteria		
Requirements		
Compliance Checklist Item		Credits
33.1 Undertake a socio-cultura and tangible and intangible qual	al assessment which determines the significance, integrity, lities of cultural and indigenous resources.	
33.2 Respect prevailing landsca design features.	ape and local architectural character and adopt harmonious	1
33.3 Protect and Enhance Ethnological, Scientific and Aes	Historical, Anthropological, Religious, Sociological, and thetic resources within the site boundary.	2
33.4 Additional Credit: Prot Sociological, Ethnological, Scie boundary.	tect and Enhance Historical, Anthropological, Religious, entific and Aesthetic resources external to the project site	2

Evidence Required

33.1 A social-cultural impact assessment report undertaken by a suitably qualified professional indicating the local resources/sites that require consideration for protection and conservation.

Provide development approval requirements and conditions for management and conservation of historical resources and how these will be met the project.

- 33.2 A description and photos/images of the landscape and local architectural character and architectural drawings which demonstrate how the project incorporates local elements into architecture and design.
- 33.3 One (1) credit is awarded for measures that will be undertaken to protect Historical, Anthropological, Religious, Sociological, and Ethnological, Scientific and Aesthetic resources/sites within the site boundary during the construction and future operations.

One (1) credit is awarded for measures that will be undertaken to enhance the state or condition of the resources/sites within the site boundary during the construction and future operations.

Required for Credits	
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33.4 One (1) credit is awarded for measures that will be undertaken to protect any Historical, Anthropological, Religious, Sociological, and Ethnological, Scientific and Aesthetic resources/sites external to the site boundary during the construction and future operations.

One (1) credit is awarded for measures that will be undertaken to enhance the state or condition of the resources/sites external to the site boundary during the construction and future operations.

34. ACCESSIBILITY & INCLUSION

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Promote safe, friendly and inclusive access for users, visitors and the local community.

Criteria	
Requirements	

Compliance Checklist Item	Credits
34.1 Make provisions to ensure people with limited ability can access and use facilities in a similar manner as people with non-limited ability.	.5
34.2 Make provisions to ensure visitors and users are able to use and navigate throughout the facilities safely.	.5
34.3 Make provisions to create natural, cultural, sports and/or recreational spaces accessible by users, visitor and the community.	1
34.4 Additional Credits: The project develops additional infrastructure, beyond the core building facilities, which will create natural, cultural, sports and/or recreational spaces available to the public.	2

Evidence Required

- 34.1 A strategy that outlines which measures will be taken to ensure that all people are able to safely access and navigate throughout the proposed facilities in a manner that does not require alternative routes/pathways. Evidence includes:
 - Access areas for persons of limited ability
 - Internal movement layouts/diagrams
 - Gradients change
 - Accessible parking, etc.
- 34.2 Measures taken to ensure facilities are safe with particular consideration to signage, lighting, security controls, and access roads/cycleway/walkways. Evidence includes:
 - Signage strategies
 - Location & connection of pedestrian, vehicle and cycle roads/pathways
 - Public areas which require particular lighting/security controls, etc.
- 34.3 Measures taken to demonstrate that the project will create natural, cultural, sports and/or recreational spaces that are accessible by users, visitor and the community in a manner that promotes social connectivity, and passive and active interaction between users, visitors and the community. Evidence includes, but is not limited to:
 - Open spaces
 - Green areas/Parks
 - Mix-use areas

Guidance		

- 34.1 The following are a set of Standards that can support and guide the team towards ensuring that all people with are able to use the facilities in a similar manner:
 - Accessibility and usability of the built environment (ISO 21542)
 - Tactile walking surface indicators (ISO 23599)
 - Application of braille on signage, equipment and appliances (ISO 17049)
 - Communication aids for blind persons (ISO/TR11548)
 - Web content (ISO/IEC 40500)

Evidence Required for Additional Credits

- 34.4 Measures taken to demonstrate that the project will develop additional infrastructure, beyond the core building facilities, which will create natural, cultural, sports and/or recreational spaces available to the public. Evidence includes:
 - School
 - Community centre
 - Library
 - Health Facilities
 - Parks/Green Areas
 - Other

35. TRAINING & EDUCATION

Objective

Promote social mobility and skill development through training and education opportunities.

Criteria	
Requirements	
Compliance Checklist Item	Creadite

Compliance Checklist Item	Credits
35.1 Commitment to staff training & education.	1
35.2 Additional Credit: Commitment to staff and their families' education to support upward mobility and career development beyond specific facilities/service management requirements.	1
35.3 Additional Credit: Commitment to non-staff community education/training that supports upward mobility, career development and economic development.	1

Evidence Required

35.1 A staff training and education plan which provides detailed evidence of:

- A training & education plan/program (i.e. specific skills, languages, etc.)
- Training & education targets (i.e. % staff)

The plan must be accompanied by a formal commitment letter signed by the Asset Management Company or the Operational (GM/CEO) which declares the intents stated in the plan are true and will be delivered.

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- 35.2 A staff and staff-relatives upward mobility and career development plan which provides detailed evidence of:
 - Vocational, Secondary or Tertiary staff education plan;
 - 'Children of staff' scholarships for Primary, Secondary or Tertiary education.
 - Training & education targets (i.e. % staff)

The plan must be accompanied by a formal commitment letter signed by the Asset Management Company or the Operational (GM/CEO) which declares the intents stated in the plan are true and will be delivered.

35.3 A non-staff education/training plan which provides detailed evidence of programs and/or projects to be implemented in the community which support upward mobility and career development. Non-staff includes individuals, businesses or operators within the local community.

The plan must be accompanied by a formal commitment letter signed by the Asset Management Company or the Operational (GM/CEO) which declares the intents stated in the plan are true and will be delivered.

Guidance

The requirements in criteria 35.1, 35.2 and 35.3 are Operational requirements and must be addressed by the Asset Management Company. The Asset Management Company or the Operational team is responsible for providing the evidence in the form of a formal commitment plan with targets and objectives on how the criteria will be met. Documents must be accompanied by a signed letter from the Asset Management Company or Operational Team (GM/CEO) which declares the intents stated in the plan are true and will be delivered.

36. EMPLOYMENT

Objective		

Promote local employment and economic development.

Criteria	
Requirements	

Commit to local employment and economic development during operations:

Compliance Checklist Item	Credits
36.1 Commitment to employ staff from the local community & surrounding areas.	1
36.2 Commitment to ethical and non-exploitative arrangements with staff.	1

Evidence Required	

36.1 A formal commitment letter signed by the Asset Management Company or the Operational (GM/CEO) which declares a commitment to prioritise the employment of local staff, within a 20km radius.

The letter must include local staff employment targets (i.e. % staff)

36.2 A formal commitment letter signed by the Asset Management Company or the Operational (GM/CEO) which declares a commitment to ethical and non-exploitative arrangements with staff.

The letter must include a list of principles and measures that will be implemented to ensure staff employment conditions are non-exploitative and local employment regulations will be respected.

Guidance

The requirements in 36.1 and 36.2 are Operational requirements and must be addressed by the Asset Management Company. The Asset Management Company or Operational Team (GM/CEO) is responsible for providing a signed letter which declares the intents stated in the evidence are true and will be delivered.

37. ECONOMIC DEVELOPMENT

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Contribute to local economic development through proactive inclusion of local suppliers and business.

Criteria	
Requirements	

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1

Evidence Required		

37.1 A strategy or plan, with clear objectives and targets, which demonstrates how products & services from local business providers will be sourced, procured and promoted, including a list of identified:

- Tour operators
- Food/Agricultural produce suppliers
- Transport suppliers
- Art/Music services & products
- Artisanal products

The strategy or plan must also prioritise environmentally and socially sustainable local business providers.

The strategy or plan must be accompanied by a formal commitment letter signed by the Asset Management Company or the Operational (GM/CEO) which declares the intents stated in the evidence are true and will be delivered.

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37.2 A micro-credit program, with clear objectives and targets, which demonstrates how local economic development will be driven through the provision of micro-credit to employees, the community and/or local entrepreneurs. Evidence required:

The strategy or plan must be accompanied by a formal commitment letter signed by the Asset Management Company or the Operational (GM/CEO) which declares the intents stated in the evidence are true and will be delivered.

Guidance		

The requirements in 37.1 and 37.2 are Operational requirements and must be addressed by the Asset Management Company. The Asset Management Company or Operational Team (GM/CEO) is responsible for providing a signed letter which declares the intents stated in the evidence are true and will be delivered.
Key Performance Area: Innovation

Objective

Innovation credits are awarded to recognise superior performance, initiatives and processes that may not be captured in the Building Planning & Design Standard criteria.

KPA Criteria

Innovation Credits

Credits Available

33. Sustainable Construction	1
34. Energy	1
35. Water & Wastewater	1
36. Solid Waste & Material Recycling	1
37. Sustainable Materials	1
38. Indoor Environmental Health	1
39. Transport	1
40. Social, Cultural & Economic Wellbeing	1

Criteria Requirements

Comp	liance Checklist Item	Credits
Demoi	nstrate innovation in technology and/or methods for the following:	
38.	Sustainable Construction	1
39.	Energy	1
40.	Water & Wastewater	1
41.	Solid Waste & Material Recycling	1
42.	Sustainable Materials	1
43.	Indoor Environmental Health	1

Comp	liance Checklist Item	Credits
Demo	nstrate innovation in technology and/or methods for the following:	
44.	Transport	1
45.	Social, Cultural & Economic Wellbeing	1

Evidence Required

To obtain innovation credits the proponent must provide the following information:

- Narrative on solution implemented which describes & justifies its innovation;
- Qualitative and/or quantitative impact on the project's sustainability outcomes;
- Support evidence used to qualify/quantify the improved project sustainability outcomes.

Note: credit approval is subject to EarthCheck ratification.

Guidance

The EarthCheck Criteria for Innovation are not prescriptive, innovation credits are assessed based on technology, methods and appropriateness to local context.

GLOSSARY OF TERMS

Activity Measure: A measure that reflects the key activity of the organisation, taking into account the type of impact.

Agenda 21: The blueprint for sustainable development adopted by 182 countries at the United Nations Earth Summit in Rio de Janeiro.

Architectural and Landscape Codes: Legal or voluntary documents which integrate the Developments goals, aims and objectives along with federal, regional and local mandatory and other voluntary environmental standards into a framework for use on a development.

Best Practice Performance: a performance benchmark that demonstrates expected operational performance for an asset class in a particular location is achieving exemplary performance.

Biodiversity: A concept relating to the degree of nature's variety. It encompasses all species of plants, microorganisms, animals and ecological processes within the ecosystem of which they are part.

Biomass: Material produced naturally by plants as part of their growing cycle (e.g. wood and leaves).

Brownfield Sites: Land previously used for urban or industrial development in built up areas.

Buildings: The term "buildings" used in the Precinct Planning and Design Standard refers to infrastructure roads, buildings and related structures such as utility-related infrastructure and the spaces between them on the development project. It does not include individual buildings such as hotels, retail shops, schools and residential dwellings etc. that form part of the building phases.

Carbon Fixing: The ability of trees and vegetation to store CO² over a long period and release it when biodegraded or burned.

Carrying Capacity: The population that can be supported by regional resources without degrading the environment or destroying the habitat.

Certification: Is achieved by satisfying the requirements of a summation of all the sections of the Precinct Planning and Design Standard.

Cleaner Production: adoption of new/modified processes/activities that are more efficient, thereby consuming less material and energy resources, and producing less waste and emissions, and hence have a lower impact on the environment.

Combined Heat and Power (CHP): A system which in contrast to conventional electricity production, utilises the waste heat of electrical production to provide hot water that is distributed for space heating or cooling.

Constructor: Infrastructure providers such as civil engineering and building companies.

Contaminated Land: Pollution grading term used to describe land that contains concentrations of substances that are likely to be harmful directly to humans and the environment.

Context Study: An analysis of a site and its environs especially in relation to the characteristics and layout of neighbouring Precincts and areas.

Cut and Fill: The process of reshaping soil particularly on sloping sites.

Delivered Energy: The energy that is delivered to the end users (via gas mains, electrical sub stations/cables, petrol pumps etc.) contrasts - with Primary Energy.

Derelict Land: Term used to describe land badly damaged by industry or development that it requires treatment before being capable of beneficial use.

Detention Basins (or ponds): Features that are designed to withhold stormwater from the flow system and to help reduce peak discharge. Detention basins can also assist in the improvement of water quality by removing pollutants through the sedimentation process.¹

Development: In context of this document development is considered more than just economic growth, and refers to the improvements in the quality of life, basic health and nutritional status, equity in access to resources and services, per capita income and in the perceived quality of the future environment.

Developer: Client/Investor/Promoter organisation initiating the development.

EarthCheck™ indicators: proprietary system that uses carefully selected indicators to measure and then benchmark environmental and social performance and impacts.

EarthCheck Assessor: an EarthCheck approved, independent third party technical specialist which reviews project evidence submissions for Certification.

EarthCheck Accredited Professional: an EarthCheck trained and accredited professional which can guide project proponents to achieve EarthCheck BPDS Certification.

Eco efficiency: see cleaner production.

Ecolabel: label supported by a national or international accredited body that identifies a product and its byproducts as environmentally safe.

Ecosystem: community of plant and animal species and their surrounding physical environment. Depending on their living requirements, plants and animals may rely on others and on their physical environment to differing extents.

Embodied Energy: The amount of energy consumed in the extraction, manufacture, transportation of components for the provision of infrastructure and buildings at a development.

Environmental Capacity: The ability of a location to perform its various natural functions.

Environmental Impact Assessment: A method of assessing and monitoring the environmental impacts of a development on a range of regulatory, policies and service activities.

Environmental Impacts: effects that an operation has on the environment as a consequence of its activities. EarthCheck uses EarthCheck[™] indicators to benchmark the level of key impacts of Travel and Tourism sectors.

Eutrophication: A natural process but in excess it kills wildlife by depressing oxygen levels. It is exacerbated by water run-off from agricultural land or sewage discharges.

Filter Strips: Grassed earthworks constructed to improve the natural recharge of underground water supplies by infiltration.

Fuel Crops: The production and harvesting of crops to provide a bio fuel source.

Geotextiles: Fabric sheets of both natural and manufactured fibrous materials designed to be laid over or with soils, for the purpose of reinforcement, resistance to erosion, improvement of the drainage/water retention and enhanced vegetation growth.

Global Warming: buildup of greenhouse gases is generally believed to be causing a steady warming of the Earth's atmosphere that could trigger glacier melting, potentially disastrous rises in sea level, and changes in various climatic regions. It can be readily argued, therefore, that due to their location, a very significant number of Travel and Tourism activities worldwide have a direct interest in ensuring that the potentially disastrous consequences are prevented.

Greenfield Sites: Undeveloped land, which has not previously been built upon, at least in recent history; usually agricultural land.

Greenhouse Gas: human activities, such as burning fossil fuels (oil, gas and coal), are unleashing emissions of gases, in particular carbon dioxide (CO_2), that act as an atmospheric blanket, trapping thermal radiation emitted from the Earth's surface, causing the greenhouse effect.

Green Power: is a subset of renewable energy and represents those renewable energy resources and technologies that provide the highest environmental benefit. US EPA defines green power as electricity produced from solar, wind, geothermal, biogas, eligible biomass, and low-impact small hydroelectric sources.

Heat Island Effects: The effect of waste heat from built up areas raising the ambient temperature of the local microclimate.

Hubs: Centres where public transport routes converge.

Infiltration: The downward percolation of water as it returns through the ground to underground reservoirs.

Infrastructure Construction: Includes roads and landscaping provided by the developer to service the site and implement early planting.

Integrated Sustainable Design Approach: An alternate energy, waste water recycling, waste management, environmentally sensitive infrastructure and associated buildings planning and design, approach to precinct development.

Key Stakeholders: include any stakeholder group which is involved in or affected by the project development, including development authority, owners, community groups, etc.

Life Cycle Analysis: The assessment of energy costs over the long term in the construction and final building form, taking account of the extraction, processing, use, maintenance and disposal of the materials involved.

Life Cycle Assessment: This is the development of life cycle analysis that also considers the external costs and effects of development upon the environment.¹

Life Cycle Costing: A technique used in Quantity Surveying to assess initial financial investment of a project and the anticipated future cost in use.

Local Workforce: workforce that lives within a 20km radius of the project site. In the absence of a local workforce for projects in remote locations, a local workforce can be defined as a workforce from the most proximate area to the project site.

Nodes: Points at which routes for public transport and other modes of movement intersect.1

Passive Design: Design that seeks to reduce the reliance on mechanical systems (active) by using the location, siting and fabric of the infrastructure or building.

Passive Solar Design: The collection of solar radiation to meet heating loads using the fabric of the structure as opposed to active solar systems which use solar panels.

Performance Modelling: refers to the use of software or other tools to undertake simulations of the expected or predicted performance of a building.

Photovoltaic Energy: A method of generating electricity using photovoltaic cells, often containing silicon, as service conductors to collect solar power.

Primary Energy: The raw energy contained in the energy sources employed in the development process.

Primary Energy Use: The primary energy of a development process including the energy used in the extraction, manufacture, assembly, transportation and eventual construction of infrastructure, associated buildings and other enabling works of the precinct.

Reedbed Technology: An alternative system to conventional sewage treatment that uses ponds and reed beds to treat waste water.

Refuges: The retention of semi natural ecological sites within a development with an appropriate management regime.

Regulation: The relevant legislation, regulations, standards and code requirements pertaining to planning, environmental, public and occupational health and safety and building codes.

Resource Conservation: Due consideration of the consumption of natural resources and impacts on ecosystems and biodiversity.

Shelterbelts: The planting of trees, hedges and shrubs to provide natural windbreaks and sheltered microclimates; additionally shelter breaks can assist in reducing noise and pollution.

Social Commitment: A commitment to the understanding of and consideration to impacts on local communities.

Socio-economic Profile: An assessment of an areas social and economic aspirations giving consideration to economic factors such as income, employment and training and social conditions such as housing quality, access to education and clean drinking water.

Soil Biotechnology (SBT): The use of natural plant systems to harness the energy, carbon and other elements of waste and convert them into bio-energy products like vegetation, rich compost and water.

Stormwater Holding Basins: An area designed to flood and store water delaying its discharge downstream which may lead to flooding.

Stakeholders: All individuals and groups that interact with an operation (e.g. shareholders, employees, customers, suppliers, local community, government etc.)

Sustainable Development: For this document sustainable development - "is about ensuring a better quality of life for everyone, now and for generations to come. It means recognising that our economy, environment and social wellbeing are interdependent. It means protecting and, where possible enhancing the environment; ensuring we satisfy people's basic needs, such as providing decent homes and safe streets and giving people the opportunity to achieve their potential through education, good health and employment. And it requires a robust economy to create the wealth that allows needs to be satisfied, now and in the future". (DETR: 2000)

Triple Bottom Line: The term is used as a framework for measuring and reporting performance against economic, social and environmental criteria. It is being applied in the corporate world as a monitoring tool as well as by local and state governments, especially in urban areas.

Volatile Organic Compounds (VOCs): any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate, which are emitted to air from activities such as combustion processes, manufacturing industries and other industries using organic based solvents.

Whole systems' View. This means the developments should respond to macro, meso and microclimatic conditions through siting, infrastructure, associated building forms and orientation. Also high quality infrastructure and associated building envelopes, climate control equipment and renewable sources of energy form part of a 'whole system,' which can be optimised to conserve and use energy efficiently.

Wildlife Corridors: Linear features that provide for the potential movement and habitat of wildlife and plants, and maintain a sense of continuity between urban, rural and coastal areas.

ACRONYMS

BRE: Building Research Establishment CPCS: Construction Process Control System CPMS: Construction Process Management System CRC: Cooperative Research Centre EMAS: Eco-Management and Audit Scheme EMS: Environmental Management System KPA's: Key Performance Areas POS: Public Open Space SAP: Standard Assessment Procedure