THE STAR

Sustainable Design and Operational Standards

THE STAR ENTERTAINMENT GROUP

Original issue date: 7 February 2014
Reissue date/s: 11 August 2015, 27 June 2017, 23 January 2020
Effective date of this version: 23 January 2020
Version number: 2.6

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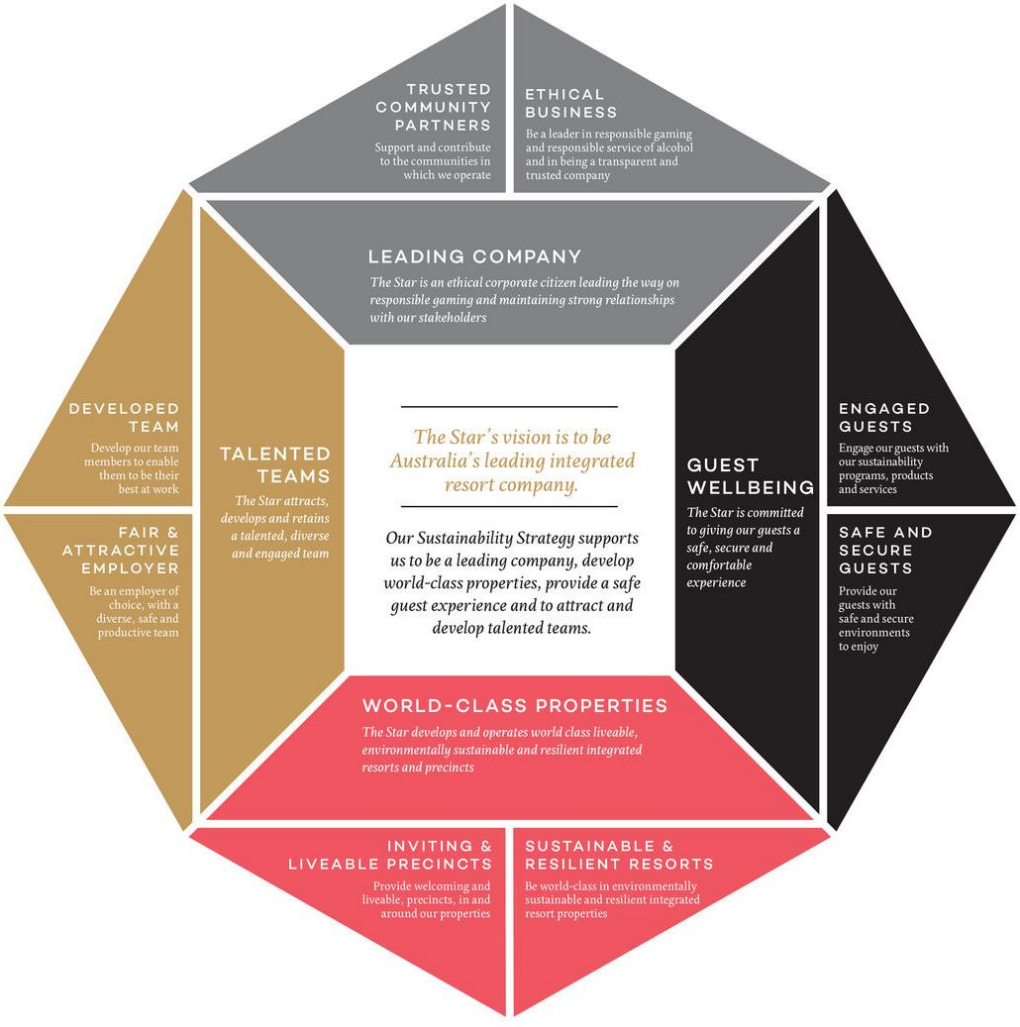
INTRODUCTION

Our vision is to be Australia's leading integrated resort company

The Star Entertainment Group (TSEG) takes a broad view of sustainability and focuses on building business capacity and delivering continuous improvement in the management of Environmental, Social and Governance (ESG) issues. TSEG has developed a Sustainability Strategy, 'Our Bright Future', built on a four-pillar framework which supports the organisations business plan. The four pillars are:

- **Leading Company** – TSEG is an ethical corporate citizen leading the way on responsible gaming and maintaining strong relationships with our stakeholders
- **World Class Properties** - TSEG develops and operates world class liveable, environmentally sustainable and resilient integrated resorts and precincts
- **Guest Wellbeing** - TSEG is committed to giving our guests a safe, secure and comfortable experience
- **Talented Teams** - TSEG attracts, develops and retains a talented, diverse and engaged team



In January 2020, TSEG released its Sustainability Action Plan 'Beyond 2020' that details key activities, objectives, targets and achievements to support the Strategy's progress. The Plan can be found on the Group's website alongside other polices and performance information.

Why these Standards apply

Occupancy costs of buildings have risen and are set to continue rising into the future due to increasing energy demand and limited availability. Building to reduce resource consumption through sustainable design principles with consideration for future climatic conditions will minimise operational costs and future risk.

TSEG's integrated resort development facilities are unique in design, operation and fabric, particularly the Treasury Building and the Land Administration Building on George Street, Brisbane which holds significant cultural and heritage value. TSEG acknowledges that operating our 24 hour gaming, luxury hotels and facilities has higher resource intensity and subsequent resource costs. TSEG therefore has unique opportunities to achieve resource efficiency in operation.

TSEG assets are long term investments by the organisation, and therefore need to consider the conditions of operation into the future. Climate change resilience will be an important factor to reduce risks to future business operations.

TSEG's business is in creating memorable guest experiences, therefore a strong focus on building world class integrated resorts with excellent indoor environment quality is essential.

TSEG is also committed to being an ethical and transparent business. It is acknowledged that many products in the building industry have global social, economic, environmental and health impacts on communities. TSEG is committed to prioritising procurement of products which provide a transparent supply chain (acknowledging the requirements under the Modern Slavery Act 2018) and minimise any negative impacts on communities (refer to The Star Entertainment Group's Sustainable Procurement Principles).

This Sustainable Design and Operational Standard provides a framework to guide project teams' design to ensure it takes a holistic approach to sustainability, and achieves sustainable outcomes through the design, construction and operational phases of the project lifecycle.

Approach to Sustainability

TSEG makes long term investments into assets, with site leases extending well beyond the normal design life of a commercial building. Therefore, all development and redevelopment work needs to consider a whole-of-life approach to sustainability.

Whilst some sustainability initiatives may incur a capital expenditure premium, project teams must look at the whole lifecycle of the asset and design to achieve asset optimisation and sustainability best practice during design, construction and operations. Initiatives which do incur a capital expenditure premium often result in an operational expenditure decrease, which should be considered in all decision making.

Return on investments will vary greatly depending on initiative type, space use and resource use. Project teams are encouraged to deliver a return on investment for their project to assist in the selection of sustainability initiatives.

Project teams must consider the following issues and future issues when considering design decisions and in the project brief:

- Resource efficiency (electricity, gas and water) including the following:
    - Future resource costs
    - Peak demands on site
    - Future resource availability
    - Redundancy and diversity of supply
    - Climate change risks (impacting availability)
- Return on investment – does the initiative provide a return on investment or a payback period?
- Resilience – does the initiative mean the asset will be more resilient to climate change risks?
- Management and monitoring – Does the design allow for effective management and monitoring in operation?
- Risk and redundancy – Does the initiative reduce the current or future risk of the asset or build redundancy into the assets operation?

Adoption of the above considerations will provide more operationally resilient assets for the organisation and ensure the assets are designed appropriately for future operations and can respond to future climate conditions.

Carbon Policy and Climate Change Statement

TSEG recognises climate change and acknowledges that its properties may be susceptible to climate related impacts in the future. We are committed to continually assessing the risks and opportunities that climate change presents for our business and the impact on our customers and within the communities in which we operate.

To manage these risks, The Star has actively conducted climate change risk assessments in 2017 and again in 2019.

TSEG recognises the recommendations of the Financial Stability Board Task Force on Climate-related Financial Disclosures and the associated framework. TSEG is currently working to align current and new projects to the four framework areas including Governance, Strategy, Risk Management and Metrics and Targets over time, and report progress.

Sustainability Targets

TSEG is committed to long term carbon emissions reduction.

To support our transition to a low carbon economy the Group is targeting net-zero carbon emissions for its wholly owned and operated assets by 2030 in line with reductions within the Paris Agreement.

Our plans to reach this target include the purchasing of renewable energy and continuing to assess the feasibility of onsite solar, continuing with our energy efficiency program and a carbon offsetting strategy.

To continue to focus on immediate reductions, TSEG has interim carbon and water targets to achieve a 30% reduction in intensity by financial year 2023 against a baseline of financial year 2013 on a square meter basis.

This target equates to 294 kgCO2-e/sqm in 2023 from 420 kgCO2-e/sqm in 2013 as reported in our Annual Report and demonstrated across the business in quarterly performance scorecards.

All energy, water and waste usage will be reported to the relevant stakeholders (at a minimum sustainability team, TSEG board/executive committee) on a quarterly basis.

Who these Standards apply to

This Sustainable Design and Operational Standard provides a framework for our suppliers, contractors and sub-contractors throughout the design, retrofit, construction, restoration and operational phases of projects.

When do these Standards apply

This Sustainable Design and Operational Standard is applicable for all planning, design, tender, construction, commissioning and operational phases of a project. Major and minor projects (new build to soft refurbishments) will consider requirements of the Standards where appropriate dependant on project scope.

CERTIFICATION

Project certification must be addressed on all major projects where the tools can apply. Certifying major projects provide an independently verified sustainability outcome adding to TSEG's objective to expand our green rated space across our portfolio.

It will provide a marketing opportunity, and allow TSEG to claim best practice, Australian excellence or world leadership in sustainability performance.

- All projects with a GFA greater than 2,000 m^2 should target a minimum 5 Star Green Star Rating through the Green Building Council Australia's (GBCA) Green Star suite of tools. The project must complete a gap analysis to determine what is required to achieve a 6 Star Green Star Rating.
  Green Star is Australia's national green building rating system certifying the design, build and operation of green buildings with a star performance rating from one to six stars administered by the GBCA. Ratings can be achieved for all building typologies, for the base building, fit out or operational performance. Ratings can be achieved as follows; **4 Star rated as Best Practice, 5 Star rated as Australian Excellence** and **6 Star rated as World Leader.**
- All Hotels should target a minimum 4 Star NABERS for Hotels energy rating, and a minimum 4 Star NABERS for Hotels water rating when not already committed to an existing Green Star Rating.
  The National Australian Built Environment Rating System (NABERS) is a national rating system that measures the environmental performance of Australian buildings including hotels during operations. NABERS for Hotels utilises measured and verified energy and water information, such as utility bills, over a 12 month period to obtain a star rating of one to six stars. For example, a 6 star rating demonstrates market leading performance whilst a 3 star rating demonstrates the building has considerable scope for improvement.

EXTERNAL ELEMENTS

External elements to a project must be considered and are outlined as follows:

- Charity partners should be considered within the project planning phase for redundant Furniture, Fixtures and Equipment (FF&E) as a result of refurbishment

- All NSW lighting, plant or equipment replacement projects must be geared, where possible to generate potential Energy Saving Credits (ESCs) under the NSW Government's Energy Saving Scheme where feasible. ESCs generate income therefore all replacements should be like for better, not like for like where a tangible energy saving exists with a 'better' technology.

SUMMARY OF THEMES

TSEG has taken a holistic approach to sustainability, as such sustainability requirements for all new buildings and refurbishments are separated into the following key sustainability themes that can be aligned to existing green benchmarks:

1. Management
2. Energy
3. Water
4. Waste
5. Biodiversity
6. Materials
7. Indoor Environment Quality
8. Climate Mitigation and Adaptation

Each sustainability theme includes 'mandatory' and 'voluntary' requirements defined as follows:

- 'Mandatory' requirements relate directly back to a key sustainability area identified by TSEG where the initiative will bring a return on investment to the organisation. The 'mandatory' requirements are critical to the business.
- 'Voluntary' requirements address areas of sustainability which are less of a focus for TSEG, however will still bring relevant sustainability outcomes to the project. 'Voluntary' requirements must be addressed by project teams unless there is a specific feasibility challenge.

Voluntary items are to be proposed by project teams and to be reviewed by TSEG for feasibility and need on each project.

Each theme brings different sustainability benefits to a project and to the organisation. Each requirement is aligned with sustainability benefits and aligned with rating tools relevant to the property industry.

1. Management

The management theme outlines practices and procedures which support best practice sustainability outcomes. It provides strategies to ensure that decisions are made during the design phase to achieve sustainability outcomes during the construction, commissioning and operational phases of the project.

Initiative type	Description	Benefit to organisation	Alignment with rating tool
Mandatory	Development of comprehensive commissioning plan, full system commissioning prior to occupation and full system recommissioning after 12 months	Improved problem diagnosis during DLP, reduced energy consumption and reduced peak energy demand	Green Star D&AB Credit 2.2, 15 NABERS for Hotels energy
Mandatory	Quarterly system measurement and tuning for the first 12 months (supported by TSEG's existing building analytics and optimisation system)	Improved problem diagnosis during DLP, reduced energy consumption and reduced peak energy demand	Green Star D&AB Credit 2.3, 15 NABERS for Hotels energy

Initiative type	Description	Benefit to organisation	Alignment with rating tool
Mandatory	Energy (electricity and gas) metering and monitoring. Individual metering, supplying monitoring and integration into the TSEG's smart metering system is mandatory for the following: → Lighting per floor or space use type → General power per floor or space use type → Major equipment (>100kW and where consumption will be greater than 5% for the whole project) → Where a revenue stream may exist either through a proposed or potential tenant supply → New metering must be added to the existing building analytics and optimisation systems onsite. → Meter details and expected loads should be provided to the Property Operations and Sustainability Teams to assess impact on building targets and performance Meters must be commissioned and validated in accordance with Section 8 of NABERS Rules for Collecting and Using Data	Improved problem diagnosis during lifetime of building, enables effective monitoring and energy management of asset, resulting in operational cost savings	Green Star D&AB Credit 6.0, 6.1, Inn – metering integrity NABERS for Hotels energy

Initiative type	Description	Benefit to organisation	Alignment with rating tool
Mandatory	Energy (Thermal) metering and monitoring. Individual metering, supplying monitoring and integration into the TSEG's smart metering system is mandatory for the following: → Total thermal energy generation for a central energy plant, where the plant serves more than one distinct use / area → Individual metering where the area being served is either a distinctly different space use, a current or potential tenant (for billing purposes) or a different function (e.g., refrigeration system) → Separate metering to ensure a NABERS for Hotels rating can be achieved → Where a revenue stream may exist either through a proposed or potential tenant supply Meters must be commissioned and validated in accordance with Section 8 of NABERS Rules for Collecting and Using Data	Improved problem diagnosis during lifetime of building, enables effective monitoring and energy management of asset, resulting in operational cost savings	Green Star D&AB Credit 6.0, 6.1, Inn – metering integrity NABERS for Hotels energy
Mandatory	Resource consumption from construction should be metered and where possible provided from third party sources for contractors in the construction phase. Specifically → Electrical, water or gas metering must be installed for construction power and connected to each property's energy metering system and building analytics and optimisation system. → Meter details and expected consumption should be provided to the Property Operations and Sustainability Teams to assess impact on building targets and performance	Reduced effect on building resource consumption targets and company performance Reduced impact on cost for resource use Reduced impact on carbon emissions footprint Ability to monitor, report and exclude construction consumption from operational resource consumption	

Initiative type	Description	Benefit to organisation	Alignment with rating tool
Mandatory	Water metering and monitoring. Individual metering, supplying monitoring and integration into the TSEG's smart metering system is mandatory for the following: → Each water use type per floor → Major water usages (kitchens, showers, wash-down bays etc.) → Each water type (potable cold, potable hot water, recycled water) → Where a revenue stream may exist either through a proposed or potential tenant supply → New metering must be added to the existing building analytics and optimisation systems onsite. → Meter details and expected consumption should be provided to the Property Operations and Sustainability Teams to assess impact on building targets and performance Meters must be commissioned and validated in accordance with Section 8 of NABERS Rules for Collecting and Using Data	Improved problem diagnosis during lifetime of building, enables effective monitoring and water management of asset, resulting in operational cost savings	Green Star D&AB Credit 6.0, 6.1, Inn – metering integrity NABERS for Hotels energy and water
Mandatory	The project is to provide an operational waste management plan to determine how waste will be managed on the project and integrated into the site waste strategy. The project is to allow for separation of major waste streams prior to leaving site including: → General waste / Landfill → Paper and Cardboard → Glass → Plastic → Organics → E-Waste	Enables improved diversion from landfill, reducing cost of landfill disposal	Green Star D&AB Credit 8

Initiative type	Description	Benefit to organisation	Alignment with rating tool
Mandatory	Services and maintainability review. Project team / contractor / facilities team to undertake review of project design to ensure it can be serviced and maintained in operation. Recommendations to be documented and incorporated into the final design	Improves the performance of the building services in operation, improving equipment life, allows effective maintenance for better efficiency and reduced operational costs	Green Star D&AB Credit 2.1 NABERS for Hotels energy
Mandatory	Building operations and maintenance information, and building user information. Development of information from the design team, to inform the facilities and maintenance teams and building users on how to operate and maintain systems efficiently.	Provides information to building users and maintenance teams so the building can be used as it was designed to, as efficiently and effectively as possible, reducing operational costs	Green Star D&AB Credit 4.1, 4.2 NABERS for Hotels energy
Voluntary	An environmental management plan for the development must be implemented on site (dependant on project size and boundary) The EMP must identify the environmental aspects and impacts that relate to the operation of the building.	Improved environmental management systems to reduce the sites impact on the environment	Green Star Performance Credit 5
Voluntary	The project is to implement a green cleaning policy covering all cleaning and monitoring procedures, material and tasks.	Improved cleaning procedures for all common areas	Green Star Performance Credit 6

2. Energy

The energy theme outlines initiatives which reduce operational energy, emissions and peak energy demand from the grid. The initiatives aim to achieve operational cost reductions through reduced energy consumption, reduced peak demand, and reduced system costs through reduced and diversified loads. It will also provide a more resilient asset through reduced reliance on public infrastructure.

Initiative type	Description	Benefit to organisation	Alignment with rating tool
Mandatory	Project must include passive design features, including optimised building orientation, external shading devices and mixed mode ventilation strategy where opportunity exists.	Reduced mechanical system sizing, reduced energy consumption, reduced operational costs	Green Star D&AB Credit 15 NABERS for Hotels energy
Mandatory	Lifecycle cost analysis of a photovoltaic system to cover all available roof space and external carpark shading for the project (should shaded parking be required). The analysis should consider all design implications e.g. increased structural loads. Implementation of photovoltaic system must be implemented where payback period is less than 7 years, and where it is feasible to install. Typical payback period is 7 – 8 years.	Reduced operational costs, typical return on investment between 7 – 9 years	Green Star D&AB Credit 15, innovation NABERS for Hotels energy
Mandatory	Connection to site central energy plant where available	Maximise system energy efficiency, reduced operational costs	Green Star D&AB Credit 15, innovation NABERS for Hotels energy
Mandatory	LED lighting technology (or equivalent) to be used for all internal and external lighting (decorative light features are excluded as a Mandatory requirement and become a Voluntary requirement) Typical payback (compared to standard lighting technology) is 3 years.	Reduced operational costs, reduced routine maintenance and replacement costs	Green Star D&AB Credit 15 NABERS for Hotels energy

Initiative type	Description	Benefit to organisation	Alignment with rating tool
Mandatory	Lighting to be individually addressable, zoned to no greater than 100 m^2 or by functional use. System to be fitted with daylight sensors and motion sensors where practical.	Maximum control of lighting system, reduced operational cost	Green Star D&AB Credit 15 NABERS for Hotels energy
Mandatory	All heating and cooling pumps and fans to an efficiency improvement of 15% over minimum NCC Section J requirements. Project to complete whole of life services cost comparison, including consideration of the following system types and system features: → 4 pipe fan coil units with electronically commutated fans → Reverse acting Variable Air Volume system → CO2 sensors and demand controlled ventilation → Economy cycle → Heat recovery systems	Maximise system energy efficiency, reduced operational costs	Green Star D&AB Credit 15 NABERS for Hotels energy
Mandatory	Cooling systems to have a COP improvement of 15% over minimum NCC Section J or MEPS requirement	Maximise system energy efficiency, reduced operational costs	Green Star D&AB Credit 15 NABERS for Hotels energy
Mandatory	Domestic hot water system to be a solar hot water heater, electric heat pump with COP of at least 3.5, gas fired, or be integrated into a heat recovery system (e.g. tri-generation following a commercial analysis)	Maximise system energy efficiency, reduced operational costs	Green Star D&AB Credit 15 NABERS for Hotels energy

Initiative type	Description	Benefit to organisation	Alignment with rating tool
Mandatory	Whitegoods and appliances to have the following rating under the Greenhouse and Energy Minimum Standards (where design allows): → refrigerators – 2 stars → clothes dryers – 2.5 stars → washing machines – 3 stars → dishwasher – 4 stars → fridge / freezer – 2.5 stars → freezers – 2.5 stars	Maximise system energy efficiency, reduced operational costs	Green Star D&AB Credit 15 NABERS for Hotels energy
Mandatory	All hotel spaces to have control systems to ensure all non-essential systems are not powered or reduced (within 5 star guest experience levels) when room is unoccupied (lighting, air conditioning, general power outlets etc.). The system should also automatically drop blinds where blinds are automated.	Minimise energy waste in unoccupied areas, reduced operational costs	Green Star D&AB Credit 15 NABERS for Hotels energy
Voluntary	Building envelope, pipework and ductwork must have a 15% improvement in insulation performance on NCC Section J requirements	Improved building thermal envelope performance, reduced operational costs	Green Star D&AB Credit 15 NABERS for Hotels energy
Voluntary	Glazing performance no greater than 85% of the allowable performance level under the NCC Section J Glazing Calculator	Improved building thermal envelope performance, reduced operational costs	Green Star D&AB Credit 15 NABERS for Hotels energy

3. Water

The water theme outlines initiatives which reduce operational potable water consumption, utilising recycled water and reduced sewer discharge. The initiatives aim to achieve operational cost reductions through reduced potable water consumption and reduced discharge to sewer. It will also provide a more resilient asset through reduced reliance on public infrastructure.

Initiative type	Description	Benefit to organisation	Alignment with rating tool
Mandatory	The project must install water efficient fixtures and fittings including the following as a minimum where available: → Taps – 5 Star WELS rating → Urinals – Waterless or recycled water → Toilets – 4 Star WELS rating → Showers – 3 Star WELS rating (<9L/min) where specification allows → Clothes Washing Machine – 6 Star WELS rating → Dishwasher – 6 Star WELS rating	Reduced water consumption, reduced discharge to sewer, reduced operational water cost	Green Star D&AB Credit 18 NABERS for Hotels water
Mandatory	All kitchen fit-outs must install waterless woks with knee-leavers to regulate the cleaning arm	Reduced water consumption, reduced discharge to sewer, reduced operational water cost	Green Star Performance NABERS for Hotels water
Mandatory	Where available on the site, the project must connect to an alternative water source (recycled water) and all non-potable water demands are to be connected	Reduced potable water consumption, reduced operational water costs	Green Star D&AB Credit 18 NABERS for Hotels water
Voluntary	The project must implement xeriscape landscaping, or irrigate through a moisture sensing drip irrigation system	Reduced water consumption, reduced operational water cost	Green Star D&AB Credit 18 NABERS for Hotels water

Initiative type	Description	Benefit to organisation	Alignment with rating tool
Voluntary	The project must drain rainwater to any existing onsite rainwater tank where infrastructure allows. The project must drain all greywater (shower, bath, spa, hand basins, laundry tub, washing machine, dishwasher and kitchen sink) to any existing on site greywater treatment plant where infrastructure allows.	Reduced potable water consumption, reduced discharge to sewer, reduced operational water costs	Green Star D&AB Credit 18 NABERS for Hotels water
Voluntary	The project should consider rainwater storage, greywater treatment or blackwater treatment	Reduced potable water consumption, reduced discharge to sewer, reduced operational water costs	Green Star D&AB Credit 18 NABERS for Hotels water

4. Waste

The waste theme outlines initiatives which increase diversion from landfill rates and improve waste management on site. The initiatives aim to achieve operational cost reductions through increased recycling and avoiding expensive landfill disposal costs.

Initiative type	Description	Benefit to organisation	Alignment with rating tool
Mandatory	The project must contractually require the contractor to achieve a diversion from landfill (recycling) rate of minimum 95% during demolition and construction works. The waste must be reported monthly to TSEG	Increased recycling rate, reduced landfill	Green Star D&AB Credit 22
Mandatory	The project must prepare an operational waste management plan to address the transportation, storage, measurement and auditing of major waste streams for the project. The project waste management should be integrated into the sites wider waste management strategy. As a minimum the following waste streams should be considered: → General waste; → Paper and cardboard; → Glass; → Aggregates → Wood, steel and other construction material → Plastic; → Organics → E-Waste; and → Any other major waste stream.	Improved diversion from landfill rate, reduced operational waste disposal costs	Green Star D&AB Credit 8 Green Star Performance Credit 22
Mandatory	The project must prepare a waste management plan to address the treatment of refurbishment, construction and demolition waste, the plan, as a minimum, must: → Cover environment impacts as a result of the refurbishment within the building → Identify services available for recycling waste streams, and options for recycling any additional waste streams	Improved diversion from landfill rate, reduced operational waste disposal costs associated with refurbishments	Green Star Performance Credit 23

	→ Include appropriate signage and instructions (e.g. point out if waste is comingled or recyclable) → Identify and implement operational practices that encourage the reduction of waste generation as well as targets for improved recycling rated → Have a review process to assess the success of the waste management plan and identify improvements based on lessons learned		
Voluntary	Public access areas should have public landfill and recycling bins spaced appropriately across the project, with signage and waste stream splits appropriate for the space, sized appropriately to avoid overfilling	Improved user experience	-

5. Biodiversity

The biodiversity theme outlines initiatives which increase the biological value of the assets. The initiatives aim to achieve cost reductions through offsetting the need for Onsite Detention (OSD) stormwater tanks and choosing native resilient landscaping, appropriate for the local climate.

Initiative type	Description	Benefit to organisation	Alignment with rating tool
Mandatory	Maximise permeable surfaces and water sensitive urban design to be integrated into design to reduce peak stormwater discharge rates. Project must demonstrate no increase in peak stormwater event from pre-development	Reduced reliance on public sewer infrastructure	Green Star D&AB Credit 26
Mandatory	Landscaping must consider local biodiversity and include hard wearing native species reducing water requirements. Species should be selected considering increased pollen counts as a result of the increase in hot days.	Improved ecological value of the site, improved landscape resilience	Green Star D&AB Credit 18, 23, 25
Voluntary	The project must prepare maintenance procedure for landscaped areas, hard surfaces and building exteriors. The maintenance procedures must include: → Diversion from landfill → Minimising use of chemicals → Energy and water use → Plan specific maintenance requirements (where relevant)		Green Star Performance Credit 24

6. Materials

The materials theme outlines initiatives which promote the selection of low impact, certified, ethically sourced materials which are free from toxins to create a better user experience. These initiatives align with TSEG's transparency and ethics pillar, and will aim to make the project's supply chain more sustainable.

Initiative type	Description	Benefit to organisation	Alignment with rating tool
Mandatory	All internally applied paints, adhesives, sealants and carpets should contain low levels of VOC's	Improved indoor quality, improved user experience	Green Star D&AB Credit 13.1
Voluntary	A sustainable procurement framework, used for the procurement of consumables and refurbishment materials	Improved supply chain transparency and lowers environmental impacts of onsite consumables	Green Star Performance Credit 21
Voluntary	The following products should prioritise the following products: → Reused products → Recycled content products → Products with Environmental Product Declarations → Third party certification schemes; or → Stewardship programs Certification schemes include but are not limited to: → Good Environment Choice Australia (GECA) → Australasian EPD Program → Carpet Institute of Australia Limited → Sustainability Standard for Commercial Furniture - AFRDI Other products which meet Green Star credit 21 criteria	Improved supply chain transparency, lower embodied carbon	Green Star D&AB Credit 21

Initiative type	Description	Benefit to organisation	Alignment with rating tool
Voluntary	Timber should be either of the following: → Reused → Certified by a forest certification scheme that meets the GBCA's 'Essential' criteria for forest certification → Recycled, with 100% recycled proportion	Improved supply chain transparency, sustainably sourced materials	Green Star D&AB Credit 20.2
Voluntary	All permanent formwork, pipes, flooring, blinds and cables should be free from PVC's or meet Best Environmental Practice PVC requirements	Improved supply chain transparency, sustainably sourced materials	Green Star D&AB Credit 20.3
Voluntary	All engineered wood products should have minimal formaldehyde limits	Improved indoor quality, improved user experience	Green Star D&AB Credit 13.2
Voluntary	Concrete should include at least 30% replacement of cement with alternative materials, mix water should be at least 50% recycled.	Lower embodied carbon	Green Star D&AB Credit 19B1.1, 19B1.2
Voluntary	Steel should be sourced from a responsible steel producer and through using energy reducing technology. See Green Star Credit	Lower embodied carbon	Green Star D&AB Credit 20.1

7. Indoor Environment Quality

The indoor environment quality theme outlines initiatives which promote the design of a high-quality space, suitable for a world leading property. These initiatives will promote assets which will provide a memorable guest experience and maximise the health and wellbeing of staff working in these areas.

Initiative type	Description	Benefit to organisation	Alignment with rating tool
Voluntary	The ventilation system should be designed to ensure the following: → The entry of outdoor pollutants is mitigated; → The system is designed for ease of maintenance and cleaning; and → The system has been cleaned prior to occupation and use.	Improved indoor quality, improved user experience	Green Star D&AB Credit 9.1
Voluntary	Provision of outdoor air beyond code compliance, at least a 50% improvement is recommended.	Improved indoor quality, improved user experience	Green Star D&AB Credit 9.2
Voluntary	The acoustic design should achieve the following: → Internal ambient noise levels should be suitable for the space as per AS2107 → Internal reverberation levels to be suitable for the space as per AS2107 → Partition walls to be designed to minimise noise transfer between enclosed rooms	Improved indoor quality, improved user experience	Green Star D&AB Credit 10.1, 10.2, 10.3
Voluntary	Lighting to be designed to achieve the following: → Be flicker free → Dimmable down to 1% → Energy saving technologies for instance LED technology or equivalent → Comply with best practice lighting levels and have fittings free from glare → Provide uniformity and visual interest → Provide localised user control	Improved indoor quality, improved user experience	Green Star D&AB Credit 11.0, 11.1, 11.2, 11.3

Initiative type	Description	Benefit to organisation	Alignment with rating tool
Voluntary	Façade design to achieve the following: → Shading devices or blinds to eliminate glare → High VLT glass to provide high daylight penetration → High VLT glass to provide high quality external views	Improved indoor quality, improved user experience	Green Star D&AB Credit 12.0, 12.1, 12.2
Voluntary	Provide high thermal performance building envelope to provide improved thermal comfort performance	Improved indoor quality, improved user experience	Green Star D&AB Credit 14.1, 14.2

8. Climate Mitigation and Adaptation Actions

The climate adaptation and resilience theme outlines initiatives for building resilience to future climate change across TSEG assets, business operations and the precincts within which they are located. In addition to understanding key areas of impact and risk for business and assets, a comprehensive approach to climate risk also delivers co-benefits in terms of reporting and disclosure requirements for insurance purposes.

Initiative type	Description	Benefit to organisation	Alignment with rating tool
Mandatory	Assess projects in accordance with the Green Star Communities Adaptation and Resilience Credit, including consideration of: → Climate Adaptation; → Community Resilience.	Improved awareness of climate risks. Improved preparation, communication, safety and response to natural hazards	Green Star Communities Adaptation and Resilience Credit (Credit 04)
Voluntary	Implement adaptation options to mitigate impacts of extreme heat, including: → Consideration of projected increase in maximum mean temperatures and extreme heat as part of capital replacement of HVAC facilities → Measures to reduce heat transfer into building envelope, e.g. green space/vegetation and / or pressurised revolving doors → Consider renewable / alternative energy measures to reduce demand on energy during peak periods e.g. solar power → Engage with the energy network provider to determine the redundancy of the local network during peak events and the prioritisation of return customers back onto the grid → Installation of back-up power generation to accommodate energy supply continuity, particularly for sensitive tenants → Implement a proactive program to raise awareness amongst staff, tenants, patrons, guests and the wider community around appropriate responses to increased extreme heat days and heatwave events	Improved resilience to extreme heat events. Improved capacity of staff, tenants, patrons, guests and the wider community to respond to extreme heat events.	Green Star Communities Adaptation and Resilience Credit (Credit 04)

Initiative type	Description	Benefit to organisation	Alignment with rating tool
Voluntary	Implement adaptation options to mitigate impacts of extreme rainfall and flooding, including: → As part of capital works, ensure roof drainage overflows are appropriately sized to reduce the potential for inundation and leaks → Ensure any basement carparks and fire doors are protected or located above the PMF → Ensure all critical building infrastructure (i.e. substations, ICT servers, lift motors etc.) are not located in the basement → Undertake a review of the emergency evacuation routes and designated assembly areas for asset emergency procedures and plans. Check pedestrian access and assembly areas for susceptibility to flooding → Ensure regular inspection of stormwater pits and pumps, with maintenance and clearing if required, to prevent overflow and flooding → Implement an early warning flood system for staff, tenants and patrons → Implement a proactive program to raise awareness amongst staff, tenants, patrons, guests and the wider community around appropriate responses to extreme rainfall and flash flooding events	Improved resilience to extreme rainfall and flood events. Improved capacity of staff, tenants, patrons, guests and the wider community to respond to extreme rainfall and flood events.	Green Star Communities Adaptation and Resilience Credit (Credit 04)

REFERENCES AND INFORMATION

- *Water Efficiency Labelling and Standards scheme (WELS) provides a star rating system for water efficiency. The higher the rating the more water efficient. For more information visit http://www.waterrating.gov.au/
- **Minimum Energy Performance Standards provides a star rating system for energy efficiency. The higher the rating, the more energy efficient. For more information visit http://www.energyrating.gov.au/consumers
- Australian Government Department of Environment and Energy website (Climate Change section), http://www.environment.gov.au/climate-change/international
- Green Building Council of Australia, http://www.gbca.org.au/
- NABERS https://nabers.gov.au/public/webpages/home.aspx