

The Star Entertainment Group

SEPTEMBER 2021

Sustainability and Circular Economy

The Star Key Site Master Plan



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Sustainability and Circular Economy The Star Key Site Master Plan

The Star Entertainment Group

WSP

Level 27, 680 George Street
Sydney NSW 2000
GPO Box 5394
Sydney NSW 2001

Tel: +61 2 9272 5100
Fax: +61 2 9272 5101
wsp.com

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WSP acknowledges that every project we work on takes place on First Peoples lands.
We recognise Aboriginal and Torres Strait Islander Peoples as the first scientists and engineers and pay our respects to Elders past and present.

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Executive summary

This report has been prepared on behalf of The Star Entertainment Group (The Star) in support of its Key Site Master Plan under the Pyrmont Place Strategy. As one of the key sites identified by the Pyrmont Peninsula Place Strategy, the Master Plan ultimately seeks to inform updated planning controls related to 20-80 Pyrmont Street and 37-69 Union Street Pyrmont, to facilitate redevelopment of both sites and enable the Star's contribution to the Precinct as "a renowned and treasured cultural and entertainment precinct".

This report addresses the commitments to Sustainability and Circular Economy initiatives that will underpin the Master Plan and associated design. Commitments apply at scales of The Star Entertainment Group's Corporate ESD strategy, precinct-level provisions and initiatives for the site, and individual Buildings-scale design provisions. It presents a compelling narrative regarding The Star's commitment to reducing its ecological footprint whilst 'opening the door' to discussion and support for precinct-wide initiatives

Corporate Sustainability

The Star Entertainment Group's initiatives, commitments and policies overarch the Sustainability strategy, and define both the agenda and many of the implementation targets for Sustainability of the Key Site Masterplan.

Declarations through the Group's corporate publications and reports form the basis of this Sustainability and Circular Economy strategy, and include key statements around

- Carbon reduction pathway and 2030 net zero carbon emissions target
- The Star's partnerships with the City of Sydney and support for programs including the Sustainable Destination Partnership
- Sustainable Design & Operation Standards and alignment to the UN Sustainable Development Goals
- Response to Country and The Star's Reconciliation pathway
- The Circular Economy

Key Site Precinct Sustainability

As a key site identified for the PPPS, The Star site's precinct-wide initiatives will play an important role in precinct-scale responses for the Pyrmont Peninsula. The Star site strategy encompasses numerous initiatives that include

- Support for a Pyrmont Precinct Climate Adaptation Plan
- Marine Ecology Audit and the Seabin initiative for Pyrmont Bay
- Exploration of a community garden opportunity and further biodiversity studies and actions in support of City of Sydney strategy recommendations
- Supporting initiatives for Indigenous Heritage and First Nations Recognition

Building – Scale Sustainability and Circular Economy

- The Star has a target to achieve coverage by third party certified environmental ratings across over 90% of its managed portfolio by 2022
- New building works will target a minimum 5 Star Green Star rating, and register under the Green Star Buildings tool or equivalent tool in force
- Transitioning to a Circular Economy and zero operational waste

1 Introduction

This report has been prepared on behalf of The Star Entertainment Group (The Star) in support of its Key Site Master Plan under the Pyrmont Place Strategy.

The Master Plan is developed under the framework established under the Pyrmont Peninsula Place Strategy (PPPS), where The Star has been identified as one of four ‘key sites’. The PPPS creates a 20-year vision and planning framework to support the NSW Government’s vision to transform the Pyrmont Peninsula to “be an innovative, creative and cultural precinct and an engine room of the Eastern Harbour CBD” while meeting the aspirations of business, industry, visitors, local and future residents.

The Master Plan ultimately seeks to inform updated planning controls related to 20-80 Pyrmont Street and 37-69 Union Street, Pyrmont to facilitate redevelopment of both sites and enable the Star’s contribution to the Precinct as “a renowned and treasured cultural and entertainment precinct”.

In particular this report addresses the commitments to Sustainability and Circular Economy initiatives that will underpin the Master Plan and associated design. Commitments exist and will be applicable at scales of The Star Entertainment Group’s Corporate ESD strategy, Precinct-level provisions and initiatives, and design provisions at the individual building scale.

It should be acknowledged this report has been prepared based on the provided information in the PPPS and the technical consultant reports that accompany the document. Assumptions have had to be made in order to make a reasonable assessment of the precinct-wide matters, especially those related to currency of available rating tools, final details of the master plan when approved and detail of the approved scheme.

1.1 Pyrmont Peninsula Place Strategy

The PPPS provides a 20-year framework that identifies areas that can accommodate growth in Darling Island, Blackwattle Bay, Tumbalong Park and Ultimo sub-precincts, while enabling more growth in the Pyrmont Village and Wentworth Park sub-precincts. The PPPS is implemented in the statutory planning system by a Ministerial Direction that requires all land use and planning proposals to be consistent with the Place Strategy.

The first phase in implementing the PPPS is the preparation of master plans for each of the seven sub-precincts that make up the Peninsula (Figure 1.1) As a ‘Key Site’ located in the Darling Island sub-precinct, The Star has been identified to progress its own Master Plan for its ‘Key Site’ alongside the broader Precinct-wide master planning being undertaken by the Department, in consultation with the City of Sydney (Figure 1.2).



Figure 1.1 Pyrmont Peninsula Sub-Precincts

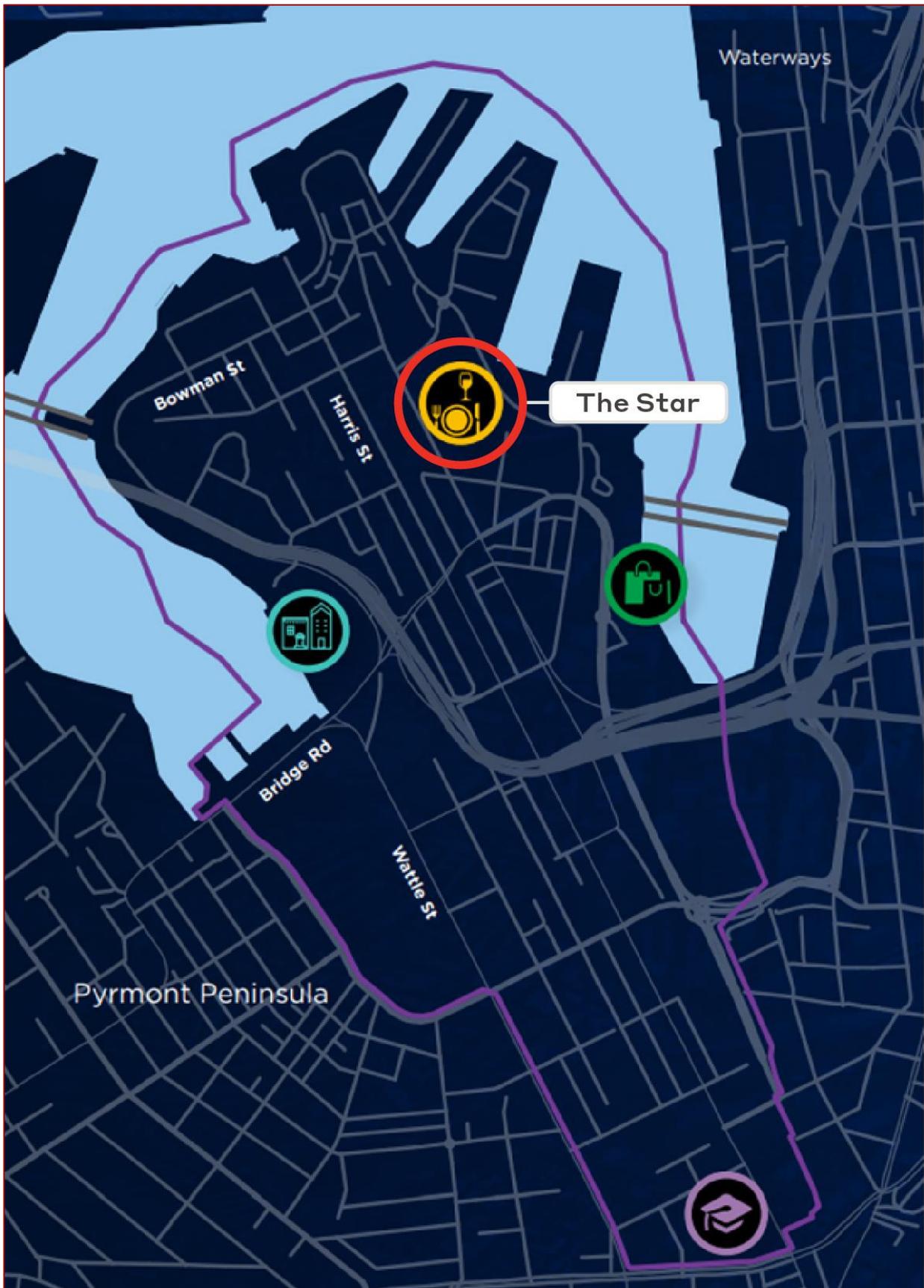


Figure 1.2 The Star Key Site

1.2 The Star

The Star is an ASX 100 listed company that owns and operates The Star Sydney, Treasury Brisbane and The Star Gold Coast.

The Star Sydney is Sydney’s leading entertainment, dining and tourism destination. More than 11 million people, including locals, domestic visitors and international tourists visit The Star annually, facilitated by a workforce of approximately 4,500 people (pre-COVID). As Sydney’s only integrated resort, The Star Sydney focuses on the development of tourism and entertainment products across four key segments – accommodation, F&B, gaming and entertainment.

1.3 The Proposal

The Star Key Site Master Plan is proposing to rezone 20-80 Pyrmont Street and 37-69 Union Street, Pyrmont to establish new planning controls to enable redevelopment on the site to accommodate future mixed uses including retail, commercial uses, hotel and residential. The site is outlined in Figure 1.3



Figure 1.3 Site Aerial

Source: Nearmap/Ethos Urban

The rezoning and proposed planning controls have been informed by detailed site planning considerations as well as existing and future local context analysis. The proposed new controls that comprise amendments to the Sydney Local Environmental Plan 2012 (Sydney LEP 2012) and a Design Guide, respond to the objectives for The Star site Master Plan as listed in the PPPS as well as the Strategy’s directions, big moves and place priorities.

It should be noted that subsequent development applications will be required in line with the relevant provisions of the *Environmental Planning & Assessment Act 1979* to deliver the proposed developments.

The key development outcomes sought to be achieved for The Star site from the proposed Master Plan include:

Northern Site (20-80 Pyrmont Street)

- A new 27 storey six-star hotel (capped at RL 110) on Pirrama Road (North Tower) comprising:
 - 6 storey podium that retains the existing ground level setback on The Star site
 - 21-storey tower with 1.5m street setback from podium and increased minimum 7m street setback to the north in line with wind advice and view sharing principles
 - Total gross floor area of 26,000m² (excluding through-site link)
 - New porte-cochere drop-off servicing hotel
- Additional built form to Level 5 rooftop of the main Star site comprising:
 - A collection of indoor and outdoor spaces with complementary functions such as indoor/outdoor dining opportunities, recreational spaces, wellness spaces and hotel amenities, including an existing hotel pool
 - Total of approximately 3,000m² (additional to existing)
- Opening up of Pirrama Road frontage to reveal light rail and to provide improved connectivity to public realm and waterfront including:
 - Active uses such as retail, food and beverage and wellness uses at street level; and
 - Total GFA of approximately 200m² (additional to existing).
- New through-site link connecting Jones Bay Road and Pirrama Road
- Re-configured and expanded entry to the Lyric Theatre
- Façade upgrades to existing Astral Towers

Southern Site (37-69 Union Street)

- A new 37 storey mixed use building (capped at RL 140) on Union Street (South Tower) comprising:
 - 5 storey podium mixed use podium with a 3m ground level setback along the Pyrmont Bridge Road boundary to increase footpath width, comprising uses such as retail, residential and hotel amenities and/or dedicated hotel levels
 - 32 storey tower generally setback 5-7m from the podium, comprising uses such as retail, residential and hotel amenities and/or dedicated hotel levels and 2 plant levels
 - Total GFA of approximately 32,000m²

Public realm

- Upgrades to corner of Edward Street and Union Street
- Upgrades to corner of Union Street and Pyrmont Street
- Improvements to public domain along Edward Street
- Improvements to public domain along Pirrama Road
- Upgrades to Union Street with potential for shared zone, including upgrades to walkway and cycleway

Once new planning controls are adopted, The Star will progress with the detailed design and planning of the future development on the site, including progressing with a design competition and securing development approval for the winning design.

1.4 General Requirements

This report has been prepared with reference to the General Requirements for Preparing Key Site Master Plans under the Pymont Peninsula Place Strategy and the alignment review prepared by the Department of Planning, Industry and Environment (DPIE) dated 26 April 2021.

2 Sustainability and the Circular Economy

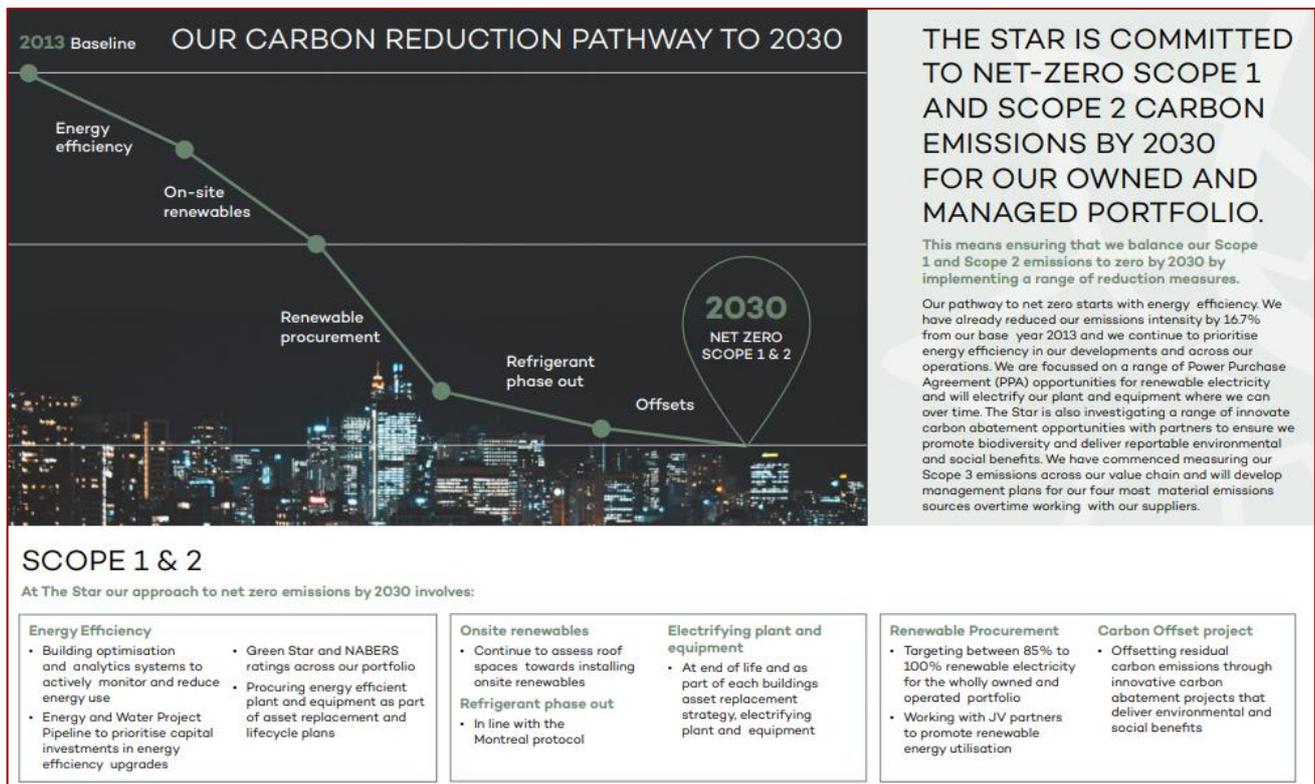
2.1 The Star Entertainment Group Corporate Sustainability

The Star Entertainment Group’s initiatives, commitments and policies overarch the Sustainability strategy, and define both the agenda and many of the implementation targets for Sustainability of the Key Site Masterplan.

This section captures key statements that apply to the Masterplan Sustainability Strategy that have been declared in TSEG’s corporate publications and reports.

2030 Net Zero

The Star Entertainment Group has set a 2030 Net-zero carbon emissions reduction target for Scope 1 and Scope 2 emission from fully owned and operated assets. In FY2021, The Star committed to measuring its most material Scope 3 emissions which are our indirect emissions that occur in the value chain, including both upstream and downstream emissions.



Source: The Star’s 2021 Sustainability Report, page 35

In March 2021, The Star completed a Value Chain Emissions Mapping and Materiality Assessment to understand the Group’s most material Scope 3 emissions by spend. The boundary of the assessment included all assets that The Star has operational control over as per the NGER Act. As a tourism, entertainment and hospitality business, The Star’s properties welcomed over 18 million visitors each year (pre-COVID) and the Group has a strong construction pipeline to develop new integrated resorts. The Star, supported by its third-party carbon consultancy, has estimated its Scope 3 emissions footprint aligned to the GHG Protocol using a FY2020 general ledger (pre-COVID).

By spend, four category groups were responsible for almost 50% of The Group’s Scope 3 emissions, a direct reflection of the industry sector in which The Star operates. Capital Development Projects were responsible for 26% of Scope 3 emissions and the purchase of meat for Hospitality food services was responsible for 11%. Third party activities for Marketing and the purchase of Dry Goods each contributed 4%.

Economic emission factors were applied to determine The Group’s estimated Scope 3 emissions footprint aligned to the GHG protocol. It should be noted that these economic emission factors can typically inflate the quantum of emissions. Sourcing Scope 3 data directly from suppliers is more accurate however is not provided by most suppliers. A financial approach allows for a broader inclusion of Scope 3 emissions’ to be collected, measured and managed in the supply chain.

As the four most material issues, The Star will be seeking opportunities to reduce these embedded emissions in its supply chain over time. The Star is examining its highest spends within the product categories to understand what are the most carbon intense, and actively determining a pathway to reduce embedded emissions from selective product and service procurement. In FY2022, the Group will focus on refining its Scope 3 inventory using direct source data provided by suppliers where available, as well as incorporation of other relevant emission sources such as waste and employee commuting.



Source: The Star Entertainment Group website, Environment [page](#)

Sustainable Destination Partnership

The Star is a Founding Members of Sydney’s Sustainable Destination Partnership with the City of Sydney. The Star has maintained strong & continuous engagement in this partnership since its inception, with member organisations together working to improve the environmental performance of Sydney’s tourism venues, invest in renewable energy, recycled water and waste avoidance & management, engage with regulators and governments on key environmental policy and regulatory issues, and champion and promote the partnership’s objectives and outcomes.

The partnership supports achieving the Sustainable Sydney 2030 goals that include 70% reduction of carbon emissions



and diversion of at least 90% of waste from landfill by 2030 for the City of Sydney, while delivering zero increase in potable water demand against a 2006 baseline.

Sustainable Design & Operation Standards

The Star’s [Sustainable Design and Operational Standards](#) ensure that all major refurbishments and new buildings implement climate mitigation and adaptation actions and initiatives for building resilience to future climate change across TSEG assets, business operations and the precincts within which they are located.

Table 2.1 Climate Mitigation & Adaptation Actions, section 8, The Star Sustainable Design & Operation Standards

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: <ul style="list-style-type: none"> — 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: <ul style="list-style-type: none"> — 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)
Voluntary	Implement adaptation options to mitigate impacts of extreme rainfall and flooding, including: <ul style="list-style-type: none"> — 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)

CASE STUDY

HEAT RESPITE IN BRISBANE AT QUEEN'S WHARF

Heat poses significant risks to the customers and communities of The Star's Brisbane-based assets, including the billion Queen's Wharf Brisbane (QWB) development

In order to mitigate the risks of extreme heat for the local community, the Queen's Wharf, Brisbane development has incorporated the following design features:

Green walls are a feature throughout the precinct.

Indoor plants, water features and vertical green walls are included in the interior design of the Rosewood Hotel.

All of the buildings, including Towers 1-4 and the integrated resort development have been designed to incorporate the principles of sub-tropical design as outlined in Brisbane City Council's 'Buildings that Breathe' Guide.

The spaces throughout all towers are orientated around the River City Design Concept that reflects and draws attention to natural features such as the river and mountains.

The development has achieved a 6 Star Green Star Communities Rating and is in the process of attaining 6 Star Green Star Design and As Built Ratings for non-residential buildings and achieving best practice design for existing heritage buildings.

Balconies allow residents and occupants to enjoy the outdoor lifestyle that is associated with the sub-tropics.

Soft landscaping is provided extensively throughout the outdoor areas of all buildings.

QWB is currently achieving the 'Heat Island Effect' Credit for the Green Star Communities Rating and has achieved an innovation credit for 'biophilic design' through the use of passive cooling measures and providing access to natural light.

THE STAR ENTERTAINMENT GROUP

Alignment to the 17 UN Sustainable Design Goals

The UN's SDGs are integrated into TSEG's strategies under the themes of its Our Bright Future (Figure 2.1) and The Star is a signatory to the Global Compact Network Australia.

It's reporting and initiatives include

- The ESG Materiality Assessment;
- 'Our Bright Future' Sustainability Strategy, Beyond 2020 Sustainability Action Plan, Modern Slavery and Human Trafficking Statement; and
- The SDGs Contribution Report, 2020 Annual Report, 2021 Sustainability Report (release September 2021)



Figure 2.1 TSEG alignment of the Our Bright Future themes to the UN Sustainable Development Goals

Other parts of The Star’s Standards, and detailed further in section 1.1 of The Star’s [Beyond 2020 Sustainability Action Plan](#), are to support Connected Cities and Communities and Custodianship and Contribution which support community cohesion and destination stewardship.

Section 3.1 of the Sustainability Action Plan, ‘Sustainable Development’, outlines commitments to biodiversity improvement, water protection and management, and green building ratings. For example, the 8,000m² of green roof space at The Star Sydney reduces heat loads and encourages biodiversity.

The Liveable Places objectives ensure continued focus on Green Space Development and increasing ‘green spaces’ around our properties for the benefit of guests, communities and team members. The Star Sydney will continue to work towards its objectives in the Action Plan in Sydney and across its other developments across Australia.

A [case study](#) for The Star Sydney repurposing used oyster shells to support marine ecosystems is provided on The Star’s website and the initiative is also noted in section 2.2 on precinct initiatives below.

Response to Country and Reconciliation.

The Star made progress towards developing its first Reflect Reconciliation Action Plan (RAP) in FY2021.

A Reflect RAP sets out the steps to take to prepare for reconciliation initiatives in successive RAPs. The Reflect RAP allows The Star to foster closer relationships and ties with Aboriginal and Torres Strait Islander stakeholders while developing our vision for reconciliation and exploring our sphere of influence.

Significant steps have been undertaken to progress this initiative.

These include:

- A RAP vision for The Star
- The formation of a Reconciliation Committee made up of seven members, including CEO Matt Bekier
- The formation of a Reconciliation Working Group ('Reconciliation at The Star') currently comprised of 15 members, including two Sydney-based First Nations Peoples
- Inclusion of Aboriginal & Torres Strait Islander Peoples, days of significance in the diversity and inclusion calendar including Close the Gap Day, National Reconciliation Week and NAIDOC Week
- Inclusion of an Acknowledgement of Country at all meetings and events of significance.

The following objectives to support the advancement of Indigenous Australians, with regard to education, employment opportunities and the self-sufficiency of communities, are part of The Star's Leading Company-Trusted Community Partners theme under its Our Bright Future sustainability framework (p10, *Beyond 2020 Sustainability Action Plan*).

Key initiatives being undertaken by The Star include:

- Reconciliation Action Plan - Develop and expand our support
- Indigenous training - In our restaurant and culinary business through relationships and partnerships with indigenous groups
- Indigenous community opportunities - Identify and foster opportunities through our food supply chains by establishing product or business offerings to directly support employment and community goals.
- Cultural Heritage Management Plans - Cultural Heritage Management Plans in place at Queen's Wharf Brisbane to correctly identify, inform and handle items of cultural significance

Climate-related Disclosures Progress Report June 2021

- This is The Star's second report in response to recommendations of the Taskforce on Climate-related Financial Disclosures (TCFD).
- Commitment to conduct physical climate risk assessments every two years (previous physical risk assessments 2017, 2019; 2021 underway)
Project alignment to TCFD recommendations in accordance with Group Sustainability Strategy

Circular Economy Initiatives

The Star are working to not only decrease waste to landfill and increase the number of recycling streams and the associated tonnage diverted, but also to integrate the principles of a circular economy into their waste strategy to determine opportunities for 'closing the loop' where possible.



'Jalaman Making Honey' artwork for Reconciliation by Devene Cockatoo-Collins.

A new Waste and Recycling Strategy 2022 is to be released with the view to mirror recycling streams across all owned and operated properties. The strategy will embed a best practice, circular economy approach, a focus on textile waste and the implementation of organics recycling at our Queensland properties.

The Star have implemented a Single use Plastics Reduction Commitment and are a signatory to the City of Sydney Single Use Plastic Reduction Pledge. There is a commitment to 100% compostable takeaway food packaging, working towards diverting 100% of food waste from landfill

2.2 The Star Key Site Precinct Sustainability Strategy

PYRMONT PENINSULA PLACE STRATEGY

As a key site identified for the PPPS, The Star site’s precinct-wide initiatives will play an important role in precinct-scale responses for the Pyrmont Peninsula, with Sustainability strategy an essential element supporting the PPPS Big Move 4 Low carbon, high performance precinct.

TARGETS AND COMMITMENTS

A number of initiatives mentioned are of relevance to The Star Sydney site and are described in Table 2.2. They form the basis of new opportunities that can be explored for the master plan, arising from studies and pilot projects to date and examples from broader practice.

Table 2.2 Initiatives that support the Star precinct targets and commitments

<p>Pyrmont Precinct Marine Ecology Audit</p> <ul style="list-style-type: none"> — The Star would complete the assessment. Opportunity for others to fund initiatives arising from the study outcomes, such as <ul style="list-style-type: none"> — Local marine biodiversity and water quality programs <p>Support for marine structures to support growth to increase water quality (TSEG has supported OceanWatch with oyster reuse for bivalve regeneration in Sydney Harbour)</p>	
<p>Expansion of Seabin Initiative for Pyrmont Bay</p> <ul style="list-style-type: none"> — The single bin pilot in Pyrmont Bay has been successful — Expansion through funding a further 10 to extend the benefit to more of the surrounding marine environment 	

Community Garden initiative

The Star currently has a green roof and opportunities are being examined for reinstating chefs' gardens to use fresh produce in our restaurants and across our bars.

In the Gold Coast, apprentice chefs led the installation of the garden and maintenance. Concepts will be fully realised when final spacing becomes available as part of master planning.

Community gardens would require consultation with the community and relevant authorities to determine a suitable location within the broader Pymont Peninsula, that provides convenient and safe access for maintenance and supplies.

The Star looks to support this concept once more details are known.



Circular Economy Educational Opportunities

- Repair workshops and demonstrations, Tool station, Community spaces to educate on food waste avoidance
- Furniture, Fittings, Textiles and Equipment donations program for local charities

Other precinct opportunities

- Explore funding of native beehives and bird boxes to enhance local biodiversity in accordance with CoS strategy recommendations
- Explore funding for an Education Walk, link to Barangaroo Walk
- Create seating areas to maximise heat respite and enjoyment for the community
- Establish a walking and cycling area map to encourage use of cycle paths and safe path sharing

Consider spatial provisions and opportunity to create a children's play area to activate underutilised green spaces to encourage community cohesion, recreation by families, tourist visitors, and communities

Support for Indigenous Heritage and First Nations Recognition

- Design initiatives to engage local artists and provide opportunity
- Host an annual art market to connect local indigenous artists with the community
- Support signage and recognition upon an educational walk
- Promote education forums with partners

Pymont Precinct Climate Adaptation Plan

The Star Entertainment Group recognises that its properties may be susceptible to future changes in climate and the responsibility this entails. Accordingly, The Star are committed to improving the resilience of business operations, assets, and the precincts in which properties are located.

The Star recognise the recommendations of the Financial Stability Board Task Force on Climate-related Financial Disclosures and the associated framework. Since the release of the recommendations in FY2017, The Star have been working to align their climate change risk assessments and new projects to the four framework areas, namely Governance, Strategy, Risk Management and Metrics and Targets. The Star has released its second TCFD-aligned report detailing physical and transition risks to a low carbon economy, with more information in the group [Climate-related Disclosures Report](#)

The Star Sydney undertakes physical climate risk assessments every two years and has a climate adaptation plan to ensure future resilience is considered. Climate change risk forms part of the company risk register and is managed under the normal risk processes with oversight from the Board. The Group acknowledges that climate change, particularly in relation to planning and contingency planning, may create a range of potential impacts. In the areas in which the Group has properties located, there is potential for changes in temperatures and related weather events in future that might impact air conditioning, building, construction and design standards.

In 2017, The Star undertook a climate change risk assessment of its assets and recommended actions to improve our resilience to future climate change. Risks were similar in nature to those found across the built environment. The risk assessment identified exposure to heat and storms across The Star's three integrated resort properties, and highest overall exposure, aggregated across all potential climate variables for Treasury Brisbane, The Star Gold Coast and The Star Sydney.

The Representative Concentration Pathway 8.5 (RCP8.5) scenario was used for the physical risk assessment. This scenario assumes minimal effort to reduce emissions, which will continue to increase marked by the continued use of conventional fossil fuel energy to power cities homes and businesses. The assessment was then reviewed and updated in 2019 to include a preliminary assessment of The Star's transition risks and opportunities, arising from the global transition to a low carbon economy. This assessment was undertaken using the RCP2.6 scenario, which assumes strong mitigation efforts and active removal of atmospheric CO₂.

Within this financial year, The Star delivered its third series of follow-up climate risk assessments of these properties in line with our commitment to reassess our physical climate risks biennially. We continue to adapt our Sustainable Design and Operational Standards accordingly to consider our most material climate mitigation and adaptation actions and where we can improve building and operational processes to reduce possible climate impact and risk

To help manage these risks into the future and to design and build with a changing climate in mind, prioritised mitigation and adaptation actions have been developed and are included in the Group's Sustainable Design and Operational Standards that are required to be applied to all major projects, refer to section 8.

More detailed information can be found in The Star's first standalone Sustainability Report for the Fy2021 year which is due for release on the 21st of September 2021 <https://www.starentertainmentgroup.com.au/annual-reports/>

2.3 Buildings - Sustainability and Circular Economy Strategy

TARGETS AND COMMITMENTS

Target 5 Star Green Star Design and As Built ratings for new buildings, aligned to The Star's Sustainable Design and Operational Standards.

New building works from the end of 2021 will register under the new Green Star Buildings tool, or the equivalent tool in future as the GBCA updates and releases new Green Star rating tools for buildings.

The Star has a target to achieve coverage of third party certified environmental ratings across over 90% of its managed portfolio by 2022 measured on a square meter basis.

To date, third party certified environmental ratings for over 80% of controlled properties have been obtained, which include

- A 5 Star Green Star Interiors rating,
- A 5 Star NABERS Tenancy rating, Green Star Performance ratings at The Star Sydney and The Star Gold Coast,
- Earth check Platinum at The Gold Coast Convention and Exhibition Centre and
- Commitments to further Green Star Performance and Design and As Built ratings as part of our new developments.

The Green Star Performance ratings assess the operational performance of existing buildings and help to measure how successfully TSEG are managing these assets. Baseline ratings undertaken at The Star Sydney and The Star Gold Coast provide a sustainability marker from which efforts are concentrated to build on our initial rating.

A continuous improvement plan over a three-year cycle guides sustainability performance progress and allows for improvements to be recognised over time. The 5 Star NABERS Tenancy rating for The Star's Sydney Office at 60 Union St, Pyrmont, has been maintained in 2021. In 2022, the NABERS tenancy ratings will expand to include additional properties to support reaching the 2022 coverage target. Destination Gold Coast Consortium (on behalf of its joint venture partners) continued to work towards its 5 Star Green Star Design and As Built rating commitments for both the Dorsett hotel and apartments tower and 'Tower 2' (to be constructed on Broadbeach Island, Broadbeach, Queensland).

Further commitments for The Star Sydney site include the following:

- Create The Star, Sydney Sustainable Development Plan
- Transition The Star Sydney and all new buildings to 100% renewable electricity, purchased through offsite Power Purchase Agreements (PPAs)
 - In line with TSEG's Net Zero Target, prioritise electrification over fossil fuels (gas fired plant)
 - End of Life asset replacement strategy to electrify plant.
 - Build for resource efficiency
 - Assess the viability of onsite solar (revert to renewable PPA if spatially beneficial)
 - Extend The Star Sydney's Building Optimisation and Analytics System to any new buildings for monitoring and resource management
- Core ESD initiatives for The Star Sydney development projects
 - Improved biodiversity to provide
 - positive urban biodiversity enhancements
 - rainwater capture and reuse

- reduced storm water runoff
- Improved access to daylight and views as a positive building user experience
- High performance façade to reduce solar loads and improve thermal comfort
- Incorporation of passive design with solar shading reduce heat loads and mitigate climate change related heat impacts
- Highly efficient energy and water systems to maximise resource use
- Utilising a sea water cooling system
- Efficient centralised energy plant
- Rooftop rainwater capture and storage

Transitioning to a Circular Economy

A Circular Economy approach means shifting away from the ‘take, make, use and dispose’ approach towards a more circular approach where we maintain the value of waste resources for as long as possible.

Transitioning to a Circular Economy requires designing out waste from the outset and looking for materials and products that are reused, repairable and recyclable. At the end of their life, we want to ensure that product components are maintained, can be efficiently reused and recycled and have a value beyond landfill. This means creating built environment design approaches, systems, processes and infrastructure to support material reuse, repair and recycling.



Figure 2.2 Visualising the Circular Economy

As well as benefiting the environment through carbon reduction and ecosystem benefits, a Circular Economy can also provide significant financial savings through reduction in materials use. It also has the potential to enhance social capital through supporting large to small-scale social ventures within the repair, reuse and recycle economy.

The earlier Circular Design strategies are embedded in projects, the more opportunities there will be to identify and implement viable solutions to ultimately design out waste.

Key opportunities include:

- Construction and Demolition Waste Minimisation
- Design for efficient operational waste management
- Toward Zero Operational Waste including organics processing
- Community Educational Opportunities at Precinct Scale

The Star’s team engage with all aspects of waste and recycling, understanding that waste is the resource stream that their people have the most ability to influence. Training continues for all staff at induction and on an ongoing basis for Stewards, Hotel and Food and Beverage Teams, and education forums continue through internal communications to all team members. Waste and recycling figures include all waste generated from operations. The Star benchmark waste and recycling performance against the base year FY2013 to ensure that improvements are measurable.

The Star is developing its new Waste Strategy presently and is increasing its focus on more circulate economy solutions. An example has been the new pilot projects The Star Sydney has created with new start-ups *Block-texx* and *Worn Up* to increase textile recycling.

CASE STUDY

WORN UP

In 2021, The Star became a Worn Up Founding Partner, providing over 2.8 tonnes of uniforms and other textiles for processing into alternative end products. Through this collaboration, we were helping to pioneer and drive change in the textile and waste sector.

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Worn Up is a textile upcycling impact enterprise which aims to take 300 tonnes of uniforms out of landfill by 2030. Worn Up is on the Product Stewardship initiative run by the Federal Government and was invited to exhibit at the National Clothing and Textile Waste Exhibition in Canberra (May 2021).

Worn Up composition tests our uniforms and textiles, sorts by fabric and colour and then processes to the correct consistency for the chosen end products. Some of the applications Worn Up has manufactured utilising our uniforms include dog beds for animal shelters made from obsolete gaming table felts; commercial tiles from old polyester gaming vests, shredded uniforms repurposed as stuffing for dog swags and prototype seats for stools.

Our obsolete uniforms provided to Worn Up has supported the experimentation and development of a new textile resource called Rectex which is used in a number of soft applications, including acoustic tiles.

An additional major output from the provision of our textiles is FabTec - a revolutionary material made simply from nonwearable uniforms and upcycled plastics. The proof of concept has proven successful and post third party testing, will be developed and utilised for a range of hard applications such as tiles, kitchen splashbacks, desks and chairs.

Worn Up are innovative and we will continue to identify and send appropriate recycling streams to support their growth. Future pilot projects include returning 100% cotton textiles shredded and returned to the soils for soil enrichment.

With over XXXX tons of textile waste landfilled in Australia each year, TSEG's contribution to Worn Up's upcycling innovations is helping to shift our waste textile landscape nationally.




Dog bed utilising shredded uniforms from The Star as stuffing

Dog bed made from gaming table felts and shredded uniforms as stuffing

BB

In 2021, The Star became a Worn Up Founding Partner, providing over 2.8 tonnes of uniforms and other textiles for processing into alternative end products.

Source: The Star’s 2021 Sustainability Report (for release September 2021)

It is written into The Star’s Sustainable Design and Operational Standards that charity partners must be sought for fittings, furniture and equipment as part of each project in accordance with the ‘External Elements’ project inclusions section of the Standards. For example, the Angels without Borders case study articulates this partnering in action.

CASE STUDY

ANGELS WITHOUT BORDERS - CHARITABLE DONATIONS

Angels Without Borders are a Sydney-based charitable organisation, helping the homeless through the provision of bedding, linen, clothing and sanitary packs as well as educating and building awareness of homelessness through sister charities. Their areas of focus cover Greater Sydney, Wollongong and the Central Coast.

This year, at The Star Sydney we continued to donate much needed items in our cooler months to Angels Without Borders, providing over 500kgs of blankets, feather

doonas, bathrobes, towels and linen from The Star Grand, The Star Grand Residences and The Darling hotel, for distribution to those in need.

Source: The Star's 2021 Sustainability Report (for release September 2021)

Construction and Demolition Waste Minimisation

The construction and demolition phase of a project offers a unique opportunity to reuse, repurpose or recycle materials during the demolition phase (particularly concrete, aluminium, glass, bricks and timber) and to implement Circular Design strategies during the design and construction phase. Key Circular Design strategies to facilitate materials circularity include:

- Design for longevity (high-quality materials)
- Design for disassembly (material recovery)
- Design for flexibility (reuse & refurbishment)
- Design for service (performance-based procurement)

Design for efficient operational waste management

Having the opportunity to be part of projects in the early design stages allows for the most effective and efficient waste strategy for each development, creating solutions which are better for yield (net leasable area), operational staff, collection contractors and facilities management. These factors lead to significant impacts including increased leasable area and safety while reducing operating costs. It also ensures flexibility in the design to accommodate future change of use, or waste management legislation; avoiding unnecessary redesign or compromise of other areas in future. Key elements to be considered include:

- Waste Stream Separation
- Waste Equipment
- Loading Dock Design
- Clean / Dirty Transfer Paths

Spatial implications: Design for efficient operational waste management typically won't require any additional spatial requirement as a more efficient waste strategy will reduce bin storage area required. Additional waste stream separation might require additional bins and dedicated areas, however this can be mitigated by sharing waste equipment at a precinct level through the implementation of community shared hubs as described in the Community Educational Opportunities at Precinct Scale section below.

Toward Zero Operational Waste

A 'Towards Zero Operational Waste' Strategy is a system by which reduced consumption is prioritised, creating environment which supports reuse, refurbishment, and remanufacturing of materials supported by recyclables which can be reprocessed into new materials, in line with Circular Economy principles.

Projects that demonstrate significant steps towards zero waste to landfill are achieving operational recycling diversions rates of 80% to 90%, reduced operational consumption figures to 20% to 25%, significant waste disposal cost savings, reduced carbon emissions and reduced traffic congestion from waste collection vehicles.

Key initiatives may include:

- Replace single use items with reusable (preferable) or compostable
- Target innovative on-site recycling and waste processing opportunities
- Food Rescue initiatives / Oz Harvest / Foodbank
- Reverse logistics (reusable crates and pallets)
- Agile working arrangements
- Extend TSEG's e-waste recycling services
- Implement reuse opportunities for charitable items including textile, furniture etc.



Community Educational Opportunities at Precinct Scale

In line with the Pyrmont Peninsula Place Strategy, there is an opportunity to support innovative Circular Economy community initiatives that facilitate access to goods through sharing, re-use and repair, reducing the amount of waste while fostering a sense of community and promoting behaviour change.

Key initiatives may include:

- Tool libraries,
- Fashion libraries
- Repair centres and/or cafes (bicycles, small white goods, clothing etc.)
- Community gardens



A number of benefits may include:

- Encourage social interaction and the building of community
- Become innovation hubs gathering communities of makers that share design and knowledge
- Reduce the amount of underutilised items purchased per capita
- Reduce the amount of waste going to landfill
- Achieve local government waste targets
- Provide training and mentoring for local youth
- Provide educational opportunities particularly for kids
- Promote environmental behaviour change



Implementation requirements: typically shared libraries and repair hubs are managed by not-for-profit organisations and are located in community buildings such as community centres, community gardens etc. to be easily accessible by the local community. A well-established example in Sydney is ‘The Bower’ (<https://bower.org.au/>)

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