The NSW Government is expanding Sydney’s light rail network with a new project that will transform the city’s public transport, revitalise the Central Business District and deliver an estimated $4 billion dollars in economic benefits.

The CBD and South East Light Rail (CSELR) project includes a new 12km light rail service connecting Circular Quay via George Street to Central Station, continuing to Moore Park then branching to Kingsford via Anzac Parade and Randwick via Alison Road. It will significantly enhance access to major destinations, including the Sydney Cricket Ground, Moore Park, the University of New South Wales, Royal Randwick Racecourse, and Circular Quay.

The following strategy outlines how sustainability considerations have been integrated into the development of the CSELR project and highlights the NSW Government’s approach to delivering sustainability during the construction and operation of the new light rail network.

For more information call 1800 684 490, email projects@transport.nsw.gov.au or visit www.sydneylightrail.com.au
Why CBD and South East Light Rail?

Electric powered light rail is an inherently sustainable form of transport. Encouraging people to transition from using cars and buses to light rail can significantly reduce traffic congestion, noise and air pollution, and greenhouse gas emissions.

The CSELR will deliver an accessible and reliable public transport solution. The improvements to Sydney's public transport system due to the new light rail network will provide significant benefits, including reliability and efficiency of services, for:

- Commuters travelling from the south-eastern suburbs to the CBD for work, shopping and recreation,
- Staff, students and visitors travelling to the University of NSW,
- Commuters taking short trips within the Sydney CBD for business or recreation, and
- Travel to major event precincts, including Moore Park, the Royal Randwick Racecourse, Circular Quay and Martin Place.

It will be more convenient for commuters to take short trips within the Sydney CBD for business or recreation, and travel to major event precincts, including Moore Park, the Royal Randwick Racecourse, Circular Quay and Martin Place.

**ENVIRONMENT**

Light rail is a quieter, lower-emission and more efficient form of transport compared to vehicles powered by internal combustion engines. A range of initiatives will be used on the project that will benefit both the environment and local communities including:

- Reducing per capita greenhouse gas emissions as a result of people switching from buses and cars to light rail,
- Offsetting part of the construction electrical needs
- Minimising noise and improving air quality,
- Minimising air, water and land pollution,
- Maximising water recycling opportunities, and
- Procuring low impact materials, where possible, to limit the embodied impacts of construction supplies used on the project.

**SOCIAL WELL-BEING**

CSELR will deliver significant social benefits to Sydney by improving equitable access to services in local communities, including:

- Improved connectivity between transport modes and destinations,
- Quiet, comfortable and efficient vehicles, and
- Improved travel time reliability.

By reducing vehicle traffic and encouraging cycling and pedestrian transport links, CSELR will also contribute to revitalisation of neighbourhoods by creating more attractive and accessible environments for residents, workers and visitors.

**ECONOMIC PROSPERITY**

Sydney will be revitalised by the improved access to the CBD and south east suburbs and the connection of people with workplaces, education and healthcare precincts, as well as shopping, recreation and tourism destinations.

By increasing transport capacity and ensuring reliable travel times, the CSELR will unlock potential for business and employment growth in the CBD and surrounding neighbourhoods. This will support economic development opportunities and enhanced productivity, and strengthen Sydney's reputation as Australia's leading business, retail and entertainment city.

The broader economic benefits of light rail include its contribution to reducing the cost of congestion in the Sydney CBD — estimated to rise to $8.8 billion a year by 2021 — and strengthening economic productivity by increasing access to some of Sydney's major destinations.

The planning, infrastructure delivery and operation of the CSELR will benefit the NSW economy by supporting the construction sector and allied industries through the creation of local jobs, skills development, and workforce diversity.
220 fewer buses per hour in the CBD during the morning peak.

95% of construction waste will be diverted from landfill.

$4 billion in economic benefits.

99% recyclable light rail vehicles.

One light rail vehicle can carry as many people as seven standard buses or eighty eight cars.

Greenhouse gas emissions reduced by 663,000 tonnes over 30 years... equivalent to greenhouse gas emissions from 185,000 return flights per person from Sydney to London.

20% of jobs will be sourced from the local community.

+8,600m² of new pedestrianised space in the CBD... equivalent to 115 SCG cricket pitches.
CSELR is a priority infrastructure project in NSW Government and local government strategies which will shape the future of Sydney.

The light rail network also strategically aligns with the Australian Government’s National Infrastructure Priorities and National Urban Policy, with the CSELR Sustainability Strategy being developed within this policy context. The diagram below provides an overview of the strategic context for prioritisation of the light rail project.

The aim of delivering a more sustainable Sydney is the common driver underpinning the following strategies. To support this important outcome, Transport for NSW (TfNSW) – the State government agency responsible for the delivery of the project – has developed an Environment and Sustainability Policy to ensure the highest standards for sustainability are embedded in the planning, construction and operation of all transport infrastructure projects in New South Wales.

Strategic context of the CSELR Sustainability Strategy
The development of the CSELR Sustainability Strategy uses the broader public policy context listed on the previous page, as well as the following six Guiding Objectives, which were developed through collaboration between the NSW Government, the City of Sydney and Randwick Council.

The Guiding Objectives set the framework for delivering key sustainability outcomes across the planning, building and operating components of CSELR.

<table>
<thead>
<tr>
<th>OBJECTIVE</th>
<th>APPROACH</th>
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<tbody>
<tr>
<td>1. Reinforcing inherent sustainability benefits</td>
<td>The inherent sustainability benefits of the project will be realised through diversion of trips to light rail from less sustainable or efficient modes (including buses and cars), and facilitating increased cycling, walking and other public transport use within the project corridor.</td>
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<tr>
<td>2. TfNSW and the City of Sydney Sustainability Targets</td>
<td>The TfNSW Sustainability Targets have been developed based on reviews of best practice infrastructure development. The targets include pollution control, energy, climate change resilience, resource management, biodiversity, heritage, liveable communities and corporate sustainability. The CSELR project has committed to meet a number of sustainability targets which will be integrated into the design, construction and operations. The project has also considered and aligned with the City of Sydney’s Sustainable Sydney 2030 targets where feasible.</td>
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<tr>
<td>3. TfNSW Sustainable Design Guidelines (v3.0)</td>
<td>The TfNSW Sustainable Design Guidelines (v3.0) apply to the construction of all light rail projects in NSW. The Guidelines provide benchmarking for delivering sustainable development practices by integrating appropriate initiatives into the design process. The CSELR project will meet the ‘Gold’ rating under the Guidelines.</td>
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<tr>
<td>4. ISCA Infrastructure Sustainability (IS) Rating Tool</td>
<td>A key TfNSW Sustainability Target is the requirement that all construction projects with a capital expenditure greater than $50 million must achieve an IS rating. The CSELR project is working towards the achievement of an ‘Excellent’ rating (minimum of 65 points), under the IS Rating Tool. This requirement also forms part of the Conditions of Approval for the CSELR project, granted by the NSW Minister for Planning.</td>
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<tr>
<td>5. Renewable Energy Offsetting</td>
<td>TfNSW has committed to offsetting 25 per cent of construction electrical energy requirements for CSELR and is striving to offset 100 per cent of operational energy requirements through the purchase of renewable energy offsets such as Green Power.</td>
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<tr>
<td>6. Collaboration with governments and stakeholders</td>
<td>TfNSW is working closely with the relevant stakeholders along the alignment including, the City of Sydney, Randwick Council, as well as utility service providers such as Sydney Water and Ausgrid to minimise disruption during construction and provide cost effective solutions for the supply of services along the light rail corridor.</td>
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Delivering sustainability on the CSELR

CSELR is the first infrastructure project in NSW to have minimum ratings under both the TfNSW Sustainable Design Guidelines (v3.0) and the ISCA IS rating scheme as a Condition of Approval granted by the NSW Minister for Planning in June 2014. A series of sustainability themes, outlined below, form the framework for achieving these ratings.

**MANAGEMENT SYSTEMS**

The management and governance systems used by TfNSW will ensure consistent, integrated and efficient operations during the planning, design and construction of CSELR. The systems will also support and promote sustainability initiatives during the construction and operation of the project, including customer service and end-of-life cycle stages.

A key driver shaping the CSELR sustainability management systems is a comprehensive framework of targets, guidelines and rating tools.

The TfNSW Sustainability Targets set the context for delivering sustainability across the NSW transport sector, while the TfNSW Sustainable Design Guidelines and ISCA IS Rating Scheme provide the key tools for delivering on these targets.

**CLIMATE CHANGE ADAPTATION**

To ensure resilience of the CSELR project to climate change, its design and future operations will take into account changing climatic conditions including potential sea level rise, extreme weather events and increases in annual average temperatures.

Processes to actively identify and manage climate change impacts will be integrated into the planning, delivery and service operations of the project, including emergency management plans and water drainage networks.

In addition, risk and opportunity assessments – including identifying and developing actions to manage key climate change hazards – will be undertaken to manage climate change impacts.

**ENERGY AND GREENHOUSE GASES**

Lower direct emissions produced by light rail systems make it one of the more sustainable forms of public transport available today. TfNSW has also committed to offsetting 25 per cent of the electricity consumption used in the construction of the new light rail network and will strive to offset 100 per cent of operational energy requirements.

TfNSW is investigating options for the onsite production of low carbon energy, including installing photovoltaic cells and solar hot water systems at the CSELR maintenance and vehicle stabling facilities.

**WATER**

TfNSW is developing strategies to reduce potable water use and encourage water recycling during the construction and operation of CSELR.

An integrated water management approach will be implemented across the project, incorporating water-sensitive urban design, as well as treatment and disposal of waste water and stormwater management systems. Additional good practice water management initiatives will include:

- Using water efficient fixtures and appliances,
- Installing rainwater harvesting for re-use at maintenance and stabling facilities,
- Building water-efficient light rail vehicle wash facilities which will recycle 85% of the water used
- Metering and monitoring water use, and
- Investigating opportunities to use recycled water from the Sydney Water network.
WASTE
CSELR will reduce the waste sent to landfill by setting targets and implementing management plans for construction waste, landfill diversion for spoil, and targets for minimising waste produced during operations. For example, during construction the project will strive to divert 95 per cent of construction waste from landfill. Other sustainability initiatives include investigating local uses for construction spoil, working with suppliers to minimise packaging and considering design options to minimise material use.

LAND
As a high capacity transport solution, CSELR will make efficient use of the land set aside for public transport in Sydney’s high density urban environment.

For most of the project, the alignment of the CSELR will follow existing roadways. Where the light rail tracks will be installed in existing green spaces, measures will be implemented to minimise potential environmental impacts, including:

• Integrating drainage provision into the landscape, and
• Offsetting vegetation in accordance with TfNSW’s Vegetation Offset Guide (2013).

STAKEHOLDER PARTICIPATION
Community and business consultation will be integrated into all phases of the project, including consultation on potential mitigation strategies. Community and business forums have been established in each precinct along the CSELR route. These are designed to help the CSELR project team better understand and respond to the needs of local communities and business, and support collaborative approaches to minimise potential impacts.

The CSELR project has established a dedicated website, a Facebook page and a community information centre in Sydney’s CBD to ensure stakeholders are informed of developments during construction, and to respond to enquiries.

MATERIALS
The sourcing, processing and supply of materials can have a range of environmental, social and economic impacts. These are often referred to as ‘embodied’ or “life cycle” impacts.

Opportunities to minimise, where practicable, the embodied impacts of constructing and operating the CSELR include:

• Reducing the use of materials through efficient design, construction and operations,
• Recycling materials, or using by-products from other processes, such as using fly-ash from blast furnace slag in concrete mixes,
• Considering the life cycle impacts of materials used in design and construction,
• Locally sourcing materials where practicable, and
• Selecting durable materials and finishes to optimise service life, while reducing the need for repair and replacement.

PROCUREMENT & PURCHASING
Procurement processes that consider sustainability, as well as value-for-money factors including reliability, quality and price, will be integrated across all stages of the CSELR project. Suppliers will be evaluated with consideration of the sustainability performance of their products and services. They will also be requested to provide evidence of appropriate environmental policies and systems.

HERITAGE
In the context of CSELR, Indigenous and non-Indigenous heritage includes places and items which are valued as landscapes, objects or structures, as well as for their intangible value and benefits to the community. CSELR will be designed to ensure that the light rail system is sensitive and sympathetic to local heritage and community values, and that construction is undertaken in ways that minimise potential adverse effects.
SUSTAINABILITY ON THE CBD AND SOUTH EAST LIGHT RAIL

The sustainability performance of the project will be measured and publicly reported annually during both delivery and operational phases. This report will be prepared in accordance with global reporting guidelines and will be the key platform for communicating sustainability performance and impacts.

ECOLOGY

TfNSW is investigating opportunities for enhancing local biodiversity, public spaces and visual amenity through the selection of plant species used in the Project’s landscaping along the light rail corridor.

DISCHARGE TO AIR, LAND AND WATER

A targeted range of initiatives will be implemented to reduce pollution during construction and operation of the light rail, including:

- Incorporating water-sensitive urban design measures in suitable locations to reduce water pollutant loads,
- Minimising the use of hazardous goods and materials by suppliers and contractors, and
- Integrating system monitoring processes to confirm harm minimisation requirements are met and to identify opportunities to further reduce potential discharge.

URBAN AND LANDSCAPE DESIGN

TfNSW’s best-practice urban design program includes both macro scale design — for example, planning and building infrastructure networks — and micro scale design, including street furniture, stops and lighting. The new light rail will contribute to good quality urban design for Sydney by:

- Supporting disability access for customers,
- Encouraging safe traffic movement including pedestrians, and
- Developing state-of-the-art way finding to assist customers and first-time visitors to Sydney.

COMMUNITY HEALTH, WELLBEING AND SAFETY

CSELR will provide community wellbeing, health and safety benefits for customers, residents and visitors by:

- Constructing a one kilometre pedestrian boulevard on George Street, from Wynyard Station to Town Hall,
- Complying with the Disability Discrimination Act 1992 (Cth) to provide equal access to the light rail system,
- Integrating with pedestrian and cycling infrastructure, including providing bicycle storage facilities at key light rail stops, and
- Incorporating Crime Prevention Through Environmental Design (CPTED) into the design.

INNOVATION

TfNSW is committed to innovation in light rail through adoption of wire-free traction power technology. An energised third track will power the light rail vehicles through the George Street pedestrianised zone, which means that no overhead wires are required in that area.

In recognition of the vital role innovation plays in advancing sustainability outcomes that benefit local communities, neighbourhoods and businesses, further opportunities for innovation will be explored during the planning, construction and delivery of the light rail system.

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