Green Square Town Centre – Town Core Sites
Statement of Environmental Outcomes

Please find below a Statement of Environmental Outcomes for the Town Core Sites within Green Square Town Centre prepared by Mirvac Design on behalf of the Green Square Consortium (GSC) / Landcom.

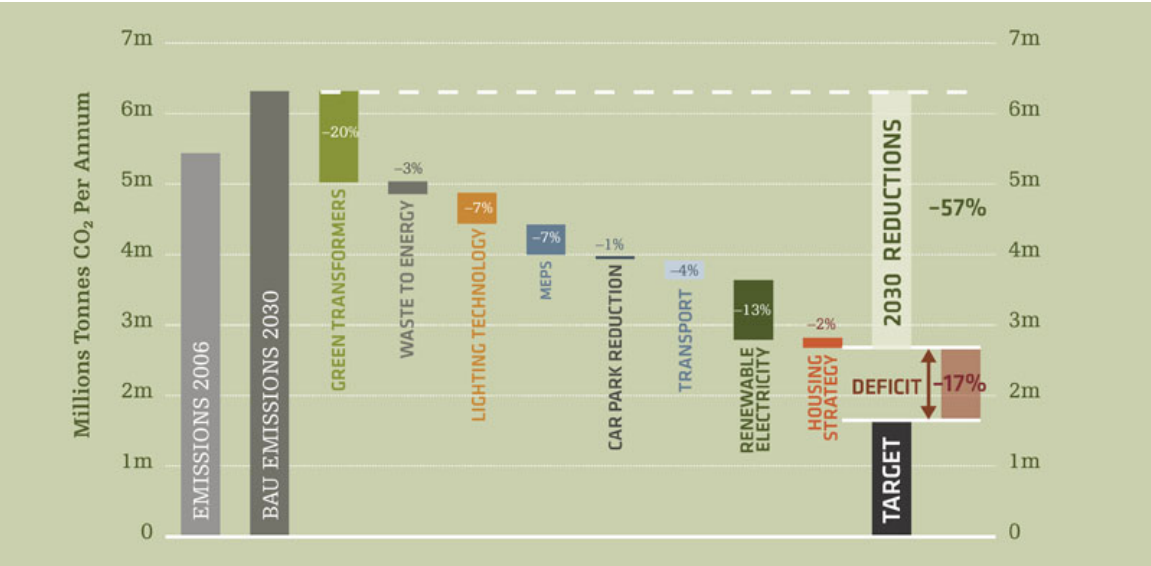
Overview

In light of Charrette discussions with the City of Sydney, GSC/Landcom has now had the opportunity to better understand the City of Sydney's direction in relation to it's vision for sustainability at the Greater Green Square and in particular the Green Transformer and other 2030 strategies. As such, GSC/Landcom has refined the sustainability strategy and believes that an integrated precinct approach is the basis for a successful sustainability outcome that addresses all facets of sustainability – environmental, transport, social and economic. This has resulted in a comprehensive range of initiatives that respond to the 2030 strategy and include key initiatives relating to the Green Transformer and transport that GSC/Landcom include in this planning proposal.

It is proposed that the Town Core Sites within Green Square Town Centre will be modelled as a pilot project using Landcom's PRECINX^{TM} rating tool to confirm the precinct's sustainability performance.

2030 Emissions Reduction Portfolio

GSC/Landcom have considered the City of Sydney's 2030 Emissions Reduction Portfolio, as identified in the following diagram, which is designed to achieve the City of Sydney's target for reduced CO_2 emissions.



GSC/Landcom have considered the various measures in the emissions reduction portfolio and identified that many of the proposed initiatives support these reduction measures.

Element	Key Measures
Green Transformers	▪ Provision for future connection to a 'green transformer' delivered by separate entity
Lighting technology (retrofit)	▪ Retrofit not applicable, however all new buildings will provide energy efficient lighting ▪ Opportunity to investigate new lighting technologies for public areas in partnership with City of Sydney (eg. LED street lighting)
Energy performance	▪ All buildings will be designed with high levels of efficiency through good design
Car park reduction	▪ Provision of adaptable, above ground parking to enable long-term conversion with changing car use patterns
Transport	▪ The provision of a dedicated transport corridor along East West Boulevard supporting Green Loop connection ▪ Provision of a bicycle to each new household in the Town Core Sites within Green Square Town Centre to promote cycling ▪ Provision of jobs and housing at transport interchange ▪ Streets designed to encourage walking and cycling
Housing strategy	▪ Provision of housing in close proximity to transport ▪ Mixed use centre supports lower car trips

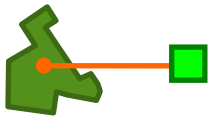
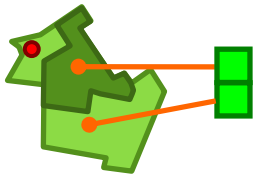
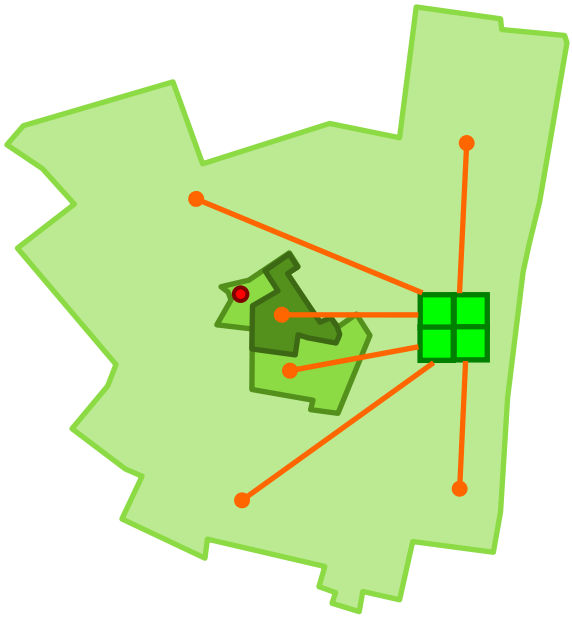
While renewable energy and waste to energy do not specifically form part of the strategy, GSC/Landcom are willing to work with the City of Sydney to identify financially viable opportunities for integrating new initiatives in these areas.

Supporting the Green Transformer

GSC/Landcom have identified that pursuing an isolated sustainability approach for the Town Core Sites within Green Square Town Centre would in fact undermine the longer-term sustainability potential of the wider Green Square area. The Town Core Sites within Green Square Town Centre has the potential to effectively underwrite the business case for delivery of the first Green Transformer and establishment of a green infrastructure network. Without subscription from the Town Core Sites within Green Square Town Centre, the delivery of the Green Transformer may be substantially delayed or stopped altogether. This may result in losing the significant opportunity to embed the green infrastructure network in the wider Green Square area.

In this context, pursuing a strategy that focuses on individual solutions for each building is not in the longer term interest of Green Square. For example, a building provided with a small cogeneration plant to achieve a slightly higher sustainability outcome today will have no provision for future connectivity to a Green Transformer.

The following diagram identifies the Town Core Sites within Green Square Town Centre in the context of the Green Square Town Centre and larger Green Square Urban Renewal. The diagram illustrates how the Town Core Sites within Green Square Town Centre can support wider sustainability outcomes.

A Precinct Approach to Sustainability in Green Square: Leveraging the Town Core Sites within Green Square Town Centre to achieve sustainability benefits throughout the entire Green Square area.	
Town Core Sites within Green Square Town Centre The Town Core Sites within Green Square Town Centre represents 5 hectares of land. The Town Core Sites within Green Square Town Centre will provide the initial subscription to support delivery of the Green Transformer.	
Green Square Town Centre The Town Core Sites within Green Square Town Centre sits within the 14 hectare Town Centre. With the Green Transformer in place following the Town Core Sites within Green Square Town Centre, the Town Centre is able to connect to the green infrastructure network.	
Green Square Urban Renewal Area The Town Core Sites within Green Square Town Centre and Town Centre sit within the 280 hectare Green Square Urban Renewal Area. The Renewal Area provides further opportunity for the Green Transformer to expand and provide sustainability benefits on a much greater scale.	

Transport

Transport is recognised as a key element to making the Town Core Sites within Green Square Town Centre sustainable. As highlighted in relation to the Emissions Reduction Portfolio, GSC/Landcom have proposed a number of key transport initiatives.

It is noted that it is beyond the control of GSC/Landcom to deliver on most measures proposed in the TMAP given the jurisdictional constraints that exist (eg. Botany Road corridor study), while the City of Sydney has specifically identified that providing the Green Loop as light rail requires State and Federal Government funding.

GSC/Landcom are committed to working with City of Sydney to ensure that the Town Core Sites within Green Square Town Centre plays its part by including the provision of a dedicated transport corridor along East West Boulevard supporting the Green Loop connection.

Social and Economic Sustainability

The social and economic sustainability of the Green Square Town Centre is integral to its long-term functioning. GSC/Landcom has considered an extensive range of initiatives within the Town Core Sites within Green Square Town Centre to address these elements as part of the integrated sustainability strategy.

A central component is the provision of increased commercial floor space to make the Town Centre a true commercial hub that is viable over the long-term. This increased commercial floor space responds directly to the 'activity hubs' concept proposed in the 2030 strategy and will make an important contribution to the City's target of 97,000 additional jobs by 2030.

The retail concept also supports the economic and social sustainability of the Town Centre, by providing a new, unique retail destination for the wider Green Square that is based around interaction and vibrancy. This organic approach to retail will deliver a level of diversity and authenticity lacking in traditional shopping centres, fostering a positive social experience.

The package of social initiatives has been developed with a view to engendering community ownership of the Town Centre, by partnering with appropriate locally based groups, creating a unique local identity and building community capacity.

Summary of Sustainability Initiatives

The following table provides a comprehensive summary of sustainability initiatives proposed by GSC/Landcom

SUSTAINABILITY INITIATIVES	
ELEMENT	**INIITIATIVES**
Environmental	▪ Highly efficient base buildings that achieve Australian best practice (as defined by the Green Building Council) ▪ Provision for future connection to a Green Transformer (subject to Green Transformer delivery) ▪ Dual reticulation in all buildings to provide for future connection to a non-potable / recycled water source. ▪ Rainwater harvesting ▪ Water efficient fixtures and fittings ▪ Water Sensitive Urban Design (WSUD) measures within private and public domains ▪ Smart metering in buildings (subject to Green Transformer delivery) ▪ 20% eco-preferred materials ▪ Low VOC materials and finishes ▪ 60% reuse / recycle of construction and demolition waste ▪ Organic waste composting facilities in residential buildings ▪ Integrated waste management plan
Connectivity	▪ Activated ground plane with retail uses ▪ Main and secondary streets and networks ▪ Links to existing street networks ▪ Design review by independent experts resulting in a safe (eyes on the street, ground floor activation), child friendly (strong community, mother's rooms, surveillance) and healthy (walkable) outcome. ▪ Front loading retail ▪ WiFi provision to selected areas of the Public Domain

Transport	▪ Target for new GSTC residents to have the highest per capita use of the City Rail system measured against Sydney's Local Government Areas – with a benchmark objective of 25% usage ▪ One bicycle to be provided to each new household in the Town Core Sites within Green Square Town Centre ▪ Above ground, adaptable car parking to provide long-term flexibility for changing car use patterns over time ▪ Streets designed to promote walking and cycling ▪ Provision for a dedicated transport corridor through the Town Centre to support the Green Loop ▪ Public and private bicycle storage with shower facilities ▪ Green vehicle priority parking ▪ Car share scheme (hybrid vehicles) ▪ Real time public transport information via intranet ▪ Partnership with community transport schemes (shuttle bus) ▪ Subsidised energy to recharging facilities for electric or hybrid plug-in vehicles (subject to Green Transformer delivery) ▪ Bicycle hire stations offering smart bicycles for rental ▪ The implementation of Smart Travel Plans through the intranet
Community Development	▪ Potential Community Building delivery in partnership with City of Sydney to achieve overall integration ▪ Implementation of Community & Cultural Strategy to provide opportunities for people to participate in community-building and cultural events ▪ Community & Cultural Strategy to be reviewed by Independent Experts. (Independent Experts may include City Futures Institute, UNSECO Growing Up in Cities Project, Heart Foundation, UTS Designing Out Crime Unit) ▪ Appointment of a Place Manager for the first the first four years of the development completing its first dwellings ▪ The provision of a Community Garden within the Public Domain ▪ Mixed land uses to support day/night and weekday/weekday activation such as retail, commercial, residential, creative industries and community spaces ▪ Regular growers markets in the public domain ▪ Delivery partnerships with local organisations ▪ Skills training and development with local delivery partners ▪ Mirvac School of sustainability at Bond University to sponsor research graduate programs in association with the development of Green Square ▪ Adoption of the Leighton Indigenous Program to provide apprentice and other opportunities during the construction of Green Square ▪ Adaptive reuse of warehouse located on Police site as temporary fresh food in Stage 1 until the permanent fresh food is delivered (Stage 2) ▪ The provision of interim Community spaces along Dunning Avenue under a rental structure arrangement until the Community Building is delivered in the public domain (Stage 2)

Community Engagement & Education	▪ Comprehensive community consultation and engagement program ▪ Permanent art located in the public domain ▪ Subsidized energy to community based organisations (subject to Green Transformer delivery) ▪ Partnerships with locals schools, universities and TAFE
Economic	▪ Increased commercial floor space to provide a sustainable commercial centre ▪ Business incubation and support through 'loose fit' first floor commercial space and appropriate rental structure ▪ Diversity of independent retail spaces including high street fashion, fresh food, food and beverage, show room, essential retail and services, laneways and threshold retail elements in public domain
Housing	<u>Affordable Housing Strategy</u> The GSC/Landcom recognise that housing affordability is a major issue in the City of Sydney and that at Green Square the gap between local housing prices and the usual benchmarks for affordability are potentially large. As affordable housing plays an important role in establishing a socially diverse and sustainable community in GSTC, GSC/Landcom will investigate strategies to significantly widen the range of households and income groups who could be attracted to living in the area. The Consortium's Affordability Strategy has several strands: ▪ GSC/Landcom will comply with the current Green Square Affordable Housing DCP (adopted by Council on 14 August 2002 and effective from 10 September 2002). ▪ The Green Square Affordable Housing DCP focuses on the provision of affordable rental housing. In addition to compliance with this DCP, GSC/Landcom is committed to the promotion of a socially diverse community within Green Square, specifically through the provision of offering diversity in accommodation. GSC/Landcom are exploring a number of models: ▪ Exploring options with financiers to launch a residential fund – potentially providing rental accommodation owned by a fund with an affordable housing component – possibly aimed at key workers ▪ Housing for specific market sectors – investigating options for purpose built housing for key groups such as students, hospital staff and senior citizens. Particular attention will be paid to exploring options that meet "whole of life" housing needs, for instance by providing adaptable housing that uses Universal Housing Design principles, as well as housing that promotes "ageing in place". ▪ Negotiated planning concessions – identifying opportunities to gain planning bonuses from the City of Sydney in return for additional affordable housing delivery, and ▪ Home buyer financial products – working with financiers to develop a scheme to assist purchasers with initial capital or off set interest rates such as shared-equity arrangements. ▪ Opportunities to partner in Government affordability initiatives potentially partnering with investors and an affordable housing manager to submit a tender under the National Rental Affordability Scheme ▪ Partnering with a not-for-profit housing association to manage any on site affordable rental housing and to develop an affordable housing product

Green Transformer Implementation

General

Following the Charrette Integrated Sustainability Strategy Meeting on 26 June 2009, GSC/Landcom has taken away the City of Sydney's commitment to the Green Transformer system delivery at a centralised location in Green Square Precinct, under the 2030 vision, and has provided below a strategy to make the Town Core Sites within Green Square Town Centre the first substantial subscriber.

GSC/Landcom believes that if the Town Core Sites within Green Square Town Centre is not included in the Green Transformer Precinct system, as a cornerstone volume subscriber, then the opportunity for the City of Sydney to implement the 2030 vision of Green Transformers in this area will be diminished.

GSC/Landcom can provide extensive commercial and project delivery experience to assist the City of Sydney to formulate their strategy for the delivery of the Green Transformer system and can confirm that the sustainability approach is based on the City of Sydney's commitment to the delivery of Green Transformer system to major precincts and GSC/Landcom's commitment to connect to the Green Transformer system, which will deliver significant improvement on a building by building tiered approach.

GSC/Landcom supports the City of Sydney's 2030 Green Transformer vision and as described below will deliver Best Practice Residential, Commercial and Retail and provide connection opportunities depending on the City of Sydney's staging / delivery of the Green Transformer system to each respective building.

GSC/Landcom aligns with the Precinct based Green Transformer approach supported by City of Sydney, and as discussed at the above Charrette Meeting that any individual building by building approach to abate emissions undermines the City of Sydney's business case for the connection of load utilising the City's street network and the Precinct based efficiencies. This approach in consistent with Alan Jones and the issue of the Precinct based system is dependant on large scale development opportunities.

GSC/Landcom believes the Town Core Sites within Green Square Town Centre provides the City of Sydney with a demonstration project for the delivery of the first City of Sydney Green Transformer precinct system

The GSC/Landcom sustainability strategy is intrinsically linked with the delivery of the Green Transformer System. If the City of Sydney and Green Transformer Operator does not proceed with the Green Transformer System, then all buildings within the Initial Sites Offering will be delivered as Best Practice. Best Practice will deliver Residential buildings BASIX compliant and Commercial Building will be delivered to Best Practice and Property Council Guidelines to meet market requirements.

The following table lists out the main points in regard to implementation of a Green Transformer

GREEN TRANSFORMER DISCUSSION	
ITEM	**DELIVERY**
2030 compliance	▪ Green Square is identified as key site / major urban renewal project within the 2030 Green Infrastructure Plan. ▪ The strategy below is structured to the Town Core Sites within Green Square Town Centre the first substantial subscriber of a deliverable demonstration project for the implementation of the City of Sydney's 2030 Green Transformer Plan. ▪ Implementation by the City of Sydney of the strategy to abate emissions through community wide energy infrastructure rather than abate emissions of on an individual building basis.
Green Transformer	▪ All opportunities related to the Low Carbon Electricity from the Green Transformers are premised on the power being available to all buildings in the Town Core Sites within Green Square Town Centre supplied over the Energy Australia power network. ▪ Connectivity of buildings to the Green Transformer System is based upon the Green Transformer Staging Strategy below. ▪ The final configuration of the delivered services from the Green Transformer system being Low Carbon Electricity, Low or High Temperature Thermal Loop or Chilled Water Thermal Loop will vary the sustainability outcome within each building type. ▪ The Scenarios below will be subject to final design analysis dependant on final energy cost. ▪ Assumption is made that all thermal storage and environmental heat rejection managed by the Green Transformer system. ▪ Assumption is made that all energy recharging facilities for electric or hybrid plug in vehicles will be supplied and managed by the Green Transformer system. ▪ Redundancy over and above the Green Transformer Services within the Residential and Retail scenarios are not considered. Redundancy over and above the green Transformer Services would be in accordance with the Property Council Guidelines.
Green Transformer Staging	It was recorded at the Charrette Integrated Sustainability Strategy Meeting 26 June 2009, that the two most likely scenarios for the Green Transformers delivery will be: **Scenario 1:** Development Design & Construction Commenced and Green Transformer Services not available: or **Scenario 2:** Green Transformer Services available GSC/Landcom have provide below sustainability strategies for both Scenario 1 and Scenario 2 to assist the City of Sydney in demonstrating that if the Green Transformer Services are delivered out of sequence with the development program of the Town Core Sites within Green Square Town Centre, which appropriate opportunities will be available for connection in the future to the Green Transformer Services.

Green Transformer Residential	**Scenario 1:** Development Design & Construction Commenced and Green Transformer Services not available: ▪ Green Transformer Operator supply low carbon electricity via Energy Australia network in the future ▪ GSC/Landcom to provide efficient building design capable of accepting low carbon power as soon as available. ▪ Green Transformer Operator supply low or high temperature hot water thermal loop ▪ GSC/Landcom will provide valved connections for future link to thermal network for Central Domestic Hot Water plant. On taller residential towers opportunity to have reverse cycle package units with heat input to condenser water for reverse cycle heating from thermal loop. ▪ All common plant runs off low carbon electricity. ▪ Opportunities for connection to chilled water thermal loop would be limited and subject to final design analysis. **Scenario 2:** Green Transformer Services available ▪ Green Transformer Operator supply low carbon electricity via Energy Australia network in the future ▪ GSC/Landcom to provide efficient building design capable of accepting low carbon power, ▪ Green Transformer Operator supply low or high temperature hot water thermal loop ▪ GSC/Landcom will provide valved connections for link to thermal network for Central Domestic Hot Water plant. On taller residential towers opportunity to have reverse cycle package units with heat input to condenser water for reverse cycle heating from thermal loop. ▪ Green Transformer Operator supply chilled water thermal loop ▪ GSC/Landcom Cooling from the chilled water thermal loop for approx 100% of cooling load. Environmental heat rejection would take place at the Green Transformer requiring no cooling towers on buildings. ▪ All common plant runs off low carbon electricity.

Green Transformer Commercial	**Scenario 1:** Development Design & Construction Commenced and Green Transformer Services not available: ▪ Green Transformer Operator supply low carbon electricity via Energy Australia network in the future ▪ GSC/Landcom to provide efficient building design capable of accepting low carbon power as soon as available. ▪ Green Transformer Operator supply low or high temperature hot water thermal loop ▪ GSC/Landcom will provide valved connections for future link to thermal network for Central Hot Water plant. ▪ GSC/Landcom will provide valved connections for future link to thermal network for space heating (dependant on a hot water based system) from thermal loop. ▪ All common plant runs off low carbon electricity. ▪ Opportunities for connection to chilled water thermal loop would be limited and subject to final design analysis. **Scenario 2:** Green Transformer Services available ▪ Green Transformer Operator supply low carbon electricity via Energy Australia network in the future ▪ GSC/Landcom to provide efficient building design capable of accepting low carbon power, ▪ Green Transformer Operator supply low or high temperature hot water thermal loop. **Assumption:** Low temperature hot water loop would be provided with a Chilled water loop and a High temperature hot water loop would be provided without a Chilled water loop in options below. ▪ GSC/Landcom will provide valved connections for link to thermal network for Central Hot Water plant. & Space Heating using thermal loop and connection to onsite absorption chilling (COP 1.6 approx) for approx 50% of normal operating cooling load. Electric chillers for other 50% + peak run off low carbon electricity. ▪ Green Transformer Operator supply chilled water thermal loop ▪ GSC/Landcom Cooling from the chilled water thermal loop for approx 80%-90% of normal operating cooling load. Electric chillers for other 10%-20% normal cooling+ peak run off low carbon electricity. 80%-90% of environmental heat rejection would take place at the Green Transformer and 10%-20% normal cooling capacity + peak load and tenant supplementary cooling would use building based cooling towers using recycled water. This scenario could also use heat exchangers from the chilled water thermal loop for primary and supplementary heat rejection using the cooling towers only for redundancy. ▪ All common plant runs off low carbon electricity.

Green Transformer Retail	**Scenario 1:** Development Design & Construction Commenced and Green Transformer Services not available: ▪ Green Transformer Operator supply low carbon electricity via Energy Australia network in the future ▪ GSC/Landcom to provide efficient building design capable of accepting low carbon power as soon as available. ▪ Green Transformer Operator supply low or high temperature hot water thermal loop. ▪ GSC/Landcom will provide valved connections for future link to thermal network for Hot Water plant or space heating. ▪ All common plant runs off low carbon electricity. ▪ Opportunities for connection to chilled water thermal loop would be limited and subject to final design analysis. **Scenario 2:** Green Transformer Services available ▪ Green Transformer Operator supply low carbon electricity via Energy Australia network in the future ▪ GSC/Landcom to provide efficient building design capable of accepting low carbon power, ▪ Green Transformer Operator supply low or high temperature hot water thermal loop. **Assumption:** Low temperature hot water loop would be provided with a Chilled water loop and a High temperature hot water loop would be provided without a Chilled water loop in options below. ▪ GSC/Landcom will provide valved connections for link to thermal network for Central Hot Water plant. & Space Heating using thermal loop ▪ Green Transformer Operator supply chilled water thermal loop ▪ GSC/Landcom Cooling from the chilled water thermal loop for approx 100% of normal operating cooling load. All common plant runs off low carbon electricity. ▪ All common plant runs off low carbon electricity.
Issues	▪ The City of Sydney, GSC/Landcom are aware of the legal, statutory, ownership, authorities barriers, metering, energy costs, Green House Gas Emissions, rating systems & carbon offsetting credits for the developer for connection, Green Transformer service locations in public road reserves and design considerations prior to a developer implementing the Green Transformer Strategy.