



sustainable built environments

SBE Melbourne

Northbank Place East
Level 2, 525 Flinders St
Melbourne, VIC, 3000

T +61 3 9923 2345

F +61 3 9923 2346

SBE Sydney

Level 6, 61 Market St
Sydney, NSW, 2000

T +61 2 8289 5720

F +61 2 9286 3745

E info@sbe.com.au

W www.sbe.com.au

Sustainable Built Environments Pty Ltd

Final Report

Sustainability Strategy

For

Huntlee New Town

State Significant Site Study

16th August 2010

Submitted to

Ian Wilks

Huntlee Pty Ltd

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APPENDIX A

Huntlee Pty Ltd Corporate Sustainability Strategy

1 INTRODUCTION

In a letter dated 8 July 2010, JBA Urban Planning, on behalf of Huntlee Pty Ltd, wrote to the Minister for Planning requesting that he agree to consider a rezoning of the Huntlee New Town site by way of its inclusion as a State Significant Site in Schedule 3 of the Major Development SEPP.

The key parameters of the overall Huntlee proposal are as follows:

- Up to 5600 dwellings in residential zones of varying sizes covering up to 612 hectares;
- Employment lands totalling up to 200 hectares including a mixed use town centre with up to 1700 residential dwellings;
- Large lot residential development covering up to 93 hectares to achieve up to 200 lots;
- The provision of associated infrastructure including upgrades to local road, sewerage and water infrastructure and the dedication of land for education and health services, community facilities and utilities;
- Dedication of 780 hectares of conservation land within Huntlee;
- Dedication of Persoonia Park (17 hectares); and
- Dedication of 4988 hectares of conservation land elsewhere in the Lower Hunter Region.

The New South Wales State Government's Lower Hunter Regional Strategy (LHRS) estimates a population growth of 166,000 additional people by 2031. This requires an additional 115,000 new dwellings of which 69,000 will be provided from new land identified within the LHRS, with the remaining 46,000 from existing urban areas.

Accommodating the population growth and urban development will require considerable sensitivity. Minimising the environmental impacts associated with urban expansion, managing water resources, providing innovative responses to the reduced rainfall available due to climate change, and providing affordable housing are just some of the challenges of sustainable development.

Huntlee New Town will create a major new centre in the lower Hunter Valley with a projected population of 18 - 21,000. Huntlee New Town will be developed in stages over a 20+ year period and will comprise of 4 residential villages, a mixed use Town Centre and public and regional open space.

Sustainable Built Environments Pty Ltd (SBE) has been commissioned to provide:

- An assessment of the potential greenhouse gas emissions on the site; and
- A strategy outlining how these predicted greenhouse gas emissions may be reduced, including Ecologically Sustainable Development (ESD) opportunities for the site and preliminary ESD targets.

The proposed State Significant Site (SSS) Rezoning is a broad strategic assessment of future development on the Huntlee New Town site. At this point the planning process has not yet progressed to detailed design and engineering stages which will come later in stage Project Applications and/or Development Applications for subdivision, works and buildings. In view of this, the sustainability strategy outlined in this report will be reviewed, revised and refined over time to reflect the more detailed planning and design solutions associated with future stages of the development process as well as to reflect the outcomes and recommendations of specialist studies.

Section 2 of this report contains a definition of sustainable development and ESD, and outlines the nature of a sustainable community. Section 3 contains the assessment of the predicted greenhouse gas emissions for the proposed Huntlee New Town development. Section 4 comprises a list of preliminary sustainability targets for the Huntlee New Town development. Section 5 outlines a sustainability strategy for the site which aims to reduce greenhouse gas emissions and to enhance the sustainability outcomes of the development. Section 6 briefly describes the process from hereon in for embedding sustainability into the planning and development process to ensure successful outcomes for Huntlee New Town.

2 A SUSTAINABLE COMMUNITY

The 1987 Brundtland Report contains the most well known definition of sustainability; “sustainability is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” Australia uses the term “Ecologically Sustainable Development (ESD)” which is defined in the 1992 National Strategy for ESD as “development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends.”

Sustainable development is achieved through attaining a balance between the inter-dependent social, environmental and economic aspects of a development. In order for a development such as Huntlee New Town to be considered sustainable, operations and management must be economically viable, environmental impacts must be minimised or eliminated, and social issues must be enhanced.

Huntlee Pty Ltd aims to create a sustainable community at Huntlee New Town by sensitively integrating the natural and built environments. Sustainable communities embody the principles of sustainable development and are places where people want to live and work. Sustainable communities respond to the local and regional community's' current and future needs. They are socially equitable, inclusive, accessible to all and safe. Sustainable communities are well planned, designed and built and strive to minimise the impact on the environment by preserving and enhancing local environmental features and minimising resource consumption. Sustainable communities are financially viable, facilitating movement and connections and linking people to jobs, schools, health facilities and other community services.

3 GREENHOUSE GAS EMISSIONS

An assessment of the potential greenhouse gas emissions of the proposed Huntlee New Town development has been undertaken and is based on the information available at this stage in the planning process.

	Breakdown of building types	Net Lettable Area (NLA)
Residential (on up to 705 ha.)	Detached housing (5,600) including: • Dress circle lots (900m² +) • Family Lots (650 – 750m²) • Traditional lots (550-650m²) • Cottage lots (350-450m²) • Up to 200 rural residential lots (around 2,000m²) on up to 93ha.	N/A
	•	
Employment Lands (on up to 200 ha.)	Business Enterprise, Light Industrial / Service Commercial, Mixed Use, Education, Tourism,	65,000m ²
	Retail	35,000m ²
	1700 residential dwellings including: Villas, townhouses and apartments.	N/A

Table 1. Breakdown of building types

Table 1. outlines the number and type of residential dwellings proposed for Huntlee New Town. 5,800 of the proposed dwellings are detached and 1700 are attached. No further details (floor area, number of storeys, building footprint, architectural plans etc.) are available at this stage. 65,000m² of the employment lands is business enterprise, light industrial/service commercial and mixed use. 35,000m² is retail. Again, no further details (architectural plans, building footprint, number of storeys, breakdown of mixed use buildings etc.) are available at this stage.

Greenhouse gas emissions

Greenhouse gas emissions are gases, such as carbon dioxide (CO₂), methane, nitrous oxide, ozone or water vapour, which contribute to the warming of the Earth's atmosphere by reflecting radiation from the Earth's surface. Greenhouse gases are a natural part of the atmosphere. However, human activity (e.g. burning fossil fuels, land clearing) has increased the concentration of these gases, causing global warming. The amount of CO₂ in the atmosphere is about 30% higher now than 200 years ago and is the biggest contributor to the enhanced greenhouse effect (about 70%).

There are a number of different sources of CO₂ emissions that can be attributed to a mixed-use development such as Huntlee New Town over its lifecycle. These are as follows:

- CO₂ emissions due to transport energy i.e. travel to, from and around the Huntlee New Town site by residents, workers and visitors;
- CO₂ emissions associated with the embodied energy of construction materials i.e. the energy required to produce the material;
- CO₂ emissions due to on-site construction energy;
- CO₂ emissions due to operational energy i.e. the energy required to operate, manage and maintain buildings once constructed; and
- CO₂ emissions associated with a building's demolition.

Operational energy is typically the dominant source of greenhouse gas emissions for non-residential buildings. CO₂ emissions due to transport energy are also significant.

Employment lands greenhouse gas emissions

For the purposes of this greenhouse gas emission assessment of the Huntlee New Town development the CO₂ emissions due to transport energy and the CO₂ emissions associated with the buildings' demolition are unable to be quantified at this stage. The different business sectors (i.e. commercial, industrial, mixed-use) within the Employment Lands have been calculated using the same methodology as the breakdown (in terms of NLA etc.) of each is not yet known. In reality, the CO₂ emissions produced by each sector would vary due to different operational activities e.g. industrial buildings would typically produce more CO₂ emissions than commercial buildings due to process related activities in operation.

The table below outlines the predicted CO₂ emissions associated with the non-residential buildings within Huntlee New Town's employment lands.

Employment Lands - Business enterprise, light industrial/service commercial, mixed use, retail		
	Significance¹	Predicted CO₂ emissions
Embodied energy of construction materials	(moderate impact) Approx. 0.5 – 2 tonnes CO ₂ / m ² . Average is 1.25 tonnes CO ₂ / m ² .	100,000 (NLA) x 1.25 tonnes CO ₂ / m ² = 125,000 tonnes CO₂
On-site construction energy	(low impact) Approx. 10 % of embodied energy. Therefore 0.05 – 0.2 tonnes CO ₂ / m ² . Average is 0.125 tonnes CO ₂ / m ² .	100,000 (NLA) x 0.125 tonnes CO ₂ / m ² = 12,500 tonnes CO₂
Operational energy	(moderate to large impact) Approx. 0.3 tonnes CO ₂ / m ² /year for an average office building.	100,000 (NLA) x 0.3 tonnes CO ₂ / m ² / year = 30,000 tonnes CO₂ / year Assume that buildings' lifespan is 40 years = 30,000 tonnes CO ₂ / year x 40 = 1,200,000 tonnes CO₂ / 40 years
Total CO₂ emissions associated with the Employment Lands over a 40 year period*		1,337,500 tonnes CO₂ / 40 years

* 40 years is generally considered to be the average lifespan of a building in Australia Source: (Australian Bureau of Statistics website)

Residential greenhouse gas emissions

For the purposes of this greenhouse gas emission assessment of the residential areas of the Huntlee New Town development the CO₂ emissions due to transport energy and the CO₂ emissions associated with the buildings' demolition are unable to be quantified at this stage. Figures for the CO₂ emissions due to the embodied energy of construction materials and on-site construction energy for the residential sector are unavailable. As the breakdown of residential dwelling types (i.e. detached, semi-detached, apartments) is not yet known, the calculation has been undertaken assuming 100% detached dwellings for an average dwelling size.

The table below outlines the predicted CO₂ emissions associated with the residential buildings at Huntlee New Town.

Residential – Detached and dual occupancy		
		Predicted CO₂ emissions
Operational energy	Total of 7,500 dwellings Average dwelling size is 215m ² Average energy use/household is 8 tonnes CO ₂	7,500 x 215 x 8 tonnes CO ₂ /m ² /year = 12,900,000 tonnes CO₂ / year Assume that buildings' lifespan is 40 years = 12,900,000 tonnes CO ₂ / year x 40 = 516,000,000 tonnes CO₂ / 40 years
Total CO₂ emissions associated with the residential sector over a 40 year period*		495,360,000 tonnes CO₂ / 40 years

* 40 years is generally considered to be the average lifespan of a building in Australia Source: (Australian Bureau of Statistics website)

Though some types of CO₂ emissions sources (e.g. due to transport energy) were unable to be calculated in a quantifiable manner at this early stage of the project, the sustainability strategy (found in Section 5) outlines a strategy for improving sustainability outcomes and minimising greenhouse gas emissions due to all sources i.e. transport, materials, operation etc. The sustainability strategy also includes potential ways to offset greenhouse gas emissions, which have not been quantified in the above calculations.

¹ Source: "Major greenhouse emission issues associated with commercial and industrial buildings", Australian Greenhouse Office, Department of the Environment and Water Resources. <http://www.greenhouse.gov.au/local/reduction/building/background.html> February 2002.

² Commonwealth of Australia, Sustainable Cities Report, August 2005 (page 40).

4 PRELIMINARY SUSTAINABILITY TARGETS

The integration of sustainability into the proposed Huntlee New Town development and achievement of ESD outcomes requires the development and implementation of a sustainability strategy and the setting of sustainability targets. The sustainability strategy and targets should address all aspects of the development including energy conservation, water consumption, materials selection, resource consumption, waste minimisation, sustainable transport, emissions minimisation, enhancement of biodiversity, land use efficiency, enhancement of social issues and viable management practices. Preliminary sustainability targets for the Huntlee New Town site are outlined below. These targets will be further developed and refined in subsequent planning and design phases and will provide a measure of sustainability performance with which progress can be reviewed and reported during the project lifecycle including the planning, design, construction and operation stages.

ENERGY
- To incorporate best practice passive solar design principles into the subdivision layout and design of buildings. - To exceed BASIX energy requirements. - To supply a percentage of the site's energy from renewable sources. - To encourage residents to install solar hot water systems.
WATER
- To incorporate best practice Water Sensitive Urban Design principles. - To exceed BASIX water requirements. - To minimise potable water use for landscape irrigation. - To minimise potable water use for toilet flushing and urinals.
MATERIALS AND WASTE
- To maximise material re-use on-site. - To recycle a high percentage of construction waste, diverting it from landfill.
TRANSPORT
- To prioritise personal mobility routes. - To locate dwellings and commercial premises within easy walking distance of public transport stops. - To locate all dwellings within easy walking distance of a convenience store.
LAND AND BIODIVERSITY
- To protect and enhance the site's biodiversity. - To plant a high percentage of the regional open space with indigenous drought-tolerant species. - To encourage residents to plant a high percentage of their gardens with indigenous drought-tolerant species.
EMISSIONS
To minimise emissions to air, water and soil.
SOCIAL
- To integrate a percentage of affordable housing into the development. - To integrate Universal Design principles into buildings and urban design. - To integrate best practice Crime Prevention through Environmental Design (CPTED) principles into buildings and urban design.
MANAGEMENT
New commercial, retail, educational, health and industrial buildings constructed on the site are to achieve a (yet to be decided) Green Star rating using the Green Building Council of Australia's Green Star tools.

5 SUSTAINABILITY STRATEGY

This Section outlines the proposed sustainability strategy for the Huntlee New Town State Significant Site (SSS) Rezoning. The strategy aims to minimise greenhouse gas emissions and to improve the sustainability outcomes of the proposed development. The strategy comprises eight sustainability aspects;

- Energy;
- Water;
- Materials and Waste;
- Transport;
- Emissions;
- Land and Biodiversity;
- Social; and
- Management.

Under each of the sustainability aspects, ESD objectives for the development are listed and the corresponding opportunities to meet these goals are outlined.

5.1 ENERGY

ESD Objective: To reduce energy demand
Subdivision layout. The lot layout and subdivision will optimise the solar orientation of dwellings for the potential installation of roof-top solar hot water systems and/or a photovoltaic array. Passive solar design (PSD). The design of all residential, commercial, retail and industrial buildings will incorporate PSD principles e.g. external shading, optimal solar orientation and thermal zoning of spaces, natural cross ventilation, insulation, thermal mass, glazing. Active environmental technology. The installation of active environmental technology, such as energy efficient lighting and solar hot water systems, into homes and non-residential buildings will be encouraged. Energy Savings Action Plan (ESAP). As per legislation, high energy users operating on the site (businesses that use more than 10 gigawatt-hours/year at the site) will be required to prepare an ESAP in accordance with the <i>Guidelines for Energy Savings Action Plans</i> (Department of Energy, Utilities and Sustainability - DEUS 2005) and to meet the associated ESAP requirements of the Dept. of Water and Energy and/or the Dept. of Environment and Climate Change. Other businesses operating on the site will also be encouraged to prepare and implement ESAPs.
ESD Objective: To reduce CO ₂ emissions
Green power. The offset of a proportion of the site's operational CO₂ emissions through the connection of homes and businesses to suppliers of "green power" will be investigated. Tree planting. The offset of a proportion of the site's operational CO₂ emissions through the planting of trees will be explored. This could be negotiated with non-profit schemes such as "Greenfleet" or through compliance with the Australian Government's National Carbon Offset Standard (NCOS) (replaces the <i>Greenhouse Friendly</i> program as of July 1st 2010).
ESD Objective: To use energy from low carbon sources and/or to generate renewable energy on-site
Low carbon energy sources and technology. The use of low carbon energy sources, such as gas (for cooking and heating) will be encouraged. The feasibility of using low carbon technology, such as a cogeneration plant that uses gas, biomass etc. will be explored. Renewable energy technology. The feasibility of generating electricity from a range of renewable energy technologies on-site will be explored. Photovoltaic arrays could be installed to the roofs of dwellings and non-residential buildings (or they could be building-integrated). The feasibility of using photovoltaics to power domestic air-conditioning systems (thereby reducing peak loads) will be explored. Wind turbines could be installed on-site. These could be large turbines or roof-mounted urban windmills. The electricity generated could be used in the buildings on the site, potentially used for site infrastructure (e.g. street lighting) and/or exported to the grid.

5.2 WATER

ESD Objective: To reduce water demand Water conservation devices. All of the buildings will incorporate water conservation devices, such as water efficient taps, showerheads and dual flush toilets. The installation of automatic sub-surface irrigations systems for landscape and open space irrigation to reduce evaporative losses will be explored. Native landscaping. The planting of native species will minimise the demand for landscape irrigation. Water metering. The water use of each dwelling and each tenancy in a commercial, retail or industrial building will be separately metered. All other water uses on-site will be separately metered e.g. irrigation of open spaces.
ESD Objective: To reduce surface water run-off, To improve water quality, To reduce demand on local infrastructure Stormwater Management. A balanced site-wide approach to stormwater management will be undertaken at Huntlee New Town in order to mitigate any flood risks and to improve water quality. A mixed-use development such as Huntlee New Town introduces large areas of impervious surfaces to the site (e.g. roads and car parks), potentially increasing peak flows during storm events as well as the “time to peak” in some catchments downstream of the development, which could lead to water pollution, increased sedimentation and flooding. In order to mitigate this effect and to trap pollutants before water is discharged into natural water courses, stormwater detention initiatives, such as Gross Pollutant Traps (GPTs), detention ponds, constructed wetlands and/or tanks, will be integrated into the development. The subdivision and lot layout will integrate the site’s natural drainage patterns so as to facilitate stormwater collection and ground infiltration through the use of Water Sensitive Urban Design initiatives. Water quality monitoring of the natural water courses will be undertaken regularly. Water Sensitive Urban Design (WSUD). WSUD initiatives will be incorporated into the development’s urban design and landscaping at both a site-wide and individual lot scale to reduce surface run-off and to maintain good water quality in the natural water courses. These initiatives could include bio-filtration areas, roadside swales, permeable paving, plant zoning for irrigation efficiency, planting of drought-tolerant species etc.
ESD Objective: To collect, store, treat and re-use water on-site, To improve water quality, To reduce demand on local infrastructure Mains water. Hunter Water will be upgrading and extending the existing mains water infrastructure (Maitland-Greta-Branxton mains line) to the site. The installation of a third-pipe/wastewater recycling system will be investigated for feasibility. It is envisaged that the re-use of recycled water on the site for non-potable domestic and public domain uses will reduce demand for potable water. Sewerage. Collection, treatment and effluent disposal will be managed through Hunter Water’s existing Waste Water Treatment Plant at Branxton. Stormwater harvesting. Stormwater harvesting will reduce the development’s demand for potable water. Stormwater harvesting initiatives can be installed at a lot scale (e.g. rainwater tanks) or at a site-wide scale potentially managed by a government authority. Patterson Britton & Partners (PB&P), in their <i>Principles of Stormwater Management</i> report (August 2007), recommend that stormwater harvesting should not be implemented concurrently with other non-potable water demand strategies (such as wastewater recycling) as the demand for non-potable water in a development is finite. PB&P suggest that if stormwater recycling is considered and attractive option, rigorous water cycle analysis would be required to achieve the best possible outcomes. Stormwater harvesting - rainwater. If a stormwater harvesting strategy is to be implemented, the roofs of the buildings on the site will be designed to maximise the collection of rainwater. The water will be collected, stored and re-used for non-potable purposes e.g. toilet flushing and garden irrigation. Wastewater recycling - greywater. If a wastewater recycling is deemed preferable to stormwater harvesting, the feasibility of a site-wide greywater recycling scheme will be explored, with the water to be re-used for non-potable purposes e.g. toilet flushing, washing machines and irrigation of parkland and open spaces. Groundwater. Due to the likely contaminated nature and saline content of the site’s groundwater, there are no plans to extract groundwater to use at Huntlee New Town. However, should the use of groundwater at Huntlee New Town be re-considered in future planning stages of the development, its extraction will be consistent with the spirit and principles of the NSW State Groundwater Policy Framework Document, the NSW State Groundwater Quality Protection Policy and the NSW State Groundwater Dependent Ecosystems Policy.

5.3 MATERIALS AND WASTE

ESD Objective: To reduce the volume of construction waste going to landfill
Modular design and prefabrication. The construction material dimensions and prefabricated and modular nature of building elements will be taken into consideration in building design to minimise offcuts and material wastage. Flexible/adaptable housing design. The potential for housing to be adapted for changing demographic needs (e.g. empty-nesters that are downsizing) will be explored, thereby extending the houses' lifespan, reducing the need for demolition and extensive alterations and additions, conserving materials and reducing the volume of waste going to landfill. Design for disassembly. The design for disassembly of the structural framing, roofing and façade cladding systems of domestic and non-residential buildings will be encouraged. Green Smart accredited builders. Housing Industry Association (HIA) Green Smart accredited builders will be used where possible to ensure that sustainable building practices are implemented on the site. Construction waste. Waste Management Plans for the collection, separation, storage and recycling/re-use of construction waste will be developed and builders/contractors contractually required to implement it.
ESD Objective: To reduce the volume of operational waste going to landfill
Operational waste. A waste recycling strategy for homes, the public domain and commercial/retail/industrial businesses operating on the site for the separation, storage and collection of recyclable waste will be developed and implemented. Partnerships with the local Singleton and Cessnock Councils could be investigated to provide high-quality waste services.
ESD Objective: To procure sustainable materials
Construction materials. Materials with a low environmental impact will be selected for the site infrastructure, buildings, landscaping and urban design features i.e. materials that have low embodied energy, that are from sustainable sources, that are locally/regionally-sourced, that are reclaimed or recycled and/or that are recyclable at the end of their lives. Where possible, materials from the site (e.g. spoil from coal-mining activities, gravel) will be re-used on the site as road base, fill etc. PVC minimisation. The use of PVC on the site and in the buildings will be minimised where appropriate.
ESD Objective: To retain/re-use the existing topsoil
Site topsoil. All topsoil excavated during earthworks will be retained and re-used on site.
ESD Objective: To re-use the existing buildings on the site
Existing buildings. Where feasible and appropriate, existing buildings on the site will be restored and re-used. If demolished, materials will be re-used on-site.

5.4 TRANSPORT

ESD Objective: To reduce reliance on the private car

Public transport. The provision of direct and frequent bus services to and from, and around, the site to regional town centres and railway stations, such as Branxton, will be facilitated. Branxton is located on the Great Northern rail line between Singleton and Newcastle. Unfortunately, due to the frequency of coal trains on that line, there is only one train per day each way during the morning and afternoon peaks. Local buses currently run through Branxton to Maitland, Cessnock and Singleton. In the future, when the extraction and transport of coal diminishes, it is envisaged that the rail infrastructure will be used for public transport.

F3 & rail transit corridor. The integration of the planned F3 extension along the northern boundary of Huntlee New Town will be managed in consultation with the Roads and Traffic Authority (RTA) and rail authorities to minimise the impacts upon Huntlee New Town and Branxton.

Neighbourhood Centres. Appropriately sized retail centres and community facilities will be located within each of the villages to encourage walking and cycling within the neighbourhoods.

Parking. A percentage of car spaces in the car parks of the employment lands and town centres will be designated for the disabled, parents with prams, small cars and other sustainable modes of transport (e.g. hybrid/electric cars).

Work from Home. The construction of dwellings that can accommodate home-based businesses, the installation of high-quality IT and telecommunication connections and the location of business support centres in the town centres will encourage the operation of home-based businesses.

Car –share club. The feasibility of establishing a car-share scheme for businesses and/or residents will be explored. The use of hybrid and/or electric cars in the scheme could be considered.

ESD Objective: To reduce transport CO2 emissions

Tree planting. The offset of a proportion of the site's operational CO2 emissions due to transport-related activities (e.g. the car fleets of businesses operating on the site) through the planting of trees will be explored. This could be negotiated with non-profit schemes such as "Greenfleet" or through compliance with the Australian Government's National Carbon Offset Standard (NCOS) (replaces the *Greenhouse Friendly* program as of July 1st 2010).

ESD Objective: To create links throughout the site, to the local community and region, To promote safe transport connections, To prioritise personal mobility routes

Personal mobility networks. A network of personal mobility routes (pedestrian, bicycle, prams, wheelchairs etc.) will be established across the site with links to the existing community, residential areas, employment lands, town centres, parklands, and community, health and educational facilities. There will be safe and permeable connections from these routes to the adjacent existing neighbouring communities.

Pedestrian prioritisation. Pedestrian routes will be prioritised. "Home Zone" principles could be implemented in the residential areas through the use of reduced speed limits, traffic calming measures and designated "shared zones".

Pedestrian and cyclist safety. The safety of pedestrians and cyclists will be prioritised with designated bicycle paths, pedestrian crossings and approved speed limits for all roads within the site.

Car routes. The subdivision plan and street layout will facilitate connectivity within the site and to existing routes. The street layout will provide a variety of routes for cars, allowing flexibility of route choice thereby minimising traffic congestion.

5.5 EMISSIONS

ESD Objective: To minimise construction pollution
Environmental Management Plan (EMP). The implementation of an EMP by builders/contractors during the construction phase will minimise air, noise, water, soil and dust pollution and improve sediment control. Builders with sustainability skills. Housing Industry Association (HIA) Green Smart accredited builders will be used where possible to ensure that sustainable building practices are implemented on the site.
ESD Objective: To minimise light pollution
External lighting control. In order to protect fauna habits and night sky visibility, street lights, external light fixtures to buildings and urban design features will be selected so that light is not focused upwards into the sky or beyond site boundaries.
ESD Objective: To minimise water pollution
Stormwater Management. In order to minimise the surface run-off of polluted stormwater into local water courses, the water management strategy will incorporate stormwater detention and infiltration measures.
ESD Objective: To minimise noise pollution
Vehicular noise. Where necessary, acoustic measures will be installed to minimise noise from road traffic. Indoor acoustics. The incorporation of measures to minimise the transfer of noise between dwellings and within commercial, retail and industrial buildings will be encouraged. Co-location of noisy activities. In order to mitigate noise impacts on residents, businesses, industries and operations that are potentially noisy will be co-located in the employment lands.
ESD Objective: To minimise atmospheric pollution
Refrigerant Ozone Depleting Potential (ODP) and Global Warming Potential (GWP). The selection of HVAC systems using zero ODP refrigerants with low GWP in domestic and commercial, retail and industrial buildings will be encouraged. Insulant Ozone Depleting Potential (ODP). The specification of zero ODP insulation in the walls, roofs, floors and building services of domestic and commercial, retail and industrial buildings will be encouraged.
ESD Objective: To improve air quality
Clean air. Site revegetation and tree planting and the successful reduction of private car use across the site will result in clean air.
ESD Objective: To improve indoor air quality
Formaldehyde minimisation. The use of low or zero formaldehyde emission composite wood products (e.g. particle board) for building construction or fitouts will be encouraged. Volatile Organic Compounds (VOCs). The use of "low-VOC" paints and carpets for homes and commercial, retail, industrial buildings and fitouts will be encouraged.
ESD Objective: To minimise the Heat Island Effect
Heat Island Effect. The augmentation of temperatures in the urban areas of the site can be mitigated by laying light coloured roads in place of dark bitumen roads, by specifying light coloured roof finishes and by extensive lot and street tree planting.

5.6 LAND AND BIODIVERSITY

ESD Objective: To rehabilitate the site

Land remediation. The former local tip on the site has been capped. The soil and land degraded as a result of the former coal mining operations on the site will be rehabilitated. There is a Remediation Order for the rehabilitation of the former Ayrfield Colliery site. There are two Prevention notices relating to the former Ayrfield No.3 Colliery site which involves the implementation of controls to manage the environmental impacts arising from the coal tailings extraction activities taking place on the site and the undertaking of thermal imaging to detect any combustion sources at depth. As a result of these remediation activities, the contaminated land will be rehabilitated and the water quality in local natural water courses will be improved.

Erosion minimisation. Techniques for soil stabilisation and retention will be implemented, particularly along Black and Anvil Creeks and water courses e.g. native grass planting, riverbank planting.

Landscaping to reflect site heritage. The majority of the site is either cleared agricultural land previously used for stock grazing or timbered areas that are regrowth woodland following logging associated with the former colliery activities or land that has been previously used as a coal mining site. Existing vegetation within the riparian corridor and open space areas will be supplemented with local indigenous drought-tolerant species as per the local landscape context. The use of materials found naturally on the site for landscaping features will be encouraged.

ESD Objective: To protect and enhance site biodiversity

Protection of existing significant habitat. The 2007 Ecological Constraints Master Plan (ECMP) identified four threatened plant species, three Endangered Ecological Communities (EECs) and twenty threatened fauna species found on the site. These are listed in the schedules of the Environment Protection and Biodiversity Act 1999 (EPBC Act).

Dedication of conservation land. As identified in the Lower Hunter Regional Conservation Plan (DEC), 5768 hectares of conservation value land will be dedicated, once the land has been rezoned.

Creation of Persoonia Park. The Ecological Constraints Master Plan (ECMP) identified the presence of *Persoonia Pauciflora*, which is listed as Endangered under the Threatened Species Conservation Act 1995 (NSW) and Critically Endangered under the EPBC Act. As a result a 17 hectare area will be dedicated to the NSW Government for the conservation, research and propagation of *Persoonia Pauciflora* to ensure the long term viability of the species.

Habitat preservation and creation. The majority of the site is either cleared agricultural land, regrowth woodlands or previously mined land. However, there is remnant vegetation that provides viable habitat resources for flora and fauna. The proposed Huntlee New Town development aims to rehabilitate and revegetate open areas and parklands through the planting of native grasses, shrubs and trees in order to supplement habitat. The riparian zones along Black and Anvil Creeks will be preserved and enhanced, with the cleared and degraded sections to be rehabilitated.

Green roofs. There is potential for the buildings in the employment lands to have green planted roofs, thus increasing habitat and encouraging biodiversity on the site.

Wildlife corridors. The movement of fauna across the site will be facilitated by the preservation of habitat linkages and the creation of wide wildlife corridors.

ESD Objective: To make effective use of the land

Efficient land use. The subdivision plan aims to make efficient use of available land. For example, the clustering of building types, such as semi-detached townhouses, reduces setbacks and wasted land. The construction of compact building forms will be encouraged to minimise heat loss in winter and heat gain in summer.

5.7 SOCIAL

ESD Objective: To engage the community and stakeholders
Community and stakeholder engagement. Extensive consultation with the adjoining land owners, local community, Singleton and Cessnock Councils and government agency representatives has been undertaken in the form of meetings and charrettes. The community, Councils and stakeholders will continue to be consulted throughout the planning, design, construction and operational phases of the project.
ESD Objective: To preserve and promote site heritage
Local history. A 2003 study (reviewed in 2005) into Aboriginal cultural heritage and archaeology on the site found no significant sites but noted some areas with the potential to contain archaeological sites of high significance, such as along the Black Creek corridor. These areas are not proposed for development. Consultation was undertaken with local Aboriginal groups during the study. There are no items of European heritage on the site (or adjacent to it) listed in the local and regional plans or the State Heritage Register. However, the former Rothbury colliery is listed in the Heritage Regional Environmental Plan (REP) as an item requiring further investigation. Any historical items of significance will be retained and restored as well as associated vistas and sight lines. The diverse natural, Aboriginal and industrial (mining) heritage of the site will be highlighted through interpretive signage. Public art. Public art, such as murals and sculptures, will be incorporated into the landscape, urban design and public buildings.
ESD Objective: To promote the site as a learning tool
Learning from the natural and built environment. Natural and urban design features and public buildings could be used to demonstrate sustainability aspects for educational purposes e.g. interpretive signage, a wind turbine with real-time display demonstrating the amount of energy generated. Information Centre. An Information Centre for the Huntlee New Town development will be open during the planning/design phase with information displays on how a sustainable suburb is being created. Welcome Pack. A Welcome Pack, outlining the sustainability features of Huntlee New Town with information encouraging sustainable living and working practices (e.g. energy efficiency and water conservation advice, public transport timetables), could be provided to new residents and businesses.
ESD Objective: To produce a safe, healthy and high quality environment
Community safety. Crime Prevention Through Environmental Design (CPTED) principles will be incorporated into building and urban design. Universal Design. Universal Design principles will be incorporated into the housing developments. Indoor Environment Quality (IEQ). Buildings will be designed to enhance IEQ. Initiatives include the use of low VOC materials, high thermal comfort, individual comfort control, external views, formaldehyde minimisation, optimised daylighting, natural ventilation etc.
ESD Objective: To generate employment
Employment opportunities. The proposed 200 hectare Town Centre at Huntlee New Town has the capability to generate 4-5,000 jobs, which is consistent with the Lower Hunter Regional Strategy's objective to ensure adequate employment lands in the region. The proposed 7,500 dwellings at Huntlee New Town represent 6% of the new dwelling requirements proposed in the Strategy. Adequate land use allocations and zoning will be provided to meet the commercial, retail, industrial and other business needs of the Branxton community and region. Home-based businesses and business support centres in the town centres and employment lands will be encouraged. Complementary business clusters. The establishment of businesses on the site whose operations and activities complement site and regional assets will be encouraged with the aim of generating local economic activity and employment. Education and training. Education and training opportunities for local people will be facilitated with the location of pre-schools, primary schools and high schools on the site, as well as the potential location of a tertiary facility on the site. Local procurement. Where available, 100% local procurement of goods, services and personnel will be encouraged.

5.7 SOCIAL CONT...

ESD Objective: To fulfil community needs

To promote social diversity, equity and accessibility

Equitable access. There will be free public access to the parklands and passive and active recreational spaces. These spaces will be connected via pedestrian and cycle paths. The conservation areas will be dedicated to public ownership via the National Parks and Wildlife Service (NPWS). Full accessibility will be provided to all community facilities for the disabled, aged etc. Access to and within all buildings will take into account Best Practice guidelines.

Recreational facilities. In order to meet the community's active and passive recreational needs a diversity of high quality amenity open space and appropriately landscaped spaces will be provided. Features could include walking paths, picnic facilities and open spaces for multi-purpose activities.

Sporting facilities. A range of sporting facilities to meet local and regional needs will be provided. Opportunities could include general playing fields and sport-specific grounds (e.g. hockey pitch) as required.

Community facilities. Community facilities and amenities will be provided on the site to meet the needs of Huntlee New Town. These will include retail facilities, neighbourhood shops, religious and community centres, health and medical services, primary schools, high schools, potentially a tertiary facility, childcare facilities, aged care facilities and an ambulance, fire and police station. In the development and implementation of facilities and services, the Community Development Plan will facilitate input by the new community regarding the type of services provided and manner in which they are undertaken.

Vibrant community. Mixed-use development will increase the vitality of the neighbourhood centres during the day and evening periods.

Diversity of housing. A mix of housing types, numbers and densities will be provided to meet the growing needs of Huntlee New Town. This could include live/work units, shop tops, etc.

Affordable housing. A percentage of affordable housing can be provided to meet the needs of low and moderate income people in an integrated manner.

5.8 MANAGEMENT

ESD Objective: To create partnerships
Partnerships. Partnerships with private, public and non-profit organisations will be explored to create opportunities for training, employment and business development. Working with DECCW The conservation areas will be dedicated to the NSW Minister for Planning. Huntlee has offered the State Government an amount of \$1.1M to be used for investment into the 780ha of conservation land identified in the Lower Hunter Regional Plan (\$1M over 7 years commencing January 2014) and the draft “Recovery Plan” directed specifically at the <i>Persoonia Pauciflora</i> (\$100,000 upon gazettal of the SEPP Amendment).
ESD Objective: To integrate ESD into the development process to ensure sustainable outcomes
Urban Design Guidelines. Huntlee Pty Ltd could develop sustainable urban design guidelines for the site (as they have done for some of their previous developments) for people wanting to construct a home on the site that must be met in order to apply for a Development Application. Development Control Plans (DCPs). The DCP(s) for the site will incorporate sustainability standards in order to obtain a Development Application. Contracts. These could consist of contracts between Huntlee Pty Ltd and potential developers/homeowners binding them to produce sustainable homes, or contracts with builders to ensure that construction waste is recycled.
ESD Objective: To integrate ESD into the management/operation process to ensure sustainable outcomes
Corporate Sustainability Strategy. Huntlee Pty Ltd Corporate Sustainability Strategy is attached as an Appendix to this report and outlines Huntlee Pty Ltd’s corporate sustainability approach and framework to implement Triple Bottom Line reporting, which aims to facilitate continual improvement and sustainable outcomes at Huntlee New Town. Sustainability Plans. Huntlee Pty Ltd plans to develop and implement Sustainability Plans for each of the villages (development stages) of Huntlee New Town. These Plans will include sustainability objectives, targets, performance indicators and requirements for performance monitoring, benchmarking, and annual auditing and reporting.
ESD Objective: To promote sustainable procurement
Sustainable procurement. Huntlee Pty Ltd will develop and implement a policy for the sustainable procurement of goods, services and personnel for the design and construction of the project. e.g. builders must demonstrate their environmental credentials as part of the contractor selection process.

6 NEXT STEPS

The sustainability strategy outlined in Section 5 will be further developed in subsequent planning and design stages of the Huntlee New Town development. As the project is in the State Significant Site (SSS) Rezoning phase, the ESD opportunities described will be refined through each Project Application,

Elements of the sustainability strategy incorporated into Huntlee Pty Ltd's urban design guidelines for the site will flow through into the local Councils' Local Environment Plan(s), Development Control Plan(s). Any Development Applications and Construction Certificate requirements for the site will aim to ensure that sustainability is embedded into each stage of the planning and development process in order to facilitate sustainable outcomes for the Huntlee New Town site.

The preliminary site sustainability targets outlined in Section 4 will be developed and refined further in each new Project Application. Where possible, quantifiable figures will be assigned to each target. The sustainability strategy and the embedding of sustainability in planning controls are the mechanism through which these targets will be achieved. Throughout the Huntlee New Town project lifecycle, information and data will be collected, collated and performance regularly reported against the targets, which will in turn be reviewed and updated, facilitating continual improvement. This framework, when developed, will allow Huntlee Pty Ltd to measure its progress against its sustainability goals over a long timeframe and will enable performance to be compared against other projects and organisations.

APPENDIX A

Huntlee Pty Ltd Corporate Sustainability Strategy

Huntlee Pty Ltd

Corporate Sustainability Strategy

August 2010

Huntlee Pty Ltd has prepared this draft corporate sustainability strategy to ensure sustainable outcomes in all future stages of development.

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Huntlee Pty Ltd Corporate Sustainability Strategy

1. Introduction

1.1 Background

Leading corporate entities now recognise that their corporate responsibilities and long term financial viability require the adoption of strategies which incorporate economic, social and environmental considerations. Reporting on performance in these three areas is known as sustainability, or Triple Bottom Line reporting.

Sustainability has an economic and risk reduction focus. In addition to the traditional approach of considering financial returns, this requires adopting a broader view by integrating broader community interests into core business strategies. The Huntlee corporate sustainability strategy is presented in the following pages. It is the start of a holistic reporting for Huntlee and a celebration of the journey towards sustainability.

1.2 Huntlee Joint Venture

The Huntlee project site comprises approximately 1740 hectares owned by Huntlee Pty Ltd and the single ownership facilitates coordinated and high-quality planning outcomes. The site is being developed by Huntlee Pty Ltd. Huntlee Pty Ltd is owned by a syndicate of investors who are committed to leading the land development industry in sustainable development.

The Huntlee Pty Ltd approach for communities goes further than simply property development, and in every project, Huntlee Pty Ltd enhances lives and livelihoods, through creation of places that provide high quality opportunities to live, work and play.

1.3 Huntlee's Role in Sustainable Development

This report outlines a corporate sustainability framework to guide the management of the Huntlee site. As a starting point, it proposes that the project's sustainability practices should be measured and documented systematically to formally embed sustainability principles and practice. Sustainability reporting will focus on innovative processes as well as innovative products.

For example, the strategy will build upon the participative project management approach and will look at innovations to further partner with the community.

International and national trends in sustainability practice provide benchmarks that will be used to guide the project's efforts to ensure that a positive legacy is left for the Huntlee community and that impacts on the environment from the development's operations are minimised.

This Sustainability Strategy has four sections:

- Section 1 provides an overview of Huntlee
- Section 2 provides the corporate sustainability context for the strategy
- Section 3 details the corporate sustainability reporting framework
- Section 4 concludes the report.

2. Sustainability – Corporate Context

2.1 Corporate Sustainability

In 2002, the peak global sustainability business body, the World Business Council for Sustainable Development (WBCSD), clarified two critical aspects of sustainability: it characterised sustainability as an aim, a journey, and a new business paradigm; and secondly, it introduced the concept of Triple Bottom Line reporting:

“Sustainable development involves the simultaneous pursuit of economic prosperity, environmental quality and social equity. Companies aiming for sustainability need to perform not against a single, financial bottom line, but against this triple bottom line.”

The WBCSD considers that the wider view and increased knowledge gained by Triple Bottom Line reporting facilitates planning more efficient, resourceful and financially successful projects. The standards set in sustainability reporting have a significant effect on standards that are ultimately achieved in an entity's endeavours.

The Australian Government encourages companies to adopt sustainability reporting to better inform stakeholders on companies' capabilities with regard to managing risks and in managing and balancing economic, social and environmental impacts of their activities.

2.2 Best Practice

This corporate sustainability strategy was developed following a comprehensive literature review of international, national and local best practices in corporate sustainability and urban development, and a review of government policies, regulations and reporting requirements.

3. Corporate Sustainability Strategy

3.1 Overview

The project's overall aim is to make a long-term contribution to the environmental, social and economic fabric of the communities in which it works and to secure the business advantages this offers, including bringing together the short and long-term requirements of its stakeholders.

Through the creation of this corporate sustainability strategy, HJV commits to formalising its sustainability measuring and reporting system to provide regular reports to the board and the community placing sustainability centrally in the joint venturer's corporate reporting framework.

3.2 Sustainability Reporting Framework

The framework makes provision for benchmarks based on applicable Government and/or industry standards and these will be incorporated into it to measure progress and facilitate continuous improvement. To activate the corporate strategy at the operational level, Sustainability Plans are being developed for each future village.

The corporate framework also provides mechanisms for monitoring and reporting progress on outcomes on a regular basis to the board and the community.

3.3 Vision

The direction for the reporting framework is provided by the vision for Huntlee's continued development. To complete the development of Huntlee the vision is:

To create Huntlee, as a truly sustainable township.

Huntlee will be a modern community designed to provide housing and associated education, recreation, retail and community facilities for 18 - 21,000 residents.

It will offer a wide choice of accommodation and lifestyles in an attractive environment designed to enhance the natural features of the site. It will draw on the historic and cultural values of the locality and bring to the community great opportunities.

Signifying a return to the more traditional values of community living, Huntlee will pursue a leadership role in the more efficient delivery of infrastructure and in the adoption of improved environmental management techniques.

The concepts that support this vision include:

- Villages that are thriving places, providing exciting options for people to live work and play. Public facilities, places and spaces teem with people; streets are alive and busy
- Where people are active, healthy and content. Where they feel safe and connected to others. Huntlee will be a great place for people of all ages, particularly children
- Its housing strategy will enable a broad cross section of home purchasers and renters to access accommodation
- Huntlee will be home to lots of innovative economic activities, providing local quality work and development options. Where environmentally and ecologically responsible businesses are supported and flourishing
- Where the natural environment is cherished. Where all development is planned so that landscapes, flora and fauna are retained where feasible and effective management plans prepared
- Where the community is empowered to use natural resources wisely

The vision and concepts are brought to life through achievement of the strategies and indicators in the sustainability reporting framework.

3.4 Core Sustainability Objectives for Huntlee

The core objectives elaborate upon different sustainability aspects of the vision and provide guidance in developing detailed sustainability programs at each stage of Huntlee's growth.

The objectives for Huntlee relate to corporate reporting requirements of the Joint Venture partners as well as Huntlee's specific geographic and urban development context.

The core objectives for its completion are to:

1. Create a model New Town that sets new benchmarks in sustainable development for the Hunter Region
2. Manage the economic, social, environmental and governance outcomes within the context of the Huntlee locality
3. Provide a consistent, holistic, integrated set of performance requirements for the planning, subdivision, built form and management phases of each new village in terms of priorities under the key urban sustainability considerations: sense of place, transport, housing diversity and affordability, community health and wellbeing, ecology, water (conservation and quality), energy and economic success
4. Establish benchmarks and targets where applicable and monitor and measure them at the relevant phase of development of Huntlee's villages
5. Continue to engage internal and external stakeholders and thereby build capacity at each phase of development of Huntlee's 5 villages, and for the Huntlee New Town
6. Foster enduring value through maintenance of appropriate governance mechanisms

3.5 Benchmarking and Measuring Performance

The outcomes sought by the objectives are further defined using a series of strategies, performance indicators and targets to measure achievement or progress in delivery.

The four key performance indicators to be reported to the Joint Venture board are:

- 1 Sustainability Plans are developed for each village.
- 2 Sustainability Plans capture the urban sustainability agenda holistically -- comprehensively addressing social, economic and environmental considerations.
- 3 Sustainability Plans are audited on an annual basis.
- 4 Benchmarks and targets are established and stretch targets are applied to priority indicators.

3.6 Delivering Sustainability at the Village Scale - Sustainability Plans

Sustainability Plans will be developed for each of the villages (stages) at Huntlee to respond to the specific characteristics of each locality and time while providing a level of consistency to the core Huntlee vision, objectives and performance indicators.

They provide detailed guidance at the operational level of sustainability and will comprise a matrix of information to conveniently measure performance at the village

scale. They address social, economic, environmental and governance measures of sustainability, further classifying each of these dimensions into key themes applicable to each village.

Sustainability Plans comprise:

- **Key themes** - describe key performance categories, describing what is trying to be achieved in the Sustainability Plan. They comprise a short statement describing current best practice and innovation. For example at Ellenbrook, in the village of Malvern Springs, the sustainability themes selected by the project team are sense of place; transport; housing diversity and affordability; community health and well-being; ecology; water quality; energy; and economic success.
- **Objectives** - these state the aims and desired outcomes. Huntlee's comprehensive approach to sustainability encompasses a number of interdependent core objectives as well as additional ones that are specific to each village. The village scale objectives are based on consultations with internal stakeholders, and a review of the development plan concepts and ecology, landscapes, and heritage of each village.
- **Strategies** - these further define the objectives and themes. Strategies describe how to work towards the outcomes which are to be applied at one or more phases -- planning, development or management.
- **Indicators** - these are specific performance measures, that is, numeric or action based measures to achieve the strategies
- **Benchmarks** - these identify the applicable standard or policy and the basis of measurement.

- **Targets** - these set the desired actual performance and as such are numeric or action based outcomes. Targets are developed from a detailed analysis of industry innovation and best practice. Where available government targets are applied.
- **Monitoring and audit responsibilities** - assigns responsibility for implementing and reporting on the indicators, indicating the extent to which the objectives have been met.
- **Reporting** - includes corporate reporting to the Board as well as reporting to the community on outcomes or progress.

Sustainable urban development practice is characterised by continuous improvement, so that today's innovation becomes mainstreamed as tomorrow's best practice. In addition, over time there is the expectation that further regulations and changes in stakeholder expectations will drive higher standards. Hence it is important to retain flexibility so that future villages can meet these new challenges.

To accommodate innovation Sustainability Plans for future villages will respond to the specific geographic, cultural and economic context at the time of planning while relating to Huntlee's core sustainability objectives.

The Sustainability Plans summarise the sustainability performance requirements that may apply at one or more phases of a village's development: planning -- including vision and objective setting; subdivision and built form delivery; and the end use/management phase.

3.7 Monitoring and Review

Monitoring the sustainability reporting program will enable progress and information to be shared with the community and other stakeholders. The monitoring program comprises:

Board reports - annual reporting concerning implementation of this strategy, including details of performance in relation to sustainability indicators.

Operational reports - village project managers will meet at half yearly workshops to report on progress and share information on project specific innovations such as energy efficiency and water conservation. Audit reports from the workshops will then form part of the annual Board reports.

Sustainability issue specific reports - Huntlee's regular project team meetings will continue to provide an opportunity to consider sustainability issues. This information forms part of operational reports.

Policy statements - addressing aspects of sustainability (economic, social, and environment) will be developed in consultation with stakeholders to maintain innovation and establish a consistent approach to sustainability issues that are central to all villages and the Town Centre. Examples include water conservation, economic success, energy, safety and diversity.

Community Reporting - a communications program will be developed to share information. Corporate responsibility reporting requires transparency and an objective critique of progress. As part of the communications program, Projects sustainability evaluation will be made available to stakeholders for example, through web sites and publications.

4. Conclusion

This report outlines Huntlee Pty Ltd's corporate sustainability approach which is proposed to be applied at the corporate and project levels across all the entity's activities. Huntlee Pty Ltd has adopted this corporate sustainability strategy to ensure that sustainability is intrinsic to all stages of development. The framework proposed in this report outlines the Project's commitments to innovation and leadership by placing corporate responsibility and sustainability reporting at the forefront of the entity's business activities. This report provides a sustainable reporting framework for the joint venture partners for Huntlee and development of its future villages.

This corporate sustainability strategy represents leading practice by national standards, and draws on a wide range of sources and a detailed knowledge of the application of sustainability in the land development industry. The corporate culture to enable the sustainability strategy is founded on creating the right culture and the right structure to provide the integration, balance and continual improvement required at the corporate and project levels. The right culture is one that is innovative, committed and creative. It includes enjoyment, teamwork, empowerment, partnerships, openness and honesty. It requires commitment from the board, management, and ensuring appropriate people and support at the corporate and project levels.

Creating the right structures requires recognition of the dynamic nature of sustainability, tracking trends in the environment, economy and society, maintaining communications with relevant experts and accepting continuous improvement: today's innovation is tomorrow's best practice and later its current practice.