



**ROYAL DOCKS
ECOBUSINESS
PARK**

Project sponsor
VENUS



**Construction
delivery partners**
SCG



MACE



**Lead Architect &
masterplanner**
Llewelyn Davies Yeang



Proposed Industry partner
IFS



Innovation partner
CEREB



London South Bank University



Technology partner
UEL



**Community
engagement partner**
LSX



Corporate partner
London First



1 Executive summary

When delivering the 2008 Budget, described as the “greenest budget ever”, Alastair Darling, the then Chancellor of the Exchequer addressed the urgent need to reduce carbon generation at home and at work. This led to the ambitious targets to make new homes zero carbon from 2016 and new non-domestic buildings to become zero-carbon from 2019. According to the London Development Agency (LDA), London generates around 47.5 million tonnes of CO₂ a year, which the Mayor of London aims to reduce by 60 percent by 2025 compared to 1990 levels.

These targets will play a pivotal role in shaping the future of the construction industry with sustainability being at the forefront of strategic thinking. If these targets are to be achieved, it is vital that there is a focus on innovation and efficiency within clean technology in the construction industry.

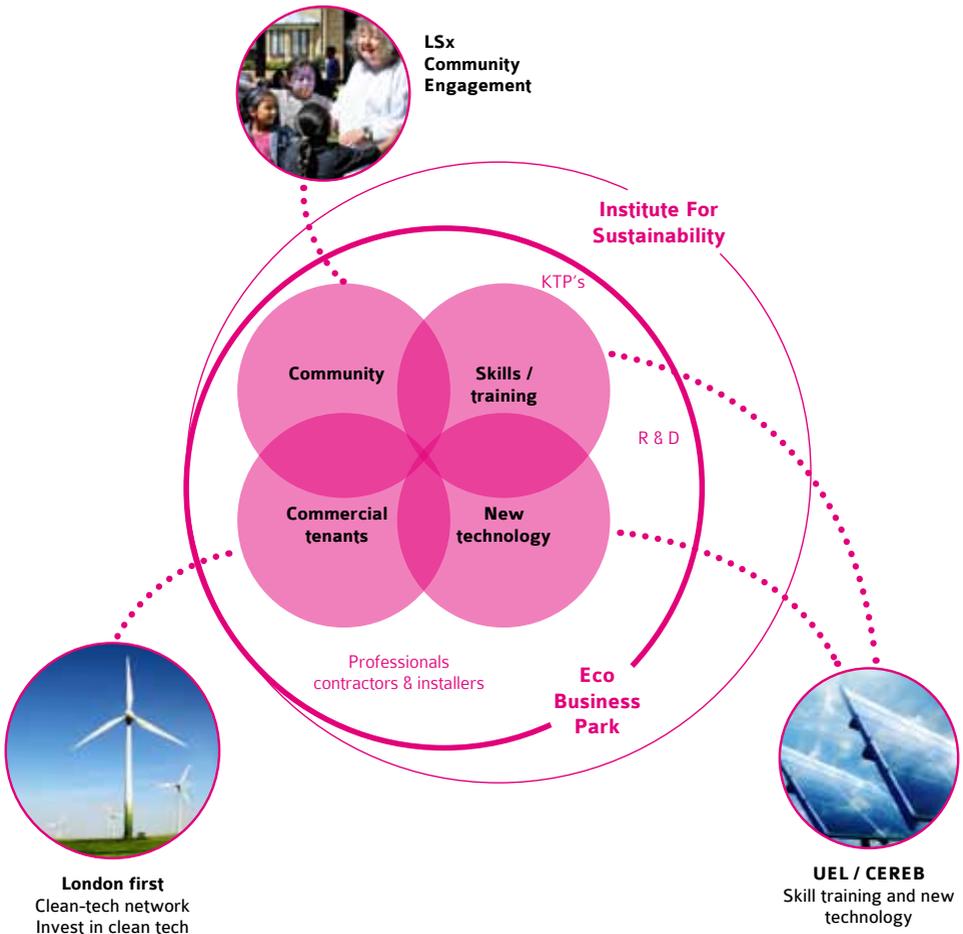
The Royal Docks Ecobusiness Park aims to be a cutting-edge zero carbon development and a world leading showcase for sustainability in the built environment. A focal point for London’s up and coming green business community, this Ecobusiness Park will bring innovation, green skills, demonstration and research to provide a sustainability hub for the capital.

The development is located in the Royal Docks, within the “Green Enterprise District” as set up by Boris Johnson (based in Thames Gateway in East London). We aim to attract green companies, jobs and innovation to the area.



The benefits to the surrounding area and wider benefits to London will include employment opportunities, income generation including the creation of a 'Green Economy', Improvements to infrastructure including a proposed extension to the well publicised cable car project and various Eco Tourism benefits; all with a focus on integrating with the local and wider communities whilst promoting sustainable living and health and wellbeing.

Our vision is to create a new focal point for Royal Albert Docks showcasing state of the art Green design technology and research.



2 Vision

Sustainable development is about ensuring we have a better quality of life now and for the future whilst protecting and enhancing the earth's resources. Our vision for this project articulates how this can be achieved and is in line with 'A Sustainable Development Framework for London'. In practice having a better quality of life is about:

- Having access to quality education, jobs, services, housing and leisure.
- Living in an environment which is healthy, resilient and stable now and into the future.
- Living and working within a society which is democratic, just, diverse, responsible, supportive and vibrant.
- Being fulfilled, healthy and with sufficient personal resources to enjoy life.
- Achieving a low carbon society with minimum impact on the environment and developing the skills and business to reach a new way of living.

The Royal Docks Ecobusiness Park aims to be a cutting-edge zero carbon development and a world leading showcase for sustainability in the built environment.

A focal point for London's up and coming green business community, the Ecobusiness Park will foster innovation, green skills, demonstration projects and research to provide a sustainability hub for the capital.

The whole site will become a living laboratory of innovative buildings that push the boundaries of zero carbon design and sustainability attracting a strong research community and like-minded sustainability entrepreneurs and business partners.

2.1 Vision statement

My interest in the Royal Docks goes back a number of years. As an East Londoner myself, we have proudly operated our UK company head office out of the London borough of Newham for over 15 years and we have a number of successful developments in East London.

A member of my team, together with representatives from our Chinese partner company, Shanghai Construction Group (SCG), met with Clive Dutton OBE Executive Director for Regeneration, Planning and Property for Newham in Shanghai during London week of the Shanghai World Expo in July 2010. London Borough of Newham were presenting the vision for the Royal Docks as prepared by the Mayors of both London and Newham.

It is this document which has focused my thinking to dedicate time and resources to develop a proposal in line with this vision to unlock regeneration and economic wealth within the Royal Docks.

I have invested in a hand-picked, dedicated and leading project team to propose an economic led development strategy with a firm focus on high technology, green enterprise and research with the aim to create and promote an environment conducive to the exchange of knowledge and ideas.

We feel that this project will attract further investment, new jobs, new homes and new people, and make the Royal Docks a healthier environment and indeed a place of choice to live.

I have every confidence of achieving my ambitions to put the Royal Docks on the map nationally and internationally with the support and assistance of the London Borough of Newham



By Sri Ganesh Nadarajah
Group Managing Director
For and on behalf of VENUS

2.2 Project partners

Project Sponsor

VENUS

Sri Ganesh Nadarajah

Group Managing Director

Thomas Harrison

Group Business Development Director

Matthew Jones

Commercial Director

Jim Moore

Construction Director

VENUS procures projects with political lobbying and structuring the project to meet project finance requirements of financial institutions in our consortium.

VENUS AM has been dealing with Chinese Government State Owned Entities (SOE) since 1995 via its subsidiary F&G International where we were one of the first major suppliers of non-ferrous metals (e.g. Copper, Manganese, Iron Ore, etc) to the Chinese Government.

In 2001, with the assistance of China Development Bank, the Venus Group diversified this business relationship to Construction.

Since 2002, we focused all efforts on Construction activities and incorporated an entity in China to undertake our first toll-road project in Pan Zhi Hua in Sichuan Province worth \$99m.

VENUS also has access to South Asian Sovereign Wealth Funds through our past working relationship and this greatly adds value as we have the option of procuring Project Financing beyond our Chinese financing partners.

Construction Delivery Partners

Shanghai Construction Group

Shanghai Construction Group (SCG), with a history over 50 years, has registered many new records in course of China's construction & development, especially since the 1990's such as Lu Pu Bridge, the steel-arch bridge with the longest span in the world, Shanghai Maglev, the world's first commercial maglev line, East China Sea Bridge, the China's first trans-ocean bridge, the 468m-high Oriental Pearl TV Tower, the 420.5m-high Shanghai Jin Mao Tower & etc. SCG has achieved monumental exploits in the building history of China, and even in the world.

Mace

Mace is an international consultancy and construction company, offering highly integrated services across the full property lifecycle.

Our experts in programme and project management, construction delivery, cost consultancy, and facilities management thrive within our collaborative and entrepreneurial culture, constantly striving to find better solutions to complex infrastructure and property challenges.

Lead Architect

Llewelyn Davies Yeang **Ecomasterplanners, Urban Designers,** **Architects and Sustainability Consultants**

Dr Ken Yeang

Chairman and Design Director

Steve Featherstone

Managing Director

Robert Powell

Project Director

Paul Barnes

Associate, Urban Designer and Masterplanner

Gianluca Ruggeri

Architect

Llewelyn Davies Yeang (LDY) is a world leader in the production of sustainable masterplans and architecture. Under their Design Director Dr Ken Yeang, LDY have developed a unique approach termed Ecomasterplanning. The practice has also developed a bespoke tool known as EmAT (Ecomasterplan Assessment Tool) that is used to assess the rigour of the resultant masterplans. LDY will supply a bespoke Ecomasterplan for the Royal Docks Ecobusiness Park together with architectural guidelines.

Thereafter LDY will contribute:

- Extensive green design and masterplanning expertise
- Project Coordination and management of various parties with individual sustainability expertise.
- Interpretation of the requirements into a signature masterplan that exceed conventional BREEAM expectations.
- A unique approach to masterplanning that takes into account our human ways of life, well being, health and mobility.
- Consideration of the ecology and water management of the site.

Proposed Industry Partner

Institute for Sustainability (IFS)

Ian Short

Chief Executive

Ed Metcalfe

Director for Research and Business Development

The Institute for Sustainability is an independent charity, led by a world class board representing UK industry, academia and public sector, set up to accelerate the delivery of sustainable cities and communities.

It is proposed that IFS will contribute to the scheme as a registered charity, in seeking to advance education and promote sustainable development with a commitment to deliver public good by:

- Enabling practical application of research and demonstration outputs for sustainable development
- Disseminate learning and sharing best practice in delivering sustainable communities
- Supporting regeneration through economic development, education and skills

Innovation Partner

Centre for Efficient and Renewable Energy in Buildings (CEREB) London South Bank University

Tony Day

Professor of Energy in the Built Environment and
Director of CEREB

Phil Jones

Visiting Research Fellow

The Centre for Efficient and Renewable Energy in Buildings is a unique teaching and research facility for the built environment demonstrating a number of renewable and intelligent energy technologies.

It is part of London South Bank University which is a centre of excellence for energy efficiency, renewable technologies and sustainability in the built environment.

CEREB experts provide teaching, training, research and consultancy focused on improving the sustainability of buildings and will act as sustainability and energy advisors to the VENUS Group on this development.

In order to address an acute shortage of skills around sustainable building, CEREB will ensure that training and improving skills lie at the heart of this innovative development. CEREB have significant experience in collaborating with industry, particularly through government funded knowledge transfer partnerships to improve business and train staff.

The development itself will become a 'living laboratory' of cutting edge sustainable buildings allowing continual monitoring and research at the forefront of industry. Through this combination of research, monitoring and training, CEREB will ensure that the whole development will become a showcase for sustainable buildings and future developments.

CEREB will provide:

- Advice on renewable energy systems
- Input into the masterplanning and design process
- Development of courses and training for industry
- Research and monitoring

Technology Partner

University of East London (UEL)

Darryl Newport

Director of the Sustainability Research Institute

The Sustainability Research Institute has been established at UEL to research and develop the application of innovative eco-efficient technologies and processes, with a focus on changes in the physical infrastructure that benefit the environment and promote a carbon-neutral society.

Under the directorship of Darryl Newport, the Institute brings together UEL research and knowledge transfer programmes across a wide range of disciplines: architecture and the built environment, civil engineering, new materials technologies, GIS, pipeline technology, renewable energy, flood defence, environmental science and biodiversity conservation.

As neighbours on the proposed development site; they are ideally placed to add value and we look forward to the partnering opportunities that this development may bring.

Corporate Partner

London First

Dr Tony Jones

Biotechnology, Healthcare, Clean Tech and FM

London First is an influential business membership organisation with the mission to make London the best city in the world in which to do business. Funded by member subscription as a not-for-profit organisation, London First represents the capital's leading employers in key sectors such as financial and business services, property, transport, ICT, creative industries, hospitality and retail. Our membership also includes higher education institutions and further education colleges. London First's aim is to influence national and local government policies and investment decisions to support London's global competitiveness. A successful London is vital to the health of the UK economy.

The influence of London First is built upon the breadth, depth and calibre of our business membership, who collectively represent over a quarter of London's GDP. Our credibility comes from our informed, in-depth policy development, supported by proactive and creative campaigning, as well as from our record of achievement.

Working with its members, London First prides itself on being innovative, developing practical and timely solutions to London's strategic challenges. Through a variety of engagement formats, events, business networks and electronic media, London First provides its members with an effective conduit for communication with government and a voice in the public arena.

London First will provide valuable links into possible anchor tenants on the site and will advise on 'Commercial Tenants'.

Community Engagement Partner

LSx

Samantha Heath
Chief Executive

London Sustainability Exchange (LSx) was founded in 2001. It is registered as an independent charity and a company limited by guarantee

LSx's vision is of London as a sustainable world city. LSx's mission is to accelerate the transition to a sustainable London by connecting and

motivating people. We work in partnership with business, government and the voluntary sector to:

- Reduce London's environmental footprint
- Improve the lives of London's disadvantaged communities
- Improve the health of Londoners
- Improve the knowledge and skills of our communities

To achieve these goals we run learning networks and innovative exemplar schemes. We also seek to influence policy and practice throughout London.

Activities and Achievements last year:

- LSx has influenced over 100,000 culturally diverse citizens to take up environmentally sustainable behaviour.
- LSx projects help to deliver a lasting legacy of change in communities across the capital by empowering behaviour change champions to make real and lasting improvements to people's quality of life.
- LSx Learning Networks support over 2,000 London professionals from public, private and voluntary sector organisations promote sustainable lifestyles across the 33 London Boroughs.

3 The Royal Docks Vision of the Mayors of London and the London Borough of Newham.

3.1 The Royal Docks Vision

3.1.1 The Royal Docks Vision is to create a place that has its own identity and sense of place. The Royal Docks – a vision for the Royal Docks prepared by the Mayor of London and the Mayor of Newham, published by the London Development Authority July 2010 highlights the following points:

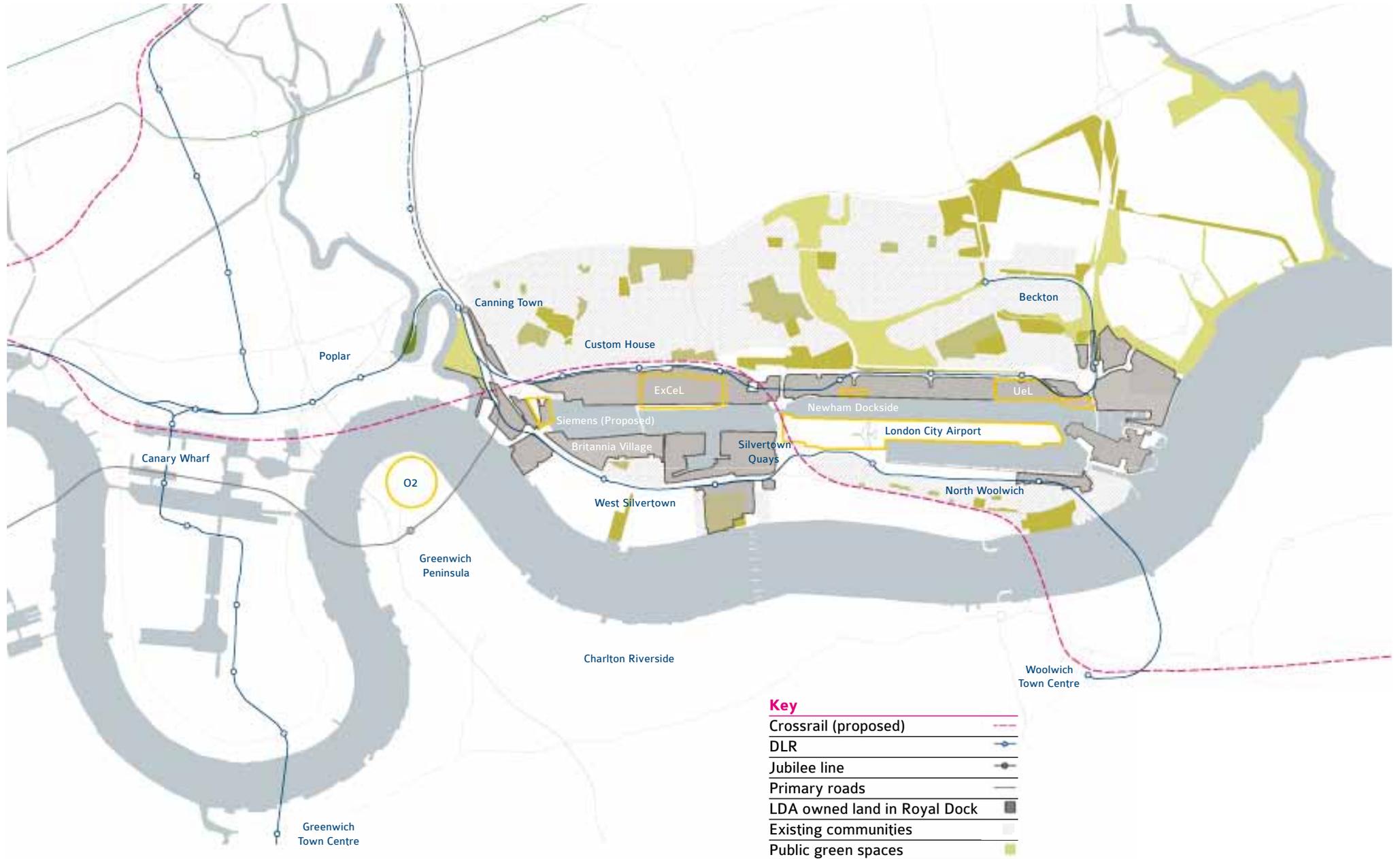
3.1.2 “We intend to transform the Royal Docks into a world-class business centre: a world leader in high technology, green enterprise and research and an international forum for the exchange of knowledge and ideas. We envisage the waterfront as a hub of activity once again; a thriving business destination for Londoners and visitors alike.”

3.1.3 “Our vision is dependent on enduring development that draws on the area’s character and heritage and is outstanding in terms of place-making, environmental performance and design. The right response lies in high quality, imaginative proposals that are financially viable and can be delivered in a range of market conditions.”

3.1.4 “The Royal Docks will offer an urban exemplar for a sustainable world city. It should be an outstanding place to live, work, play and stay.

The Royal Docks Vision

From London Borough of Newham Royal Docks Vision



3.2 The Royal Docks

Vision – 10 key issues

“Our vision for the future of the Royal Docks is underpinned by a clear ten-point strategy. In order to unlock the area’s full potential we pledge to:

- 01 Develop the Royal Docks as a world-class business destination within the knowledge economy.
- 02 Promote the Royal Docks as a focus for investment on a world stage building on opportunities presented by the 2012 Olympic Games.
- 03 Make the Royal Docks a place of choice to live.
- 04 Champion green enterprise and environmental sustainability.
- 05 Ensure that development positively benefits the local community.
- 06 Exploit the potential for visitor and tourist economy.
- 07 Create a unique and high quality waterfront urban quarter with a strong sense of place.
- 08 Improve cross-river and local connectivity.
- 09 Communicate openly and clearly.
- 10 Make it happen.

4.1 The wider context

4.1.1 The site is located at:

Latitude 51° 30' 28.52" N
Longitude 0° 3' 17.43" E

The 12.4 ha (124,000 sq metres) site was formerly part of the Royal Albert and King George V Docks situated to the north of the River Thames within the London Borough of Newham.

4.1.2 Site Access

Access is obtained from Royal Albert Way along the northern boundary of the site.

4.1.3 The site has ready access to a number of key docklands facilities. These include:

The University of East London	0.7 km
Excel Centre	1.6 km
The proposed Siemens Pavilion	1.8 km
London City Airport	1.8 km
Canary Wharf	6.3 km
O2 Centre (by DLR and Jubilee)	15 minutes
2012 Olympic Games	9.7 km
The City of London	10.5 km
Proposed Cable Car	15minutes

The site



4.1.4 The site is located close to good public transport facilities. The nearest DLR stations are Beckton Park, immediately to the North that connects to the Jubilee Line at Canning House every 15 minutes.

A bus service also runs from Beckton Park station. London City Airport offers flights to a number of European and international destinations.

A proposed cable car will provide good links across the Thames.

4.1.5 Amenity Space

There are extensive playing fields immediately to the north of the site with no fewer than seven football pitches.

4.1.6 Other amenity spaces include:

- The River Thames waterfront
- Ecological corridors
- Playing fields
- Open grassland
- Thames Park
- Albert Dock waterfront
- Supermarkets

4.2 Opportunities and constraints

4.2.1 The key opportunities are:

- The south facing site has open views over the former dock towards London City Airport
- There are good public transport connections with the possibility of a cable car extension
- There are good connections to an International Airport
- The site is level
- There is potential for vibrant waterfront activity
- There is an opportunity to link landscape and enhance the biodiversity of the site
- The close proximity to London Borough of Newham Council offices is an advantage
- Real opportunities to connect the site with the local community and wider London initiatives
- For sustainable travel (cable car extension) and sustainable built environment
eg: building integrated renewable technologies and green roofs

4.2.2 The principle constraints are:

- Access to the site is currently by a large vehicle ramp off the dual carriageway roundabout. The ramp destroys the character of the listed buildings
- The public transport hub is located beneath the roundabout with poor access to the site for pedestrians
- The site contains two historical buildings which must be retained. The two buildings are Listed Grade II. The English Heritage - Heritage at Risk Register 2009 (Page 88) highlights these two buildings as follows; "Central Office and central Building at Custom House , Royal Dock E16, Listed Building Grade II, condition- Good, Occupancy vacant. Offices and Restaurant built 1883 top the design of Vigers and Wagstaffe in the manner of Norman Shaw, Repaired and mothballed' by the London Docklands Development Corporation. Now owned by LDA . . . No current plans for building."
- There is noise pollution from London City Airport to the south and the highway to the north
- Building height constraint due to airport

5 Conceptual masterplan

Llewelyn Davies Yeang have developed a radically new approach to physical planning – one that is environmentally driven. Ecomasterplanning reinforces the specificity of a site, more than the traditional contextual analysis, comprehension of place, history, connectivity, etc. Whilst reinforcing the importance of these factors, ecomasterplanning penetrates much deeper into the natural loci of the site. This unlocks a positive ecological attitude to a project which, at the outset, defines the design process and outcome.

This process also ensures concurrent responses to cultural context and to the local community, which have evolved from their geographic and environmental background. Formally, LDY projects exude a signature spirit and energy that create unique plan forms and built configurations. Underpinning this is a parallel deep understanding of an approach to masterplanning that signals a major leap forward in the way we consider and plan for sustainable and responsible environments, whilst ensuring they embody pleasurable experiences for users and address the need to deliver financial successes to their clients.

Ecomasterplanning represents a significant move forward, given the global context and imperative within which we all now function. The approach points towards a future for planning. It recognises that the essence of an appropriate response resides in a deep understanding of the role and responsibilities of the masterplanner towards adopting an affirmative ecological approach to planning.

The Ecomasterplan





GREEN

Ecological characteristics and continuity of landscape

Amount of green landscaping; ecological assessment for the area count of biodiversity

Landuse

Air, soil pollution



BLUE

Flood protection

Rainwater and storm water management

Water consumption

Water quality for watercourses; water pollution



GREY

Passive and energy efficient design

Energy production, including renewable energy sources

District energy networks

Waste management and recycling



RED

Planning policies

Local restrictions on pollution waste, landfill use, etc

Amenities available

Social integration

Community involvement

INFRASTRUCTURES

Ecomasterplanning Assessment Tool (EmAT)©

6 Ecomasterplanning features

Llewelyn Davies Yeang brings a sustainable approach to masterplanning that sees the process as the positive and seamless integration of four strands of ecoinfrastructure into a system. These are, the Green infrastructure being nature's utilities and the creation of new habitats; the blue water-management infrastructure being close-loop water management and sustainable drainage; the grey infrastructure being eco-engineering systems and utilities; and the red infrastructure addressing issues such as the human society, buildings, lifestyles and legislation.

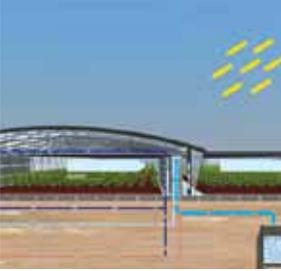
This approach to masterplanning reinforces the unique nature of each site. It considers the location and context unlocking a positive sustainable response. This process ensures an integrated approach and a robust cost-effective solution.

6.1 Green ecoinfrastructure

The Royal Docks Ecobusiness Park should be designed to create an ecological nexus and continuous habitat horizontally and vertically within built-up areas, linked to the hinterland as a biome. This entails:

- Design based in an ecological survey and assessment of the ecology of the area
- Retention of existing, and creation of new, ecological corridors, fingers, ecobridges and undercrofts to link green spaces and parks across existent urban landscape and to hinterland
- Evaluating the natural habitats in the built-up area, including vertical and horizontal areas, internal gardens, etc.
- Researching the ecological history of sites prior to human intervention as the basis for design and rehabilitation of the ecology of localities devastated by humans
- Biointegration of urban land use with natural areas
- Identifying edaphic factors and including soil protection, prevention of sedimentation leading to siltation of water bodies, etc.
- Identifying areas with productive soil for food production
- CO₂ sequestering and air pollution reduction using plants and trees
- Biodiversity enhancement. Creation of new habitats, setting of biodiversity targets (benchmarking), ecological assessment, biodiversity counts and comparison to the biodiversity in surrounding countryside
- Ecosystem(s) protection
- Flood protection
- Creation of green ecoinfrastructure





6.2 Blue ecoinfrastructure (water)

The Royal Docks Ecobusiness Park should be designed to close the water cycle, to manage water and create sustainable drainage systems. This involves:

- Rainwater harvesting
- Monitoring of ground water quality
- Management of surface water and sustainable drainage systems
- Urban waste water reuse and recycling (grey and black water)
- Water conservation systems
- Management of water quality in watercourses and avoidance of water pollution from emissions
- Water treatment and sewage treatment
- Urban water reticulation systems
- Sustainable drainage systems – bioswales, retention ponds, filtration strips, constructed wetlands
- Retrofitting of water management and drainage systems in existing cities and urban areas

6.3 Grey ecoinfrastructure (cleantech engineering and environmental systems)

The Royal Docks Ecobusiness Park should be designed to reduce consumption of non-renewable resources and reduction of carbon emissions and environmental pollution. This involves:

- Optimisation of passive-mode and mixed-mode solutions as low-energy design
- Miscellaneous engineering systems e.g. IT and telecommunications, street lighting, etc.)



- Closing the materials cycle: reuse, recycling and reintegration, DfD (Design for Disassembly)
- Large scale composting systems such as ROCKET with waste collection and separation by ENVAC vacuum systems)
- Anaerobic Digestion waste-to-energy plant supplying CHP/trigeneration dealing with waste from the development but also from the community around the development
- Materials being sourced sustainably (certifications, reuse, recycling, disposal, renewable components, etc.
- Transportation systems and modalities, personal and collective systems, high mobility versus energy consumption, density of road areas/inhabitant, availability and distance to communal amenities (retail, schools, social services, etc.) Assessment of average transport energy or carbon costs per inhabitant
- Embodied energy of engineering systems
- Cleantech engineering systems in the retrofitting of grey systems in existing cities and urban areas
- Dock water cooling with water source heat pumps
- Building integrated Photovoltaics (PV)
- Building integrated wind turbines
- Concentrated reflector solar Photovoltaics and Solar Hot Water
- Combined PV & Thermal solar (PVT)
- Solar hot water supplementing district heating
- Hydrogen fuel cell CHP

6.4 Red ecoinfrastructure (Humans and human systems and quality of life issues)

The Royal Docks Ecobusiness Park should be designed for a sustainable lifestyle, a sustainable society, with sustainable services, industry and economy including:

- Sustainable human lifestyles and social systems (low energy and low carbon footprint lifestyle, diet and food, mobility issues, comfort conditions, etc.)
- Sustainable industries, amenities, services and economics
- Policies : Tax incentives, Grants, % of budget dedicated to sustainability, local restrictions on pollution, waste, landfill use, etc.
- Societal rules, laws and regulations
- Review of environmental comfort: inside, outside (ambient temperature, humidity, air change, etc.)
- Cultural events and celebrations
- Health and Safety issues
- Creation and provision of new sustainable employment
- Sustainable lifestyle goals
- Economic viability / business plan
- Long term resilience issues (climate change (temperature, storms, floods, rainwater), self sufficiency in terms of water, food and energy, and adaptability to new technology
- Flexibility to support new clean technologies and innovation
- 'Happiness' and well-being issues
- Changing to sustainable eco lifestyles, social systems. business models and production systems and functions in the retrofitting of existing cities and urban areas



6.5 Ecomasterplanning Assessment Tool (EmAT©)

Llewelyn Davies Yeang have developed a bespoke tool – EmAT © (Ecomasterplanning Assessment Tool) that will be employed to ensure the ecomasterplan is robust and has inbuilt flexibility.

6.6 Zero carbon development

The aim is to build a zero carbon development in line with Government aspiration for 2019. We would aspire to become a positive energy site, exporting on-site generation to the local community.

7 The value chain

7.1 The Royal Docks Ecobusiness Park

Envisaged as a major source of knowledge related to sustainability, cleantech industries and the renewable energy sector in the UK.

The Ecobusiness Park will accommodate several knowledge-based institutions including universities, research foundations and laboratories. These will form the basis of a so-called 'value chain'. Within the site there will be a variety of 'Cleantech' demonstration projects including wind turbines and photo voltaic arrays, geo-thermal and waste-to-energy plants that will be evaluated in terms of their performance in temperate climate conditions thus forming the next link in the value chain.

The final stage in the value chain will see the implementation of the most successful of these technologies via Small and Medium-sized Enterprises (SME's). In short the Ecobusiness Park seeks to create synergy between researchers, entrepreneurs and investors.

It is envisaged that Cleantech industries could be created in six categories:

- Energy generation
- Energy efficiency
- Water
- Manufacturing
- Transportation
- Waste and recycling



7.1 Energy generation

- District heating and connecting to local community plus dock water cooling where needed. Passive low carbon designed buildings with integrated renewable like PV and wind.
- Biogas from organic matter (anaerobic digestion)
- Ethanol from a biofermentation process
- Genome engineering
- Algae biodiesel
- Biogasoline
- Solar hot water systems
- Solar/concentrated PV
- Silicon research
- Advanced batteries – flow batteries and fuel cells
- Microinverters in solar cells
- Thin film PV cells (cadmium telluride and amorphous silicon)
- Monocrystalline silicon solar cells



7.2 Energy efficiency

- Mineralisation via Aqueous Precipitation
- Low carbon heating and cooling pumps
- Building automation
- Energy storage systems
- Hydrogen storage
- Innovative building insulation
- Smart lighting systems
- Solid state lighting (LED)
- Solar-powered portable lights
- Carbon accounting (carbon calculators)
- Smart grids
- Smart metering



7.3 Water

- Wastewater treatment
- Purification processes
- Engineered Reverse Osmosis



7.4 Manufacturing

- Advanced bioprocesses (green building blocks)
- Polymers
- Isotopes
- Lithium extraction
- Work with Newham College, UEL and LSBU regarding training the local work force in green skills



7.5 Transportation

- Electric vehicles
- Electric motors
- Recharging facilities
- Solar powered cars
- Car sharing systems
- Cable car technologies



7.6 Waste-to-energy and recycling

- Anaerobic digestion and biomass gasification
- Emissions control
- Plastics/rubber recycling
- Metals recycling
- Monitoring systems

8 Benefits to London Borough of Newham

8.1 Employment opportunities

The development will generate local employment in the construction phase and when the Ecobusiness Park is fully operational. The consortium will work with the London Borough of Newham to promote local employment schemes. The Park will provide training to local people.

8.2 Income generation

The new Green Economy will provide economic benefits to the London Borough of Newham by bringing investors into this new growth area with a subsequent uplift in business rates.

8.3 Ecobusiness tourism

The development will showcase state-of-the-art Green Technology and Research attracting informed visitors. The Ecobusiness Park will also promote a waterside 'café culture' for anecdotal evidence suggests that many inventive ideas emerge not from the laboratory but as result of interaction after office hours in local 'watering holes' i.e. pubs, restaurants and cafes in close proximity to research enterprises.

8.4 Links with community of Beckton

The development will benefit the local community by improving energy production and waste treatment.

A key part of the ecobusiness park vision is an energy and waste infrastructure reaching out into the local community through district heating and cooling networks, waste and recycling collection schemes. This should lead to community wide waste to energy schemes including renewable biogas combined heat and power (CHP) from organic waste (anaerobic digestion). At the centre of the development will be an energy centre with large scale ground and water source heat pumps alongside renewable CHP. Renewable dock water cooling will supplement the energy centre supplying a heating and cooling network to all the buildings and the local community as required.

Establishing a connection to the waterfront incorporating a public plaza and convention centre and constructing part of a riverside promenade that will eventually link to sites to the East and West.

8.5 Catalyst for improvement

The development will be a catalyst for improvement to infrastructure and transportation systems including utilisation of the London Docklands Light Rail station. River travel will be promoted and it is proposed that the Cable Car project linking the O2 Arena with the Siemens Pavilion be extended to the Ecobusiness Park.

8.6 Integration

The development will be integrated with London Green Grid, smart grid, and the Mayors' municipal waste strategy.

8.7 Focal point

The development will create a new and exciting focal point for the Royal Albert Docks.

8.8 Zero carbon development

The development will link to the LDA proposed London Thames Gateway Heat Network that will supply affordable low-carbon heat from sources including Barking Power Station and the Tate & Lyle sugar refinery. Heat from developments will be captured and the hot water distributed via pipes to properties where the heat will be used for domestic hot water and central heating, replacing conventional boilers.

8.9 Regeneration

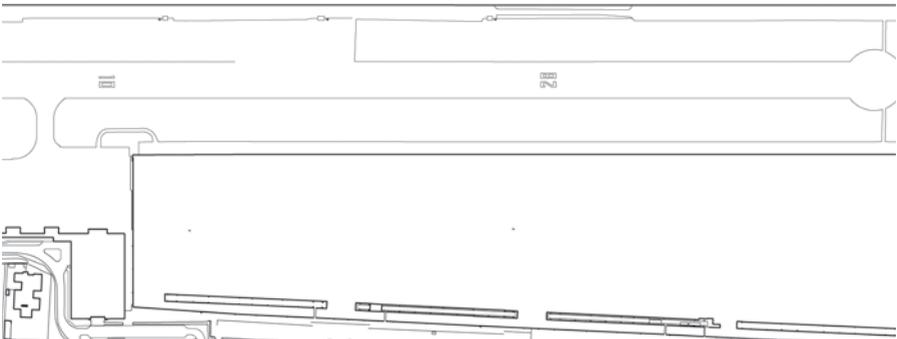
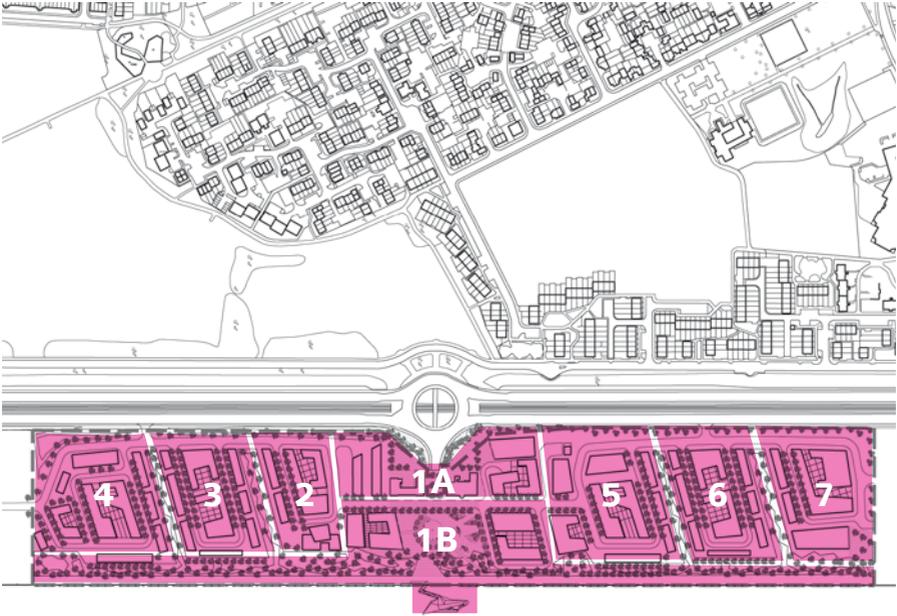
Regeneration of the Royal Docks will be a catalyst for the regeneration of the entire area.

8.10 Pioneering initiatives

The Ecobusiness Park aims to position Newham as a global destination for sustainable development.

8.11 Knowledge Transfer Partnerships

The development will facilitate Knowledge Transfer Partnerships to bridge the gap between innovation and implementation.



9 Development overview

9.1 Phasing diagram

Phase 1A (2012 – 2015)

Involves establishing a presence at the entrance to the site from the Docklands Light Rail (DLR) station. Creating a link to the hinterland to the north with an ecobridge or ecoundercroft.

Phase 1B (2014 – 2017)

Establishing a connection to the waterfront incorporating a public plaza, hotel and convention centre and constructing part of a riverside promenade that will eventually link to sites to the east and west.

Phase 2 (2015 – 2018)

Extension of the R&D and SME facilities to the west

Phase 3 (2016 – 2019)

Further extension of R&D and SME facilities to the west

Phase 4 (2017 – 2020)

Further extension of R&D and SME facilities to the west

Phase 5 (2018 – 2022)

Extension of facilities to the east to link with UEL Research facilities.

Phase 6 & 7 (2012 – 2025)

Site allocated to UEL expansion

9.2 Construction plan

June 2011

LDY Design commencement
for planning submission

Dec 2011

Planning submission for Phase 1A – 5

March 2012

Planning approval

Sept 2012

Construction commencement

Construction commencement completion 2012 – 2015

Phase 1A

Construction commencement completion 2014 – 2017

Phase 1B

Construction commencement completion 2015 – 2018

Phase 2

Construction commencement completion 2016 – 2019

Phase 3

Construction commencement completion 2017 – 2020

Phase 4

Construction commencement completion 2018 – 2022

Phase 5

10 Next steps

- 01 Enter into negotiations with landowner – ideally as partner in the development.
- 02 Gain the support of the London Borough of Newham to actively promote the development.
- 03 Gain the support of the London Borough of Newham with regard to infrastructure improvements.
- 04 Work alongside UEL to develop green technology and sustainable construction.
- 05 Achieve a masterplan that compliments the Thames Gateway development.
- 06 Achieve a Memorandum of Understanding (MOU) between the London Borough of Newham and VENUS.

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