Brighton One Planet Living
Blocks E & F
New England Quarter

Sustainability Action Plan

For Crest BioRegional LLP

Crest NICHOLSON

BioRegional

QUINTAIN ESTATES AND DEVELOPMENT PLC

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1 Executive Summary

1.1 Scope of this document

This Sustainability Action Plan outlines the vision that Crest Nicholson BioRegional Quintain[1] has in creating a truly sustainable community as part of the New England Quarter development in Brighton.

The Plan has been conceived as a touchstone document recording our over-arching sustainability aspirations and commitments relating to the development of Blocks E & F, as well as providing more detailed proposals using the framework of the ten One Planet Living[2] Principles.

The document will evolve and be refined over time as the detailed design and development phases unfold. Throughout this process, it is envisaged that the Sustainability Action Plan can be used to both express our sustainable vision to a wide stakeholder audience, in addition to being used by the design team to inform our development and construction processes to ensure that the ethos is delivered.

This document does not represent an Environmental Statement, but should be considered as part of the suite of documentation and drawings illustrating our proposals.

Via this Sustainability Action Plan we aim to demonstrate our commitment to creating a truly sustainable community in Brighton which rises to the One Planet Living challenge, and achieves the stretching sustainability targets set for the site by Brighton and Hove City Council.

This Sustainability Action Plan records the vision of the proposed scheme, as well as summarising the associated sustainability targets, delivery mechanisms and aspirations.

1.2 Vision for Blocks E & F – New England Quarter

A masterplan for the regeneration of the 8 hectare site in Brighton city centre was approved by Brighton and Hove City Council in September 2003. The overall New England Quarter (NEQ) proposal was for a mixed-use scheme including:

- 355 residential units
- New car park for the station
- Sainsbury food store
- Community facility
- Training centre
- Office and workspace
- Two hotels
- Language school

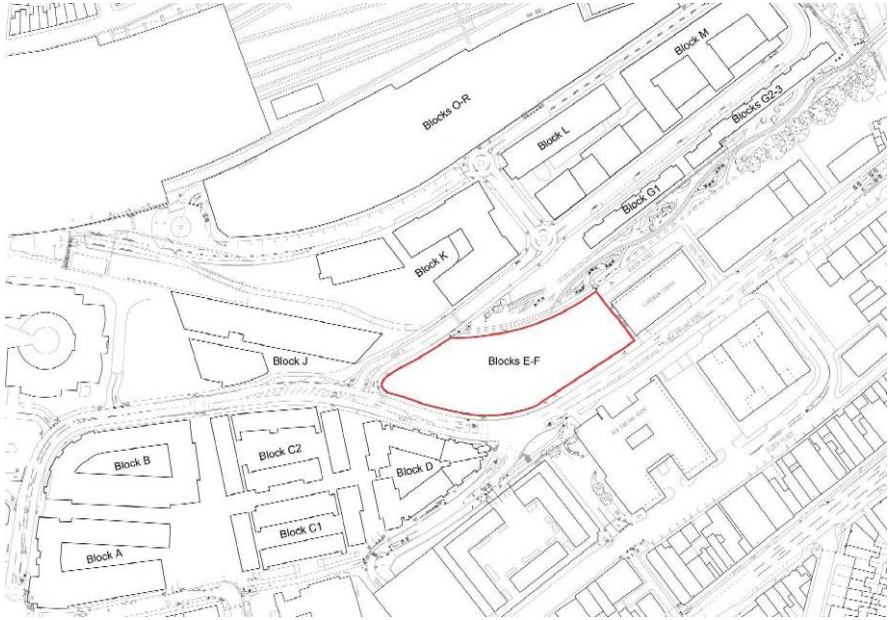
As part of the overall masterplan, Blocks E & F secured outline planning permission for a proportion of the residential units, as well as commercial space and a community facility.

The New England Quarter masterplan vision expressed clear commitment to developing with high regard to sustainability issues. This includes achieving a 40% reduction in carbon dioxide emissions associated with building energy.

Our vision for developing Blocks E & F, as part of the wider New England Quarter community, is to create a new community which enables residents to lead sustainable lifestyles from day one and into the future.

[1] Crest Nicholson BioRegional Quintain is a joint venture between Crest Nicholson and BioRegional Quintain established to develop this project in Brighton. Further information on both partner organisations is located in section 3 of this document

[2] One Planet Living is a joint initiative between WWF and BioRegional Development Group. The international initiative aims to make sustainable living affordable, attractive and easy through working with partners to support the creation of sustainable products, services and communities. 'One Planet Living' is a registered trademark of WWF and BioRegional. www.oneplanetliving.org



Plan and aerial visualisation of New England Quarter: images FCB

2 Vision for One Planet Living

2.1 Sustainability imperative

We live in a global society in which our consumption of energy and natural resources and our production of waste are ever-increasing. WWF's *Living Planet Report* [3] states we are collectively living beyond our means and need the equivalent of 1.2 planets to support ourselves at current rates of consumption[4]. Furthermore, if everyone on the planet were to consume natural resources and pollute the environment as we currently do in the UK, we would need three planets to support us.

The three-planet challenge

We rely on the earth for the resources we need to sustain our lives and to absorb our waste. Living unsustainably beyond the regenerative carrying capacity of the earth is resulting in the degradation of our environment and diminished human wellbeing which may ultimately leave future generations with a planet that is unable to sustain human life.

There is broad international recognition of the sustainable development imperative, as expressed in global initiatives such as the Kyoto Protocol to the United Nations Framework Convention on Climate Change and the Agenda 21 movement. A significant amount of legislation governing and promoting sustainable development has also been introduced at national and international levels. For example, within Europe EU legislation and targets in relation to energy and waste are leading to a greater emphasis on renewable energy generation and more efficient use of resources, with increased re-use, recycling, composting, and recovery of value from residual waste.

[3] WWF International (2004), 'Living Planet Report 2004', Switzerland

[4] Moreover, global consumption rates are increasing with an increasing population and economic growth

2.2 The one-planet challenge

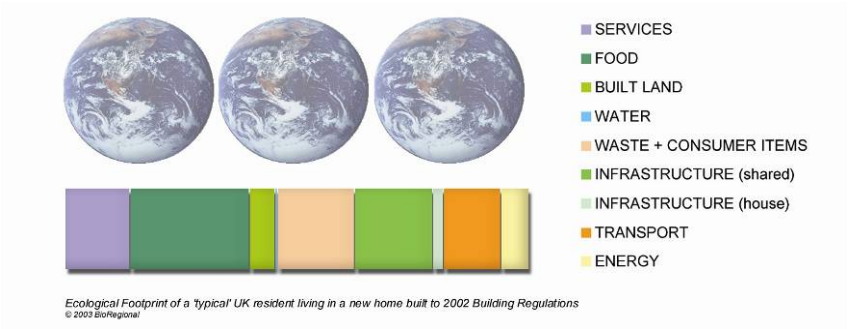
The terms ‘sustainability’ and ‘sustainable development’ are used increasingly in relation to elements of our built environment and aspects of our day-to-day lives, but there are inconsistencies and uncertainties about what is actually meant by the terms. This section identifies ecological footprinting as a valuable ‘common language’ methodology for measuring our impacts, and the potential for the One Planet Living framework as a way of addressing the issues.

Ecological footprinting methodology provides an accounting tool that represents environmental impact in terms of the area of biologically productive land required to produce a particular natural resource, absorb waste materials arising from consumption and cope with the carbon dioxide emissions associated with the energy demands.

The ecological footprinting figures from WWF’s Living Planet Report suggest that the UK needs to reduce its consumption of fossil fuels and virgin materials by two-thirds to be environmentally sustainable as part of a concept of living within a fair share of the Earth’s resources. To achieve this reduction in consumption, we need to develop buildings, infrastructure and lifestyles that are consistent with ‘one planet’ ways of living.

2.3 Importance of infrastructure and lifestyles

The diagram below illustrates one way of separating out the ecological footprint of a ‘typical’ UK individual into the component aspects of their lifestyle. The diagram highlights the relative importance of lifestyle choices compared to the impact of our buildings (i.e. the footprint associated with our food consumption compared to the impact of the materials used in our home). The diagram also shows the importance of our shared infrastructure and services (e.g. the impact of airport buildings, hospitals, banking and financial services etc.). It is difficult for individuals to address and reduce the impacts associated with these shared impacts.



Expressing where our environmental impacts come from

In striving to achieve a sustainable future, we need to consider designing communities which enable people to choose to live sustainably. In such communities, the commuting distance between home and work, where the food comes from and how waste is dealt with will be as important as, if not more important than, the energy performance of the buildings.

To enable these sustainable lifestyle choices it is fundamental that communities are provided with appropriate efficient infrastructure (e.g. district heating solutions) and service provision (e.g. access to car clubs). In this regard, the greatest opportunities are achievable in new communities and those benefiting from extensive regeneration.

The understanding of where our environmental impacts come from and how to best support sustainable lifestyles has greatly informed the development of our proposals for Brighton.

2.4 One Planet Living initiative

To help communicate the challenge we all face in reducing our environmental impact, and to facilitate change at local and global levels, BioRegional Development Group (BDG) and WWF have recently launched the *One Planet Living* initiative. The initiative aims to build on the work of both organisations to promote the concepts of sustainable development and ecological footprinting.

If we are to achieve One Planet Living, we need to rise to the challenge as individuals and as communities and organisations. We need to consider every aspect of how we live and build to enable and make lifestyle choices to reduce our environmental impact.

The One Planet Living programme is structured around ten Principles, which act as a framework to express the sustainability challenge and a mechanism for developing and presenting solutions.

Zero Carbon	Sustainable Water
Zero Waste	Natural Habitats and Wildlife
Sustainable Transport	Culture and Heritage
Local and Sustainable Materials	Equity and Fair Trade
Local and Sustainable Food	Health and Happiness

As part of the One Planet Living initiative, developers and design teams are encouraged to use the Principles as a framework to develop and present their proposals.

Crest Nicholson BioRegional Quintain and their design team are using the framework of One Planet Living Principles to inspire and structure their vision for their Brighton proposals. Furthermore, the team are committing to the One Planet Living range of common international targets which establish over-arching standards to be met by developments by 2020.

3 Rising to the challenge

3.1 BioRegional Quintain

BioRegional Quintain Limited (BQL) is a recently formed joint venture partnership between BioRegional Properties Ltd (BPL) and Quintain Estates and Development plc (QED).

BPL is part owned by BioRegional Development Group (BDG), a registered charity, which is one of the UK's foremost environmental organisations. Among other projects, BDG was the initiator of the BedZED development in south London – the UK's largest 'eco-village' – and more recently worked with WWF-UK and London 2012 to produce the sustainability plan for London's successful bid for the 2012 Olympic Games.

Together with Quintain, one the UK's principal developers which is leading the regeneration of Wembley and (with partners Lend Lease) the Greenwich Peninsula, BQL will lead the market in the creation of sustainable community development.

BQL looks beyond current industry standards to enable residents to benefit from a 'green lifestyle' – in support of providing enhanced health and happiness, and reduced environmental impact and household expenditure. The company will explore the extensive use of e-marketing[5] and aims to lead the creation of a 'multi-skilled' construction system[6] to raise productivity and reduce the costs of sustainable construction.

[5] BQL consider that project websites could be enhanced to take forward marketing strategies by offering a range of information to prospective purchasers. Ultimately, the website should become the community extranet for the residents of the scheme

[6] The multi-skilled approach increases productivity and reduces costs by utilising standardised building components (as opposed to standardised building designs), and reducing the number of specialist trades, and trade and material interfaces, that exist in the construction project.

3.2 Crest Nicholson

Creating sustainable communities which are able to generate a sense of belonging is central to Crest Nicholson's business strategy. Every scheme planned by Crest Nicholson has as its main focus a potential to generate a true community spirit through the incorporation of features such as distinctive residential areas, with their own character and identity, generous areas of open space and essential amenities such as schools, shops and sports facilities.

An integral part of all Crest Nicholson's new schemes now is the provision of a viable infrastructure which does not rely on the use of the car. Many of it's newest developments feature designated cycle routes and integrated bus services linked to town centres thereby helping to create a safer and cleaner living environment.

Concerns for the environment are also always at the heart of it's development plans and, as a result, Crest Nicholson is increasingly engaged in partnerships with conservation organisations and wildlife trusts to ensure that the natural habitat continues to thrive on all it's developments.

In achieving sustainable development, Crest Nicholson believes it is necessary to take a long term strategic approach based on a combination of sound technical and sociological principles.

Crest Nicholson finished in top position in *Investing in sustainability* - the second benchmark report assessing how well UK house-builders manage and report on sustainability issues, recently published by Insight Investment and WWF.

The report records progress and performance among the UK's listed house-builders and is part of WWF's One Million Sustainable Homes campaign (OMSH), the aim of which is to move sustainability from the fringes to the mainstream of UK housing. The report looked at twelve UK house-builders quoted on the FTSE All Share Index, together accounting for 41% of all housing units completed in the UK in 2004.

Proposals for Middlehaven: Placemakers BQL JV is Preferred Developer

Ingress Park: Crest Nicholson RTPI and Evening Standard Award Winner

Park Central, Birmingham: Crest Nicholson 2005 Regeneration Awards Winner

BedZED Eco-village: BDG Multi-Award Winning Sustainable Development

4 Vision for Brighton New England Quarter

4.1 Description of development proposals

The proposed development is conceived as a mixed-use scheme sitting within a mixed-use neighbourhood. The development would offer a range of residential accommodation, a community space and commercial areas.

Through the design, specification and service provision, the proposed development would aim to make sustainable high quality living easy, affordable and attractive. The proposed development would offer:

- 172 homes (eco-studios, 1-bed, 2-bed and 3-bed units)
- 30% affordable homes
- 925m^2 (NIA) of community space
- 1134m^2 (NIA) of commercial space

Refer to the *Design Statement* document for further details.

Development proposals for Blocks E&F as part of New England Quarter

BioRegional Quintain Ltd

Buildings specified to reduce energy demands and achieve high levels of thermal efficiency. Zero carbon strategy includes on-site renewable energy generation

Recycling and composting made easy through the provision of on-site segregation and composting facilities. Ongoing support and guidance provided to occupants

Access to local services and public transport, providing a car club and facilities for cyclists, provision of ongoing information and support making it easy to live without a car

Development constructed using materials which offer high performance in use, but with reduced impacts in sourcing, manufacturing and transportation

Opportunities for on-site food growing within a tight urban site through innovative building design, with facilities and initiatives to encourage the consumption of local and seasonal produce

Water consumption reduced through the specification of efficient fittings and appliances. Rainwater harvested and used for irrigation and for WCs in community facility

Building design and landscaping strategy to promote biodiversity through the selection of planting, building finishes and habitat creation

Community trust and community extranet to be established, and Green Caretaker employed to support the ongoing sustainable management of the development. Sense of community and identity engendered

Mixed-use community offering private and affordable homes, including a proportion of eco-studios to address the challenge of providing intermediate affordable private homes to the local market

High levels of indoor air quality whilst optimising energy use. To provide access to pleasant outdoor space in an urban location. Ongoing sustainable management supported by commitment to monitor performance

4.2 The national and regional sustainability context

The need for sustainable development has been acknowledged by the UK government as a critical driver influencing how the country should grow and develop in the future. The government has made commitments on a wide range of social, economic and environmental targets[7].

The *Sustainable Communities Plan* sets out the Government's approach towards tackling the problems of housing supply and affordability, land availability and development delivery, neighbourhood decline and abandonment, as well as environmental and countryside pressures.

Of particular relevance to the development of communities in Brighton is the sustainable growth agenda for the South East of England. The Environment Agency reports that up to 3.8 million new homes will be required in England and Wales by 2021, mostly in the South East, which could clearly conflict with the UK government's sustainable development aspirations and targets unless these homes, and the communities in which they are placed, are built to strict standards for sustainability.

In support of ensuring the sustainable development of the South East region, the South East England Development Agency (SEEDA) has been closely involved in two important pieces of work: *'Taking Stock,'* an ecological footprint of the South East, and *'The Sustainability Checklist,'* a guide for new developments in the South East.

The 2003 *'Taking Stock'* report[8] considers the environmental impact of people living in the South East of England (excluding London).The report concluded that the ecological footprint of the average resident living in the South East region was higher than the UK figure and nearer 3.5 planets, due largely to increased consumption and travel associated with greater affluence.

The *SEEDA Sustainability Checklist*[9] has been developed as a region-specific tool for assessing new developments and the impacts of the people living within them. The tool is designed for local authorities and developers to use when planning or building large developments in the South East, including new estates, urban villages and regeneration projects.

The Checklist identifies key sustainability issues and groups them under ten headings with questions raised under each detailing available development options. Strategies to achieve 'Good Practice' and 'Best Practice' are communicated using performance indicators.

In addition to drivers, such as changes in planning and building legislation, as well as the South East Plan and SEEDA work outlined above, there are further socio-economic drivers which are steering towards sustainable development in the South East. For example, the scarcity of fossil fuels will almost inevitably result in continued increasing energy prices in the future, hence there is growing interest in compact mixed-use communities comprising energy efficient buildings in which transport and domestic energy consumption is reduced.

Furthermore, as pressure on landfill capacity increases waste disposal costs, people will increasingly seek resource-efficient products and homes in communities which make recycling easy. The Environment Agency has estimated that in the South East of England, there is less than 5 years of landfill capacity remaining within existing sites.

The table below considers how the framework of 10 One Planet Living Principles relates to the areas of impact identified in the *Taking Stock* ecological footprinting study. The framework extends beyond the 'consumption'-related issues to address further key aspects of sustainability, such as culture and happiness.

[7] The 2005 *UK Sustainable Development Strategy – Securing the Future* sets out the government's objectives and responsibilties under four key priority areas: sustainable consumption and production, climate change and energy, protecting natural resources and environmental enhancement and sustainable communities

[8] The report was produced by the Stockholm Environment Institute in York (SEI) et al with support from SEEDA as part of the Biffaward Programme on Sustainable Resource use

[9] The Checklist was developed by the Building Research Establishment (BRE) for SEEDA

4.3 Ecological Footprint of a resident of the South East

Principle	Percentage of SE Ecological Footprint
Zero Carbon	*Energy Use in Buildings:* ***12%*** *(8% from Households / 4% from Commercial)* ≈ **0.45 planets** of 3.6 planet total
Zero Waste	*Manufactured Durable and Consumer Goods:* ***7%*** ≈**0.26 planets** of 3.6 planet total
Sustainable Transport	*Personal transport (2000):* ***12%*** ≈ **0.42 planets** of 3.6 planet total
Local and Sustainable Materials	*Construction Materials:* ***17%**** ≈**0.62 planets** of 3.6 planet total *Freight Transport:* ***9%*** ≈**0.3 planets** of 3.6 planet total
Local and Sustainable Food	*Food Consumption:* ***25%*** (23% from Households / 2% from Restaurants) ≈ **0.89 planets** of 3.6 planet total
Sustainable Water	*Water Use in Buildings:* ***0.2%*** (≈ 0.2% from Households / ≈ 0.01% from Commercial) ≈ **0.007 planets** of 3.6 planet total
Natural Habitats and Wildlife	*Percentage of South East Ecological Footprint related to built land area (2000):* ***1.5%*** ≈ **0.05 planets** of 3.6 planet total No specific value associated with Natural Habitats WWF Living Planet Report suggests setting aside 10% of biologically productive land for wildlife
Culture and Heritage	No specific value associated with Culture and Heritage, Equity and Fair Trade or Health and Happiness
Equity and Fair Trade	
Health and Happiness	*Commercial and Public Services (2000):* ***17%*** *(15% from Commercial / 2% from Public)* ≈ **0.6 planets** of 3.6 planet total

* - The 2003 One Planet Living in the Thames Gateway study, undertaken by BioRegional Development Group and Stockholm Environment Institute, found that of the total ecological footprint impact of construction materials approximately 90% was associated with materials used in shared infrastructure compared to 10% used in the construction of homes

4.4 The local sustainability context

Brighton and Hove City Council has developed a stretching and comprehensive vision of what sustainability means to the area from a triple-bottom-line perspective. The 12 key objectives identified (see below) have been expressed in their *Sustainability Strategy* and through a corresponding series of *Action Plans*[10]:

- Access to basic elements of life
- Air quality
- Culture, recreation, tourism and leisure
- Economy and work
- Education and training
- Energy use
- Community safety
- Housing
- Land use
- Natural environment
- Transport
- Waste

In developing this Sustainability Action Plan for the Quintain development proposals, the Brighton and Hove City Council's Sustainability Strategy, Sustainability Checklist and the other documents and studies outlined above have all been actively considered. A response to the Sustainability Checklist has been included as an appendix to this document.

[10] The current iterations of the Action Plans relate to 2004-06

4.5 New England Quarter Sustainability

The planning brief for the development of the New England Quarter has clear aspirations for the creation of a sustainable neighbourhood. As part of the outline planning permission, various sustainability ‘requirements’ were stipulated for the development of Blocks E&F.

This Sustainability Action Plan demonstrates how the development proposals satisfy (and exceed) these planning requirements. The commitment to further in-house developer targets beyond the remit of the planning brief provides a broader definition of sustainability and a demonstration of its incorporation at the core of the proposals.

The table below records how the Sustainability Action Plan, and suite of supporting planning documents, responds to the planning ‘sustainability’ requirements:

	Section 106 Criteria	Response	Supporting evidence
1.1	Submission of **AM11 Building Energy and Environmental Modelling Prediction** confirming that at least 40% carbon savings will be achieved	• Zero Carbon strategy includes measures to achieve carbon savings in excess of 40%, and to make the proposed development a net carbon-neutral scheme • Modelling methodology has been produced	• Methodology and proposals recorded in Zero Carbon Plan summary in **Section 7.1** of this **Sustainability Action Plan** document • A further bullet-pointed summary can be found in **Section 5** of this SAP document
1.2	Submission of **Efficiency of Development Report** giving details of:	• This **Sustainability Action Plan**, together with the supporting **Design Statement** represent the Efficiency of Development Report	• See left and below
	• Daylighting/sunlighting	• Key consideration in design development	• Zero Carbon Plan summary in **Section 7.1** of this **Sustainability Action Plan** document • **Design Statement** (Section 3.3)
	• Passive solar heating	• Thermally massive structure	• Zero Carbon Plan summary in **Section 7.1** of this **Sustainability Action Plan** document
	• Passive ventilation and cooling	• Thermally massive structure with efficient assisted ventilation	• Zero Carbon Plan summary in **Section 7.1** of this **Sustainability Action Plan** document
	• Building fabric	• Thermal performance consistent with highest EcoHomes/BREEAM ratings	• Zero Carbon Plan summary in **Section 7.1** of this **Sustainability Action Plan** document
	• Water reuse, reduction measures	• Efficient fittings/appliances and some rainwater harvesting	• Zero Carbon Plan summary in **Section 7.1** of this **Sustainability Action Plan** document
	• Renewable energy	• On-site biomass boiler and wind turbines, plus commitment to 'green' tariff investment in off-site provision	• Zero Carbon Plan summary in **Section 7.1** of this **Sustainability Action Plan** document
	• BRE EcoHomes 'Very Good' rating	• Commitment to EcoHomes 'Excellent'	• Appendix in **Section 7.7** of **Sustainability Action Plan**
	• BREEAM 'Very Good' rating	• Commitment to BREEAM 'Excellent'[11]	• Appendix in **Section 7.8** of **Sustainability Action Plan**
1.3	• EcoHomes Post Construction Review (PCR) assessment	• Commitment to EcoHomes 'Excellent' and PCR	• Appendix in **Section 7.7** of **Sustainability Action Plan**
	• BREEAM PCR	• PCR would be undertaken by occupiers of non-residential elements	• N/A
1.4	• Philosophy behind BREEAM/EcoHomes in **marketing literature**	• Marketing literature to have sustainable living embedded as a key message • Ongoing information and support will be provided through the community trust, community extranet and the role of green caretaker	• **Sustainability Action Plan** (Sections 4.7, 4.8)

[11] It is acknowledged that the proposed development is to 'shell and core' finish and therefore the full BREEAM rating obligation and assessment requirements will be the tenants' responsibilities

	Section 106 Criteria	Response	Supporting evidence
	• All occupiers supplied with **fact sheet** on sustainability	• Residents' packs will have sustainable living embedded as a key message • Ongoing information and support will be provided through the community trust, community extranet and the role of green caretaker	• **Sustainability Action Plan** (sections 4.7, 4.8)
2.6	Submission of **Green Procurement Procedure** giving details of:	• This **Sustainability Action Plan**, together with the supporting **Design Statement** represent the response to the need for a Green Procurement Procedure	• **Sustainability Action Plan** (section 5) • **Design Statement** (Materials section)
	• Use/reuse of sustainable accredited materials	• Target for 100% of timber used to be sustainably certified (such as FSC) or from recycled or reclaimed stock	• **Sustainability Action Plan** (section 5) • **Design Statement** (Materials section)
	• Embodied energy	• This issues has been considered as part of an overarching and comprehensive approach to sustainable materials	• **Sustainability Action Plan** (section 5) • **Design Statement** (Materials section)
	• Recycled content	• Stretch target has been set for 25% of materials to be recycled with focus on bulky materials and products	• **Sustainability Action Plan** (section 5) • **Design Statement** (Materials section)
	• Durability	• Materials selected from a 'whole life' perspective, e.g. balancing embodied energy of facade against need for robustness in coastal environment	• **Sustainability Action Plan** (section 5) • **Design Statement** (Materials section)
	• Ecological impact	• This issues has been considered as part of an overarching and comprehensive approach to sustainable materials	• **Sustainability Action Plan** (section 5) • **Design Statement** (Materials section)
	• Recyclability	• This issues has been considered as part of an overarching and comprehensive approach to sustainable materials	• **Sustainability Action Plan** (section 5) • **Design Statement** (Materials section)
	• Toxicity	• This issues has been considered as part of an overarching and comprehensive approach to sustainable materials	• **Sustainability Action Plan** (section 5) • **Design Statement** (Materials section)
	• Construction waste	• Stretch target set for minimising construction waste generated • Contractor will be required to develop and implement sustainable waste plan, potentially utilising BRE Smartwaste	• **Sustainability Action Plan** (section 5) • **Design Statement** (Materials section)
2.7	Other measures taken to achieve 40% CO_2 savings	• Refer to response to 1.1 above	• Refer to answer 1.1 above
		• In relation to non building related carbon dioxide emissions, the sustainable mobility strategies including zero private non-disable parking provision and the promotion of cycling etc. would further contribute towards reduced overall emissions associated with the proposed development	• **Sustainability Action Plan** (section 5) • **Accessibility Statement** and **Draft Travel Plan**
2.8	Submission of residential car share schemes	• Commitment to establish on-site car club with CityCarClubs • CityCarClub feasibility report confirms viability and potential for club to grow from 2 to 5 vehicles over time • Information on the car club and incentives for membership will be provided	• **Sustainability Action Plan** (section 5) • **Accessibility Statement** and **Draft Travel Plan**

4.6 Providing sustainable infrastructure

As stated earlier in this document, ecological footprinting analysis highlights the importance of our lifestyle choices in effecting our environmental impacts – the design of our buildings and infrastructure are fundamentally important to enabling sustainable lifestyle choices.

The Brighton proposals include provision of development-wide infrastructure solutions. These include individual fresh air heating and ventilation units linked to communal energy-efficient boiler plant running on biomass, and a sustainable waste solution including internal and communal external segregated bins. This sustainable shared infrastructure provision contributes towards making One Planet Living achievable.

Furthermore, the built form has been designed and specified to efficiently use materials which have optimised lifecycle impacts[12]. BioRegional Quintain is planning to develop and refine a construction system and methodology over a series of projects which will take a multi-skilling approach to support increased construction and workforce efficiencies. Our learning from Brighton will greatly inform this process.

Also addressed is the need for social infrastructure. This includes the provision of a community centre to act as a focus for the development and as a facility for the wider community. It is proposed that the centre will also represent a hub for One Planet Living activities locally offering support and outreach as part of a growing global network of One Planet Living communities and initiatives. This One Planet Living remit for the centre will be subject to securing third party funding.

BedZED exhibition centre: image LB Southwark

[12] For example, balancing the implications of selecting façade components with higher embodied energy levels, but which require less maintenance and have more durability in a coastal location

4.7 Supporting sustainable lifestyles

To enable residents at the New England Quarter development to lead sustainable lifestyles, it will be important to provide appropriate support and guidance.

A community governance body will be established, which is likely to be in the form of a community trust. Through the trust, and in partnership with other key stakeholders (including the Ethical Property Company), it is proposed to provide ongoing 'green lifestyles' support to occupants via a 'Green Caretaker'. It is envisaged that the caretaker, in addition to undertaking standard duties, would be the day-to-day face of the community trust and would ensure the provision of support and guidance to residents on green lifestyles issues, including transport, food and purchasing choices. The proposed community extranet would be kept up to date with relevant information on sustainable lifestyles and local issues by either the Caretaker or a third party contracted to the community trust.

Furthermore, all residents will receive a Green Lifestyles Pack when they move in. This will contain information on the development and the local area, guidance on sustainability and making informed choices to reduce environmental impact, as well as information on the BRE EcoHomes rating and details of the car club.

As part of the pack, residents will be able to purchase 'green' benefits from a range of 'green' goods and services. It is anticipated that these could include; car club and cycle club memberships, discounted cycle purchase and maintenance workshops, food box delivery trials and cookery lessons and discounts at local and fair trade retailers.

It is hoped that over time, the scheme could be further developed and evolve into a local 'eco-credits' currency. For example, under such as scheme residents could gain credits for recycling which they could spend on local bus journeys. This initiative would need to be further developed in consultation with local stakeholders.

As part of an outreach role, BioRegional Quintain will support a One Planet Living Plan for Brighton and Hove to promote an ecological footprint target of 1.5 gha/person by 2020 (equivalent to a one planet footprint). Furthermore, BioRegional Quintain proposes to provide copies of the upcoming 'One Planet Living' book to Secondary Schools in the area.

Cover of proposed One Planet Living book: image BDG and WWF

These two measures are examples of how, through embracing the One Planet Living challenge, BioRegional Quintain is seeking to influence the decisions and actions of a wider audience.

Whilst the proposed development would be able to greatly influence the impacts of those people 'using' the buildings and services, a One Planet Living Plan for Brighton and Hove, and disseminating the sustainability message into local schools, could help to transform policy, infrastructure and lifestyle decisions more widely.

4.8 Management and monitoring

The ongoing implementation of a management mechanism which supports the long-term vision of a truly sustainable community is very important. It is proposed to establish a community trust to take lead responsibility for this role. This trust will own the freehold of the development and act as a residents' association which will both represent and support the residents in living sustainably.

To understand the progress of the community in moving towards a 'one planet' level, it will be critical to undertake a programme of monitoring covering building performance, the uptake of sustainable services and the satisfaction of residents. This process will have three important aims;

- To feed into the production of annual One Planet Living reports illustrating progress to interested parties,
- To enable refinement of the sustainable management and support strategies over time to facilitate continual improvement,
- To provide evidence of a sustainable community in action to provide valuable case study information to the wider market.

Crest Nicholson BioRegional Quintain are committed to the benefits of ongoing monitoring and will undertake a suitable level during the development process. As stated earlier in this document, this Sustainability Action Plan is conceived as a dynamic document which will be appended periodically to reflect performance against targets.

Our commitment to undertaking BREEAM / EcoHomes post-construction reviews means that the 'as built' scheme will be measured against the BRE criteria.

Furthermore, as part of the One Planet Living initiative, the community trust will be tasked with monitoring and reporting against the 10 Principles and associated targets. This process will most likely include elements of metering (e.g. energy consumption), physical monitoring (e.g. recycling levels), and sample residents' surveys (e.g. travel habits and wellbeing).

Monitoring of sustainable mobility choices could be undertaken via an online survey submitted through the community extranet

5 Summary of targets, commitments and mechanisms

The series of 'Action Plans' ten tables starting overleaf records the aspirations, commitments and delivery mechanisms associated with the proposed development against the organising framework of the One Planet Living Principles.

The targets expressed represent internal project targets above and beyond the sustainability criteria associated with planning requirements.

The ten 'Action Plan' tables should be viewed as 'snapshot' summaries representing key elements of the proposed development at this stage. Many of the 'Action Plan' tables are supported by more comprehensive and technical reports produced by the design team. The table below highlights where this supporting information can be found.

Principle	Further information
Zero Carbon	• **Sustainability Action Plan** (Section 7.1)
Zero Waste	• **Design Statement** (Sustainable Waste section)
Sustainable Transport	• **Accessibility Statement** and **Travel Plan**
Local and Sustainable Materials	• **Design Statement** (Materials section)
Local and Sustainable Food	• **Sustainability Action Plan** (Section 7.3)
Sustainable Water	• **Sustainability Action Plan** (section 7.2)
Natural Habitats and Wildlife	• **Design Statement** (Landscape & Ecology section)
Culture and Heritage	• **Sustainability Action Plan** (Section 7.4)
Equity and Fair Trade	• **Sustainability Action Plan** (Section 7.5)
Health and Happiness	• **Sustainability Action Plan** (Section 7.6)

Zero Carbon	*Reducing carbon dioxide emissions by optimising building energy demand and supplying from zero/low carbon and renewable resources*
Strategy	

Over-arching Zero Carbon Plan developed	• Strategy developed that facilitates a net carbon-neutral development through addressing demand and supply issues
	• Zero Carbon strategy to ensure percentage carbon dioxide savings in excess of 40% site-wide CO_2 reduction target for New England Quarter
	• For further Details on Zero Carbon strategy refer to Fulcrum's *Detailed Proposals Report* and document entitled *CO_2 Emissions and Water Calculation Procedure and Comparison to Typical Scheme*
	• Targets developed in-line with One Planet Living Common International Targets
	• Targets developed with reference to EcoHomes and BREEAM standards which support achieving 'Excellent' ratings overall
	  • Target for net CO_2 emissions associated with providing heat and power for proposed development to be zero
	  • Target for CO_2 emissions (as defined under EcoHomes) for residential elements of proposed development to be < 25kg/m^2/annum
	  • Target for space heating demands for residential elements of scheme to be less than 30 kWhr/m^2/annum
	  • Target for energy consumption for hot water heating for residential elements of scheme to be less than 45 kWhr/m^2/annum
	  • Target for electrical consumption (including ventilation) for residential elements of scheme to be less than 45 kWh/m^2/annum

Approach	D	T	D/T	Mechanism	Notes
High thermal performance standards of built form	√			• Insulation levels to be in excess of 2002 Building Regulation minimums by 15% in-line with achieving maximum credits under relevant EcoHomes criteria. Proposed external wall construction has U-value of 0.21 W/m^2K (40% above 2002 Building Regulations) and window U-value of 1.3 W/m^2K (sufficient to preclude unwanted cold downdraughts)	
	√			• Window surface area for residential elements to be greater than 0.15m^2 per m^2 of floor area	
	√			• Target for air tightness of 5m^3/hour/m^2 @ 50 pa. This compares to Building Regulations maximum of 10m^3/hour/m^2 @ 50 pa	
Energy efficient appliances and fittings	√			• Provide A-rated appliances in homes and information to occupants on purchasing energy-efficient goods	
	√			• Building design to incorporate opportunities for natural lighting in circulation areas to reduce the need for artificial lighting	
	√			• Energy efficient light fittings specified internally and externally to secure maximum relevant EcoHomes and BREEAM credits, and to help ensure efficient lights are used in perpetuity	
	√			• Drying spaces in homes to provide energy efficient alternative to tumble driers	
Low/Zero carbon energy generation	√			• Centralised renewable energy system providing a carbon-neutral solution • <u>Heating and hot water:</u> • Biomass-fuelled boiler coupled to accumulator with back-up gas boiler. System specified to meet all hot water and space heating demands. Residential units to each have a consumer thermal interface that provides hot water as required to meet demand. Heating to each residential unit to be provided by fresh air heating system with high efficiency heat recovery	Undertaken in partnership with ESCO (Energy Services Company)

D – Design commitment / Developer responsibility T – Community Trust's responsibility D/T – Initial role for Developer with ongoing role for Community Trust

Approach	D	T	D/T	Mechanism	Notes
				• Summer time temperatures to be limited by façade design, exposed thermal mass and night time purge by ventilation unit • Condition of commercial tenancies and community space agreement that centrally-produced hot water is purchased, and that low energy strategies are adopted as part of fit-out. Electricity requirement to drive pump sets etc. provided by on-site wind generation. • <u>Electrical:</u> • Wind power generation via array of small-scale building-integrated wind turbines • Commitment to feasibility study investigating twinning development with new larger-scale wind turbine array in Brighton area • Remainder of electrical demand met via 'green tariff' supply contract between renewable utility provider and community trust with sub-metering via private wire to individual residents (currently exploring approach via 'opt out' of 28 day rule). REGO (Renewable Energy Guarantee of Origin) certified 'green tariff' selected to support the creation of new renewable capacity	
Ongoing management strategy	√			• Appropriate commissioning programme and quality monitoring (as BREEAM guidance) undertaken	With EPC The Ethical Property Company) and other occupiers as appropriate
		√		• Energy Services Company (ESCO) established as part of Community Trust to manage sustainable energy supply. ESCO to maintain/upgrade infrastructure and provide affordable sustainable energy to community	
		√		• ESCO to undertake ongoing energy/carbon monitoring with annual reports produced	

Zero Waste	*Reducing waste arising, then reclaiming, recycling and recovering*
Strategy	

Over-arching Zero Waste Plan developed	• Strategy developed in partnership with waste contractor(s) and other local stakeholders, which supports a long-term vision for a zero waste community
	• Strategy developed with reference to *Brighton & Hove Sustainability Waste document 2004-2006*
	• For further details of Sustainable Waste strategy refer to *Design Statement*
	• Targets developed in-line with One Planet Living Common International Targets
	• Targets developed with reference to EcoHomes and BREEAM standards which support achieving 'Excellent' ratings overall
	  • Target for household waste arisings to be 400kg /person/annum within 2 years of development completion (compared to 512kg/person/annum for UK in 2002/03 – Defra), with ongoing incremental reduction per annum
	  • By year 5: 50% of household waste to be recycled or composted
	  • By year 10: 70% of household waste to be recycled or composted
	  • By 2020: 98% of household waste to be diverted from landfill (could include recycling, composting, clean energy-from-waste)
	  • By year 5: 80% of all household organic waste to be composted on-site or collected
	  • Support commercial tenants in working towards recycling rates above contemporary benchmarks (currently 35% commercial recycling – Source: Brighton & Hove Council)

Approach	D	T	D/T	Mechanism	Notes
Reduced levels of construction waste	√ √ √			• Target for construction waste to be less than 15m^3 per 100m^2 floor area (refer to Constructing Excellence EPI) and less than 0.2% of construction cost • Development of comprehensive construction waste management plan, potentially with use of BRE SmartWaste system to provide monitoring data. This to be part of contractual obligations of building contractor • Investigate and promote (as appropriate) construction techniques that are efficient in the use of materials	In partnership with building contractor
Strategies to minimise waste generation		√ √		• Seek to promote (thru' shop leasing/rental agreements) a reduction in consumer product packaging sold through site-based activities • Trust to seek opportunities to liaise with and support EcoSys (www.greenbusiness.org.uk), local schools and organisations, including retail and commercial outlets, to promote waste minimisation	In partnership with third parties
Facilities and services to make recycling easy	√			• Building contractor will be responsible for delivering the infrastructure requirements of the Zero Waste plan	

Approach	D	T	D/T	Mechanism	Notes
	√			• Proposals developed to coordinate with Local Authority sustainable waste management strategy	
	√			• Provide space and storage within individual homes for the storage of segregated waste	
	√			• Provide corresponding divided bins externally for the storage of segregated waste	
			√	• Guidance notes, collection schedules and performance details available on community extranet	
Composting facilities			√	• Subject to securing appropriate licensing etc., it is proposed that 'green' waste (and hopefully kitchen waste) would be segregated for either on-site treatment using 'Bokashi Rocket' system (or similar), or for collection by local operator. Key aim to use compost generated as part of on-site food growing programme and/or to link with local farms as part of a closed loop food supply chain. Potential use of the compost on the adjacent greenway could be considered	
				• The viability and implications of co-collecting and treating domestic and commercial putrescible wastes will be further investigated	
	√			• Kitchen design and storage facilities to support collection and storage of organic waste	
Community Recycling			√	• Provide notice boards and space on extranet system, promoting the sale and or exchange of used and or unwanted goods	
		√		• Target to establish links between on-site non-residential occupants and existing local 'scrap stores'	
Ongoing Management Strategy		√		• Negotiation with local authority of the terms for engagement of third party waste management contractor	
		√		• Community trust to take responsibility for waste/recycling obligations and undertake ongoing waste monitoring with annual reporting	

Sustainable Transport

Reducing the need to travel and providing sustainable alternatives to private car use

Strategy	

Over-arching Sustainable Transport Plan developed	• Strategy developed which supports a long-term vision for a community with minimised transport impacts
	• Strategy developed with reference to *Brighton & Hove Sustainability Transport document 2004-2006*
	• For further details of Sustainable Transport strategy refer to *Accessibility Statement* and *Travel Plan documents*
	• Targets developed in-line with One Planet Living Common International Targets
	• Targets developed with reference to EcoHomes and BREEAM standards which support achieving 'Excellent' ratings overall
	  • 2010 target for annual total travel distance for residents of 20% below DfT NTS benchmark, or equivalent
	  • 2020 target for annual road vehicle travel distance for residents of 80% below DfT National Travel Survey benchmark, or equivalent
	  • Ongoing target to reduce transport related carbon emissions, based on a local benchmark, to level consistent with 'one planet' level by 2020

Approach	D	T	D/T	Mechanism	Notes
Reducing the need to travel	√			• Homes provided with conduits for the installation of broadband infrastructure	
	√			• Provision of non-residential space within the scheme, including community and commercial to support a mixed-use community	
	√			• Development sited within close proximity to a range of existing facilities and employment opportunities	
			√	• Communal internet ordering point and collection facilities for on-line orders, e.g. food boxes	
Alternatives to private car use: public transport	√			• Development sited within close proximity to established public transport hub – Brighton station	
			√	• Information on public transport options provided as part of residents' packs and via community extranet	
			√	• Work with car club and public transport operators to explore opportunities for offering limited discounted public transport travel as part of an over-arching sustainable mobility package – as part of ongoing process	
	√			• Proposal to provide two charging points for electric vehicles for use by car club and/or disabled drivers vehicles	
Alternatives to private car use: car clubs			√	• Car club established to serve residential and commercial users	
	√			• Discounted car club membership offered to residents as part of Green Lifestyles Package options	
	√			• No private car parking provision – spaces provided for car club vehicles and disabled provision only	
Alternatives to private car use: walking and cycling	√			• Strategy refined in consultation with Brighton & Hove's Walking and Cycling Officer, and reference to the Council's Cycling Strategy	
			√	• Secure and sheltered cycle storage provided for residential and non-residential users. Cycle parking provided for communal/casual use	

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Approach	D	T	D/T	Mechanism	Notes
	√			• Showering/changing facilities provided within commercial space to secure associated BREEAM credits – as part of fit-out	With Ethical Property Company
			√	• Information on opportunities to walk and cycle for day-to-day journeys provided as part of residents' packs and via community extranet	
			√	• Commitment to investigate feasibility of establishing cycle club, conditional on third party funding	
	√			• Discounted cycle purchase/service vouchers offered to residents as part of an over-arching Green Lifestyles Package options	
			√	• Stakeholder consultation to maximise opportunities arising from Brighton's status as a National Cycling Demonstration Town 2005-08	
		√		• Walking club to be established by community trust, or links established with existing clubs to support, as appropriate, Brighton and Hove's Walking Network initiative as part of the 2009 Walking and Cycling Year	
Ongoing Management Strategy			√	• Sustainable travel guidance provided as part of residents' pack with ongoing travel information provided via community extranet. Envisaged that timetables and running times would be provided through link to www.citytransport.org	
			√	• Personalised sustainable travel planning session offered to residents as part of Green Lifestyles Package (potential link with local cycle group - www.bricycles.org.uk and/or to Sustrans)	
		√		• Envisaged that ongoing monitoring of transport impacts in partnership with CityCarClubs	
		√		• Proposed that Green Transport Coordination role undertaken by Green Caretaker	
		√		• Negotiations entered into with Sainsbury and other retailers to provide discounts to car club members on health related / travel purchases	
		√		• Carbon neutral air travel explored with air carrier and carbon offset business as part of over-arching sustainable mobility package, with discounts for travel insurance etc.	

Sustainable and Local Materials

Materials chosen for buildings and infrastructure to give high performance in use with minimised impact in manufacture and delivery

Strategy	

Over-arching Sustainable and Local Materials Plan developed	• Strategy developed which supports a long-term vision for a community with optimised material lifecycle impacts
	• For further information on Sustainable and Local Materials strategy refer to *Design Statement*
	• Targets developed in-line with One Planet Living Common International Targets
	• Targets developed with reference to EcoHomes and BREEAM standards which support achieving 'Excellent' ratings overall
	• Plan to include a method statement on the opportunities for designing for deconstruction
	  • Target for embodied CO_2 to be less than 700kg/m^2 (excluding any energy/ventilation plant e.g. wind turbines)
	  • Target for 25% of materials to come from recycled/reclaimed sources (including recycled aggregate)

Approach	D	T	D/T	Mechanism	Notes
Materials with low embodied energy	√ √ √			• Life cycle methodology and 'whole life costing' approach to be used alongside other parameters to inform selection of materials • The BRE's Green Guide to Specification will be used to inform the selection of materials • Embodied energy/CO_2 audit to be undertaken	With building contractor
'Healthy' and non-toxic materials	√			• Within the materials specification; PVC use will be minimised, MDF containing formaldehyde will be prohibited, materials with greater low levels of Volatile Organic Compounds (VOC) will be prohibited, materials with Ozone Depleting Potential or a Global Warming Potential >5 will be prohibited	With building contractor
Specifying sustainable timber	√			• All timber products will be specified in accordance with securing maximum credits under BREEAM and EcoHomes, with priority given to FSC-certified timber	With building contractor
Specifying local materials	√			• Subject to life cycle analysis, the use of local construction products (considered to be within a 50 mile radius) will be optimised within the materials specification	With building contractor
Reused and recycled materials	√			• Construction specification developed to optimise opportunities for including materials from recycled and reclaimed sources, as well as those derived from waste products	With building contractor
Multi-skilling approach	√ √ √			• BioRegional Quintain is committed to adopting a 'multi-skilling' approach to construction to facilitate increased efficiencies arising from reduced build time and wastage. The proposed Brighton development would be used to support the evolution of the approach • The proposed fresh air heating and ventilation unit is being developed along 'plug and play' principles utilising off-site manufacturing techniques and push-fit connections to facilitate reduced work on site • The issues and opportunities associated with taking multi-skilling approach at Brighton - the impacts on construction systems, prefabrication, material selection, component design, construction programming and construction skills training – have been explored in two BioRegional Development Group reports *One Planet*	

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Approach	D	T	D/T	Mechanism	Notes
				Living in the SEEDA region (April 2004) and *Building a Construction Supply Chain for One Planet Living* (November 2004)	
Ongoing Management Strategy	√			• Through their One Planet Products initiative, BioRegional Development Group are seeking to establish a buyers group for developers to bulk purchase 'green' building products to secure the associated economy of scale benefits. BioRegional Quintain are fully supportive of this initiative and will seek to join any such buyers group when established	
			√	• The specification details of the construction materials and products used in building the development will be made available, together with additional sustainable materials information, via the community extranet so that building users can make informed decisions about home improvement choices	With building contractor

Sustainable and Local Food

Consumption of local, seasonal and organic produce, with reduced amount of animal protein and packaging

Strategy	

Over-arching Sustainable and Local Food Plan developed	• Strategy developed which supports a long-term vision for a community which enables people to choose low impact produce
	• Strategy developed with reference to *Spade to Spoon - Brighton & Hove Food Strategy and Action Plan*
	• For further details of Sustainable and Local Food strategy refer to appendices
	• Targets developed in-line with One Planet Living Common International Targets
	  • 2020 target for at least 25% of food consumed (by weight) within the development to be sourced from within a radius of 50km (or equivalent area)
	  • 2020 target for at least 10% of food consumed (by weight) within the development to be from certified organic and/or fair-trade sources

Approach	D	T	D/T	Mechanism	Notes
Opportunities for on-site food-growing	√ √ √			• Roof-top automatically-irrigated mini-allotment areas to provide space for growing selected plants for food • Balconies, where provided, will include integrated planters suitable for growing selected plants for food • Planting strategy for external areas to include 'edible landscaping', e.g. fruit trees and herbs etc.	
Opportunities for off-site food-growing			√	• Establish community garden as food growing and land restoration project	
Connections to existing local farmers networks and food box schemes			√ √ √	• Consultation suggests that existing successful farmers' markets locally could suffer with a new regular market at the proposed development. Potential for occasional small market could be considered • Residents able to receive trial membership of local food box schemes as part of Green Lifestyles Package • The community space will be designed to include a communal internet ordering point and a secure 'drop-off' point and storage for receiving food box deliveries	
Low impact and fresh food issues promoted			√	• As part of the community facility, a café operated by a local community group is proposed by the Ethical Property Company as a potential occupier. Subject to further studies and discussion this could utilise local and seasonal produce	
Supporting fresh food preparation	√ √	 √		• Encouraging fresh food preparation will be an important driver for residential kitchen design – Residents to be offered steamers and juicers as part of Green Lifestyles Package • Kitchens to include storage areas for fresh food and products/appliances to encourage home-cooking • Envisaged that, through a food group within the community trust, recipes and guidance will be available to residents via extranet. Available support may include provision of food hygiene and cooking lessons	
Supporting sustainable food waste management	√ √			• Kitchens to include spaces suitable for compostable waste storage • 'Bokashi Rocket' composter(s), or similar, to be provided for communal use. Subject to appropriate licenses etc. refer to Zero Waste section for further details	

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Approach	D	T	D/T	Mechanism	Notes
		√		• Resulting compost to be made available to residents with sky gardens, and for use on communal grounds where appropriate	
Ongoing Management Strategy		√		• The ongoing implementation and development of the Sustainable and Local Food Plan will be led by the community trust, it is envisaged that this process will be undertaken in consultation with key local stakeholders including the Brighton and Hove Food Partnership • Monitoring against targets will be conducted using periodic resident and business tenant surveys, and headline figures from any on-site catering facility (such as a community café)	

Sustainable Water	*Reduced water demand with rain and waste water managed sustainably*
Strategy	
Over-arching Sustainable Water Plan developed	• Strategy developed which supports a long-term vision for a community with optimised water usage • For further details of Sustainable Water strategy refer to Fulcrum's *Detailed Proposals Report* and document entitled *CO_2 Emissions and Water Calculation Procedure and Comparison to Typical Scheme* • Targets developed in-line with One Planet Living Common International Targets • Targets developed with reference to EcoHomes and BREEAM standards which support achieving 'Excellent' ratings overall • Target for residential water use to <100 litres/person/day from outset. Represents a 25%+ reduction on 139 litres figure for metered homes (OFWAT, Security of supply, leakage and efficient water use 2004-05)

Approach	D	T	D/T	Mechanism	Notes
Water efficient fittings and appliances	√ √ √			• All units to be fitted with low-flush dual-flush WCs and water-saving taps/fittings • No 'power' showers will be specified • All provided washing machines to be higher performing water-efficient models	
Rainwater management	√ √ √			• Rainwater collected on southern block to be used for irrigation of roof terraces (as appropriate) and sky gardens. Additionally, collected rainwater used to flush demonstration WC(s) within community facility • Rainwater collected on northern block to be collected in butts for use in irrigating communal external areas • Soakaways, porous paving and other landscaping treatments to facilitate high levels of surface water attenuation	
Ongoing Management Strategy		√	√	• Monitor water consumption and to report annually • Guidance provided through residents' packs and via community extranet on the environmental impacts of unsustainable water consumption to help inform lifestyle and purchasing choices	

Natural Habitats and Wildlife

Existing biodiversity conserved and opportunities taken to increase ecological value

Strategy	
Over-arching Natural Habitats and Wildlife Plan developed	• Strategy developed which supports a long-term vision for a development which optimises ecological value within an urban site • Strategy developed with reference to *Brighton & Hove Sustainability Natural Environment document 2004-2006*, and SEEDA's *Building for Nature* • For further details of Natural Habitats and Wildlife strategy refer to *Design Statement* • Targets developed with reference to EcoHomes and BREEAM standards which support achieving 'Excellent' ratings overall • Targets and showcased case studies developed in-line with One Planet Living Common International Targets

Approach	D	T	D/T	Mechanism	Notes
Protection of existing ecologically-valuable features	√			• Accredited ecological consultant has been appointed to advise on site strategy. Site has been purchased stripped and levelled with perimeter roads infrastructure established. Considered to have minimal/zero ecological value	

Interventions to enhance ecological biodiversity	√
	√
				• Development site is adjacent to a proposed 'greenway' which will run through the New England Quarter to provide a pleasant circulation route as well as a range of wildlife habitats
				• Accredited ecological consultant has been appointed to advise on site strategy
				• Envisaged features/characteristics include;
				  • Incorporating bird boxes and feeding points into buildings and the surrounding environment
				  • Including areas of wildlife planting using native species where appropriate
				  • Finishing sections of the roofscape with 'green' and/or 'brown' roofs to encourage biodiversity	

Ongoing Management Strategy		√ √		• Ongoing implementation of the Natural Habitats and Wildlife Plan will be managed by the community trust who will advise in the appointment and remit of landscaping contractors. It is envisaged that this will include working with partners to facilitate monitoring of biodiversity levels • Green Gym opportunities with BTCV (British Trust for Conservation Volunteers). Green Gym projects have been independently evaluated by Oxford Brookes University and were found to improve fitness and physical health, as well as have positive effects upon mental health and wellbeing. There are established BTCV Green Gym programmes running in the Brighton area	With local wildlife groups

Culture and Heritage	*Cultural heritage acknowledged and interpreted. Sense of place and identity engendered to contribute towards future heritage*
Strategy	
Over-arching Culture and Heritage Plan developed	• Strategy developed which supports a long-term vision for a culturally rich community • For further details of Culture and Heritage strategy refer to appendices • Targets and showcased case studies developed in-line with One Planet Living Common International Targets

Approach	D	T	D/T	Mechanism	Notes
Community consultation and cohesion			√	• Community consultation process (in partnership with Ethical Property Company) will be undertaken to understand the local community in terms of cultural preferences and composition • Consultation process has already been started to inform development and design proposals • It is envisaged that a proportion of local consultees will become members of the community trust	
	√			• Community centre provided to support community cohesion and interaction	

			√	• Community extranet developed. The proposed system would have inward and outward facing roles. The system could be used to provide:
				  • supporting information on sustainability issues to residents and some access to wider community
				  • mechanisms to establish a time bank
				  • mechanisms for residents to pay utility bills
				  • booking mechanisms for community facilities
				  • information on upcoming events
				  • guidance on sustainable travel options
				  • information on the development to the wider community	

			√	• An events programme will be developed and supported by the community trust to support engendering a sense of community identity	
Culture of Sustainability		√		• The One Planet Living centre, provided as part of the community facility, will have support, outreach and dissemination roles. The Brighton community will be part of a growing network of international communities inspired by the One Planet Living initiative. Via the One Planet Living centre and the extranet, it is proposed to support a global exchange of knowledge	
Integrating art	√			• Engage with process for site-wide New England Quarter art strategy, as appropriate	
Ongoing Management Strategy		√		• Ongoing implementation of the Culture and Heritage Plan will be the responsibility of the community trust	
		√		• Requirement to review the Plan periodically to ensure that it both reflects the culture and heritage of the area, promotes a culture of sustainability to all, and strives to ensure that facilities and services are promoted which support the future culture of the community	

D – Design commitment / Developer responsibility T – Community Trust's responsibility D/T – Initial role for Developer with ongoing role for Community Trust

Equity and Fair Trade	*Create a sense of community. Provide accessible, inclusive and affordable facilities and services*
Strategy	
Over-arching Equity and Fair Trade Plan developed	• Strategy developed which supports a long-term vision for an equitable community • Strategy developed with reference to Brighton and Hove Fairtrade City Status Campaign materials • For further details of Equity and Fair Trade strategy refer appendices • Targets and showcased case studies developed in-line with One Planet Living Common International Targets

Approach	D	T	D/T	Mechanism	Notes
Affordability	√			• In addition to working with a housing association to provide an allocation of social units, the range of private properties being developed offer opportunities for the intermediate market. In particular, the eco-studios are aimed at enabling young people in getting on to the first rung of the property ladder	
	√			• Further investigate innovative private shared-ownership mechanisms which enable purchasers to own a proportion of their home and affordably accrue equity	
	√			• Proposing to release the eco-studio units to the local homebuyers before making available to the wider market	
Accessibility	√			• All of the homes will be designed in accordance with the Lifetime Homes standard	
	√			• Buildings and landscaping designed to achieve high levels of accessibility for all. Ramps provide high levels of accessibility to external areas, including link to adjacent greenway. Lifts proposed to serve all internal areas	
Encouraging the local workforce	√			• A construction stage plan will be developed, and incorporated into construction contracts, which promotes the use of local contractors, suppliers and workforce in the development	In partnership with building contractor
	√			• Contractors will be required to demonstrate investment in training, apprenticeships and staff development	
	√			• 'One Planet Living' construction training pack will be created to disseminate the development ethos	
Fairtrade city status				• Brighton and Hove has Fairtrade city status	
			√	• Consultation will be undertaken with relevant stakeholders to capitalise on any links and joint projects in the context of this status	
			√	• Concession for a fair-trade retailer will be considered in consultation with the Ethical Property Company. This would be subject to market testing and viability etc.	
Ongoing Management Strategy		√		• Ongoing implementation of the Equity and Fair Trade Plan will be the responsibility of the community trust	

Health and Happiness	*Promote health and wellbeing. Establish long-term management and support strategies*
Strategy	

Over-arching Health and Happiness Plan developed	• Strategy developed which supports a long-term vision for a healthy and happy community
	• Strategy developed with reference to *Brighton & Hove Sustainability Economy and Work, Air Quality and Community Safety documents 2004-2006*
	• For further details of Health and Happiness strategy refer to appendices
	• Targets developed with reference to EcoHomes and BREEAM standards which support achieving 'Excellent' ratings overall
	• Targets and showcased case studies developed in-line with One Planet Living Common International Targets
	  • Targets to be developed for NOx and other local emissions, with monitoring undertaken via ESCO
	  • Target to be established for night time noise levels in-line with guidance currently being developed by the World Health Organisation (WHO)

Approach	D	T	D/T	Mechanism	Notes
Buildings and infrastructure designed to promote wellbeing	√ √			• Issues of noise pollution, access to daylight and indoor air quality are drivers of the building design • Material specification, thermal and ventilation strategies implemented to achieve 'healthy' internal environments/air quality	
Establishing a community trust		 √ √ √	√	• Community trust established as key vehicle to support ongoing fair and equitable community governance • Community trust will support establishing and maintaining a community 'spirit' • Community trust would act as the client for facilities management of buildings/infrastructure • Community trust to facilitate and enable residents in establishing healthy lifestyle patterns regarding consumption and travel etc	
Community extranet			√	• The community extranet will aim to facilitate social interaction within the local community and interest groups, as well as supporting an international knowledge exchange between communities around the world rising to the One Planet Living challenge	
Ongoing Management Strategy			√ √ √ √	• Production of 'green lifestyles' induction information, establishment of 'green' benefits package for residents and the provision of ongoing support via the community trust, extranet and Green Caretaker • Commitment to develop a programme of ongoing monitoring of building performance and occupant satisfaction to be undertaken by the community trust in partnership with other stakeholders. Data presented in annual report to 'One Planet Living' representatives • Gathered information would be used to both inform changes to the operation of the development in the future and help to inform future sustainable community best practice • One Planet Living Centre provided as part of the community centre facility to act as a hub for One Planet Living activities locally by offering support and outreach as part of a growing global network of OPL communities and initiatives	

D – Design commitment / Developer responsibility T – Community Trust's responsibility D/T – Initial role for Developer with ongoing role for Community Trust

6 Living at NEQ in 2008

Young professional at New England Quarter

NEQ provides me with an excellent base for my busy lifestyle.

I regularly need to travel to London and around the South East for work, and living here I have excellent access to transport choices available to me. With the train station being so convenient, my door to door journey for those days when I commute to London is around 80 minutes, this is comparable to when I was renting in South London.

The broadband connection enables to me to work from home when I can, and the meeting room facilities and café in the community centre mean that I can also meet with clients easily.

The good range of local facilities in Brighton and the network of cycle paths mean than I can cycle to most places I need day-to-day, although I have to admit that I am a fair weather cyclist and I take the bus when it's raining.

The community extranet helps me to organise my travel arrangements. From it I can find out the running times of local trains and buses, identify the best cycle routes to take, and can even book a car club vehicle for the occasional times when I need a car.

The extranet also allows me to see how much energy and water I am using in running my home. This facility has sparked some friendly competition with my neighbours over who can reduce their consumption the most. Even with our very efficient homes and low energy appliances and lights, it is amazing how a little thought about how I live can save energy and water.

I like to eat healthily and order my organic food boxes and items from the supermarket over the internet. My orders are dropped off at the community centre downstairs for me to pick up on my way back from work or from being out with friends. This is really convenient for both me and the delivery people as I don't have to spend hours food shopping and they can deliver in bulk and save on time and fuel.

New England Quarter is a great place to live, from my apartment I get great views over Brighton and towards the sea. I can have a high quality of life and reduce my environmental impact at the same time.

Local First Time Buyer at New England Quarter

I have lived in Brighton for all of my life and since graduating I have been trying to get on the property ladder.

I am very pleased with my Eco-Studio, I never thought that I would be able to afford to buy my own home in the city, let alone a brand new one.

It is also in such a central location and it is easy for me to walk or cycle to work, to get the shops or the beach, and to get back after a night out with friends. For my daily local trips I use the folding bike I got free with my flat, but at weekends I frequently borrow a mountain bike from the cycle club and head for the Sussex Downs.

Living here has made me start to think much more about the environment and how my lifestyle choices can damage it. I have become a convert to recycling and most recently to composting. Having the facilities on site makes it very easy to do.

This year I plan to rent one of the roof-top mini-allotments. I think it will be fun to grow some of my own vegetables using 'home grown' compost, and in preparation I have taken some gardening and cookery lessons which were offered as part of green lifestyles package I received when I moved in.

The city has such great variety and diversity, and there is so much going on. The community extranet provides a range of useful links to local activities, clubs and events so that I can keep up to date on what is going on in and around the city. There are also regular events here in the courtyard, in the last few months there has been a Fairtrade market, performances by local arts groups, and a cycle maintenance workshop.

There is a strong sense of community here, and I know many more of my neighbours than where I lived previously. I think that this is partly due to the design of the development with the community centre and the range of communal spaces, as well as having the community trust helping to make sure the management runs smoothly.

The layout and design of my Eco-Studio is really clever. It is compact, but perfectly formed, and the storage wall provides enough space for all my bits and bobs including my bike. Along with the other Eco-Studio residents, I also get access to one of the innovative sky gardens and exclusive use of space within the community centre to relax and meet with friends.

Semi-retired couple at New England Quarter

We moved to New England Quarter from a bigger family home further along the coast. Now that our children have their own families, we wanted to move somewhere which was easier to look after and less isolated, being centrally located with good access to services.

Our apartment overlooks the wonderfully planted greenway and last summer we had some lovely evenings out on the balcony enjoying the sunsets. We have two bedrooms which is great for when we have the grandchildren stay with us. They think that Nan and Granddad live in a very exciting building, with windmills on the roof and gardens in the air.

Although we are both partly retired, living so centrally means that my wife can easily get the train if she needs to be in London, whilst I hop on a bus to the nearby school where I work. We sold our car when we moved here and we haven't really missed it at all. For those times when we do need one we can make use of the car club downstairs.

In addition to not having the hassle and expense of running our own car, we have noticed that our energy and water bills are lower here too; much lower than those of our friends. I think that the efficient design and having our own communal heating will help to save us more in the future as utilities continue to get more expensive, and as we become pensioners!

The quality of the indoor environment is important to us as I suffer from asthma. The materials and paints used were carefully selected to minimise the levels of toxic chemicals, and the ventilation system provides us with filtered fresh air which is heated if required. Our home is warm in the winter and cool in the summer, it is also doesn't get stuffy like many other new homes we have been in.

New England Quarter is a very neighbourly place to live and we have made some good friends through the events organised by the community trust, or simply through chance meetings in the community centre.

The community extranet has also played an important part in supporting a sense of community here. Through the time bank facility, I have been able to get computer lessons from neighbours in exchange for giving gardening guidance to some of the younger people who are growing food up on the roof.

7 Appendices:

7.1 Zero Carbon Plan

Summary

This section sets out a robust analysis of energy usage and CO_2 production of the project to test compliance against both planning conditions and a project-related zero carbon energy strategy as part of the client's approach to sustainabilty.

Calculations to check predicted project energy related CO_2 emissions against the 40% saving target set by Brighton & Hove Planning Department (and supported by benchmark figures given by NIFES) have been carried out.

A robust analysis methodology has been chosen utilising building energy fuel factors, standard dwelling hot water usage, Part L1A (2006) compliant space heating usage and electrical usage based on analysis methods BREDEM 12 and SAP (2006). This methodology has been used to demonstrate compliance, even excluding the benefits of the electrical energy generated renewably from off site wind turbines, the utilisation of certified 'green' tariff electricity, and other lifestyle dependent savings, such as the use of energy efficient appliances.

The prediction is that a 76% reduction from the Base Case will be achieved, compared to the 40% reduction required, as set out in the Residential and Affordable housing laid out in the NIFES Sustainable Energy Report.

When these additional proposed measures are considered, a carbon emissions saving of 100% is achieved.

A summary of the calculated CO_2 emissions for each of the situations is given below. Figures are stated in per unit and total to allow comparison with the NIFES figures.

	NIFES Base Case (kgCO2 per unit/yr)	NIFES Target Figure (kgCO2 per unit/yr)	Typical Figure (kgCO2 per unit/yr)	Proposal With Off-setting of On-site Turbines Building Regs Fuel Factors (kgCO2 per unit/yr)	Proposal With Reductions EcoHomes Fuel Factors Off-setting of On-site & Off-site turbines and Green tariff (kgCO2 per unit/yr)
Eco-Studio	4,934	3,002	1,725	964	6
1-bed	4,934	3,002	2,130	1,198	6
2-bed	4,934	3,002	2,588	1,467	7
Office	81,405 (total)	42,359 (total)	162,677(total)	27,466 (total)	32 (total)
Community	107,881(total)	70,135 (total)	48,232 (total)	11,578 (total)	85 (total)
Total	1,037,945 (total)	628,871 (total)	558,244 (total)	252,425 (total)	1,222 (total)

In developing the zero carbon energy strategy, a review of all feasible renewable energy sources was undertaken coupled with consideration of further consumption reduction techniques which have proved successful and have previously been monitored in operation.

All heat production is to be from exemplary low emission centralised combustion of local chipped wood delivered over a communal heating network. Ground-source heat pump technologies have been rejected as there is insufficient cooling demand to allow summer generated heat to be stored inter-seasonally. Solar thermal panels have been rejected as there is investment competition against the stored solar energy available all year from the biomass plant.

The project is in a low mean wind-speed environment and the limited roof area and the number and size of rooftop integrated wind-turbines could not therefore be justifiably increased beyond the 8 units to be provided. The turbine array would generate (to maximum output) an amount of renewable electricity equivalent to that used by the Eco Studios throughout the year.

Furthermore, they will act as a visible 'icon'. There is evidence that such iconic technology will persuade users to adopt a lower carbon lifestyle.

It is further proposed to install a small array of photovoltaic cells to the building façade. It is envisaged that sufficient area would be provided to significantly contribute towards the energy requirements of an electric vehicle(s). On this basis, the electricity generated is not considered as part of the 'building carbon' strategy in this section.

It is proposed that the rooftop wind-turbines will be augmented by a development of wind turbines in the Brighton area. Such proposals are being actively promoted and supported by the developer. The turbines would be positioned in a good mean wind speed environment to maximise the renewable energy production from the financial investment.

All other project electrical energy will be derived from a Renewable Energy Guarantee of Origin (REGO) DTI certified offsite source, delivered via the National Grid supply. This will guarantee project specific investment in additional offsite renewable energy sources. Ensuring a long-term project energy source via legal agreements between the development's occupants and the management organisation.

Other integrated electrical supply technologies have been analysed and rejected. Photovoltaic panels have been rejected because of poor cost/benefit analysis and availability of mounting areas. Biomass based Combined Heat and Power (CHP) plant has been rejected as the required scale of the plant is yet to be proved as sufficiently robust in operation from monitoring development projects.

With a REGO audited electrical supply providing carbon neutral electricity and biomass providing carbon neutral heat, the only carbon emissions would come from the embodied energy of processing and transportation of wood fuel. Using the DEFRA wood fuel factor to calculate this embodied energy CO_2 component there is an annual project CO_2 emission of just 23 tonnes per year.

This amount would be more than offset by the provision to the grid of additional renewable electrical energy from the roof-mounted wind-turbines and the linked Brighton area wind-turbines. Together these could be viewed as offsetting a minimum of 47.5 tonnes of CO_2 per year. This carbon calculation could be viewed therefore as a carbon negative strategy, improving on carbon neutral.

In terms of analysed residential energy usage, the Client's design annual target figure per square metre is 30 kW/m² for space heating, 40 kW/m² for domestic hot water and 40 kW/m² of electricity usage. The predicted energy usage, assuming available lowest energy appliances, the actual specific fan power usage of the fresh air heating and ventilation system, the reduction in heat loss from the 'super insulation levels 'to be provided to the building fabric and reduction in hot water consumption figures as achieved in BedZED (London Borough of Sutton) the predictions are shown below:

	kWh/m²	kWh/person
Heating	30	890
Hot Water	47	1379
Electrics	48	1414
Total	126	3682

Although the targets for hot water thermal energy and electrical energy used have not quite been met, the further savings are mostly associated with the lifestyle habits of individual residents, which are difficult to predict and model. The project is demonstrating the commercial viability of developing spatially and energy efficient buildings, whilst highlighting that in designing very low energy demand modern homes, measuring energy usage per person is potentially a better indicator than per unit area.

Introduction

A key ambition of the proposed development is to set new standards in terms of energy and water use in a primarily residential development on an urban site, and offer a solution that is repeatable through out the UK.

Comprising 172 residential units - made up of Eco-Studios, and one and two bed apartments, those in Block E are to be sold on the open market and those in Block F are a to be combination of housing association and shared ownership.

A small car park, commercial space and community space will be arranged over the ground and first floor levels.

Design Drivers

- The planning requirement of a 40% carbon reduction from base case, set by Brighton and Hove Council (B&HCC) for the New England Quarter development.
- The B&HCC requirement for "Very Good" ratings for EcoHomes and BREEAM
- Crest Nicholson BioRegional Quintain's requirement for "Excellent" ratings for EcoHomes and BREEAM
- Crest Nicholson BioRegional Quintain's key concept of carbon neutral operation for the development, in line with One Planet Living principles.

Site and Development Restrictions

The proposed development is of relatively high density, and use of available outside space has been maximised by utilising roof tops and ground floor space for recreation and food production.

The site is sloping, long and narrow, running north - south with limited access due to the retaining wall, on the west perimeter and other adjacent buildings.

The site lies towards the bottom of a north east-facing slope. The roofscape of Brighton station at the top of the slope and the undetermined development blocks higher up the slope makes the site relatively sheltered from prevailing wind.

Reducing Energy Use

Building Fabric

The building will be constructed to super insulated building standards, with fabric U-Values exceeding Building Regulation Part L1A(2006) minimum values by 25% and double glazed windows with centre pane U-value not exceeding 1.4 W/m²K to minimise heat losses. An airtight building envelope will be designed to achieve an air pressure test of 5m³/hr/m²@50Pa (of exposed area).

Daylight/Sunlight/Passive Solar Heating/Passive Cooling

Daylighting within the living spaces of the residential units has been maximized by specification of large, high quality window units, reducing the energy use from artificial lighting additionally architectural detailing has allowed daylight penetration into the circulation spaces.

The orientation of the apartments ensures they will all receive direct sunlight at some point in the day. The traditional theory of passive solar gain has been disregarded as modern lifestyle dictates that most people are out at work during the day when the useful solar gain occurs and the benefit has dissipated by the time they return home in the evening. This has been proved by dynamic thermal modelling on TAS software. Additionally where passive solar gain has been maximised there is increased risk of summer time over heating.

Solar control measures, such as shading from overhanging balconies and planting, together with solar control glass, will be utilised on those apartments that will suffer from high solar gain due to their orientation. Additionally, the concrete slab soffits within the building are to be left exposed - their thermal mass will limit temperature swings and provide a heat/coolth sink, boosted by night-time ventilation via the mechanical ventilation system with heat recovery.

Air is supplied into the spaces at high level via grilles maximising contact with the exposed soffits and thus increasing energy transfer.

A bypass damper has been allowed for in the fresh air heating and ventilation unit. This ensures maximum free cooling by preventing incoming outside air by exhaust air warming up the incoming air.

Electricity

Electricity consumption within the residential units will be reduced without affecting tenant comfort or lifestyle by careful specification of electrical equipment such as low energy lighting systems, "A/A+/++" rated white goods and low energy consumption fans in the high efficiency fresh air heating and ventilation systems.

Hot Water

Reducing hot water usage and wastage not only saves water but the energy required to heat it. Hot water use will be reduced by flow regulation, low water use fittings as described below:

- All shower outlets and wash hand basin hot and cold outlets are to be fitted with flow restricter devices. (Flow restricters are not to be installed on baths and sinks as this can cause water to cool too much before it is used)
- Showers are to be low flow type with atomising heads.
- Basins are to be fitted with dual flow aerator type mixing taps with water break cartridge.
- Where baths are to be installed they are to be chosen with low volume to depth ratio.

Hot water wastage will be reduced by minimising dead legs, careful sizing of pipe work and the fact that the hot water provided via consumer thermal interface is more instantaneous than if provided by, for example, by a combination boiler.

Renewable Energy Supply:

Options Considered at an Early Design Stage

Biomass Heating

This increasingly popular source of heat generation is being considered for many schemes countrywide. One of the most attractive aspects of this form of heat generation is that it is sustainable by it's nature. The term 'carbon neutral' is used for this technology because the wood that is being burnt has been grown very recently and it contains carbon derived from atmospheric CO_2 only.

From a total carbon balance perspective, there could be considered to be some carbon emissions associated with biomass due to the fuel refinement and shipping from its place of origin to the boiler itself, i.e. Biomass Embodied Energy. However, the authorities currently disagree on this matter i.e. DEFRA fuel factors in SAP and Building Regulations include for the embodied energy in wood whilst the fuel factors in BREEAM and EcoHomes do not.

One particular aspect that needs to be considered when embarking upon biomass heating system is the local competition for the supply of wood chip, or similar. Local producers need to enter into long term energy supply contract, with regard to the delivery of suitably prepared fuels. If this is not the case in time fuel may need to come from further afield and the embodied energy of the fuel will increase as will the supply cost. Discussions have been held between the developer, boiler supplier and potential biomass suppliers to secure a local and waste wood supply chain.

The hot water heating demands for the proposed development are considered to be of suitable scale (based on the number of units, even with minimised unit demands), and of suitable spread throughout the year (due to the primarily residential characteristics of the development), to suggest the selection of this arguably carbon-neutral approach.

On-site Wind, Off-site wind and Merchant Wind Power

In the absence of detailed local data on wind directions and speeds, and the changes to these that are likely to arise from neighbouring development, a cautious view has been taken.

The prevailing wind direction is from the south-west, therefore a north-east facing slope is likely to receive relatively poor mean wind speeds. Additionally the surrounding buildings and landforms may induce problematic vortexes of wind.

An enquiry to the British Wind Energy Association wind speed database gives the mean wind speed 25 metres above ground level at 6m/second for the site position; though this may not be achieved given the effect of the slope and surrounding developments.

The actual performance of the on-site turbines is uncertain at this stage, and hence their contribution to delivering a significant reduction in carbon associated with electrical use. However the use of roof mounted turbines installed on masts should maximise the available output. Furthermore, the

educational and transformative value of having on-site turbines as a visible icon of sustainability should not be underestimated.

A separate commitment has been made by the developer for the support of an off site wind turbine development in the Brighton area. Subject to the relevant and required planning approvals this would be a large-scale wind turbine in a prominent windy position in the Brighton area, exporting energy to the grid. As well as potentially providing a renewable advertisement and marketing tool for the development, the turbines' electricity generation would provide a significant contribution to the electricity requirement of the development.

Merchant wind power offers a revolutionary approach to the supply of electrical energy, resulting in a guaranteed long-term supply of asset-linked renewable electricity. The approach involves a simple but innovative method of electricity supply. A renewable energy supplier (for example, Ecotricity) would fund, take planning risk, build, own, operate and maintain large scale wind turbines offsite and potentially at a remote location. A minimum 12 year power purchase agreement would be established and in return the development receives its own dedicated supply of green electricity at an agreed competitive price, with negotiated percentage discounts below standard tariff costs.

Although this development is considered to be too small to be supplied by the mechanism described above. A similar approach has been explored and committed to at this stage, under which the development's electrical requirement would be centrally purchased via a community owned ESCO. The ESCO will be obliged to enter into a long term agreement to purchase REGO (Renewable Energy Guarantee of Origin) DTI certified, renewable electricity from a supplier such as Good Energy Limited, guaranteeing investment in new off site renewable electricity generating equipment to meet the development's remaining electrical load requirement.

Photovoltaic Panels

Although the production of electricity through PV cells has become increasingly common in the UK, the majority of projects that have utilised this technology have had significant funding in order to facilitate their inclusion. The large-scale production of electricity through PV is, at this point in time, still very limited and when considering financial payback - even with the inclusion of government grants - their economic case is poor. This option was therefore not considered further for meeting building energy needs.

In this context, the client has decided to propose a small-scale array of PV cells as part of the sustainable transport strategy to help reduce the highly environmentally damaging vehicle emissions. It is envisaged that sufficient area would be provided to significantly contribute towards the energy requirements of an electric vehicle(s).

Solar Water Heating

There is a potential opportunity to integrate solar water heating into this scheme, and evacuated solar collectors could potentially make a significant contribution to the hot water and heating demands of the development if linked back to the main accumulator tank. There is however a limited available roof area suitable for mounting the solar collectors.

Biomass is in fact stored solar heat, available year round and a capital investment in a Biomass plant is a competing investment against solar thermal panels. For this reason this option was not pursued further.

Ground Source Heat Pumps via boreholes and Aquifer Thermal Energy Store (ATES)

There are several different types of system that can interface with the ground and ground water to capitalise on the potential for energy exchange between the fairly consistent conditions at depth and the requirement for heating or cooling. Ground water at say 12°C can be used as a heat source with electrically powered heat pumps elevating that temperature to a suitable heating temperature, however the strongest case for this type of system is where reasonably shallow ground water is utilised as a source of energy exchange for buildings that require significant levels of cooling. During the summer the heat energy removed from the of the air during the cooling process, is transferred into the ground water creating a "warm well" with a elevated temperature.

Using this "warm well" gives a much-improved coefficient of performance, and low carbon intensity when in heating mode. Within the development there is a comparatively small area of commercial and community space, with a likely negligible cooling requirement, therefore this solution was not considered further.

Selected Renewable Energy Sources

The following is a description of the selected mix of renewable energy sources chosen for the site to meet the building energy needs:

Biomass Heating

A woodchip biomass boiler installation, owned and operated by a community owned energy services company (ESCO) will satisfy all the development's heat requirements. The only arguable actual carbon generation from this form of technology is in it's refinement and shipping from the place of origin to the boiler itself. This will be minimised by the establishment of a local supply chain. A long term agreement with more than one supplier is being developed to secure the supply woodchips processed from locally collected waste wood

On-site, Off-site Wind Turbines and Merchant Wind Power

Eight on-site roof mounted (to maximise output) wind turbines will annually generate electricity equivalent to that used by the Eco Studios through the year. Some consideration was given to vertical axis wind turbines (as part of a study of micro wins turbine options); however it was considered that the iconic/educational value was less than that gained from horizontal axis turbines. Additionally, vertical axis turbines are typically more expensive (hence reducing the size of the array within an allocated budget), and are generally less efficient.

The Swift horizontal axis wind turbine has been selected as it is specifically designed to be roof mounted in a residential situation. The manufacturer makes bold claims in it literature regarding "silent" and vibration free operation. It has a circumferential rotor ring, which is designed to eliminate noise from vortices shed from the turbine blade tips. The turbine has an electronic breaking system ensuring safe operation at high wind speeds.

The standard mast height is 3m however the possibility of a taller mast has been discussed with Scottish and Southern the Swifts' supplier.

A proposed off site large scale wind turbine, or turbines, in a prominent windy position in the Brighton area will export energy to the grid as well as providing a renewable advertisement/marketing tool for the development. The outline budget allocation could potentially fund two new 15kW Proven turbines (capable of supplying 30000kWh/year each) or alternatively a 150kW reconditioned turbine (capable of supplying 400,000kWh/year) if a suitable unit were available.

The development's remaining electrical requirement will be centrally purchased with billing management via the community owned ESCO. The Community Trust ESCO will be obliged to enter into a long term agreement to purchase REGO (Renewable Energy Guarantee of Origin) DTI certified, renewable electricity from a supplier such as Good Energy Limited, guaranteeing investment in new off site renewable electricity generating equipment to meet the development's remaining electrical load requirement.

On other projects the BRE have accepted long-term supply agreements in the form of Merchant Wind Power Contract as an acceptable way of offsetting site electrical usage for consideration under BREEAM and EcoHomes. As this proposal is a similar long term concept, and it will be a requirement of the tenants' lease to that they buy REGO certified electricity from the ESCO, it is felt by the reports' authors that this too should be acceptable, though this point needs to be specifically agreed with the BRE.

Sub-meters will be provided to all residential units, community, commercial and landlord areas allowing facility for monitoring, water, heat and electricity, and billing via a system managed and operated by the Community Trust ESCO.

Energy Use

This section gives a brief overview of the calculation methodology used to estimate the CO_2 emissions of the proposed scheme, and how comparisons were made with the same development but with 'typical' energy use patterns utilising traditional energy sources (grid electricity and gas) and typical water usage. Additionally comparisons have been made with the

B&HCC, Brighton New England Quarter Base Case Energy targets set out in the Sustainability Reports prepared by NIFES.

Energy Use Calculations

The energy use for the development as proposed, and the energy use of the development if built to 'typical' standards, has been analysed. Due to the lack of detail at this planning stage as regarding the specification of the non-domestic areas, published benchmark figures relating to energy use have been used for the office and community areas. For the apartments, Building Regulations Part L 2006 compliant CO2 emissions have been calculated using SAP (Standard Assessment Procedure) 2005 (in accordance with Part L 2005). SAP 2005 has also been used to estimate the actual energy use of the dwellings built to the standards proposed for this development. Additionally further reductions have been made on these figures based on other energy saving strategies being adopted and resulting reductions made to the calculations. The CO_2 emissions factors used in the calculations were taken from the BRE EcoHomes guidance.

Energy Use Targets

The information below was taken from Sustainable Energy Reports (Supplementary Report 1/6/04), Sustainability Measures Report (3/6/04) and Condensed Base Case Report (1/6/04). All produced by NIFES Consulting Group for the Brighton New England Quarter Development. NIFES report target figure is 1366 tonnes CO_2 per year for all residential accommodation (Owner-occupier and affordable). The NIFES report assumes 455 dwellings. Therefore, per dwelling, the CO_2 emissions target is 3002kgCO_2/yr. When combined with the target saving for Student Accommodation, the overall target reduction for residential accommodation is 45.3% from the Base Case. If the student accommodation target is separated out the target for the owner occupier and affordable can be assumed to be 40% from the Base Case.

The NIFES report target figure for offices is 38.23kgCO_2/m^2/year. This assumes community space comprises of offices, training, retail and café and a combined average CO_2 emissions figure of 75.66kgCO_2/m^2/year. These figures are set out in the table below.

Target Saving	Residential*	Office	Community	
TOTAL	3002	38.23	75.66	kgCO_2/m^2/yr

*per dwelling

Co_2 Emissions from Typical Development

- Apartments

  Typical CO_2 emissions for heating, hot water, pumps and fans, and lighting were taken from SAP (Standard Assessment Procedure) calculations for the Eco-Studio, one bed and two bed apartments. The highest allowable CO_2 emissions figure for Part L 2006 compliance was taken, to indicate typical emissions for new build properties. Emissions for appliances and cooking were estimated using the calculation procedure set out in BREDEM-12 (Building Research Establishment Domestic Energy Model), based on estimated occupation and dwelling area. It was assumed that the apartments would have a gas boiler for heating and hot water, with electrical energy being from a standard grid supply.

- Office

  Typical CO_2 emissions for heating, hot water, cooling, fans, pumps and controls, lighting, office equipment, catering, and other electrical equipment were taken from Energy Consumption Guide 19, Energy Use in Offices (Action Energy, 2000/2003). Energy use figures were used for a typical air-conditioned standard office. It was assumed that heating and hot water would be from a gas boiler, with standard grid electricity for other uses.

- Community

  Typical CO_2 emissions for the community areas were taken from Energy Consumption Guide 87, Energy Use in Local Authority Buildings (Action Energy, 2004). 'Typical' energy use figures for total heating and hot water and electricity for community centres were used. It was assumed that heating and hot water would be from a gas boiler, with standard grid electricity for other uses.

- Results

  If built to have typical energy use, the total CO_2 emissions for the development would be 558 tonnes per year. See detailed breakdown

below. This is based on the accommodation schedule dated 16th January 2006.

	Eco-Studio	1 Bed	2 Bed	Office	Community	TOTAL	
Space Heating	n/a	n/a	n/a	34,435	26,904	61,339	$kgCO_2$/year
Cooling (electrical load)	0	0	0	14,495	0	14,495	$kgCO_2$/year
Hot Water	n/a	n/a	n/a	3,826	6,726	10,552	$kgCO_2$/year
Electricity - pumps & fans	n/a	n/a	n/a	28,055	0	28,055	$kgCO_2$/year
Electricity - lifestyle only	13,850	59,323	88,377	63,123	12,909	237,582	$kgCO_2$/year
Part L 2006 compliance*	16,374	74,565	115,281	n/a	n/a	206,221	$kgCO_2$/year
TOTAL	30,224	133,889	203,658	143,934	46,539	558,244	$kgCO_2$/year

* Includes CO_2 emissions from heating, hot water, pumps & fans and lighting

Co_2 Emissions from Proposed Development

- Apartments

  SAP (Standard Assessment Procedure) calculations for the Eco-Studio, one bed and two bed apartments were carried out to determine the energy use for heating, hot water, pumps and fans, and lighting for the proposed development specification. Energy use attributable to appliances and cooking was estimated using the calculation procedure set out in BREDEM-12 (Building Research Establishment Domestic Energy Model), based on estimated occupation and dwelling area.

- Office

  Good practice CO_2 emissions for heating, hot water, cooling, fans pumps and controls, lighting, office equipment, catering, and other electrical equipment were taken from Energy Consumption Guide 19, Energy Use in Offices (Action Energy, 2000/2003). Energy use figures were used for a good practice, naturally ventilated open plan office.

- Community

  Good practice CO_2 emissions for the community areas were taken from Energy Consumption Guide 87, Energy Use in Local Authority Buildings (Action Energy, 2004). 'Good practice' energy use figures for total heating and hot water and electricity for community centres were used.

- Energy Sources

  The proposed scheme utilises a communal biomass boiler for heating and hot water on the entire development. The boiler would be fired by woodchip, and be utilised 51 weeks per year. It will need to be shut down for one week in the summer for maintenance, during which time a gas boiler will operate to fulfil the hot water needs of the development.

  It is proposed that some of the electricity requirements of the scheme will be offset by eight 'Swift' wind turbines. Details taken from the manufacturer's literature estimate that each turbine should produce 3000-4000kWh electricity per year - for the purposes of the calculation the 3000kWh figure was used.

- Results

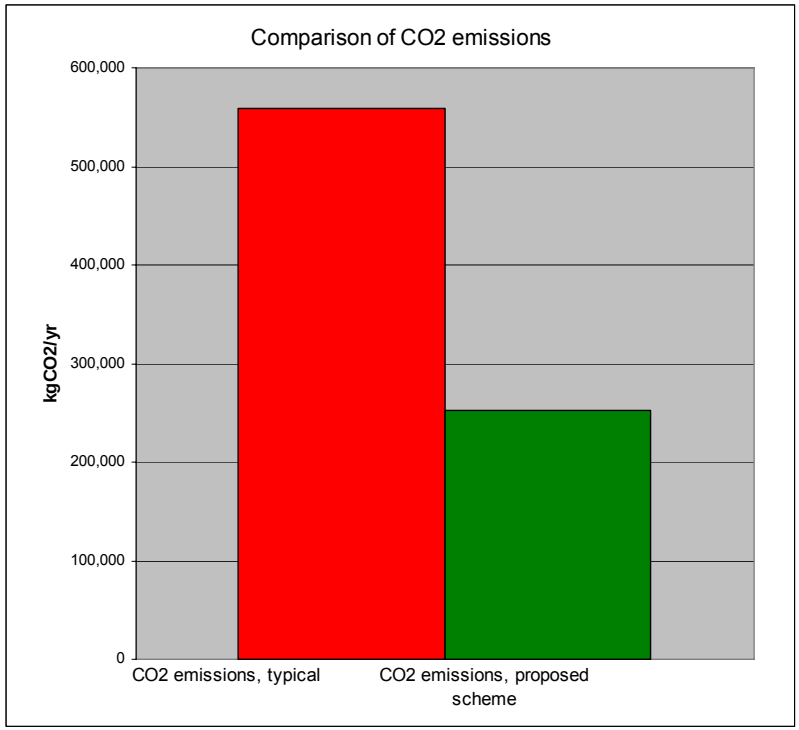
  The results below are based on the accommodation schedule dated 16th January 2006 and utilises Part L2006 fuel factors.

  If built to the proposed development standards with biomass boiler, standard grid derived electricity meeting the majority of the majority of non-thermal energy demands supported by an onsite array of 'Swift' wind turbines, the total CO_2 emissions for the development would be reduced to 252 tonnes per year.

	Eco-Studio	1 Bed	2 Bed	Office	Community	TOTAL	
Space Heating	412	2,270	4,168	1,969	2,318	11,137	$kgCO_2$/year
Cooling (electrical load)	0	0	0	0	0	0	$kgCO_2$/year
Hot water, biomass boiler (operation 51 weeks/year)	1,195	4,792	6,717	216	571	13,491	$kgCO_2$/year
Hot water, gas boiler operation 1 week/year	129	517	724	23	62	1,454	$kgCO_2$/year
Electricity - pumps & fans	1,577	8,285	14,222	1,870	0	25,954	$kgCO_2$/year
CO_2 emissions offset by 8 onsite 'Swift' wind turbines*	n/a	n/a	n/a	n/a	n/a	-10,128	$kgCO_2$/year
Electricity - lifestyle only	14,959	65,392	98,647	22,911	8,606	210,516	$kgCO_2$/year
TOTAL	18,272	81,256	124,478	26,990	11,557	252,425	$kgCO_2$/year

* Manufacturers literature gives yearly output at 3000-4000kWh. 3000kWh figure used here.

The CO_2 emissions for the proposed scheme (as described above and excluding consideration of the mechanisms for purchasing REGO certified electricity in lieu of grid derived, and 'twinning' with a new local larger scale offsite turbine array) with the onsite compared to the 'typical' scheme are illustrated below. This indicates a 55% decrease in emissions from the Typical Case, a further 60% reduction from the NIFES Targets, and it is equivalent to a 76% reduction from the NIFES Base Case, significantly exceeding the 40% requirement.



Carbon Neutrality - CO_2 Emissions from Proposed Development with further reductions

- Apartments

  SAP (Standard Assessment Procedure) calculations for the Eco-Studio, one bed and two bed apartments were carried out to determine the energy use for heating, hot water, pumps and fans, and lighting for the proposed development specification. Energy use

attributable to appliances and cooking was estimated using the calculation procedure set out in BREDEM-12 (Building Research Establishment Domestic Energy Model), based on estimated occupation and dwelling area.

- Office

  Good practice CO_2 emissions for heating, hot water, cooling, fans pumps and controls, lighting, office equipment, catering, and other electrical equipment were taken from Energy Consumption Guide 19, Energy Use in Offices (Action Energy, 2000/2003). Energy use figures were used for a good practice, naturally ventilated open plan office.

- Community

  Good practice CO_2 emissions for the community areas were taken from Energy Consumption Guide 87, Energy Use in Local Authority Buildings (Action Energy, 2004). 'Good practice' energy use figures for total heating and hot water and electricity for community centres were used.

- Energy Sources

  In addition to the proposed scheme described above, further energy reductions have been made on these base case figures as follows:

  - As "A" rated appliances are to be fitted out in the apartments, a further reduction from the BREDEM-12 output has been assumed equivalent to 168kWh/year per apartment.

  - The fresh air heating and ventilation unit will have low specific fan power and centralised boiler plant will reduce pump energy therefore a reduction of approximately 4kWh/m² has been made to SAP2005 output within the residential units.

  - As low water use fitting and other water saving measures are to be utilised, a reduction in energy from hot water generation of approximately 10kWh/m² was used. This calculation was based on the anticipated reductions described earlier in the report.

As a budget is available for an off-site wind turbine sufficient to purchase a minimum of two 'Proven'15kW wind turbines (Annual output advised by the supplier to be 30000kWh, if located in a suitable wind location) further offsetting of the electrical demand is possible.

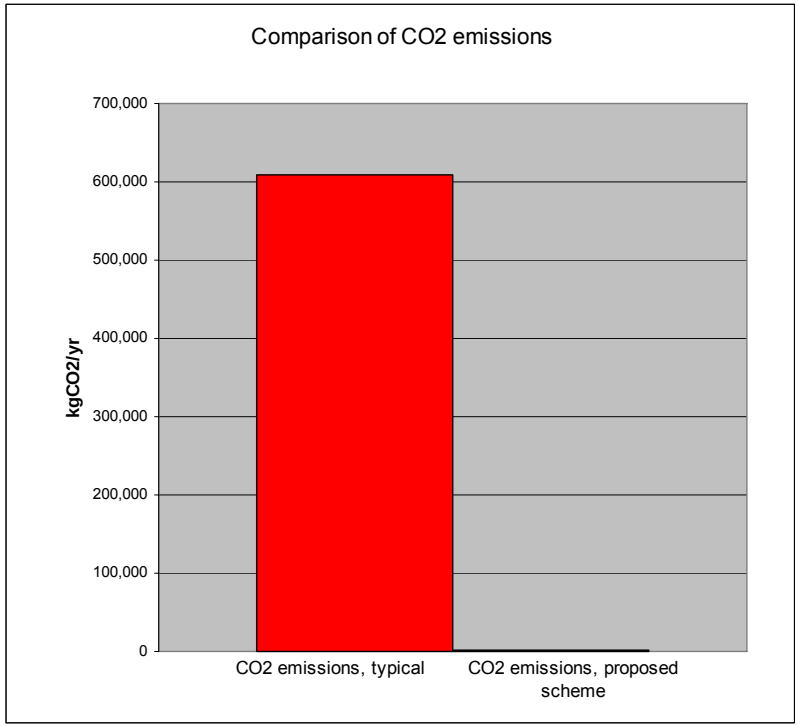
When using the BRE EcoHomes Fuel Factors and if built to the proposed development standards, including the reductions described above the development's CO2 emissions are negligible. i.e. it would be considered a zero carbon development. See detailed break down below.

	Eco-Studio	1 Bed	2 Bed	Office	Community	TOTAL	
Emissions as above	17,169	78,748	122,880	29,394	10,282	258,473	$kgCO_2$/year
CO_2 emissions offset by green tariff electricity for cooling	0	0	0	0	0	0	$kgCO_2$/year
CO_2 emissions offset by green tariff electricity for pumps & fans	-1,103	-7,031	-13,398	-2,216	0	-23,748	$kgCO_2$/year
CO_2 emissions offset by green tariff electricity for lifestyle	-15,957	-71,291	-108,911	-27,146	-10,197	-191,503	$kgCO_2$/year
CO_2 emissions offset by 8 onsite 'Swift' wind turbines*	n/a	n/a	n/a	n/a	n/a	-12,000	$kgCO_2$/year
CO_2 emissions offset by 2 offsite 'Proven 15kW' wind turbines**	n/a	n/a	n/a	n/a	n/a	-30,000	$kgCO_2$/year
TOTAL	109	425	571	32	85	1,222	$kgCO_2$/year

* Manufacturers literature gives yearly output at 3000-4000kWh. 3000kWh figure used here.

** Manufacturers advise yearly output at 15000-3000kWh. 30000kWh figure used here as assume sight will be suitable

The CO_2 emissions for the proposed scheme compared to a 'typical' scheme are shown in the graph below. This indicates 100% decrease in emissions.



7.2 Sustainable Water Plan

Summary

Reduction in water usage is one of the key requirements of Crest Nicholson BioRegional Quintain to deliver a one planet living development.

Reduction in water usage has a two-fold effect. Mains water has embodied energy excepted by authorities at 0.26kgCO2/m³. These emissions being saved by water consumption reduction measures included in the design. Additionally reducing hot water usage and wastage not only saves water but also the energy required to heat it.

The design considered the incorporation of grey water recycling but this was judged not to be economically justifiable due to the need to provide a completely separate grey water drainage system from bathing water areas along with the cost of a separate green water supply pipe network to serve WCs.

In addition, the proprietary grey water units considered needed roof top header tanks and under ground grey water filtration/treatment/storage/pumping units. The disinfectants available were Bromine based which is viewed as having a potentially unacceptable environmental impact on the municipal treatment systems, which would receive the flush water after use.

Rainwater harvesting has been considered, but at a general development height of between 6 and 10 stories there is relatively little roof area for rainwater collection available per person. 46m² of roof per person is required under normal Brighton annual rainfall conditions to meet even the exemplary low water consumption targets included in the design.

In addition a significant proportion of the available roof is provided as sky terrace gardens. He sky terrace planting will use the rain falling on it for plant growth reducing the amount of harvestable rain even further. Rainwater collection for irrigation and WC flushing in the Community area WC cores is viable and has been included to reduce the development water demand.

Various water consumption reduction techniques have been included in the design and it is anticipated that the mains water consumption per person will be reduced from 50.7m³/person/year to 39m³/person/year. Similar water reduction strategies (although including more comprehensive greywater reuse) were adopted at BedZED in Sutton, monitoring has shown water consumption as low as 25 m³/person/year.

Metering of both heat and water will be centrally monitored and billed by the on site management organisation.

Reducing Water Use

It is estimated that the embodied energy of mains water is 0.5kWh/m³ so as well as saving water reducing usage and wastage reduces energy use.

Water use will be reduced by flow regulation, low water use fittings and low water use washing machines and dishwashers as described below:

- All WCs are to be 4/2 litre twin flush type, subject to waiver from the Water Authority;
- All shower outlets and wash hand basin hot and cold outlets are to be fitted with flow restricter devices. (Flow restricters are not to be installed on baths and sinks as this can cause water to cool too much before it is used);
- Showers are to be low flow type with atomising heads;
- Basins are to be fitted with dual flow aerator type mixing taps with water break cartridge;
- Where baths are to be installed they are to be chosen with low volume to depth ratio;
- Low water use washing machines and dishwashers.

WC cisterns will be matched to bowl to ensure efficient flushing and low flush valve leakage. The intention is to approach the local water authority to accept

the use of WCs with lower flush capacities than stated in the water bylaws. These WCs have been successfully used elsewhere such as the BedZED development in Sutton.

Rainwater collection for irrigation and WC flushing in the Community area WC core will reduce the development's water demand further.

Typical Development

The typical water use for the development was calculated using the UK average domestic water use figure of 139 litres per person per day (OFWAT, Security of Supply, Leakage and the Efficient Use of Water, 2004-05). This was multiplied by the estimated occupancy figures for the dwellings. The typical water use for the office and community areas was taken from 'typical practice' benchmark figures for offices (M4i, Environmental Performance Indicators for Sustainable Construction).

Proposed Development

The estimated water use for the dwellings as proposed was calculated using the procedure outlined in EcoHomes under the 'Wat1'credit. As water saving devices are to be used, the water use for the office and community areas was taken from 'good practice' benchmark figures for offices (M4i, Environmental Performance Indicators for Sustainable Construction).

Results

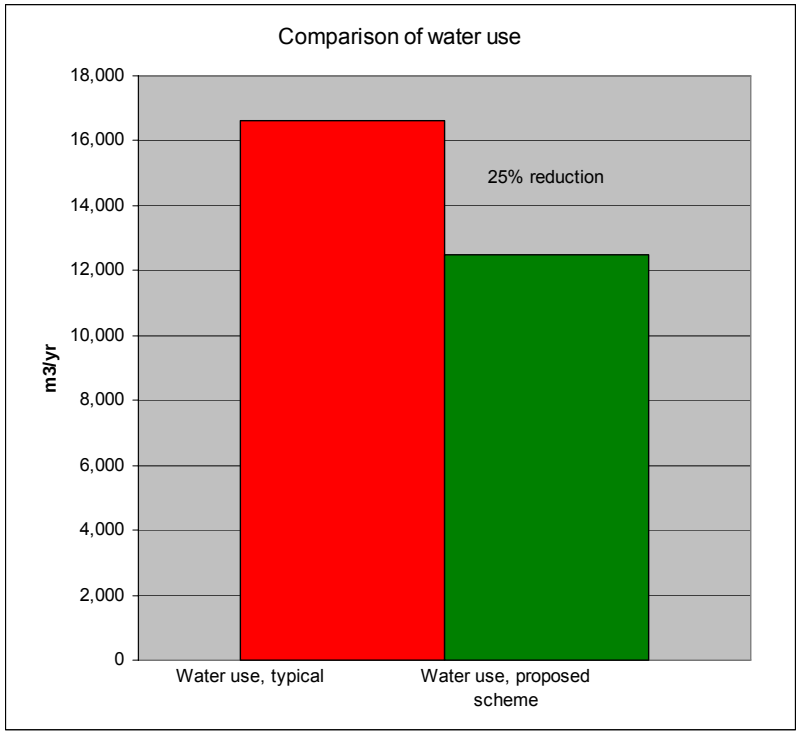
Water use, typical scheme:

	Eco-Studio	1 Bed	2 Bed	Office	Community	TOTAL	
Water	1,052	5,430	9,133	554	464	16,632	m^3/year

Water use, proposed scheme:

	Eco-Studio	1 Bed	2 Bed	Office	Community	TOTAL	
Water	814	4,202	7,069	222	185.4	12,492	m^3/year

This means that the water use of the proposed scheme is 25% lower than for a typical scheme. See graph below.



7.3 Local and Sustainable Food Plan

The One Planet Living *Local and Sustainable Food* Principle considers measures to support minimising food-related carbon dioxide emissions and other environmental impacts. This includes promoting and enabling the consumption of local, seasonal and organic produce, with reduced amounts of animal protein and packaging. Initiatives to support increased consumption of fresh food are acknowledged in benefiting health and wellbeing.

It is estimated that around one-fifth of the UK's carbon emissions[13] are associated with our current global food system, furthermore Taking Stock[14] states that around one-quarter of the ecological footprint of a typical south east England resident is attributable to the food and agriculture sector.

This Local and Sustainable Food Action Plan has been developed to highlight how the development proposals for the creation of a truly sustainable mixed-use community in Blocks E&F of New England Quarter in Brighton respond to this agenda.

Under the One Planet Living suite of Common International Targets, there is an expectation that projects rising to the One Planet Challenge promote healthy diets and achieve minimum targets for consumption of organic or low-environmental impact food and local sourcing.

Approach

The proposed development has adopted the One Planet Living Common International Target of, by 2020, reaching a position where at least 25% (by weight) of produce consumed within the development would be locally sourced from within a radius of 50 km (or equivalent area considering the coastal location). Furthermore, a project target has been set for at least 10% of food consumed (by weight) within the development to be coming from certified organic and/or fair-trade sources by 2020.

The Plan has been developed with reference to Spade to Spoon - Brighton & Hove Food Strategy and Action Plan, which has key aims to:

- Increase access for all residents to nutritious, safe, affordable food in culturally and socially acceptable ways
- Raise awareness of the role of food in supporting health, the economy and the environment
- Reduce, reuse and recycle waste generated by the food system
- Promote food production systems which conserve and enhance the environment
- Exchange information, support and advice and build capacity in all sectors of the food system
- Encourage the development of vibrant local food economy and expand local food production.

The overarching approach includes offering sustainable choices across the food cycle; covering growing and/or sourcing local produce, preparing meals using local, seasonal and fresh produce, and sustainable waste management options for dealing with putrescible wastes to enable 'closed loop' local food production.

Opportunities for on-site food growing

Although the proposed development is a high-density scheme located within a dense urban environment, steps have been taken to create opportunities for food growing on-site.

To enable residents' to grow their own produce, a limited number of mini-allotments would be provided to the roof top of Block F. It is envisaged that these would be made available for rent to residents of the community on an annual leasehold basis for the growing of suitable fruit and vegetables. Current proposals make provision for irrigation utilising harvested rainwater, and options for optimising soil depth and using lightweight growing media. These will be further considered as part of the design development process.

[13] *Wise Moves: Exploring the relationship between food, transport and carbon dioxide*; Transport 2000, Nov 2003

[14] *Taking Stock* report; Stockholm Environment Institute in York (SEI), SEEDA, EcoSys et al, 2003. The report concluded that the ecological footprint of the average resident living in the South East region was higher that the UK figure and nearer 3.6 planets

In addition to the mini-allotment provision, balconies (where provided) will include integrated planters suitable for growing selected plants for produce. The small planter are conceived as being most suitable for planting herbs which could encourage residents to cook more using fresh ingredients in place of 'convenience' foods which commonly contain more fat and salt, and have high environmental impacts. The planters would be the maintenance responsibility of the individual householders and would not be connected to an irrigation system.

Roof-top vegetable growing in Montreal: image www.santropolroulant.org

As part of the landscaping strategy, appropriate plants will be selected to support an 'edible landscaping' concept. This may include the planting of fruit trees and herbs in communal spaces.

Opportunities for off-site food growing

Although a range of opportunities for on-site food growing would be facilitated (as shown above), the high density urban characteristics of the proposed development considerably limits the produce yields in relation to the food needs of the future community. To further encourage residents' in growing their own food locally, there is a commitment to support establishing a community garden in Brighton and Hove which would be 'twinned' with the proposed development.

There are 37 allotment sites across the city comprising more than 2,000 allotment plots. The potential for delivering the market garden through the renovation of poorly maintained local allotment plots, or the transformation of suitable unused ground near to the site would be considered as part of further design development. In addition to providing a local food source, the community garden could act as a land restoration project. This could include improving levels of biodiversity, soil quality, and to potential for absorbing and storing carbon.

Access to local food

Brighton and Hove has a thriving local food economy including regular and successful farmers' markets. Although the communal courtyard at the heart of the proposed development would provide an excellent event space, and potentially a venue for food markets, it is proposed that regular farmers' markets on-site could detract from the existing local provision. Hence, on-site food markets/events could be focussed on allotment shows and niche local food fairs.

A range of national and local food box delivery schemes serve the Brighton and Hove area (for example, www.realfood-direct.com). Such schemes can provide an affordable a convenient means for people to get access to locally produced fresh produce, and as such, their use would be promoted through the proposed development and the subsequent activities of the community trust. It is proposed that scheme trials could be offered to new residents as part of an overarching Green Lifestyles Package.

Furthermore, it is proposed that communal storage would be provided to enable the delivery of boxes whilst residents are not at home, and as part of the fit-out of the community centre, a communal internet-connected computer would be provided to enable residents who don't have their own internet access to order food on-line.

Local food box scheme: image Bioregional Development Group

As part of the community facility, a café operated by a local community group is proposed by the Ethical Property Company as a potential occupier. Subject to further studies and discussion this could utilise local and seasonal produce.

Supporting fresh food preparation

To support residents in making the most of the fresh local food they have grown or purchased, and the herbs gathered from their balcony, the approach to sustainable food needs to extend into kitchen design and equipment. The detailed design and specification of kitchens to include consideration of suitable storage for fresh produce, and the provision of steamers and juicers. All kitchens would be provided with suitable facilities for segregating compostable waste.

It is acknowledged that the proposals above, promoting home-grown produce and home-made meals from fresh ingredients, would need to be complemented by measures to address both skills and confidence gaps. The contemporary food system, including international sourcing, supermarket dominance and increased consumption of processed convenience meals, has resulted in a disconnection between many people and the food they eat.

To assist in establishing a more knowledgeable and sustainable relationship between people and their food, and to help ensure good participation rates in the proposed initiatives, the creation of a food club will be supported. It is envisaged that the club could act as a knowledge 'hub' taking a lead in organising food-related events and in maintaining an area of the community extranet as a resource promoting local and sustainable food; this resource could include links to local suppliers, food growing tips and recipes etc. The extranet would also link to information on existing local food initiatives, such as; www.bhfood.org.uk, www.brightonandhovepct.nhs.uk/healthylives/healthyeating.

To further support increasing skills, knowledge and confidence, cookery and food hygiene courses could be offered to residents as part of the proposed Green Lifestyles Package.

'A Taste of Sussex' Food and Drink Festival Market in Brighton: image www.brightonfoodfestival.co.uk

Supporting sustainable food waste management

The sustainable management of food and 'green' waste, including the use of compost to reintroduce nutrients back into the soil, is an important part of creating sustainable 'closed loop' food systems. As part of the development measures are proposed to enable the segregation of suitable waste from the recycling and residual waste streams; this includes the provision of internal bins potentially lined with degradable bags for transporting wastes to external storage areas.

Current proposals are for the provision of 'Rocket' composter(s), or similar, to be provided externally for communal use. These are 'in vessel' systems which, subject to appropriate design, use and licensing, can be used to compost kitchen waste in addition to 'green' waste.

Rocket automatic continuous in-vessel composting: image www.johnstownrecycling.com

There is complex legislation in place regarding home/community composting and the potential for co-composting putrescible wastes from the non-residential users. Further investigation will need to be undertaken to ascertain the viability of securing appropriate licenses for on-site facilities and treatment processes. However, a fall-back position could be for such wastes to be segregated on-site, as appropriate, to be collected by a licensed third-party for composting at a licensed location.

It is envisaged that the resulting compost would be made available for use in the sky gardens, roof-top mini-allotments, on communal grounds, at the proposed community garden, or even on the adjacent greenway.

Ongoing management and monitoring

The ongoing implementation and development of the Sustainable and Local Food Plan will be led by the community trust and the food club. It is proposed that this process would be undertaken in consultation with key local stakeholders including the Brighton and Hove Food Partnership.

Monitoring against targets is an important aspect of the One Planet Living approach. Gathered information can be used to understand how successfully residents are minimising their ecological footprints through their eating and drinking habits, as well as helping to inform the future provision and management of facilities and services to enable ongoing improvements. It is envisaged that local and sustainable food monitoring would be consist of periodic resident and business tenant surveys, potentially completed on-line via the community extranet, together with headline figures from any on-site catering facility (such as a community café).

7.4 Culture and Heritage Plan

The One Planet Living *Culture and Heritage* Principle considers projects in which any valuable cultural heritage is acknowledged and interpreted positively, and in which a sense of place and identity are engendered as part of solutions which contribute towards future culture of sustainability.

This Culture and Heritage Action Plan has been developed to highlight how the development proposals for the creation of a truly sustainable mixed-use community in Blocks E&F of New England Quarter in Brighton respond to this agenda.

Under the One Planet Living suite of Common International Targets, developed to ensure that all projects rising to the One Planet Challenge are similarly stringent and stretching, two case studies highlighting positive approached to cultural and heritage issues are required.

The proposals have been developed to support the long-term vision for the creation of a culturally rich community in which an ethos of sustainable living is proudly integrated into the fabric of the community and the ongoing management of the development.

Community consultation

A community consultation process has been undertaken in partnership with the Ethical Property Company. EPC are preferred operators for the community centre and who currently manage some existing offices near to the proposed development.

The process has primarily comprised a series of meetings at which the evolving development proposals have been presented by BioRegional Quintain representatives, and feedback has been gathered from attendees. Furthermore, comments have been sought on cultural preferences and development composition.

Through the consultation process, consultees have identified several local historians and other key individuals who could provide valuable local knowledge in support of understanding the historical and cultural context for the proposed development.

A comprehensive description of the consultation process undertaken to date and proposals for how the process will be continued can be located in the Community Consultation Strategy accompanying the planning application.

It is envisaged that a number of the local consultees will be asked to become initial board members of the proposed community trust.

Community centre

The proposed development will include a community centre to provide space and facilities to support community cohesion and interaction. This has been located on the ground and lower ground floors of Block E of the proposed development with prominent street frontage and aspect to the shared courtyard to the west. The facility will be designed to achieve an 'Excellent' rating under BREEAM, and will be constructed to 'shell and core' stage by the developer and transferred, via Brighton and Hove City Council, to an operator (likely to be The Ethical Property Company).

As part of the community centre, BioRegional Quintain will support the installation of an 'information point' on the wider international One Planet Living programme. At this early stage it is considered that this will include information on the imperative of One Planet Living, the importance of leading sustainable lifestyles and case studies of other sustainable communities. This facility will provide an important dissemination outreach role.

Community Extranet

Crest Nicholson BioRegional Quintain sees the role of a community website/extranet provision as integral to delivering our sustainable communities vision. Research has shown that the majority of our environmental impacts are associated with our lifestyle choices[15], and hence establishing convenient information and communication tools to enable such choices is fundamental.

[15] For example, in seeking to reduce our impacts, promoting local and seasonal food and increased cycling for local journeys is as, if not more, important than constructing well insulated homes

Beyond opportunities for supporting reduced environmental impacts, the website will be crucial in engendering and supporting the social aspects of a truly sustainable community. Through the facility it is envisaged that users will be able to access information about their home and utility use, and the local area and events, as well as access services such as booking car club vehicles, meeting rooms in the community centre and ordering local food boxes etc. Furthermore, residents could utilise the facility to establish interest groups, organise and advertise social events, and use innovative services such as time-banking.

Extract from Greenwich Millennium Village Community website: image www.gmvoline.com

The facility would additionally be used as a means of gathering data to support measuring the environmental impacts of the community against targets associated with the 10 One Planet Living Principles.

It is envisaged that the ongoing management of the website/extranet, once the development is occupied, would be undertaken by the green caretaker(s) who would be resident in all communities.

The facility would comprise:

- Information on development and community
- Information on sustainability
- Information on One Planet Living
- Links to third party sites
- Registered users area to subscribe to newsletters/notifications
- Ecological Footprint calculator
- Facility to book community facilities and order 'green' goods
- Facility to capture and report consumption, mobility and building performance data
- Ability for online payment of bills for 'on-site' services
- Community events diary
- Community forum
- Virtual notice board
- Library containing technical information on the development and sustainable living
- Time Bank facility[16]

Supporting a community

Ongoing implementation of the Culture and Heritage Plan will be the responsibility of the community trust. The role will also include working with partners to establish an events programme to support engendering a sense

[16] Time banks are mutual volunteering systems, encouraging those who are normally the subject of volunteering to get involved alongside doctors, teachers or community workers, supporting neighbours. www.neweconomics.org

of community identity. Events could be structured around new residents' evenings, food fairs, local history talks, musical performances etc, and would utilise the community centre facilities and the communal courtyard.

As part of the ongoing management and of the community, the Culture and heritage Plan would be periodically reviewed to ensure that it reflects the changing culture and heritage of the area, promotes a culture of sustainability to all, and strives to ensure that facilities and services are promoted which support the future culture of the community.

7.5 Equity and Fair Trade

Sustainability and One Planet Living needs to be as much about ensuring equity and fair-trade between people and between countries, as it is about protecting our natural resources. Indeed One Planet Living is about making it easy for people everywhere living within a fair share of the earth's resources.

The Crest Nicholson BioRegional Quintain scheme in the New England Quarter will promote equity and fair trade at a number of levels.

A new apartment type has been introduced called the "eco-studio". This is aimed at the so-called intermediate market, of people who do not qualify for social housing, but are unable to afford to purchase their own property. Figures from The Joseph Rowntree Foundation demonstrate that Brighton has one of the largest percentages of people falling in this intermediate category[17]. The eco-studios will be self contained apartments with much more affordable sales prices. For a specified period, preference will be given to purchasers of the eco-studios who have been residents in Brighton and Hove for at least one year, before opening out sales to a wider market.

All apartments have been designed to meet lifetime homes standards so that people can continue to live in their homes even as their personal health and mobility situation may change. High levels of accessibility have been designed into the buildings as a whole and the public realm.

During construction, contractors will be required preferentially to employ local labour and all staff will be required to attend a "One Planet Living" induction session to ensure they are familiar with the ethos of the development.

New England Quarter will also promote social and commercial enterprises which support the principles of One Planet Living. As well as the community and office space to be occupied by The Ethical Property Company which will support local not-for-profit organizations, tenants for the remaining space will be sought with marketing materials clearly showing a preference to those that are trading in eco-friendly and/or certified fair trade products. All commercial tenants will be required to abide by lease conditions which are in-line with social and environmental conditions applied by the Ethical Property Company for their tenants, hence reflecting best industry practice. All commercial tenants will be required to complete a short annual report for the Community Trust Residents' Association on how they are supporting One Planet Living and contributing to the One Planet Living Sustainability Action Plan for the development. The Community Trust itself will take responsibility for promoting Equity and Fair trade and introducing new tenants to One Planet Living.

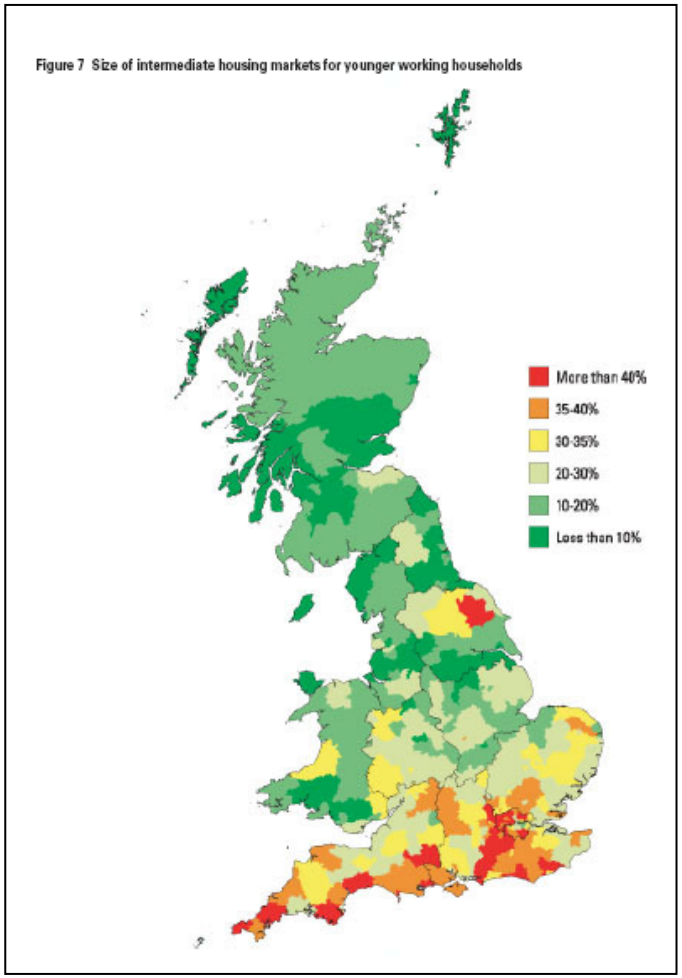


Figure 7 Size of intermediate housing markets for younger working households

[17] "Affordability and the intermediate housing market", Steve Wilcox, 2005, Joseph Rowntree Foundation; www.jrf.org.uk

7.6 Health and Happiness

The One Planet Living *Health and Happiness* Principle considers projects in which health and wellbeing are supported through the design of environments and the provision of services, as well as those which establish long-term management and support structures to enable people to be happy and to achieve a high quality of life within their fair share of the earth's resources.

Under the One Planet Living suite of Common International Targets, developed to ensure that all projects rising to the One Planet Challenge are similarly stringent and stretching, two case studies highlighting positive approached to health and happiness issues will be recorded.

Furthermore, project targets have been set for monitoring emissions of two greenhouse gases other than carbon dioxide, and for night time noise levels compared with the indicators and guidance currently being developed by the World Health Organisation (WHO).

This Health and Happiness Action Plan has been developed to highlight how the development proposals for the creation of a truly sustainable mixed-use community in Blocks E&F of New England Quarter in Brighton respond to this agenda.

The proposals have been developed to support the long-term vision for the creation of a healthy and happy community in which the importance of wellbeing for the individual and the planet is acknowledged and integrated into the ongoing management approach.

Building design and infrastructure

The characteristics of both the indoor and outdoor environments can impact on the health of the building users. Drivers informing the design of the proposed development have included consideration of minimising noise pollution, optimising access to daylight, and taking measures to ensure a high quality of indoor air quality.

The thermal and ventilation strategies for the proposed development have been conceived to be highly energy efficient whilst ensuring the maintenance of comfortable indoor temperatures, humidity levels and air change rates.

Furthermore, materials and products specified for construction, finishes, furniture and fittings have been considered in relation to achieving 'healthy' indoor environments. This approach includes minimising levels of Volatile Organic Compounds (VOC), formaldehyde, and off-gassing.

Natural 'healthy' materials and daylighting at BedZED: Image BioRegional Development Group

Further contributory factors to health and happiness are the perceived sense of safety and the levels of fear of crime. The proposed buildings and associated open spaces have been designed to maximise natural surveillance over public and semi-public space, including access and through routes. Refer to the response to security questions in the completed Brighton & Hove Sustainability Checklist later in the document for further details.

Community Trust

As part of delivering and maintaining the sustainable development vision and the support of the communities' health and happiness, a community trust will be established.

Research has shown that the majority of our environmental impacts are associated with our lifestyle choices[18], and hence establishing governance and management structures to enable such choices is fundamental.

Beyond the opportunities for supporting reduced environmental impacts, a community trust would have a key role in supporting the social aspects of a truly sustainable community. A trust would facilitate increased and equitable involvement by community members in the management of their environment and access to services, as well as helping to establish both notions of 'identity' and 'belonging' to the community.

At Brighton, the community trust will be crucial in engendering and supporting a sense of community, in helping to facilitate people in making sustainable lifestyle choices into the future, and in supporting residents in establishing healthy lifestyle patterns with regards to eating, exercise, travel and consumption. This will include coordinating the provision of information and guidance (e.g. via residents packs or the community extranet), supporting access to appropriate facilities and services (e.g. by encouraging cycle use and use of the community centre), and providing a support network (e.g. through organising community events and via the interactive elements of the extranet).

In line with the overarching sustainability ethos, the community trust would be established as an 'equitable' organisation in which the community is fairly engaged and represented. The trust will have a governance capacity, acting as 'client' for the facilities management of the buildings, grounds and infrastructure. The trust will also fulfil the role of a residents' association in representing the members of the community and providing the framework and forum for consultation and decision-making.

Further key roles for the community trust will be to support and maintain a sense of community 'spirit'. A cohesive and engaging community in which people know their neighbours and in which people feel safe could have notable benefits in addressing issues of isolation which is significant determinant of poor health.

Ongoing management and performance

The provision of ongoing support and management are critical to the long-term health and happiness of the community. As mentioned throughout this document, the provision of information and guidance to support sustainable lifestyle choices will be an important element of the proposed development. This provision is likely to include the production of 'green lifestyles' induction information, establishing a 'green' benefits package for residents offering opportunities for trials and discounts of selected products and services, as well as the provision of ongoing support via the community trust, community extranet and the Green Caretaker.

The Green Caretaker will have an important and multi-faceted role. In addition to offering basic caretaking services, they will also play a critical part integrating the sustainability ethos. This is likely to include being day-to-day point of contact for enquiries, helping to support the operation of services such as the car club and recycling collections, and taking a lead role in the monitoring process.

The community trust will commit to undertake, with other stakeholders as appropriate, a programme of ongoing monitoring of building performance and occupant satisfaction, developed in partnership with BioRegional Quintain. It is proposed that the findings of the monitoring and surveys will be reported on an annual basis.

The information gathered and its interpretation would be of value in informing the future management of the development to facilitate further reducing environmental impact and ensuring high levels of 'user' satisfaction health and happiness. In addition, the information could be used to inform considered best practice for sustainable community development, and to shape the further evolution of the international One Planet Living initiative.

[18] For example, in seeking to reduce our impacts, promoting local and seasonal food and increased cycling for local journeys is as, if not more, important than constructing well insulated homes

7.7 Provisional EcoHomes assessment

The Building Research Establishment's EcoHomes sustainability assessment tool for housing is widely accepted in the construction sector as the most comprehensive and successful currently available. EcoHomes considers the broad environmental concerns of climate change, resource use and impact on wildlife, and balances these against the need for a high quality of life, and a safe and healthy internal environment. The BRE tool addresses the environmental sustainability of new developments and refurbishments under seven criteria (Energy, Water, Land Use and Ecology, Transport, Health and Wellbeing, Pollution, and Materials) with the aim of providing an indication of the sustainability of a home. Environmental performance is expressed on a scale of Pass, Good, Very Good and Excellent.

There is a requirement for the proposed development to achieve a 'Very Good' rating as part of the outline planning consent. This is satisfied and exceeded by the client's project requirement for an 'Excellent' rating to be achieved at both design stage and post-construction review.

EcoHomes is a reasonably straightforward, flexible and independently verified environmental assessment method. It is an easily understood, credible label for new and renovated homes including houses and apartments. It acknowledges developers and homeowners who improve environmental performance through good design, rather than necessarily high capital cost solutions.

EcoHomes rewards dwellings which are built with insulation levels in excess of minimum Building Regulation requirements and which, through energy efficient design and specification, have reduced CO_2 emissions associated with meeting energy demands. Credit is also given for homes located with good access to public transport and amenities, and which are constructed from materials with low environmental impact. Reducing water demand and providing recycling storage facilities are also rewarded. Issues relating to the conservation and enhancement of the external natural environment and the quality of the internal environment for occupants are also assessed under the scheme.

The table below lists the sections against which homes will be assessed under the current 2005 version of EcoHomes. The scheme has been registered with BRE in anticipation of full assessment.

Assessments can be undertaken at both design stage and post-construction. This offers the flexibility to develop an understanding of the performance of proposed homes at an early stage, and the ability to appraise the performance based on what was actually built and not simply any good intentions pre-construction.

It should be noted that the comments below represent an informed view by a licensed EcoHomes assessor on what the proposed development could achieve.

A full EcoHomes assessment by a licensed assessor would be required to clarify the rating achieved.

Rating	Score
Pass	36
Good	48
Very Good	60
Excellent	70

Section	Issue	Credits available	No. achieved	% achieved	Weighting Factor	Credits scored
Ene 1	Carbon Dioxide Emissions	10	7	80%		
Ene 2	Building Envelope Performance	5	5	100%		
Ene 3	Drying Space	1	0	100%		
Ene 4	Eco-Labelled Goods	2	2	100%		
Ene 5	External Lighting	2	2	100%		
Energy		20	**16**	90%		
Tra 1	Public Transport	2	2	100%		
Tra 2	Cycle Storage	2	1	50%		
Tra 3	Local Amenities	3	3	66%		
Tra 4	Home Office	1	0	0%		
Transport		8	**6**	75%		
Energy and Transport		**28**	**22**	**78.6%**	**0.3**	**23.57**
Pol 1	Insulant ODP and GWP	1	1	100%		
Pol 2	NOx Emissions	3	1	33%		
Pol 3	Reduction of Surface Runoff	2	2	100%		
Pol 4	Zero Emission Energy Source	1	1	100%		
Pollution		**7**	**5**	**71.4%**	**0.15**	**10.71**
Mat 1	Timber: Basic Building Elements	6	6	100%		
Mat 2	Timber: Finishing Elements	3	3	100%		
Mat 3	Recycling Facilities	6	6	100%		
Mat 4	Environmental Impact of Materials	16	10	62.5%		
Materials		**31**	**25**	**80.6%**	**0.15**	**12.09**
Wat 1	Internal Water Use	5	3	80%		
Wat 2	External Water Use	1	1	100%		
Water		**6**	**4**	**66.7%**	**0.10**	**6.66**
Eco 1	Ecological Value of Site	1	1	100%		
Eco 2	Ecological Enhancement	1	1	100%		
Eco 3	Protection of Ecological Features	1	1	100%		
Eco 4	Change of Ecological Value of Site	4	2	50%		

Section	Issue	Credits available	No. achieved	% achieved	Weighting Factor	Credits scored
Eco 5	Building Footprint	2	2	100%		
Land Use and Ecology		**9**	**7**	**77.8%**	**0.15**	**11.67**
Hea 1	Daylighting	3	0	0%		
Hea 2	Sound Insulation	4	3	75%		
Hea 3	Private Space	1	1	100%		
Health and Well being		**8**	**4**	**50%**	**0.15**	**7.5**
TOTAL						**72.2%**

Issue		Available Credits	Possible Score
Energy			
Ene1	**CO2 emissions** *Rewards minimising emissions of CO_2 to the atmosphere arising from the operation of a home and its services. Zero carbon homes achieve maximum credits.* • Electrical needs met via on-site wind turbines, purchase of green tariff energy and investment in off-site renewable generation • 100% of heat from on-site wood-fuelled boiler and gas back-up • Estimate carbon emissions <25kg/m2/annum • Confirmation sought from BRE on accounting for off-site REGO-certified energy supply	10	7
Ene2	**Building envelope performance** *Acknowledges improving the performance of building envelope (U-value) compared with Building Regulations. Maximum points are available for achieving U-value performance15% above current Building Regulations.* • ROOF o Building Regulations U-value: 0.25 o Proposed U-value: 0.19 o 24% improvement • WALLS o Building Regulations U-value: 0.35 o Proposed U-value: 0.21 o 40% improvement • WINDOWS o Building Regulations U-value: 2.0	5	5

Issue		Available Credits	Possible Score
Energy			
	o Proposed U-values: 1.3 o 35% improvement • <u>FLOORS</u> o Building Regulations U-value: 0.25 o Proposed U-value: 0.19 o 24% improvement		
Ene3	**Drying space** *Provision of drying space to negate need for tumble drier* • 'A heated space (although not additionally heated) with adequate, controlled ventilation, i.e. extract fan with humidistat or passive vents' • 'Fixings/fittings to hold a minimum of 4m live for 1/2 bed units'	1	0
Ene4	**Eco Labelled white goods** *Provision of energy efficient A-rated + white goods* • Proposals include supply of compliant appliances	2	2
Ene5	**External Lighting** *Provision of low energy external lighting* • Proposals include supply of compliant fittings	2	2
Total Number of potential Energy Credits		**20**	**16**

Issue		Available Credits	Possible Score
Transport			
Tra1	**Public Transport** *Rewards developing a site with good access to public transport* • Site is well located in terms of access to transport hubs and amenities	2	2
Tra2	**Cycle storage** *Provision of suitable cycle storage* • '1 and 2 bed units need to provide storage for 1 cycle/unit' • 1 credit for 50% of units, 2 for 95% compliance • 'storage needs to be weatherproof (at least a roof and 3 walls)	2	1
Tra3	**Local Amenities**	3	3

Issue		Available Credits	Possible Score
Transport			
	Rewards developing a site with good access to local amenities • Site is well located in terms of access to transport hubs and amenities • Considered likely that scheme may score 2 out of 3 credits available		
Tra4	**Home office** *Provision of space, and services, for a home office* • Proposals are not seeking this credit due to implications of spatial requirements • 'Minimum size (1.8m wall) to allow a desk and filing cabinet or bookshelf to be installed, with space to move around and open the door'	1	0
Total Number of potential Transport Credits		**8**	**6**

Issue		Available Credits	Possible Score
Pollution			
Pol1	**Insulation ODP and GWP** *Specifying insulating materials, which avoid the use of ozone depleting substances and substances with a global warming potential* • It is understood that neither render wall insulation system nor the roof system use any of these harmful materials • The homes are not provided with insulated hot water tanks or loft hatches	1	1
Pol2	**NOx emissions** *Specification of boilers with low NOx emitting burners* • The NOx emissions associated with biomass boilers are relatively high compared to individual domestic gas boilers. The proposed biomass boiler is understood to have predicted emissions in the order of 90-120mg/kwh. This is subject to confirmation as part of the detailed design process, and an assumption of <150mg/kwh has been taken at this stage	3	1
Pol3	**Reduction of surface runoff** *Rewards designs that reduce peak surface runoff rates to either natural or municipal systems by 50% for:* *Hard surface runoff* *Roof runoff* • It is understood that the proposed permeable surfacing, soakaways and roof-top rainwater attenuation and harvesting could reduce runoff by 50%	2	2

Issue		Available Credits	Possible Score
Pollution			
Pol4	**Zero Emission Energy Source** *Acknowledges schemes where at least 10% of either the heat (space & hot water) demand or the non heat electrical demand within the development is supplied from local renewable energy sources* • The energy strategy for the proposed development would secure these credits through having the biomass heating system. This can be considered renewable 'where there is also evidence of a contract for the supply of renewable biomass fuel'	1	1
Total Number of potential Pollution Credits		**7**	**5**

Issue		Available Credits	Possible Score
Materials			
Mat1	**Timber: Basic building elements** *Rewards the specification of certified* timber and timber products and/ or recycled/ reused elements. Maximum credits are secured for percentages over 75%.* **CSA, FSC, MTCC, PEFC, SFI or any combination of these subject to the requirements for a full third party chain of custody* • Commitment for all timber used within the proposed development to come from certified sources, with preference for FSC certification	6	6
Mat2	**Timber: Finishing elements** *Rewards the specification of certified* timber and timber products and/ or recycled/ reused elements. Maximum credits are secured for percentages over 75%.* **CSA, FSC, MTCC, PEFC, SFI or any combination of these subject to the requirements for a full third party chain of custody* • Commitment for all timber used within the proposed development to come from certified sources, with preference for FSC certification	3	3
Mat3	**Recyclable Materials** *Provision of internal and external storage for recyclable waste* • The waste strategy for the proposed development will include the provision of compliant bins	6	6
Mat4	**Environmental Impact of Materials** *Encourages the use of materials that have less impact on the environment, taking account of the full life cycle. The specification of materials obtaining A-ratings from the BRE Green Guide for Housing are rewarded for the following components:*	16	10 (estimated)

Issue		Available Credits	Possible Score
	• ROOF (3/3) o Most concrete slab roofs achieve an A-rating, subject to surfacing/membranes etc o Timber-framed roofs with ply decking get an A-rating generally o Sucoflex-type systems uses TPO (thermoplastic polyolefin) o Potential to seek clarity from BRE on assessing accessible terraces o ESTIMATE OVERALL A-RATING • EXTERNAL WALLS (3/3) o Single leaf Ziegel clay block with wood fibre insulation and render - A' (estimated) o Single leaf Ziegel clay block, insulation and untreated timber - 'A' (estimated) o Walls between flats and sky gardens - Clay plaster on Ziegel block - 'A' (estimated) o Timber frame with wood fibre insulation and untreated timber finish achieves - 'A' o ESTIMATE OVERALL A-RATING • INTERNAL WALLS (3/3) o Timber/metal studded partitions with plasterboard finish achieve A-rating o Party walls – Timber frame gets an A-rating, steel frame not mentioned o ESTIMATE OVERALL A-RATING • FLOORS (0/3) o In-situ concrete slab floors do not score an A-rating, however BRE could be consulted regarding crediting use of PFA and high recycled content etc. - ASSUME C-RATING o Intermediate floors would be concrete - ASSUME C-RATING • WINDOWS (0/2) o Softwood FSC-certified timber framed windows with aluminium facing, or aluminium framed units do not score an A-rating. Opportunity to talk to BRE regarding recycled aluminium - ASSUME C-RATING • EXTERNAL SURFACING (0/1) o Chippings, aggregates and timber decking can all achieve A-ratings o Porous paving to communal areas - paving generally scores a B-rating, but porous is not specifically mentioned. Opportunity to discuss with BRE • BOUNDARY PROTECTION (1/1) o Spec. to be confirmed o Timber generally A-rated, brick or steel railings B/C-rated		
Total Number of Materials Credits Achieved		**31**	**25**

Issue		Available Credits	Possible Score
Water			
Wat1	**Internal water use** *Provision of water efficient fittings and fixtures to reduce levels of internal water use* • Proposals for Brighton, including specification of low-flush dual-flush WCs, aerated taps and flow-restricted showers	5	3
Wat2	**External water use** *Acknowledges the specification of a rain water collection system for watering gardens and landscaped areas* • 'Specifying a system that will collect rainwater for use in **external** irrigation/water, e.g. water butts, central rainwater collection systems' • 'provide a minimum of 1 litre capacity for each m^2 of land allocated to the dwelling (either uniquely allocated or shared) to a minimum of 200 litres'	1	1
Total Number of Water Credits Achieved		**6**	**4**

Issue		Available Credits	Possible Score
Land Use and Ecology			
Eco1	**Ecological value of site** *Acknowledges building on land which is of low ecological value* • The site was secured pre-cleared as a bare site with little or no ecological value as confirmed by accredited ecological consultant	1	1
Eco2	**Ecological enhancement** *Acknowledges strategies implemented to enhance the ecological value of the site through consultation with an accredited expert* • Commitment undertaken to work with accredited ecologist and implement recommendations	1	1
Eco3	**Protection of ecological features** *Rewards steps taken to ensure the protection of any existing ecological features on the site* • Commitment undertaken work to with accredited ecologist and implement recommendations • Can secure credit automatically if site determined to have no ecological value by consultant	1	1
Eco4	**Change of ecological value of site** *Credits awarded for a change in ecological value of site between -9 and +9 species per hectare* • Although site was secured pre-cleared and with little or no ecological value, it is very challenging	4	2

Issue		Available Credits	Possible Score
Land Use and Ecology			
	to demonstrate a net increase in species count using outlined method • Suggest that species count would remain at zero		
Eco5	**Building footprint** *Rewards developing residential schemes which make effective use of the building foot-print. More specifically, achieving a floor area : footprint ratio of at least 2.5:1* • The proposed development is a high density scheme rising between 6 and 11 storeys in height	2	2
Total Number of Land Use and Ecology Credits Achieved		**9**	**7**

Issue		Available Credits	Possible Score
Health and Well Being			
Hea1	**Daylighting** *Provision of adequate daylighting, according to BS 8206:pt2 in:* *In the kitchen* *In living rooms, dining rooms and studies* *View of sky in all above rooms* • The restricted site, single aspect units and the presence of high-rise neighbouring buildings, potentially make it difficult to score on this credit	3	0
Hea2	**Sound Insulation** *Acknowledges pre-completion testing to comply or improve on performance standards in Approved Document E (2003 Edition)* • A comprehensive programme of testing is proposed for the proposed development to secure the majority of these credits	4	3
Hea3	**Private space** *Provision of private or semi private space* • The provision of balconies, roof terraces, secure communal grounds and sky gardens suggest that this credit can be achieved • 'private space @1.5m^2 per bed space (min of 3m^2 per unit) • 'shared space @1m^2 per bed space • Allows easy access to residents of designated dwellings only	1	1
Total Number of Health and Well Being Credits Achieved		**8**	**4**

7.8 Provisional BREEAM assessment

Route to 'Excellent'

The non-domestic part of the Brighton NEQ development is required to achieve a BREEAM rating of *Very Good* as part of planning requirements, with a client's project requirement for scoring *Excellent*.

The non-residential elements of the proposed development will be completed to a 'shell and core' level with 'fit out' to be undertaken by the tenants. For the purpose of this report it has been assumed that all of this space will be considered as offices and therefore will be assessed under BREEAM for Offices 2005, although a bespoke assessment may be required for the community centre.

As many of the BREEAM credits require confirmation of information which will not be available until the tenants design the fit-out for their areas, it has been proposed that the BREEAM assessment is carried out on all the elements included within the core build, and then left for the tenants to conclude.

As it is a planning requirement that the development achieve a specific BREEAM rating, it would become a contractual requirement of the lease that all tenants achieve this rating with their fit-out. It has been confirmed with the BRE (who manage the BREEAM scheme) that this is an acceptable way to proceed in these circumstances.

Mark Standen of the BRE has stated in recent correspondence: *"I can confirm that it is possible to carry out an assessment to cover the core work of the development and then pass the assessment over for completion when the tenants are known. This would essentially mean that the assessment is carried out in two phases and could be carried out by two different assessors."*

The table below outlines all the credits included in the BREEAM for Offices 2005 scheme indicates in each case whether the credit has been achieved by the design team, can be achieved by the tenant or is not achievable for this development. This initial BREEAM review has been undertaken by Fulcrum Consulting - this review does not represent a formal assessment.

The design team are committed to provide a very good base-line for tenants to work from in their fit-outs by achieving an optimised number of credits within the core build.

The credits that the design team have committed to achieve for the core build contribute 35.8% towards the final BREEAM rating. If tenants achieve all the credits suggested in the table below they would score 80.0% which is well over the 70% required for a BREEAM Excellent.

Credit ref	Credit title	Credit Criteria	No of credits achieved to Core	Suggested credits for lease-holders	Number of credits available	Credit Validation (Fulcrum Consulting)	Status
Management Section							
Man 1-2	Commissioning Monitor	One credit where evidence can be provided to demonstrate that a design team member(s) is appointed to monitor commissioning on behalf of the client, and that where there are complex systems a commissioning agent or manager is appointed.		**1**	**1**	Contract requirements and specifications should include the appointment of a commissioning monitor in accordance with BREEAM requirements. It is recommended that a commissioning consultant is employed to manage all aspects of commissioning including compliance with BREEAM requirements for all leaseholders.	Lease
Man 1-4	Commissioning Clauses	One credit where evidence can be provided to demonstrate that pre-commissioning, commissioning and quality monitoring are passed on to the appropriate contractors and all trades on site in accordance with BSRIA/ CIBSE guidelines.		**1**	**1**	Contract specifications should include commissioning clauses in accordance with BREEAM requirements.	Lease
Man 1-5	Building Users' Guide	One credit is awarded where evidence can be provided to demonstrate that there is provision of a simple guide, including information relevant for the 'non-technical' building manager and occupants. This guide can be contained in the O&M manuals, but must be an extractable or 'stand alone' section.		**1**	**1**	It is likely that criteria for this credit will be addressed alongside the building energy log book provision. The requirements for these credits will be adhered to for the core build leaving it available for leaseholders to achieve.	Lease
Man 1-6	Construction Site Impacts	Up to six credits are awarded where established good practice is adopted on site in line with the BREEAM Construction Site Management Checklist(s) (See Checklists A1 and A2). Use the BREEAM calculators to determine the number of credits achieved		**5**	**6**	It is assumed that the contractors will be required to perform well under the considerate constructors scheme, or suitable equivalent. It is also assumed that although some monitoring of site impacts, such as water and energy use will be possible, full documentation on transport to and from site may not be feasible. The requirements for these credits will be adhered to for the core build leaving it available for leaseholders to achieve.	Lease
Man 1-7	Seasonal Commissioning	One credit is awarded where evidence can be provided to demonstrate that seasonal commissioning will be carried out during the first year of the buildings occupation.		**1**	**1**	Contract requirements should include the appointment of a commissioning monitor to conduct seasonal commissioning in accordance with BREEAM requirements.	Lease
Health & Wellbeing Section							
Hea 0-1	Cooling Towers & Evaporative Condensers	One credit where systems have been designed in accordance with CIBSE TM13 and the HSE Approved Code of Practice and Guidance (ACoP): "Legionnaires' disease: The control of legionella bacteria in water systems" (rev 2000), or where there are no cooling towers or evaporative condensers specified.	**1**		**1**	There is currently no intention of providing cooling towers or evaporative condensers as part of the scheme. Where necessary, fit out specifications will include clauses to ensure that any fit-out works are in accordance with the BREEAM requirements for this credit.	Achieved
Hea 0-2	Water Systems - Legionellosis	One credit where water systems have been designed or actions taken, to minimise risks of		**1**	**1**	Contract specifications and building services designs will demonstrate adherence to the requirements of CIBSE TM13 and	Lease

Credit ref	Credit title	Credit Criteria	No of credits achieved to Core	Suggested credits for lease-holders	Number of credits available	Credit Validation (Fulcrum Consulting)	Status
		Legionellosis, using the HSE ACoP and CIBSE TM13.				the HSE ACoP. The requirements for this credit will be adhered to for the core build leaving it available for leaseholders to achieve.	
Hea 0-3	Potential for Natural Ventilation	One credit where windows in the external façade to office areas are openable and on at least opposite sides for accommodation over 7m deep. The openable area should be the equivalent of 5% of the gross floor area of the building. This should have an even distribution across the office area so as to promote adequate cross ventilation.	**0**		**1**	Based on the general building form it seems unlikely that this credit will be achievable.	Not possible
Hea 0-4	Failsafe Humidification	One credit where steam humidification is installed OR where no humidification is present.	**1**		**1**	No humidification is likely to be present.	Achieved
Hea 0-5	Internal Air Pollution	One credit where location of air intakes and outlets are over 10m apart to minimise recirculation AND intakes (or openable windows) avoid sources of external pollution	**0**		**1**	Although every reasonable effort will be made to keep air intakes over 10m from air exhausts and also over 20m from major sources of external air pollution, which are defined to include car parks and frequently used roadways, however this may not be feasible due to site constraints.	Not possible
Hea 0-6	Ventilation Rates	One credit where either fresh air is provided at a rate of 12 litres per second per person in a/c or mechanical ventilation systems OR trickle vents are provided at the rate of 400mm^2 per m^2 of floor area (and credit Hea 0-3 is achieved) in naturally ventilated buildings		**1**	**1**	It is anticipated that design ventilation flow rates will equal or exceed requirements.	Lease
Hea 0-7	Daylighting & View Out	Up to two credits where 80% net lettable office area is adequately daylit and where the occupants have a view.	**0**		**2**	It is anticipated that office areas will all be provided with an compliant 'view out'. Due to likely general arrangement of the building there it is not considered that a 2% daylight factor could be confidently predicted at this stage.	Not possible
Hea 0-8	Daylight Glare Control	One credit where an occupant controlled system of glare control (e.g. internal or external blinds) is fitted.		**1**	**1**	Blinds or occupant controlled glare control will be fitted if this forms part of the main build contract. If this item forms part of separate fit-out works, BREEAM glare controls requirements will be included as part of the tenant fit-out contract.	Lease
Hea 0-9	High Frequency Lighting	One credit where luminaires with high frequency ballasts are installed in all general office areas.		**1**	**1**	The low energy lighting requirements will be adhered to within the electrical lighting specification. If this item forms part of separate fit-out works, BREEAM lighting specification requirements will be included as part of the tenant fit-out contract.	Lease
Hea 0-10	Electric Lighting Guide	One credit where lighting design is compliant with the addendum to CIBSE Lighting Guide 3, 2001 and has been designed to avoid glare and distracting screen reflections from electric lighting.		**1**	**1**	The LG3 lighting requirements will be adhered to within the electrical lighting design and specification. If this item forms part of separate fit-out works, BREEAM requirements will be included as part of the tenant fit-out contract.	Lease
Hea 0-11	Lighting Zones	One credit where control of lighting in office areas relates to circulation space, perimeter areas and is zoned to provide separate control		**1**	**1**	It is not considered certain that it will necessarily be practicable to control lighting in zones as per BREEAM guidelines, however tenants may be able to provide this.	Lease

Credit ref	Credit title	Credit Criteria	No of credits achieved to Core	Suggested credits for lease-holders	Number of credits available	Credit Validation (Fulcrum Consulting)	Status
		for groups of no more than 4 workspaces.					
Hea 0-13	Thermal Zoning	One credit where local control is available for temperature adjustment in office areas, to cope with different load requirements.		**1**	**1**	It is considered likely that zone control of thermal comfort will be provided to spaces as per BREEAM requirements.	Lease
Hea 1-2	Thermal Comfort Modelling	One credit where assessments have been carried out for thermal comfort levels at design stage and these are used to evaluate appropriate servicing options.		**1**	**1**	Thermal comfort modelling may be carried out by tenants, probably using Hevacomp software.	Lease
Hea 1-3	Internal Noise Levels	One credit where the building design can be shown to achieve ambient internal noise levels between: 35-40dB LAeqT in small offices, 40-45dB LAeqT in medium offices, 45-50 dB LAeqT in large offices.		**1**	**1**	Appropriate specification of building elements and services will be be required to achieve this credit. Acoustic calculations to prove compliance with this credit will need to be provided. Where internal partitions may be part of a separate fit-out, the acoustic requirements will need to be included within the fit-out contract. The requirements for this credit will be adhered to for the core build leaving it available for leaseholders to achieve.	Lease
Energy Section							
Ene 0-2	Energy Sub-metering	One credit where direct sub metering is provided for substantive energy uses within the building covering lighting, small power and computer rooms. Catering facilities and any other major energy consuming plant must also be sub-metered if present.		**1**	**1**	It is considered very likely that sub-metering will be provided. Designs/specifications will be developed to meet the credit requirements. Where elements may be part of a separate fit-out, the sub-metering requirements will need to be included within the fit-out contract.	Lease
Ene 0-3	Tenancy Sub-metering	One credit where electrical sub metering of tenancy areas is installed in multi-occupant buildings or sub-metering by floor plate / department is installed in single occupancy buildings.		**1**	**1**	It is considered very likely that sub-metering will be provided. Designs/specifications will be developed to meet the credit requirements. Where elements may be part of a separate fit-out, the sub-metering requirements will need to be included within the fit-out contract.	Lease
Ene 0-4	Fabric & Form	Up to five credits based on the predicted fabric loses minus gains (kWh/m^2)		**5**	**5**	The brief for the project is such that there is every confidence that the requirements of this credit will be met. The requirements for these credits will be adhered to for the core build leaving it available for leaseholders to achieve.	Lease
		Using the BREEAM calculators ENTER Total Losses - Gains =					
Ene 1-1	CO_2 Emissions	Up to ten credits can be awarded based on the predicted net CO_2 emissions (kgCO_2/m^2/year)		**7**	**10**	This is a reasonably good performance emissions level, which is considered a safe, but slightly conservative, estimate for this scheme. At this early stage it is difficult to be conclusive regarding likely actually emissions. The requirements for these credits will be adhered to for the core build leaving it available for leaseholders to achieve.	Lease
Transport Section							

Credit ref	Credit title	Credit Criteria	No of credits achieved to Core	Suggested credits for lease-holders	Number of credits available	Credit Validation (Fulcrum Consulting)	Status
Tra 0-1	Transport CO_2	Up to ten credits are available on the basis of net CO_2 emissions resulting from commuting	**10**		**10**	In the knowledge that parking is not generally provided on site, it is likely a very high score will be achieved. It is also assumed that a green travel plan will be developed and implemented. Assuming total net lettable area of 2000m², provided less than 43 car parking spaces are provided then maximum credits can be achieved. Central Brighton is also confirmed as a city centre location.	Achieved
Tra 0-2	Cyclist Facilities	Up to two credits where there is adequate provision of cycling facilities: cycle storage, showers and either lockers or a dedicated drying space for use by building occupants who cycle.		**2**	**2**	Exact BREEAM requirements for cyclist facilities will need to be implemented. Showers will be provided as part of the core build, the remaining requirements for these credits will need to be met by the tenants.	Lease
Tra 0-3	Commuting Public Transport	One credit where good access is available to public transport networks, i.e. within 500m with at least a 15 minute service frequency to and from a local urban centre.	**1**		**1**	The site is reported to be in close proximity to public transport provision and major transport modes.	Achieved
Tra 0-4	Public Transport Business Use	One credit where there is good access to public transport networks, i.e. within 500m and where there is a 30 minute service frequency to and from a major transport node.	**1**		**1**	The site is reported to be in close proximity to public transport provision and major transport modes.	Achieved
Water Section							
Wat 0-1	Water Consumption	Up to three credits can be awarded on the basis of the predicted potable water consumption for sanitary use within the building.		**2**	**3**	Design for low water use will be incorporated within the scheme, however the exact details of installations cannot yet be confirmed; therefore one credit has been withheld.	Lease
Wat 0-2	Water Meter	One credit where a water meter with a pulsed output is installed on all mains supplies to the building.	**1**		**1**	The required meter will be incorporated within design specifications.	Achieved
Wat 0-3	Mains Leak Detection	One credit where a leak detection system is specified or installed and is capable of identifying major leaks either inside or outside the building and covering all mains water supplies to the building	**0**		**1**	There is not an high likelihood that a leak detection system will be specified, however it is possible that this could be included.	Possible
Wat 0-4	Sanitary Supply Shut Off	One credit where a proximity detection shut off is provided to the water supply to all urinals and WC's.		**1**	**1**	There is not a high likelihood that a proximity detection shut off will be specified, but tenants could chose to include this.	Lease
Materials Section							
Mat 0-1	Asbestos	One credit where asbestos is excluded from any new works; or for existing buildings where an asbestos survey has been carried out and all asbestos either removed or contained and identified with a H & S plan.	**1**		**1**	Confirmation of asbestos being excluded from all construction elements, including lift brakes, will need to be provided, usually in the form of an exclusion clause in specification and/or contract.	Achieved

Credit ref	Credit title	Credit Criteria	No of credits achieved to Core	Suggested credits for lease-holders	Number of credits available	Credit Validation (Fulcrum Consulting)	Status
Mat 0-2	Recyclable Waste Storage	One credit where a central, dedicated storage space is provided for materials that can be recycled. The size of the space allocated for this must be at least $2m^2$ per $1000m^2$ of net floor area, or at least $10m^2$ for buildings with floor area over $5,000m^2$.	**1**		**1**	It is likely that recycling facilities will be provided. It is thought that 4m² of storage space will be made available and that this credit can be secured	Achieved
Mat 1-1	Reuse of Façade	One credit where at least 50% of the new building's total façade comprises re-used façade and at least 80% by mass of the reused façade comprises in-situ re-used material.	**0**		**1**	The project involves new-build only.	Not possible
Mat 1-2	Reuse of Structure	One credit where the design allows the reuse of at least 80% of the existing major structure by gross building volume. In the case of a project that is part refurbishment and part new build, the reused structure must comprise at least 50% of the total final structure by building volume.	**0**		**1**	The project involves new-build only.	Not possible
Mat 1-3	Materials Specification	Up to four credits are available where major building elements have a relatively low environmental impact as a result of their specification. Use the BREEAM calculators to determine the number of credits achieved.		**4**	**4**	It is likely that design construction specifications will be developed to meet requirements. Details of all construction elements will need to be provided to confirm compliance, in the form of drawings or specifications. The requirements for these credits will be adhered to for the core build leaving it available for leaseholders to achieve.	Possible
Mat 1-6	Recycled Aggregates	One credit where significant use of crushed aggregate, crushed masonry or alternative aggregates manufactured from recycled materials are specified to deliver positive aspects of the design such as the building structure, ground slabs, roads, etc.	**0**		**1**	It is not deemed possible at the current time to predict whether the requirements of this credit will be achievable. It is proposed to use recycled aggregate within the structure, but full details are not yet available	Possible
Mat 1-7	Sustainable Timber	Up to two credits are available where timber and composite timber products used in structural and non-structural elements are either responsibly sourced OR are reused or recycled timber.		**2**	**2**	Care will need to be taken to specify appropriately certified timber as per BREEAM requirements. It should be noted that supply chain availability can often be a barrier to obtaining the timber as specified. The requirements for these credits will be adhered to for the core build leaving it available for leaseholders to achieve.	Lease
Mat 1-8	Floor Finishes	One credit where carpets and other floor finishes in tenant areas of speculative buildings are only installed in a limited show area or where the future occupant has specified them.	**1**		**1**	Requirement of this credit are deemed likely to be achieved. Where tenants are due to occupy the building, either carpets should not be provided, or the occupant should select or specify them.	Achieved
Land Use & Ecology							
Lan 1-1	Reuse of Land	One credit where site has been previously built on or used for industrial purposes within the last 50 years.	**1**		**1**	Requirements of this credit have been confirmed.	Achieved

Credit ref	Credit title	Credit Criteria	No of credits achieved to Core	Suggested credits for lease-holders	Number of credits available	Credit Validation (Fulcrum Consulting)	Status
Lan 1-2	Reclaimed Contaminated Land	One credit where land prior to development is defined as contaminated and where adequate remedial steps have been taken to decontaminate the site prior to construction.	**0**		**1**	No remediation work is reported.	Not possible
Eco 1-1	Ecological Value	One credit where the development site is defined as land of low ecological value (refer to Assessment Manual for the current checklist) or where specialist ecological advice has been provided and the ecological consultant has defined the land as 'land of little or no ecological value' within an ecological assessment report.	**1**		**1**	Based on advice regarding current site conditions.	Achieved
Eco 1-2	Change of Ecological Value	Up to five credits are awarded where the ecological value of a development site is either not substantially harmed or is enhanced beyond its previously existing state.	**2**		**5**	Estimate based on advise regarding the general site conditions and general project scope.	Possible
Eco 1-3	Ecological Enhancement	One credit where the design team or client has sought, and acted on, advice from the Association of Wildlife Trusts (AWTC), a full member of the Institute of Environmental Management and Assessment (IEMA) or a full member of the institute of Ecology and Environmental Management (IEEM) in terms of enhancing the ecological value of the site.	**1**		**1**	Suitably registered Ecologist to be appointed and advice taken, either in whole or part.	Possible
Eco 1-4	Protection of Ecological Features	One credit where the contract specification ensures that all trees over 100mm trunk diameter, hedges, ponds, streams etc. are maintained and adequately protected from damage during clearing and construction works.	**1**		**1**	It is not known with any certainty that the requirements of these credits are likely to be practicable.	Possible
Eco 1-5	Long-term Impact on Biodiversity	One credit where steps have been taken to prevent adverse impacts on biodiversity.	**1**		**1**	It is considered likely that the requirements of this credit will be met and demonstrated as necessary.	Possible
Pollution Section							
Pol 0-2	Refrigerant Leak Detection	One credit where systems containing refrigerants are contained in a moderately air tight enclosure and where a refrigerant leak detection system is specified/installed covering high-risk parts of the plant (evaporator or condenser coils can be omitted from this) or where no refrigerants are specified for the development.	**1**		**1**	No refrigeration is currently anticipated on the project.	Achieved

Credit ref	Credit title	Credit Criteria	No of credits achieved to Core	Suggested credits for lease-holders	Number of credits available	Credit Validation (Fulcrum Consulting)	Status
Pol 0-3	Refrigerant Recovery	One credit where either provision of automatic refrigerant pump down is made to the heat exchanger (or dedicated storage tanks) with isolation valves, or where there are no refrigerants specified for the development.	**1**		**1**	No refrigeration is currently anticipated on the project.	Achieved
Pol 0-4	NOx Emissions	Up to four credits available, depending on the NOx emission rates of the boiler plant: 1 credit where emissions are ≤140 mg/kWh delivered heating energy; 2 credits where emissions are ≤ 89 mg/kWh 3 credits where emissions are ≤ 59 mg/kWh 4 credits where emissions are ≤ 39 mg/kWh	**1**		**4**	Biomass boilers are proposed for the project. The Nox emissions have been calculated as 97.5mg/kWh, therefore only 1 credit can be awarded.	Possible
Pol 0-5	Water Run-off	One credit is awarded where rainwater holding facilities and/or sustainable drainage techniques are used to provide attenuation of water runoff by 50% at peak times to either natural watercourses and/ or municipal drainage systems.	**1**		**1**	Advice has been given that the design will incorporate SUDS in compliance with credit. Some rainwater harvesting is proposed in addition to porous paving in the court yard.	Possible
Pol 0-6	Watercourse Pollution	One credit where on site treatment such as oil interceptors/filtration are present.	**1**		**1**	It is envisaged highly likely that the appropriate levels of filtration will be specified to achieve this credit. As minimal parking is provided, oil interceptors are unlikely to be required.	Possible
Pol 0-7	Refrigerant GWP	One credit where all refrigerant types in use have a global warming depletion potential (GWP) of below 5 or where there are no refrigerants present.	**1**		**1**	No refrigeration is currently anticipated on the project.	Achieved
Pol 0-8	Renewable Energy	One credit where at least 10% of either the heat demand or the electricity consumption in the building is supplied from local renewable energy sources.	**1**		**1**	Biomass boilers are proposed for the project, sized to meet more than 10% of the buildings energy needs.	Achieved
Pol 0-9	Reduction of Light Pollution	One credit where the external lighting design is compliant with the guidance in the Institution of Lighting Engineers (ILE) Guidance notes for the reduction of light pollution, 2000.	**1**		**1**	Design and specification requirements of this credit are likely to be applied.	Possible
Pol 1-1	Insulant ODP & GWP	One credit where the insulating materials specified avoid the use of ozone depleting substances and substances with a global warming potential (GWP) of 5 or more, in either manufacture or composition.		**1**	**1**	It is likely that specifications will be developed to meet requirements. Details of all insulation products will need to be provided to confirm compliance, in the form of specifications or drawings notes.	Lease

7.9 Brighton and Hove Sustainability Checklist

Criteria	Criteria met?	Comments
Natural Environment		
Does the development protect / maintain and enhance / the biodiversity of the site as per Local Plan Policy QD17?	*Fully*	• An accredited ecologist has been consulted in the design development of the proposed scheme • The site for the proposed development was received in a stripped and levelled condition. This has been confirmed as having low ecological value by the ecology consultant • The ecological and landscaping proposals have been developed to include opportunities to encourage biodiversity through habitat creation, brown roofs, planting and nest boxes etc • The proposals are being developed with a target of achieving maximum ecology-related credits under BRE EcoHomes
Has a nature conservation report been submitted as part of the application?	*Fully*	• Information included as part of Design Statement submitted as part of planning application • Further reporting will be produced as part of EcoHomes assessment
Pollution		
Does the development give rise to an increase in land and water contamination and atmospheric pollution?	*Fully*	• Issues of air quality are covered as part of *Environmental Statement* • Issues of ground conditions and contamination are covered as part of *Environmental Statement* • The proposed development has been designed as a net 'zero carbon emissions' scheme with on-site carbon-neutral energy being generated by a biomass boiler and wind turbine array • The on-site measures alone (together with the energy-efficient building design) have been calculated to reduce carbon dioxide emissions by more than 50% compared to a contemporary benchmark. Refer to Carbon section of *Sustainability Action Plan* • The sustainable mobility strategy and zero private non-disabled parking provision will contribute towards local air quality. Refer to *Accessibility Statement*
Community Safety		
Will the design of the development be of a high standard contributing to public safety and crime prevention?	*Partially*	• Building and associated open space are designed to maximise natural surveillance: The buildings are outward looking in all directions, with no backs or blank gable ends. This results in many primary aspect windows overlooking all areas of public and semi-public space, including access and through routes • The mixed use development creates an active neighbourhood, ensuring occupancy at all times of the day and a high usage of the external spaces and routes • Landscape Architects have been employed to ensure that the design of the open spaces is of

Criteria	Criteria met?	Comments
		the highest quality. There are clearly defined zones, creating a of hierarchy public and semi-public spaces, for example from the main public courtyard to the secure communal garden of Block F, with planted areas adjacent to the building to protect low-level windows. All areas are subject to natural surveillance from resident's windows and often from commercial or community spaces as well. All areas have a good level and quality of lighting • The Car Park is secured with a roller grill to control vehicular and pedestrian access. The space is well lit and will have light coloured internal finishes. Communal residential entrances will have a concierge and/or PAC entry system. Entrance areas will be monitored by CCTV cameras. A 'Green Caretaker' will be based within the proposed development and will help ensure that it is well maintained and managed
Economy and Work		
Does the development provide a mix of uses suitable to the area and the development itself?	*Fully*	• The development proposals represent a mixed-use community comprising of residential, commercial and community functions • On-site employment opportunities will be associated with the community centre, office or retail uses within the commercial space, and ongoing requirement for maintenance of the built form and landscaping • Furthermore, the proposed development forms part of the wider mixed-use New England Quarter neighbourhood which has been conceived to supplement the existing diversity with supporting uses • Reference should be made to the socio-economic impacts section within the *Environmental Statement*
Does the development add a diverse range of employment opportunities for local people, encouraging both start-ups and expanding businesses?	*Partially*	• The proposed development offers 1134m^2 of commercial area and 925m^2 as a community facility • The planning requirements for the proposed development include for 'shell and core' only and it is therefore not within the remit of the developer to determine the range or type of businesses occupying the completed scheme • The community facility (and potentially a proportion of the commercial space) will be managed by the Ethical Property Company (EPC). EPC support ethical businesses and their ethos supports providing flexible spaces to meet a variety of business needs. Including for start-ups and small-but-growing businesses • The commercial spaces will be designed to a 'shell and core' state to permit a high level of flexibility for incoming business occupants with differing needs
Does the development provide training opportunities for local people?	*Partially*	• The Ethical Property Company, as operators of the community facility, are keen to work in partnership with community organisations and social enterprises who offer employment and training opportunities to disadvantaged and vulnerable groups • Through a 'One Planet Living' approach to construction, it is proposed that attitudes towards

Criteria	Criteria met?	Comments
		providing training for local people will help inform selection of constructor partners
Does the development provide for expansion in growth areas, as identified in the economic strategy?	*Partially*	• The proposed development could become a hub for green thinking and green action • The integration and expression of sustainable thinking throughout the scheme, coupled with the involvement of the Ethical Property Company, are likely to attract businesses and organisations from the (environmental and social) sustainability sector • This 'green collar' sector has grown notable in recent years and the outlook is positive for increasing demand for related knowledge and skills
Energy		
Has the development been developed with regard to the principles of policy SU2 and Draft SPG16 on Renewable Energy and Energy Efficiency?	*Fully*	• The proposed development has been designed to optimise building energy demands through the utilisation of highly performing building components to achieve insulation levels in-line with achieving maximum credits under BRE EcoHomes • Furthermore, energy-efficient lighting and appliances will be specified • 100% of the building's thermal demands (for space heating and hot water) will be met via an on-site biomass boiler with natural gas back-up • Electrical demands will be met via a combination of an array of small-scale wind turbines on-site together with investment in off-site renewables capacity • For further details refer to Zero Carbon section of the *Sustainability Action Plan*
Does the development incorporate sustainable energy sources such as CHP, solar and wind?	*Fully*	• Refer to previous answer • For further details refer to Zero Carbon section of the *Sustainability Action Plan*
Land use		
Will the development secure the re-use of vacant land, derelict and underused sites?	*Fully*	• The development site forms part of a wider brownfield redevelopment scheme • It is understood that the development site previously included disused railway buildings and infrastructure • The location of the site within an urban environment supports government policy on regeneration of previously used urban infill sites
Is the development located in an area with good access to local community facilities?	*Fully*	• The proposed development has a city centre location which would enable safe walkable access to a variety of local amenities and community facilities • A range of new facilities being created as part of NEQ, most of which will the operational as Blocks E&F are nearing completion • Through the inclusion of a community centre the proposed development inherently provides new community facility 'downstairs'
Will the development achieve a BREEAM / EcoHomes rating of Very Good /	*Fully*	• There is a client project target to achieve EcoHomes 'Excellent' on the residential units both at design stage and at post construction review

Criteria	Criteria met?	Comments
Excellent?		• The non-residential elements will be designed to achieve BREEAM 'Excellent' ratings although they will only be completed by the developer to a 'shell and core' level. On this basis, the BREEAM obligations would be transferred to the owners/tenants of the units
Will the development be accessible to all sectors of the community?	*Partially*	• 100% of the homes will be designed to Lifetime Homes standards • The proposed development will be accessible via a series of lifts • The external environment is navigable via an arrangement of ramps suitable for wheelchair use
Transport		
Is the development located in an area with a good level of access to public transport?	*Fully*	• To proposed development is excellently location for public transport being located less than 5 minutes walk from Brighton train station and will very good access to local bus services • Refer to *Accessibility Statement* and *Travel Plan* for further details
Will the development promote a sustainable means of transport to all sectors of the community by including e.g. car clubs / car sharing schemes?	*Fully*	• A car club will be based on the proposed development serving residents and commercial occupants as well as the wider community • The club will have 5 allocated parking spaces as part of the proposals • Through the proposed community extranet, car-sharing initiatives will be promoted • Refer to *Accessibility Statement* and *Travel Plan* for further details
Will the development encourage cycle use by providing onsite parking facilities in accordance with TR12 and provide shower and changing facilities if an office development?	*Fully*	• The proposed development will encourage cycling through an innovative approach combining sheltered and secure storage, with storage for folding cycles, incentives for residents to purchase cycles, and a proposed cycle club • Showering and changing facilities will be provided within the community centre, but not within the commercial spaces as they would form part of the tenant fit-out • Refer to *Accessibility Statement* and *Travel Plan* for further details
Waste		
Will the development incorporate recycling facilities on site?	*Fully*	• The proposed development will include segregated bin provision within all the residential units in support of achieving maximum credits under EcoHomes • External bins for different recyclates will also be provided for both residential and commercial waste streams • Composting will also be promoted through the provision of suitable storage facilities within the residential kitchens and (subject to necessary licensing etc) either the provision of on-site in-vessel composters or collection by a third party waste contractor
Is construction material reused, or recycled form sustainable resources and from within 20km?	*Partially*	• As part of the Local and Sustainable Materials strategy outlined in the *Design Statement* and the *Sustainability Action Plan*, project targets have been set for the percentage of reclaimed and recycled materials used within the scheme

Criteria	Criteria met?	Comments
		• A preferential policy for sourcing local materials has been established as part of a pragmatic approach to optimising building material impacts from embodied energy and life cycle assessment perspectives
Will the reuse waste water and reduce water consumption?	*Partial*	• Water consumption within the proposed development will be reduced compared to contemporary benchmarks through the specification of low-flush dual-flush toilets and taps/showers with flow restrictors • The planting strategy includes the use of species which have drought-resistant properties • Rainwater will be collected from a proportion of the roofscape and utilised for irrigation of the roof gardens and 'sky gardens' as well as for the toilets within the community facility • Refer to Sustainable Water section of *Sustainability Action Plan* for further details
Housing		
Will the development provide a mix of unit sizes?	*Partial*	• The proposed development would include a mixture of studio, one and two bed units • Furthermore, in addition to providing socially-rented and shared-ownership homes through the RSL provision, the eco-studio units have been conceived as offering private affordable housing in response to the strong intermediate market in Brighton
Does the development incorporate the provision of public and private amenity space in accordance with the provisions of policies HO (new policy) and HO5 of the Second Deposit Draft Local Plan	Partial	• The proposed development includes courtyard and external landscaped areas totalling nearly 1500m^2, together with communal terraces, garden and sky gardens totalling more than 450m^2. A further 128m^2 of roof-top allotments are provided

7.10 One Planet Living Common International Targets

The table below summarises the One Planet Living common international targets which aim to be achieved in the flagship communities by 2020.

Principle	Common International Targets, by 2020	Common Targets – Summary
Zero Carbon	All buildings and structures should be zero carbon (powered by renewable energy), preferably from day 1 of occupation but certainly by 2020 at the latest. Renewable energy can either be generated on site or purchased from a dedicated off-site source representing new renewable energy capacity (adding to total renewable energy capacity, not diverting it from other uses).Country specific agreements on the profile to meet the 2020 target can be negotiated, but the profile must demonstrate rapid and clear progress towards the zero carbon target, especially given current rapid advances in the introduction of renewable energy technology globally. All buildings and structures are designed or retrofitted to be energy efficient to country-specific best practice standards. Although nuclear fission may be a bridging technology to reduce climate change in the medium term, it is not considered a renewable energy source for the purposes of OPL. Similarly, although use of fossil fuels with new technologies may be a useful way or reducing carbon dioxide emissions, e.g., on-site gas CHP systems, such solutions are not considered suitable for the purposes of demonstrating OPL, even if the resulting fossil fuel emissions from buildings are offset by carbon sequestration.	All buildings must be energy efficient and supplied by renewable energy.
Zero Waste	Long term the aim is to "eliminate the concept of waste". By 2020, the following targets must be achieved: ▪ at least 70% of waste by weight generated by residents and commercial operations within the developments should be reclaimed, composted or recycled; ▪ per capita waste production should be monitored and targets set for reduction in per capita waste; ▪ clean energy from waste plant may form part of the zero waste strategy provided careful monitoring of emissions is in place and international best practice standards on operations are employed; ▪ ideally no more than 2% of waste by weight should be sent to landfill by 2020; ▪ Country-based best practice standards in waste minimisation during construction should be employed. Country based agreements on the profile to meet the 2020 target can be negotiated, but the profile must demonstrate a rapid and clear progression to the zero waste target especially given current rapid advances in the introduction of waste processing globally.	At least 70% of waste by weight to be reclaimed, recycled or composted and ideally no more than 2% should be sent to landfill.
Sustainable Transport	Country specific differences and locational issues mean that it is difficult to set a common international numerical target. Most importantly, whereas industrialised countries will need to reduce carbon dioxide (CO_2) from transport, poor countries may need to increase per capita CO_2 emission from transport, at least in the short to medium term. However, in all cases, the EF arising from transport has to be consistent with the overall EF target of achieving One Planet Living (i.e., living within an EF of one or 1.5 hectares per person). BDG and WWF will agree sustainable transport targets on a case by case basis. These targets will be based on a transport CO_2 per capita and will need to show reduction over an agreed regional benchmark and progression year on year towards a "One Planet Living" level. Given the CO_2 contribution from transport in industrialized countries, these targets are likely to be very stretching. A simple sampling process for residents to monitor against this target must be developed. Targets for travel within the site and to and from the site need to be set, in particular for projects with a major tourist component. For developments with a tourist component, CO_2 per person per night can be used as an indicator.CO_2 emissions from all remaining transport should preferably be offset by a certified carbon sequestration scheme, ideally meeting the WWF Gold Standard. For tourist projects, all air travel to and from the site must be offset by a certified carbon sequestration programme. Moreover, no OPL partner may formally oppose introduction of taxes on aviation fuel.	CO_2 emissions of persons travelling to and from the site and within it must be reduced relative to an agreed regional benchmark. Ideally all unavoidable CO_2 emissions from transport should be offset by a certified carbon sequestration scheme.

Principle	Common International Targets, by 2020	Common Targets – Summary
Sustainable materials	Via the common process guidelines detailed below, country-specific targets should be determined to increase and optimise the use of local, reclaimed, recycled and low environmental impact materials for construction and estate management phases of the development.	Use of local, reclaimed, recycled and low environmental impact materials in construction and estate management should be increased and optimised.
Local and sustainable food	Healthy diets high in local, seasonal, organic and low environmental impact foods should be promoted, given their consistency with a One Planet Living ecological footprint. By 2020, a significant proportion of food should be locally sourced from low environmental impact farming with reduced packaging from a radius of 50 km (or equivalent area of 7850 km^2, to a maximum of 100 km from the centre of the site). Given the importance of food to eco-footprints, stretching targets are essential. Specific targets will be set via the process guidelines, but a minimum target of 25% of food by weight must meet these criteria, and ideally 50% of food by weight. Key Performance Indicators should be set for certified organic and fair trade food. Country specific profiles to hit this target need to be agreed.	Healthy diets should be promoted and minimum targets achieved for supply of organic or low-environmental impact food and local sourcing.
Sustainable water	Country-specific best practice standards in water efficiency and recycling must be agreed. These targets will need to be stricter in areas with water shortage problems. All residents must have access to safe potable water. Projects in areas of flood risk should have an acceptable 100 year flood risk strategy.	Water efficiency and recycling must be promoted in line with country-specific best practice.
Natural Habitats and Wildlife	The development must make a net positive contribution to local native biodiversity and natural habitats. Any key species must be identified and monitored, as part of a local conservation plan. A site-specific action plan to maintain, enhance or revive valuable aspects of biodiversity must be elaborated, following the process guidelines detailed below. At least one opportunity must be identified to regenerate degraded local natural resource stocks (soils, trees, fisheries, etc) and a plan implemented. At least 2 case studies should be showcased, one for biodiversity and one for natural resource stocks.	Local biodiversity and natural resource stocks must be increased.
Culture and Heritage	A site specific action plan to maintain, enhance or revive valuable aspects of local culture and heritage (including anything from local buildings and building techniques to local produce or arts and crafts) must be produced. At least 2 case studies should be showcased.	Valuable aspects of local culture and heritage must be maintained, enhanced or revived.
Equity and Fair Trade	OPL communities are expected to improve the welfare of selected disadvantaged populations, whether on site or elsewhere. Country-specific priorities of equity and fair-trade must be identified and targets set. Where products are imported from developing countries, targets should be set for the proportion that must be certified fair trade. At least 2 case studies should be showcased.	Targets must be set to address country-specific equity priorities and for the ratio of imported goods and services that is fair trade certified.
Health and Happiness	A plan for promoting the health and happiness of residents must be produced, building on emerging findings from happiness research. Residents' satisfaction levels and concerns must be regularly monitored. Partners should also explore the feasibility of meeting UN standards for health, security and environmental quality. At least 2 examples of strategies to promote health and happiness must be showcased.	Health and happiness of residents must be promoted based on emerging findings from 'happiness' research and periodic residents' surveys