

Abacus Projects Limited

Inglewood, Paignton, Torbay

Outline Sustainability Strategy

16/10/2017 Revision 02

SUSTAINABILITY





Audit Sheet

Rev.	Date	Description	Prepared	Verified
01	18/08/2017	Final document issued for submission	KA/TB/TA	GJ/JF
02	16/10/2017	Updated to incorporate changes to revised masterplan (final)	KA	TA

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Foreword

Purpose of this Report

This Sustainability Strategy has been prepared by Hoare Lea to accompany the outline application for planning permission submitted on behalf of Abacus Projects Limited and Deeley Freed Estates Limited (hereafter referred to as the 'Applicant') for the proposed Inglewood Masterplan development (hereafter referred to as the 'Proposed Development').

Project Description

The Proposed Development includes a mix of residential accommodation types including an element of affordable housing (rental and shared ownership) – up to 400 residential units of varying types and tenures has been proposed. The Proposed Development also includes the provision of a two entry Primary School which will also be used as a Community Space outside of School hours, and a Public House (Pub).

The Application Site is within Torbay Council and located to the west of the built up area of Paignton; south of Long Road and west of Brixham Road. It is 4 miles from the centre of Torquay to the north east; 1.8 miles from the centre of Paignton to the north east; and 2.6 miles from the centre of Brixham to the south east. The site is located on Paignton's urban fringe, with the residential areas of Goodrington and Hookhills immediately to the east of Brixham Road. Torbay Business Park abuts the site to the north.

The proposed Development is circa 37.2 hectares (92 acres) and land identified for development is approximately 32 hectares (80 acres) in size, about half of which being granted planning permission in 2009. Approximately 5 hectares (12 acres) set aside for public open space.



1. Executive Summary

This report outlines a potential Sustainability Strategy for the Proposed Development which has been informed by both national and local policy requirements, as well as various sustainable design frameworks and standards.

The design of the Proposed Development would embrace sustainability principles and should result in the creation of a new and vibrant community. It is on this basis that the Five Capitals Model for Sustainability (See Section 4 for a brief description) is being applied to capture the multi-faceted benefits that the Proposed Development potentially brings to the Application Site, local community, surrounding businesses and future building users.

The overall strategy is illustrated in Figure 1.2 overleaf – the diagram highlights the applicable principles and associated themes; that is, key focus areas pertinent to the Proposed Development in line with the Five Capitals Model for Sustainability.

Natural Capital

The Proposed Development is within an ‘Area of Great Landscape Value’ and this has been well considered by the design proposals. As a minimum, the Proposed Development would seek to minimise impact on the site’s ecological value and explore opportunities to protect and enhance site biodiversity. Consideration would be given to recycled materials with low environmental impact where feasible.

An Air Quality Assessment (AQA) has been conducted for the Proposed Development and this concluded that concentrations of nitrogen dioxide, PM₁₀ and PM_{2.5} will remain well below the objectives at all existing receptors in 2019, whether the scheme is developed or not. The overall operational air quality effects of the development are judged to be ‘not significant’. The Energy Strategy for the Proposed Development is also aimed at reducing the overall greenhouse gas emissions particularly as a result of CO₂ emissions from the operational phase of the development.

Human Capital

The Proposed Development would aim to improve the health and wellbeing of future residents, staff and visitors alike by seeking to achieve good levels of daylighting, indoor air quality, thermal comfort, safety and security. A range of local amenities including three areas of public open spaces are proposed; two of these would include multi-use game areas and play pitches. In addition, opportunities for walking, cycling and other recreational facilities have been considered. See Appendix 2 for how the Proposed Development incorporates the *Ten Principles of Active Design* championed by Sports England.

Social Capital

The Proposed Development would be adding value to the local community, its activities and economic outputs by strengthening the existing network of local partnerships and also helping to create new vibrant ones. The Proposed Development would create a distinctive sense of place and a vibrant public realm which promotes interaction, supports social cohesion and community development. Additionally, the Proposed Development would include affordable housing.

Physical Capital

In addition to implementing high quality, sustainable design and construction, the Proposed Development would aim to improve the existing transport infrastructure. A site wide Travel Plan would be developed for the site that would set out targets and measures for promoting sustainable transportation modes – including walking, cycling and keeping single occupancy private car trips to a minimum.

The proposed Energy Strategy is in line with the Energy Hierarchy and after applying the three steps of the hierarchy; that is, “Be Lean”, “Be Clean”, and “Be Green”. Based on an initial assessment, the Proposed Development could potentially achieve an overall carbon emissions reduction of up to 22% beyond Building Regulations Part L 2013 as shown in Figure 1.1 below. Please refer to Appendix 1 for the preliminary energy assessment calculation results and assumptions.

The total anticipated energy consumption (regulated) for the Proposed Development is estimated at circa 2,700 MWh/year, with the largest proportion of the Proposed Development’s regulated energy consumption; that is, over 50% coming from space heating. This translates to an overall carbon emission of circa 690 TCO₂/year.

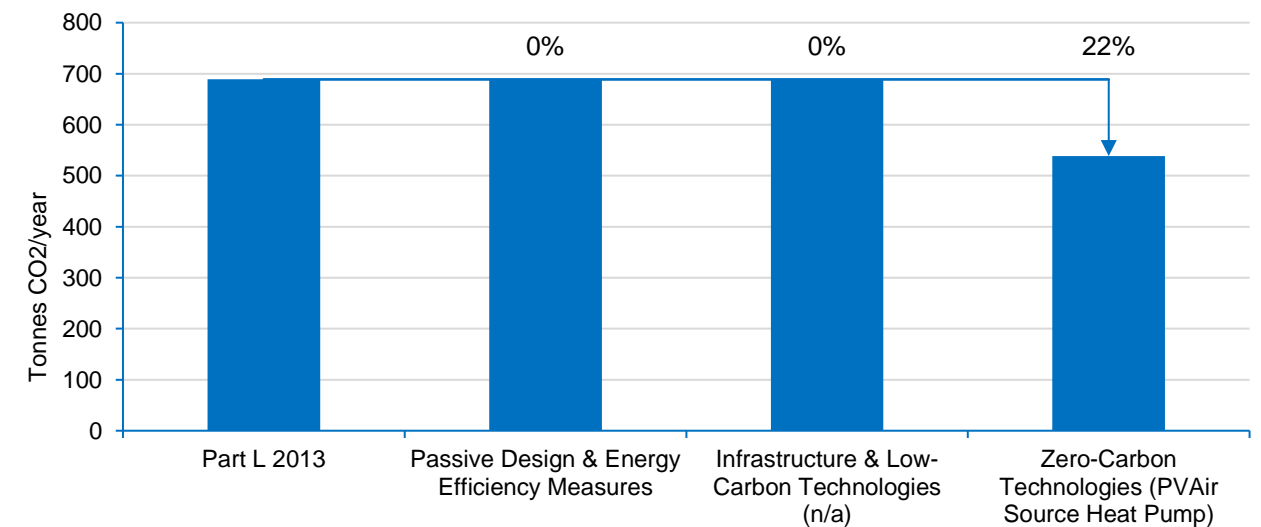


Figure 1.1: Overall Estimated Regulated Carbon Emissions Reductions.

A number of potential renewables and LZC technologies have been considered as part of an initial appraisal; some have been discounted with others such as air source heat pumps, solar hot water and photovoltaic (PV) panels considered for further review. However, a full appraisal of applicable technologies would be undertaken during the later design stages.

Economic Capital

In order to boost local economy, local business and suppliers would be used where viable. Whole life cycle costing of the design options would also be considered in order to deliver whole life value from the Proposed Development and promote economic sustainability. Based on research for English Partnerships, the Proposed Development could generate over a thousand full time equivalent jobs.

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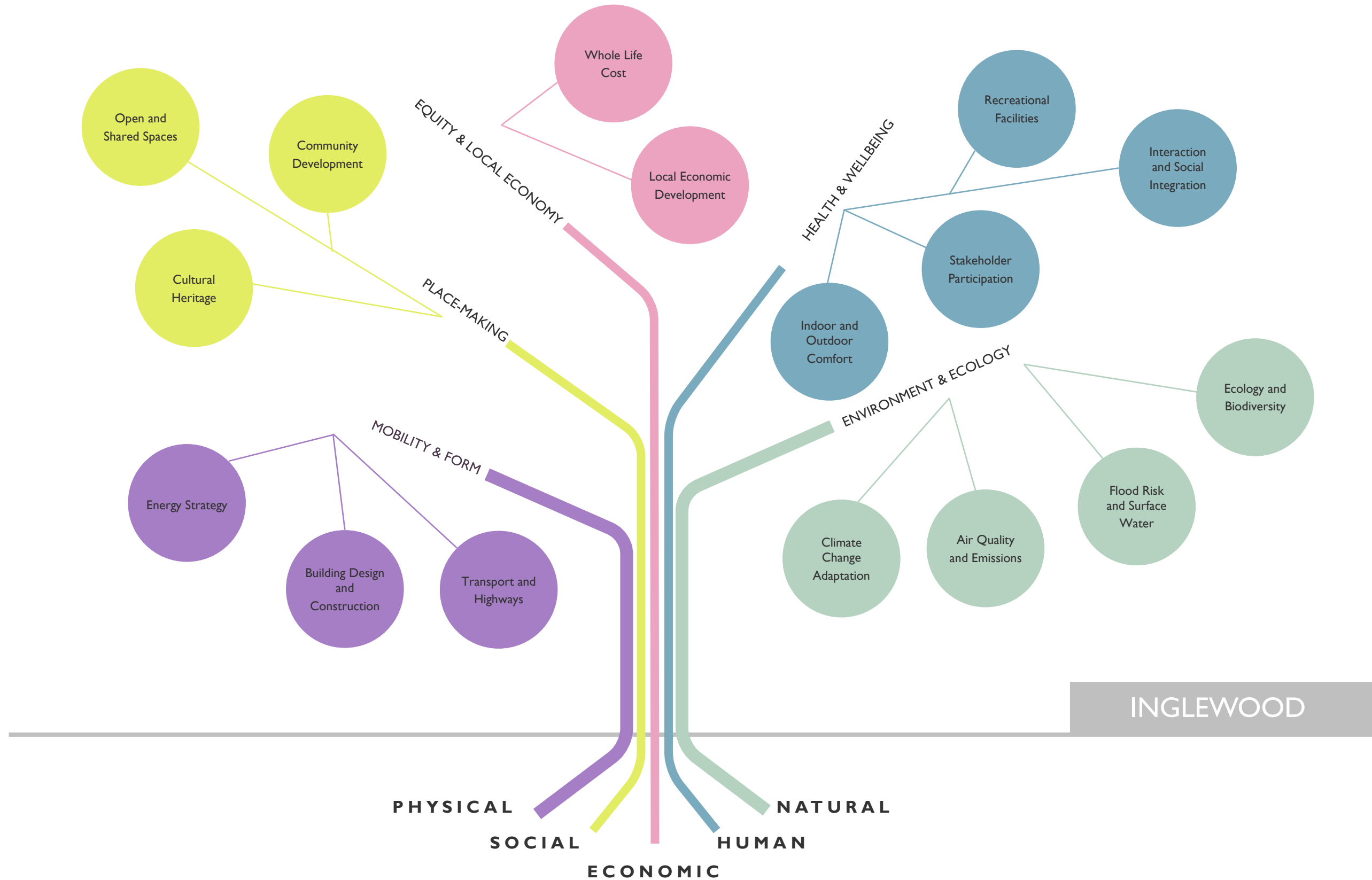


Figure 1.2: The Five Capitals Model of Sustainability Illustrated – Key Principles and Themes.

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3. Policy Context and Drivers

3.1 Relevant National and Local Policies

A policy review has been undertaken and is outlined in Appendix 3. As a summary, planning policy documents applicable to the Proposed Development have been identified and include the following:

- ▶ National Planning Policy Framework (2012).
- ▶ National Building Regulations (2013).
- ▶ Torbay Local Plan (December 2015).
- ▶ Torbay Energy and Climate Change Strategy (2014).
- ▶ Torbay Harbour Authority – Port Masterplan (July 2013).
- ▶ Brixham Peninsula Neighbourhood Plan – Policy Document (January 2017).
- ▶ Other Brixham Peninsula supporting documents; including:
 - Strategic Environmental Assessment (January 2017).
 - Habitat Regulations Assessment Screening (December 2016).
 - Housing Site Assessment – Site Appraisal (October 2016).

3.2 Sustainable Design Frameworks

The Applicant is committed to reducing the environmental impact of the Proposed Development through environmental best practice and its application. As a result, a number of sustainable design frameworks/standards have been considered.

The sustainable design standards considered include the following:

- ▶ One Planet Living (2016) – *Goals and guidance for communities and destinations*
- ▶ Building for Life Standard (2015) – *The sign of a good place to live*
- ▶ Building Healthy Places Toolkit (2015) – *Strategies for enhancing health in the built environment*
- ▶ BREEAM Communities (2012) – *Integrating sustainable design into the Masterplanning of new communities and regeneration projects.*

The Proposed Development would also seek to incorporate Sport England’s *Ten Principles of Active Design*. These principles are rooted in Sport England’s aims and objectives to promote the role of sport and physical activity in creating healthy and sustainable communities, and this would support the Proposed Development’s objective to create healthy and sustainable spaces which contribute positively to making places better for people. See Appendix 2 for details of these Principles and how they would be incorporated into the design.

Section 4 overleaf provides an overview of the proposed site-wide Sustainability Strategy including a brief narrative on how applicable design strategies and targets from the planning policy documents and sustainable design frameworks highlighted above could be integrated and delivered across the Proposed Development.

The section also identifies how the five key sustainability aspirations set out in the adopted Torbay Council Local Plan (2015) could be addressed through the design proposals and Masterplan strategies.



Figure 3.1: Relevant Planning Policy and Sustainable Design Frameworks.

4. Sustainability Strategy

4.1 Approach to Sustainability

The following strategy addresses various sustainability subject areas and covers various headline sustainability categories. The strategy confirms the applicable policies, the Applicant’s aspirations and sustainability measures that could be implemented at the Proposed Development. The design of the Proposed Development would embrace sustainability principles and aim to create a new and vibrant community. It is on this basis that the **Five Capitals Model for Sustainability** as illustrated in Figure 4.1 is being applied to capture the multi-faceted benefits that the Proposed Development potentially brings to the:

- ▶ Application site,
- ▶ Local community,
- ▶ Surrounding businesses, and
- ▶ Future building users.

The Five Capitals Model for Sustainability is built around the concept of wealth creation; that is, “capitals” and aims to address the shortcomings of previous conceptual models and frameworks. This sustainability framework conveys a clear business case for sustainability measures and seeks to highlight how the Proposed Development drives the creation of long term value across the five capitals; that is:

- ▶ Natural,
- ▶ Human,
- ▶ Social,
- ▶ Physical, and
- ▶ Economic.

The Masterplan Vision

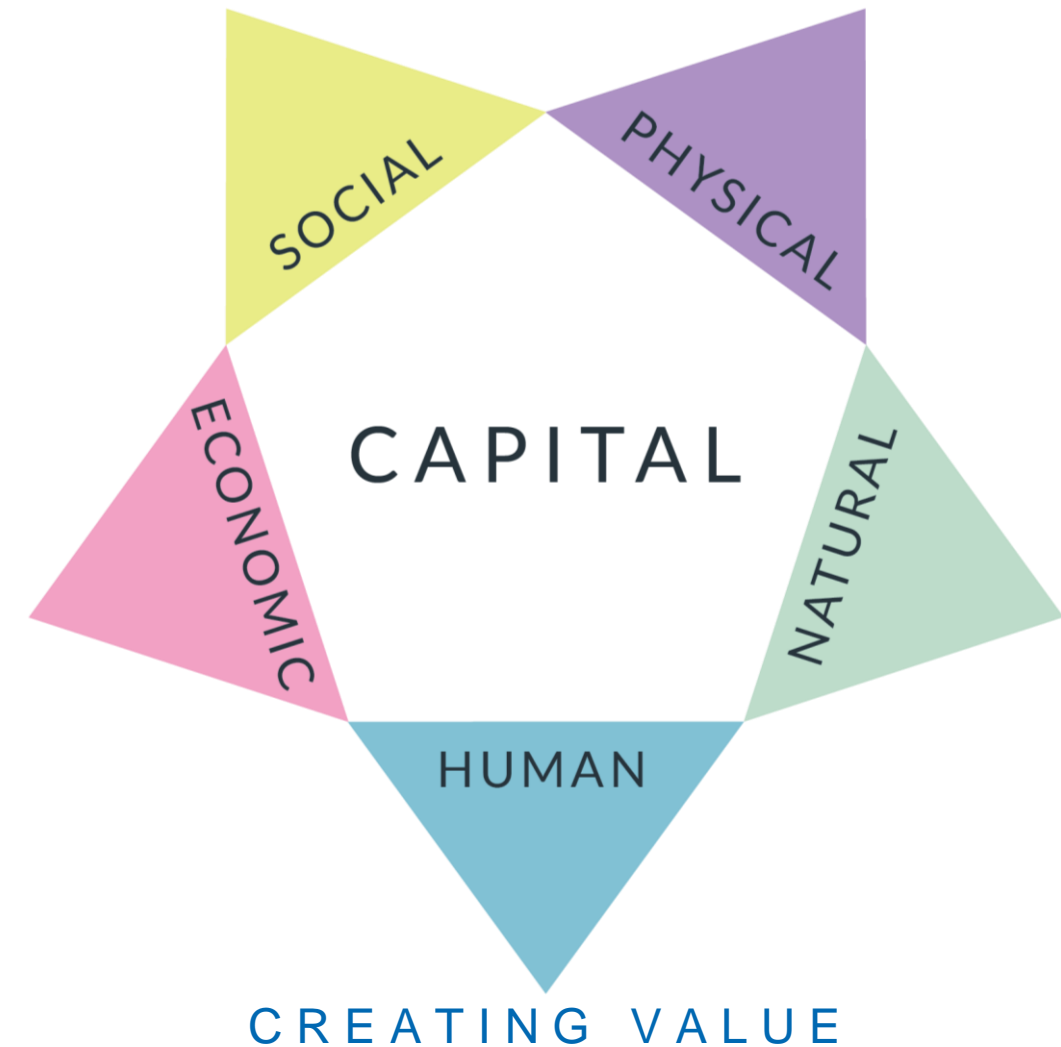
Ultimately, the aim of the proposed energy and sustainability strategy for the Proposed Development is to achieve high standards of sustainability. It is envisaged that this goal could be underpinned by a set of objectives (strategies and targets) which would drive the Proposed Development towards a sustainable pathway and deliver sustainability outcomes over the Masterplan phases.

The Charter and Governance

The objectives which would be set to govern the design and delivery of the Masterplan is informed by a review of relevant national and local policy documents including a number of sustainable design standards. The objectives include: design strategies (Masterplan level), and specific performance targets (Buildings/plot scale).

The Delivery Framework

The overall energy and sustainability objectives for the Proposed Development have been encapsulated within the Five Capitals Model for Sustainability illustrated in Figure 4.1. More specifically to the energy aspect (discussed under the Physical Capital), the Energy Strategy is delivered in line with the Energy Hierarchy. Please see Appendix 1 for the preliminary energy calculations and assumptions. The application of these frameworks are discussed further throughout this report.



- Natural Capital** “...that is, the access to, quality and productivity of the natural environment and resources.”
- Human Capital** “...that is, the life skills, social skills and techniques that give people the self-efficacy to lead autonomous lives.”
- Social Capital** “...that is, the web of communities, voluntary organisations; e.g. local partnerships, associations, etc.”
- Physical Capital** “...that is, the quality of housing, transport, welfare and medical services, food distribution systems, communication and energy infrastructure, etc.”
- Economic Capital** “...that is, the productive power of the other types of capital and equitable access to liquidity and fair wages.”

Figure 4.1: Proposed Framework for Sustainability – The Five Capitals Model.

4.2 Natural Capital

“... the access to, quality and productivity of the natural environment and resources.”

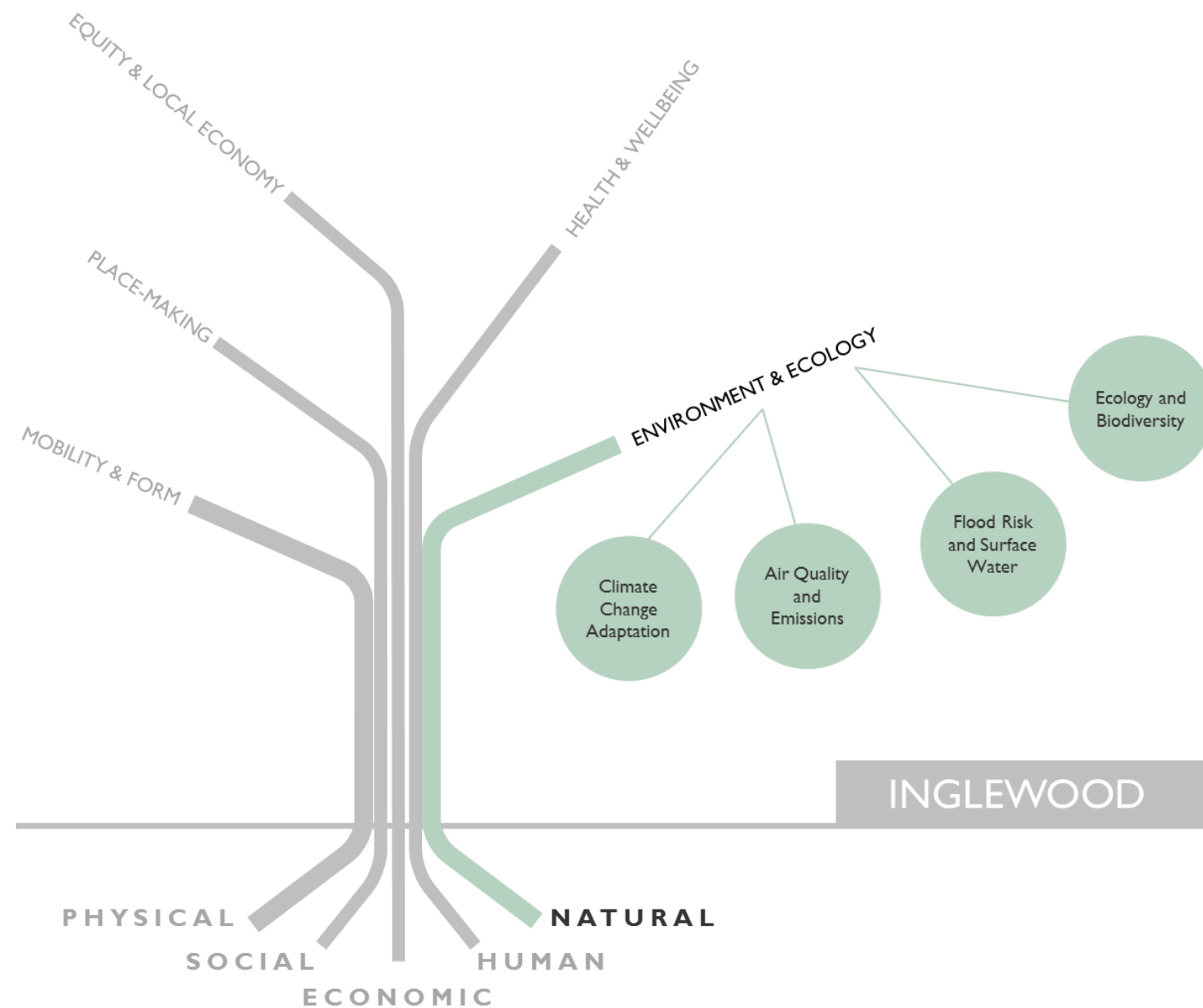


Figure 4.2: Natural Capital Illustrated.

Ecology and Site Biodiversity

Ecological surveys undertaken by Ecosulis since April 2010 include: Phase 1 habitat survey, Bat surveys, Dormouse surveys, and Breeding bird survey. These have confirmed to date the use of the Application Site by bats and cirl bunting. Hedgerow and invertebrate surveys are to be undertaken imminently and bat, dormouse and reptile surveys are on-going.

The Proposed Development has employed an ecologist to advise on enhancing the ecological value of the site. Measures to enhance site ecology would include: creation of 3km of new hedgebanks, planting of approximately 0.5ha of broad leave native woodland and 0.4ha of orchards, and the installation of bird and bat boxes. There would also be significant opportunity to enhance tree cover, and any tree loss would be restricted where possible to low grade trees.

As a minimum there would be no negative impact on the site’s ecological value in line with **Torbay’s Aspiration 3: protect and enhance a superb environment**

- ▶ *Policy SS8 Natural environment* – developments must protect and manage wildlife, habitats and the corridors between them.
- ▶ *Policy SS9 Green infrastructure* – developments to follow a green infrastructure-led approach and maintain existing and contribute to tree planting and woodland creation.

Flood Risk and Surface Water

- ▶ A Flood Risk Assessment including a sustainable drainage strategy has been carried out for the Proposed Development which confirms the Application Site has a low risk of flooding from all sources.
- ▶ It is anticipated that surface water run-off would be managed by a combination of soakaways and surface water sewers draining to a communal infiltration basin. Private driveways would be surfaced with permeable paving.
- ▶ Small scale rainwater harvesting could also be considered for the dwellings.

Climate Change Adaptation

The design could contribute to the adaptation and mitigation of the effects of climate change through the consideration of these measures:

- ▶ A robust drainage infrastructure and strategy.
- ▶ Resilient materials and components for the building’s structure and fabric elements.
- ▶ Dynamic thermal analysis to assess the risk of overheating.
- ▶ Additional modelling using a Climate Change 2050 weather file could be carried out to further consider the impacts of climate change and enable design adaptability.

All the above are in line with **Torbay’s Aspiration 5: Respond to climate change**

- ▶ *Policy SS14 Low carbon development and adaptation to climate change* – deliver sustainability in a holistic manner and make the most of opportunities to provide resilience to climate change through:
 - ▶ Limiting summertime overheating within buildings
 - ▶ Conserving water supplies and minimising the risk/impacts of flooding
 - ▶ Avoiding increases in energy use and greenhouse gas emissions

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Air Quality and Emissions

An Air Quality Assessment (AQA) has been carried out for the Proposed Development and this confirms that the Proposed Development is consistent with the NPPF.

The AQA concluded that concentrations of nitrogen dioxide, PM₁₀ and PM_{2.5} will remain well below the objectives at all existing receptors in 2019, whether the scheme is developed or not. The additional traffic generated by the Proposed Development will affect air quality at existing properties along the local road network; however, the AQA demonstrated that the increases in concentrations of PM₁₀ and PM_{2.5} at relevant locations, relative to the objectives, will range from zero to 1% (when rounded) and the impacts will all be negligible. In the case of nitrogen dioxide, the percentage increases are predicted to range from zero to 3%, and the impacts will all be negligible.

The effects of local traffic on the air quality for residents living in the Proposed Development have been shown to be acceptable at the worst-case locations assessed, with concentrations being well below the air quality objectives.

The overall operational air quality effects of the development are judged to be 'not significant'. This conclusion, which takes account of the uncertainties in future projections, in particular for nitrogen dioxide, is based on the concentrations being well below the objectives and impacts all being negligible.

Furthermore, the Energy Strategy for the Proposed Development is also aimed at reducing the overall greenhouse gas emissions particularly as a result of CO₂ emissions from the operational phase of the development. Please see Section 4.5 and Appendix 1 for further details.

Resource and Material Efficiency

- ▶ Wherever possible, reclaimed materials would be reused to limit use of virgin materials.
- ▶ The Proposed Development would aim to use materials with low environmental impacts and as far as possible, aim to specify materials with a Green Guide Rating of A+ to D.
- ▶ Insulation products to be specified would have zero Ozone Depleting Potential (ODP) and minimal Global Warming Potential (GWP) to five or less.
- ▶ All timber to be used would be responsibly sourced; that is, FSC, PEFC certified, etc.

4.3 Human Capital

“...the life skills, social skills and techniques that give people the self-efficacy to lead autonomous lives.”

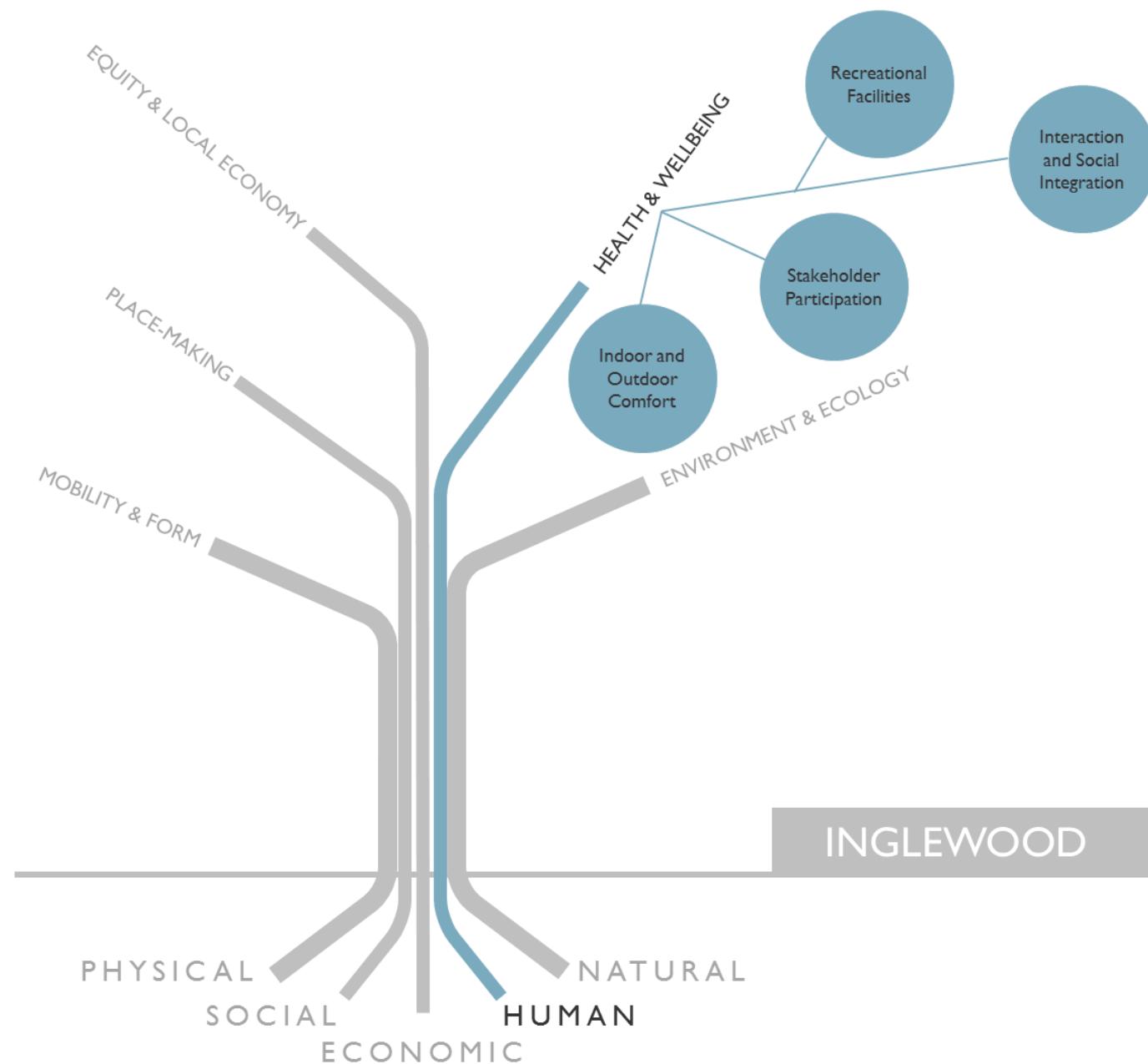


Figure 4.3: Human Capital Illustrated.

Stakeholder Participation

A significant level of engagement has been recorded and is currently still ongoing. The following amongst others would be produced to record and track this process:

- ▶ Statement of Community Involvement.
- ▶ Consultation Tracker.
- ▶ Exhibition boards from public exhibition and various records including meeting minutes.

Where appropriate and deemed feasible, consultation feedback would be incorporated into the final design of the building. Torbay consultation feedback gathered from an online survey (May 2017) highlighted the following key recommendations:

- ▶ Include more community facilities.
- ▶ Increase outdoor / recreation space.
- ▶ Improve protection of wildlife.

Indoor and Outdoor Comfort

- ▶ Consideration for adequate daylight and glazing designed to reduce glare.
- ▶ Noise Impact Assessment has been carried out and findings considered in the design.
- ▶ External lighting report produced in line with local authority guidance; including street lighting and external lighting controls with photocells and timeclock arrangements.

Recreational Facilities and Spaces

Human Capital incorporates the health, knowledge, skills, intellectual outputs, motivation and capacity for relationships of the individual. Therefore, the Proposed Development would aim to create new buildings that actively promote the health and wellbeing of its occupants.

See Appendix 2 for how Sport England’s *Active Design Principles* would be integrated into the building design and layouts. A range of local amenities including three areas of public open spaces have been proposed; two of these would include multi-use game areas and play pitches. In addition, opportunities for walking, cycling and other recreational facilities have been considered.

This is in line with **Torbay’s Aspiration 4: Create more sustainable communities and places**

- ▶ *Policy SS11 Sustainable communities* – regenerate or improve social, economic or environmental conditions through these measures:
 - ▶ Develop a sense of place and local identity.
 - ▶ Promote social inclusion and design out crime.

Interaction and Social Integration

- ▶ The Proposed Development has been designed to encourage a fluid movement of people and enable safe and convenient access between the site, its local centre, surrounding communities and green spaces.
- ▶ A suitably qualified security consultant such as an Architectural Liaison Officer (ALO) would be consulted in order to ensure the Proposed Development incorporates applicable and relevant Secured by Design principles for a safe and secure public realm for people to enjoy.

4.4 Social Capital

“...the web of communities, voluntary organisations; e.g. local partnerships, associations, etc.”

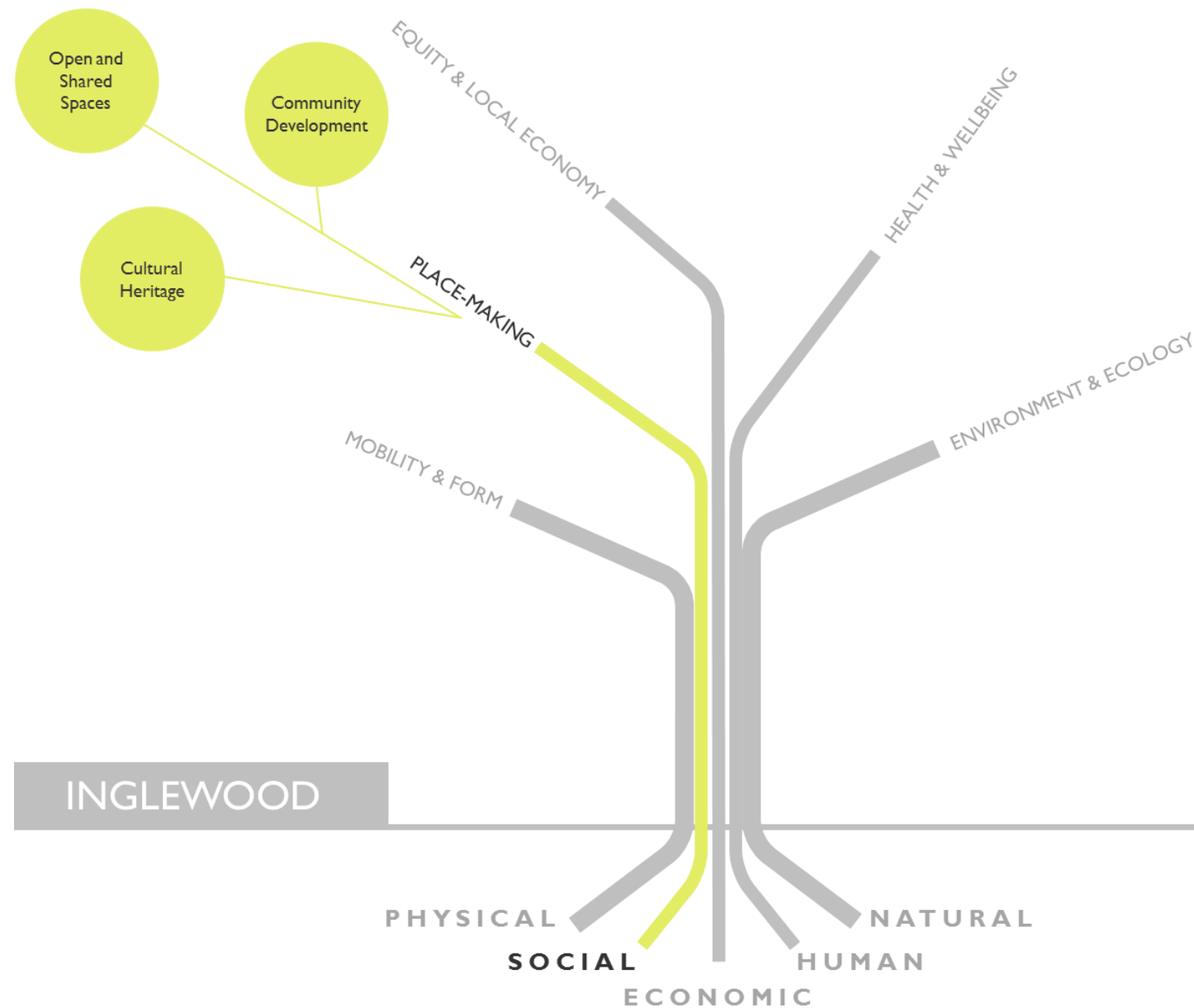


Figure 4.4: Social Capital Illustrated.

Community Development

It is anticipated that the Proposed Development would add value to the local community, its activities and economic outputs by strengthening the existing network of local partnerships and also helping to create new vibrant ones.

Equal Opportunities and Local Labour

- ▶ All contractors to have an equal opportunities and human rights statement.
- ▶ Provision of a Sustainability Implementation Plan for the overall development.
- ▶ Main contractor to monitor wage levels in respects of living wage.
- ▶ Establish at least one relationship with a local education establishment.
- ▶ Use local business and suppliers where viable and consider schemes promoting local employment.

Affordable Housing

A mix of residential units is proposed ranging from 1 and 2 bedroom flats to 2 to 4 bedroom family homes. A mix of type and tenure of housing is proposed that will include affordable housing. It is envisaged that the affordable housing will combine an appropriate mix of accommodation to rent and shared ownership in response to Torbay Council’s identified need for family housing.

Open and Shared Spaces

The Proposed Development comprises a mixture of residential types, a pub, a primary school (which would include a shared community space to be used outside of school hours) and recreational spaces including an aesthetically balanced character and landscaping which create:

- ▶ A distinctive sense of place; and
- ▶ A vibrant public realm which promotes interaction, supports social cohesion and community development.

In addition to the general public realm and private residential gardens, the overarching landscape strategy for the Proposed Development includes the creation of five distinct character areas; that is: Orchards, Vistas, Brixham Edge, Nords Village and a Rural Edge.

This is in line with **Torbay’s Aspiration 4: Create more sustainable communities and places**

- ▶ *Policy SS11 Sustainable communities* – regenerate or improve social, economic or environmental conditions through these measures:
 - ▶ Develop a sense of place and local identity.
 - ▶ Promote social inclusion and design out crime.
 - ▶ Support local food production and consumption.

Cultural Heritage

There are a number of heritage assets in the vicinity of and within the assessment site which includes evidence of Prehistoric and Roman activity and three designated heritage assets are also thought to possess a direct view of this site.

Mitigation measures would be considered for the Proposed Development to reduce the impact on these assets, including new hedging along the site boundary to reduce the visual impact of the development.

4.5 Physical Capital

“...the quality of housing, transport, welfare and medical services, food distribution systems, communication and energy infrastructure, etc.”

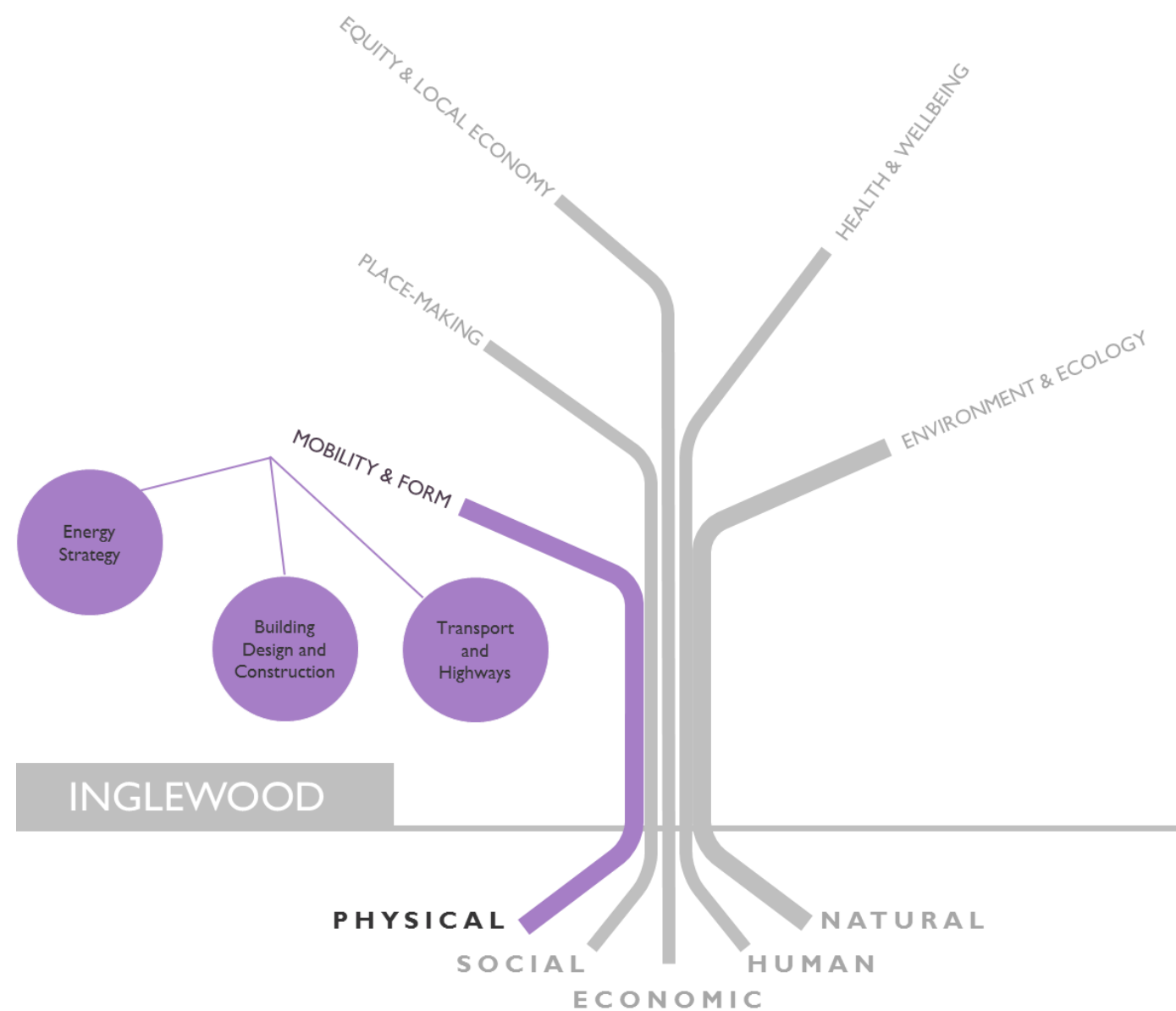


Figure 4.5: Physical Capital Illustrated.

Building Design and Construction

The new buildings that comprise the Proposed Development would be of a high quality and incorporate sustainable design and construction techniques.

Land Use and Community Spaces

The Proposed Development includes a mix of residential accommodation types including an element of affordable housing (rental and shared ownership) – up to 400 residential units of varying types and tenures has been proposed as well as a primary school, which will also be used as a community space, and a pub.

Architectural Design and Character

- ▶ The building design would be contemporary; nonetheless sympathetic and complementary to the local architectural character.
- ▶ The building design would allow for future adaptation and effects of climate change.
- ▶ Responsibly sourced and durable materials with low environmental impact would be specified and utilised for construction.

Green Certification – Sustainability Rating System

- ▶ The Proposed Development could potentially incorporate the BREEAM Communities RE 04 *Sustainable Buildings* credit requirement thereby requiring the developer and design team to:
 - ▶ Commit to using an accredited third party assessment scheme such as the Home Quality Mark and/or BREEAM, to measure the level of sustainable design and construction of all buildings on site.
 - ▶ Confirm this commitment through a planning condition, (or other binding mechanism, such as a planning obligation), by the local authority.

In addition, the contractor could be required to implement a Sustainable Procurement Plan.

Sustainable Transport and Highways

In addition to implementing high quality, sustainable design and construction, the Proposed Development would seek to improve the existing transport infrastructure, through the provision of a new network of walking and cycling routes, and new bus stops and routes to serve the proposed primary school and surrounding area.

A site-wide Travel Plan could be developed for the site that this would outline targets and measures for promoting sustainable transportation modes – including walking, cycling and keeping single occupancy private car trips to a minimum.

This is in line with **Torbay’s Aspiration 2: Achieve a better connected accessible Torbay**

- ▶ *Policy SS7 Infrastructure phasing and delivery of development* – a range of physical, social and green infrastructure to be sought via:
 - ▶ Provision of critical infrastructure required for development.
 - ▶ Provision of opportunities for walking, cycling and recreation.

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Energy Strategy

The Energy Strategy for the Proposed Development would follow the Energy Hierarchy. The total anticipated energy consumption (regulated) for the Proposed Development is estimated at circa 2,700 MWh/year, with the largest proportion of the Proposed Development's regulated energy consumption; that is, over 50% coming from space heating. This translates to an overall carbon emission of circa 690 TCO₂/year.

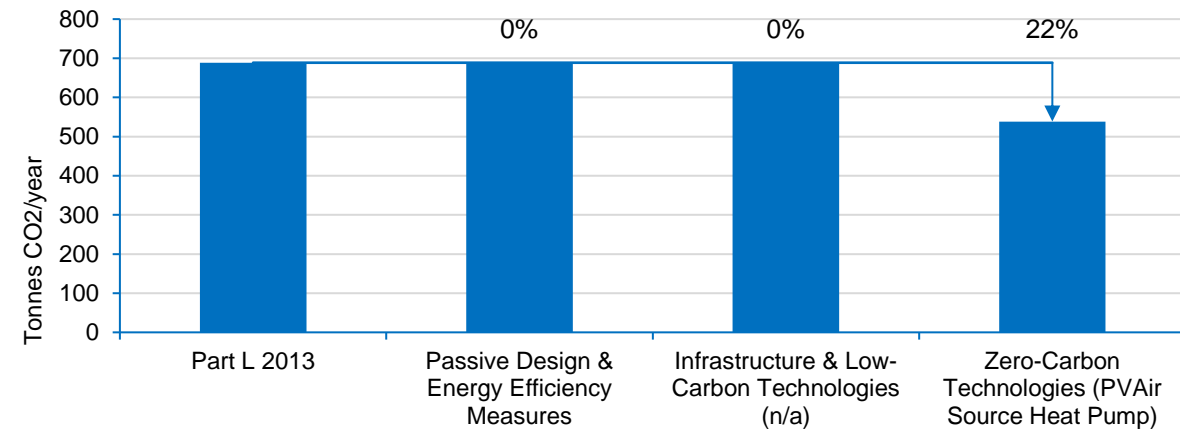


Figure 4.5a: Overall Estimated Regulated Carbon Emissions Reductions.

Be Green – Low and/or Zero Carbon (LZC) Technologies

Renewable energy technologies would be considered and incorporated into the Proposed Development as appropriate with an aim to reduce the overall carbon emissions by at least 20% beyond national building regulations target. LZC technologies such as air source heat pumps, solar hot water and photovoltaic (PV) panels have been considered for further review. However, a full appraisal of applicable technologies should be undertaken during the later design stages and as technologies emerge, mature and become viable they will be considered to support the provision of future onsite renewable targets at future detailed stages.

Be Clean – Infrastructure and Low Carbon Technologies

From an initial review, CHP is currently not recommended for the Proposed Development and therefore, the implementation of a site wide heat network has not been considered. However, this would be reviewed at the later design stages. Furthermore, in view of the anticipated national grid decarbonisation, it is expected that the carbon reduction benefits of CHP systems would decline and an electric-biased system could be more favourable. See Section 6.5.

Be Lean – Passive Design and Energy Efficiency Measures

Passive design and the minimisation of energy demand would be at the cornerstone of the Proposed Development's design; this could include the consideration for:

- ▶ Suitable glazing ratio and g-value to balance heat loss/gain and daylight ingress.
- ▶ Efficient space heating systems with zonal, programmable and thermostatic controls, with separate programmer for hot water.
- ▶ Energy efficient internal lighting with external and communal lightings coupled to daylight and presence detection sensors to minimise unnecessary use.
- ▶ Efficient mechanical ventilation with heat recovery.
- ▶ Smart energy meters to enable occupants monitor consumption and potentially achieve further cost and energy savings.

The strategy described is in line with **Torbay's Aspiration 5: Respond to climate change**

- ▶ *Policy SS14 Low carbon development and adaptation to climate change* – deliver sustainability in a holistic manner and make the most of opportunities to provide resilience to climate change through:
 - ▶ Limiting summertime overheating within buildings.
 - ▶ Avoiding increases in energy use and greenhouse gas emissions.

Please see Appendix 1 for the preliminary energy assessment calculation and results.

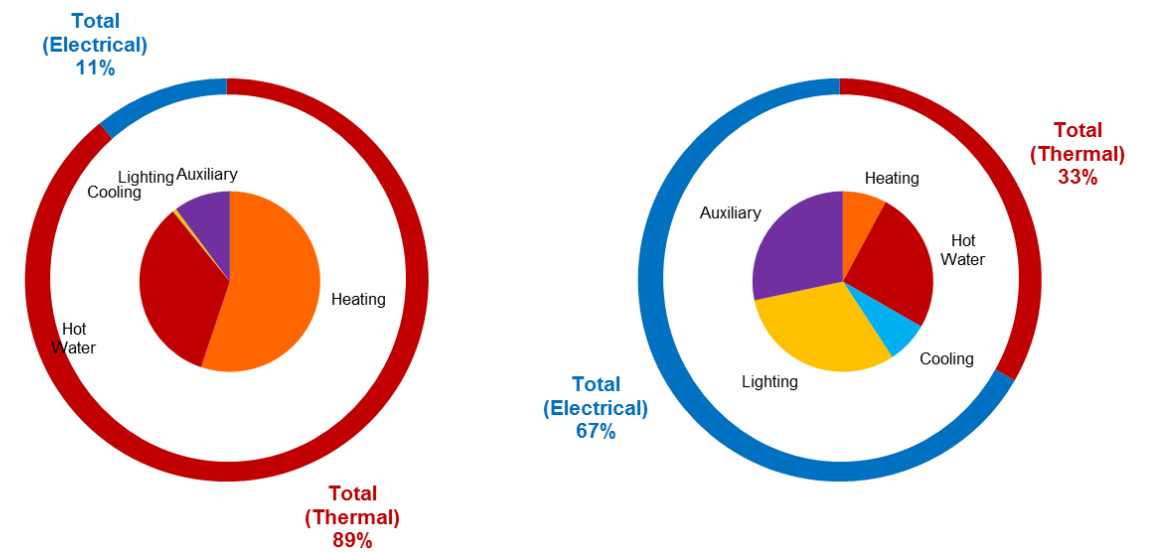


Figure 4.5b: Anticipated Regulated CO₂ Emissions – Residential only. Figure 4.5c: Anticipated Regulated CO₂ Emissions – Non-Residential only (School and Pub).

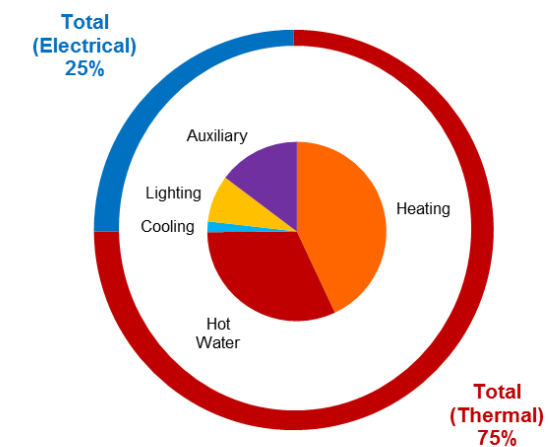


Figure 4.5d: Anticipated Regulated CO₂ Emissions – Overall Masterplan (Residential and Non-Residential).

4.6 Economic Capital

“...the productive power of the other types of capital and equitable access to liquidity and fair wages.”

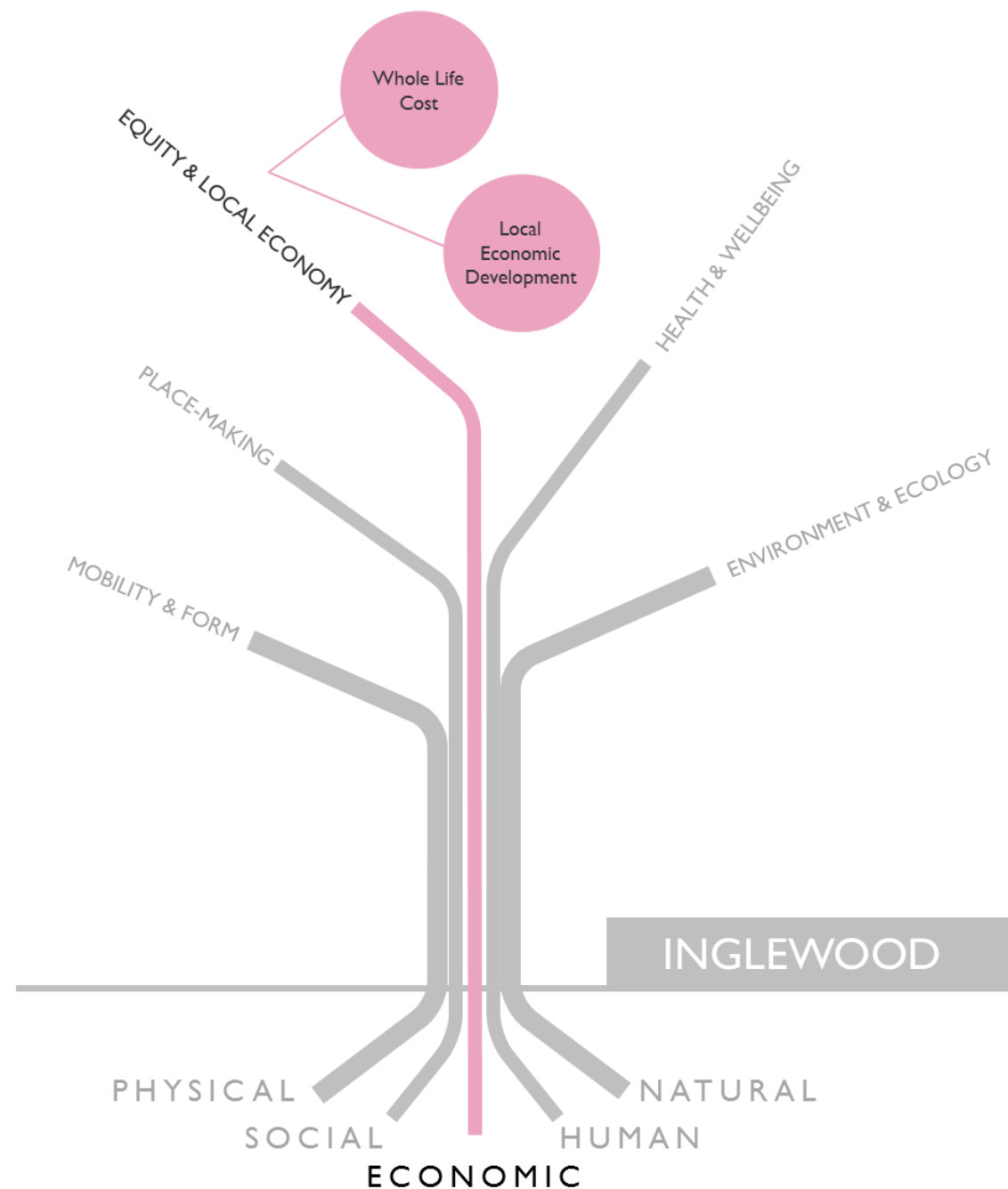


Figure 4.6: Economic Capital Illustrated.

Local Economic Development

At the core of the vision of the Proposed Development is the regeneration of the Paignton area; this has environmental, social and economic benefits. As far as the local economy is concerned, the Applicant’s aim is to:

- ▶ Use local business and suppliers where viable.
- ▶ Consider schemes promoting local employment.
- ▶ Monitor wage levels in respects of living wage for the construction phase.

In order to boost local economy, local business and suppliers would be used where viable. Whole life cycle costing of the design options would also be considered in order to deliver whole life value from the Proposed Development and promote economic sustainability.

Based on research for English Partnerships, the Proposed Development could generate over a thousand full time equivalent jobs during construction. The Proposed Development also includes the provision of a new primary school which would provide some local employment opportunities once operational.

Human Rights and Employment Opportunities

All contractors would be required to have an equal opportunities and human rights statement and wage levels to be monitored in respects of living wage.

The Proposed Development is residential led; however, would also a new school, which would offer additional local employment opportunities.

This is in line with **Torbay’s Aspiration 1: Secure economic recovery and success**

- ▶ *Policy SS4 The economy and employment* – phased delivery of mixed use developments must include provision of serviced employment space.
- ▶ *Policy SS5 Employment space* – major developments to provide around 25% Use Class B spaces.

Whole Life Cycle Cost

To deliver whole life value from the Proposed Development and promote economic sustainability, whole life cycle costing of the design options would be carried out. This is likely to improve the building design, specification and through-life maintenance and operation, and the following could be produced at various stages of the project in order to inform the design process:

- ▶ RIBA Stage 2: An elemental life cycle cost (LCC) analysis.
- ▶ RIBA Stage 4: A component level LCC plan.

The whole life cost; that is, a combination of the capital, maintenance and operational costs would inform the design decision and help achieve the following:

- ▶ Lowest possible building energy consumption over the operational life span of the building (compared to other options/alternatives analysed).
- ▶ Significant reduction in maintenance requirement/frequency.
- ▶ Prolonged replacement intervals of services infrastructure/systems or building fabric.



5. Conclusion

This report has outlined a potential Sustainability Strategy for the Proposed Development which has been informed by both national and local policy requirements as well as various sustainable design frameworks and standards.

The design of the Proposed Development would embrace sustainability principles and should result in the creation of a new and vibrant community. It is on this basis that the [Five Capitals Model for Sustainability](#) has been applied to capture the multi-faceted benefits that the Proposed Development potentially brings to the Application Site, local community, surrounding businesses and future building users.

The overall strategy is illustrated in Figure 5.2 overleaf – the diagram highlights the applicable principles and associated themes; that is, key focus areas pertinent to the Proposed Development in line with the Five Capitals Model for Sustainability.

Natural Capital

The Proposed Development is within an ‘Area of Great Landscape Value’ and this has been well considered by the design proposals. As a minimum, the Proposed Development would seek to minimise impact on the site’s ecological value and explore opportunities to protect and enhance site biodiversity. Consideration would be given to recycled materials with low environmental impact where feasible.

An Air Quality Assessment (AQA) has been conducted for the Proposed Development and this concluded that concentrations of nitrogen dioxide, PM₁₀ and PM_{2.5} will remain well below the objectives at all existing receptors in 2019, whether the scheme is developed or not. The overall operational air quality effects of the development are judged to be ‘not significant’. The Energy Strategy for the Proposed Development is also aimed at reducing the overall greenhouse gas emissions particularly as a result of CO₂ emissions from the operational phase of the development.

Human Capital

The Proposed Development would aim to improve the health and wellbeing of future residents, staff and visitors alike by seeking to achieve good levels of daylighting, indoor air quality, thermal comfort, safety and security. A range of local amenities including three areas of public open spaces are proposed; two of these would include multi-use game areas and play pitches. In addition, opportunities for walking, cycling and other recreational facilities have been considered. See Appendix 2 for how the proposed Development incorporates the [Ten Principles of Active Design](#) championed by Sports England.

Social Capital

The Proposed Development would be adding value to the local community, its activities and economic outputs by strengthening the existing network of local partnerships and also helping to create new vibrant ones. The Proposed Development would create a distinctive sense of place and a vibrant public realm which promotes interaction, supports social cohesion and community development. Additionally, the Proposed Development would include affordable housing.

Physical Capital

In addition to implementing high quality, sustainable design and construction, the Proposed Development would aim to improve the existing transport infrastructure. A site wide Travel Plan would be developed for the site that would set out targets and measures for promoting sustainable transportation modes – including walking, cycling and keeping single occupancy private car trips to a minimum.

The proposed Energy Strategy is in line with the Energy Hierarchy and after applying the three steps of the hierarchy; that is, “Be Lean”, “Be Clean”, and “Be Green”. Based on an initial assessment, the Proposed Development could potentially achieve an overall carbon emissions reduction of up to 22% beyond Building Regulations Part L 2013 as shown in Figure 5.1 below. Please refer to Appendix 1 for the preliminary energy assessment calculation results and assumptions.

The total anticipated energy consumption (regulated) for the Proposed Development is estimated at circa 2,700 MWh/year, with the largest proportion of the Proposed Development’s regulated energy consumption; that is, over 50% coming from space heating. This translates to an overall carbon emission of circa 690 TCO₂/year.

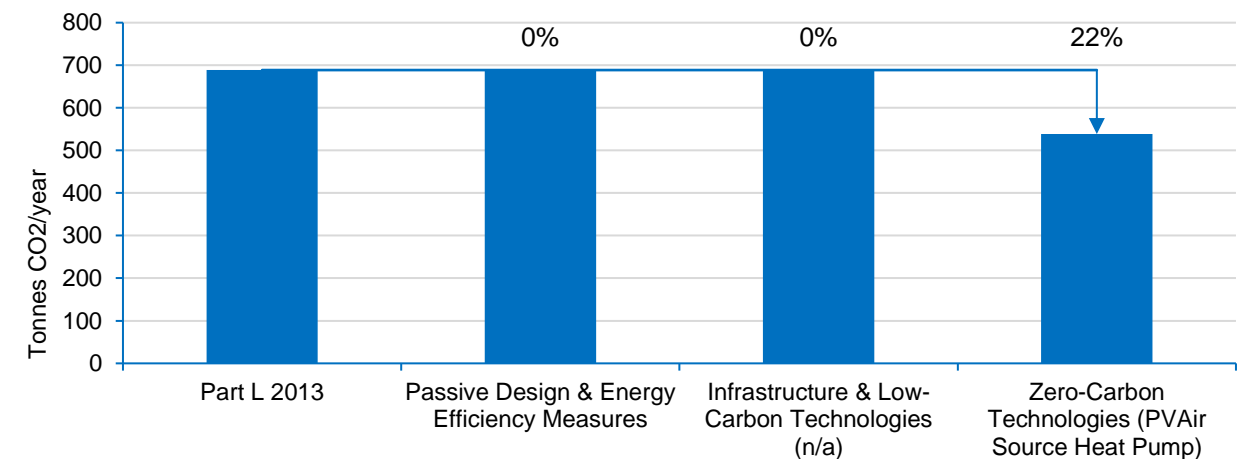


Figure 5.1: Overall Estimated Regulated Carbon Emissions Reductions.

A number of potential renewables and LZC technologies have been considered as part of an initial appraisal; some have been discounted with others such as air source heat pumps, solar hot water and photovoltaic (PV) panels considered for further review. However, a full appraisal of applicable technologies would be undertaken during the later design stages.

Economic Capital

In order to boost local economy, local business and suppliers would be used where viable. Whole life cycle costing of the design options would also be considered in order to deliver whole life value from the Proposed Development and promote economic sustainability. Based on research for English Partnerships, the Proposed Development could generate over a thousand full time equivalent jobs.

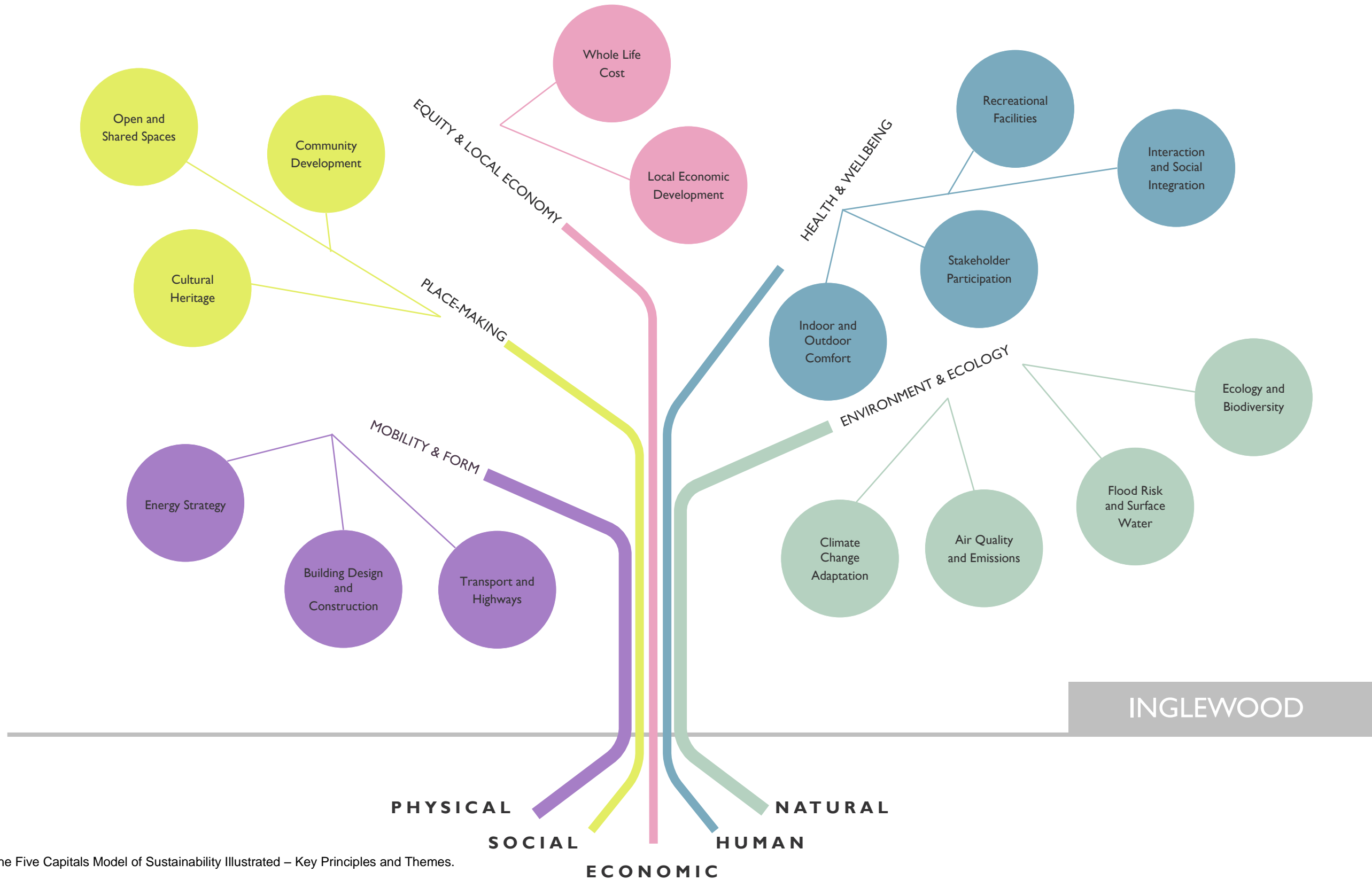


Figure 5.2: The Five Capitals Model of Sustainability Illustrated – Key Principles and Themes.

6. Appendix 1: Preliminary Energy Assessment Calculations

6.1 Approach to the Energy Strategy

The energy strategy for the Proposed Development would follow the Energy Hierarchy – the following steps as described below and illustrated in Figure 6.1 set out the strategic approach that would be adopted.

Step 1 Passive Design and Energy Efficiency Measures

Step 1 otherwise called “*Be Lean*” describes a fabric first approach to building design. Passive design and energy efficiency measures are the first step to reducing the overall energy demand and CO₂ emissions reduction strategy for the Proposed Development.

There is an opportunity to achieve additional reductions in the Proposed Development’s overall carbon emissions through the specification of high-efficiency building services in order to limit losses in energy supply, storage and distribution.

The strategic approach for the Proposed Development would be to reduce the need to condition buildings by considering an appropriate suite of passive design measures prior to the consideration of integrating low and zero carbon (LZC) technologies.

Step 2 Infrastructure and Low Carbon Technologies

The second step also called “*Be Clean*” in the Energy Hierarchy considers ways of supplying energy efficiently, by considering the installation of site-wide district energy networks to enable low carbon energy to be distributed to site.

Step 3 Zero Carbon Technologies

Following completion of steps 1 and 2 above, the implementation of appropriate on-site and/or near-site renewable technologies for the proposed development would be considered. The feasibility of suitable technologies, carbon savings and payback would be appraised. This step is also referred to as “*Be Green*”.

This section provides a summary of the preliminary energy strategy for the Proposed Development.



Figure 6.1: The Energy Hierarchy.

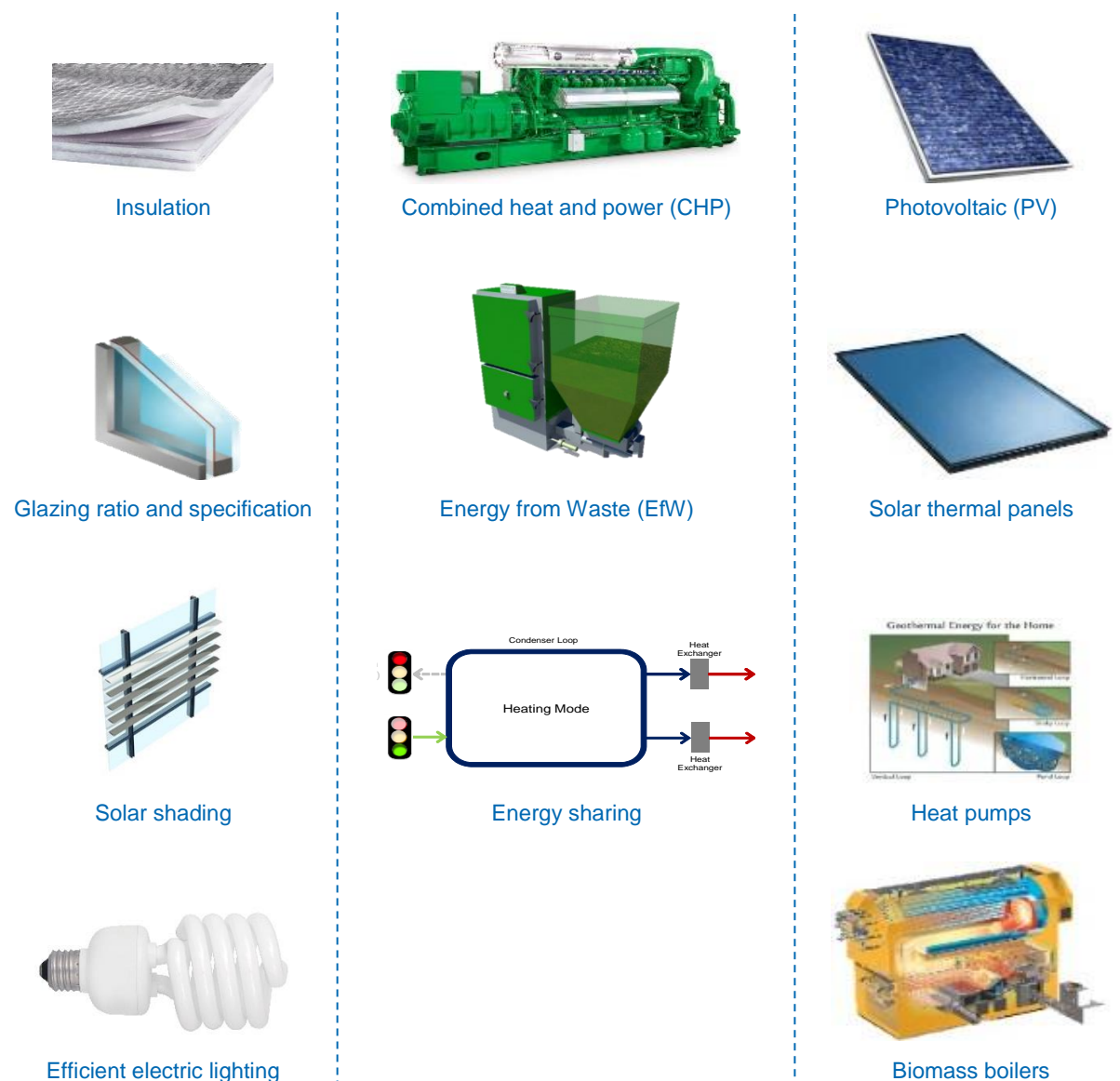


Figure 6.2: Potential Strategies from the Energy Hierarchy.

SUSTAINABILITY

Inglewood Outline Sustainability Strategy



6.2 Anticipated Energy and Carbon Baseline

The energy and carbon baseline for the Proposed Development has been calculated based on the accommodation schedule provided by Stride Treglown Architects and energy consumption benchmark data for similar Part L compliant buildings. Table 6.1 summarises the anticipated energy consumption and CO₂ emissions for the Proposed Development. It also provides the anticipated energy consumption breakdown by system types.

	Heating	Cooling	Auxiliary	Lighting	Hot Water	Total Regulated Energy	Total Regulated CO ₂
	(MWh/yr)	(MWh/yr)	(MWh/yr)	(MWh/yr)	(MWh/yr)	(MWh/yr)	(TCO ₂ /yr)
Residential	1,308	0	100	8	809	2,225	513
Non-Residential	64	25	96	104	207	496	175
Overall	1,371	26	196	112	1,016	2,721	534

Table 6.1: Anticipated Energy Consumption and CO₂ Emissions.

The total anticipated energy consumption (regulated) for the Proposed Development is estimated at circa 2,700 MWh/year, with the largest proportion of the Proposed Development's regulated energy consumption; that is, over 50% arising from space heating. This translates to an overall carbon emission of circa 690 TCO₂/year.

6.3 Proposed Energy and Carbon Management Strategy

Overall Energy Strategy

Following the application of the Energy Hierarchy, it is anticipated that the Proposed Development would achieve an overall 22% carbon emissions reduction.

PVs and heat pumps are currently considered to be most appropriate to the Application site and should be considered in further detail to determine appropriate sizing and suitable location. Low or Zero Carbon (LZC) technology options not considered for further appraisal include combined heat and power (CHP) and biomass boilers.

A comprehensive appraisal of the various applicable technologies would be undertaken as the design develops.

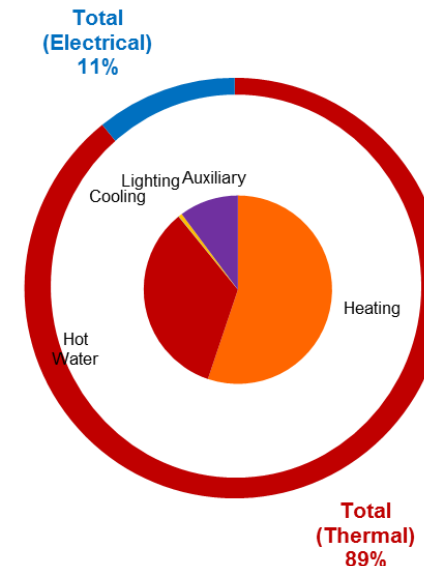


Figure 6.3: Anticipated Regulated CO₂ Emissions – Residential Units Only.

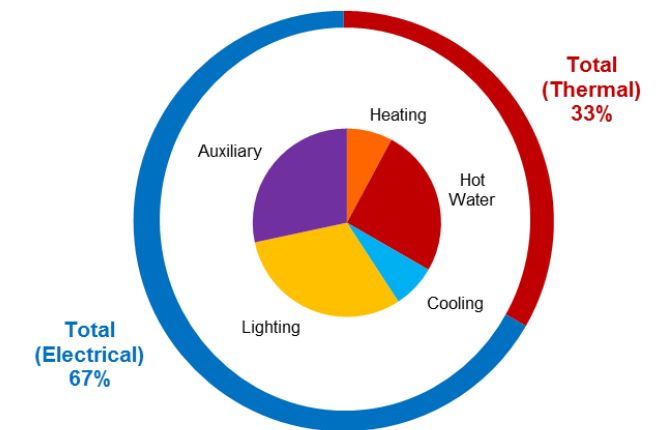


Figure 6.4: Anticipated Regulated CO₂ Emissions – Non-Residential Only (School and Pub).

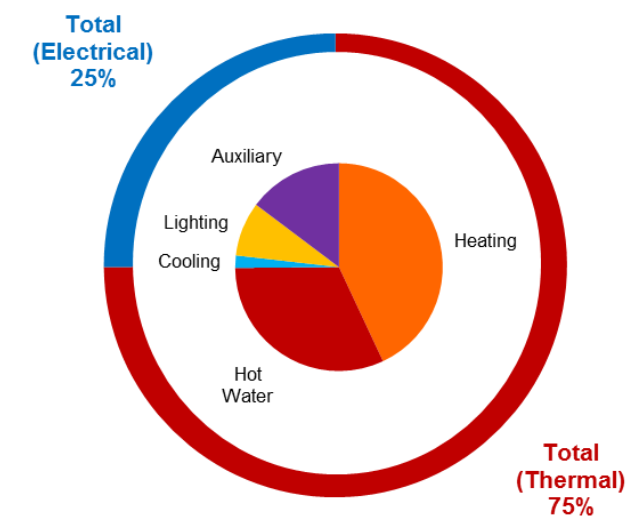


Figure 6.5: Anticipated Regulated CO₂ Emissions – Overall Masterplan (Residential and Non-Residential).

SUSTAINABILITY

Inglewood Outline Sustainability Strategy



Be Lean – Passive Design and Energy Efficiency Measures

A ‘fabric first’ approach would be taken in order to reduce the energy demand and CO₂ emissions from the Proposed Development. The following elements of passive design should be considered:

- ▶ Passive Design Measures
- ▶ Building Envelope
- ▶ Glazing Energy & Light Transmittance
- ▶ Thermal Insulation
- ▶ Thermal Mass
- ▶ Fabric Air Permeability
- ▶ Energy Efficiency Measures

The Proposed Development is currently targeting compliance with Part L 2013 at this step of the Energy Hierarchy.

Be Clean – Infrastructure and Low Carbon Technologies

From an initial review, CHP is currently not recommended for the Proposed Development and therefore, the implementation of a site wide heat network has not been taken forward. However, this would be reviewed at the later design stages. Furthermore, in view of the anticipated national grid decarbonisation, it is expected that the carbon reduction benefits of CHP systems would decline and an electric-biased system could be more favourable. Please refer to Section 6.5 for more details.

As a result, it is envisaged that the greater opportunity for carbon emissions savings for the Proposed Development could be achieved by systems powered by electricity.

Be Green – Low and/or Zero Carbon (LZC) Technologies

The Proposed Development would aim to incorporate renewable energy sources where feasible. From an initial appraisal, Photovoltaics (PV) and Air Source Heat Pumps (ASHP) are currently considered to be appropriate.

However, a comprehensive appraisal of the various LZC technologies would be undertaken during the later design stages.

Technology Options		CO ₂ Emissions reductions (TCO ₂ /year)	CO ₂ Emissions Reductions Contribution
Photovoltaic (PV) Panels	146kWp (1022 sqm)	53	7.7%
Air Source Heat Pumps (ASHP)	243kW	97	14.1%

Table 6.2: Potential CO₂ emissions reductions from PV and ASHP.

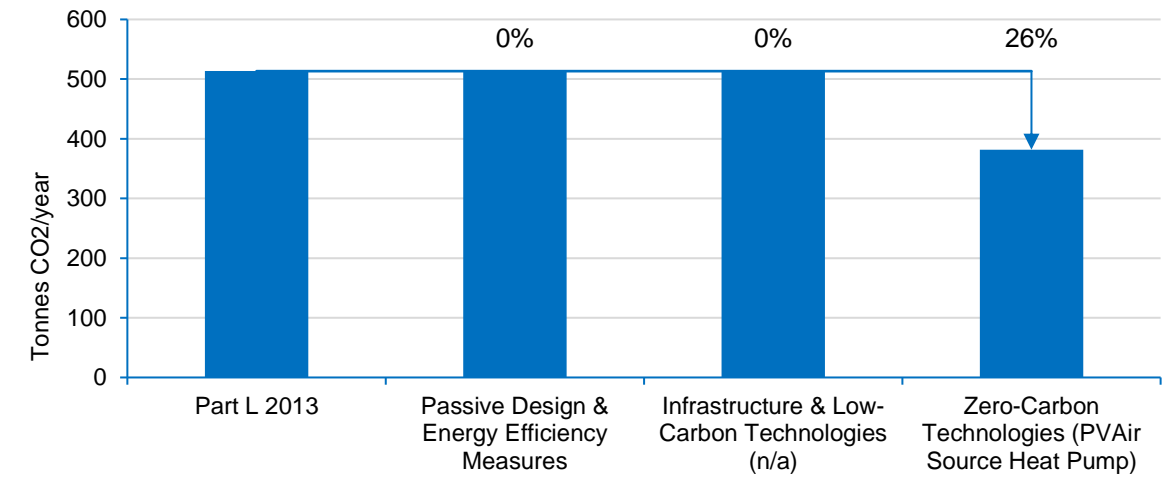


Figure 6.6: Estimated Regulated Carbon Emissions Reductions Residential Units Only.

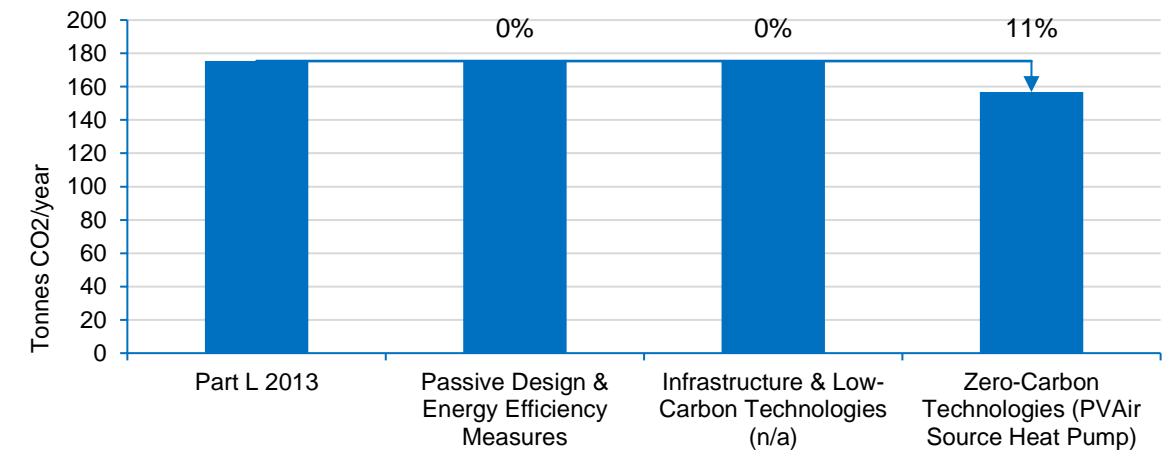


Figure 6.7: Estimated Regulated Carbon Emissions Reductions Non-Residential Only (School and Pub).

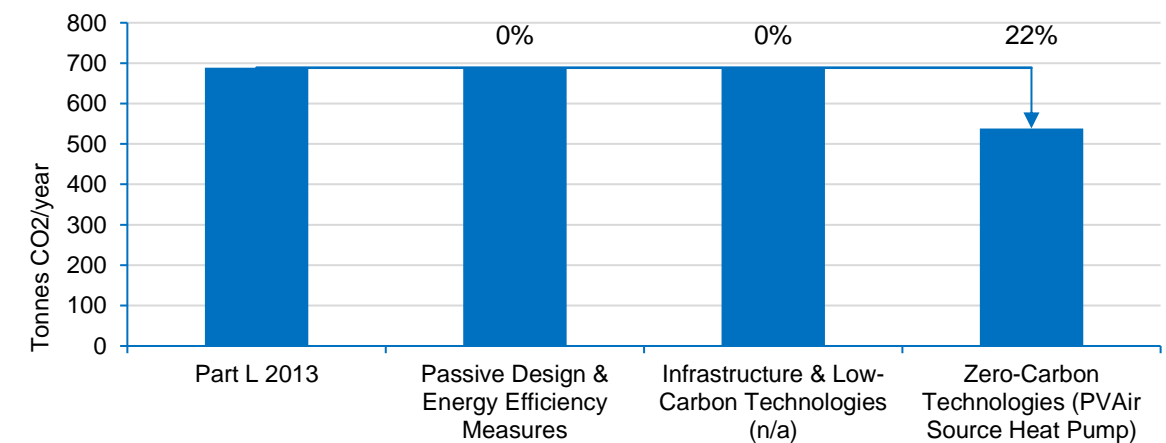


Figure 6.8: Estimated Regulated Carbon Emissions Reductions Overall Masterplan (Residential and Non-Residential).

6.4 Summary Calculation Results

6.4.1 Energy and Carbon Summary Tables

	Heating (MWh/yr)	Cooling (MWh/yr)	Auxiliary (MWh/yr)	Lighting (MWh/yr)	Hot Water (MWh/yr)	Total Regulated (MWh/yr)
Apartments	59	0	2	8	48	116
Houses	1,249	0	98	0	761	2,109
School	27	6	41	32	80	184
Pub	37	20	55	73	127	312
Total	1,372	26	196	112	1,016	2,721

Table 6.1: Regulated energy consumption by building type.

	Heating (TCO ₂ /yr)	Cooling (TCO ₂ /yr)	Auxiliary (TCO ₂ /yr)	Lighting (TCO ₂ /yr)	Hot Water (TCO ₂ /yr)	Total Regulated (TCO ₂ /yr)
Apartments	13	0	1	4	10	28
Houses	270	0	51	0	164	485
School	6	3	21	16	17	64
Pub	8	10	29	38	28	112
Total	296	13	102	58	220	689

Table 6.2: Regulated CO₂ emissions by building type.

6.4.2 LZC Summary Table

Technology	Annual Thermal Output (MWh/year)	Annual Electrical Output (MWh/year)	CO ₂ Emissions Reduction (TCO ₂ /year)	CO ₂ Emissions Reduction (beyond Part L) (%)	Suitable?	Notes
~378kWe CHP with DEN	1,550,600	1,461,700	145,800	21.2%	✗	Running for ~3000 hours per year to provide 50% of the space heating and 100% of the hot water demand.
~146kWp (1030sqm) Photovoltaic (PV) Panels	-	102,200	53,000	7.7%	✓	Estimated to require a roof area of approximately 1030sqm.
~517kWp (1040sqm) Solar Thermal Heating	472,000	-	112,200	16.3%	✓	Estimated to require a roof area of approximately 1040sqm.
~600kW Wood Pellets Boilers	1,299,600	-	232,900	33.8%	✗	Running for ~2000 hours per year to provide 30% of the space heating and 100% of the hot water demand.
Borehole Cooling	163,293	-	19,266	2.8%	✗	Based on an aquifer flow rate of 10 litres per second, with a temperature difference of 3 degrees C.
~243kW Ground Source Heat Pump	1,135,300	-11,600	97,200	14.1%	✗	Sized to provide 50% of the space heating and 50% of the hot water demand.
~97kW Water Source Heat Pump	454,100	-4,600	38,900	5.6%	✗	Sized to provide 20% of the space heating and 20% of the hot water demand.
~243kW Air Source Heat Pump	1,135,300	-11,600	97,200	14.1%	✓	Sized to provide 50% of the space heating and 50% of the hot water demand.
1 No. 200kW Horizontal axis wind turbine	-	21,898	11,400	1.7%	✗	Based on NOABL wind speed data for the site at 45m above ground level.

Table 6.3: LZC Summary table.

6.4.3 Area Schedule

Building Type	Area (GIA, m ²)
<i>Houses</i>	
2 bed	6,104
3 bed	20,673
4 bed	10,952
Total	37,729
<i>Apartments</i>	
1 bed	450
2 bed	1,260
Total	1,710
<i>School</i>	2,192
<i>Public House</i>	1494
Total Building Area	38,049

Table 6.4: Area schedule by building type (based on the information provided by Stride Treglown 12/10/2017 and Masterplan layout 15230_P_010).

6.5 Grid Decarbonisation

The carbon factor of the National Grid, that is the equivalent amount of carbon dioxide released per kWh of electricity produced and distributed, is recognised in building regulations as being 0.519 kgCO_{2e}/kWh (last reviewed in 2013). For many years, the use of a Combined Heat and Power (CHP) engine has been the de facto solution to reduce regulated CO₂ emissions when designing a medium to large development with high heat load. CHP relies on the fact that it is possible to produce and distribute electricity at a lower carbon factor, due to the difference between the quoted carbon factors of the National Grid and the natural gas used to fuel the CHP. However, as the national mix of electricity generation methods progresses towards greener solutions, the Building Regulations 2013 value of the National Grid carbon factor has been shown to be high and as such, the benefits of implementing a CHP have been over-estimated. The Future Energy Scenarios (FES) document, produced by the National Grid discusses how the UK’s energy landscape is changing.

6.5.1 Future Energy Scenarios (FES)

The FES 2016 report discusses the changing carbon factor of the National Grid (NG). The NG carbon factor is anticipated to change over time for four different FES Scenarios. The mix of generation and distribution techniques is heavily dependent on myriad political, economic and social factors and as such, it is impossible

to predict exactly how the UK’s energy landscape will change over the next 30 years. For this reason, the report discusses the changing climate in one of four scenarios, designed to give a broad perspective on how different factors could likely impact the NG moving forward.

In 2016, the quoted carbon factor of 0.290kgCO_{2e}/kWh of the NG is much lower than that stated in the Building Regulations 2013 (0.519kgCO_{2e}/kWh). From the historic carbon factors from 2010 to 2015 (taken from published NG fuel mix year on year), it is clear that between years 2013 and 2015, the carbon factor is decreasing more steeply than even the Gone Green scenario does initially. This rate of decrease of the recorded carbon factor further justifies additional consideration of the appropriate energy technology to implement.

6.5.2 Policy Direction of Travel

The Department of Energy and Climate Change (DECC) were tasked by the government to develop a bespoke policy to encourage the deployment of new gas CHP, provided it was shown that this would not displace lower carbon generation. A Bespoke Gas CHP Policy, published in 2014, is the culmination of this effort, which investigates the likely increase in national CHP provision should a bespoke subsidy be provided and also the viability of CHP in reducing emissions in real terms, referencing the decarbonisation of the National Grid.

The analysis conducted by DECC concluded that up until 2032, CHP could provide net emissions savings – that is, deployment of CHP will likely offer an annual reduction in regulated CO₂ emissions for the next 15 years. However, the report also notes that when considering the lifespan of CHP to be 20 years, only CHP installed before 2023 will offer net emissions reductions over their lifetime. Considering the uncertainty in the mix of generation and associated grid carbon factor in future, it seems bold to make such a precise prediction as to when CHP will no longer offer carbon benefits. Despite this, the findings of DECC are broadly in line with Hoare Lea’s own projections: the fact that a government body has identified the reducing emissions savings and inevitable net increase in CO₂ offered by CHP over the coming decades suggests that a drastic change in policy is not far away.

6.5.3 Alternative Technologies

The emissions benefits from a CHP, by nature of the declining carbon factor of the National Grid and their use of natural gas as a fuel, are only going to reduce over time. In contrast to this, electricity-fuelled solutions such as heat pumps will see their benefit increase over time. Even with the benefits from the CHP optimised, ASHPs are anticipated to provide greater emissions savings than the CHP in years 2019 and 2023 for the Gone Green and No Progression Scenarios respectively and will continue to do so from that point. The whole life carbon benefit of ASHPs is therefore greater than that for CHP. ASHPs could also be implemented on a building by building basis, obviating the need for a DHN.

It is evident from this analysis that, even when the benefits from the CHP are maximised by using a 90% distribution factor and considering the No Progression scenario, ASHPs will become a more effective means of reducing regulated carbon emissions in just 6 years’ time. Given the scale and anticipated phasing of the development, by the time much of the masterplan is completed.

7. Appendix 2: Ten Principles of Active Design – Sports England

Active Design takes a fresh look at the opportunities to encourage and promote sport and physical activity through the design and layout of the built environment to support a step change towards healthier and more active lifestyles. Good design should contribute positively to making places better for people, to create environments that make the active choice the easy and attractive choice for people and communities.

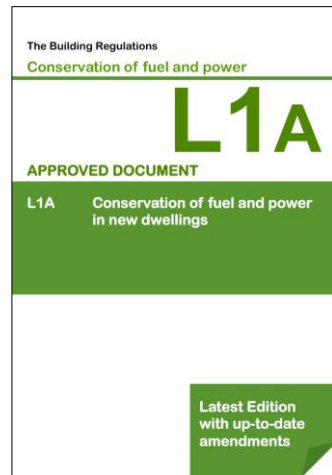
	Active Design Principles	Development Response
	<p>1. Activity for all</p> <p><i>Neighbourhoods, facilities and open spaces should be accessible to all users and should support sport and physical activity across all ages.</i></p> <p><i>Enabling those who want to be active, whilst encouraging those who are inactive to become active</i></p>	<ul style="list-style-type: none"> Provision for activity for all ages: <ul style="list-style-type: none"> Play areas for different ages – Local Equipped Areas for Play (LEAPs) and Neighbourhood Equipped Areas for Play (NEAPs). Public open spaces for informal play, recreation and relaxation. Proposed new and extensive walking routes and countryside access, also linking with existing countryside access routes. Trim Trail route – Made up of simple pieces of exercise equipment placed along a route, equipment can be used for informal play or to do various exercises that can develop balance, strength and coordination. Homezones – Shared space strategy to roads where vehicles and pedestrians utilise the circulation routes on equal terms. Encourages informal play in streets. Edible landscape trail – linking spaces and route together with fruiting and edible planting species. Implementing inclusive design principles to enable everyone to participate equally, confidently and independently in everyday life and activities.
	<p>2. Walkable communities</p> <p><i>Homes, schools, shops, community facilities, workplaces, open spaces and sports facilities should be within easy reach of each other.</i></p> <p><i>Creating the conditions for active travel between all locations.</i></p>	<ul style="list-style-type: none"> Links to and from local communities, including links across Brixham Road. School located centrally to be accessible from the whole site with good pedestrian links. Bus stops located in a prime position within easy walkable reach.

	Active Design Principles	Development Response
	<p>3. Connected walking and cycling routes</p> <p><i>All destinations should be connected by a direct, legible and integrated network of walking and cycling routes. Routes must be safe, well lit, overlooked, welcoming, well maintained, durable and clearly signposted. Active travel (walking and cycling) should be prioritised over other modes of transport.</i></p> <p><i>Prioritising active travel through safe, integrated walking and cycling routes.</i></p>	<ul style="list-style-type: none"> A network of walking and cycling routes would be integrated into the design, including: <ul style="list-style-type: none"> Two pedestrian/cycle crossings across Brixham Road to the wider communities. Countryside access walking route – Gravel all-weather footpath. Pavements along key roads. All main routes along roads would be lit, however countryside access routes and routes close to key habitats would not be lit. All key routes (not countryside access) would be designed to be overlooked and reduce risk of potential crime areas. All footpaths would be well maintained and durable as outlined in the Framework LEMP. A clear wayfinding strategy would be developed to ensure legibility across the site.
	<p>4. Co-location of community facilities</p> <p><i>The co-location and concentration of retail, community and associated uses to support linked trips should be promoted. A mix of land uses and activities should be promoted that avoid the uniform zoning of large areas to single uses.</i></p> <p><i>Creating multiple reasons to visit a destination, minimising the number and length of trips and increasing the awareness and convenience of opportunities to participate in sport and physical activity.</i></p>	<ul style="list-style-type: none"> School – Community asset outside of school hours, not just educational but sports and activities. In close proximity to NEAPs and LEAPs.
	<p>5. Network of multifunctional open space</p> <p><i>A network of multifunctional open space should be created to support a range of activities including sport, recreation and play and other landscape features including Sustainable Drainage Systems (SuDS), woodland, wildlife habitat and productive landscapes. Facilities should be positioned in prominent locations, co-located with other appropriate uses</i></p>	<ul style="list-style-type: none"> A network of appropriate scaled multifunctional open space would be integrated into the Proposed Development and positioned in prominent locations for use by residents and the wider community. These spaces would support a range of activities including: <ul style="list-style-type: none"> Sports provision within the school site. Recreation and play spaces – One NEAP, two LEAPs and Trim Trail route.

	Active Design Principles	Development Response
	<p><i>whilst ensuring relationships with neighbouring uses.</i></p> <p><i>Providing multifunctional spaces opens up opportunities for sport and physical activity and has numerous wider benefits.</i></p>	<ul style="list-style-type: none"> ▶ Sustainable Drainage Systems (SuDS), such as ponds and rain gardens. ▶ New woodland, acting as recreational spaces and visual mitigation. ▶ Wildlife habitat creation through mitigation land provided, retention and reinforcement of hedgerows, additional planting and areas for active farming. ▶ Productive landscapes, including allotments and orchards. ▶ Countryside access walking routes. ▶ Edible landscape trail – linking spaces and route together with fruiting and edible planting species.
	<p>6. High quality streets and spaces</p> <p><i>Flexible and durable high quality streets and public spaces should be promoted, employing high quality durable materials, street furniture and signage.</i></p> <p><i>Well-designed streets and spaces support and sustain a broader variety of users and community activities.</i></p>	<ul style="list-style-type: none"> ▶ A variety of streetscapes and functions to those streets including shared surfaces and Homezones. ▶ Trim Trail - Made up of simple pieces of exercise equipment to have flexible and varied use, including to link spaces together. ▶ Designed to be constructed from high quality materials and street furniture which will be durable and well maintained.
	<p>7. Appropriate infrastructure</p> <p><i>Supporting infrastructure to enable sport and physical activity to take place should be provided across all contexts including workplaces, sports facilities and public space, to facilitate all forms of activity.</i></p> <p><i>Providing and facilitating access to facilities and other infrastructure to enable all members of society to take part in sport and physical activity.</i></p>	<ul style="list-style-type: none"> ▶ Provision of a School for education and community asset. ▶ Commitment from the client to do enabling works, including implementation of all mitigation planting and some public open space and installation of the NEAP and Trim Trail at an early stage in the development. ▶ Countryside access walking routes. ▶ Section 106 contribution to offsite sports pitch facilities.
	<p>8. Active buildings</p> <p><i>The internal and external layout, design and use of buildings should promote opportunities for physical activity.</i></p>	<ul style="list-style-type: none"> ▶ Homezones – Shared space strategy to roads, where vehicles and pedestrians utilise the circulation routes on equal terms. This gives pedestrians a better quality space and reduces the importance of vehicle dominated areas.

	Active Design Principles	Development Response
	<p><i>Providing opportunities for activity inside and around buildings</i></p>	<ul style="list-style-type: none"> ▶ Doorstep Play – Small multi-functional spaces for informal play opportunities. ▶ Proposed Primary School <ul style="list-style-type: none"> ▶ Prominent focal position in layout. ▶ Provides accessible internal layout with direct connections with the outdoors ▶ Shared community facility. ▶ Housing facing onto and overlooking play areas and public open space.
	<p>9. Management, maintenance, monitoring and evaluation</p> <p><i>The management, long-term maintenance and viability of sports facilities and public spaces should be considered in their design. Monitoring and evaluation should be used to assess the success of Active Design initiatives and to inform future directions to maximise activity outcomes from design interventions.</i></p> <p><i>A high standard of management, maintenance, monitoring and evaluation is essential to ensure the long-term desired functionality of all spaces.</i></p>	<ul style="list-style-type: none"> ▶ A framework Landscape and Ecological Management Plan (LEMP) to be submitted with the outline application to provide sufficient confidence that proposed ecological and landscape mitigation, compensation and enhancement is deliverable. ▶ Green infrastructure areas to be managed by a management company and mitigation land areas would be managed by a tenant farmer. ▶ A regime of regular inspections of planting and seeding works, wearing surfaces, timber and play area repairs and the general condition of the habitats (particularly woodlands) would be essential to guiding habitats development. Monitoring works and reactive management would ensure that habitat value is maximised in the long-term.
	<p>10. Activity promotion and local champions</p> <p><i>Promoting the importance of participation in sport and physical activity as a means of improving health and wellbeing should be supported. Health promotion measures and local champions should be supported to inspire participation in sport and physical activity across neighbourhoods, workplaces and facilities.</i></p> <p><i>Physical measures need to be matched by community and stakeholder ambition, leadership and engagement.</i></p>	<ul style="list-style-type: none"> ▶ The school will pay an active role in the community and in encouraging community activities including sporting events. ▶ The proposals include community orchards and Allotments which will include community engagement activities and promote healthy eating and wellbeing. ▶ Countryside access and walking routes. ▶ Edible landscape trail – linking spaces and route together with fruiting and edible planting species.

8. Appendix 3: Policy Context



National Building Regulations Part L 2013

Criterion One – This requires that the building as designed is not anticipated to generate CO₂ emissions in excess of that set by a Target Emission Rate (TER) calculated in accordance with the approved Standard Assessment Procedure (SAP) v9.92 2012 for dwellings and the National Calculation Methodology (NCM) 2013 for non-dwellings.

On aggregate, Part L 2013 requires the following CO₂ emissions reductions:

- ▶ 6% beyond the requirements of Part L 2010 for dwellings
- ▶ 9% beyond the requirements of Part L 2010 for non-domestic buildings

Criterion Two – This places upper limits on the efficiency of controlled fittings and services for example, an upper limit to an external wall U-value of 0.30W/m².K (dwellings). Part L 2013 requires a Target Fabric Energy Efficiency (TFEE) to be achieved. The TFEE is calculated independently for each dwelling, based upon an elemental recipe of efficiency parameters, applied to the geometry of the dwelling in question. This would generate a notional value which would then be relaxed by 15% to generate the TFEE.

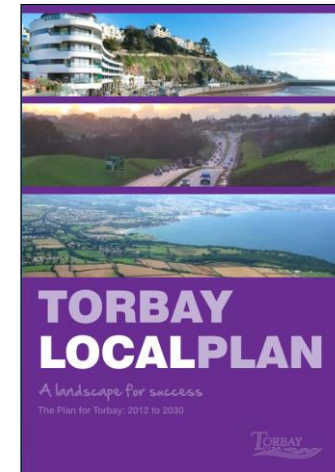
Criterion Three – Criterion three requires that dwellings are not at 'high' risk of high internal temperatures in summer months (June, July & August) and that zones in commercial buildings are not subject to excessive solar gains. This is demonstrated using the procedure given in SAP 2012 Appendix P for dwellings and the National Calculation Methodology (NCM) 2013 for non-dwellings.

Emerging Policy – Nearly Zero Energy Buildings (NZEB)

The Energy Performance of Buildings Directive (EPBD), 2010/31/EU (Recast) states and requires that: "All new buildings are nearly zero-energy buildings by 2020; and new buildings occupied and owned by public authorities are nearly zero-energy buildings by 2018."

This has not become a policy in the UK, but given that Northern Ireland has recently passed this into law it is currently anticipated that this requirement could potentially come into force with the forthcoming updates of the National Building Regulations currently anticipated in 2018/2019.

Achieving the Passivhaus Standard is a recognised route to NZEB. In addition, for a zero energy building primary energy must be equal to 0kWh/m²/year.



Torbay Local Plan

The adopted Local Plan sets out a plan for change and growth between 2012 and 2030 and includes the following sustainability aspirations:

Aspiration 1: Secure economic recovery and success

- ▶ *Policy SS4 The economy and employment* – phased delivery of mixed use developments must include provision of serviced employment space
- ▶ *Policy SS5 Employment space* – major developments to provide around 25% Use Class B spaces

Aspiration 2: Achieve a better connected accessible Torbay

- ▶ *Policy SS7 Infrastructure phasing and delivery of development* – a range of physical, social and green infrastructure to be sought via:
- ▶ Provision of critical infrastructure required for development
- ▶ Provision of opportunities for walking, cycling and recreation

Aspiration 3: protect and enhance a superb environment

- ▶ *Policy SS8 Natural environment* – developments must:
- ▶ Protect and manage wildlife, habitats and the corridors between them
- ▶ Conserve and enhance distinctive character and biodiversity of Torbay
- ▶ *Policy SS9 Green infrastructure* – developments to follow a green infrastructure-led approach and consider/provide:
- ▶ Public open space and public access routes
- ▶ Maintain existing and contribute to tree planting and woodland creation

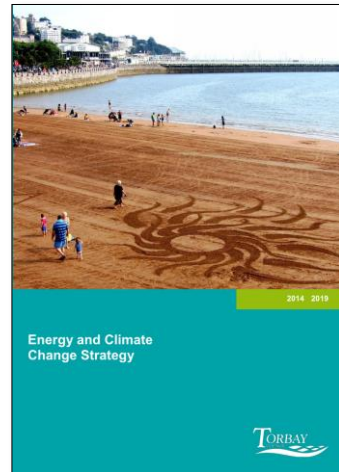
Aspiration 4: Create more sustainable communities and places

- ▶ *Policy SS11 Sustainable communities* – regenerate or improve social, economic or environmental conditions through these measures:
- ▶ Develop a sense of place and local identity
- ▶ Promote social inclusion and design out crime
- ▶ Support local food production and consumption

Aspiration 5: Respond to climate change

- ▶ *Policy SS14 Low carbon development and adaptation to climate change* – deliver sustainability in a holistic manner and make the most of opportunities to provide resilience to climate change through:
- ▶ Limiting summertime overheating within buildings
- ▶ Conserving water supplies and minimising the risk/impacts of flooding
- ▶ Avoiding increases in energy use and greenhouse gas emissions

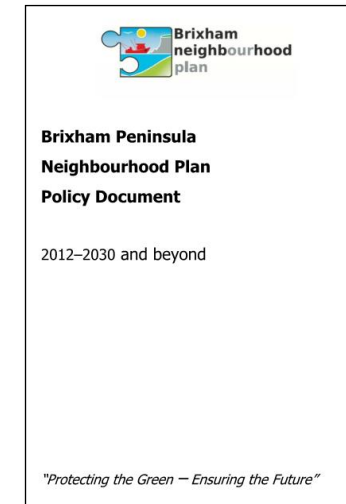




Torbay Energy and Climate Change Strategy (2014)

Translates locally, the legal binding national targets to reduce carbon emissions against 1990 levels:

- ▶ 34% by 2020,
- ▶ 50% by 2025 and
- ▶ 80% by 2050

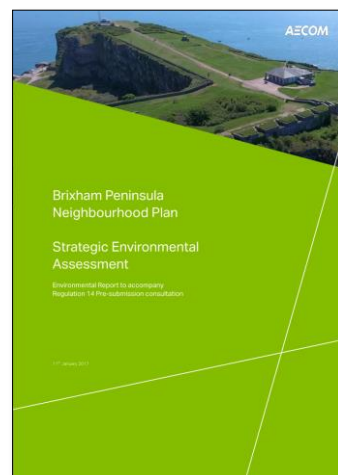


Brixham Peninsula Neighbourhood Plan (BPNP) 2012-2030 and beyond

The BPNP aims to be a guide for all developments that will generate and enhance the area through creating jobs, sustainable infrastructure, improving health and wellbeing and enhancing the environment. Key sustainability policies relevant to the Proposed Development include:

Employment Policies:

- ▶ *Policy J1: Employment land – proposed, retained and refurbished*
Developments that generate permanent jobs will be viewed favourably provided that they can be accommodated without prejudicing the integrity of the AONB, Special Areas of Conservation and the Coastal Preservation Area.
- ▶ *Policy J3: Local Employment – traditional training and skills*
Major new developments (those that seek to employ 10 or more staff) are strongly encouraged and will be supported to link with local educational/training facilities.



Brixham Peninsula Neighbourhood Plan (BPNP)– Strategic Environmental Assessment

A strategic environmental assessment has been undertaken to inform the BPNP, and provides a number of recommendations for inclusion in the BPNP:

- ▶ Provisions for the protection and enhancement of features and exposures of interest for geodiversity;
- ▶ Support for the aims of the English Riviera Geopark Management Plan;
- ▶ Provisions for increasing access to features and areas of geodiversity interest so more people can experience and understand the Neighbourhood Plan's rich and varied geodiversity; and

Utilisation of the Brixham Peninsula's geodiversity resource to support sustainable tourism.

Housing Policies:

- ▶ *Policy H4: Brownfield and greenfield sites*
Development on brownfield sites in preference to greenfield sites will be promoted and supported. Should sufficient or suitable brownfield land be demonstrated to not be available for a development, then the use of greenfield land which has the least visual and ecological impact may be acceptable if it complies with all other policy in this Plan.
- ▶ *Policy H5: Retention of local character*
Development should retain the distinctive character of the area in general and the site in particular. Local building materials should be used.
- ▶ *Policy H7: Sustainable construction*
New development should incorporate the latest developments in sustainable construction, adaptive technologies, eco-innovation and other measures to combat climate change and enable sustainable lifestyles.
- ▶ *Policy H8: Noise and light pollution*
Additional consideration will be required where any development could impact detrimentally upon the nightscapes, soundscapes and natural tranquillity of the South Devon AONB.

Natural Environment Policies:

- ▶ *Policy E1: Landscape beauty and protected areas*
Natural beauty, character and biodiversity should be preserved and enhanced.

▶ *Policy E3: Green wedges:*

The green wedges separating the towns of Paignton and Brixham and the villages of Churston, Galmpton and Broadsands must be preserved as valued countryside to prevent the merging of settlements.

▶ *Policy E6: Views and vistas*

Views and vistas, particularly those to and from the sea or the river Dart, including horizons and skylines, must be protected.

Built Environment Policies:

▶ *Policy BE1: Preservation of local character*

Developments must maintain or enhance where possible the area's heritage character. Proposals that contribute to the distinctive local character and quality of our heritage will be favoured.

Transport Policies:

▶ *Policy T1: Linking of new developments to travel improvements*

New developments should include safe walking and cycling access and within short walking distance to bus routes. Opportunities for environmentally friendly transport of freight should be maximised where possible.

▶ *Policy T3: Travel across and beyond Brixham Peninsula*

New developments will be favoured that incorporate into the scheme reductions in unnecessary travel, support for alternative modes of sustainable travel or improvements in road safety for all road users.



Code for Sustainable Homes (CfSH) and Home Quality Mark (HQM)

Following the Ministerial Statement (March, 2015) the Code for Sustainable Homes (CfSH) assessment has been revoked by government, and is therefore no longer required as a means of demonstrating sustainable development in dwellings.

However, considering the abolition of the CfSH and the introduction of the Home Quality Mark (HQM), the Applicant might consider it suitable to employ the HQM instead. It is therefore suitable that at this stage, the Applicant makes no commitment to undertake to follow the CfSH or HQM methodology, but to agree with Torbay Council an acceptable means of demonstrating that sustainable measures are included post-planning.

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