EBBSFLEET SUSTAINABILITY ASSESSMENT

// Public Realm+ Infrastructure

Engagement Draft// May 2024

Ebbsfleet DEVELOPMENT CORPORATION

EBBSFLEET GARDEN CITY

Public Realm & Infrastructure

One Page Design Guidance

Carbon & Energy

The primary focus is on the the delivery of Net Zero Carbon public realm and infrastructure. Such schemes should:

- Utilise renewable energy sources such as solar panels PV cells to ensure a low operational carbon demand
- **Use low embodied carbon** materials that are highly sustainable, renewable or made of high recycled content such as timber, GGBS concrete and recycled steel. Schemes should make reference to how materials are being manufactured, procured, transported and constructed onsite to reduce Upfront Carbon figures. Questions should be asked about what are the big ticket carbon saving materials being used, their specifications & strategies for repair, maintenance & replacement of the homes to reduce in-use embodied carbon

Water

The primary focus is to develop public realm and infrastructure to be climate resilience, and minimise water use. Schemes should demonstrate:

- Evidence of blue / green infrastructure and Sustainable Urban Drainage Systems (SuDS) that capture stormwater and mitigate flooding
- Connections to existing SuDS infrastructure, where possible
- Evidence of permeable hard landscape surfaces
- Provision of rainwater collection such as water butts to infrastructure buildings and Grey water recycling measures

Additional guidance can be found here:

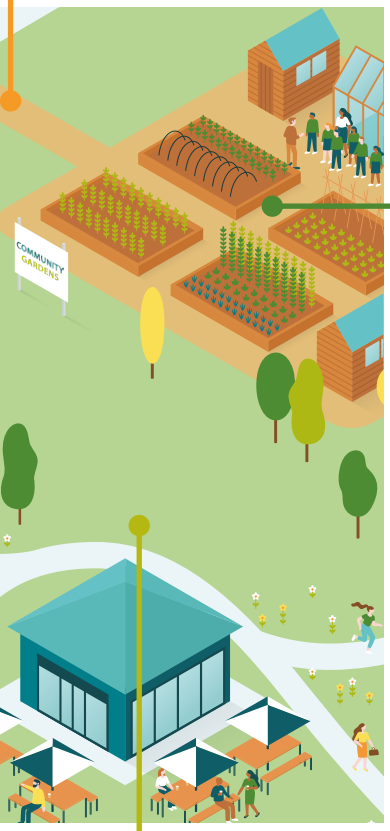
- **Susdrain, Delivering SuDS (including retrofitting SuDS)**
- **Kent County Council Drainage and Planning policy statement**
- **Susdrain, Water People Places**

Waste & Materia

The primary focus is to d
infrastructure with circular e
sustainable and healthy ma
minimise domestic waste stre

Schemes should evidence:

- Appropriately sized, ea
storage provision for rec
waste streams
- Specify reused or recyc
materials in dwellings an
- Demonstrate design for
deconstruction or adap
and Offsite Construction



Health & Wellbeing

The primary focus is to develop healthy neighbourhoods with active travel and low carbon and pollution infrastructure, that allow residents to be within a 5 minute walk of day to day amenities and good access to public open space.

- The public realm should be designed with a clear design hierarchy of pedestrian, cycle and public transport routes
- Align design proposals with the **Design for Ebbsfleet Character Guide**
- Align design proposals with the Ebbsfleet's Park Design Criteria
- Align design proposals with the Ebbsfleet Public Realm Strategy

Natural Environment

The primary focus is to construct the public realm with green infrastructure that contributes to climate resilience and provides opportunities to enable residents and visitors to connect with nature and make sustainable lifestyle choices. Applicants should provide evidence of:

- Diversity of native and drought resistance species of planting
- Creation and provision of habitats in the landscape
- Soft landscaping and Tree Canopy Cover strategies in alignment with **EDC'S Public Realm Strategy**
- Connecting new public realm to existing
- Adoption of minimum 10% Biodiversity Net Gain and target 0.4 or greater Urban Greening Factor opportunities

als

construct public realm and conomy principles, promote terials and opportunities to eams.

sily accessible and secure ycled food waste and general

led and responsibly sourced d landscape treatment

material efficiency, high PMV, tability of homes with DfMA / MMC methods

Public realm + Infrastructure

Carbon and Energy

Sustainability Performance Assessment

Performance measure	Will not deliver Net-Zero Ebbsfleet	Towards Net-Zero	Net-zero best practice
Whole life carbon CO2 emission from both embodied and operational stages- (modules A-C, excluding B6- B7) CO2 e / m2 (GIA)			Net-zero best practice Please attach Whole Life Carbon Assessment report
Operational: Renewables Amount of on site renewable	**<50%** of infrastructure / public realm energy demand provided by onsite renewables	**≥50%** of infrastructure / public realm energy demand provided by onsite renewables	**Energy positive 100%** of infrastructure / public realm energy demand provided by onsite renewables
Energy Management Performance gap (Soft Landings and Post Occupancy Evaluation)	Not included (Provide justification)		Net-zero best practice Soft Landings Stage 6-7 principles (Provide evidence)

Public realm + Infrastructure

Waste & Materials

Sustainability Performance Assessment

Performance measure	Will not deliver Net-Zero Ebbsfleet	Towards Net-Zero	Net-zero best practice
Circular sourcing % building materials by volume that are reused, recycled, secondary and renewable in construction See glossary for definition.	**<30%** Provide comprehensive justification	**≥30%** Provide Circular Economy Statement as a written summary.	**≥50%** Provide Circular Economy statement and Table of results.*
Responsible sourcing % construction materials by volume that are responsibly sourced	**<75%** of key materials are responsibly sourced	**≥75%** of key materials are responsibly sourced	**100%** of key materials are responsibly sourced. Provide Circular Economy statement
Construction waste Waste to landfill and % incinerated volume/tonnage	Waste to landfill and incineration	***Zero** non-hazardous waste to landfill and **≤10% incinerated.**	***Zero** non-hazardous waste to landfill and **0% incinerated.**

* Referencing GLA CE Template v1.1 May 2023

* Referencing GLA CE Template v1.1 May 2023

Public realm + Infrastructure

Health & Wellbeing

Sustainability Performance Assessment

Performance measure	Will not deliver a healthy Ebbsfleet	Towards a healthy Ebbsfleet	Healthy Ebbsfleet
Car club Distance from car club and ratio of car/number of units	Car club bays within 5 minute walking radius	**Net-zero best practice** 2 car club bays within 5 minute walking radius (1 car / 100 - 199 units | 2 cars / 200-399 units | 3 cars / 400+ units)	
Transport connections Distance to public transport stops and Mobility as a Service (MaaS) hubs	**≤400m** to bus stops	**Net-zero best practice** **≤400m** to mobility hubs (car share, bike share, bike hubs, bus stops)	
External daylight and sunlight Compliance with BRE 209 standard for external daylight and sunlight	**< 2 hours** direct sunlight on the ground to **50%** of open space on 21st March	**< 2 hours** direct sunlight on the ground to **70%** of open space on 21st March	**≥ 2 hours** direct sunlight on the ground to **70%** of open spaces on 21st March
Wind comfort Wind speed (m/s) sits within 'comfortable' level of Lawson Wind Comfort Criteria	**≥15m/s** (Unsafe)	**<15m/s - 8m/s** (Uncomfortable to Fast walking)	**< 8m/s** (Comfortable)

Public realm + Infrastructure

Water

Sustainability Performance Assessment

Performance measure	Non water-resilient	Towards water-resilience	Water-resilient
SuDs Sustainable Urban Drainage Systems See glossary for definition.	**No SuDs measures provided** Provide justifcation	**SuDs measures provided**	**100%** above ground attenuation
Surface water run off Runoff volume	**No control measures provided** Provide justification	**Control runoff to greenfield volume**	**Control runoff to greenfield volume and no net increase in volume from existing state**
Water Use Water usage per person / BREEAM criteria	**Irrigation systems fed by Potable water**	**Net-zero best practice** **No permanent irrigation system used**	

Public realm + Infrastructure

Natural Environment

Sustainability Performance Assessment

Performance measure	Under-performing	A greener Garden City	Garden City Best Practice
Biodiversity Net Gain % biodiversity net gain (BNG)	Not Applicable	≥10 BNG	≥20% BNG
Tree Canopy cover % tree canopy cover of amenity and public realm outdoor space	≥ 10.6% (Gravesham) ≥ 16% (Dartford)	≥16.5% (Environmental Improvement Plan)	Net-zero best practice ≥20% of the site area ≥ 0.3 target score (UK Forestry Commission)
Food Growing Proximity to community growing garden, orchard or allotment.	Community Garden, Allotment or Orchard within 10mins walk or greater from the site	Community Garden, Allotment or Orchard within 5mins walk from the site	Community Garden, Allotment or Orchard provided on site.
Drought resistance % drought resistant species of trees, shrubs and ornamental planting specification	No Drought resistant planting provided. (Provide justification)	≥80% planting to be drought tolerant	100% planting to be drought tolerant
Ecological corridor Compliance with Ebbsfleet Green Infrastructure Framework	Net-zero best practice Provide evidence report on number of connections to Ebbsfleet Green Infrastructure Framework 'garden grid' network.		

Public realm + Infrastructure

Inclusive growth + community development

Performance measure	Assessment criteria	Yes	No
Community Engagement	Project has delivered engagement aligned with **EDC's guidance on community engagement,** and facilitated co-design events early in the design process to up-skill the community on design, and enable them to engage in the co-design of the project.		
Community Engagement	Project has utilised a digital engagement platform throughout the design process to provide a portal for all briefing and community engagement activities, and to provide feedback on community proposals and ideas.		
Accessibility	Project has included an access consultant to enable best practice accessibility within the project.		
Accessibility	For Public Realm, the project has applied the public building section of the London Legacy Development Corporation's Inclusive Design Standards.		
Arts and Culture	Design teams has reviewed the Ebbsfleet Public Art Strategy, and integrated the Ebbsfleet public art principles into the project and design process.		

Application Assessment Summary

Project Name: _____ Date: _____

Sustainability Themes / Performance Measure	Please select Sustainability Level achieved in each measure		
Carbon & Energy			
Whole life Carbon	N/A	N/A	☐
Renewables	☐	☐	☐
Energy Management	☐	N/A	☐
Waste & Materials			
Circular sourcing	☐	☐	☐
Responsible sourcing	☐	☐	☐
Construction waste	☐	☐	☐
Health & Wellbeing			
Car club	☐	N/A	☐
Transport connections	☐	N/A	☐
External daylight and sunlight	☐	☐	☐
Wind comfort	☐	☐	☐
Water			
Sustainable Urban Drainage Systems (SuDs)	☐	☐	☐
Surface water run off	☐	☐	☐
Water use	☐	N/A	☐
Natural Environment			
Biodiversity Net Gain	N/A	☐	☐
Tree Canopy cover	☐	☐	☐
Food growing	☐	☐	☐
Drought resistance	☐	☐	☐

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CARBON + ENERGY GUIDANCE

Key Local Policy

Kent Minerals and Waste Local Plan 2013-30 (in conjuction with Draft Kent Minerals and Waste Local Plan 2023-38)

- Policy CSM 12: Sustainable Transport of Minerals
- Policy DM 1: Sustainable Design
- Policy CSW 8: Recovery Facilities for Non-hazardous Waste

Dartford Plan 2024

- Policy M3: Sustainable Technology, Construction and Performance
- Policy S3: Climate Change Strategy

Gravesham Local Plan Policy

- Policy CS18: Climate Change
- Policy CS19: Development and Design Principles

Relevant reading references

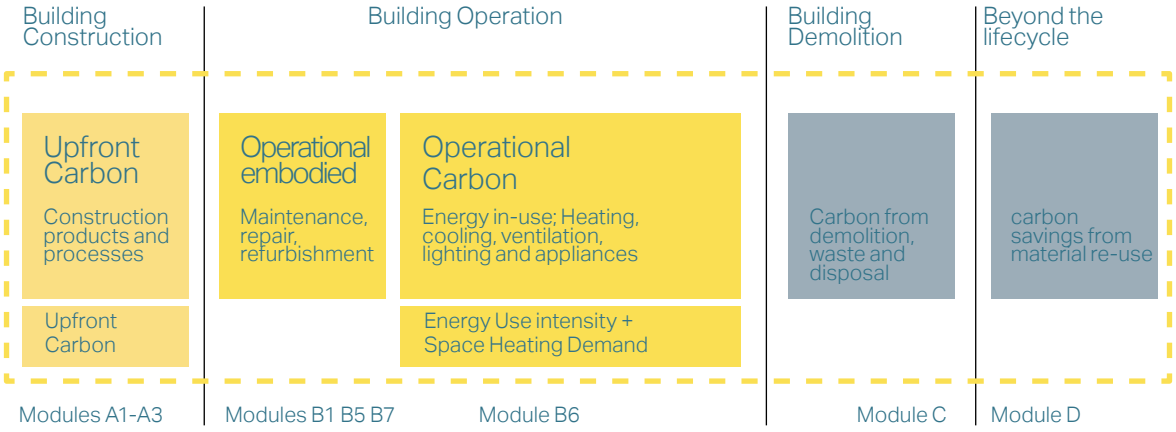
- LETI Client Guide
- Climate Emergency Design Guide
- RIBA Sustainable Outocomes Guide 2019

Whole-life Carbon Assessment

Aim: Reduce carbon emissions at every stage of the project's life cycle

Whole life carbon is a measure of the total amount of carbon emitted throughout the life cycle of a building or infrastructural asset, and include both upfront emissions generated through construction, and operational emissions generated during the building's use.

The UK Green Building Council's 'Net zero carbon framework' provides a useful approach to guide projects in reducing carbon across all stages to mitigate climate change.



1 Use a whole-life carbon assessment method to inform the design process, and reduce carbon at every stage.

Embedding a whole-life cycle assessment into the design process will ensure every design decision considers its impacts on the embodied and operational carbon emitted. It should also encourage design for flexibility, adaptability and deconstruction to minimise end-of-life impacts and enable a 'circular economy' within the built environment.

2 Use a circular economy approach to reduce upfront carbon

Upfront carbon can be significantly reduced through the re-use and retrofit of existing buildings / infrastructure, the pursuit of a circular economy approach in the design and specification of products and materials , and the reduction of waste.

The '**upfront carbon**' metric provides a summary of how much carbon is emitted during construction.

3 Reduce operational energy needed:

Reducing the energy demanded by a building when in use will make it much easier to be operationally net-zero carbon, regardless of whether the energy is generated by on site renewable sources or the national grid.

This can be achieved by using a combination of passive design to reduce the energy needed for servicing the building, using efficient electrical devices and systems

within the building, and providing smart energy management systems to allow users to monitor and manage energy use into the future.

The '**Energy Use Intensity**' is a measure of how much energy per m2 is required by the building per annum.

> See Energy Efficiency for detailed guidance

4 Use passive design to reduce the energy needed for heating / cooling

Passive design aims to use the conditions and climate of a site, and the design of the building's external walls, roof and floors to minimise energy needed to keep occupants comfortable throughout the year.

The '**operational heating demand**' metric provides a measure of how well passive design has been applied.

5

> See Passive Design for detailed guidance

Generate renewable energy

Generating energy on site helps to reduce demand on the national grid, decarbonise the national grid, and off-set the energy demanded by the site.

The '**operational renewables'** metric provides an understanding of whether a site is reliant on the decarbonisation of the natonal grid to achieve operational net-zero by 2050, or can claim to be net-zero upon completion.

6

> See Renewables for detailed guidance

Provide metering, monitoring and reporting to help users reduce their energy use.

Incorporating smart energy/building management systems can allow users to better manage and reduce their energy usage. The reporting of the buildings / project's in-use energy on an annual basis will improve our ability to further reduce carbon across the industry.

> See Energy Management for detailed guidance

> Recommended detailed guidance

LETI Client Guide

GLA London Plan Guidance: Whole Life Cycle Carbon Assessments

LETI Climate Emergency Design Guide

RIBA Sustainable Outcomes 2030 Guide

Submission requirements :

EDC Sustainability Assessment

> Complete Tab 2 +3 : Whole Life carbon Assessment

Whole-life carbon performance should be demonstrated through the submission of a completed EDC Whole Life Carbon Assessment Table 2 and 3. The two templates are based on the RICS Whole Life Carbon Assessment methodology, and any alternative approach to reporting should be agreed by the EDC Planning officer during the pre-application stage.

Energy Efficiency [be clean]

Aim: Reduce the energy demand by occupants in the home / building.

We can maximise the energy efficiency of our homes and buildings by using passive design to reduce the amount of heating and cooling needed, using low-carbon heating, efficient water system design and ultra-efficient electrical devices.

The total energy used per unit gross floor are to heat and cool homes and buildings, and for lighting, cooking and powering our devices is called the energy use intensity.

1 Use Passive design to create a comfortable climate and reduce the energy required to heat and cool the home, building or place.

2 Use a district heating system or micro-grid if available in the local area.

While there are no heating networks in Ebbsfleet currently, this may change during the remaining build out period, and design teams should explore the availability of a local heat network, ambient loop and micro-grids to power heating systems. EDC will provide further information if and when such systems are planned. Bear in mind that connecting to an existing district energy scheme means that it would not be possible to reach zero carbon if the main energy source uses fossil fuels unless it is refurbished at a later date to be fed from heat pumps or other renewable source.

3 Use a zero-carbon heating system

The national grid is continuing to decarbonise, and therefore the most likely low-carbon heating system within Ebbsfleet will be electricity powered heat pumps or boilers.

Heat pumps are preferred over electric boilers, as they are more efficient and cheaper to run.

Heat pumps can either be sized for individual homes/buildings, or communal to serve a network of homes or buildings. [Click here for a basic guide to choosing the right heat pump].

Heat pumps run more efficiently at lower temperatures (35-45°C degrees), which means radiators may need to be slightly larger to emit the same amount of heat as they would in a conventional gas-fired boiler heated home. However, this may be countered by the fact that ultra-low energy buildings will require less heat. Heat pumps are particularly suited to underfloor heating

Heat pumps will require a hot water cylinder, which will need to be accommodated in an easily accessible cupboard, but which should not result in a net loss of storage space within the home. These cylinders will need to be heated to around 60oC intermittently to prevent the growth of the legionella bacterium.

4 Reduce water usage, particularly hot water demand see water use

In very low energy buildings, the energy required to heat hot water can meet or exceed the amount of energy required for space heating. Consider

- Reduced flow rates: Refer to Water sections in most recent BREEAM and HQM protocol to optimise realistic flow rates.
- Minimise distribution loss: This issue is often overlooked by architects but can easily be improved by the following simple measures.
    - o Try to cluster taps close to the hot water source,
    - o Ensure all pipework is insulated.
    - o Aim to use the smallest diameter pipework possible but taking account of peak demands.
- Consider if there is a need for hot water tanks and super-insulate all tanks.
- Consider wastewater heat recovery (WWHR).

5 Ensure all electrical appliances supplied at fit-out are the best energy rating possible.

Planning Application submission requirements :

EDC Sustainability Assessment

> Complete Tab 4 : EUI / Space Heating Tables

1. Applicants should use Tab 4 to report the Energy Use Intensity and Space Heating Demand for each dwelling or building use. This calculation should align with the performance level selected in the EDC Sustainability Assessment Table.
2. This should include details of the software that was used to calculate the performance level.
3. Reported values should exclude any renewable energy generation.

Energy Strategy

Applicants should include within the Energy Strategy an explanation of how the EUI and space heating demand have been calculated including;

1. Details of software used to calculate the two performance metrics.
2. Active design measures, including high efficiency lighting, efficient mechanical services.
3. Ventilation with heat recovery and wastewater heat recovery, must also be investigated and set out in the energy assessment.

Passive Design [be lean]

Aim: Reduce energy needed to heat or cool the home / building / place

Passive design works with the local climate to maintain a comfortable temperature in a building or a place throughout the year, reducing or eliminating the need for additional heating or cooling, thus reducing the energy demand and the associated operational carbon emissions.

The following guidance will help to create a more comfortable internal environment in buildings and reduce the amount of energy needed to heat or cool buildings throughout the year.

1 Orientation

The first pre-application meeting should consider the optimal orientation to optimise solar gains, avoiding overheating or excessive cooling load, whilst preventing significant overshadowing in the winter.

Maximise the number of dual aspect, homes / spaces.

Locate the highest-occupied rooms along the southern facade where feasible.

Avoid overshadowing of PVs from adjacent buildings, trees and taller parts of the building.

Aim to minimise overshadowing of communal and private outdoors spaces where feasible.

2 Building form

Compact forms have less external surface area and thus lose less heat, but can compromise architectural expression, and lead to generic architecture, and a less varied silhouette and streetscape.

Carefully consider the building form to balance the compactness of the form alongside the need to formally express the chosen design narrative and respond to the townscape context of the site.

Design teams should focus on the compactness of the 'thermal envelope' rather than the general architectural form. The thermal envelope is defined by the wrapping of continuous insulation to enclose all heated spaces within the building. Careful detailing can avoid cold bridging through the thermal envelope, while allowing additional articulation of the buildings form through balconies, stepped roofs, projections and overhangs.

Group 'unheated' spaces such as bin stores and cycle stores outside the thermal envelope together, preferably to the northern façade, to aid compactness.

Consider the use of external access cores and deck access to apartment blocks, to reduce the thermal envelope, and the amount of space that needs heating and cooling.

3 Thermal fabric and air tightness

The forthcoming changes to the Building Regulations in 2025 will continue the pathway towards more insulated and more air-tight thermal envelopes, and deeper façade build-ups. EDC's performance indicators do not assess fabric efficiency, using the Energy Use Intensity metric to frame overall performance, and preserving the flexibility for design teams.

4 Window locations and sizes

Getting the right glazing-to-wall ratio on each façade is a key feature of energy efficient design. Minimise heat loss to the north (smaller windows) while providing sufficient solar heat gain from the south (larger windows) whilst mitigating against the risk of overheating.

5 Ventilation

The most important aspect of ventilation is controlled air flow to ensure the building sustains a comfortable temperature, while avoiding issues such as condensation and overheating. Mechanical Ventilation with Heat Recovery (MVHR) systems work by extracting and recovering heat from warmer rooms and distrubuting clean air around the building. They are critical in maintaining good air quality and reducing heat losses within a home.

> Recommended Detailed guidance

- LETI Client Guide
- GLA London Plan Guidance: Whole Life Cycle Carbon Assessments
- LETI Embodied Carbon Primer
- RIBA Sustainable Outcomes 2030 Guide

Renewables [be green]

Aim: Maximise the amount of renewable energy generated

Net zero carbon can be achieved through generating energy using renewable technologies such as photovoltaics (PV). Generating sufficient energy onsite to be self-reliant is much easier at lower densities, but the density of development in much of Ebbsfleet will require a mix of onsite photovoltaics and potentially offsite renewables to supplement / aid the decarbonisation of the national grid.

1 Locate and orientate the roof to maximise solar access / energy generation

Photovoltaic panels can be located on both flat roofs and pitched roofs, as well as mounted on carports, garages and garden structures.

Houses: Most houses have sufficient space onsite to generate most of the energy needed on an annual basis but will require a battery to be fully self-sustainable.

Apartment blocks: Within Ebbsfleet it should be possible for apartment blocks that are six stories or less in height to achieve a net zero energy balance on site using rooftop solar PV arrays, assuming the blocks achieve the Energy Use Intensity performance level for 'towards net zero'.

2 Aim to maximise panel density

A large south facing mono-pitch roof will generate the most energy for a scheme.

For apartment blocks with a flat roof, east/west facing concertina type solar arrays will generate up to twice the amount of energy as the conventional approach of orientating rows of south facing panels, with a large offset between each row to avoid overshading. While the concertina layout generates less energy per panel, they do not require the offset to avoid interrow shading, and thus achieve a greater overall area of PV.

3 Aim to specify high performing PV panels

Design teams and planners should look to ensure the following criteria are met for PV panels to ensure a high-quality PV panel is specified;

- Aim to specify high efficiency panels with an output of 300W or greater per panel.
- Check the panel supplied provides a 'linear warranty' to ensure the panel will continue to generate energy levels comparable to when new, for longer.
- Confirm that the PV system includes Module Level Power Electronics, (MLPE) such as a micro converter or DC Optimiser.

4 Review energy balance

The total designed renewable energy generation on-site should equal the total predicted energy use, which will provide a zero-carbon on-site balance.

Planning application submission requirements :

EDC Sustainability Assessment

> Complete Tab 5 : Renewables

Applicants should use Tab 5 to report the total energy generated from renewables for each dwelling, or building. This should include;

1. Details of any software that was used to calculate the performance level
2. Specification of PV panel (if known)
3. Type and length of warranty
4. Use of MLPE and battery specification

Energy mangement [be seen]

Aim: Reduce carbon emissions at every stage of the project's life cycle

Measuring how a building / project performs once it is completed and in use allows us to pro-actively manage the performance, as well as verify whether the completed building performs in the way it was planned and modelled to do at the design stage. This verification stage is critical to improving our understanding of where and how our design approaches and modelling needs to be improved in future projects.

1

'The performance gap' is a term that has been coined to capture the difference between a building's modelled performance at the design stage (usually in terms of water use, and energy generated, saved and used) and the actual performance of the building once completed and in use. The use of so called 'smart' technology can help us to better understand how a building is operating, and to help us manage energy use, as well as inform our behaviour, to drive energy and water efficiency even further.

2

Smart control systems

The use of 'smart' technology to meter, monitor and control renewable energy generating devices and our heating, cooling, ventilation and other devices will enable us to achieve even greater energy efficiencies.

Enable home energy management systems to be demand responsive. If a home or building is built to be 'Demand response' ready, it means the energy supply can be managed to either reduce or increase consumption for a period of time. This could be managed by the homeowner, to take advantage of cheaper off -peak supply, or by the energy provider to manage peak-demand and create a more stable grid.

- All homes should include a Smart Thermostat / Home Energy Management System that is WIFI enabled, and supports 'Active demand response' (see below)
- EV Charging points should include 'Vehicle to Grid' / 'Vehicle to Home' technology to support demand responsive grid network management.
- Providing battery storage within a home will allow PVs to supply a larger proportion of a dwelling total energy demand, and potentially enable a net zero energy balance.
- All homes should use LED lighting as standard.

3

Metering

Locate the electricity smart meter display in the hallway or kitchen, to allow easy monitoring.

Locate water meter/ use display in highly visible locations where their visibility can influence user behaviour, such as locating water usage display adjacent to the kitchen sink.

Consider where sub-meters should be provided in addition to general meters to enhance homeowners and building managers/users understanding of energy and water usage and allow them to actively

4 manage and control their usage more effectively.

Handover

Handover is a critical stage in ensuring the homeowners and building managers operate the building as was envisaged at design stage, to ensure it performs as designed.

Provide building and operational information to residents in the form of site inductions and building user guides. Ensure they understand how the building and systems are designed to operate. Guides should include photos and instructions of actual systems and controls installed.

EDC projects should adopt a 'Soft Landings' approach to planning for the handover and operation of the project after completion, which will include planning for the monitoring of performance.

5 Monitor and report performance.

Design teams should consider how the metering and reporting systems specified at design stage will allow reporting in alignment with the targeted performance metrics. I.e., how easy will it be for homeowners and building occupiers to compare their annual energy usage and water usage against the performance metrics stated in this guide?

For non-residential projects, the design team should set out a plan for monitoring the building post-completion, specifically stating what data should be collected, how it will be collected and by whom, as well as processes for monitoring and verifying the data.

Design teams should consider how they plan for the reporting of building performance back to them for the first 5 years, to help to reduce the performance gap. The RIBA 2030 Sustainable outcomes programme advocates that Architects share the operational performance of completed buildings for the first 3 years of operation, to address the performance gap, and share the data with the RIBA to allow them to create a national database.

Planning application submission requirements :

EDC Sustainability Assessment Schedule
> Complete Tab 6 : Energy Management

Applicants should include details of their metering strategy and reporting commitments within Tab 6.

Energy Strategy
Full details of the metering strategy, smart device and systems and should also be included in the Energy strategy.

> Recommended Detailed guidance

- LETI Client Guide
- GLA London Plan Guidance: Whole Life Cycle Carbon Assessments
- LETI Climate Emergency Design Guide
- RIBA Sustainable Outcomes 2030 Guide

WASTE + MATERIALS GUIDANCE

Key Local Policy

Kent Minerals and Waste Local Plan 2013-30 (in conjuction with Draft Kent Minerals and Waste Local Plan 2023-38)

- Strategic Objectives for the Minerals and Waste Local Plan
- Policy DM 1: Sustainable Design
- Delivery Strategy for Waste: Policy CSW 2, Policy CSW 3, Policy CSW 7

Dartford Plan 2024 (Pre-Submission (Publication) Document September 2021)

- Policy M3: Sustainable Technology, Construction and Performance
- Sustainable Technology, Construction and Performance: 5.31 - 5.32

Gravesham Local Plan Policy

- Policy CS19: Development and Design Principles

Relevant reading references

- LETI Embodied Carbon Primer
- WRAP Seven Steps to Net Zero

Circular economy

Aim: To minimise non-renewable resources extracted from the earth.

A circular economy means to reduce waste by using all available waste materials rather than sending them into the waste stream. By keeping resources and materials in use as much as possible through their re-use or re-purposing, unnecessary waste is minimised to almost zero.

The Circular Economy is still a relatively new concept, but will require everyone to rethink how we make, manage, maintain, use and renew our buildings and infrastructure. The guidance below sets out key principles for discussion between planners and design teams. EDC endorses the GLA's approach to preparing Circular Economy Statements as a means of reporting a circular economy led design process.

1 Engage the constructor early in the design process to co-develop the circular economy approach together.

2 Use workshops to co-develop circular economy approach to harness expertise and experience, and share the risk between the design team, client and constructors.

3 Re-use what's already there

Most projects in Ebbsfleet are starting from an empty site, and therefore re-use, retrofit and refurbishment will not be feasible. However where existing buildings and infrastructure already exist on site, these should be re-used.

4 Prioritise off-site manufacture

Consider the role of off-site construction and the use of modern methods of construction, which can significantly reduce waste through standardisation and factory fabrication driving material efficiency.

A design with standardised elements uses clusters of components as the basis of construction with standardised dimensions, enabling maximum waste reduction and reuse.

5 Circular sourcing

Where a site includes existing buildings or infrastructure on site, an audit of the existing material should be undertaken to identify if the existing site/building/material can be retained, refurbished, reused or re-purposed either onsite or locally.

When no resources already existing on the site, the priority is to look into reusing materials instead of sourcing virgin materials.

Re-purpose materials that could be used in another form.

6 Responsible sourcing

Where virgin materials are required, only use materials from a sustainable resource, as products made from virgin materials contribute to resource depletion and require carbon intensive activities to manufacture.

Recycle materials. This step requires additional energy and often devalues materials, which is why it should be considered last.

7 Long life and loose fit

Buildings that are built to be durable should last longer, and thus need less resources to maintain them during their lifetime. The durability of buildings can be maximised by;

Design in lifetime layers : Designing the building in layers,based on the design life of components. Shorter-life layers need to consider how they can be easily accessed and replaced.

Design for flexibility : A flexible built asset is capable of adapting to the changing use of building occupants through the reconfigurability of its parts. This may include short periodical changes (e.g. different daytime or evening use, seasonal changes) or long-term changes (e.g. change of ownership).

Design for adaptability : An adaptable asset is designed to suit the present needs of building users while considering and accommodating possible future changes.

This involves scenario planning and optimising the structural and non-structual elements of the building to best respond to the potential future scenarios.

8 Design for disassembly

The design team should consider how all layers of the buildings can be disassembled and re-used from the outset of the project.

Use the 'layers approach' to structure the design approach and allow different elements with different design lives to be easily maintained and replaced

Use mechanical fixtures and fittings rather than adhesives.

9 Material passports

A material passport is a document that defines all materials used within a product, and the key characteristics that will enable the product/material to be recovered , re-used or recycled more easily in the future.

This will improve the ability of disassembled elements to be reused.

Planning application submission requirements :

Circular Economy Statement

Provide a circular economy statement which demonstrates the percentage of:

- building materials by volume that are reused, recycled, secondary and renewable in construction
- construction materials by volume that are responsibly sourced
- building materials/elements reusable at end of life by volume/tonnage
- construction material manufactured offsite

The circular economy statement should set out how materials arising from demolition and remediation works will be reused and/or recycled and demonstrate how the design and construction of the development will reduce material demands and enable building materials, components and products to be disassembled and re-used at the end of their useful life, following design for disassembly principles.

> Recommended Detailed guidance

- **GLA Circular Economy Statement Guidance**
- **LETI Embodied Carbon Primer**
- **Eleanor McCarthy Foundation Circular Economy Toolkit**
- **ACAN Circular Economy Design Guide**
- **Modern methods of construction Framework**

Zero construction waste

Aim: Avoid any construction waste going to landfill

Waste should be minimised throughout construction, and contribute towards a circular economy approach. A construction waste management strategy should establish target rates for recycling and define processes to manage different waste streams, as well as a commitment to preventing any biodegradable waste going to landfill.

- Appoint someone to take overall responsibility for the strategy. Typically, this will be the client in the pre-construction phase, but responsibility may transfer to the principal contractor when construction starts.
- Start preparing the strategy during the concept and design of the project.
- Consider the construction methods and materials used to reduce the amount of waste produced.
- Plan for sufficient storage space to allow wastes to be properly segregated as they arise.
- Pre-order materials to specification at the design stage to reduce waste created from off-cuts.
- Purchase materials with less or returnable packaging.
- Record all decisions about the project design, construction methods or materials that will minimise the waste produced on site.
- Record all measures taken to reduce waste, to enable the tonnages of reduced waste to be quantified.
- Identify the types and quantities of waste that the project will produce. Estimate how much waste will be produced and set realistic targets for how much of that waste can be reused, recycled or disposed of.
- Identify how to manage waste. Know where, when and what sort of materials can be reused, recycled or disposed of.
- Keep signed waste transfer notes or consignment notes for all waste disposed of or transferred from the site.
- Identify where and how to dispose of waste. Make sure that waste disposal contractors dispose of waste safely and legally.
- Communicate the strategy and implement a training programme. Keep the strategy on site and include in inductions. Meet with staff and contractors to clearly explain why the strategy is important.

- Carry out spot checks and monitor staff regularly to make sure they are following procedures.
- Measure the waste. Keep track of all movements of waste within and from the site. Record the types of waste taken, who removed the waste and where they took the waste.
- Update the strategy. Keep waste documents and update the strategy as the works progress to reflect the actual handling of waste.
- Produce a final report on the use of recycled and secondary materials, waste reduction, segregation, recovery and disposal, and identified costs and savings.

> Recommended Detailed guidance

GLA Circular Economy Statement Guidance

Planning application submission requirements :

Construction Waste Management Plan

Provide a construction waste management strategy which outlines how waste materials will be managed efficiently and disposed of legally during construction, and how the re-use and recycling of materials will be maximised. The strategy should include ;

- Who will be responsible for resource management.
- Types of waste and estimated quantity that will be generated, an dhow it will be measured.
- How the waste will be managed, including details of the % that will be re-used or recycled on site, or removed from the site for re-use, recycling, recovery or disposal.
- Which contractors will be used to ensure the waste is correctly recycled or disposed of responsibly and legally.

HEALTH + WELLBEING GUIDANCE

Key Local Policy

Dartford Plan 2024

- Policy D1: Central Dartford Strategy
- Policy D2: Central Dartford Development Principles
- Policy E1: Ebbsfleet & Swanscombe Strategy
- Policy M1: Good Design for Dartford
- Policy M3: Sustainable Technology, Construction and Performance
- Policy M8: Housing Mix
- Policy M9: Sustainable Housing Locations
- Policy M10: Residential Amenity Space
- Policy M17: Active Travel, Access & Parking
- Policy S2: Infrastructure Planning Strategy

Gravesham Local Plan Policy

- Policy CS06: Ebbsfleet (Gravesham) Opportunity Area
- Policy CS08: Retail, Leisure and the Hierarchy of Centres
- Policy CS10: Physical and Social Infrastructure
- Policy CS11: Transport
- Policy CS19: Development and Design Principles

Relevant reading references

- Dartford Air quality Action Plan 2023-2028
- Air Quality Positive LPG - Greater London Authority, 2023
- Design for Ebbsfleet

Sustainable travel

Aim: Maximise the number of trips by walking, cycling or public transport

Ebbsfleet's Sustainable Travel Strategy sets out the vision for balancing mobility in Ebbsfleet, so that everybody has a choice of affordable travel options, and active modes such as walking or cycling are widely recongised as being safe, secure and enjoyable by local residents. All planning applications should comply with the guidance set out in the sustainable travel strategy.

1 Provide high quality cycle storage, and facilities for walking, cycling and sustainable travel

Walking : Follow the guidance G2-G7 to ensure development is easy to access and safe, secure and attractive for pedestrians

Car Clubs : Follow the car club guidance G8 to ensure adequate car club provision is provided within 5 minutes walk of the site

Cycle share : Follow guidance G9 to ensure your development supports the provision of an area wide cycle share scheme

Cycle storage : Follow guidance G10-G17 to ensure adequate cycle parking is provided in the correct locations, and is easy, secure, safe and attractive to use

2 Develop an approach to parking that is aligned with your sustainable travel provision

Use guidance G18-G19 to ensure the appropriate quantity of parking is provided.

3 Accommodate the car discretely

Use guidance G20-G29 the most appropriate forms of parking are used, based on the type of use, housing typology, density and street typology.

4 Provide vehicle charging

Use guidance G30-G36 to ensure appropriate provision, location and type of charging facility is provided

EV Charging points should include 'Vehicle to Grid' / 'Vehicle to Home' technology to support demand responsive grid network management

5 Pro actively manage car parking

Use guidance G37-G38 to ensure an appropriate parking management strategy is established and maintained to ensure streets remain accessible, safe and attractive for everybody

6 Consider the provision of a centralised mobility hub to accommodate all shared / public transport facilities within the scheme site or local area

In addition to transport connections, they can include community facilities that reduce car use such as a cafés, co working spaces, parcel collection and cycle maintenance facilities, as well as meeting points for residents and live waiting time screens

Planning application submission requirements :

Scheme Travel Strategy

Applicants should use the Ebbsfleet Sustainable Travel Strategy to inform their scheme's travel strategy, specifically using the 5 step structure of the Ebbsfleet strategy to frame their document structure. This should articulate:

1. The sustainable travel facilities that are within 5 and 10minutes ped-sched, and which trips are envisaged to be undertaken by sustainable modes
2. Residual parking demand following assessment of sustainable trips
3. Vehicle charging provision
4. Parking management strategy

Design and Access Statement

Applicants should demonstrate within the DAS how the travel strategy has been incorporated into their masterplanning, site plan, and house types/ building plans.

Applicants should demonstrate how the parking typology guidance has been applied to parking spaces within their scheme.

Healthy homes + buildings

Aim: All homes are comfortable and safe for people of all ages and abilities

EDC has developed a set of housing performance criteria to ensure homes in Ebbsfleet support Ebenezer Howard's original ambitions for Garden Cities to "secure healthier surroundings for our residents". Buildings should aim to provide the following performance to support resident's health and wellbeing;

1 Space to live

All new homes should have as a minimum, the liveable space required to meet the needs of people over their whole lifetime, including adequate internal and external storage space.

All new homes in Ebbsfleet should meet the nationally described space standards, including the storage requirement.

All new homes in Ebbsfleet should include a $2m^3$ space for a desk that is adjacent to a window to allow for home working. If this desk space is within a bedroom, this needs to be in addition to the bed and circulation space.

2 Private external spaces

All new homes in Ebbsfleet should provide a private outdoor space that complies with EDC's outdoor space, balcony and terrace guidance;

- All private balconies and roof terraces must provide a generous balcony, that is larger than 5 m^2 for each 1-2 person dwelling, plus 1 m^2 for each additional occupant over 2 persons.
- All balconies and roof terraces must have a minimum depth and width of 1500 mm.

3 Dual aspect homes

Schemes should aim to maximise the number of dual aspect homes.

Single aspect north facing homes should be avoided.

Consider the use of deck access to enable dual aspect for medium and higher density apartment blocks.

4 Internal daylight, sunlight and ventilation

Daylight and sunlight can significantly enhance the wellbeing of residents, and all main living areas and bedrooms of a new dwelling should have access to natural daylight.

Aim to ensure habitable rooms are directly sunlit, achieving 750Lux (500lux as a minimum).

A ceiling height of 2.6m significantly improves daylight and sunlight penetration into the home when combined with taller windows.

The height of rooms in a dwelling dramatically affects the perception of

space in a home. A small increase in ceiling height can make the difference between a home feeling cramped or spacious. When matched with generous window sizes, higher ceilings also improve natural light levels and ventilation, and the depth to which light penetrates a room.

Higher ceiling heights are encouraged, particularly for ground floor dwellings and any single aspect north facing homes.

5 External sunlight

Use the methodology set out in BS 209 to generate site layouts that map shade at ground level, and that allows for a visual assessment of where 2 hours direct sunlight or greater is achieved on the ground on 21st March.

6 Homes and buildings should be accessible to everybody

All new homes and their surroundings should be designed to be inclusive, accessible, and adaptable to suit the needs of all.

All homes should aim to meet M4 (2) Category 2 requirements as a minimum.

Design teams should liaise with EDC to identify the need, and preferred location for M4 (3) Category 3 dwellings .

All senior living accommodation should meet the HAPPI standard.

All public buildings should meet the LLDC inclusive design standards.

7 Air quality

All new homes should not contribute to unsafe or illegal levels of indoor or ambient air pollution and must be built to minimise, and where possible eliminate, the harmful impacts of air pollution on human health and the environment.

Planning application submission requirements :

EDC Energy and Carbon Assessment Spreadsheet: > Complete Table 6

Applicants should complete table 6 to identify the housing quality performance for each home within the scheme.

Site plans accumulative shadow mapping

Submission should include site plans that identify areas of land that received 2 hours or greater of direct sunlight on March 21st. at a scale of 1:100, aligned with the performance level selected in the EDC Sustainability Assessment Table.

Internal Daylighting Study

Submission should include Internal lighting study, to demonstrate compliance with BS EN 17037, aligned with the performance level selected in the EDC Sustainability Assessment Table.

Overheating

Aim: Use passive design to reduce or avoid the risk of overheating.

As the climate changes there is a greater risk of overheating in buildings which can be a significant threat to occupants' health and wellbeing, particularly for vulnerable people. Overheating risk can be reduced through careful passive design; thinking through orientation, massing, façade and window design, internal layout and shading. Locating rooms with openable windows facing onto external sources of noise and pollution should be avoided.

1 Use the Good Homes Alliance overheating risk tool to understand the factors that could contribute to or mitigate the likelihood of overheating.

This tool provides a good starting point for identifying a site's risk and opportunities that could contribute towards or mitigate the risk of overheating.

2 Consider building and room orientation

Maximise dual aspect spaces to increase cross ventilation and naturally cool buildings.

Consider the use of deck access to enable dual aspect for medium and higher density apartment blocks.

Avoid bedrooms with west facing windows, this risks bedrooms heating up before residents go to bed, exacerbating night time overheating. This is a particular issue if facades face onto sources of noise or air pollution. If there are bedrooms facing west, avoid large window proportions and incorporate external shading to reduce overheating risk.

3 Window placement and design

Ensure glazing areas are not excessive i.e. not more than 20-25% of facade on south or west façades.

Avoid fixed panes and maximise opening areas of windows. Side hung windows typically allow more ventilation than top hung.

Select a g-value (the solar factor indicating how much heat is transmitted from the sun) for glass of around 0.5 to balance heat gain and loss.

Use the Acoustics and Noise Consultants (ANC) Acoustics, Ventilation and Overheating Guide to find a balanced approach to acoustics, daylight and overheating risk.

4 Consider external shading

South façades should have fixed horizontal shading over the window (e.g. brise-soleil or deep reveals).

East or west façades should have movable external vertical shading (e.g. shutters or louvres).

Utilise green and blue infrastructure to provide natural cooling to the local environment.

Balconies can be used to provide cost-effective shading.

Consider including shading above top floor balconies.

Lighter coloured finishes applied to external surfaces will maximise sunlight reflection.

5 Use dynamic simulation analysis to satisfy Part O, and to report at planning application stage.

Design teams should use CIBSE TM59 to iteratively test and confirm whether window and facade design and shading is reducing overheating to an acceptable level.

Prioritise natural methods of reducing overheating over energy-intensive technology like air conditioning.

CIBSE TM59/TM52 overheating analysis for homes and non-domestic spaces should be reported as part of detailed planning submissions.

Planning application submission requirements :

Overheating Strategy

Applicants should submit their overheating strategy, using CIBSE TM59 / TM52 dynamic simulation analysis to demonstrate the overheating performance level in alignment with the performance selected in the EDC Sustainability Assessment Table.

Design and Access Statement

Applicants can demonstrate how they have considered passive design to enable mitigation of overheating within the DAS.

WATER MANAGEMENT GUIDANCE

Key Local Policy

Kent Minerals and Waste Local Plan 2013-30 (in conjuction with Draft Kent Minerals and Waste Local Plan 2023-38)

- Policy DM 1: Sustainable Design
- Policy DM 10: Water Environment

Dartford Plan 2024 (

Policy M3: Sustainable Technology, Construction and Performance

- Policy M4: Flood Risk and Riverside Design
- Policy M14: Green and Blue Infrastructure and Open Space Provision

Gravesham Plan 2024 Policy

- Policy CS18: Climate Change

Relevant reading references

- RIBA Sustainable Outocomes Guide 2019
- Drainage and Planning Policy - a Local Flood Risk Management Strategy Document, Kent County Council, 2019
- **AECB Design Guidance Standard**

Sustainable urban drainage

Aim: Reducing surface water flood risk

Changes to our climate are predicted to result in increased rainfall and greater risk of flooding. The Ebbsfleet Implementation Framework and Public Realm Strategy set out a water sensitive design approach that integrates sustainable urban drainage systems into Ebbsfleet's buildings, streets, parks, gardens and open spaces to capture, store, distribute and absorb rainwater. This will reduce surface water run-off and support local drainage networks to function effectively, reducing the risk of flooding.

1 Collect and re-use rainwater in buildings

Green and blue roofs can help to capture and store rainwater in more dense urban developments such as Ebbsfleet, and help to slow water entering into the wider landscape and drainage systems below ground.

Provide rainwater storage systems for larger buildings and water butts or underground storage tanks.

Consider how water management onsite can be connected to wider scale drainage systems within the street and neighbourhoods, to create fully integrated systems.

2 Incorporate SuDS into Ebbsfleet's streets

EDC's Public Realm Strategy provides practical guidance on where SuDs should be incorporated into all scales of street in Ebbsfleet, from Level 1 boulevards through to the smallest of laneways.

3 Incorporate SuDS into Ebbsfleet's parks and open spaces

Incorporate a range of landscapes that capture stormwater and mitigate flooding through planting trees, hedgerows and buffer strips in all parks and landscape areas.

Reduce surface water runoff on every site by designing in multi-functional sustainable urban drainage (SuDs) early on.

Use the Design with Nature tool and the CIRIA / Susdrain guidance to identify the most appropriate locations and types of SuDS features.

Prioritise the use of above ground SuDs features that provide the public with a visual understanding of how water is conveyed within the public realm as part of their daily lives.

Increase infiltration through improving soil structure, creating permeable surfaces.

Include bioretention systems (e.g. rain gardens), swales, ponds, wetlands, detention basins, infiltration basins and soakaways.

Aim to ensure all hardscaped surfaces are permeable where appropriate.

Consider the opportunity to incorporate natural water processing systems such as wetlands into city parks.

Planning application submission requirements :

Drainage Strategy

- Drainage strategy should demonstrate no net increase in surface water runoff volume from the existing state.
- Provide details of Sustainable Urban Drainage solutions proposed.
- Provide details of rainwater harvesting solutions proposed.

> Recommended Detailed guidance

- Susdrain Guide to Delivering SuDs
- SuDs Guidance, CIRIA
- Kent County Council Drainage and Planning Statement

Water use

Aim: Reduce potable water consumption

Ebbsfleet typically gets half the rainfall of Sydney in Australia, and with our climate continuing to warm our water supplies are increasingly under pressure. Reducing the demand for water is imperative to managing our water more efficiently, so our communities are resilient to climate change.

1 Reduce water consumption

Water consumption and capacity should be considered for all relevant materials and appliances used in the design.

In very low energy buildings, the energy required for hot water can exceed the amount of energy required for space heating. Therefore optimisation of hot water systems is essential to ensure energy use remains low.

Use low flow fixtures and fittings throughout homes / buildings, to all taps.

Low flow showers can reduce water and energy by upto 30%, but need careful specification to ensure residents continue to perceive a high quality flow from their showers even with local-flow features, otherwise they will replace low flow shower heads with conventional heads, and the benefit is lost.

Consider incorporating the new generation of ultra-low flush / vacuum toilets that can reduce water use by over 80%.

Install leak detection systems to ensure water can be managed effectively.

2 Rainwater harvesting

All buildings should include rainwater harvesting, to reduce water demand, and also minimise flood risk in the local area.

Every home should provide as a minimum one water butt with a capacity of 200l or greater, that must be connected to the downpipe of the main roof.

Aim to ensure the entire main roof is connected to rainwater storage, either in a centralised location, or to decentralised tanks located adjacent to main downpipes.

Rainwater should be used for outdoors uses such as garden irrigation, and no potable water should be used for irrigation.

3 Consider recycling

Grey water recycling is the process of treating waste water and reusing it, either within individual homes or buildings, or collectively across multiple buildings.

At its most basic it involves collecting rainwater and the water used in taps, sinks, showers and baths, and processing it to enable it to be reused in toilets, washing machines and external taps.

It is expected to be an increasingly important approach to driving potable water usage down to sustainable levels.

Consider the range of greywater systems available, dependent on the scale of the project, the density of the housing types, the anticipated maintenance burden and the targeted water use reduction level.

4 Monitor and manage water

Install water management systems to monitor and control consumption.

Consider locating a water use display panel in close proximity to the kitchen tap to enable a clearer understanding of water usage in the home.

Use the water use calculator iteratively throughout the project to check compliance with water-use reduction targets.

> Recommended Detailed guidance

- Building Regulations Approved Doc Part G
- BREEAM and Home Quality Mark metrics
- RIBA Sustainable Outcomes 2030 Guide

Planning application submission requirements :

Water efficiency statement

Provide a water efficiency statement that demonstrates the maximum consumption of water in litres per person per day using the calculation methodology set out in the Building Regulations Approved Doc. Part G.

- Provide details of the appliances and fixtures proposed, including consumption details.
- Provide details of rainwater harvesting solutions included
- Demonstrate that greywater use has been explored and advise of the outcome.
- Provide details of the water monitoring technology and any leak detection system proposed.

NATURAL ENVIRONMENT GUIDANCE

Key Local Policy

Kent Minerals and Waste Local Plan 2013-30 (in conjuction with Draft Kent Minerals and Waste Local Plan 2023-38)

- Strategic Objectives for the Minerals and Waste Local Plan
- Policy CSM 5: Sustainable Development
- Policy DM1: Sustainable Design
- Policy DM19: Restoration, Aftercare and After-use

Dartford Plan 2024

- Policy S3: Climate Change Strategy
- Policy M1: Good Design for Dartford
- Policy M4: Flood Risk and Riverside Design
- Policy M15: Biodiversity and Landscape
- Policy S3: Climate Change Strategy

Gravesham Local Plan Policy

- Policy CS06: Ebbsfleet Opportunity Area
- Policy CS12: Green Infrastructure
- Policy CS19: Development and Design Principles

Relevant reading references

- England Trees Action Plan 2021-2024 (May 2021)
- Kent County Council's Plan Bee Pollinator Action Plan July 2021
- Kent County Council's Tree Establishment Strategy 2022-2032
- Ebbsfleet Implementation Framework - Garden Grid
- Urban Greening Factor for England – Development and Technical Analysis, Natural England, 2023

Biodiversity net gain

Aim: Maximise the quantity + quality of habitats and species found in Ebbsfleet

Biodiversity net gain is an approach to the development and management of land to enhance the quantity and quality of habitats that will support local wildlife. National planning policy now requires all development delivers a 10% biodiversity uplift, however EDC's own work has identified opportunities in some development areas to achieve upwards of 15-20% net gain in certain areas.

1 Consider the context

Although most of Ebbsfleet's sites are former quarries, significant habitats and wildlife have re-inhabited these post industrial landscapes.

Assess the existing ecological value of the wider area to determine the presence of UK protected and priority habitats and species.

Particular consideration should be given to the presence of the Swanscombe Peninsula SSSI, and actions / approaches that will need to be considered to mitigate impacts, and manage access to it.

Where existing habitats exist, tree and ecology surveys should be conducted, and subsequent reports should be followed in the design.

2 Ensure connectivity

Use the Ebbsfleet Implementation Framework, and the applicable outline masterplan to identify how the site will integrate and support the development of the green infrastructure grid across Ebbsfleet and the Thames Estuary.

Existing green spaces, trees, green corridors, or other habitats should be linked in the local and wider context.

Clever tree provision in the design can help to connect the streets and natural spaces together.

Plants can be used as a natural barrier in place of fences.

Create new green corridors to encourage connection and provide foraging and shelter areas as well as transit routes for wildlife as set out in the Ebbsfleet Implementation Framework and Outline Masterplans / Area Masterplans.

3 Multifunctional green spaces

When developing the vision for green spaces, consider how the space can support biodiversity as part of the wider blue and green infrastructure network, and the health and wellbeing of residents.

Biodiverse spaces can provide attractive and safe spaces for walking and cycling routes, sports and leisure facilities, and in so doing enable a wider range of people to engage with nature on their doorstep.

4 Ensure habitats are resilient to climate change

Design green infrastructure and native species with climate change resilience and long term sustainability in mind, taking into account the abundance of sunlight and water provided on the site. Planting should not require irrigation.

5 Don't forget to make the home and back garden a haven for wildlife

Basic design moves that can make a big difference to supporting wildlife in new homes;

- Include a 13 cm2 hole in all party fences to allow for the movement of hedgehogs.
- Include integrated bird-nests / lofts in every home.
- Include bee bricks on south or western façades with no vegetation in front of the fascia.

Planning application submission requirements :

Biodiversity Netgain report

Applications should submit a BNG metric report compliant with the requirements that establishes the BNG uplift for a scheme.

- Biodiversity metric
- Biodiversity gain plan
- Onsite irreplaceable habitats plan :

> Recommended Detailed guidance

- Biodiversity net-gain good practice
- Kent Biodiversity Strategy
- Urban Greening and biodiversity net gain

Green infrastructure

Aim: Maximise the quantity + quality of habitats and species found in Ebbsfleet

The vision for Ebbsfleet as a 21st Century Garden City is predicated on providing tree-lined and richly planted streets, parks and neighbourhoods, and large areas of open space to support the health and wellbeing of humans and nature living together. EDC has developed the Ebbsfleet Public Realm Strategy and Park Design Principles to define the vision, and provide detailed guidance that must be applied to all schemes in Ebbsfleet.

1 Use the Ebbsfleet Public Strategy to set the vision for streets, parks and open spaces in Ebbsfleet

The Public Realm Strategy provides landscape character analysis , street layouts and key performance criteria for all streets in Ebbsfleet that should be used as the starting point for scheme landscape design.

A set of Park Design Principles have also been developed to enable assessment of park design at application stage.

2 Maximise the number of trees planted in the streets, parks and parking areas

Tree lined streets are intrinsic to the vision of a Garden City. Use the Ebbsfleet Public Realm Strategy to ensure the minimum number of street trees for each street typology can be incorporated into the street, without compromising lighting positions and visibility splays.

Adhering to the minimum street tree KPI set out in the Public Realm Strategy will ensure Ebbsfleet trees achieve a minimum canopy cover of 20%. Tree canopy cover is the layer of leaves, branches, and tree stems that cover the ground. Urban trees provide many benefits, providing contact with nature, a backdrop for recreation and wellbeing, cooling and improving the air quality.

Car parks provide a useful place to enhance the urban canopy. The Ebbsfleet Sustainable Travel Strategy requires trees to be planted between every car parking bay.

3 Prioritise green roofs to minimise flood risk, the urban heating effect, and enhance biodiversity

Roofs provide a potentially important surface and are considered in the Urban Greening Factor tool. A green roof system is an extension of the existing roof which involves a high-quality waterproofing and root repellent system, a drainage system, filter cloth, a lightweight growing medium and plants. Adding green roofs can also reduce rainwater runoff and the risk of surface flooding risk, create further opportunities for habitat creation to enhance biodiversity, and can help in reducing the urban heat island effect.

Green roofs can now be combined with PV installations to maximise the functionality of flat roof space.

4 Food growing

The vision for Ebbsfleet is to provide community gardens, orchards, and allotments across every village.

Schemes should consider opportunities to integrate community growing as well as the creative use of roofs, walls and balconies where external space is limited. There are many benefits associated with food growing, including improving the physical and mental health of residents, increasing biodiversity, improving air quality, reducing carbon emissions associated with long distance food distribution, and greening the urban landscape.

5 Drought resistant planting

Ebbsfleet is within a water scarce area, and ensuring our parks remain resilient to climate change is critical to long term stewardship of the Garden City. Choosing plants that can tolerate dry conditions once they are established is paramount to overcoming the challenge of gardening with less water. Design teams should prioritise plants that can tolerate dry soils and low levels of rainfall. These tend to be plants with light leaf colours that reflect rays of sunlight, such as grey-green or silvery leaves. Some plants also have fine hairy foliage and stems, which help retain moisture around the plant tissues.

Use the Urban Greening Factor to

6 demonstrate how green infrastructure has been integrated across a scheme's surfaces

The Urban Greening Factor (UGF) is a tool advocated by Natural England to evaluate the quality and quantity of natural features such as planting, water-bodies and green roofs - collectively referred to as urban greening.

Use the UGF assessment calculator throughout the design process to iteratively test the level of urban greening across a scheme, and to also help to contribute towards the delivery of the biodiversity target.

Planning application submission requirements :

Urban Greening Factor Report

Submission should include a urban greening factor study that includes

1. A masterplan at 1:100 that is colour coded to show the different surface cover types
2. A completed Urban Green Factor table, showing the total area of each surface, and the factors used to calculate the total. A UGF calculator is included in the EDC Sustainable Assessment Schedule

Design and Access Landscape Strategy + Landscape masterplans

These submission documents will be used to assess ;

- Application of Ebbsfleet Public Realm Strategy guidance
- Street tree canopy cover
- Proximity of food growing areas
- Drought resistance of planting

> Recommended Detailed guidance

- Urban Greening Factor Guide : Natural England
- Ebbsfleet Implementation Framework
- Ebbsfleet's Streets Design Guidance
- Ebbsfleet's Parks Design Guidance