

# Outline Energy and Sustainability Statement

Kenley Campus

For Croydon and District Education Trust

June 2023





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Project number	897
Report status	Final
Revision number	2
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## 1 Executive Summary

This Outline Energy and Sustainability Statement summarises the key measures proposed to meet Tandridge District Council's energy and sustainability policies in support of the outline planning application for Kenley Campus in Caterham.

The proposed development comprises 87 no. homes and associated access roads, car parking, landscaping and amenity spaces. The site surrounds the Grade II Listed Former RAF Dining and Institute Building (currently utilised by One School Global), and is located to the immediate south of Kenley Aerodrome.

### 1.1 Energy Strategy

The outline energy strategy for the project has been developed in line with an Energy Hierarchy which prioritises a fabric first approach, followed by supplying energy efficiently and subsequently the application of low and zero carbon technologies onsite. The CO<sub>2</sub> emissions for the development has been assessed using the Standard Assessment Procedure (SAP) in line with Building Regulations Part L 2021.

Recommended energy measures for the development include:

- **Step 1: Use Less Energy** – Passive design with a fabric first approach (enhanced U-values, low air tightness target and careful thermal bridging detailing) and provision of low energy lighting.
- **Step 2: Supply Energy Efficiently** – Communal heating system is not deemed suitable for the relatively low-density nature of the proposal. Individual systems are proposed. No existing or planned district heat network are found in proximity to the development.
- **Step 3: Consider Low or Zero Carbon Energy Sources** – High efficiency Air Source Heat Pumps (ASHPs) will generate both space heating and domestic hot water for the dwellings. Photovoltaic provision can be considered at Reserved Matters Application stage.

Overall, the proposed development is anticipated to achieve at least a 50% reduction in regulated CO<sub>2</sub> emissions over the Part L 2021 baseline. The development can also achieve a minimum of 50% saving at Step 3 in comparison to Step 1/ Step 2 baseline, which exceeds the 20% reduction target from onsite low and zero carbon technologies stipulated within the adopted Tandridge District Core Strategy.

### 1.2 Sustainability Strategy

The sustainability strategy for the outline proposal has been developed in accordance with relevant policies set out by Tandridge District Council.

The image to the right provides an overview of the sustainability measures integrated into the scheme and demonstrates the client and design team's aspirations to meet and exceed planning policy requirements.

#### Energy and carbon

- Fabric first approach to minimise energy demand onsite
- Air source heat pumps for low carbon heating supply to all homes.
- Anticipated regulated CO<sub>2</sub> reduction of >50% over Part L 2021 baseline.
- Potential additional savings from PV installation at roof level.

#### Water efficiency and surface water

- Water efficiency sanitary fittings and appliances to achieve 110 l/p/d
- Holistic Sustainable Urban Drainage strategy including permeable paving, swale, rain gardens to be integrated into streetscape and amenity.

#### Landscape and biodiversity

- Woodland fringe along eastern boundary and green pockets with green corridors across site
- Ecology strategy to mitigate and enhance habitats for flora and fauna.



#### Material and waste

- Use of construction materials with high recycled content will be prioritised.
- Diversion of waste from landfill through reduction, as well as onsite recycling and reuse.

#### Health and wellbeing

- Air source heat pumps with no onsite emissions are proposed for all homes to maintain good air quality across site.
- No notable noise impact to future residents and surrounding neighbours.
- Low density development with minimum obstruction to daylight and sunlight access to buildings and amenities.
- Extensive provision of private and public external amenity spaces for an active and healthy lifestyle.
- EV charging points and cycle storage to encourage sustainable modes of transportation.

Figure 1. Summary of Energy and Sustainability Measures at Kenley Campus



Table 1. Planning policies applicable for the proposed development, and the report sections where they are responded to.

	3 Energy Strategy	4.1 Optimising Land Use	4.2 Health and Wellbeing	4.3 Nature, Landscape and Biodiversity	4.4 Climate Resilience	4.5 Water and Surface Water Runoff	4.6 Materials and Waste	4.7 Sustainable transport
<b>Tandridge District Core Strategy (October 2008)</b>								
Policy CSP 14: Sustainable Construction	◆							
Policy CSP 15: Environmental Quality			◆	◆	◆	◆	◆	
Policy CSP 17: Biodiversity				◆				
Policy CSP 18: Character and Design			◆					
<b>Tandridge District Core Strategy (October 2008)</b>								
DP7: General Policy for New Development		◆	◆	◆			◆	◆
DP19: Biodiversity, Geological Conservation & Green Infrastructure				◆				
DP21: Sustainable Water Management					◆	◆		
DP22: Minimising Contamination, Hazards and Pollution			◆					
<b>Tandridge Emerging Local Plan: 2033 (Draft Issued January 2019)</b>								
TLP17: Health and Wellbeing			◆					
TLP18: Place-Making			◆				◆	◆
TLP30: Green and Blue Infrastructure				◆				
TLP35: Biodiversity, Ecology and Habitats				◆				
TLP37: Trees and Soft Landscaping				◆				
TLP45: Energy Efficient and Low Carbon Development	◆							
TLP46: Pollution and Air Quality			◆					
TLP47: Sustainable Drainage and Reducing Flood Risk					◆	◆		
TLP48: Water Consumption and Waste Water						◆		
TLP49: Waste							◆	
TLP50: Sustainable Transport and Travel								◆



## 2 Introduction

### 2.1 Site

The proposed development is located on land at the Kenley Campus on Victor Beamish Avenue in Caterham. The site is surrounded by residential properties to the south and west. Kenley Aerodrome is located to the immediate north of the site, and an area of woodland can be found along the eastern boundary.

The site comprises three parcels of land, all currently owned by the Educational Trust. The northern parcel of land is grassland except for a single dilapidated workshop. The southern parcel of land is periodically used by One School Global as informal playing grounds but is surplus to the school's requirements. The third parcel of land is located to the west of Victor Beamish Avenue and to the east of Halton Road. This land is also unused grassland.

The site is currently located within the Metropolitan Green Belt. A draft allocation in the emerging Tandridge Local Plan (HSG06) proposes that the site be removed from the Green Belt and allocated for the development of housing.

The outline application proposal includes the erection of 87no. homes at the site.

The site location is presented in Figure 2.



Figure 2. Approximate site location of Kenley Campus (source: Google Maps, accessed: 25 April 2023)



## 2.2 Planning policies

A review of the applicable policies for the proposed development has been undertaken. A full summary of the relevant policies set out by Tandridge District Council are presented in Appendix B.

The proposed development has been designed to meet and exceed (where feasible) the following main policy drivers within adopted Policy Documents, including Tandridge District Core Strategy (Adopted October 2008) and Tandridge Local Plan, Part 2: Detailed Policies 2014-2029 (Adopted July 2014):

### Energy and carbon:

- All new residential development to reach a minimum percentage saving of 20% in CO2 emissions through the incorporation of on-site renewable energy.

### Sustainability:

- Code for Sustainable Homes Level 3 (it should be noted that Code for Sustainable Homes has been withdrawn since 2015, and is no longer applicable).
- Design in measures to ensure safety and security, with consideration of Secure by Design standards.
- Provision of inclusive, usable and safe public and private amenity.
- Lifetime Homes principles to enable future adaptability.
- Consider Sustainable Urban Drainage, green roofs, greywater recycling and separate disposal of surface water and foul water.
- Protect and enhance public open spaces and heritage assets.
- Protect and enhance existing ecological features and Green Infrastructure.
- Integrate Green Infrastructure with SuDs, external amenity and landscaping. Maintain and enhance green corridors.
- Avoid harm to amenities of neighbouring occupiers (air quality, noise, light, traffic etc).
- Facilities such as cycle storage, amenity areas and gardens, waste storage to be provided in line with Council standards.
- Efficient utilisation of construction materials.

- Promote health and wellbeing for all ages groups, with active spaces for children and adults, and sustainable modes of transport.

The following additional energy and sustainability policy drivers set out within Tandridge's Emerging Local Plan: 2033 (Draft Issued January 2019) have also been considered as part of the outline application:

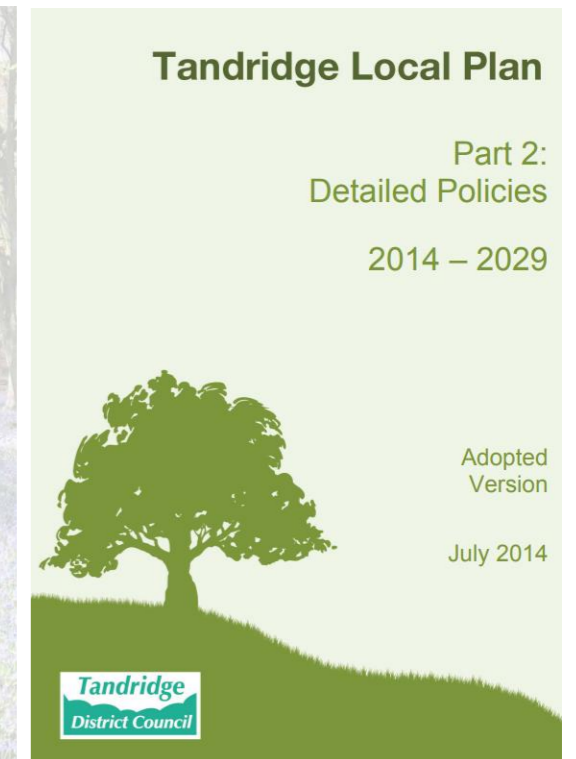
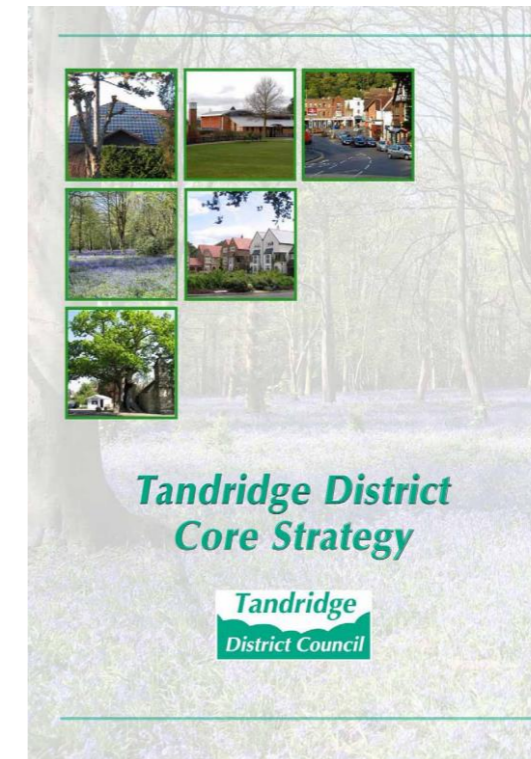
### Energy and carbon:

- Integrate low and zero carbon mechanisms in the design and layout of the proposed development.
- Ensure the reduction of energy consumption by the end users.
- Encourage innovative design for low and zero carbon developments.

### Sustainability:

- Resist the loss of vegetation of significant amenity, historic, cultural or ecological value.
- Comprehensive replacement planting where trees have been removed.
- Design in measures to ensure environmental resilience.
- SuDs to be required for all residential developments, and should be designed to be multifunctional where feasible and provide improvements in water quality.
- The following peak surface water runoff rates should not be exceeded:
  - pre-development greenfield runoff rates on all new development;
  - as close as reasonably practicable to greenfield run off rates from all other brownfield sites.
- All new homes to meet the water efficiency standard of 110l/p/d.
- Provide electric vehicle charging points in line with Council requirements.

The proposed Energy and Sustainability strategies for Kenley Campus are presented in the following chapters.





### 3 Energy Strategy

This section of the report assesses the predicted energy performance and carbon emissions of the proposed development at Kenley Campus, and relates to the outline application of the scheme only. The potential energy performance and CO<sub>2</sub> savings will be assessed in further detail at Reserved Matters Application (RMA) stage.

The Energy Strategy for Kenley Campus has been developed in line with an Energy Hierarchy as below

1. Step 1: use less energy.
2. Step 2: supply energy efficiently.
3. Step 3: consider low or zero carbon (LZC) energy sources.

The CO<sub>2</sub> emissions at each stage of the Hierarchy are compared to a Building Regulations Part L1 2021 compliant baseline.

Part L 2021 software (Design SAP 10) was used to model and calculate the energy performance and carbon emissions. Preliminary energy calculations were carried out for typical dwelling types (mid-terrace homes, end-terrace or semi-detached homes, and detached homes) in lieu of the availability of floor plans and elevation design at this outline application stage. The preliminary emissions of typical dwelling types have been multiplied with the proposed dwelling mix within the site to estimate the total emissions of the outline proposal.

It should be noted that the estimations presented within this statement are based on the Part L calculation methodology and the associated standard assumptions regarding occupancy, space/system usage and climatic conditions; and should not be considered as a predictive assessment of the likely in-use energy requirements for the development.

The follow sub-sections present the measures adopted at each stage of the Energy Hierarchy at the proposed development.

#### 3.1 Step 1: Use Less Energy

A range of energy efficiency measures will be applied to the design of the building fabric and building services systems to minimise energy demand and CO<sub>2</sub> emissions at Step 1.

##### 3.1.1 Passive Design

All homes will be dual aspect for cross natural ventilation for passive cooling during the warmer months, and potential for passive solar heating from south facing facades or east/west facing facades during the cooler months.

The low-density nature of the masterplan enables good daylight and sunlight access to all homes without any notable obstructions to main building facades, reducing the need for artificial lighting during the day.

Design and specification of glazed elements and window opening areas will be carefully considered during Reserved Matters Application stage to ensure good levels of daylight and sunlight to all habitable spaces and also allow for overheating risk mitigation to meet Building Regulations Part O compliance. The provision of full height glazing (aside from patio doors) and fixed panes of glazing should be avoided wherever possible to limit excessive solar gains. Window opening areas should be maximised where feasible and practicable (with consideration for safety and security) to future-proof the homes against rising temperatures.

##### 3.1.2 Fabric Performance

A fabric first approach will be adopted to minimise unwanted heat loss through the building fabric and reduce heating energy demand over the cooler months.

The proposed building fabric specification will go beyond the notional building standards set out within Part L1 2021. Recommendations on targeted u-values, air permeability and thermal bridging are presented in Appendix A. Building fabric specifications should be considered in further detail at Reserved Matters Application stage to ensure that the notional baseline performance can be met at Step1 to limit energy demand as far as feasible prior to the installation of Low Zero Carbon technologies.

U-values beyond Part L 2021 levels, low air-tightness and good thermal bridging design to limit heat loss through building fabric.

All dwellings are dual aspect, with potential for passive cooling during the warmer months through natural cross ventilation with openable windows.



All dwellings can benefit from passive solar heating through east/west/south facing facades. Facade design to be determined at RMA stage to achieve a balance amongst energy, daylight and overheating performance.

All dwellings will have a portion of pitched roof oriented to the southeast or southwest which will be suitable for photovoltaic installation if deemed feasible at RMA stage.

Figure 3. Passive design measures considered for the outline proposal at Kenley Campus.





### 3.1.3 Efficient lighting

All light fittings within the proposed development will be specified as low energy lighting, and will only incorporate LEDs, fluorescent and compact fluorescent (CFL) fixtures with an average efficacy of more than 100 lm/W.

### 3.1.4 Controls and Energy Monitoring

Time and temperature zone control will be provided for space heating for all homes. Hot water will be independently controlled from space heating. Where feasible, smart meters will also be installed at an accessible location at each home to enable occupants to monitor their energy consumption.

## 3.2 Step 2: Supply Energy Efficiently

Proposed major developments that are in proximity to existing or planned district heat networks (DHNs) are encouraged to implement a communal heating system to enable connection to a DHN or to other low/zero emission local heat sources onsite.

A review of the Government's Heat Network Planning Database Map (Figure 4) shows that there are no existing and proposed district heating networks in proximity to the site. The proposed development is also located in an area considered to have low overall heat demand (Figure 5).

A communal heating system with onsite energy centre is not deemed suitable as the development is not of sufficient density to effectively benefit from a communal heating solution.

Gas based heating solutions are not recommended as they do not future-proof the development as the UK transitions to a low carbon economy and will limit the potential for the development to meet the policy target 20% carbon reduction from onsite Low and Zero Carbon Technologies. Installation of gas boilers in new homes is also set to be banned by the Government from 2025.

The application of individual Air Source Heat Pumps at each dwelling is therefore considered as the most suitable heating strategy for the proposed development.

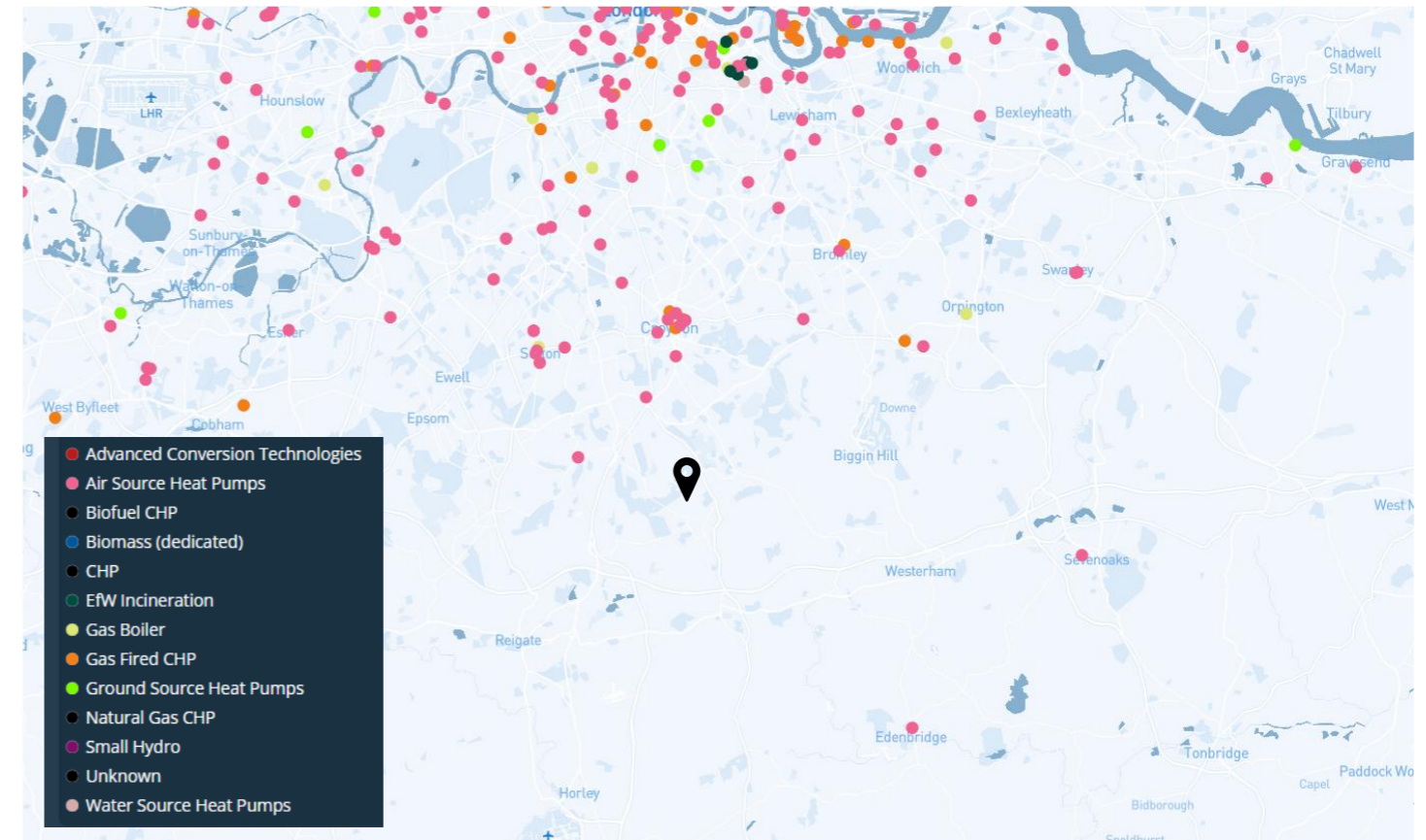


Figure 4. Heat Network Planning Database Map showing existing and planning district heat network heat sources (source: Department for Business, Energy & Industrial Strategy, accessed: 3 May 2023).

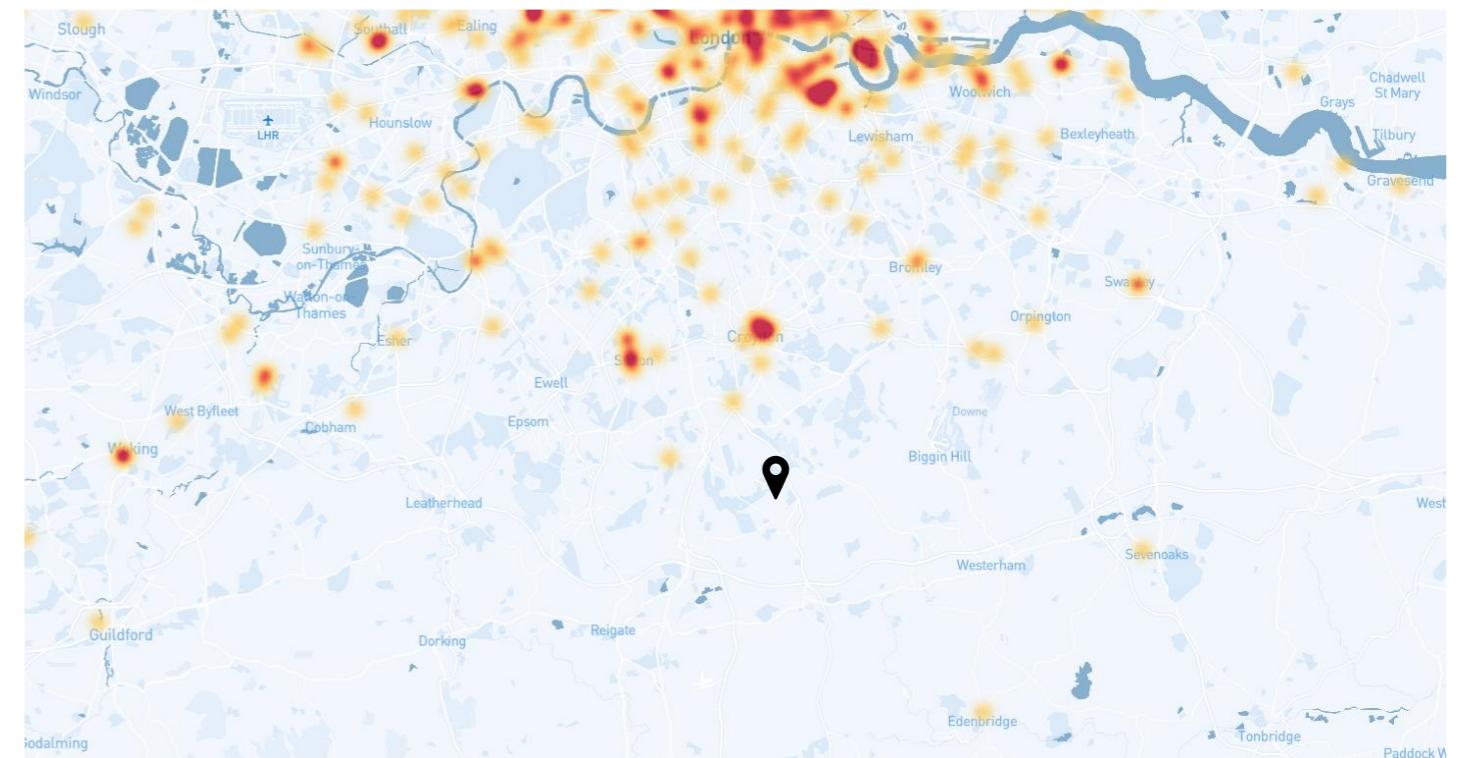


Figure 5. Heat Network Planning Database Map showing heat demand (source: Department for Business, Energy & Industrial Strategy, accessed: 3 May 2023).



### 3.3 Step 3: Consider Low or Zero Carbon (LZC) Energy Sources

The opportunity for producing and utilising renewable energy onsite will be maximised for the proposed development, in line with Policy CSP14 of the currently adopted Tandridge District Core Strategy (October 2008) and TLP45: Energy Efficient and Low Carbon Development of Tandridge’s Emerging Local Plan: 2033 (Draft Issued January 2019).

An outline feasibility study has been undertaken (see Table 2), which identified individual air source heat pumps as the most suitable low/zero carbon technology for the scheme to achieve policy requirements. The air source heat pumps should provide space heating and domestic hot water to all dwellings.

Additional savings can be achieved with provision of photovoltaic arrays at roof level to all buildings across the site.

The extent of PV provision can be assessed in detail at Reserved Matters Application stage when a more developed design will inform roof area, roof pitch and orientation, as well as plant space provisions.

Table 2. Outline LZC feasibility

LZC Technology	Feasibility
<b>Photovoltaics (proposed)</b>	The development provides an extent of roof for the installation of PV panels. The PV array can integrate well with the proposed heating and hot water strategy. The extent of PV provision will be determined at Reserved Matters Application stage.
<b>Solar thermal (not proposed)</b>	A solar thermal hot water system is not compatible with individual heat pumps without the provision of a separate thermal store. PV is deemed a more effective use of available roof space.
<b>Wind turbines (not proposed)</b>	The installation of wind turbines at the proposed building/site will have a notable visual impact on the site and surroundings, and not deemed suitable for the development which is located within the Kenley Aerodrome Conservation Area.
<b>Ground source heat pump (GSHP) (not proposed)</b>	The installation of ground source trench or borehole system for each dwelling requires notable space, time and cost, and is not deemed feasible for a scheme of this scale and nature.
<b>Air source heat pump (ASHP) (proposed)</b>	ASHP is an effective way of providing low carbon heating and hot water. The external units of the heat pumps will be located within an acoustic enclosure (where required) at the rear garden of each home (TBC at Reserved Matters Application stage).
<b>Biomass (not proposed)</b>	Biomass systems emit high NOx levels and are not supported within sub-urban areas. There is also no suitable space onsite for the storage of biomass.



### 3.4 Results

Through the measures outlined for each stage of the Energy Hierarchy, it is anticipated the proposed development can achieve over 50% reduction in regulated CO<sub>2</sub> emissions over the Part L 2021 baseline.

The application of air source heat pumps to all dwellings will also enable the development to achieve at least a 50% reduction in regulated CO<sub>2</sub> emissions over the Step 1/ Step 2 baseline, which notably exceeds the 20% target set out by Policy CSP14 of the currently adopted Tandridge District Core Strategy.

Additional reduction in regulated CO<sub>2</sub> emissions may be possible through provision of photovoltaics at roof level. A feasibility review can be undertaken at Reserved Matters Application stage.

Table 3, Table 4 and Figure 6 present the anticipated CO<sub>2</sub> emissions and savings at each stage of the Energy Hierarchy.

It should be noted that results presented in this section represent a preliminary estimation of energy and CO<sub>2</sub> performance of the outline development. The potential energy performance and CO<sub>2</sub> savings should be assessed in further detail at Reserved Matters Application stage.

Table 3. Outline Carbon emissions after each stage of the Energy Hierarchy for Kenley Campus

	Site Wide Carbon Dioxide Emissions (tCO <sub>2</sub> /yr)	
	Regulated	Unregulated
<b>Baseline: Part L 2021 Compliant Development</b>	97.4	38.7
<b>After energy demand reduction (Step 1)</b>	94.9	38.7
<b>After heat network connection (Step 2)</b>	94.9	38.7
<b>After renewable energy (Step 3)</b>	40.0	38.7

Table 4. Outline regulated carbon savings from each stage of the Energy Hierarchy for Kenley Campus

	Regulated carbon dioxide savings		
	(Tonnes CO <sub>2</sub> per annum)	(% savings over baseline)	(% savings over previous stage)
<b>Be lean: Savings from energy demand reduction</b>	2.5	3%	3%
<b>Be clean: Savings from heat network</b>	0.0	0%	0%
<b>Be green: Savings from renewable energy</b>	55.0	56%	58%
<b>Cumulative on-site savings</b>	57.4	59%	-

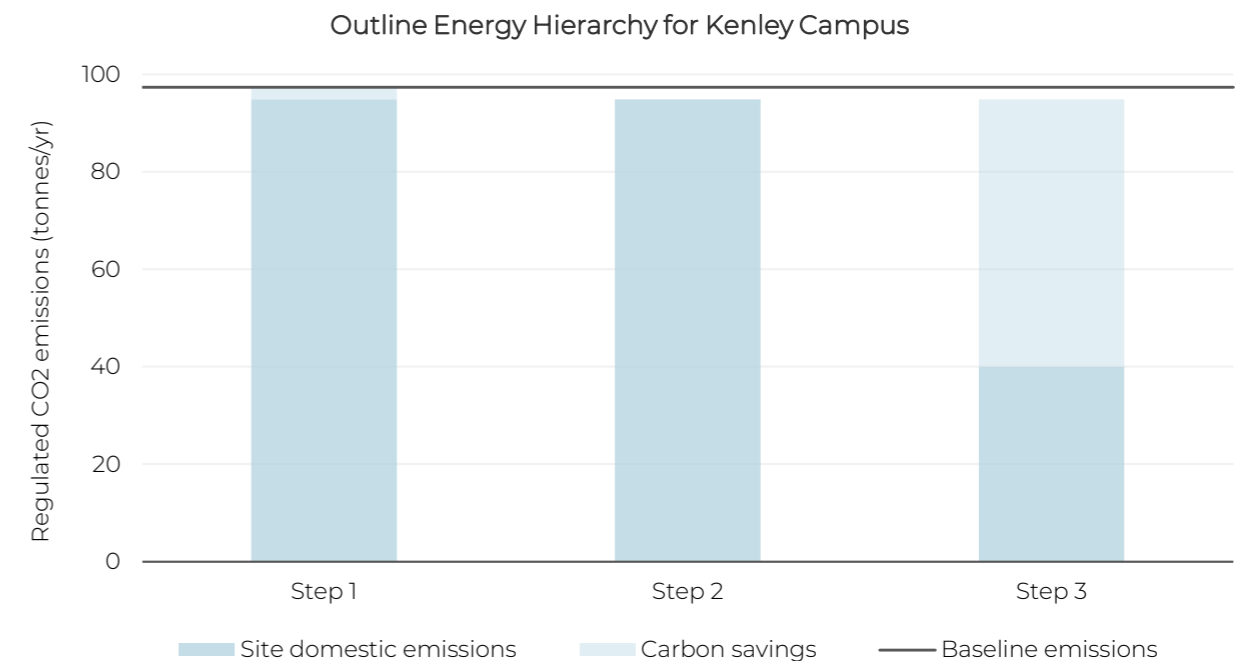


Figure 6. Outline estimated regulated carbon emissions at each stage of the Energy Hierarchy.



## 4 Sustainability Strategies

This section of the report presents the key elements of the development which respond to the sustainable development policies set out within Tandrige's policy documents.

### 4.1 Optimising Land Use

The site currently comprises a mixture of unused grassland, informal playing grounds and a dilapidated workshop building at the northern parcel of land. The site is located within the Metropolitan Green Belt. However, a draft allocation in the emerging Tandrige Local Plan (HSG06) proposes that the site is removed from the Green Belt and allocated for the development of housing.

The outline proposal includes the erection of 87no. homes of terraced, semi-detached and detached houses of 1 to 3 storeys in height, with a significant proportion of affordable housing provision.

The scale, nature and density of the outline proposal are consistent with existing residential properties to the east, south and west of the site. The proposed positioning of building massing throughout the site also respects the band of woodland area along the eastern site boundary which is part of the Green Belt as well as Kenley Aerodrome to the north of the site.

Overall, the proposed development at Kenley Campus will make use of under-utilised land to contribute to housing targets set out by Tandrige Council, and at the same time aim to protect the character and appearance of the Kenley Aerodrome Conservation Area.

## 4.2 Health and Wellbeing

### 4.2.1 Safety and Security

Secure by Design principles will be incorporated into the design to ensure safe and secure spaces are provided to all residents and site users, with details to be provided at the Reserved Matters Application stage.

### 4.2.2 Accessibility and Inclusiveness

The development has been designed to be an accessible environment to meet the needs of all potential users. Routes and access ways will be sufficiently wide, with minimal level changes where possible. All residential units will be designed to meet Building Regulations Part M(1) or M(2) or M(3).

### 4.2.3 External Amenity

The landscape strategy for proposed development aims to provide a safe, well-vegetated landscape which encourages social exchange and a sense of community.

Elements including open lawns and green spaces, woodland walks, tree lined pathways and naturalistic play trials are integrated into the outline proposal.

To cater for younger residents, the proposed landscape concept will look to provide play across the site in a play network with 'play on the way' opportunities connecting trails and adventure routes with larger play elements.

Further details are presented in the Landscape Design and Assess Statement prepared by Scarp.

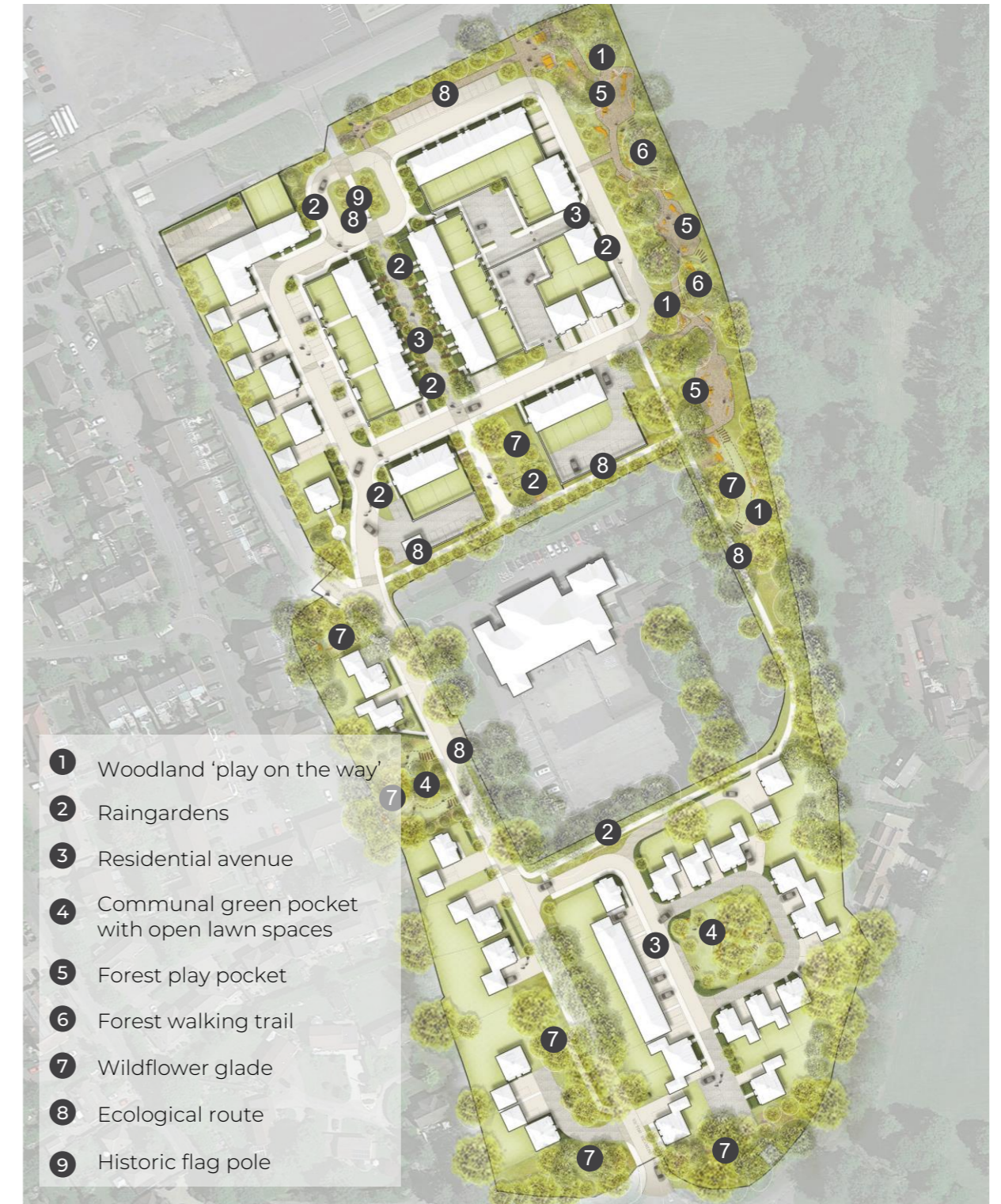


Figure 7. Outline landscape masterplan for Kenley Campus (from Landscape Design and Access Statement by Scarp).



### 4.2.4 Air Quality

Any potential dust and stationary plant emissions during the construction period, and any potential impact from traffic flows on the local road network, during and after construction will be mitigated.

Individual air source heat pumps driven by electricity will supply space heating and hot water at the proposed development. Therefore, there will be no PM and NOx emissions associated with fossil fuel combustion from the operation of the building services systems at the scheme.

Electric vehicle (EV) charging points and cycle storage spaces will be incorporated as per Tandridge and Surrey County Council requirements, with details to be provided at the Reserved Matters Application stage.

### 4.2.5 Noise

The development will incorporate building fabric measures to ensure the impact of any external sources on internal ambient noise levels are within acceptable limits, in line with BS8233:2014 or latest standard at the time of the Reserved Matters Application. Any potential noise impact from external building services at the development (e.g. air source heat pump external units) will also be mitigated by acoustic attenuation measures, with details to be provided at the Reserved Matters Application stage.

Any potential noise impact during demolition and construction will be mitigated accordingly.

### 4.2.6 Daylight and Sunlight

The proposed development is not at a scale or proximity to existing neighbouring properties that would cause any notable impact on daylight and sunlight access.

Within the masterplan itself, buildings are well spaced out, with good provision of front and back gardens, therefore good daylight and sunlight performance is expected for the proposed dwellings, private gardens and public amenity spaces.

Reasonable extends of windows and glazed areas should be designed into the dwellings at Reserved Matters Application stage, with consideration for

energy performance, daylight/sunlight and overheating risk mitigation.

### 4.2.7 External Lighting

The external lighting design and specification will be in accordance with the ILP's Guidance Note for The Reduction of Obtrusive Light (2021).

The scheme will limit the amount of up-lighting and all external lighting (aside from security lighting) will be connected to daylight sensors and be time controlled where applicable.



### 4.3 Nature, Landscape and Biodiversity

#### 4.3.1 Nature and Biodiversity

A Detailed Ecological Assessment including Habitat Surveys was undertaken by Ecology Solutions in order to ascertain the general ecological value of the site and to identify the main habitats and associated plant species.

The Ecological Assessment states that the site comprises areas of species-poor semi-improved grassland, recolonising vegetation, with two areas of woodland and a large number of scattered trees throughout the site. Small areas of scrub and ruderal vegetation are present, with areas of hardstanding also present throughout the site, with one building in the south of the site and a dilapidated building in the north.

The Habitat Surveys identified the likely presence of bats, birds and invertebrates. Their habitats will be mitigated and enhanced as part of the proposed development.

The retention of scattered trees and the eastern woodland block, as well as the creation of areas of wildflower meadow, new trees and native hedgerows will retain suitable opportunities for bats and a range of invertebrates. The creation of swales will create new aquatic habitat within the site, creating new opportunities for aquatic invertebrates within the site.

Bird and bat boxes, bug hotels and loggery will be installed to provide additional sheltering for wildlife.

Although no evidence of badgers was recorded within the site, badgers are known from the local area and therefore a precautional approach is recommended with regard to badgers during construction.

Further details are presented within the Ecological Assessment prepared by Ecology Solutions.

#### 4.3.2 Trees

The development will offer the opportunity to remove poor quality self-seeded and diseased trees on site. All high quality trees currently present on site will be retained and protected as far

as possible and new tree planting is proposed as part of the development.

The approach to tree planting for the site will provide a robust and diverse range of tree species for way-finding, enhanced biodiversity, visual amenity, green infrastructure links and an enhanced microclimate for pedestrians. The outline tree planting strategy has been chosen to provide ecological benefits and be heavily weighted with native species.

Detailed information is presented within the Arboricultural Impact Appraisal and Method Statement Report, and the Tree Protection Plan prepared by Barrell Tree Consultancy, as well as the Landscape Design and Access Statement prepared by Scarp.

#### 4.3.3 Landscape

The proposed landscaping strategy will include woodland fringe and woodland glades, new native hedgerows, new wildflower meadow within areas of open space, which could be sown with a native, species-rich seed mixture, swales/rain gardens to enhance the floristic diversity of the site post development and diversify habitats within the site through the creation of new aquatic habitat. New areas of species-rich amenity grassland oversown with a native species-rich seed mixture will also be created within the site.

The Landscape Design and Access Statement prepared by Scarp presents comprehensive information regarding the landscape strategy.

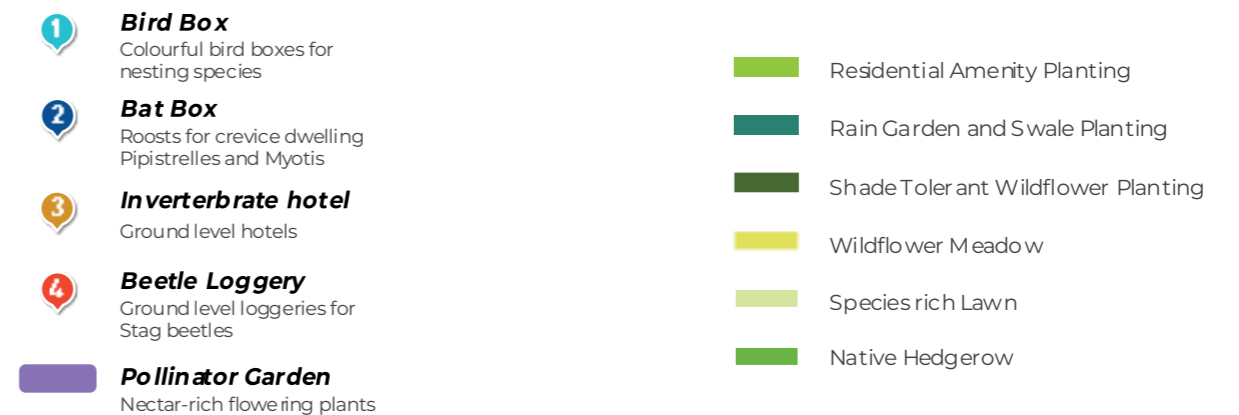


Figure 8. Proposed outline biodiversity and ecology strategy (left) and planting strategy (right) for Kenley Campus (from Landscape Design and Access Statement by Scarp and OSP Architects).



## 4.4 Climate Resilience

### 4.4.1 Managing risk of overheating

All homes will be double aspect, with openable windows to benefit from cross ventilation and passive cooling during the warmer months.

Glazing portions, window free area and potential solar control elements for all homes will be carefully considered at Reserved Matters Application and Detailed Design stages to ensure compliance with Building Regulations Part O.

### 4.4.2 Managing flood risk

A site-specific Flood Risk Assessment (FRA) has been undertaken by Elliott Wood for the development site. The FRA indicates that site is located solely in Flood Zone 1, and is deemed to be at low risk from tidal and fluvial flooding, sewers and artificial water bodies. The east of the site is noted from the Strategic Flood Risk Assessment as being at risk of ground water flooding for subsurface structures and there are areas of low to medium risk of surface water flooding.

It is recommended that ground floor levels for buildings shall be elevated by a minimum of 150mm above ground levels.

Further details are presented within the FRA report prepared by Elliott Wood.

## 4.5 Water and Surface Water Runoff

### 4.5.1 Water Efficiency

The proposed development will target a mains water consumption of less than 110 litres/person/day. This is consistent with Building Regulations Part G(2) requirement and Policy TLP48: Water Consumption and Waste Water within Tandridge's emerging Local Plan: 2033.

The following suggested flow rates shall be considered during detailed design of the development to achieve the water consumption target:

- WCs: 6 litre / 3 litre dual flush.
- Wash basin taps: 4 litres/min.
- Kitchen sink taps: 6 litres/min.
- Showers: 8 litres/min.

- Baths: 180 litres to overflow;
- Dishwasher: 1.25 litres/place setting (where provided).
- Washing Machine: 8.17 litres/kg dry load (where provided).

Greywater harvesting and reuse is not deemed suitable for a low-density residential development of this nature. However, rainwater collection butts for landscape irrigation will be provided to all homes aside from apartments to reduce potable water demand.

### 4.5.2 Surface water runoff

A Sustainable Urban Drainage strategy has been developed in accordance with a Sustainable Drainage Hierarchy. Rainwater butts will be installed for all homes to reduce runoff from roofs. Permeable paving will be used for residential roads and parking bays throughout the site to enable infiltration into ground where possible with overflow connection to the site wide drainage system comprising of a deep bore soakaway located at the northeast of the site.

Filter strips are proposed along Victor Beamish Avenue to manage surface water runoff from the road. A swale is also proposed along the south side of the existing school to manage surface water in this area.

Further to the above, below ground attenuation tanks sized to manage surface water for storm events up to and including the 1 in 100 + 40% climate change scenario will be provided.

The proposed SuDs strategy will improve water quality, water quantity, amenity and biodiversity.

Further details are presented within the SuDs Strategy report prepared by Elliott Wood.

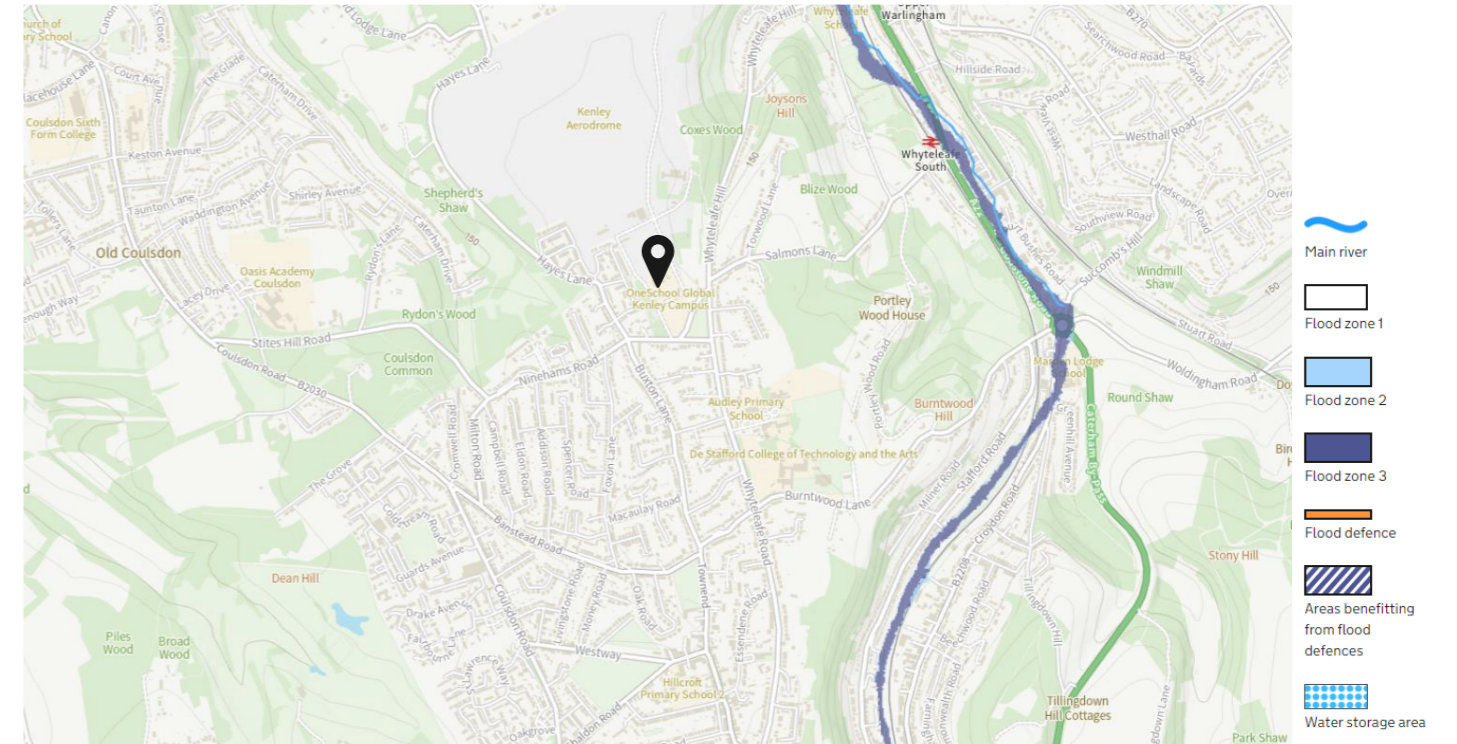


Figure 9. Flood risk map – rivers and sea flooding. (Accessed 25 April 2023).



Figure 10. Proposed green and blue infrastructure, integrating SuDs with amenity and ecological enhancement.



### 4.6 Materials and Waste

#### 4.6.1 Reuse of Buildings

Aside from the Grade II Listed Former Institute Building at the centre of the site, there are no other buildings currently onsite suitable for reuse. The removal of the dilapidated workshop at the northern land parcel will be recorded.

#### 4.6.2 Material Selection and Procurement

The structure of the proposed dwellings will be rationalised and stacked to minimise transfer structures and the associated material requirements.

Materials will be selected for longevity and durability as well as recoverability and recyclability at end of life. To minimise potential sources of indoor air pollution, low VOC materials, paints and finishes will be prioritised where possible.

To reduce embodied carbon of the proposed development, materials with recycled content will be prioritised during detailed design stage specification.

All timber used on the site will be FSC or PEFC certified. Where feasible, all other construction materials utilised at the development will be certified under BES6001 and EMS or other similar responsible sourcing certification schemes.

Where practicable, the contractor will source items locally, and where possible amalgamate deliveries to reduce the overall number of vehicle movements taking place.

#### 4.6.3 Waste Management and Circular Economy

Waste streams will be efficiently segregated (offsite) and processed during both construction and operation stages, with a target to maximise potential re-use of materials and diversion from landfill in line with Tandridge Policies.

All waste that cannot be reused or recycled will be disposed of in accordance with legislation and best practice.

Suitable waste storage provisions, including recyclable waste storage and food/garden waste

storage/composting, will be considered for all homes, with details to be provided at the Reserved Matters Application stage.

### 4.7 Sustainable transport

The proposed development at Kenley Campus will enhance existing paths and green spaces to improve accessibility and footpath links through the site. Vehicular access is proposed to be through Victor Beamish Avenue at the southern part of the site. Footpath access is also proposed via the north of the site. In addition, cyclist access through the site will be improved.

Local bus services are available to the south of the site on Salmon Green Lane. Whyteleafe South Railway station is approximately 1.5km, while Whyteleafe and Upper Warlingham Railway Stations are approximately 1.8km to the northeast, providing frequent services to a wide range of destinations.

A Transport Assessment has been undertaken which concludes that the proposal will not lead to a material increase in traffic on the local highway network as it benefits from good provision of public transport in the local area as well as satisfactory access by foot and cycle.

#### 4.7.1 Cycle Parking

Cycle parking/storage spaces will be provided within the curtilage of each home, in line with Tandridge District Council's requirements. Details will be provided at the Reserved Matters Application stage.

#### 4.7.2 Car Parking

Car Parking will be provided in accordance with Tandridge District Council's Parking Standards.

Electric vehicle charging points will be provided on-site in accordance with Surrey County Council's Vehicular and Cycle Parking Guidance where all residential units will have access to an active charging point.

Further details on sustainable transport are presented within the Transport Assessment Travel Plan prepared by Motion.





## 5 Conclusions

Through the adoption of the energy and sustainability strategies presented in this report, the client and design team demonstrated that the proposed development will fulfil the relevant policy requirements stipulated by Tandridge District Council's adopted and emerging Local Plans.

The proposal will positively contribute to sustainable development at the site and its surroundings.



Appendix A – Energy calculation assumptions

The items listed below are recommendations based on preliminary energy assessment carried out at outline planning application stage to meet planning policy and Building Regulations Part L 2021 compliance. Throughout the design and construction stages the fabric and system requirements (including provisions of renewable technologies) may change whilst the building designs are being progressed. It should be noted that this document is not exhaustive and the design and construction teams should allow for flexibility on site where necessary. Further assessments should be carried out at Reserved Matters Application stage to inform building fabric and systems specifications.

Building fabric Parameter	Specification	Unit	Note	Systems	Specification	Unit	Note
<b>Floors</b>				<b>Ventilation</b>			
Ground floors	0.1	W/m2K	1	Type	Natural ventilation with trickle vents		1
				Extract fans assumed in kitchens and bathrooms	Yes		1
<b>Walls</b>				<b>Heating</b>			
External walls	0.15	W/m2K	1	Type	Individual Air Source Heat Pumps		1
Party walls	0	W/m2K	1	Coefficient of Efficiency - space heating	>300	%	1, 3, 4
				Coefficient of Efficiency Efficiency - domestic hot water	>200	%	1, 3, 4
<b>Roofs/ceilings</b>				<b>Hot Water</b>			
Roofs	0.1	W/m2K	1	Heat emitter	Underfloor or Radiators		1, 3, 4
				Flow temperature	<55	°C	1, 3, 4
<b>Openings</b>				<b>Photovoltaics</b>			
External doors	1	W/m2K	1	Fuel type	Electricity		1
New windows (inc. rooflights and glazed doors) - pane and frame	1.2	W/m2K	1	Electricity tariff	Standard		1
Windows transmittance factor (g-value)	0.63		1, 2	Intsalled to Microgeneration Installation Standard	Yes		1, 3, 4
Windows frame factor	0.7		1	Pump in heated space	Yes		1, 3, 4
<b>Air permeability</b>				<b>Lighting</b>			
Maximum average air permeability across units.	4	m3/m2.h	1	Light fittings with efficacy	>100 lm/W for all fittings		1, 3
Air permeability test required for all units prior to handover.							
<b>Thermal Bridging</b>				<b>Domestic water consumption</b>			
The following psi values are recommended:				Water consumption	<110	l/p/d	1
E1/E2 Lintel	0.05	W/mK	1	Shower flow rate	8	l/s	1
E3 Sill	0.05	W/mK	1				
E4 Jamb	0.025	W/mK	1				
E5 Ground floor	0.08	W/mK	1				
E6 Intermediate floor within a dwelling	0	W/mK	1				
E10/E11 Eaves	0.04	W/mK	1				
E24 Insulation at ceiling level (inverted)	0.24	W/mK	1				
E12/E13 Gable	0.08	W/mK	1				
E16 Corner (normal)	0.09	W/mK	1				
E17 Corner (inverted)	-0.09	W/mK	1				
E18 Party wall between dwellings	0.08	W/mK	1				
P1 Party wall - ground floor	0	W/mK	1				
P2 Party wall - intermediate floor within dwelling	0.08	W/mK	1				
P4/P5 Party wall - roof	0.08	W/mK	1				

1 - Planning stage assumption to achieve policy or Building Regulations targets

2 - Subject to overheating assessment to be carried out at RMA or detailed design stage

3 - Building regulations requirement

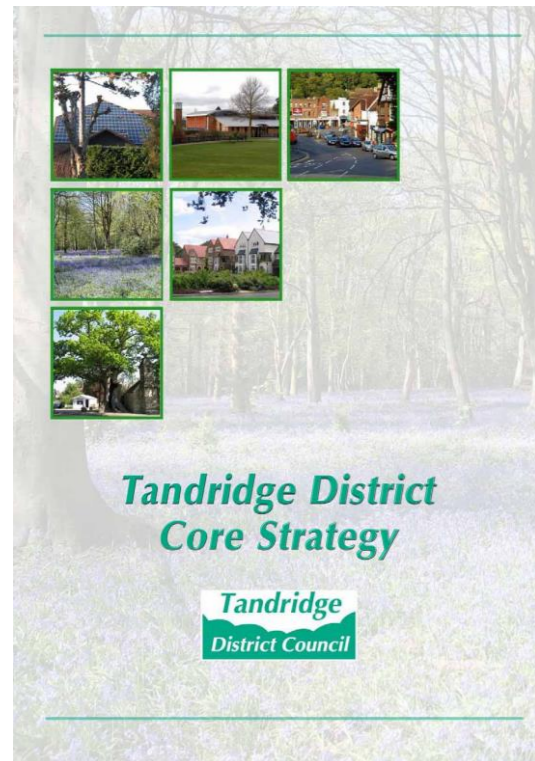
4 - subject to MEP design by others

NB. Please refer to Approved Document L1 2021 for all requirements to comply with Building Regulations Part L.



## Appendix B – Tandridge Planning Policies

Tandridge District Core Strategy (Adopted October 2008)



The adopted Tandridge District Core Strategy sets out a vision for the District and a set of key policies within which other more detailed policies can be prepared and set out in future Local Development Document.

The Plan noted that sustainability is one of the main issues facing the District of Tandridge:

*' In view of the importance of climate change and the need to live within the limits of environmental capacity, the issue of ensuring that new development incorporates sustainable development principles is important.*

*Such measures can include a contribution towards renewable energy, energy conservation, water conservation and Sustainable Drainage Systems (SuDS). Some areas of the District are within flood risk areas and the Core Strategy needs to make sure*

*that flooding is not made worse and that development avoids flood risk areas.'*

The energy and sustainability policies within the Core Strategy relevant to the proposed development at Kenley Campus are summarised below.

### Policy CSP14: Sustainable Construction

- All residential development (either new build or conversion) to meet Code level 3 as set out in the published Code for Sustainable Homes.
- All new residential development (either new build or conversion) will be required to reach a minimum percentage saving of 20% in CO<sub>2</sub> emissions through the incorporation of on-site renewable energy.

### Policy CSP 15: Environmental Quality

- The design and layout of new development should be safe and secure, by the inclusion of measures to address crime and disorder and where possible meet "Secured by Design" Standards.
- Sustainable Drainage Systems (SuDS) should be included.
- New dwellings should be designed to include "Lifetime Homes" principles so that they can be readily adapted to meet the needs of those with disabilities and the elderly.
- The reuse of buildings should be considered before redevelopment.
- Innovative construction methods, such as "green roofs" to impede the flow of surface water run-off are encouraged.
- Where possible, provision for grey water recycling and/or separate disposal of surface and foul water to adoptable standards are encouraged. The provision of improvements to local sewer networks/treatment works should also be considered where necessary.
- New development should include cabling and other technical resources to allow for the installation of information/communication technology.

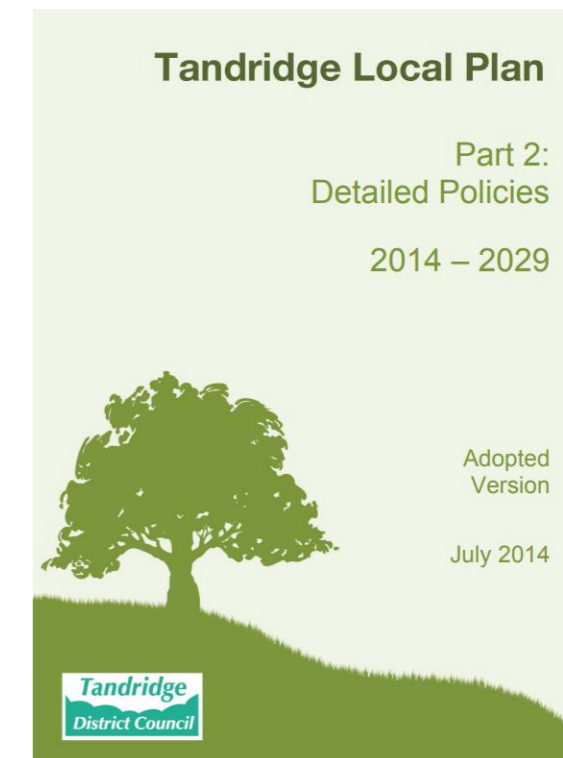
### Policy CSP 17: Biodiversity

- Development proposals should protect biodiversity and provide for the maintenance, enhancement, restoration and, if possible, expansion of biodiversity, by aiming to restore or create suitable semi-natural habitats and ecological networks to sustain wildlife in accordance with the aims of the Surrey Biodiversity Action Plan.

### Policy CSP 18: Character and Design

- Development must not significantly harm the amenities of the occupiers of neighbouring properties by reason of overlooking, overshadowing, visual intrusion, noise, traffic and any other adverse effect.

Tandridge Local Plan, Part 2: Detailed Policies 2014-2029 (Adopted July 2014)



The Tandridge Local Plan Part 2: Detailed Policies supports the adopted Core Strategy (Part 1 of the Tandridge Local Plan) by containing a set of detailed planning policies to be applied locally in the assessment and determination of planning applications over the plan period (2014 - 2029).

The energy and sustainability policies within the Detailed Policies relevant to the proposed development at Kenley Campus are summarised below.

### DP7: General Policy for New Development

- Proposals should have regard to the Police 'Secured by Design' standards to create safe and secure environments that reduce the risk of crime.
- Proposals should not significantly harm the amenity of neighbouring properties by reason of pollution (noise, air or light), traffic, or other general disturbance.



- Proposals should provide a satisfactory environment for the occupiers of both the existing and new development.
- Proposals should provide appropriate facilities for individual and communal use including bicycle storage, amenity areas and garden areas; as well as facilities for the storage and collection of refuse and recycling materials which are designed and sited in accordance with current Council standards.
- Proposals should seek to protect and, where opportunities exist, to enhance valuable environmental (including public open space) and heritage assets.
- Promote the use of sustainable design and construction that provides for efficient use of minerals and enables the incorporation of a proportion of recycled or secondary aggregates, in accordance with the Surrey Minerals Plan Core Strategy (2011).
- Ensure that landscaping is an integral element in layout design, making provision for suitable new planting, trees and boundary treatments to enhance the appearance, character and amenity of the site from the outset. The proposal is also expected to retain existing important features such as trees, hedgerows and walls wherever possible.
- Where trees are present on a proposed development site, a landscaping scheme should be submitted alongside the planning application which makes provision for the retention of existing trees that are important by virtue of their significance within the local landscape.

**DP19: Biodiversity, Geological Conservation & Green Infrastructure**

- Seek to protect, enhance or increase the provision of, and access to the network of multi-functional Green Infrastructure (GI).
- Promote nature conservation and management.
- Restore or create Priority Habitats.
- Maximise opportunities for geological conservation.
- Not result in significant harm to local, national or statutory sites of biological or

geological importance or the broader GI network.

- Not result in direct or indirect harm to an irreplaceable environmental asset of the highest designation, such as a Site of Special Scientific Interest (SSSI), ancient woodland or veteran trees.
- Not directly or indirectly affecting protected or Priority species.

**DP21: Sustainable Water Management**

- Seek to restore natural flows in the river systems or re-establish areas of functional floodplain, and identify opportunities for recreation, habitat restoration/enhancement or additional Green Infrastructure provision.
- Secure opportunities to reduce both the cause and impact of flooding; for example through the use of Green Infrastructure for flood storage and, where necessary, the incorporation of Sustainable Drainage Systems (SuDS) suitable to the scale and type of the development, ensuring the discharge of surface run off is restricted to that of the pre-development site. Consideration should be given as to the future maintenance of any proposed SuDS schemes.

**DP22: Minimising Contamination, Hazards & Pollution**

- Noise generating forms of development or proposals that would affect noise-sensitive development should be accompanied by a statement detailing potential noise generation levels and any mitigation measures proposed to ensure that all noise is reduced to an acceptable level.
- For proposals involving new residential development sited close to transport derived noise sources, applications will be considered against the noise exposure categories as outlined in the Noise Exposure Categories table, as well as other material considerations.
- External lighting proposed should be the minimum necessary for security, safety, working or recreational purposes and that it

minimises the potential pollution from glare or spillage.

- Not have an adverse impact on health, the natural or built environment or amenity of existing or proposed uses by virtue of odour, dust and/or other forms of air pollution.
- Proposals should not suffer unacceptable nuisance as a result of proximity to existing sources of odour, dust and/or other forms of air pollution.

**Tandridge Emerging Local Plan: 2033 (Draft Issued January 2019)**



Tandridge's Draft Local Plan:2033 has been published in January 2019, and is currently under examination by the Planning Inspectorate. Although the Draft Local Plan is yet to be adopted, the proposed development at Kenley Campus has taken into consideration sustainability and energy policies set out in the emerging plan. These are as follows:

**TLP17: Health and Wellbeing**

- Require development to be designed to promote healthy, safe and active living for all

age groups, including healthy living options for older people, active space for children and adults and encourage physically active lifestyles through the provision of sustainable modes of transport (e.g. walking and cycling routes).

- Support Green Infrastructure initiatives.

**TLP18: Place-Making**

- Provide accessibility and permeability for all by creating safe and welcoming places that connect with each other.
- Incorporate measures to promote community safety ensuring that private and public amenity spaces are clearly defined and are designed to be inclusive, usable, safe and enjoyable.
- Promote environmental resilience through sustainable design and have regard to energy use and resistance to changing climates including through the orientation and layout of properties.
- Integrate functional needs such as refuse / recycling storage and collection points, car and cycle parking.
- Developments should not significantly harm the amenities of the occupiers of existing development by reason of overlooking, overshadowing, visual intrusion, noise, traffic or any adverse impact.

**TLP30: Green and Blue Infrastructure**

- Developments will provide a net gain in green infrastructure, which should include suitable biodiversity, habitats and wildlife corridors, while seeking to provide a high quality multi-functional green infrastructure network.

**TLP35: Biodiversity, Ecology and Habitats**

Development at any given site should ensure there is a net gain in biodiversity. Schemes should provide for the maintenance, enhancement; and, if possible, expansion of such important assets, by aiming to restore or create appropriate priority wildlife habitats and ecological networks to sustain and recover biodiversity.



**TLP37: Trees and Soft Landscaping**

- Resist the loss of trees, woodlands, hedgerows and vegetation of significant amenity, historic, cultural or ecological value.
- Require existing trees, hedgerows and vegetation to be positively integrated into the site layout and protected in accordance with BS5837:2012 and any subsequent update, allowing for the future growth of trees and avoiding conflict with structures, hard surfaces and resident amenity.
- Require comprehensive replacement planting to be provided where trees have been removed prior to planning permission being granted.
- Expect new development to positively integrate space for additional trees, hedgerows and vegetation wherever possible within layout design allowing for the future growth of trees both above and below ground and avoiding conflict with structures, hard surfaces and resident amenity.
- Seek opportunities to improve links between green spaces to improve access for recreation and corridors which allow species to move between habitats.

**TLP45: Energy Efficient and Low Carbon Development**

- Integrate low and zero carbon mechanisms in the design and layout of the proposed development
- Ensure the reduction of energy consumption by the end users.
- Avoid or mitigate any adverse impacts including, but not limited to, landscape, noise, visual and cumulative impacts.
- Innovative design in all developments and community-led renewable energy schemes for low and zero carbon developments which can demonstrate direct community benefit will be encouraged.

**TLP46: Pollution and Air Quality**

- All development proposals must be located and designed to not cause a significant adverse effect upon the environment, the

health of residents or residential amenity by reason of pollution to land, air or water, or as a result of any form of disturbance including, but not limited to noise, light, odour, heat, dust, vibrations and littering.

- New residential development located near to existing uses that generate pollutant, noise, odour or light will be expected to demonstrate that the proposal is compatible, and will not result in unacceptable living standards.
- Where required, conditions limiting hours of construction, opening hours and placing requirements on applicants to submit further proposal details will be implemented in order to ensure impacts on the environment and residential amenity are kept within acceptable limits and where possible reduced.
- Development should not result in the national Air Quality Objectives being exceeded, and should not lead to a significant deterioration in local air quality resulting in unacceptable effects on human health, local amenity or the natural environment.
- Proposals should also be in accordance with the Local Transport Plan and its supporting, Air Quality Strategy, Low Emissions Transport and Electric Vehicle Strategies

**TLP47: Sustainable Drainage and Reducing Flood Risk**

- Take account of all sources of flooding from fluvial, surface water, groundwater, sewers, reservoirs and ordinary watercourses.
- Sustainable drainage systems are required in all residential development and major non-residential schemes.
- Surface run-off should be managed as close to the source as possible and does not increase flood risk elsewhere.
- In circumstances where it has been proved that SuDs is impractical, discharge of surface water to watercourse/sewer shall not exceed the following peak rates:
  - at pre-development greenfield runoff rates on all new development;

- as close as reasonably practicable to greenfield run off rates from all other brownfield sites;
- at pre-development greenfield runoff rates in areas susceptible to surface water flooding (Burstow Parish, Caterham on the Hill Parish, Caterham Valley Parish, Chaldon Parish and Whyteleafe).
- SuDs should be designed to be multi-functional and incorporate sustainable drainage into landscaping and public realm, including maximising opportunities to establish surface water ponding areas, urban watercourse buffer areas and multi-use flood storage areas in locations of high surface water flood risk and critical drainage areas to improve flood resilience, amenity and biodiversity.
- SuDs should achieve improvements in water quality through a sustainable drainage system management train, and be designed with consideration of future maintenance and climate change.

**TLP48: Water Consumption and Waste Water**

- All new homes are required to meet the water efficiency standard of 110 litres/person/day, to be achieved through a local standard for Building Regulations and development that can reduce water consumption rates further below this standard are encouraged.
- Creative design which integrates rainwater harvesting and/or grey water recycling will be viewed positively.

**TLP49: Waste**

- Process and disposal of construction waste should be in line with the Government's Waste hierarchy with the emphasis on reusing materials, for hardcore or in the design of the development.
- Where construction waste is to be disposed of, applicants will be required to identify how, where and why this is to be done, including details of any on-site processing.

- New methods of construction which limit construction waste and its need to be transported off-site, will be supported.
- All new residential development will be required to incorporate safe and accessible space to store and then present waste for collection in accordance with the waste collection authority's requirements.

**TLP50: Sustainable Transport and Travel**

- Development proposals shall demonstrate how safe and accessible pedestrian access and cycle routes will be delivered and how they will connect to the wider travel network.
- Developments will provide cycle parking in accordance with the Parking Standards set out in the Surrey Local Transport Plan or updated guidance. Planning applications must include full details of the proposed cycle parking.
- The provision of charging points for electric vehicles on all developments that result in additional units, both residential and business, will be required in line with the Surrey Local Transport Plan.



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