



# **SPD1: Planning Obligations**

## **Technical Note 3: Climate Change - Mitigation and Adaptation**

**February 2012**

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## A. INTRODUCTION

- A.1. This document is a supporting Technical Note for the Core Strategy Climate Change Policy L5 and Planning Obligations SPD1. This note contains:
- The evidence base used to inform this technical note;
  - A number of climate change adaptation measures to help developers ensure that their development is resilient to changes in the climate;
  - A summary of flood risk issues and guidance on managing flood risk and other aspects of the water environment;
  - Definition of Trafford's Low Carbon Growth Area boundaries;
  - A range of technologies/large scale energy generating infrastructure which development proposals could connect to; and
  - A suggested Carbon Budget Statement to be prepared by the developer/applicant.
- A.2. This Technical Note is a 'living document' and will be updated regularly to reflect the latest guidance, data and local carbon energy generating opportunities.

## B. EVIDENCE BASE LIST

- B.1. The following evidence base documents have been used to inform this note.
- B.2. **PPS1: Delivering Sustainable Development** identifies that planning authorities should provide a framework that promotes and encourages renewable and low carbon energy generation nor should policies restrict renewable and low carbon energy and supporting infrastructure. The Supplement to PPS1 (2007) expects DPDs to set out policies on the provision of low carbon and renewable sources of energy. It details that "Local Authorities should set out a target percentage of energy to be used in new development to come from decentralised and renewable or low carbon energy sources where it is viable. The target should avoid prescription on technologies and be flexible in how carbon savings from local energy supplies are to be secured. Where there are particular and demonstrable opportunities for greater use of decentralised and renewable or low-carbon energy than the target percentage, bring forward development area or site specific targets to secure potential".
- B.3. **Planning Policy Statement 25: Development and Flood Risk** sets out how local planning authorities should take account of flood risk from all sources in preparing plans and determining planning

applications. It also highlights the current evidence that climate change is likely to lead to increased and new risks of flooding within the lifetime of planned new developments. The importance of incorporating effective surface water management measures and flood resilient construction techniques in new buildings is stressed.

- B.4. **Trafford Core Strategy Policy L5 Climate Change** sets out minimum carbon emission reduction targets for new developments across the Borough, to help Trafford contribute to the national target of a 34% reduction in carbon emissions by 2020. The higher local carbon emissions reduction targets are based where low carbon infrastructure opportunities exist and can be connected to viably. There is one CO<sub>2</sub> emissions reduction target for the whole of the Borough and one for distinct Low Carbon Growth Areas (LCGAs).
- B.5. The **AGMA Decentralised and Zero Carbon Energy Planning Study** assesses the potential to deliver zero carbon buildings and decentralised energy across Greater Manchester. The study sets minimum targets for low or zero carbon energy to be set within Core Strategies for developments located within classified character areas (target areas) based on the distinct forms of development modelled within the study i.e. micro-generation areas, electricity focus areas and network expansion/district heating areas.
- B.6. The **Trafford Low Carbon Energy Study Phase 1** has identified that Trafford's future high growth areas (as detailed in Core Strategy Policy L1) have the potential to deliver higher minimum CO<sub>2</sub> emissions reduction targets than the rest of the borough, as there is a greater potential to deliver viable low/zero carbon energy networks in these areas.
- B.7. The **Greater Manchester Strategic Flood Risk Assessment (August 2008)** provides a broad overview of flood risk across the sub-region, and includes a SUDS map and User Guide to indicate the types of drainage system that would be appropriate in different areas given their specific hydro-geological characteristics. A detailed assessment of flood risk from all sources within the Borough is provided in the joint **Manchester, Salford and Trafford Level 2/Hybrid SFRA (March 2010)**. This detailed SFRA is accompanied by a User Guide (May 2010) which offers practical advice to those involved in formulating and assessing development proposals (see Section D).

### C. CLIMATE CHANGE ADAPTATION MEASURES

Type of Climate Change Adaptation Measure	Description	Location best Suited	Type of Development
SUDS (Sustainable Drainage Systems)	A range of systems which use existing landscape features, low energy designs such as ditches (swales) and holding ponds, and infiltration-based methods (where appropriate) to minimise the quantity of surface water which enters the drainage system.	Particularly important for built-up & heavily paved areas such as industrial sites & residential neighbourhoods, as well as town centres. Parks and other green spaces may be used as part of wider, strategic SUDS to prevent localised flooding of neighbourhoods. The choice of attenuation-based, infiltration-based or combined systems should have regard to the hydro-geology of the various parts of the Borough, as identified in the Greater Manchester SFRA SUDS Map and User Guide.	Suitable for all types of development, particularly major residential and commercial developments.
Green Roofs	Typically purpose-specific species such as sedums grown in a shallow gravel substrate above a waterproof membrane on the roof of a building.	Can be incorporated into new build or retrofitted to existing buildings. Can reduce energy costs & mitigate localised flooding risks. Ideal for areas affected by the urban heat island effect & localised flooding; built up areas with hard paving.	Suitable for either residential or commercial.

Type of Climate Change Adaptation Measure	Description	Location best Suited	Type of Development
Tree Cover	Increasing tree cover can help to reduce localised flooding, the urban heat island effect & atmospheric pollution such as airborne particulates, as well as increasing biodiversity opportunities.	Care must be taken with choice of tree planting locations; fallen leaves can cause problems with blocked drains which may negate the positive effect on flooding reduction. However, increasing tree cover in industrialised, heavily paved and built-up areas can bring multiple benefits.	Suitable for residential and commercial developments.

## **D. SUMMARY OF FLOOD RISK ISSUES AND EXTRACT FROM MANCHESTER, SALFORD AND TRAFFORD LEVEL 2/HYBRID STRATEGIC FLOOD RISK ASSESSMENT USER GUIDE (MAY 2010)**

- D.1. The Manchester, Salford and Trafford Level 2/Hybrid Strategic Flood Risk Assessment User Guide (May 2010) provides technical advice on assessing and managing flood risk within the Borough. This includes specific guidance on reducing run-off from new development within Critical Drainage Areas and other areas where there are known surface water issues. Developers should have regard to the technical advice contained within the User Guide when formulating proposals for development.

### **Extract from SFRA User Guide (May 2010)**

#### **3.4.1 Critical Drainage Areas**

- D.2. Certain locations are particularly sensitive to an increase in the rate of surface water runoff and/or volume from new development. This can be for a number of reasons, including known local flooding problems associated with these areas. These areas have been defined as Critical Drainage Areas (CDAs) in the SFRA. Specific drainage approaches are recommended in these areas to help reduce local flood risk. The SFRA has designated CDAs as high flood risk areas.
- D.3. The CDAs provided in the SFRA should be refined over time as more detailed information on flood risk and local flood management assets, including sewered catchments, becomes available.
- D.4. In these areas, a detailed FRA is advised for all developments over 0.5 hectares, regardless of which Flood Zone the site falls within. This should demonstrate that new development is not at risk from flooding from existing drainage systems or potential overland flow routes. It should also demonstrate that the development will not adversely affect existing flooding conditions by the use of appropriate mitigation measures. The FRA should define and address the constraints that will govern the design of the drainage system and layout of the development site.
- D.5. The Environment Agency Standing Advice allows developers to screen online for the level of flood risk assessment that is appropriate for a development with regard to the PPS25 Flood Zones. This highlights the need for a FRA in Flood Zones 2 and 3 and in Flood Zone 1 where there are critical drainage problems. The Standing Advice notes that for



developments in Flood Zone 1 FRA Guidance Note 1<sup>1</sup> should be followed *‘In areas where the Local Planning Authority has identified drainage problems through a Strategic Flood Risk Assessment or Surface Water Management Plan and they have indicated that a formal flood risk assessment is required’*. FRA Guidance Note 1 requires FRAs to provide *‘Proposals for surface water management that aims to not increase, and where practicable reduce the rate of runoff from the site as a result of the development (in accordance with sustainable drainage principles, and the Local Planning Authority’s published SFRA)’*. It is recommended that proposals for development in Critical Drainage Areas, as defined by this SFRA, follow the guidance set out below.

### **Recommended allowable discharge rates for CDAs and other areas**

- D.6. All development should seek to reduce existing local flooding problems and not add to them. The AGMA authorities are currently developing drainage standards for developments within Critical Drainage Areas and for all other areas. Over time, it is envisaged that local authorities will commission drainage strategies (see below) to determine in more detail, and establish the evidence base for, set reductions in surface water runoff from development sites. These will be used to inform the incorporation of targets and standards in Development Plan Documents, supported by Supplementary Planning Documents, as appropriate.
- D.7. With regard to this, the developer should liaise closely with the Environment Agency, United Utilities and the LPA as soon as possible to determine an appropriate reduction in runoff rate and volume with reference to discharge limits as laid down by any completed SWMP, drainage strategy or local development document for that area. Minimising surface water run off rates within catchments should be the starting point for negotiations with Developers.
- D.8. In the interim, and based on the technical work undertaken for the SFRA, the following guidance is provided:
- Development should aim to deliver Greenfield runoff on Greenfield sites up to a 1 in 100 year storm event, considering climate change;
  - Development should aim for a minimum reduction in surface water runoff rates of 50% for Brownfield sites, with an aim of reducing runoff to Greenfield rates up to a 1 in 100 year storm event, considering climate change;

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<sup>1</sup> Environment Agency. Flood Risk Assessment (FRA) Guidance Note 1, Development Greater Than 1 Hectare (ha) in Flood Zone 1 (and Critical Drainage areas less than 1ha) Can be accessed online at <http://www.environment-agency.gov.uk/static/documents/Research/FRAGuidanceNote1.pdf>

- Development should be designed so that there is no flooding to the development in a 1 in 30 year event and so that there is no property flooding in a 1 in 100 year plus climate change event.

- D.9. Wherever possible, this should be achieved through the implementation of SUDS. Source control should be considered first. There may be opportunities to deliver SUDS through integrated solutions for collections of strategic sites. The future ownership and maintenance of SUDS systems should be discussed at the planning application stage with the relevant sections of the LPA (including Highways and Drainage), United Utilities and the Environment Agency. This approach should be taken unless the developer can demonstrate that this is not feasible and that there will be no adverse impact caused by the development elsewhere.
- D.10. This is supported by Category 4 of the Code for Sustainable Homes, which requires developers to ensure that peak run-off rates and run-off volumes will be no greater than the pre-development conditions as a minimum. However, the code recommends that attenuation of the additional flows caused by development should be related to the degree of flood risk in an area. In 'high flooding risk areas', 100% of the additional volume should be attenuated<sup>2</sup>. Planning Policy Statement 1<sup>3</sup> allows local planning authorities to stipulate high levels of the code where there are local circumstances that allow and warrant it. **The SFRA has designated CDAs as high flood risk areas.**
- D.11. The effectiveness of a flow management scheme within a single site is heavily limited by site constraints including (but not limited to) topography, geology (soil permeability), development density, existing drainage networks within the site and surrounding area, adoption issues and available area. The design, construction and ongoing maintenance regime of such a scheme must be carefully defined at an early stage and a clear and comprehensive understanding of the catchment hydrological processes (i.e. nature and capacity of the existing drainage system) is essential.

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<sup>2</sup> CLG (2006) Code for Sustainable Homes

<sup>3</sup> CLG (2007) Planning Policy Statement: Planning and Climate Change - Supplement to Planning Policy Statement 1

## **E. LOW CARBON GROWTH AREAS MAPS**

- E.1. Core Strategy Policy L5 introduces the application of local higher carbon emissions reduction targets where it is viable to connect into low carbon energy generating infrastructure. The actual target for each development is determined by the scale and location of the development. The higher local carbon emission reduction targets are set out in Policy L5 (para L5.5). Areas of high development growth termed Low Carbon Growth Areas (LCGAs) have been identified to have the potential to deliver higher carbon emissions reduction targets of up to 15% above current Building Regulations, with the rest of the Borough to deliver up to 5% above current Building Regulations.
- E.2. The LCGAs are based on the places within the Borough identified for large scale new development as detailed in Policies L1 and W1. The Low Carbon Study (2011) outlined the boundaries for Altrincham, Carrington and Trafford Park (see figures 1 to 3). The Altrincham boundary is based on Super Output Area data available for the town centre and surrounding area. The latter two boundaries are derived from the Trafford Economic Viability Study.
- E.3. As part of pre-planning application discussions, the Council will help identify any low carbon energy generating infrastructure opportunities that the proposed development proposal could connect into. These infrastructure opportunities will be set out and updated in a revision of this technical note. The applicant is to use this information and demonstrate how the local higher carbon emissions reduction target could be achieved and include a viability appraisal. If the higher target cannot be achieved for reasons of viability, a lower target will be accepted by the Council via design measures as set out in the SPD.

Figure 1.

Altrincham

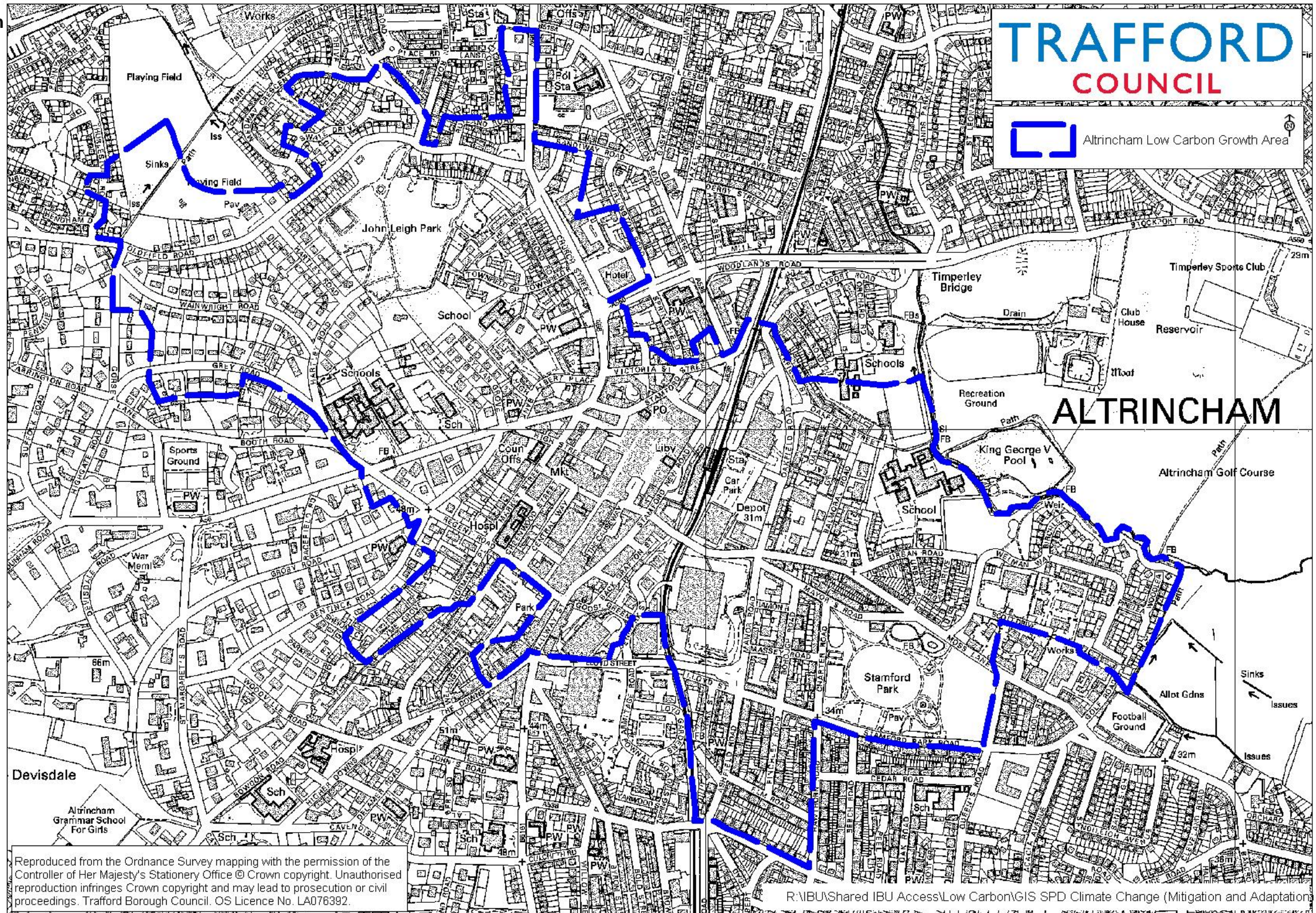


Figure 2.  
Carrington

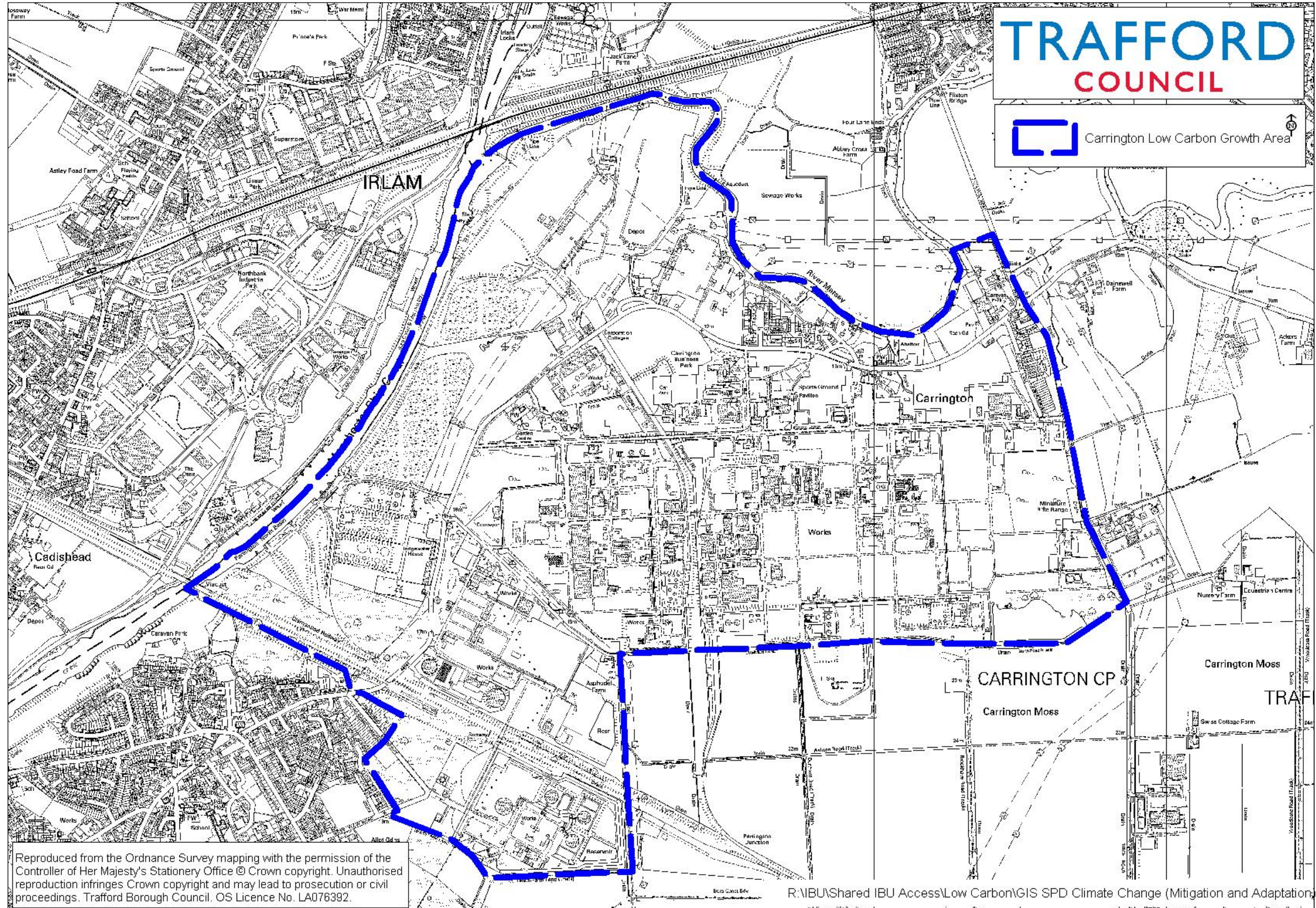
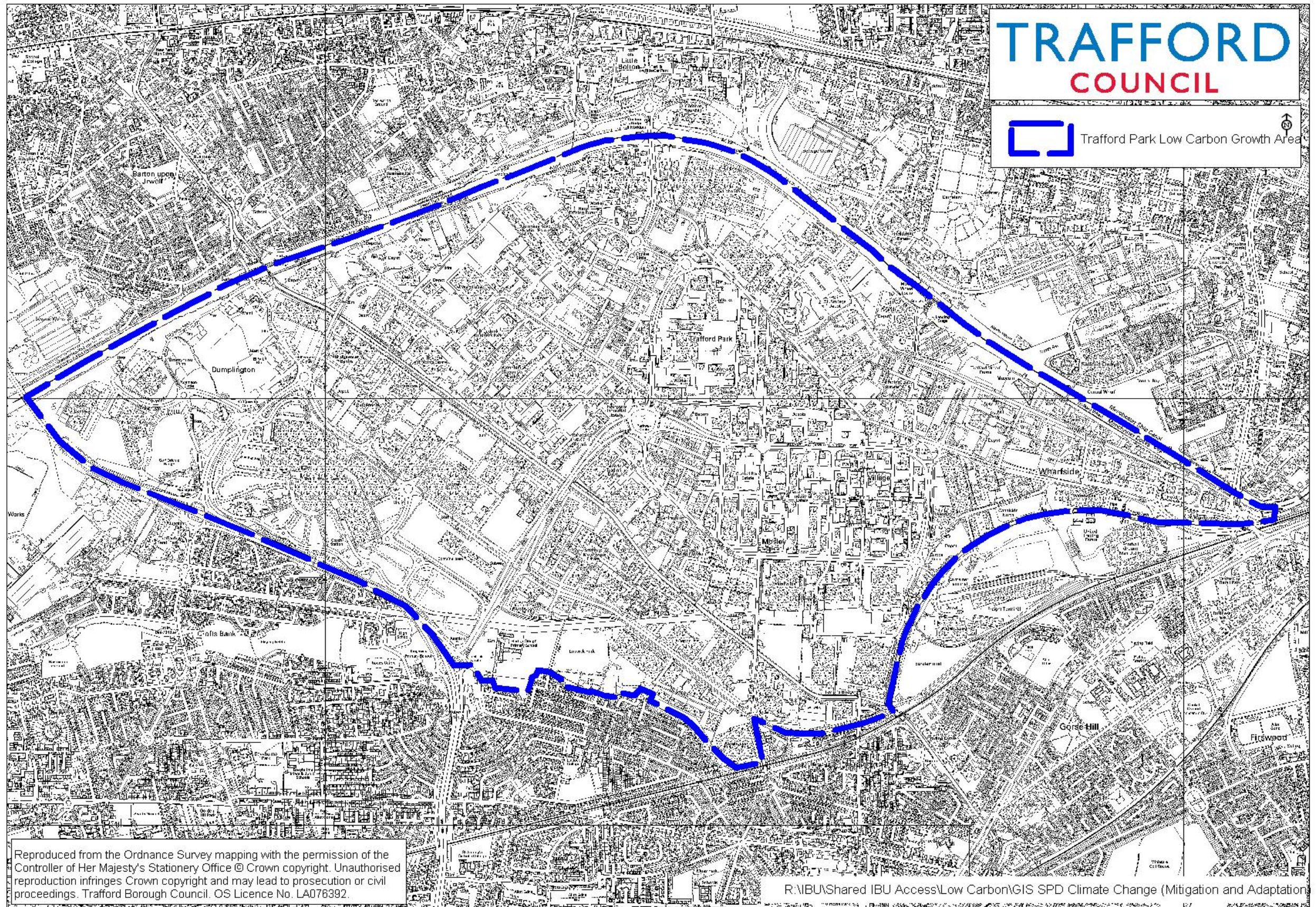


Figure 3.  
Trafford Park



## F. EXAMPLES OF LOW CARBON ENERGY INFRASTRUCTURE

F.1. This table will be updated with live infrastructure opportunities for new developments to connect into, as they are programmed / delivered.

Type of Low Carbon Energy Opportunity	Description	Location best Suited	Type of Development to be served
District Heat Network	An underground network of pipes carrying either steam or hot water.	Most easily constructed for new developments but can be retrofitted to social housing estates and large commercial premises	Residential, commercial, industrial
Combined Heat and Power (CHP)	As District Heat Network, plus the provision of electricity on a private wire network.	As District Heat Network	As District Heat Network
Biomass	An energy centre burning biomass (wood, oil or gas) can provide low carbon heat and electricity.	Away from residential areas to allow road access for delivery of fuel	Residential, commercial, industrial
Coal Bed Methane	Coal bed methane can be used in a CHP unit to provide heat and electricity. The heat is classed as low carbon if it is used and not wasted.	At the site of coal bed methane production	Residential, commercial, industrial

<b>Type of Low Carbon Energy Opportunity</b>	<b>Description</b>	<b>Location best Suited</b>	<b>Type of Development to be served</b>
Waste heat from water treatment	Water treatment works produce waste heat which can be fed into a District Heat Network. Also, the burning of biogas and biomass produced from sludge treatment can produce electricity and heat.	At the site of existing water treatment works	Residential, commercial
Waste heat from existing electricity generating plant	Existing power stations produce waste heat which can be harnessed to feed a District Heat Network.	At the site of existing electricity generating plant	Residential, commercial, industrial
Geothermal	'Hot rocks' deep underground can be used to produce usable heat for a District Heat Network.	At the site of geothermal opportunities	Residential, commercial



## **G. CARBON BUDGET STATEMENTS**

- G.1. To assist the applicant and the Council in determining how the carbon emissions reduction target for the development will be met, the developer will be required to provide a Carbon Budget Statement (CBS) for the proposed development. A template CBS is set out below to help applicants.
- G.2. The submitted CBS will detail which design measures and or technologies will be employed to reduce the energy consumption of the development in line with the carbon reduction target. Some examples of the types of technologies that can be used to reduce carbon emissions from a range of developments can be found in Section F. To help applicants submit an appropriate level of detail for the CBS, a template CBS has been produced. An equivalent document will be accepted as part of a Design & Access Statement or Planning Statement, if it meets the required content of the CBS.
- G.3. The CBS will also contain an element of viability testing, to help the developer and Council to ensure that the technologies and or design measures used to meet the carbon reduction target are technologically feasible and financially appropriate for the development.
- G.4. An applicant should first consult with the Council at the pre-planning application stage to establish the actual carbon reduction target before preparing a CBS.
- G.5. The CBS submitted with the planning application should be regarded as a draft statement which may be subject to change during the application process if this is deemed to be necessary. Delivery of the development in line with the final agreed CBS will form a condition of the planning approval. Once the Council is satisfied that all planning conditions have been met, the planning conditions will be discharged.

## Suggested Template for Carbon Budget Statements

G.6. The key steps to be followed in preparing a CBS are outlined below:

### Steps

**Step 1:** Calculate the predicted annual energy demand of the development using the latest benchmarks as detailed in CIBSE Guide F. For guidance the table below details some the energy consumption of generic development types (residential is based on CfSH Level 4) (source Trafford Low Carbon Study – 2011).

Generic Development Types	Gross Floor Area_m <sup>2</sup>	Total kWh/yr
Individual dwelling Detached/semi-detached	160	20,445
Individual dwelling Terrace	105	13,417
Individual dwelling Flat conversion	65	8,305
Development of dwellings 10-50 flats	930	118,839
Housing/Mixed use site >50-200 units	5,065	952,286
Housing/Mixed use site >200-500 units	16,355	2,106,251
Housing/Mixed use site >500 units (excluding CHP)	100,300	15,726,137

This step will help the applicant to assess the suitability of the available low carbon energy opportunity to serve the proposed development.

**Step 2:** Calculate the baseline CO2 emissions for the entire development phased by the year that each phase of the building project is completed using the National Calculation Methodology and the latest CO2 emissions factors. For guidance the table below details CO2 emissions for generic development types (residential is based on CfSH Level 4) (source Trafford Low Carbon Study – 2011).

Generic Development Types	Total tCO <sub>2</sub> /yr
Individual dwelling Detached/semi-detached	6.28
Individual dwelling Terrace	4.12
Individual dwelling Flat conversion	2.55
Development of dwellings 10-50 flats	36.49
Housing/Mixed use site >50-200 units	254.84
Housing/Mixed use site >200-500 units	641.64
Housing/Mixed use site >500 units (excluding CHP)	4,987.76

This step will enable the applicant to assess from what level the CO2 emissions of the development must be reduced to meet the target.

**Step 3:** Describe the proposed approach to reducing CO2 emissions from the development in order to meet the target. This should include a summary of the:  
proportion of CO2 emissions reduction to be met by additional design measures; and

- proportion to be met through connection to the local low carbon energy opportunity.

**Step 4:** Calculate the reduction of baseline CO2 emissions for the development or the project introduced via design measures and/or connection to local low carbon energy generation opportunities.

**Step 5:** Within the development appraisal, the effect of the costs of design measures and/or low carbon energy generation options with other planning obligations to be shown clearly.