

## **Sustainable Design and Construction Statements**

### **Guidance on Content for Planning Applications in Islington**

Islington requires all applications for major developments to include a statement on the potential implications of the development on sustainable design and construction principles. The statement should demonstrate that the proposal will meet the highest standards of sustainable design and construction throughout all stages of the development, including demolition, construction and long-term management. This requirement is based on the London Plan Policy 4A.3 and draws on a range of local policies and guidance (see Appendix 2), including Islington's Green Construction Supplementary Planning Guidance.

The Sustainable Design and Construction Statement should set out how the development will address the principles set out in Policy 4A.3 and meet each of the corresponding policies detailed further within Section 4A: Climate Change and London's Metabolism as well as fulfil Islington's local policy requirements. The key areas which should be covered include:

- Energy - the Sustainable Design and Construction Statement should include an Energy Statement, as required in Policy 4A.4 in the London Plan. This should form a separate document or appendix to the Sustainable Design and Construction Statement. The Energy Statement should provide an assessment of the baseline energy demand and carbon dioxide emissions from proposed major developments, and demonstrate the expected energy and carbon dioxide emission savings from the energy efficiency and renewable energy measures incorporated in the development, including the feasibility of CHP/CCHP and community heating systems. A suggested template for an Energy Statement is included in Appendix One. If biomass is proposed as part of the renewables mix, additional information on the proposed technology will need to be provided – see Appendix 3.
- Climate change adaptation – details of how the proposed development is adapted to climate change should be provided, for example through measures to reduce overheating and the rate of surface water run off<sup>1</sup>.
- Sustainable drainage – the statement should include details of how the proposed development will integrate Sustainable Drainage Systems (SUDS) to reduce the surface water run-off rate from the site, with the aim of achieving a Greenfield run-off rate.
- Biodiversity – proposals for how the proposed development will enhance on-site ecology should be provided, for example through use of green roofs, artificial nesting boxes and ecological landscape design.
- Water resources – the Sustainable Design and Construction Statement should include water efficiency proposals including, where relevant, to meet the

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<sup>1</sup> The GLA's guide 'Adapting to climate change: a checklist for development' can be downloaded from [www.napa-pana.org/private/modules/knowledgebox/io/file.php?entry=1109&field=31](http://www.napa-pana.org/private/modules/knowledgebox/io/file.php?entry=1109&field=31)

London Plan water use target for residential development (currently set at 105 litres per person per day). It should also provide details of the maximum level of water that can feasibly be provided to the development from rainwater and, where possible, grey water recycling, and include proposals for the integration of such systems into the development.

- Materials – details of the scheme’s sustainable procurement policy should be included. This should demonstrate how the procurement of materials for the development will promote sustainability, including by use of low impact, locally and/or sustainably sourced, reused and recycled materials. Wherever possible, this should include targets and a process for the implementation of this policy through the development process.
- Construction – the statement should include proposals for how the environmental impacts of construction will be mitigated, including through the reduction, reuse and recycling of demolition and construction waste. This should link to the Site Waste Management Plan for the scheme.
- Other issues – other sustainability issues covered within the London Plan and local policies should also be addressed. These include promotion of sustainable behaviours during operation of the development, waste and recycling<sup>2</sup>, pollution and flexibility of buildings over their lifetime.
- BREEAM and Code for Sustainable Homes – the statement should include, as an appendix, a Code pre-assessment report (for new build residential schemes or elements of schemes) and/or relevant BREEAM pre-assessment report(s) (for all other schemes or elements of schemes). These should summarise the design strategy for achieving BREEAM Excellent and/or Code for Sustainable Homes Level 4 and include details of the credits proposed to be achieved. The assessment should be carried out using the most up to date versions of schemes, including BREEAM 2008 where it is available.

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<sup>2</sup> See Islington’s Refuse and Recycling Storage Guidance at [www.islington.gov.uk/Environment/RubbishAndRecycling/Rubbish/refusecontainment.asp](http://www.islington.gov.uk/Environment/RubbishAndRecycling/Rubbish/refusecontainment.asp)

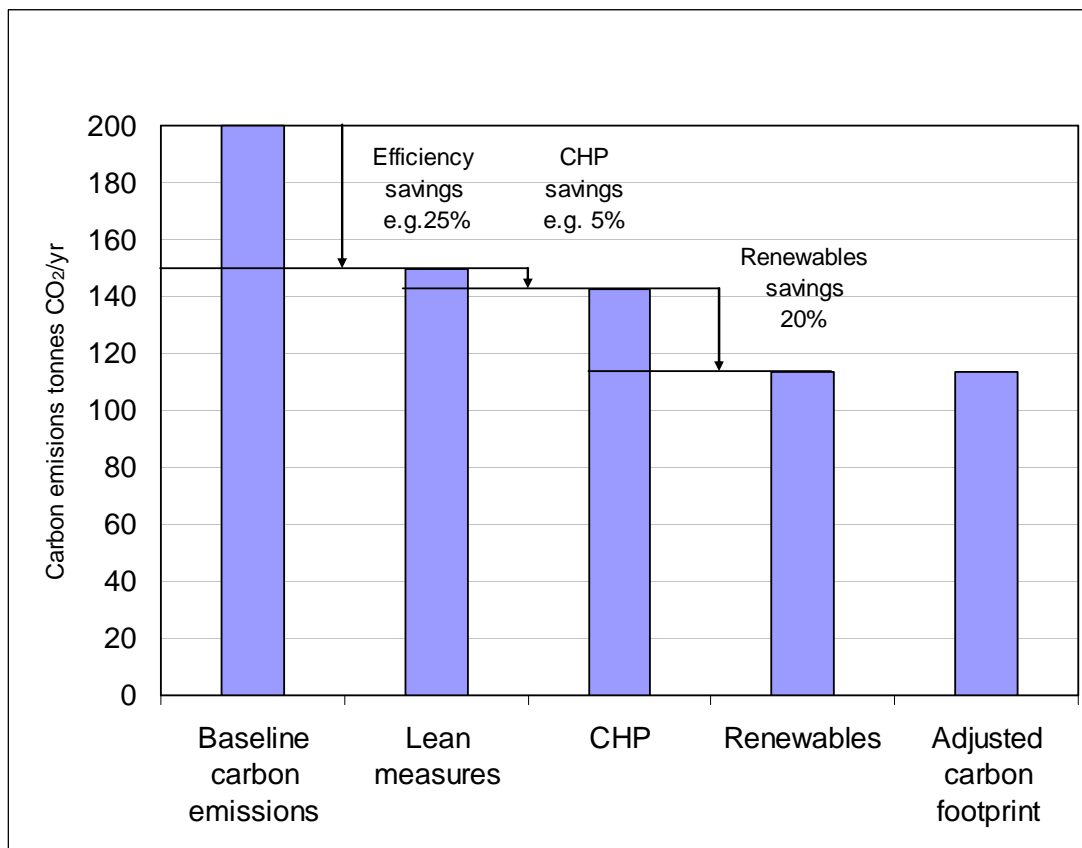
## Appendix One: Energy Statement Suggested Outline Structure

### 1 Executive Summary

Energy demand summary – completion of the following table:

	Energy demand (kWh/yr)	Energy consumption savings (%)	CO <sub>2</sub> emissions (kg/yr)	CO <sub>2</sub> emission savings (%)
Proposed baseline scheme				
Proposed scheme after energy efficiency measures				
Proposed scheme after CHP savings				
Proposed scheme after renewables savings				

Also represent graphically, clearly showing carbon dioxide savings from energy efficiency, Combined Heat and Power (CHP) and then renewables, as per this example (note, percentage savings shown are illustrative only):



The following information should then be set out:

**1.1 Key energy efficient design measures** – outline main measures proposed, including proposed u-values for all building fabric elements.

**1.2 Summarise proposed heating and cooling systems** – including outcome of CHP/Trigeneration feasibility study

**1.3 Choice and impact of renewable energy technology(s).**

## **2 Energy demand assessment**

Applicants should produce an assessment of the energy demand and carbon dioxide emissions from proposed major developments, which should demonstrate the expected energy and carbon dioxide emission savings from the energy efficiency and renewable energy measures incorporated in the development, including the feasibility of CHP/CCHP and community heating systems.

The assessment should include:

- calculation of baseline energy demand and carbon dioxide emissions, including the energy consumed in the operation of the space heating/cooling and hot-water systems, ventilation, all internal lighting, cooking and all electrical appliances
- proposals for reduction of energy demand and carbon dioxide emissions from heating, cooling and electrical power
- proposals for meeting residual energy demands through renewable energy measures
- calculation of the remaining energy demand and carbon dioxide emissions.

### **2.1 Baseline calculations**

Part L Building Regulations 2006 will be the baseline standard that all new buildings must meet. Planning policies are not in place to duplicate regulations. Energy statements should therefore set out the building fabric and services measures specific to the scheme and demonstrate the extent to which they exceed building regulations. Benchmark estimates are not acceptable. Applicants are encouraged to demonstrate site-specific or innovative measures that show energy efficiency is fundamental to a scheme's design. As the London Plan takes a 'whole energy' approach, baselines emissions should also take account of emissions associated with uses not covered by Building Regulations.

## **3 Energy efficiency savings**

Applicants should complete the following table to demonstrate the likely heating, hot water, cooling and electricity demand. The purpose of this information is to help identify the technical feasibility of energy efficient and renewable energy technologies, and to identify where an applicant can make the most effective energy and carbon emissions savings in a scheme. It will also validate whether a scheme achieves the borough and London Plan targets for a 20% reduction in carbon dioxide emissions from on-site renewable energy technologies.

	Baseline scheme		Proposed scheme after efficiency measures		Change		
	kWh	CO <sub>2</sub> (kg)	kWh	CO <sub>2</sub> (kg)	kWh	CO <sub>2</sub> (kg)	CO <sub>2</sub> (%)
Electricity							
Heating & hot water							
Cooling							
Total							

#### 4 Heating, cooling and ventilation systems

All planning applications should demonstrate how they have applied the London Plan's heating and cooling hierarchy. In particular, all applications should fully investigate communal heating and cooling systems (for all land uses), where applicable, and the feasibility of Combined Heat and Power and Trigeneration. Developments should ensure heating and cooling systems can be connected to future district heating and/or cooling networks. The need for active cooling should be reduced as far as possible. Also, applications should demonstrate how the development is heat resilient in design, construction and operation to prevent overheating.

Combined Heat and Power / Trigeneration summary:

	Amount (kWh / tonnes)	%
Reduction in energy demand from CHP		
Reduction in CO <sub>2</sub> emissions from CHP		

#### 5 Renewable energy technologies

Developments should achieve a minimum reduction in carbon dioxide emissions of 20% from onsite renewable energy generation (which can include sources of decentralised renewable energy), after energy efficiency and CHP measures have been taken into account. Where the 20% target has not been achieved, scheme-specific justification is required.

All technologies listed in policy 4A.7 of the London Plan are considered potentially technically feasible in London. In particular, wind and biomass should not be rejected on generic planning grounds. Please note that if biomass is proposed Islington will require submission of additional information as a supplement to the energy statement – please see Appendix 3 for details. However, it should be noted that air-source heat pumps are not classified as a renewable technology.

Renewable energy savings and CO<sub>2</sub> reductions:

	Amount (kWh / tonnes)	%
Proposed energy generation from renewables (kWh)		
Required minimum CO <sub>2</sub> reduction from renewables		20%
Proposed CO <sub>2</sub> reduction from renewables		

## Appendix 2: Summary of relevant sustainability policies

Issue		Policy		
Area	Detail	National	London Plan	Local
BREEAM/CSH		When proposing any local requirement for sustainable buildings planning authorities should specify the requirement in terms of achievement of nationally described sustainable buildings standards, for example the Code for Sustainable Homes (PPS1a)	Developments should meet the highest standards of sustainable design and construction (4A.3 - see also below policies).	All major developments to achieve BREEAM Excellent or equivalent (CS1)
Energy	Efficiency	Reduce energy uses and emissions and promote energy efficient buildings (PPS1); secure the highest viable energy efficiency and reduction in emissions. The spatial distribution, location and design of new development should be planned to limit CO2 emissions (PPS1a)	Minimise energy use, including by passive solar design, natural ventilation, and vegetation on buildings (4A.3); reduce the need for active cooling systems as far as possible through passive design (4A.6)	Minimise energy use through energy efficient design (UDP, Env 30-33; CS1)
	CHP	Promote local heating schemes and CHP (PPS1). New development should be planned to make good use of opportunities for decentralised energy (PPS1a)	Heating, cooling and power systems to be selected to minimise CO2 emissions (in accordance with the Mayor's order of preference), designed to allow the use of decentralised energy, consider potential to link to the surrounding area (4A.6) and be designed to connect to the heating and cooling network (4A.5)	Encourage the provision of district heating and combined heat and power schemes (UDP Env 31)
	Renewables	Promote and encourage development of renewable energy resources (PPS22/1/1a)	Adopt a presumption that developments will achieve a reduction in CO2 emissions of 20% from on site renewable energy generation (4A.7)	Promote energy from renewable sources (UDP, Env 31; CS1)
Water	Efficiency	Promote the sustainable use of water resources (PPS1)	Developments to apply maximum water use target of 105 l/p/day for residential development (4A.16)	Reduce water consumption (UDP Env 39, CS1)
	Recycling	Give priority to use of SUDS, including water harvesting from impermeable surfaces and encourage layouts that accommodate waste water recycling	Maximise rainwater harvesting opportunities and promote dual potable and grey water recycling systems, including through targets for major developments (4A.16)	Encourage water reuse (UDP Env 39, CS1)

		(PPS1a)		
Materials and construction	Materials	N/A	Procure materials sustainably using local suppliers where possible, minimise the use of new aggregates and do not use ozone-depleting materials (4A.3)	Requires construction materials to be from sustainable sources (CS1)
	Construction impacts	Impacts on biodiversity should be minimised and biodiversity enhanced wherever possible(PPS9)	Use best practice and appropriate mitigation measures to reduce the environmental impact of demolition and construction (4A.3)	N/A
Waste	Demolition and construction	New development should be supported by site waste management plans, including identification of opportunities for reuse and recovery (PPS10); waste should be used as a resource wherever possible (PPS1)	Developers to produce site waste management plans which minimise waste produced and require material transport by water or rail where practicable (4A.28)	N/A
	Operational	New development should provide for sustainable waste management, looking to disposal as the last option (PPS1a/10)	Promote sustainable waste behaviour, including support for local integrated recycling schemes, CHP, CCHP and other treatment options (4A.3)	Minimise waste creation, increase recycling rates, view disposal as last option, require adequate provision for waste storage and recycling (UDP Env 34-38, CS1,9)
Ecology	Natural environment and open space	Conserve and enhance biodiversity, recognising that the distribution of habitats and species will be affected by climate change; give appropriate weight to designated sites and protected species; seek to design in biodiversity (PPS1/1a/9)	Conserve and enhance the natural environment, particularly in relation to biodiversity and easy access to open spaces (4A.3); Major developments to incorporate living roofs and walls where feasible (4A.11)	Development proposals should enhance ecology (UDP Env 21-29), encourage green roofs (CS3); also green walls and artificial nesting sites (Green Construction SPG)
Adaptation	Overheating and water use	Take climate change impacts into account in the location and design of development (PPS1); new development should be planned with both mitigation and adaptation in mind (PPS1a)	Promote effective adaptation including minimising overheating and solar gain (4A.10), minimising water use (4A.16) and protecting and enhancing green infrastructure	N/A
	Floodrisk	Ensure flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk (PPS25)	Manage flood risk, including through Sustainable Drainage Schemes (SUDS) and flood resilient design for infrastructure and property (4A.13, 4A.14)	N/A

	SUDS	Promote the use of SUDS, including water harvesting from impermeable surfaces and encourage layouts that accommodate waste water recycling (PPS25/1/1a)	Surface water to be managed as close to its source as possible in line with the proposed drainage hierarchy; developers aim to achieve greenfield run off via rainwater harvesting and SUDS (which are to be promoted in new developments unless there are practical reasons for not doing so); encourage reduction and discourage increase in hardstanding around homes (4A.14)	Encourage Sustainable Drainage Schemes (CS1)
Pollution	Air, water, noise, land	Seek to control, mitigate and remove pollution as far as possible and practicable (PPS22); ensure that, wherever practicable, noise-sensitive developments are separated from major sources of noise (PPG24)	Minimise light lost to the sky, reduce air and water pollution and adverse noise impacts (4A.3)	Prevent pollution, including air, noise, light, water and land (UDP Env 16-20)
Other		N/A	Effective use of land and existing buildings, design new buildings for flexible use, ensure designs make the most of natural systems both within and around the building, comfort and security, avoid creation of adverse local climatic conditions (4A.3)	Ensure land and buildings are used efficiently, existing buildings are reused where possible and new buildings designed for future adaptability, encourage mixed use (CS1)
Operational measures		N/A	N/A	Seek a continuous improvement in environmental performance via experience and new technologies (CS1)
Transport	Sustainable transport	New development should create and secure opportunities for more sustainable transport choices and reduce the need to travel, especially by car (PPG13/PPS1a)	Coordinating transport and landuse development to support growth and improve accessibility, improve capacity of public transport, particularly on key routes, reduce congestion and traffic levels (3C)	Reduce need to travel, ensure high trip generating developments are in accessible locations, only allow essential parking needs and promote car free housing, reduce road traffic and its adverse effects, improve walking and cycling provision and public transport (UDP ST7, CS2)

### **Appendix 3: Biomass - additional information requirements**

If your scheme proposes use of biomass Islington Council requires submission of the following additional information as a supplement to the energy statement. This is important because of the need to ensure that the utilisation of biomass is appropriate and makes use of the best available technology and effective operation/management so as to maximise efficiency and carbon emissions savings while minimising air pollution.

Guidance published in June 2009 by LACORS and Environmental Protection UK provides a useful overview of the key issues around biomass and air quality – see <http://www.environmental-protection.org.uk/biomass/>

### **Biomass Boiler Information Request**

#### **1 Particulars of the Boiler**

- i. Description of biomass boiler including make, model, manufacturer, thermal capacity (kw/MW)
- ii. Maximum rate of fuel consumption in kg/hr or m<sup>3</sup>/hr
- iii. Identify efficiency of the boiler. Does the boiler comply with EN303-5; provide details
- iv. Describe the boiler combustion system and grate design
- v. Describe how combustion will be optimised and controlled in order to reduce pollution emissions
- vi. Describe the fuel feed system
- vii. Provide details of the abatement equipment in place for controlling particulate matter emissions.
- viii. If no abatement system for particulate matter is fitted, justify what boiler design features are in place to effectively reduce particle emissions.
- ix. How does the biomass boiler deal with variable heat loads - is the boiler linked to an accumulation tank
- x. Is the biomass boiler an exempt appliance in accordance with the Clean Air Act 1993. If yes provide evidence to demonstrate the biomass boiler has been tested and certified as an exempt appliance.

#### **Boiler Operation and Maintenance**

- xi. Describe arrangements for cleaning and de-ashing the boiler
- xii. Who will be responsible for operating and maintaining the boiler

- xiii. Provide details of the maintenance schedule associate with boiler, abatement equipment and stack. This should include frequency of boiler inspection and servicing by a trained boiler engineer.
- xiv. Describe how incidences of boiler or abatement system failure are identified & mitigated.

## 2 Boiler Stack Details

- i. Identify the height of the boiler exhaust stack above ground. The height should be calculated using dispersion modelling software such as ADMS Urban or Aermid. Evidence shall be presented to demonstrate that predicted emission concentrations associated with the calculated stack height do not have a significant impact on the air quality objectives for NO<sub>2</sub> and PM10.
  - Air quality modelling shall be carried out in accordance with the procedures outlined in Air Quality and Planning Guidance, London Councils (2006) and Technical Guidance Note TG(08) (currently being drafted)
  - The modelling work should consider variable emissions rates associated with the biomass boiler operating on full and partial load.
  - A report shall be submitted outlining the following
    - Details of the modelling software chosen
    - Emission rates and stack parameters used in the modelling exercise
    - Building parameters
    - Meteorological data
    - Terrain and surface roughness
    - Background concentrations
    - Method used to calculate background and predicted concentrations
    - The predicted results for specific receptors should be tabulated, this should include location of receptors and distance from the stack. The location and grid reference of maximum pollution concentrations should also be identified.
    - A full discussion of any potential breaches of air quality criteria should be provided. This should also include discussion of model sensitivity and variation.
- ii. Identify stack internal diameter (m)
- iii. Does the stack terminate vertically and is the stack insulated
- iv. Provide maximum particulate matter and nitrogen oxides emission rates (mg/m<sup>3</sup>) to standard reference conditions. Provide emissions test data as evidence of emissions rates from the boiler. This shall reference the test method used to determine emission concentrations.
- v. Identify the exhaust gas efflux velocity (m/s)
- vi. Is the boiler exhaust stack fitted with draft fans with adjustable speed control
- vii. Identify grid reference of boiler exhaust stack.

### **3 Fuel Details**

- i. Description of the fuel specification including origin, type of wood (chips, pellet, briquettes), particle size, nitrogen, moisture, ash content (%) and mechanical durability. Islington Council strongly encourages use of fuel types that release fewer particulate matter (PM) emissions when burnt and have higher energy density (thus requiring less transportation and generating fewer transport emissions) such as wood pellets.
- ii. Does the fuel comply with European or equivalent fuel quality standards such as CEN/TS 335?
- iii. Describe what fuel quality control procedures will be adopted to guarantee constant fuel quality from your supplier.
- iv. Provide evidence to demonstrate that the biomass boiler combustion system is applicable to the fuel specification
- v. Location and distance of fuel supplier(s) from site
- vi. Identify where and how fuel will be stored on site (eg bunker or silo)
- vii. Identify the capacity of the fuel store and the frequency of fuel deliveries required
- viii. Will the biomass store be fitted with ventilation, provide details
- ix. Describe how fuel will be unloaded from the delivery vehicle into the storage facility and what control measures will be in place to reduce particulate matter emissions to atmosphere.
- x. Identify the type of fuel delivery vehicle and provide evidence to demonstrate that there is sufficient space for the fuel delivery vehicle to access, exit and manoeuvre the site.

### **4 Building Details**

- I. Distance of adjacent buildings from boiler exhaust stack
- II. Height of adjacent buildings from boiler exhaust stack
- III. Dimensions of building to which the boiler exhaust stack is attached
- IV. Indicate the distance from the boiler exhaust stack to the nearest fan assisted intakes and openable windows.

### **5 Plans**

- I. Provide a site plan showing the location of the boiler room, fuel storage area and the access and exit route for fuel delivery vehicles
- II. Provide a site plan showing the position of the boiler exhaust stack, fan assisted intake air vents and nearest openable windows.