

Review of progress in securing sustainability measures on major planning applications: March 2007 to end of March 2009

Contents

Executive summary 3

Introduction 4

Approach 4

Results and analysis 5

Conclusion & recommendations 18

1.0 Executive Summary

Islington Council encourages developers to achieve the highest practicable levels of environmental performance. This study assesses progress since 1st March 2007 up to the end of March 2009 in securing sustainability measures on major planning applications based on interviews with planning officers and checks of online documentation. An analysis of the data is followed by conclusions and recommendations for establishing a sustainability monitoring system for major planning applications.

Key findings from the study are:

- BREEAM Excellent, the most widely sought sustainable building standard, was conditioned (by planning officers) or proposed (in the application) on 47% of certifiable elements of all approved major applications for permanent new or refurbished buildings; there was a broad trend of increasing proportions of applications aiming to achieve both BREEAM Excellent and Code level 4 across the study period.
- Fourteen developments, or 21% of all major applications for permanent new or refurbished buildings approved in the study period, included CHP. There was no clear trend in uptake of this technology across the study period.
- Forty-three per cent of approved applications for permanent new or refurbished buildings in the study period that committed to achieve a target percentage CO2 reduction through renewables committed to provide a 20% CO2 reduction through renewables. There has been a consistent improvement in the average CO2 reduction through renewables secured across the study period, climbing steadily closer to the London Plan policy 4A.7 target of a 20% CO2 reduction through renewables.
- Biomass was the most popular form of renewable technology, proposed/conditioned on almost a quarter of applications (23.9%), followed by ground source heat pumps (GSHP), solar hot water (SHW) and solar PV.
- Forty-two developments, or 63% of all major applications for permanent new or refurbished buildings approved between 1st March 2007 and the end of March 2009, committed to provide green roofs. Available data indicated this equates to over 12,000 square metres of green roof.
- After green roofs, the most popular other form of sustainable urban drainage conditioned or proposed was rain water harvesting.
- Based on available data, 40 out of 67 applications (59.7%) were 'car-free'. In the last six months (October 2008 to end of March 2009), 10 developments were known to be 'car-free' out of 13 approved major schemes, or 77% of schemes, indicating that in the most recent months the Council has had substantial success in securing 'car-free' schemes.

2.0 Introduction

Islington is seeking to secure high standards of sustainability in the built environment. One powerful mechanism/process for helping to achieve this is the planning system.

Islington Council encourages developers to achieve the highest practicable levels of environmental performance, through robust application of Islington's own and London Plan planning policies and positive encouragement/promotion of relevant options and technologies.

This study sets out a baseline evidence base, reviewing progress made between 1st March 2007 and the end of March 2009 in securing sustainability measures on major planning applications¹. It provides the findings from an analysis of 67 major planning applications granted planning permission over this period.

The key aim of the study is to quantify the achievements to date in terms of securing sustainability measures on major planning applications. This information is critical for understanding and promoting what we have already achieved and for identifying any areas in need of improvement in future. Moreover, and especially if this baseline data is added to over time, this information will constitute an important evidence base for development of LDF policies.

3.0 Approach

Planning officers working on major planning applications over the study period (1st March 2007 to end of March 2009) were interviewed to gain information on the major applications they had dealt with over this period that were granted planning permission. High level information gained from the officers was followed up with checks online of committee reports, sustainability assessments, conditions imposed and other documents as relevant/necessary.

Some officers who dealt with major applications during the study period had left the council. These outstanding applications were picked up from an APAS report of all major applications approved during the study period. This list was also used as a cross-check to pick up any other missed applications.

Practical problems encountered early on included locating the required information within the multiple documents submitted; limited data, or data of questionable accuracy, provided on Environmental Monitoring Forms or other documents; lack of easily accessible data on key issues e.g. total area of green roofs; changes in the specifics of sustainability measures/commitments in the built scheme from details provided on Environmental Monitoring Forms, Sustainability Statements, planning conditions (where these were subsequently renegotiated) or other relevant and easily accessible information sources.

Due to the above problems it took considerable effort to search out, interpret and assemble the data, especially for the earlier applications. Time and resource constraints placed limits on the number of factors on which data could be collected and the depth of search possible for specific items of information. Where possible a process of cross checking has been used to consolidate and enhance the robustness of the data set. Moreover, as monitoring has proceeded it has been possible to make improvements to the way sustainability information on planning applications is recorded - principally through the development and uptake of a range of standardised conditions; this is helping to reduce data gathering problems.

¹ A major application is one that proposes 10 or more residential units or 1000sq metres or more of commercial floorspace.

4.0 Results and analysis

The following provides the results and analysis of the data in the form of tables and graphs. It should be noted that each graph represents analysis of specific subsets of the data where the relevant information is available.

Sample sizes are shown to indicate the size of each subset, but this does not indicate the relationships and overlap that may exist between these subsets. However, the tables of data and graphs do help to create a clearer picture of the progress achieved in securing sustainability measures on major planning applications over the study period.

This analysis is based on all major planning applications approved between 1st March 2007 and the end of March 2009 that involved the development of permanent new and/or refurbished buildings (i.e. applications for temporary accommodation, variations of conditions, changes of use, internal reconfigurations etc were excluded from the analysis) – a total of 67 applications. Note that available data indicates that only one of these developments has been completed to date (the Adult Education Centre at 57 Shepperton Road, N1 3DH)². These applications include a range of types of development including many residential and residential mixed use schemes (including student accommodation), hotels, schools, retail, cafes/restaurants and business uses.

4.1 Code for Sustainable Homes and BREEAM standards

The table and graph below summarise data on the number of major applications for permanent new buildings approved between 1st March 2007 and the end of March 2009 that committed to achieve a certain standard on one or more of their constituent 'certifiable elements' on the Code for Sustainable Homes (CSH) or BREEAM³ sustainable buildings rating systems (on the whole or a part of the development). A 'certifiable element' is defined as any element of a major application that is conditioned to achieve a BREEAM or Code rating (e.g. BREEAM Office, or BREEAM Multi-residential for student accommodation); or any residential element of a major scheme; or any other use class element that is equal to or greater than 500sqm in area (e.g. retail, café).

Table 1: Number and percentage of certified elements of major applications for permanent new buildings approved between 1st March 2007 and end of March 2009 that were required to achieve BREEAM and Code for Sustainable Homes standards

Standard	Number of certified elements	% of certifiable elements of all approved major applications for permanent new buildings (106)*
BREEAM Excellent	50	47.2%
BREEAM Very Good	13	12.3%
CSH level 4	4	3.8%
CSH level 3	6	5.7%
Non certified applications	33	31.1%

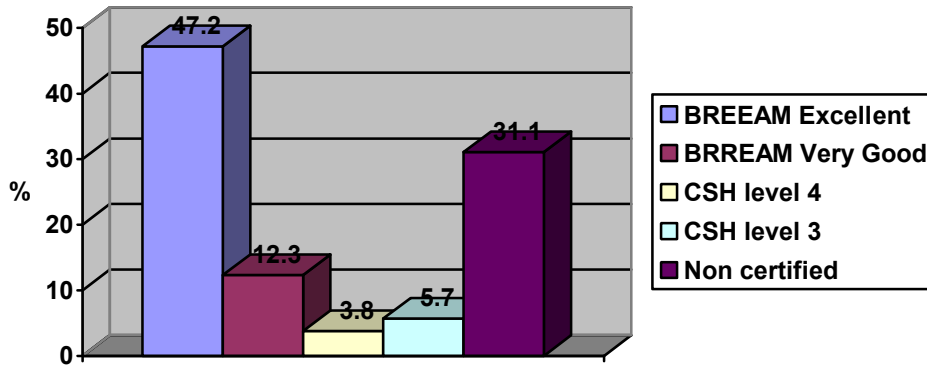
*These percentage figures are based on dividing the sub-totals by the total number of 'certifiable elements' of developments, rather than the total number of applications (e.g. a large mixed use scheme may have a residential element built to Code Level 4 and an office element built to BREEAM Excellent, so we count both elements separately)

² Being an alteration to a previously approved scheme that predated tougher sustainability requirements, this development lacks many sustainability features (e.g. renewable energy, green roof) and is not therefore useful as a case study of sustainable design.

³ BREEAM assessment schemes exist for common building types such as education, healthcare, industrial and residential. However, BREEAM Ecohomes (the BREEAM residential assessment) is now only used for refurbished homes as new homes are assessed against the new Code for Sustainable Homes, introduced in April 2007. Less common building types can be assessed against the Bespoke BREEAM assessment. The BREEAM data provided in this study refers to all types of BREEAM assessment undertaken.

towards the number of cases and also the overall base). All applications were analysed to identify the total number of 'certifiable elements' (106).

Graph 1 showing percentage of certified elements of major applications for permanent new buildings approved between 1st March 2007 and end of March 2009 that were required to achieve different BREEAM and Code for Sustainable Homes standards



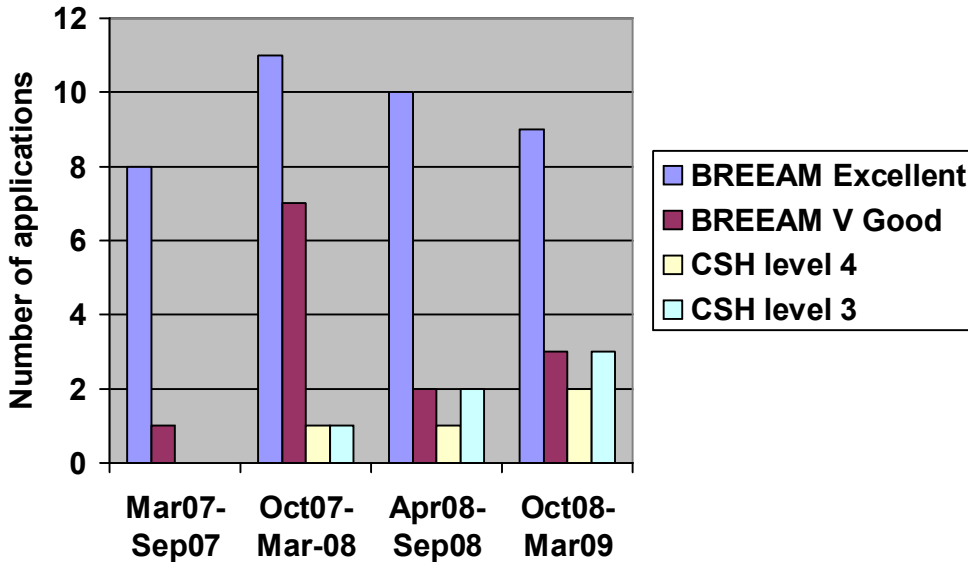
BREEAM Excellent was the most widely sought standard (on 47% of certifiable elements), significantly more prevalent than the other standards, the closest being BREEAM Very Good (12.3% of certifiable elements).

With regard to 13 developments that were refurbishments (in part or in whole), 4 sought BREEAM Very Good, 4 sought BREEAM Very Good and BREEAM Excellent (these were all part refurbishments and the BREEAM Very Good applied to the refurbished element), 2 sought BREEAM Excellent and three sought no standard. Thus in total 10 of 15 refurbishment applications or two-thirds sought to achieve a standard of BREEAM Very Good / Code level 3 or higher.

Analysis of planning applications documentation and interviews with case officers indicated achievements of higher levels of the Code or BREEAM was sometimes constrained for the following reasons: original application being approved prior to tougher sustainability requirements being established; development involving renovation/refurbishment (often the reason for only seeking to achieve BREEAM excellent on part of the development, since the refurbished element would seek BREEAM very good); listed building status. Developers were also generally more reluctant to commit to Code level 4 than BREEAM Excellent due to the significant extra cost involved in achieving Code level 4 as opposed to Code level 3 – this is illustrated by the proportionally greater achievement of BREEAM Excellent (in comparison to BREEAM Very Good) than Code level 4 (versus level 3). It is also worth noting that the policy base for the achievement of BREEAM Excellent or Code level 4 is weak, being based on the withdrawn Core Strategy rather than any adopted local or regional policy.

It should also be noted that Code for Sustainable Homes was only introduced in England in April 2007. There was a lag in uptake of this new standard with Code ratings being sought from January 2008 onwards, with the number of applications committing to both Code level 3 and level 4 increasing across the remainder of the study period, whereas BREEAM Excellent ratings have been sought (on higher numbers of applications) across the whole study period from April 2007, as shown in the graph below.

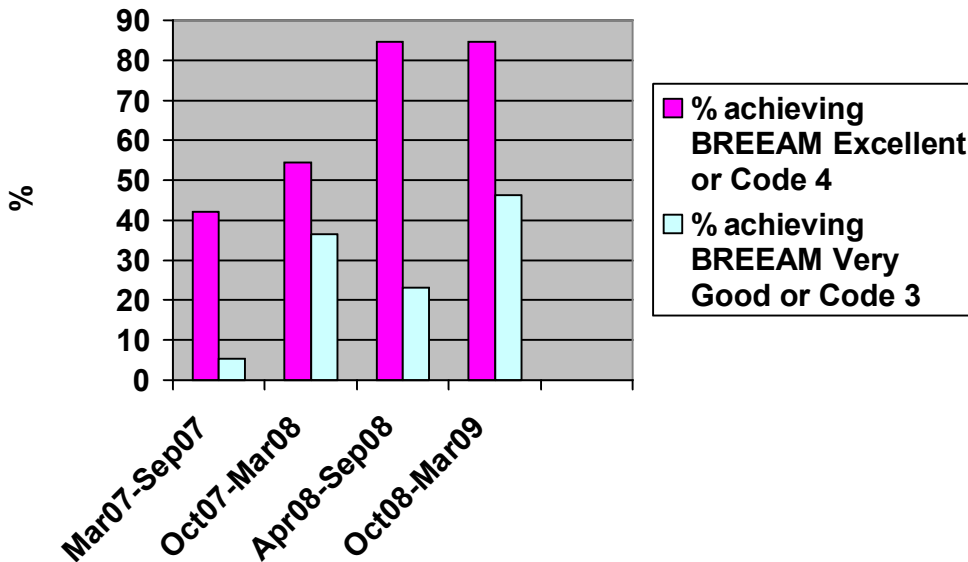
Graph 2: Number of applications approved during each six month period between 1st March 2007 and end of March 2009 that sought to achieve higher BREEAM and Code for Sustainable Homes standards⁴



The graph below shows the proportion of applications achieving BREEAM Excellent or Code for Sustainable Homes level 4 (these are considered to be analogous) and BREEAM Very Good or Code level 3. It indicates a broad trend of increasing proportions of applications aiming to achieve the higher levels (BREEAM Excellent and Code level 4) across the study.

⁴Note that five applications committed to both BREEAM Very Good and BREEAM Excellent, these were counted towards both totals. 18 out of 67 applications (26.9%) did not commit to achieving a standard under the Code or BREEAM.

Graph 3: Percentage of applications approved during each six month period between 1st March 2007 and end of March 2009 that sought to achieve higher BREEAM and Code for Sustainable Homes standards⁵



4.2 Combined heat and power

14 out of 67 applications, or 20.9%, incorporated combined heat and power (CHP) as part of their proposed schemes. Of these 14 schemes, the composition of types of development was as follows:

- 6x mixed use including residential
- 4x student accommodation plus other uses (retail, café, office etc)
- 1x mixed use (no residential)
- 1x student accommodation
- 1x school
- 1x hotel

Mixed use schemes and student accommodation are best suited to CHP because they have a relatively constant demand for heat throughout the day.

In last year's study there appeared to be a peak towards the end of the study period but a review of the applications incorporating CHP this year shows no clear pattern and no obvious increase in CHP uptake.

Data on the size of these CHP units was only accessible on 4 units – these varied in size from 5.4kWe to 145 kWe. Locations of sites with CHP will be mapped as part of the Decentralised Energy Network studies and could contribute to the Core Strategy evidence base.

Connection provided to offsite heat network

Eight schemes included a condition requiring the heating system to be designed to allow for the future connection to any neighbouring heating and cooling network. Note that all eight schemes appeared from June 2008 onwards, following attention to this issue when developments incorporated CHP. Use of a

⁵ Note that some applications committed to multiple standards, hence the totals add up to more than 100% for some six month periods.

standard condition related to future heat network connection is now encouraged on all major schemes, since any development with communal heating system has the potential to be connected up to a wider community heat network. Facilitating the connection of new developments to future heating and cooling networks (when such networks becomes feasible) is in line with London Plan policy and will enable further reductions in carbon dioxide emissions.

Communal heat onsite

This indicator was measured in the previous annual report but is not reported on here as it is now our policy to require all major developments to incorporate communal heating systems. Communal heating systems are supported by London Plan policy - such systems are important because, as noted above, they can potentially be connected to wider heating networks over time as such networks become viable.

4.3 Percentage onsite CO2 reduction through renewables

The table and graph below summarise data on the number of major applications for permanent new buildings approved between 1st March 2007 and the end of March 2009 that committed to achieve certain carbon dioxide (CO2) reduction or energy consumption reduction targets through use of renewable energy.

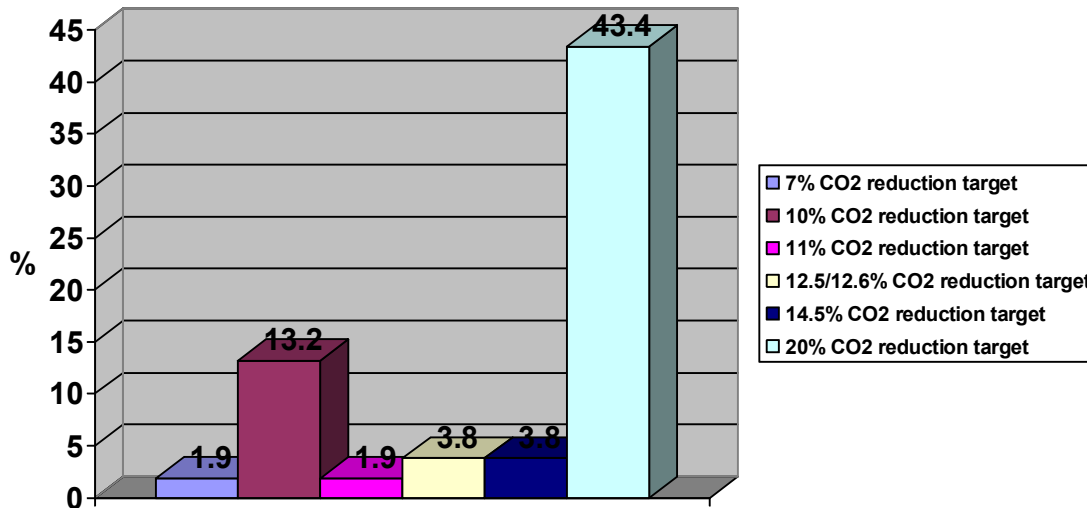
Table 2: Proportion of major applications for permanent new buildings approved between 1st March 2007 and end of March 2009 that committed to meet different CO2 reduction targets or energy consumption targets through renewables

% onsite CO2 reduction through renewables	Number of cases	% of all approved major applications for permanent new buildings (53)*
7%	1**	1.9
10%	7	13.2
11%	1	1.9
12.5/12.6%	2	3.8
14.5%	2	3.8
20%	23	43.4
No renewables target	17	
% energy consumption through renewables		
10%	3	-
13.6%	1	-
20%	10	-

*Sample size – 36 applications included a specified renewables percentage contribution to CO2 reduction (conditioned or proposed), out of total 67 applications (53.7%); 14 older applications had a target expressed in terms of % reduction in energy demand; 17 older applications had no renewables target of any kind. The method of expressing this indicator has been altered slightly from last year's report. In line with the methodology adopted for calculating Performance Indicators, any applications with a target expressed in terms of % reduction in energy demand as opposed to % reduction in CO2 emissions were omitted from the sample size as this target (which was used prior to the revisions to the London Plan) is difficult to compare with the CO2 reduction targets, however it would be likely to result in a lowering of CO2 emissions when implemented. Therefore the above figures are based on a sample size of 53 (67 – 14). The preferred approach now is to state the condition in terms of % contribution to CO2 reduction rather than % contribution to energy consumption as the overarching aim is to reduce carbon dioxide emissions.

**Was conditioned as 10% renewables CO2 reduction, negotiations about full package and budget led to final achievement of only 7%

Graph 4 showing proportion of major applications for permanent new buildings approved between 1st March 2007 and end of March 2009 that committed to meet different CO2 reduction targets through renewables



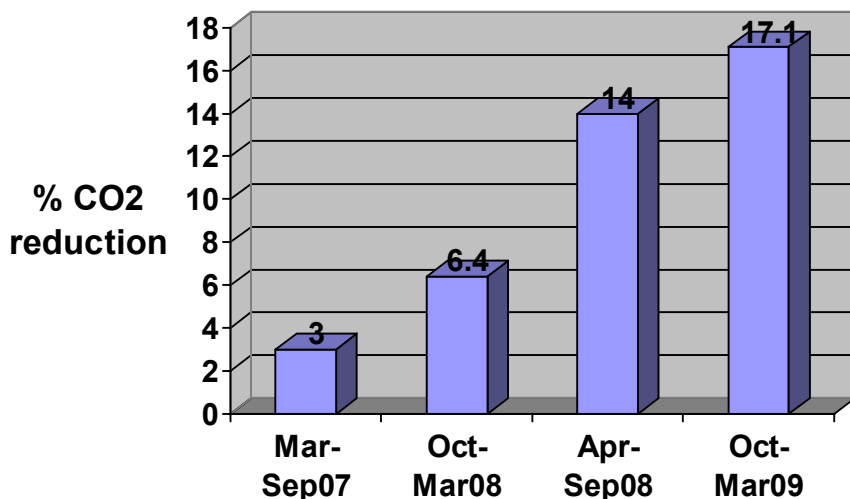
Forty-three per cent of major applications for permanent new buildings approved between 1st March 2007 and the end of March 2009 committed to provide a 20% CO2 reduction through renewables (in accordance with London Plan policy 4A.7). A further 24.6% of all major applications for permanent new buildings approved over the same period proposed or were conditioned to provide a 7 to 14.5 per cent CO2 reduction through renewables.

In total, the average CO2 reduction proposed or conditioned across the study period (based on an average of 53 applications, excluding those with targets expressed in terms of energy consumption) was **11.4%**.

Seven of the applications that proposed or were conditioned to provide a 20% CO2 reduction were refurbishments (in whole or in part), and one proposed a 12.53% CO2 reduction – thus 8 out of 15 refurbishment applications (53%) sought significant CO2 reductions.

Graph 8 below shows the average CO2 reduction for six month periods across the study period. Note that this graph does not include the CO2 savings achieved through the applications which specified targets for a proportion of *energy consumption* to be met through renewables, since the exact CO2 savings that achieving these targets would generate it is not clear. The graph clearly illustrates a consistent improvement in the average CO2 reduction through renewables secured across the study period, climbing steadily closer to the London Plan policy 4A.7 target of a 20% CO2 reduction through renewables.

Graph 5: Average CO2 reduction committed to per six month period between 1st March 2007 and end of March 2009 excluding those applications that had a target expressed in energy demand rather than CO2 reduction.



4.4 Renewables by type

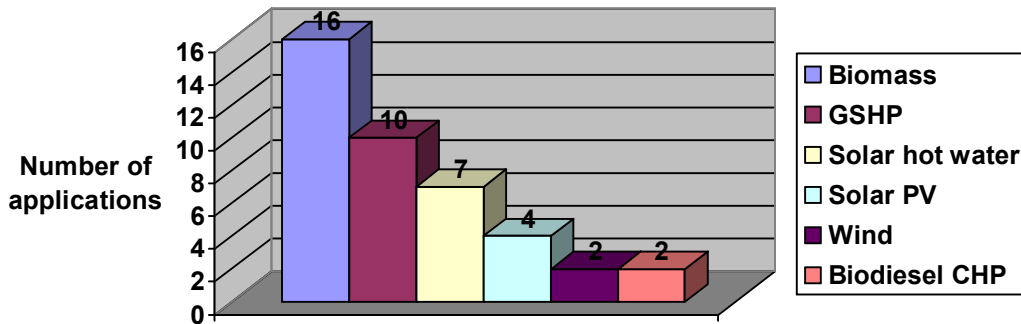
The table and graph overleaf summarise data on the number of major applications for permanent new buildings approved between 1st March 2007 and the end of March 2009 that proposed or were conditioned to provide different types of renewable energy technology. 53 out of 67 applications (79.1%) included renewables, and the majority that did not were applications approved in 2007, indicating that the Council is now picking up on renewables issues consistently. It should be noted that on 20 of the 53 applications details are yet to be submitted of renewable technologies selected, or the details are unknown, therefore the picture of types of renewables selected is not complete. These blind spots should become increasingly resolved in future if ongoing monitoring is able to pick up information from details that are submitted pursuant to the renewables conditions. Moreover, the aim now is always to get the mix of energy technologies identified and agreed prior to any planning approval.

Table 3: Number of major applications for permanent new buildings approved between 1st March 2007 and end of March 2009 that committed to provide different renewable energy technologies

Technology	Number of cases	% of all approved major applications for permanent new buildings (67)
Biomass	16	23.9%
Ground source heat pump	10	14.9%
Solar water	7	10.4%
Solar PV	4	6.0%
Wind	2	3.0%
Biodiesel CHP	2	3.0%
Awaiting details*	20	29.9%

*E.g. conditioned to assess feasibility of different renewables to meet 20% target, but no details yet submitted
 Total - 53 applications included renewables out of total of 67 applications (79.1%). The percentages are based on the full sample of 67 applications.

Graph 6 showing number of major applications for permanent new buildings approved between 1st March 2007 and end of March 2009 that proposed or were conditioned to provide different renewable energy technologies



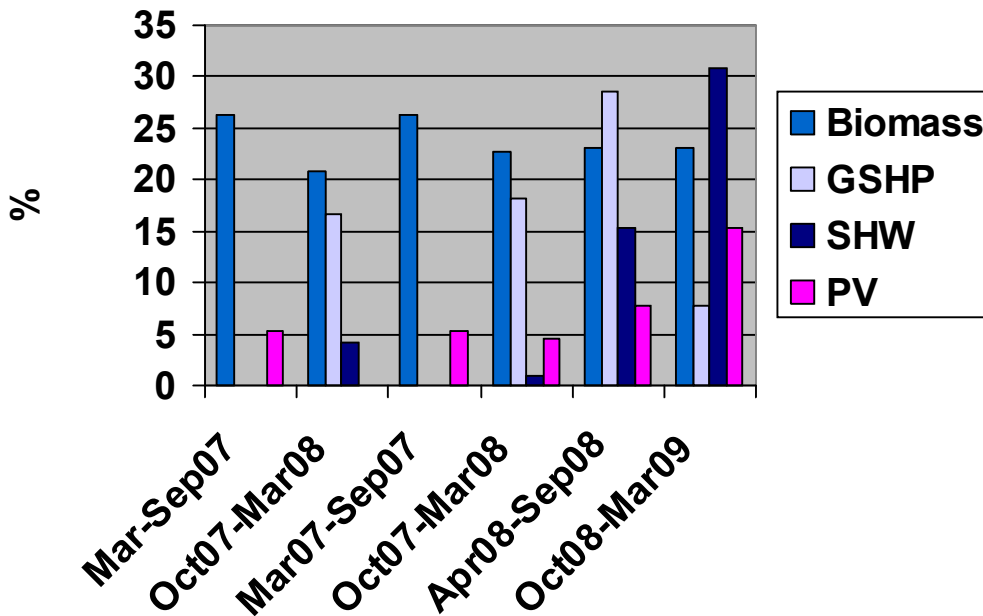
Biomass was the most popular form of renewable technology, committed to on 24% of all approved major applications for permanent new buildings. In descending order the next most popular renewable technologies were ground source heat pumps (GSHP), solar hot water (SHW) panels and solar PV panels. Biomass often has the lowest capital cost associated with it (and can generate substantial carbon savings) and when CHP (or a heat network connection) is proposed too this tends to rule out SHW and GSHP since sufficient heat is already supplied by the CHP. GSHP and SHW are both cost effective technologies when used separately from CHP for heating (or in the case of GSHP also for cooling), but PV tends to be more expensive and has a longer payback period. Wind tends to be of limited applicability to many dense urban settings due to sub-optimal wind conditions.

A study of the impact of energy policies in the London Plan across the whole of London as a whole undertaken in 2007⁶ identified the same four most popular renewable technologies as this study but in a different order of popularity: SHW, biomass, PV and GSHP.

The report from 2008 indicated that applications containing biomass appeared to have declined across the study period, but Graph 8 below indicates that between March 2007 and the end of March 2009 the proportion of applications incorporating biomass has been relatively consistent. By contrast there is a clear increase in the proportion of applications incorporating solar hot water panels in the last 12 months from April 2008 to the end of March 2009. It will be interesting to see if this increase continues over future periods, especially with the introduction of the renewables feed-in tariff in April 2010.

⁶ London South Bank University. 2007. Review of the impact of the energy policies in the London Plan on applications referred to the Mayor (Phase 2). Final Report.

Graph 7: Percentage of applications approved during each six month period between 1st March 2007 and end of March 2009 that committed to provide different renewable energy technologies*



*Only the four most popular renewable technologies have been plotted here.

It is important to be aware that Islington continues to take a ‘technology neutral’ approach to use of different forms of renewable energy. However, where biomass is proposed additional information must be submitted, in particular regarding the predicted impact that the operation of a biomass boiler will have on local air quality. The GLA have recently raised concerns about the use of smaller biomass boilers in AQMAs (see the Mayor’s draft Air Quality Strategy⁷, October 2009). The report states that “Strategic applications with small biomass boilers below 500kWth in AQMAs are considered unsuitable unless they can demonstrate that they have no adverse effects on local air quality when compared with conventional gas fired boilers”. The Mayor expects local authorities to be satisfied there are no adverse impacts on local air quality before granting planning permission for biomass boilers when considering local planning applications. These developments are likely to impact on the number of applications that incorporate biomass in future, with knock-on impacts for uptake of alternative renewable technologies.

4.5 Green roofs

Green roofs are given particular emphasis by the Council because of their multiple benefits for biodiversity, reduced water runoff, energy efficiency, urban cooling and amenity.

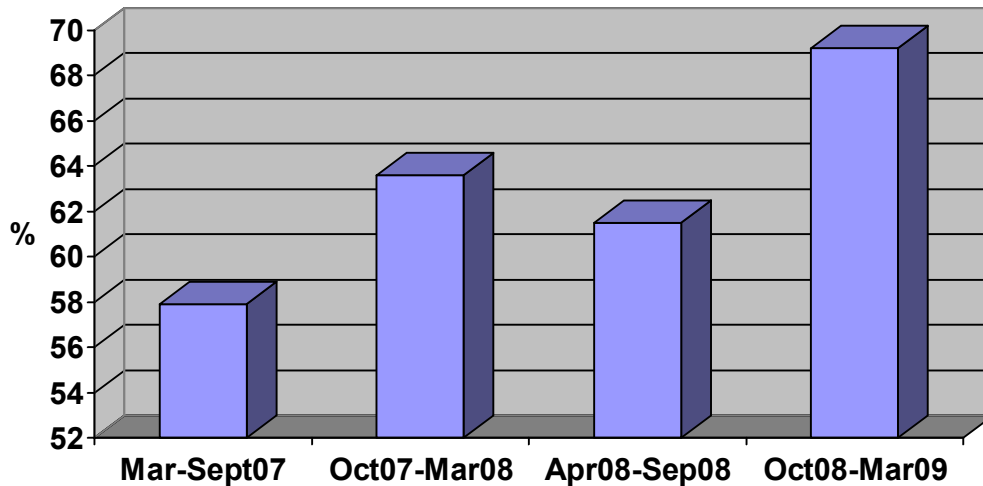
Forty-two developments, or 62.7% of all major applications for permanent buildings approved between 1st March 2007 and the end of March 2009, had green roofs (proposed or conditioned), including 12 refurbishments (in part or in whole, out of a total of 17). Of these 42 developments with green roofs it was possible to confirm that at least 24 (57.1%) are specified as biodiversity based substrate green roofs, the preferred specification since it maximises biodiversity, cooling and water-holding benefits. This is something that has been more strongly encouraged towards the end of the study period, including through standardised conditions requiring this specification. Thus, for the last two quarters of 2008-09, nine out of 13

⁷ http://www.london.gov.uk/mayor/environment/air_quality/docs/AQS09.pdf

applications (69%) were conditioned with green roofs and all of these were specified as biodiversity based substrate green roofs.

The graph below indicates that the proportion of applications with green roofs (proposed or conditioned) has climbed across the two year study period, with the last six months showing the highest proportion of developments incorporating green roofs (69.2%).

Graph 8: Proportion of applications approved during each six month period between 1st March 2007 and end of March 2009 that included a green roof (proposed or conditioned)



Data on the area of green roofs conditioned or proposed was not available for all applications but data from 24 of the 42 developments with green roofs (57.1%) indicated that at least 12,860 square metres of green roof has been approved, an area equating approximately to the size of Newington Green⁸. In future the use of a green roof condition that incorporates the figure for the total area of green roof required on all major developments should greatly facilitate collection of this data, enabling a more accurate picture of the total green roof area approved to be gained. Data on planning approvals could be cross-referenced against completions data so that as more developments are finished in the coming years, spot checks could be undertaken on selected developments.

4.6 Other SUDS measures (besides green roofs)

The table and graph below summarise data on the number of major applications for permanent new buildings approved between 1st March 2007 and the end of March 2009 that proposed or were conditioned to provide other sorts of sustainable urban drainage measures (SUDS), besides green roofs (which were considered above).

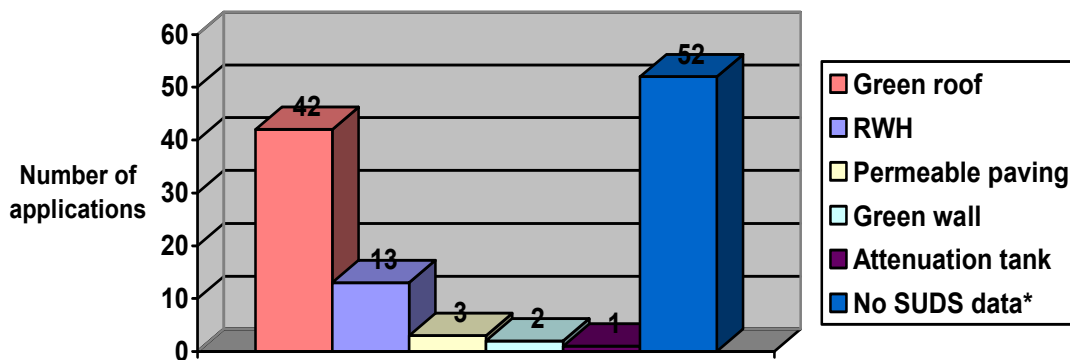
⁸ The revised figure for total green roof area quoted here for 2007-08, using the best available data on all approved major developments, is slightly lower than the figure quoted in the State of the Environment Report for the same period. The figure for 2008-09 is the same. The result is the total figure for 2007-2009 (12,860) is approximately 1000 sqm lower than the total calculated from the SoE figures previously (13,957).

Table 4: Number of major applications for permanent new buildings approved between 1st March 2007 and end of March 2009 that proposed or were conditioned to provide different forms of SUDS other than green roofs

SUDS measure	Number of cases	% of all approved major applications for permanent new buildings (67)
Rain water harvesting	13	19.4
Permeable paving	3	4.5
Green wall	2	3.0
Attenuation tank	1	1.5

Sample size – 15 applications with a type of technology, out of a total 67 applications (22.4%). This may be an underestimate as this data has been difficult to locate in planning application documents.

Graph 9 showing number of major applications for permanent new buildings approved between 1st March 2007 and end of March 2009 that proposed or were conditioned to provide SUDS



*The 'No SUDS data' column refers to no information on SUDS excluding green roofs

As the graph shows, green roofs are by far the most common form of SUDS technique proposed within approved major schemes. Besides green roofs, rain water harvesting (this may be for external or internal use) was the next most common form of SUDS, used on 13% of schemes. Other SUDS such as use of permeable paving, green walls and use of an attenuation tank were less widespread. Many developments also incorporate soft landscaping which can help to reduce water runoff, although ideally this should be designed as part of an integrated SUDS system.

Information was limited on use of SUDS measures other than green roofs (52 applications had no accessible data on these measures). The density of sites, lack of external space and ground conditions were cited as reasons for these SUDS measures sometimes not being viable or relevant. As noted above, green roofs are particularly encouraged by the Council because of their multiple benefits for biodiversity, energy efficiency, urban cooling and amenity as well as for their ability to reduce runoff.

In future it is anticipated that wider use of a new surface water drainage condition, the possible development of a new SUDS condition and a greater focus on SUDS when analysing planning applications (supported by a new good practice guidance note and research by SUDS specialist Bob Bray) should all help to expand uptake of SUDS techniques and improve the quality of data collected on such measures.

4.7 Parking

Based on data for 64 of the 67 applications (95.5%), 40 of these 67 applications (59.7%) were 'car-free'⁹, broadly similar to the 63% figure quoted for the financial year 2007/08 in the State of the Environment Report 2008. It is worth noting that in the last six months (October 2008 to end of March 2009), 10 developments were known to be 'car-free' out of 13 approved major schemes, or 77% of schemes, indicating that in recent months the Council has had substantial success in securing 'car-free' schemes.

It should be noted that we currently can only encourage rather than require car-free development, due to a lack of an adopted policy. Car-free development will not always be appropriate, for example in areas located at a considerable distance from public transport and shopping centres.

⁹Car free developments are those where no parking provision is provided on site (other than designated accessible parking bays) and where occupiers are not able to obtain parking permits allowing them to park in surrounding streets. If major applications have 4 or fewer car parking spaces in total it is assumed that these spaces are designated accessible parking bays and therefore the development is considered 'car free'.

5.0 Conclusions

Summary of achievements and possible future trends

The data analysed indicates that significant achievements have been made to date in terms of securing sustainability measures on major planning applications.

BREEAM Excellent, the most widely sought sustainable building standard, was conditioned or proposed on 47% of certifiable elements of all approved major applications for permanent new buildings. The Code for Sustainable Homes was only introduced in April 2007 and there was a lag in uptake of this new standard so applications conditioned or proposed to achieve Code level 3 or 4 have been limited to date. Applications conditioned or proposing to meet Code standards are likely to increase in future years. Indeed, the data indicated a broad trend of increasing proportions of applications aiming to achieve both BREEAM Excellent and Code level 4 across the study period.

Fourteen developments, or 21% of all major applications for permanent new buildings approved between 1st March 2007 and the end of March 2009, included combined heat and power (CHP), either within the planning application proposal or as required via a condition on the approval. There was no clear trend in uptake of this technology across the study period. Increased use of CHP and/or heat network connections in future years could have implications for the viability of other renewables technologies.

Forty-three per cent of approved applications for permanent new buildings in the study period that committed to achieve a target percentage CO₂ reduction through renewables committed to provide a 20% CO₂ reduction through renewables. There has been a consistent improvement in the average CO₂ reduction through renewables secured across the study period, climbing steadily closer to the London Plan policy 4A.7 target of a 20% CO₂ reduction through renewables, despite the impacts of the credit crunch. In total, the average CO₂ reduction proposed or conditioned across the study period was 11.4%.

Biomass was the most popular form of renewable technology, proposed/conditioned on approximately a quarter (23.9%) of all approved major applications for permanent new buildings, followed by ground source heat pumps (GSHP), solar hot water (SHW) and solar PV. There was a noticeable increase in the proportion of applications incorporating solar hot water panels in the last 12 months of the study period from April 2008 to the end of March 2009. Given that this technology is highly cost effective and given also the planned introduction of the renewables feed-in tariff in April 2010 this trend may well continue.

Forty-two developments, or 63% of all major applications for permanent new buildings approved between 1st March 2007 and the end of March 2009, committed to provide green roofs. Available data indicated this equates to over 12,000 square metres of green roof.

Of these 42 developments with green roofs it was possible to confirm that at least 24 (57.1%) are specified as biodiversity based substrate green roofs, the preferred specification since it maximises biodiversity, cooling and water-holding benefits. This is something that has been more strongly encouraged towards the end of the study period, including through standardised conditions requiring this specification. Thus, for the last two quarters of 2008-09, nine out of 13 applications (69%) were conditioned with green roofs and all of these were specified as biodiversity based substrate green roofs.

After green roofs, the most popular other form of sustainable urban drainage conditioned or proposed was rain water harvesting. With wider use of a new surface water drainage condition, the possible development of a new SUDS condition and a greater focus on SUDS when analysing planning applications (supported by a new good practice guidance note and research by SUDS specialist Bob Bray), uptake of SUDS techniques and improved SUDS data quality should be improved.

Based on available data, 40 out of 67 applications (59.7%) were 'car-free'. In the last six months (October 2008 to end of March 2009), 10 developments were known to be 'car-free' out of 13 approved major schemes, or 77% of schemes, indicating that in the most recent months the Council has had substantial success in securing 'car-free' schemes.