



London Borough of Sutton Local Plan

Building A Sustainable Sutton: Technical Guidance Note for Developers

- 1 Carbon Offset Fund
- 2 Biodiversity Accounting
- 3 Green Space Factor

April 2018



How to use this document

In February 2018, the council adopted its Local Plan, which included three policies which would benefit from further explanation. The three policies are:

- Policy 31: Carbon and Energy, specifically part (a) (ii) which relates to offsetting carbon emissions from a redevelopment or new development where the carbon emissions cannot be reduced on site to the required amount;
- Policy 26: Biodiversity, specifically part (a) which relates to biodiversity accounting or replacing and enhancing biodiversity value in a redevelopment or new development; and,
- Policy 33: Climate Change Adaptation, specifically part (b) which relates to a green space factor or the replacement and increase in green space cover following a new development or redevelopment

How is the document structured?

The document is structured according to the policies set out above. The first section deals with how to calculate carbon offsetting and schemes for offsetting, the next section deals with biodiversity accounting and the method of calculation and the final section deals with the green space factor and includes a scoresheet.

Who will use this document?

The document is intended to be used primarily by consultants in the appropriate fields who are working with developers submitting applications to the council. However, the council invites all stakeholders to use the document when they consider it appropriate or purely for information purposes.

When to use the various calculation methods (trigger points)

Carbon offsetting will apply in the following circumstances:

- Major residential developments (10 or more units, gross) when the zero carbon standard cannot be met on site
- Major non-residential developments (1,000sqm addition, gross) when the 35% reduction threshold cannot be met on site
- Minor residential developments (10 or fewer units, gross) when the 35% reduction threshold cannot be met on site

Biodiversity accounting will apply in the following circumstances:

- Major residential and non-residential developments on sites with some greenfield element. For the purposes of this document, greenfield is taken to mean forestry, agricultural and amenity land.

If applicants are in any doubt whether their site is greenfield, they should contact the council's Biodiversity Officer, David Warburton, at david.warburton@sutton.gov.uk. Mr Warburton will also be able to supply applicants with information on how to evaluate sites.

The Green Space Factor will apply in the following circumstances:

- All major residential and non-residential developments on sites with some greenfield element.

Affordable Housing and Carbon Offsetting

The council expects all the planning obligations, set out in the Planning Obligations Supplementary Planning Document, to be met in full when required. However, where an applicant submits a viability report with an application, which is robust and with reasonable assumptions, and the report shows that not all the obligations can be met, the council will prioritise the delivery of affordable housing over the delivery of carbon offsetting. This is because affordable housing delivery is a corporate priority and, due to relative cost, affordable housing is more difficult to deliver than carbon offsetting.

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1. Carbon Offsetting

1.1 INTRODUCTION

1.1.1 This section sets out council's approach to delivering the 'zero carbon' target for all major¹ residential developments through carbon offsetting and for minimising CO₂ emissions from all other proposals in line with London Plan Policy 5.2 and Local Plan Policy 31. The following guidelines should be used by developers together with the Mayor's 'Guidance on preparing energy assessments' (GLA, 2016)². A programme of off-site CO₂ reduction measures to be funded through developer contributions is also included.

1.2 SUTTON'S ZERO CARBON TARGET

1.2.1 Local Plan Policy 31 requires all major residential developments to meet zero carbon standards by:

- **achieving at least a 35% reduction in CO₂ emissions on-site compared to a Building Regulations Part L 2013 compliant development; and**
- **offsetting the remaining emissions (to 100%) through CO₂ reduction measures elsewhere through a Section 106 contribution to the Council's carbon offset fund at £60 per tonne over 30 years.**

1.2.2 Sutton's zero carbon target is thus aligned with London Plan Policy 5.2 which introduced the zero carbon target across the whole of London from 1 October 2016.

1.3 ENERGY STATEMENTS

1.3.1 All planning applications for **major residential, major non-residential or for minor residential developments** must be accompanied by an Energy Statement. The purpose of an Energy Statement is to ensure that climate change objectives are considered from the earliest stages of project planning and design and to demonstrate how the proposed development will comply with the relevant planning policies by:

- **achieving at least a 35% reduction in regulated CO₂ emissions on-site compared to a Part L 2013 compliant development through application of the Mayor's energy hierarchy (i) Be lean: use less energy (ii) Be clean: supply energy efficiently; and (iii) Be green: use renewable energy;**
- **for all major residential developments, achieving 'zero carbon' by offsetting the remaining emissions through either a financial contribution to the Council's carbon offset fund or a unilateral undertaking to deliver equivalent CO₂ reduction measures elsewhere (Section 106);**
- **reducing regulated emissions below those of a Part L 2013 Building Regulations compliant development through energy demand reduction ('be lean') measures alone, where feasible;**
- **prioritising connection to existing or planned district heat networks in line with the hierarchy in London Plan Policy 5.6, Local Plan Policy 31 and the Council's Decentralised Energy Protocol³;**
- **reducing total emissions (regulated and unregulated) from major developments by at least 20% through on-site renewable energy with minor developments achieving at least a 10% reduction;**
- **mitigating overheating in line with the Mayor's cooling hierarchy in London Plan Policy 5.9; and**
- **ensuring that any proposed combined heat and power (CHP) or gas-fired heating systems located within Air Quality Focus Areas⁴ have no significant adverse impacts on local air quality.**

¹ 'major residential developments' are defined as those creating 10 or more self-contained residential units (gross) and/or with a site area > 0.5 ha

² Mayoral guidance on energy assessments is available at https://www.london.gov.uk/sites/default/files/gla_energy_planning_guidance_-_march_2016_for_web.pdf

³ the Council's 'DE Protocol' is set out in Schedule 10.A of the Local Plan Appendix at <https://drive.google.com/file/d/1HDGens8brNg2J1FZBPNmE-8nm7HtW-/view>

⁴ Air Quality Focus Areas (AQFA) are locations that not only exceed the government's annual mean limit value for NO₂ but are also locations with high human exposure

1.4 MINIMUM CARBON PERFORMANCE STANDARDS

Proposed Development	On-site emissions reduction against Part L 2013	Reduction in total CO ₂ emissions (regulated + unregulated) through on-site renewables	On-site CO ₂ emissions reduction through energy efficiency measures <u>alone</u>	Zero Carbon Target	Carbon Offsetting	Decentralised Energy	Cooling and Overheating
RESIDENTIAL DEVELOPMENTS							
Major residential developments located within DE Opportunity Area' (or 'Heat Network Priority Area' identified in London Heat Map	35%	20%	Exceed Part L1A 2013 by 20%	ZERO CARBON	YES (to 100%)	<ul style="list-style-type: none"> Apply 'DE Protocol' to ensure connection to existing or future planned district heat network Commit to site-wide or communal network until connection to wider network In Air Quality Focus Areas, demonstrate no significant impacts on air quality 	<ul style="list-style-type: none"> Mayor's cooling hierarchy GLA Domestic Heating Checklist Dynamic overheating modelling
Major residential developments elsewhere	35%	20%	Exceed Part L1A 2013 by 20%	ZERO CARBON	YES (to 100%)	<ul style="list-style-type: none"> Comply with hierarchy in LP Policy 5.6 as amended Commit to site wide or communal network where appropriate 	<ul style="list-style-type: none"> Mayor's cooling hierarchy GLA Domestic Heating Checklist Dynamic overheating modelling
Major residential refurbishments (change of use)	Comply with Part L1A 2013 where feasible	20% where possible	-	NO	NO	<ul style="list-style-type: none"> Comply with hierarchy in LP Policy 5.6 as amended 	<ul style="list-style-type: none"> Mayor's cooling hierarchy in London Plan Policy 5.9 where feasible
Minor residential	35%	10%	Comply with Part L1A 2013	NO	YES (to 35%)	<ul style="list-style-type: none"> Comply with hierarchy in London Plan Policy 5.6 	<ul style="list-style-type: none"> Minimise cooling demand through passive design.
NON-RESIDENTIAL DEVELOPMENTS							
Major non-residential	35%	20%	Comply with Part L2A 2013	NO	YES (to 35%)	<ul style="list-style-type: none"> Comply with hierarchy in LP Policy 5.6 as amended 	<ul style="list-style-type: none"> Mayor's cooling hierarchy
Minor non-residential	n/a	10%	Compliance with Part L2A 2013	NO	NO	<ul style="list-style-type: none"> Comply with hierarchy in LP Policy 5.6 as amended 	<ul style="list-style-type: none"> Minimise cooling demand through passive design.

1.5 PLANNING FLOWCHART FOR MAJOR RESIDENTIAL DEVELOPMENTS

PRE-APPLICATION STAGE

- **Draft Energy Strategy** including:
 - provisional on-site CO₂ reduction target (at least 35% beyond Part L of the Building Regulations 2013);
 - outline approach to Mayor's energy hierarchy in London Plan Policy 5.2 - be lean; be clean; be green;
 - consideration of energy demand reduction measures; site-wide or communal heating systems (having regard to the order of preference in London Plan Policy 5.6b); and renewable energy technologies;
 - for sites in 'DE Opportunity Areas' (or Heat Network Priority Areas on the London Heat Map), proposals for 'future-proofing' to enable connection to existing or planned district heat networks having regard to Sutton's 'Decentralised Energy Protocol'
 - provisional calculation of CO₂ emissions to be offset (to 100%) and sum payable based on 'as designed' Part L 2013 outputs
 - outline proposals to minimise overheating based on GLA Domestic Heating Checklist Section 1.
- **Developer Commitments** to:
 - achieve at least a 35% reduction in regulated CO₂ emissions on-site compared to Part L of the Building Regulations 2013;
 - connect to existing or planned district heating network or deliver site-wide network with single energy centre as appropriate;
 - deliver 'zero carbon' by offsetting the remaining regulated emissions to 100% through a financial contribution to the carbon offset fund (£60 per tonne over 30 years) or through equivalent CO₂ reduction measures elsewhere.
- **Pre-Application Meetings** between the planning case officer and the developer's energy consultants.

FULL PLANNING APPLICATION

- Submission of **Energy Statement** prepared in line with the Mayor's 'Guidance on preparing energy assessments' to include:
 - *Executive Summary (including Energy Strategy overview);*
 - *Site Description;*
 - *Calculation of CO₂ emissions at each stage of the hierarchy;*
 - *Proposed energy demand reduction measures (Step 1: Be Lean);*
 - *Proposed decentralised energy measures (Step 2: Be Clean);*
 - *Proposed renewable energy measures (Step 3: Be Green);*
 - *Proposed cooling measures (GLA Domestic Heating Checklist Sections 1 & 2) plus dynamic overheating modelling*
 - *Copies of 'as designed' Part L1A Building Regulations 2013 outputs based on SAP.*
 - *Emissions reduction shortfall (tonnes CO₂ per year)*
 - *Proposed **carbon offset contribution (£60 per tonne over 30 years)** OR compensatory off-site measure*
- Comments on Energy Statement provided by **Strategic Planning** team and **GLA** (for referable planning applications)
- Where appropriate, **identify suitable solar PV project** for offset funding (working with LBS Energy Manager).
- Negotiate **Section 106 agreement** to include offset payment, carbon reduction projects to be funded, and obligations on the developer to undertake monitoring and/or connect to existing or planned district heating network as appropriate.



PLANNING APPROVAL

- **Planning Application** approved (13 weeks) with signed Section 106 agreement and conditions as appropriate.



PRIOR TO COMMENCEMENT

- **Discharge of the relevant planning conditions** by the Council including submission of:
 - updated Energy Statement including revised 'as designed' Building Regulations Part L1A outputs based on SAP;
 - revised calculations to show emissions reduction shortfall on-site and size of proposed offset contribution.
- **Payment of the carbon offset contribution** to the Council in line with the Section 106 agreement unless otherwise specified



PRIOR TO OCCUPATION

- **Discharge of conditions** including submission of 'as built' Building Regulation Part L1A reports based on SAP



POST-CONSTRUCTION/ OPERATIONAL STAGE

- **Monitoring** of energy/ carbon performance of the development against targets and annual reporting to Council.
- **Implementation** of carbon offset measure by the Council within agreed timescale and **ongoing monitoring**.
- **Reporting** of progress against the 'zero carbon' target in Local Plan Policy 31 in Authority Monitoring Report (AMR).

1.6 CARBON PRICING

1.6.1 Carbon offset payments for major residential developments are priced at £60 per tonne of CO₂ over 30 years as shown in Table 6.1. The relevant calculations should be based on ‘as designed’ Building Regulations Part L1A outputs for the proposed development and set out in Energy Statements using the recommended methodology in the Mayor’s ‘Guidance on preparing energy assessments’ (GLA, 2016) as amended. The council will review its carbon price in the event that the Mayor’s newly-recommended price of £95 per tonne is adopted as part of the new London Plan⁵.

Table 6.1: Calculation of CO₂ carbon offset payments for major residential developments

CO ₂ emissions reduction shortfall per annum (tonnes per annum)	A
CO ₂ emissions reduction shortfall over 30 years (tonnes)	A x 30
Carbon price (£ per tonne)	£60
Sum payable to the Council’s carbon offset fund (£)	A x 30 x £60

1.7 CARBON OFFSET MEASURES

Types of measure which may be funded through carbon offset contributions

1.7.1 All carbon offset measures to be funded through Section 106 contributions must meet the following tests:

Table 7.1: Criteria for selection of carbon offset measures

- The proposed measure must not constitute ‘infrastructure’ and therefore must *not* fall within the scope of the Community Infrastructure Levy (CIL) Regulations or be on the Regulation 123 List⁶;
- Where the proposed measure forms part of a larger carbon-saving project, the financial contributions collected must not be pooled from more than 5 developments;
- The proposed measure must not be able to be challenged on the grounds of ‘additionality’ i.e. it needs to be demonstrated that the measures are not already funded and would have therefore been delivered anyway even in the absence of any carbon offset contribution being secured
- The proposed measure must not be able to be challenged on the grounds of ‘state aid’⁷; and
- The proposed measure must be located within the Borough boundaries.

1.7.2 Suitable measures to be funded through carbon offset contributions may therefore include solar PV panels on schools, council offices or other public buildings; domestic retrofit measures in Council housing, other social housing or for private householders; replacement of gas-fired boilers or combined heat and power (CHP) units; community energy schemes; and feasibility studies unlocking a major carbon saving project.

1.7.3 Carbon offset contributions can also be used to cover the costs of administering the council’s carbon offset fund and the implementation of the measures (up to 15% of the monies collected).

Sutton’s Provisional Carbon Offset Programme (June 2018)

1.7.4 Carbon reduction measures to be funded through Section 106 contributions must be specific, fully costed and capable of being delivered by the Council or relevant organisation well within the negotiated or statutory 5-year timeframe. Clear responsibilities should also be in place for implementation and monitoring. Sutton’s solar PV programme, prepared by AgilityEco consultants on behalf of Sutton in June 2017, meets all of these requirements and is therefore prioritised for offset funding as shown below in Table 7.2.

1.7.5 Looking further ahead, carbon offset funding could have an important part to play in delivering be domestic retrofit projects across the borough.

⁵ Policy SI2 of the Draft London Plan 2017 notes that “a nationally recognised non-traded price of £95/tonne has been tested as part of the viability assessment for the London Plan which Boroughs may use to collect offset payments” – see <https://www.london.gov.uk/what-we-do/planning/london-plan/new-london-plan>

⁶ the Council’s Regulation 123 List is available at <https://drive.google.com/drive/folders/0Bww0pBhg-RKJTmt0SmpKQUZaMTg>

⁷ guidance is available in ‘The State Aid Manual’ <https://www.gov.uk/government/publications/state-aid-manual>

Table 7.2: Carbon Offsetting Priorities for the London Borough of Sutton

<p>Priority 1 – Solar PV on Council owned buildings</p> <p>The aim of this programme is to enable the large scale roll out of solar PV across numerous council-owned assets and potentially broadened in the future to include privately owned sites across the Borough. To achieve this, AgilityEco carried out a feasibility assessment for over 100 Council-owned commercial properties, schools and Sutton Housing Partnership (SHP) sites. As part of the assessment, the potential for solar PV arrays on each building was assessed in terms of roof type, number of panels, capacity (kWp), annual output (kWh) and estimated installation costs (£). Further site surveys have been carried out on 11 shortlisted sites.</p> <p>When the carbon reduction shortfall and the size of the proposed financial contribution are known (based on the final Energy Statement), case officers should liaise with the council's Energy Manager to identify an appropriate solar PV scheme which could be implemented with the available funding subject to further investigation. The Section 106 agreement would need to refer specifically to the identified scheme although there should be sufficient flexibility in the wording to enable an alternative solar PV scheme to be progressed if necessary.</p>
<p>Priority 2 – Domestic Retrofit Projects</p> <p>In early 2017, Sutton, Croydon, Merton and Kingston procured RetrofitWorks as a domestic retrofit programme development partner to set out options and a detailed delivery plan for implementing the proposed South London Domestic Retrofit Scheme. RetrofitWorks is a cooperative of small to medium enterprises, operating in collaboration with local communities, councils and other community-based organisations. It has been developed with and supported by leading national trade associations, professional institutions and local authorities as a reliable delivery model for good quality building retrofit – both low carbon and general improvement works - using local resources. This model involves RetrofitWorks buying materials and products in bulk across the four boroughs on behalf of its membership to drive down prices for homeowners.</p> <p>A programme plan was prepared in April 2017 which identifies a number of ways in which carbon offset funding could be used in combination with other funding streams, including soft loans, to deliver domestic retrofit projects across the Borough. In the event that the programme is implemented in Sutton, it is anticipated that the South London Domestic Retrofit Scheme would be coordinated by the council's Environmental Strategy Team and would offer an alternative use for carbon offset funding in future years</p>

Developing a carbon offset fund for Sutton

1.7.6 Options for introducing a dedicated carbon offset fund for Sutton are now being explored by the council's Environmental Strategy Team taking account of current best practice across London⁸. Arising from this work, it is intended to develop a proposal outlining how the proposed fund will operate in terms of governance arrangements, staff responsibilities for administering the fund, identifying carbon reduction measures, implementation, monitoring and review. However, until such time as a dedicated fund is introduced, the monies collected from developers will be administered through the current Section 106 arrangements.

Compensatory offsite measures

1.7.7. As described above, the emissions reduction shortfall on a development site can alternatively be offset through the delivery of equivalent carbon reduction measures elsewhere by the developer. Examples include:

- (1) For council-led projects, energy efficiency improvements for existing council estates (overseen by the Sutton Housing Partnership);
- (2) Allowing developers to invest funding on off-site projects within their control) rather than paying directly into the fund was discussed (this is probably most appropriate for housing associations);
- (3) Measures with wider sustainability benefits as part of the proposed development in lieu of payment, such as green roofs (only in certain circumstances where viability is a constraint); or
- (4) Export of low carbon heat to a neighbouring land use as part of a future district heating network.

1.7.8 Such offsite measures and monitoring requirements would be enforced through a Section 106 agreement.

⁸ Information on current best practice is available in the 'Review of Carbon Offsetting Approaches in London' prepared by the National Energy Foundation (NEF) on behalf of the GLA in June 2016 – see https://www.london.gov.uk/sites/default/files/gla_cof_approaches_study_final_report_july_2016.pdf

1.8. PROVISIONAL CARBON OFFSET PROGRAMME - IDENTIFIED SOLAR PV SCHEMES

(1) Commercial buildings

Site	Panels	kWp	kWh	Cost	Dwellings offset
Silverwing Ind Estate Unit 2-24 CR0 4RU	552	143.52	124,144	£165,048	110 units
Kimpton Link Business Centre SM3 9QP	280	72.80	63,263	£83,720	56 units
Kimpton Road 09 SM3 9TE	192	49.92	45,327	£57,408	38 units
Sandiford Road Unit 14 SM3 9RD	152	39.52	36,793	£45,448	30 units
Kimpton Road 05 SM3 9QL	127	33.02	29,883	£37,973	25 units
Holiday Inn Hotel SM1 2RF	126	32.76	29,516	£37,674	25 units
Sandiford Road Unit 09 SM3 9RN	120	31.20	27,736	£35,880	24 units
Sandiford Road Unit 02 SM3 9RD	112	29.12	25,887	£33,488	22 units
Rosehill Court SM4 6JS	104	27.04	25,606	£31,096	21 units
Wealdstone Road 2 SM3 9QN	103	26.78	23,459	£30,797	21 units
Sandiford Road Unit 10 SM3 9RS	99	25.74	22,393	£29,601	20 units
Sandiford Road Unit 06 SM3 9RD	92	23.92	21,264	£27,508	18 units
Kimpton Road 03 SM3 9QL	85	22.10	19,669	£25,415	17 units
Sandiford Road Unit 01 SM3 9RN	75	19.50	16,965	£22,425	15 units
Sandiford Road Unit 08 SM3 9RD	68	17.68	15,381	£20,332	14 units
Sandiford Road Unit 04 SM3 9RD	64	16.64	14,792	£19,136	13 units
Sandiford Road Unit 07 SM3 9RN	60	15.60	13,962	£17,940	12 units
Sunningdale Road 62 SM1 2JS	60	15.60	14,882	£17,940	12 units
The Grange Beddington Park SM6 7BT	50	13.00	12,103	£14,950	10 units
Kimpton Road 36 SM3 9QW	50	13.00	11,882	£14,950	10 units

Site	Panels	kWp	kWh	Cost	Dwellings offset
Wealdstone Road 1-3 SM3 9QN	47	12.22	11,242	£14,053	9 units
Shanklin Community Centre SM2 6TT	45	11.70	11,255	£13,455	9 units
Sutton Gate SM1 4LE	44	11.44	10,925	£13,156	9 units
Kimpton Road 34 SM3 9QW	44	11.44	10,845	£13,156	9 units
Sandiford Road Unit 12 SM3 9RD	44	11.44	10,627	£13,156	9 units
Gaynesford Lodge Day Centre SM5 1LJ	31	8.06	7,366	£9,269	6 units
Sandiford Road Unit 03 SM3 9RN	14	3.64	3,388	£4,186	3 units
Kimpton Road 01 SM3 9QL	14	3.64	3,407	£4,186	3 units
Wealdstone Road 5 SM3 9QN	12	3.12	2,914	£3,588	2 units
Throwley Way 32-34 SM1 4AF	12	3.12	3,082	£3,588	2 units
Throwley Way 36 SM1 4AF	7	1.82	1,798	£2,093	1 units
Throwley Way 18 SM1 4AF	7	1.82	1,798	£2,093	1 units
Throwley Way 26 SM1 4AF	7	1.82	1,798	£2,093	1 units
Throwley Way 14 SM1 4AF	6	1.56	1,541	£1,794	1 units
Throwley Way 10 SM1 4AF	5	1.30	1,284	£1,495	1 units
Throwley Way 12 SM1 4AF	5	1.30	1,284	£1,495	1 units
Throwley Way 16 SM1 4AF	5	1.30	1,284	£1,495	1 units
Throwley Way 20 SM1 4AF	5	1.30	1,284	£1,495	1 units
Throwley Way 28 SM1 4AF	5	1.30	1,284	£1,495	1 units

arranged by kWp

(2) Schools

Site	Panels	kWp	kWh	Cost	Dwellings offset
Glenthorne High SM3 9PS	468	121.68	115,961	£139,932	93 units
Carshalton High for Girls SM5 2QX	407	105.82	99,999	£121,693	81 units
Wandle Valley Primary SM5 1LW	328	85.28	81,016	£98,072	65 units
Woodfield Campus SM5 3HW	316	82.16	78,791	£94,484	63 units
Nonsuch High for Girls SM3 8AB	180	46.80	45,349	£53,820	36 units
Green Wrythe Primary SM5 1JP	171	44.46	41,081	£51,129	34 units
St Mary's Infants' SM5 2PT	121	31.46	30,547	£36,179	24 units
Cheam Park Farm Junior SM3 9UE	115	29.90	27,388	£34,385	23 units
All Saints' Benhilton Primary SM1 3DA	112	29.12	27,460	£33,488	22 units
Carew Manor SM6 7NH	110	28.60	28,142	£32,890	22 units
Nonsuch Primary KT17 2HQ	69	17.94	16,433	£20,631	14 units
Old Wallington Town Hall SM6 0NB	63	16.38	16,003	£18,837	13 units
Spencer Nursery CR4 4JP	49	12.74	12,268	£14,651	10 units
Devonshire Primary SM2	40	10.40	9,952	£11,960	8 units
The Avenue Primary SM2 6JE	192	49.92	48,172	£57,408	38 units
Rushy Meadow Primary SM5 2SG	255	66.30	62,653	£76,245	51 units
Abbey Primary SM4 6NY	267	69.42	63,866	£79,833	53 units
Holy Trinity Junior SM6 8BZ	302	78.52	76,399	£90,298	60 units
Hackbridge Primary SM6 7AX	158	41.08	36,889	£47,242	31 units
St Cecilia's Primary SM3 9DL	178	46.28	43,595	£53,222	35 units
Bandon Hill Primary SM6 9QU	183	47.58	45,296	£54,717	36 units
St Dunstan's Primary (Cheam) SM3 8DF	196	50.96	45,252	£58,604	39 units
Cheam Common Junior KT4 8UT	206	53.56	49,543	£61,594	41 units
Overton Grange School SM2 6TQ	229	59.54	57,158	£68,471	46 units
Sherwood Park SM6 7NP	284	73.84	58,850	£84,916	57 units
St Philomena's SM5 3PS	219	56.94	55,573	£65,481	44 units
The John Fisher CR8 3YP	407	105.82	101,587	£121,693	81 units

(3) Sutton Housing Partnership Sites

Site	Panels	kWp	kWh	Cost	Dwellings offset
Beauchlare House SM2 5BT	157	40.82	39,187.20	£46,943.00	31 units
Block B Milton House SM1 2QS	143	37.18	35,209.46	£42,757.00	29 units
Crownbourne Court SM1 1JE	139	36.14	32,236.88	£41,561.00	28 units
3-11 & 12-20 Regal Crescent SM6 7DQ	132	34.32	30,441.84	£39,468.00	26 units
Clarence House SM6 0EP	114	29.64	24,867.96	£34,086.00	23 units
Cheam library SM3 8QH	112	29.12	24,781.12	£33,488.00	22 units
Rosehill Crescent SM4 6JT	104	27.04	25,606.88	31,096.00	21 units
Denmark Road office SM5 3JG	94	24.44	22,655.88	£28,106.00	19 units
Clensham Crt SM1 2NE (Blk C Flats 10-15 Blk D Flats 16-21 & Blk B Flats 4-9)	72	18.72	17,578.08	£21,528.00	14 units
8 Flats 23-37 Odd Wolseley Rd CR4 4JR	44	11.44	11,188.32	£13,156.00	9 units
8-22 Roche Walk SM5 1DA	28	7.28	6,726.72	£8,372.00	6 units
Beech Tree Place (Flats 5-8) SM1 1SF	70	7.28	6,209.84	£8,372.00	6 units

arranged by kWp

2. Biodiversity Accounting

2.1 INTRODUCTION

2.1.1 Local Plan Policy 26 states that “major new development should result in no net loss of biodiversity value, as assessed against the DEFRA biodiversity offsetting metric, the Environment Bank Biodiversity Impact Calculator or any metric which the council subsequently adopts formally. New development should incorporate opportunities to enhance biodiversity, wherever possible” (a). Enhancements to any new development can only be determined through Biodiversity Accounting.

2.1.2 In addition, “The council will grant permission for developments that create, conserve or enhance biodiversity (b);”, which also includes those proposed within the Catchment Plans for the River Wandle and Beverley Brook, and the Biodiversity Action Plan.

2.1.3 As such, Biodiversity Accounting will also be applied, judiciously, to those applications of medium and possibly, small size that suggest the loss or impact on an amount of biodiversity, habitat or green space, including back garden land and the above plans, to ensure that, as far as possible, the council captures all relevant information on biodiversity loss and gain.

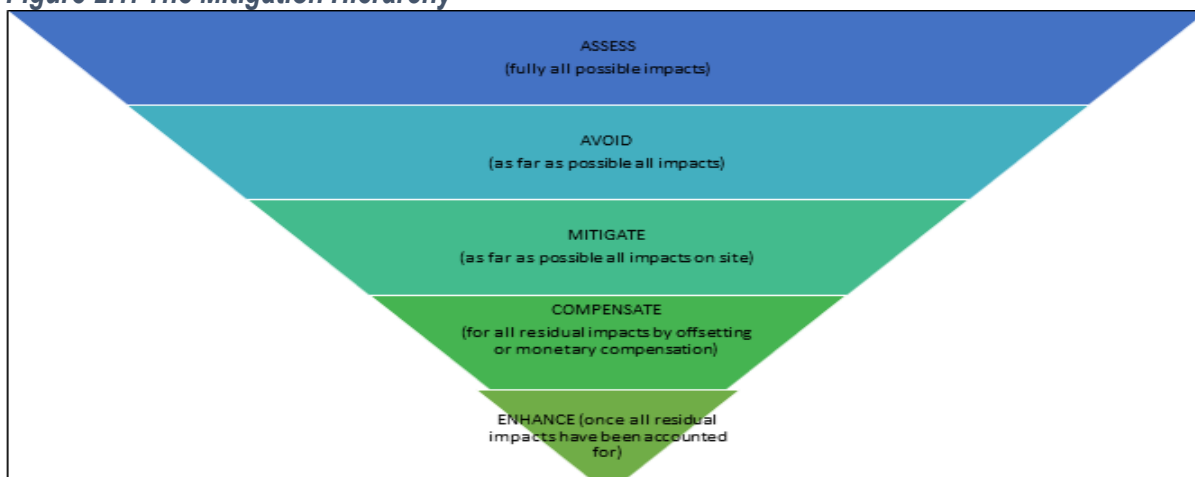
2.1.4 Having reviewed other calculators and in order to reflect the landscapes and species present within the Borough, the Council has developed its own bespoke impact calculator and the following guidelines set out how the Sutton Biodiversity Impact and Mitigation Calculator (or Sutton Biodiversity Accounting) is to be used.

2.1.5 Sutton Biodiversity Impact and Mitigation Calculator is one tool the London Borough of Sutton will employ when considering a planning application and provides a framework for considering impacts in a consistent and transparent way.

2.2 THE MITIGATION HIERARCHY

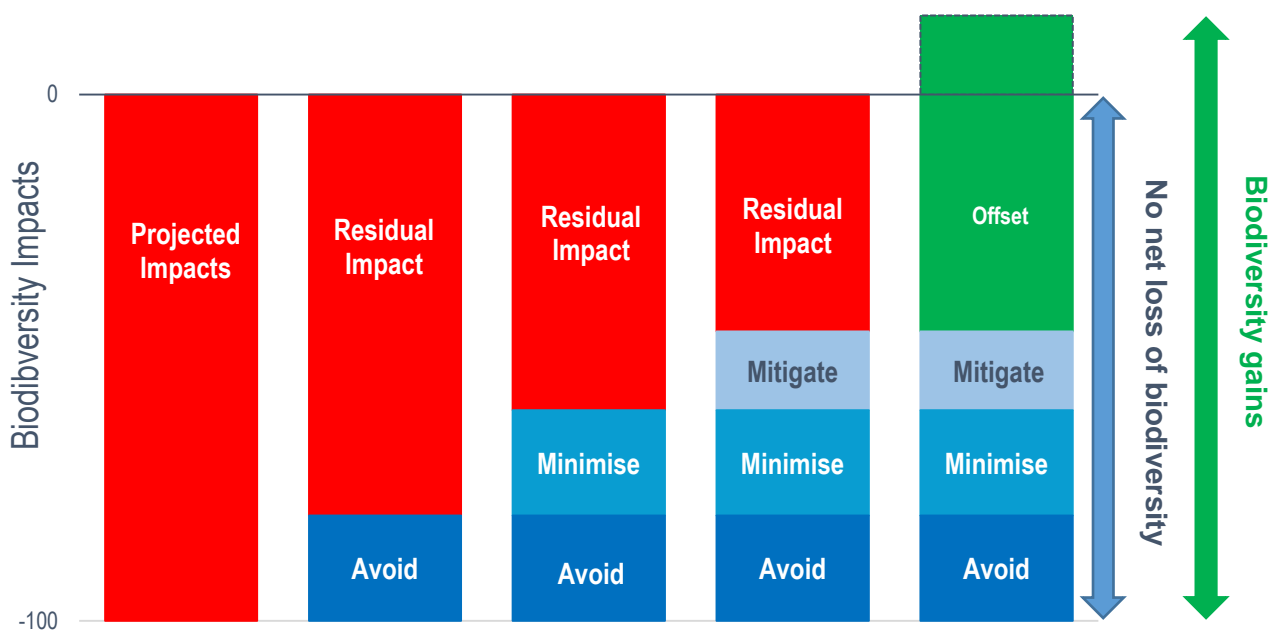
2.2.1 In assessing possible impacts on biodiversity or habitats developers are required to follow the ‘Mitigation Hierarchy’ in Figure 2.1 below.

Figure 2.1: The Mitigation Hierarchy



2.2.2 As can be seen in Figure 2.2, offsetting is one option for dealing with residual impacts that cannot be avoided or mitigated in full. As the space for offsetting within the Borough is extremely limited, the council will be seeking monetary compensation for residual impacts, rather than offsetting but the ‘Mitigation Hierarchy’ must be followed to provide as much on-site gain as possible. *Enhancements* are classified as those gains above the line in the green box at the far right of Figure 2.2; once all existing impacts have been avoided, mitigated and compensated for.

Figure 2.2: Stepwise Evaluation of Impacts – Mitigation hierarchy



2.3 HABITAT TYPES

2.3.1 Habitats are collections of animal and plant individuals or communities in their natural surrounds. At a broad scale, we can think of ‘woodlands’ or ‘grasslands’ as being distinct habitats, with associated species of flora and fauna. Each broad scale habitat is considered in relation to latitude, longitude and altitude to refine the habitat definition. As such, all grassland within Sutton is within the southeast region and is classed as lowland.

2.3.2 As the geology of the borough changes from south to north, from, predominantly, chalk to, predominantly, London clay, the grassland species composition changes, as the plant community of each grassland habitat reacts to geological bedrock, in regards pH and nutrient availability, to create calcareous grassland on the chalk (those that can tolerate the high pH levels) and neutral grasslands on the clay (lower pH levels).

2.3.3 All lowland calcareous grassland is classed as being a Priority Habitat under the Schedule 41 of the Natural Environment and Rural Communities Act 2006⁹ (NERC, 2006). Within this classification, further secondary habitat types are recognised, based on the specific plant communities on site. As such, a broad swathe of habitats are listed under Schedule 41 of the NERC Act and are classified, under standard Biodiversity Accounting, as being of ‘High Distinctiveness’ and are scored at 6 units per habitat in the DEFRA calculator.

2.3.4 Priority habitats are frequently those that form the backbone of statutory protected sites (international and national protection) and those non-statutory designated sites, often termed Sites of Importance for Nature Conservation (SINC) within London or Local Wildlife Site (LWS) in the rest of the country. Priority habitats may not have been identified as such through the planning system, they could be on private land that has not been surveyed or they could be semi-natural regeneration of undisturbed areas. Consequently, not all Priority Habitats have statutory or non-statutory designation.

2.3.5 Habitats described as ‘semi-natural’ are classified as having ‘Medium Distinctiveness’ and are scored at 4 units per habitat. Habitats described as having ‘Poor Distinctiveness’ are those that have been heavily modified by human activity and provided the lowest score per habitat type of 2 units.

⁹ the Natural Environment and Rural Communities Act 2006 is available at <https://www.legislation.gov.uk/ukpga/2006/16/contents>

2.3.6 The council has modified the above bands to take account of the specific habitat types and levels of urbanisation and habitat modification within the borough (see Table 3.1). This approach broadly follows the Warwickshire, Coventry and Solihull sub-region Biodiversity Impact Assessment Calculator¹⁰. The imposition of an age based consideration for medium high through medium low is there to consider the value of habitat continuity and as a proxy for species richness i.e. older habitats are, in general, more species rich. A full list of habitat types likely to be found within the London Borough of Sutton and their distinctiveness scores is provided in Table 8.1.

Table 3.1 - LBS Habitat Distinctiveness Values

Habitat Type band	Distinctiveness	Broad Habitat covered	Score
High	High	Priority Habitat, as defined under Schedule 41 of NERC Act 2006	6
Medium	Medium High	Old modified semi-natural habitat or created habitat	5
Medium	Medium	Recent modified semi-natural habitat or created habitat	4
Medium	Medium Low	Very recent modified semi-natural habitat or created habitat	3
Low	Low	Highly modified habitat e.g. amenity grassland or arable crops	2
None	None	Buildings and hardstanding	0

2.4 HABITAT CONDITION

2.4.1 The condition of a habitat is a vital reflection of the habitat's ability to support species. This may be through the number of species on site, the amount of management it receives, the presence of invasive species, the impact of human usage or the levels of pollution on site etc. Condition is used to consider direct and indirect impacts to the habitat. For instance, fly-grazing may provide a direct negative impact on a habitat, whereas light pollution may provide an indirect negative impact to the habitat.

2.4.2 The national DEFRA metric utilises the national Farm Environment Plan (FEP) Manual¹¹ to assess site condition and Sutton will follow this, although the condition assessment of woodland within the FEP is very much targeted to the farmed landscape and is not appropriate for considering Sutton's woodlands. The council may use the Warwickshire County Council assessment criteria. It is understood that national revisions to condition assessment, moving away from the FEP to specific Biodiversity Accounting assessments, may take place over 2018 and 2019. As such, Sutton will evaluate and may modify the condition values within this TGN, based on national research and guidance. The habitat condition weighting is shown in Table 4.1 below.

Table 4.1 - Condition Weighting

Habitat Condition	Weighting
Good	3
Moderate	2
Poor	1

2.4.3 The Habitat Distinctiveness is multiplied by the Habitat Condition weighting on site, to give a 'unit' value, per hectare, for each extant habitat or the Habitat Value (Table 4.2).

¹⁰ the Warwickshire, Coventry & Solihull sub-region Biodiversity Impact Assessment Calculator is available at <https://apps.warwickshire.gov.uk/api/documents/WCCC-863-512>

¹¹ the national Farm Environment Plan (FEP) Manual is available at <http://adlib.eversite.co.uk/resources/000/251/202/NE264.pdf>

Table 4.2 - Habitat value matrix

Habitat Distinctiveness	Condition Weighting		
	Poor	Moderate	Good
High	6	12	18
Medium High	5	10	15
Medium	4	8	12
Medium Low	3	6	9
Low	2	4	6
None	N/A	N/A	N/A

2.4.5 The value of this approach is that habitats of different distinctiveness, different conditions and different sizes can be compared with the value of their 'units'. A High Distinctiveness habitat in good condition is 'worth' 9 times as much as a Low Distinctiveness habitat in poor condition, per hectare of occupation. Utilising this approach, Sutton can roughly calculate the value of amenity grasslands in parks, or the value of woodlands, or, the value of pre-development sites.

2.4.6 To complete a condition assessment within the FEP manual, it is necessary to assess how many of the detailed criteria are met:

- a. Good condition: All criteria are met.
- b. Moderate condition: All but 1 criterion are met.
- c. Poor condition: 2 or more criteria are failed.

2.4.7 For all habitats, the council will expect the following information to be provided: (i) habitat type; (ii) habitat condition; (iii) area or length of each habitat, hedgerow or linear feature; (iv) impact from development, both direct (on-site) and indirect (off-site) and on-site biodiversity mitigation/enhancement measures. For grasslands, for instance, adequate sampling of the grassland for all of the condition criteria is required to be undertaken and submitted with the planning application.

2.4.8 Ecological expertise and experience has to be utilised in assessing the condition of any habitat and any deviations from the FEP criteria need to be justified in full. Expertise and experience in considering the condition of a habitat will be considered by practitioners that can demonstrate the possession of at least a Level 3 Field Identification Skills Certificate¹² (FISC) within the last 3 years.

2.5 RISK MULTIPLIERS

2.5.1 The above metric is used to calculate pre-development scores for all habitats on site. The same metric is used to calculate post-development scores on site, with the addition of risk multipliers. Risk multipliers are the consideration of the possible failure of the post-development mitigation (how difficult is it to create) or time to develop to the desired condition.

2.5.2 Within Biodiversity Offsetting, three risk multipliers are utilised:

- a. Temporal risk - the time taken to deliver something to an agreed condition to deliver appropriate 'unit value';
- b. Delivery risk - the difficulty of creating a specific habitat; and
- c. Spatial risk - the difficulty in creating a suitable parcel of land within an ecologically coherent network.

¹² further information about Field Identification Skills Certificates is available on the Botanical Society of Britain and Ireland website at <https://bsbi.org/field-skills>

For onsite delivery, the London Borough of Sutton will mainly consider temporal and delivery risks. The risk multipliers follow the DEFRA Offsetting Pilot and the Warwickshire, Coventry and Solihull sub-region pilot.

2.5.3 Temporal Risk - this is the time from the point of impact (i.e. site clearance) to the estimated time that it will take for the habitat to reach the pre-agreed target quality (i.e. the point at which the agreed number of units is delivered).

2.5.4 The calculations around the temporal risk multiplier (see Table 5.1) cover the whole period concerned. The calculations should assume that there is a quality jump from the baseline condition to the target condition, once the relevant number of years has elapsed. This will be supported by an agreed upon survey schedule and reporting back to the London Borough of Sutton Biodiversity Team, through the planning application process. The calculations, therefore, do not need to take into account increasing quality in the habitat.

Table 5.1 - Temporal risk multipliers

Time to target condition (years)	Multiplier	Example habitats
5	1.2	Eutrophic ponds; species poor hedgerows; standard landscaping (borders etc.)
10	1.4	Reedbeds (10-100 years)
15	1.7	Eutrophic grasslands, species rich hedgerows
20	2	Neutral lowland meadows / grasslands
25	2.4	Secondary woodland
30	2.8	Heathlands
32+	3	
50-100+	Effectively irreplaceable	Chalk grasslands
500-2000+	Effectively irreplaceable	Ancient woodlands
10,000+	Effectively irreplaceable	Limestone pavements

2.5.6 Difficulty Risk is the consideration that each habitat has various intrinsic levels of difficulty within them to restore or expand and, therefore, there will be different levels of risk for different habitat creation or restoration. **Table 6** provides examples of habitats, their difficulty to create and the associated multiplier for the difficulty level. For any particular habitat, restoration is likely to be lower risk than expansion.

2.5.7 The difficulty risk multipliers for habitat creation in Table 5.2 are based on national risk multipliers but have been modified to consider the specific conditions inherent in Sutton and experience in managing / creating these habitats by the Biodiversity Team. Some habitats are considered irreplaceable within Sutton, especially ancient woodland. This cannot be recreated within the bounds of Biodiversity Accounting. Full details of creation and restoration multipliers are given in Appendix 1. Risk multipliers are applied, sequentially, to the proposed habitats.

Table 5.2 - Difficulty risk multipliers

Difficulty of creation	Multiplier	Example habitats
Very high	10	Sphagnum bog (none in Sutton)
High	3	Marshy / wet grassland; calcareous / acid grasslands; heath
Medium	1.5	Broadleaf plantation; neutral grasslands; swamp / reedbed
Low	1	Standard landscaping; cornfield arable flower margins; green infrastructure; improved grasslands; hedgerows
N/A	Irreplaceable	Ancient woodlands

2.6 WORKED EXAMPLE

Table 6.1: Existing and Proposed Habitat - Example 1

<p>Existing Habitat: 4ha of amenity grassland in poor condition</p> $\begin{array}{ccccccccc} \textit{Area} & \times & \textit{Distinctiveness} & \times & \textit{Condition} & = & \textit{Habitat Value} \\ 4 & \times & 2 & \times & 1 & = & 8 \end{array}$
<p>Majority of Proposed Habitat: 3ha of buildings and hardstanding</p> $\begin{array}{ccccccccc} \textit{Area} & \times & \textit{Distinctiveness} & \times & \textit{Condition} & = & \textit{Habitat Value} \\ 3 & \times & 0 & \times & 0 & = & 0 \end{array}$
<p>Theoretical Net Loss to Habitat Value: 8</p>
<p>Remainder of Proposed Habitat: 1ha of broadleaf plantation woodland in moderate condition</p> $\begin{array}{ccccccccc} \textit{Area} & \times & \textit{Distinctiveness} & \times & \textit{Condition} & = & \textit{Habitat Value} \\ 1 & \times & 4 & \times & 2 & = & 8 \end{array}$
<p>Theoretical Net Loss of Habitat Value: 0</p>
<p>Application of Risk Multipliers to All of the Proposed Habitat</p> $\begin{array}{ccccccccc} \textit{Habitat Value} & \div & \textit{Temporal Risk Multiplier} & \div & \textit{Difficulty Risk Multiplier} & = & \textit{Final Habitat Value} \\ 8 & \div & 2.4 & \div & 1.5 & = & 2.22 \end{array}$
<p>Net Loss of Habitat Value: 5.88</p>
<p>Changing Variables:</p>
<p>Increasing area of woodland to equal existing habitat value</p> $\begin{array}{ccccccccc} \textit{Existing Habitat Value} & \div & \textit{Final Habitat Value} & = & \textit{Area of Woodland Required} \\ 8 & \div & 2.22 & = & 3.6\textit{ha} \end{array}$
<p>Increasing the condition of woodland to 'good'</p> $\begin{array}{ccccccccc} \textit{Area} & \times & \textit{Distinctiveness} & \times & \textit{Condition} & = & \textit{Habitat Value} \\ 1 & \times & 4 & \times & 3 & = & 12 \end{array}$ $\begin{array}{ccccccccc} \textit{Habitat Value} & \div & \textit{Temporal Risk Multiplier} & \div & \textit{Difficulty Risk Multiplier} & = & \textit{Final Habitat Value} \\ 12 & \div & 2.4 & \div & 1.5 & = & 3.33 \end{array}$
<p>Net Loss of Habitat Value: 4.77</p>
<p><u>Other Methods to Mitigate the Net Loss</u> The development might look to provide species rich boundary hedges, soft landscaping and green infrastructure (biodiverse roofs etc.) within the 3ha of development to further reduce the net loss. Each proposed habitat would be calculated in regards its area (or, linear distance, per kilometre) and the temporal and difficulty risk multipliers applied. In this way, it may be possible to mitigate all net loss on site, or even provide some net gains.</p>
<p><u>Offsetting As The Last Resort</u> If there was no way of mitigating on site net loss of the 5.88 (or 4.77) units, the London Borough of Sutton would consider whether offsite compensation (<u>offsetting</u>) could be used (although, this would possibly incur the spatial multiplier and require increased habitat creation). As noted above, however, at this time, the possibility for offsetting is probably extremely limited within Sutton and the London Borough of Sutton would likely seek a monetary contribution towards protecting and enhancing existing biodiversity elsewhere</p>

2.7 DOWNTRADING

2.7.1 Downtrading is the loss of a particular habitat (or sum of habitats) of medium or high distinctiveness of values above 3 (for example, semi-improved neutral grassland), with the proposed replacement of habitats of low distinctiveness (of 2 or less, such as amenity grassland). Downtrading is not permissible within Biodiversity Accounting. The biodiversity value of a habitat that is lost must be mitigated / compensated for on a like for like or higher (uptrading) basis. The following is an example of how a proposed development could be acceptable in accounting terms but not acceptable as it downtrades.

Table 7.1: Existing and Proposed Habitat - Example 2

<p>Existing Habitat: 4ha of semi-improved neutral grassland in poor condition</p> $\begin{array}{rcccccc} \textit{Area} & \times & \textit{Distinctiveness} & \times & \textit{Condition} & = & \textit{Habitat Value} \\ 4 & \times & 4 & \times & 1 & = & 16 \end{array}$
<p>Majority of Proposed Habitat: 3ha of buildings and hardstanding</p> $\begin{array}{rcccccc} \textit{Area} & \times & \textit{Distinctiveness} & \times & \textit{Condition} & = & \textit{Habitat Value} \\ 3 & \times & 0 & \times & 0 & = & 0 \end{array}$
<p>Theoretical Net Loss to Habitat Value: 16</p>
<p>Remainder of Proposed Habitat: 1ha of broadleaf plantation woodland in moderate condition</p> $\begin{array}{rcccccc} \textit{Area} & \times & \textit{Distinctiveness} & \times & \textit{Condition} & = & \textit{Habitat Value} \\ 1 & \times & 4 & \times & 2 & = & 8 \end{array}$
<p>Theoretical Net Loss of Habitat Value: 8</p>
<p>Application of Risk Multipliers to All of the Proposed Habitat</p> $\begin{array}{rcccccc} \textit{Habitat Value} & \div & \textit{Temporal Risk Multiplier} & \div & \textit{Difficulty Risk Multiplier} & = & \textit{Final Habitat Value} \\ 8 & \div & 2.4 & \div & 1.5 & = & 2.22 \end{array}$
<p>Net Loss of Habitat Value: 13.78</p>
<p>Developer's Adjoining Site Proposed Habitat: 8.3ha of playing fields and amenity grassland</p> $\begin{array}{rcccccc} \textit{Area} & \times & \textit{Distinctiveness} & \times & \textit{Condition} & = & \textit{Habitat Value} \\ 8.3 & \times & 2 & \times & 1 & = & 16.6 \end{array}$ $\begin{array}{rcccccc} \textit{Habitat Value} & \div & \textit{Temporal Risk Multiplier} & \div & \textit{Difficulty Risk Multiplier} & = & \textit{Habitat Value} \\ 16.6 & \div & 1.2 & \div & 1 & = & 13.83 \end{array}$
<p>Developer's Site and Adjoining Site Proposed Habitat Value</p> $\begin{array}{rcccccc} \textit{Developed Site with Woodland} & + & \textit{Adjacent Amenity Site} & = & \textit{Final Habitat Value} \\ 2.22 & + & 13.83 & = & 16.05 \end{array}$

2.7.2 However, even though the existing habitat value and the proposed habitats value are equal, 13.78 units are being down traded, from semi-improved neutral grassland (medium distinctiveness) to amenity grassland (low distinctiveness). The woodland has a distinctiveness value of 4 and so is like-for-like trading.

2.7.3 DEFRA states that 'At no time should an offset result in "trading down", for instance, in the replacement of habitat of high distinctiveness with creation or restoration of a habitat of medium distinctiveness.' and that 'where development is taking place on habitats in the low distinctiveness band, the offset actions should result in expansion or restoration of habitats in the medium or, preferably, high distinctiveness band.' (both Paragraph 22 of the Defra Technical Paper). The London Borough of Sutton interprets 'offset actions' as those working throughout Biodiversity Accounting.

2.8 MANAGEMENT

2.8.1 The creation of habitats alone is not sufficient to mitigate for net loss, the habitats require specific management to achieve the agreed upon condition in the agreed upon timeframe and be maintained. DEFRA states that “*offsets should last at least as long as the impact of the development, and ideally, in perpetuity*”. Again, ‘offsets’ are interpreted by the London Borough of Sutton as those working throughout Biodiversity Accounting.

2.8.2 The management of created habitats to ensure No Net Loss needs to be undertaken by a competent person or organisation against an agreed upon management plan, which is specifically tailored for each habitat on (or off) site. The works could be undertaken by a suitably qualified landscaping contractor, a competent third party, such as a conservation charity or by the Biodiversity Team, for which a specific charge would be calculated and agreed through a Section 106 obligation.

2.9 MONITORING AND REPORTING

2.9.1 All created habitats require survey and monitoring to ensure they meet the agreed upon condition in the agreed upon timeframe and be maintained for the life of the development or, ideally, in perpetuity.

2.9.2 As noted previously for the assessment of extant habitats, a modified FEP survey is likely to be most useful in assessing the new habitat, to provide comparable results to determine No Net Loss and these template survey sheets are provided free of charge. The amount of surveying and monitoring necessary will depend on the type of habitat created, the time it will take to reach condition, the amount of management necessary to achieve the condition and the possibility of extrinsic impacts (human pressure, invasive species etc.).

2.9.3 As with management and the initial assessment, monitoring needs to be undertaken by a competent individual(s), with suitable training and experience. Again, the Biodiversity Team could undertake this function through a Section 106 obligation, or, a third party could be contracted to undertake it. Their qualifications and expertise would be assessed as part of the planning process to ensure they were suitable.

2.9.4 To determine that No Net Loss is occurring across the London Borough of Sutton, all developments undertaking Biodiversity Accounting will be required to report the results of their actions back to the Local Planning Authority / Biodiversity Team, on an agreed upon schedule, so that changes in Net Loss and Net Gain are fully quantified, recorded and assessed against baselines.

Table 9.1: Habitat Descriptions for LB Sutton

Phase 1 Habitat Descriptions	Phase 1 Habitat Codes	Distinctiveness		Difficulty of creation		Difficulty of restoration	
Built Environment: Buildings/hardstanding	n/a	none	0	Low	1	Low	1
Built Environment: Gardens (lawn and planting)	n/a	Low	2	Low	1	Low	1
Woodland: Broad-leaved semi-natural woodland	A111	High	6	n/a	-	High	3
Woodland: Broad-leaved plantation	A112	Medium	4	Medium	1.5	Medium	1.5
Woodland: Coniferous semi-natural woodland	A121	Medium	4	n/a	-	Low	1
Woodland: Coniferous plantation	A122	Low	2	Medium	1.5	Low	1
Woodland: Mixed semi-natural woodland	A131	Medium	4	n/a	-	Medium	1.5
Woodland: Mixed plantation	A132	Low	2	Medium	1.5	Low	1
Woodland: Wet woodland	n/a	High	6	Medium	1.5	Medium	1.5

Phase 1 Habitat Descriptions	Phase 1 Habitat Codes	Distinctiveness		Difficulty of creation		Difficulty of restoration	
Woodland: Dense continuous scrub	A21	Medium-Low	3	Low	1	Low	1
Woodland: Scattered scrub	A22	Medium	4	Low	1	Low	1
Woodland: Scattered trees	A3	Medium	4	Low	1	Low	1
Woodland: Broad-leaved parkland	A31	High	6	Medium	1.5	Low	1
Woodland: Coniferous parkland	A32	Medium	4	Medium	1.5	Low	1
Woodland: Recently felled woodland	A4	Low	2	n/a	-	n/a	-
Woodland: Orchard	A5	High	6	Low	1	Low	1
Grassland: Unimproved acidic grassland	B11	High	6	High	3	Medium	1.5
Grassland: Semi-improved acidic grassland	B12	Medium-High	5	Medium	1.5	Low	1
Grassland: Unimproved neutral grassland	B21	High	6	Medium	1.5	Medium	1.5
Grassland: Semi-improved neutral grassland	B22	Medium	4	Medium	1.5	Low	1
Grassland: Unimproved calcareous grassland	B31	High	6	High	3	Medium	1.5
Grassland: Semi-improved calcareous grassland	B32	Medium-High	5	Medium	1.5	Low	1
Grassland: Poor semi-improved grassland	B6	Medium-Low	3	Medium	1.5	Low	1
Grassland: Improved grassland	B4	Low	2	n/a	-	Low	1
Grassland: Marsh / Marshy grassland	B5	High	6	High	3	Medium	1.5
Grassland: Dry heath / Acidic grassland mosaic	D5	High	6	High	3	Medium	1.5
Grassland: Set-aside / Arable field margins	J113	High	6	Low	1	Low	1
Grassland: Amenity grassland	J12	Low	2	Low	1	Low	1
Wetland: Standing water	G1	High	6	Medium	1.5	Medium	1.5
Wetland: Running water	G2	High	6	Medium	1.5	Medium	1.5
Wetland: Reedbed / Swamp	F1	High	6	Medium	1.5	Medium	1.5
Wetland: Inundation vegetation	F22	High	6	Low	1	Low	1
Other: Arable	J11	Low	2	n/a	-	n/a	-
Other: Continuous bracken	C11	Low	2	Low	1	Low	1
Other: Tall ruderal	C31	Med-Low	3	Low	1	Low	1
Other: Non-ruderal	C32	Medium	4	Low	1	Low	1
Other: Ephemeral /short perennial	J13	Low	2	Low	1	Low	1
Other: Allotments	J112	Low	2	Low	1	Low	1
Other: Quarry	I21	Low	2	Low	1	Low	1
Other: Spoil	I22	Low	2	Low	1	Low	1
Other: Refuse tip	I24	Low	2	Low	1	Low	1
Other: Introduced shrub	J14	Low	2	Low	1	Low	1
Other: Bare ground	J4	Low	2	Low	1	Low	1
Other: Green roof	n/a	Medium-Low	3	Low	1	Low	1

Phase 1 Habitat Descriptions	Phase 1 Habitat Codes	Distinctiveness		Difficulty of creation		Difficulty of restoration	
Linear Features							
Hedges: Intact hedge	J21	Medium	4	Low	1	Low	1
Hedges: Native species rich intact hedge	J211	High	6	Low	1	Low	1
Hedges: Hedge with trees	J23	Medium-High	5	Low	1	Low	1
Hedges: Native species rich hedge with trees	J231	High	6	Low	1	Low	1
Hedges: Defunct hedge	J22	Low	2	n/a	-	n/a	-
Hedges: Linear scrub	A21	Medium	4	Low	1	Low	1
Hedges: Linear trees	A3	Medium	4	Low	1	Low	1
Hedges: Introduced shrub	J14	Low	2	Low	1	Low	1
Ditches: Standing water	G1	High	6	Medium	2	Low	1
Ditches: Running water	G2	High	6	Medium	2	Low	1
Ditches: Dry ditch	J26	Low	2	Low	1	Low	1
Boundaries: Fence	J24	None	0	Low	1	Low	1
Boundaries: Wall	J25	Low	2	Low	1	Low	1
Boundaries: Dry stone wall	J25	Medium	4	Low	1	Low	1
Other: Inland cliff	I1	Medium	4	Low	1	Low	1
Other: Earth bank	J28	Low	2	Low	1	Low	1
Other: Green wall	n/a	Low	2	Low	1	Low	1

3. Greenspace Factor

3.1 INTRODUCTION

3.1.1 This section sets out the council's Green Space Factor (GSF) scoring system which is required under Local Plan Policy 33 on 'Climate Change Adaptation' to help determine the appropriate level of urban greening in new developments. Urban greening measures such as soft landscaping, tree planting, green roofs, sustainable drainage (SuDS) measures and open water features are not only highly effective in counteracting overheating and the 'urban heat island' (UHI) effect during summer heatwaves, but also achieve a range of other important benefits for people and wildlife.

3.1.2 The following guidelines should be used by developers and their agents to ensure that all major development proposals within the Borough contribute towards the climate change adaptation objectives by incorporating urban greening measures from the earliest stages of project planning and design. In nearly all cases, the Greenspace Factor should be considered in conjunction with Biodiversity Accounting (Section 2 of this note).

3.2 BACKGROUND

3.2.1 'Overheating' is defined as when high temperatures begin affect the health and comfort of people. During the August 2003 heatwave, over 600 people died in London as a direct result of this single event.

3.2.2 The latest climate projections¹³ for London predict that summers will become drier and hotter over the next few decades, with an increase in the average annual daily temperatures as well as more extremely hot days. The number of very hot summer days over 25°C will increase from an average of nine days per year (1961-1990) to 18- 21 days per year by the 2020s and to 28-45 days per year by the 2050s. Built up areas are more vulnerable to increased summer temperatures and localised heat waves due to the UHI effect. Across London, the number of hours that an intense UHI (defined as +4°C above rural) exists is predicted to increase by up to 30% by the 2050s.

3.2.3 The simplest way to achieve urban cooling is to increase green space coverage as part of new developments by protecting existing green spaces and encouraging new opportunities for urban greening. Research shows that increasing green cover by 10% in built up areas could help to keep surface temperatures at levels similar to the 1961-1990 average until the end of the century¹⁴. Within London, UHI intensity has been shown to increase sharply with the proportion of continuous built-up areas¹⁵. At 30% continuous development, a maximum UHI intensity of +4°C is seen; at 70% continuous development this rises to +6°C

3.2.4 Planning for green space as an integral part of new developments, through soft landscaping, tree planting, green roofs/walls, SuDS measures and open water features, can be highly effective in counteracting the UHI effect through evaporative cooling, shading and the inflow of cooler air. At the area-wide scale, permeating new developments with green space links connected to wider open space networks, river corridors and walking/ cycling routes can be even more effective. Urban greening can also bring about many other benefits, including for biodiversity, flood risk management, air quality, water resources and quality of life.

3.3 DEVELOPING A GREEN SPACE FACTOR FOR SUTTON

3.3.1 For all proposed developments, the type of land cover is the key factor determining the extent of urban cooling that can be achieved. To account for this, a number of planning authorities across the UK and elsewhere, including Southampton, Malmo, Berlin and Seattle, have pioneered green space scoring systems as the basis for assessing planning proposals. These approaches are commonly referred to as the Green Space Factor' (GSF)

¹³ UK Climate Impacts Programme (UKCIP09) <http://www.ukcip.org.uk/>

¹⁴ ASSCUE (Adaptation Strategies for Climate Change in the Urban Environment) (University of Manchester) - see <http://www.k4cc.org/bkcc/ascue>

¹⁵ LUCID (Development of a Local Urban Climate Model and its Application to the Intelligent Design of Cities) (UCL) - see <http://www.lucid-project.org.uk>

3.3.2 Accordingly the Council has developed a GSF scoring system for Sutton¹⁶ and aspirational targets for previously developed and greenfield sites respectively which all major developments will be expected to meet in line with Local Plan Policy 31.

3.4 POLICY CONTEXT

Sutton Local Plan

3.4.1 Part (b) of Local Plan Policy 31 requires that proposed developments should minimise overheating and contribution to the UHI effect by permeating the site with blue and green spaces and by incorporating a range of natural cooling measures as part of the design and layout, including through a range of passive design measures, shading, planting, soft landscaping, trees, sustainable drainage (SuDS) measures, ponds and other surface water features.

3.4.2 The following specific requirements are set in relation to the Green Space Factor (GSF), overall green space coverage and the incorporation of green roofs or walls as part of the design and layout:

- for previously developed sites - aim to achieve an improved Green Space Factor (GSF) score of at least +0.2 compared to the baseline GSF score prior to redevelopment;
- for greenfield sites - aim to achieve a GSF score of at least 0.5;
- for previously developed sites - aim to achieve an increase in overall green space coverage of at least 10% compared to baseline conditions prior to development; and
- incorporate and manage green roofs or green walls where feasible and with reference to biodiversity accounting (see Section 2 of this note)

3.4.3 Further requirements for all developments to make provision for suitable new planting, trees and boundary treatments taking climate change into account are set out under Part (o) of Local Plan Policy 28.

3.4.4 Policy G5 of the Draft London Plan (GLA, December 2017) also advises boroughs to develop an Urban Greening Factor for new developments tailored to local circumstances.

3.5 GREEN SPACE FACTOR SCORING

3.5.1 Sutton's GSF scoring system is set out in Table 5.1.

3.5.2 14 categories of land cover are identified in the table, consisting of ten primary or ground level surface types (A1 to E), 3 secondary layers (F to H) and one tertiary layer e.g. green roofs (I). Each type of land cover is assigned a weighting factor from 0.0 (low) to 1.0 (high) which reflects its likely effectiveness in terms of urban cooling and a range of other climate change adaptation functions such as sustainable drainage.

3.5.3 The overall GSF score for both existing conditions on the site prior to development (baseline) and for the proposed development should be calculated using the following 'weighting and scaling' method

- (a) multiplying the area of each type of land cover with the relevant weighting factor in the table;
- (b) summing the weighted scores; and
- (c) dividing the result by the total land area of the site.

3.5.4 For example, the GSF score for a 0.5 ha (5,000 m²) site, consisting of 2,000 m² buildings (A1); 500 m² of non-permeable surfaces (A2); 1,500 m² of semi-permeable surfaces (C); 500 m² of vegetation with no direct soil contact (D2) and 500 m² of vegetation with direct soil contact (D3) would be calculated as follows:

$$\frac{[2,000 \times 0.0] + [500 \times 0.0] + [1,500 \times 0.4] + [500 \times 0.6] + [500 \times 1.0]}{5,000 \text{ m}^2} = \frac{1,400}{5,000} = 0.28$$

¹⁶ Sutton's GSF system was initially developed through the council's participation in the EU GRaBS¹⁶ project between 2008-11 (Green and Blue Space Adaptation for Urban Areas and Eco-Towns)

Table 5.1 Green Space Factor scoresheet

Category	Surface Type	Weighting Factor	Existing Layout Surface Area m ²	Change in Surface Area m ²	Proposed Surface Area m ²
Primary (Ground Level) Layers					
A1	Buildings	0.0			
A2	Non-permeable driveway/parking surfaces	0.0			
A3	Non-permeable road surfaces	0.0			
A4	Non-permeable footpath surfaces	0.0			
B	Stone paving with joints where water can infiltrate	0.2			
C	Semi-permeable surfaces e.g. sand and gravel	0.4			
D1	Vegetation where soil depth is less than 60cm and there is no direct contact with deeper soil e.g. roof of underground parking	0.4			
D2	Vegetation where soil depth is more than 60cm and there is no direct contact with deeper soil e.g. roof of underground parking	0.6			
D3	Vegetation where plants have direct contact with deeper soil	1.0			
E	Areas of open water including ponds and ditches/swales covered by water for at least 6 months	1.0			
DEVELOPMENT AREA TOTAL		n/a			
Secondary Layers					
F	Shrubs and hedges (cover m ²)	0.3			
G	Trees (canopy cover m ²)	0.4			
H	Green walls with a height limit of 10m (area in m ²)	0.6			
Tertiary Layers					
I	Green roofs, brown roofs and eco-roofs calculated by the area covered by plants (m ²)	0.7			
		BASELINE GSF SCORE		PROPOSED GSF SCORE	

3.5.5 To demonstrate compliance with Policy 31, developers should provide an evaluation of the GSF score using the above GSF scoresheet, both for the existing conditions on the site and post-development, as part of sustainable design and construction statements submitted with planning applications. An initial assessment should also be provided as the basis for early discussions with the council at the pre-application stage.

3.5.6 The above GSF assessment should also be used to demonstrate compliance with the council's minimum requirement under Policy 31 for proposed developments to increase overall green space coverage on the site by at least 10% compared to baseline conditions.

.3.6 PLANNING FLOWCHART FOR MAJOR DEVELOPMENTS

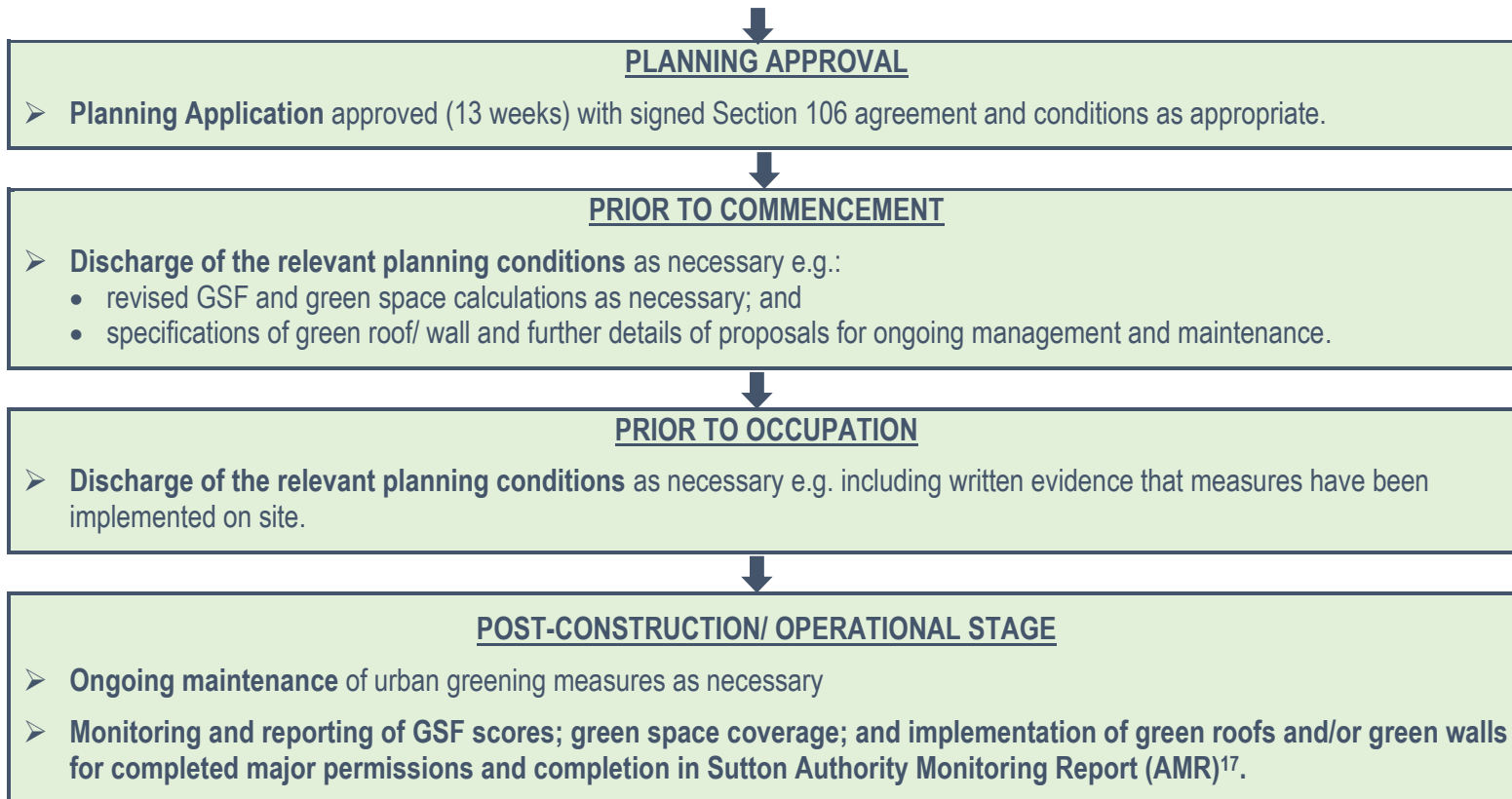
PRE-APPLICATION STAGE

- **Outline landscape strategy** for the development including;
 - a **baseline assessment** of the development site with breakdown of surface types, existing hard and soft landscaping, boundary treatments and existing trees/ planting;
 - calculations to show the **Green Space Factor (GSF) score** and the **% coverage of green space** for the site prior to development;
 - **supporting information** to show how the outline landscape strategy will “make provision for suitable new planting, trees and boundary treatments, taking account of the future effects of climate change” under Local Plan Policy 28;
 - calculations to show the **provisional GSF score and % coverage of green space** for the proposed development;
 - an **evaluation** of whether the GSF targets in Policy 31 are likely to be met by the draft landscape strategy (an improved GSF score of at least +0.2 for previously developed sites; a GSF score of at least 0.5 for greenfield developments; and an increase in overall green space coverage of at least 10%);
 - outline **proposals for a green roof and/or wall** as required under Policy 33.
- **Pre-Application Meetings** between the planning case officer and the developer’s landscape consultants as necessary.



FULL PLANNING APPLICATION

- Submission of the proposed **landscaping scheme** in support of the planning application including:
 - a **baseline assessment** of the development site with breakdown of surface types, existing hard and soft landscaping, boundary treatments and existing trees/ planting;
 - calculations to show the **Green Space Factor (GSF) score** and the **% coverage of green space** for the site prior to development;
 - **information** to show how the proposed **landscaping scheme** will “make provision for suitable new planting, trees and boundary treatments, taking account of the future effects of climate change” under Local Plan Policy 28;
 - revised calculations to show the GSF score and % coverage of green space for the proposed development;
 - an evaluation of whether the GSF targets in Policy 31 have been by proposed **landscaping scheme** (an improved GSF score of at least +0.2 for previously developed sites; a GSF score of at least 0.5 for greenfield developments; and an increase in overall green space coverage of at least 10%;)
- Submission of **proposals for a green roof and/or wall** either as part of the Design and Access Statement and/or the sustainable drainage strategy (SuDS) together with proposals for ongoing management and maintenance.



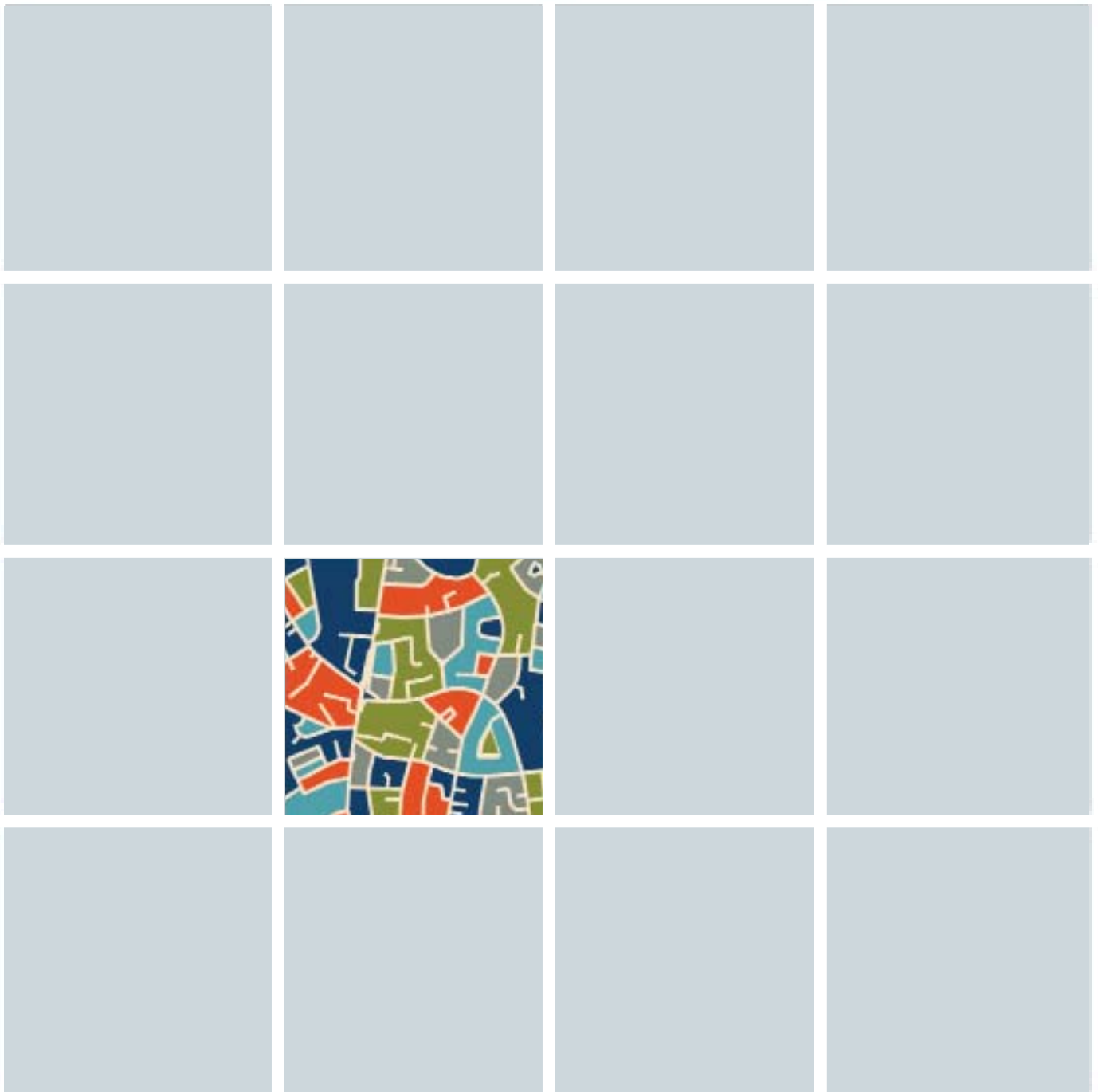
¹⁷ Sutton's Authority Monitoring Report (AMR) is prepared on an annual basis and is available on the council website at https://www.sutton.gov.uk/info/200464/planning_policy/1419/authority_monitoring_report_amr

3.7 URBAN GREENING – GOOD PRACTICE CHECKLIST

<p>Green Space Factor (GSF)/ greenspace coverage</p> <ul style="list-style-type: none"> ➤ for previously developed sites –achieve an improved Green Space Factor (GSF) score of at least +0.2 ➤ for greenfield sites - achieve a GSF score of at least 0.5 ➤ for previously developed sites – Increase overall green coverage on site by at least 10% 	
<p>Green Roofs</p> <ul style="list-style-type: none"> ➤ introduce green roofs on all buildings where feasible (GSF score = 0.7) ➤ design green roofs to capture rainwater and minimise run-off at source - see SuDS below ➤ maximise biodiversity by using 'dry meadow extensive' to 'semi-intensive' biodiverse green roofs rather than sedum roofs ➤ design green roofs to ensure compatibility with renewable technologies e.g. solar PV 	
<p>Green Walls</p> <ul style="list-style-type: none"> ➤ introduce green walls on all buildings where feasible (GSF score = 0.6) ➤ design green walls to provide shading for buildings in summer and maximise solar gain in winter ➤ design green walls to maximise biodiversity and provide habitats for birds and insects 	
<p>Planting and Landscaping</p> <ul style="list-style-type: none"> ➤ retain or maximise coverage of vegetation on site where soil depth is at least 60cm (GSF score = 0.6) or preferably has direct contact with deeper soil (GSF score = 1.0) ➤ retain or maximise coverage of shrubs and hedges on site (GSF score = 0.3) ➤ plant vegetation to stabilise slopes and soils vulnerable to erosion ➤ design planting and landscaping to provide a variety of microclimates for users e.g. access to sun, shade, wind, shelter 	
<p>Biodiversity and Habitat creation</p> <ul style="list-style-type: none"> ➤ ensure no net loss in biodiversity based on Sutton's Sutton Biodiversity Impact and Mitigation Calculator (Biodiversity Accounting) see Policy 26 and Technical Guidance Note 2 (contained within this document). ➤ safeguard existing wildlife habitats and improve their integrity in line with Biodiversity Action Plan objectives ➤ create new habitats on site, including ponds, and ensure that linear features such as backgardens, hedges, watercourses, SuDS and public routes are wildlife friendly to and provide links to adjacent wildlife corridors and habitats ➤ plant a diverse mixture of vegetation using native species and minimise the use of mown lawns on site ➤ introduce bird and bat boxes 	
<p>Tree Planting – see also Local Policy 28 Part (o)</p> <ul style="list-style-type: none"> ➤ retain existing mature trees on site wherever possible (GSF score = 0.4) increase tree cover on site through new planting ➤ select a mixture of native species to provide food, habitats and shelter for wildlife, including birds, insects and bats ➤ select appropriate tree species to reduce local air pollution ➤ select broadleaf tree species to provide shade to buildings in summer and to allow for solar gain in winter ➤ select tree species with larger canopies to maximise shading and maximise cooling 	
<p>Sustainable Drainage (SuDS)</p> <ul style="list-style-type: none"> ➤ promote the role of natural SuDS measures as an integral part of the design and layout of the development in order to minimise run-off rates and volumes as close as reasonably practical to greenfield rates in line with the council's minimum standards in Policy 32b and any Technical Guidance on SuDS which may be prepared by the council ➤ for major proposals – complete Sutton's Drainage Assessment Form¹⁸ as part of the site-specific Flood Risk Assessment ➤ promote the following green and blue space measures within the context of the following SuDS hierarchy¹⁹ and maximise their benefits for ecology, urban cooling, visual quality and amenity <ul style="list-style-type: none"> (1) Source Control: green roofs; permeable paving and parking areas; soakaways (where suitable soil/geological conditions); rain gardens (bio-retention); and rainwater re-use/ harvesting (2) Site/ local control: filter strips; filter drains; swales; detention basins; reed beds; and ponds (GSF = 1.0) (3) Area-wide control: stormwater wetland (GSF = 1.0); balancing ponds (GSF = 1.0); and large detention basins ➤ where feasible, 'make space for water' by restoring natural floodplain, de-culverting watercourses and through the use of other 'non-defensive' flood risk management measures 	
<p>Area-Wide Open Space Links/ Green Grid</p> <ul style="list-style-type: none"> ➤ safeguard existing public open space, public access routes, water features and wildlife sites/ corridors within the site ➤ connect public access routes in on-site green infrastructure to existing access routes in the surrounding area ➤ maximise public access to on-site green infrastructure, including parks, recreational facilities and any linear features such as watercourses, wildlife sites/corridors, footpaths and cycle ways ➤ permeate the development with green spaces linkages to area-wide or sub-regional networks of strategic open land (e.g. Mayor's green grid), wildlife habitats, river corridors and sustainable transport routes for walking and cycling 	
<p>Local Food Production</p> <ul style="list-style-type: none"> ➤ safeguard any allotments on site and/ or create new allotment areas for local food cultivation ➤ use species that provide food, including fruit and nuts ➤ compost household and garden waste for use on site 	

¹⁸ Sutton's Drainage Assessment Form (DAF) is available at <https://drive.google.com/file/d/0B-v29C6qCIIXMnpQdmRRZU1mWXc/view>

¹⁹ details of the 'SuDS Management Train' are available at <https://www.susdrain.org/delivering-suds/using-suds/suds-principles/management-train.html>



Simon Latham Assistant Director
Housing, Planning and Regeneration

Environment, Housing and Regeneration
London Borough of Sutton
Environment and Leisure
24 Denmark Road
Carshalton SM5 2JG

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