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## **Urban Greening Factor**

Former Gasholder site, Yarnton  
Way, Belvedere

October 2023

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# Urban Greening Factor

Former Gasholder site, Yarnton Way, Belvedere

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# 1. Introduction

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## Project Background

- 1.1 Phlorum Limited was commissioned by Bellway Homes Limited to assess the Urban Greening Factor in relation to the proposed development at Former Gasholder site, Yarnton Way, Belvedere, London borough of Bexley (hereafter referred to as “the site”).
- 1.2 This version is to update corresponding tables.





## Site Description and Context

- 1.3 The site comprised developed land; sealed surface, mixed scrub, other neutral grassland, ruderal/ephemeral, and ornamental lake or ponds.
- 1.4 The site is located in the northern extent of Belvedere in the London Borough of Bexley. The site is surrounded by residential developments, large warehouses, main roads, and grassland. The closest statutory designated site is Lesnes Abbey Woods Local Nature Reserve (LNR) which sits 500m southwest of the site.
- 1.5 The National Grid Reference for the centre of the site is TQ 49224 79365. The survey area extended over approximately 3.5 hectares (ha).

## Description of Development

- 1.6 Current proposals involve the redevelopment of the site to provide residential units including affordable housing (Use Class C3) and commercial floorspace (Class E) in new buildings ranging between 3 to 5 stories in height, together with associated car parking and cycle storage, landscaping including new areas of public open space and a reptile retention zone, associated infrastructure including new junctions off Yarnton Way, drainage and land raising.

## Documentation Provided

- 1.7 This document has been developed with reference to the findings contained within the previous ecological reports:
  -  Landscape Statement Part 3 of 3 (Macfarlane and Associates, 2023).
  -  Preliminary Ecological Appraisal (PEA) (Phlorum, 2023).
  -  Reptile Survey Report (CT Ecology, 2020).
  -  Habitat scoping report (CT Ecology, 2018).

## 2. Methodology

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### Establishing the Baseline Habitat

- 2.1 Phlorum carried out an ecological site survey in August 2023 to inform a Biodiversity Survey & Preliminary Ecological Appraisal (Phlorum 2023) for the site, following the guidance set by the Joint Nature Conservation Committee, handbook for Phase 1 surveys (JNCC 2010).
- 2.2 Previous reports (CT Ecology, 2020 & CT Ecology 2018) and Google earth imagery were also used to assess the baseline habitat conditions of the site, following the guidance set by the Joint Nature Conservation Committee, handbook for Phase 1 surveys (JNCC 2010). This was due to the site being previously cleared in February 2020.

### Calculating the Urban Greening Factor Score

- 2.3 The London Plan outlines that:

*“For developments with a low baseline level of biodiversity, an ecologically informed approach can create new areas of wildlife habitat to deliver biodiversity gains alongside other green infrastructure benefits. New habitats should be designed and managed to contribute to local biodiversity priorities and the Local Nature Recovery Plan.*

*Where protected species or priority habitats or species are found on a development site or a proposed development may impact a Site of Importance for Nature Conservation, the requirements of Policy G6 Biodiversity to manage impacts on biodiversity should be met in addition to any relevant UGF targets. In these cases, a priority for any new urban greening should be to help avoid or mitigate the impacts of the proposed development on biodiversity as well as to provide locally relevant greening that complements the site’s existing wildlife value and will achieve an overall gain in biodiversity.”*

- 2.4 Different types of greening that can be incorporated into development are categorised by surface cover types which broadly indicate their relative quality. The Urban Greening Factor (UGF) assigns a factor score to each surface cover type which are weighted based on their potential for rainwater infiltration. This is used as a proxy for naturalness and functionality. Scores range from 1 for semi natural vegetation through to 0 for impermeable sealed surfaces. The surface cover types and their associated scores are shown in Table 1.

**Table 1: Surface cover types and factor scores**

Surface cover type	Factor
Semi-natural vegetation (e.g. trees, woodland, species-rich grassland) maintained or established on site.	1
Wetland or open water (semi-natural; not chlorinated) maintained or established on site.	1
Intensive green roof or vegetation over structure. Substrate minimum settled depth of 150mm.	0.8
Standard trees planted in connected tree pits with a minimum soil volume equivalent to at least two thirds of the projected canopy area of the mature tree.	0.8
Extensive green roof with substrate of minimum settled depth of 80mm (or 60mm beneath vegetation blanket) – meets the requirements of GRO Code 2014.	0.7
Flower-rich perennial planting.	0.7
Rain gardens and other vegetated sustainable drainage elements.	0.7
Hedges (line of mature shrubs one or two shrubs wide)	0.6
Standard trees planted in pits with soil volumes less than two thirds of the projected canopy area of the mature tree.	0.6
Green wall –modular system or climbers rooted in soil.	0.6
Groundcover planting.	0.5
Amenity grassland (species-poor, regularly mown lawn).	0.4
Extensive green roof of sedum mat or other lightweight systems that do not meet GRO Code 2014.	0.3
Water features (chlorinated) or unplanted detention basins.	0.2
Permeable Paving.	0.1
Sealed surfaces (e.g. concrete, asphalt, waterproofing, stone).	0

2.5 The following steps were followed to calculate the overall UGF score:

1. Each surface cover type in the development was assigned to the corresponding UGF factor in line with the factor scores in Table 1;
2. The area of each surface cover type was measured in square metres;
3. The factor score was multiplied by the area of the corresponding surface cover type;
4. The scores were added together for each surface type; and
5. The combined score was divided by the total site area in square metres to determine the scheme’s UGF score.

2.6 The following principles were applied:

- 🌿 The UGF should always be calculated on the total site area, equivalent to the red line boundary;
- 🌿 Adjacent areas of land not included in the red line boundary, irrespective of ownership or management, must not be included;
- 🌿 Retained surface cover types should be included in the calculation;
- 🌿 Vertical surface areas of proposed green walls should be included in the UGF calculation but not be added to the site's total area. This may mean it is possible to score a UGF of more than 1, which is equivalent to the whole site area, where extensive use of green walls is proposed;
- 🌿 Where a surface cover type is not included in Table 1, a reasonable assumption of the most relevant factor score should be made, recorded on the application drawing and referenced in the Design and Access Statement;
- 🌿 Where tree canopies will grow over another permeable surface the area of the surface underneath the canopy can also be included in the UGF calculation; and
- 🌿 Where land is not in the ownership/ control of applicant but is within the red line boundary (such as adopted roads), integration of acceptable surface cover types should be sought where possible. Where this is not possible, greening across the wider site and building design should be maximised towards meeting the relevant UGF target.

## Urban Greening Factor Target Scores

- 2.7 UGF target scores should be set out in Local Plans. Where Local Plans do not have UGF scores, the London Plan UGF scores of 0.4 for predominately residential and 0.3 for predominately commercial developments should be applied. UGF target scores should be considered the minimum benchmark not the maximum required.
- 2.8 The Bexley Local Plan 2023 does not set out target UGF scores. This proposed development is considered to be a predominately residential development, therefore the target score of 0.4 from the London Plan should be applied. However, parts of the development could also be considered commercial where the target score is 0.3.

## Caveats

- 2.9 The UGF calculates surface cover and only provides a score to represent the estimated biodiversity value of the site, irrespective of site-specific features. As a result, compensation and mitigation should be designed using appropriate expertise and common sense.

- 2.10 As only surface cover types are calculated an increase in biodiversity due to increase in fauna (e.g. birds, bats, insects, reptiles, amphibians, or other mammals) is not included. The creation of bird/bat/insect boxes, log piles, and/or hibernacula can significantly enhance the ecosystems on a site, but these enhancements are not calculated by the UGF assessment. The UGF is a good guide to help increase biodiversity, but habitats need both flora (plants) and fauna (animals) enhanced to ensure healthy and sustainable ecosystems.
- 2.11 The existing levels of protection provided to certain habitats or protected species are not changed by this calculator. The impact on protected species is not considered by the calculator and must be assessed separately.
- 2.12 In nature the boundaries between ecological habitats are not usually an easily defined line, unless human impact such a hard surface (e.g. buildings/roads), fences, ploughing, and/or felling has occurred. As a result, the habitat areas used are based on best judgement and therefore can at times be subjective.



## 3. Urban Greening Factor Assessment

### Urban Greening Factor Calculation

3.1 The UGF calculation is shown in Table 2 below.

**Table 2: Urban Greening Factor (UGF) calculation**

Surface cover type	Factor	Total Area (m <sup>2</sup> )	Score
Semi-natural vegetation (e.g. trees, woodland, species-rich grassland) maintained or established on site.	1	2385	2385
Wetland or open water (semi-natural; not chlorinated) maintained or established on site.	1	0	0
Intensive green roof or vegetation over structure. Substrate minimum settled depth of 150mm.	0.8	0	0
Standard trees planted in connected tree pits with a minimum soil volume equivalent to at least two thirds of the projected canopy area of the mature tree.	0.8	2900	2320
Extensive green roof with substrate of minimum settled depth of 80mm (or 60mm beneath vegetation blanket) – meets the requirements of GRO Code 2014.	0.7	4890	3423
Flower-rich perennial planting.	0.7	6900	4830.7
Rain gardens and other vegetated sustainable drainage elements.	0.7	928	649.6
Hedges (line of mature shrubs one or two shrubs wide)	0.6	480	288
Standard trees planted in pits with soil volumes less than two thirds of the projected canopy area of the mature tree.	0.6	0	0
Green wall –modular system or climbers rooted in soil.	0.6	0	0
Groundcover planting.	0.5	0	0
Amenity grassland (species-poor, regularly mown lawn).	0.4	0	0
Extensive green roof of sedum mat or other lightweight systems that do not meet GRO Code 2014.	0.3	0	0

Water features (chlorinated) or unplanted detention basins.	0.2	0	0
Permeable Paving.	0.1	1776	177.6
Sealed surfaces (e.g. concrete, asphalt, waterproofing, stone).	0	17719	0
<b>Total Score:</b>		<b>14073.9</b>	
<b>Total Area (m<sup>2</sup>):</b>		<b>34,604</b>	
<b>Urban Greening Factor:</b>		<b>0.406</b>	

- 3.2 The Urban Greening Factor of the proposed development has been calculated as **0.406**.
- 3.3 This result reflects the retention of 2,000m<sup>2</sup> of semi-natural vegetation (scrub) and the creation of a 2285m<sup>2</sup> area of trees in the southeastern section. This result also reflects the tree planting, the addition of areas of flower-rich perennial planting and rain gardens, hedges and a extensive green roof. Areas such as permeable paving and sealed surfaces are also extensive with a total of 17,719m<sup>2</sup>.

## 4. Discussion and Recommendations

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### Discussion

- 4.1 The Urban Greening Factor of the proposed development at Former Gasholder site, Yarnton Way, Belvedere, London borough of Bexley is **0.406**.
- 4.2 This exceeds the commercial development target of 0.3 and the residential developments target of 0.4.
- 4.3 The site is currently comprised of developed land; sealed surface, mixed scrub, other neutral grassland, ruderal/ephemeral, and ornamental lake or ponds.
- 4.4 Given the layout of the site and the addition of houses and areas of parking it is not considered that any new habitats of value can feasibly be created within the site. However, it should be noted that an area of scrub of 2,000m<sup>2</sup> will be retained as the reptile translocation area. There will also be an area of 285m<sup>2</sup> for a small woodland which will be created through a community run program. There will also be the addition of trees, flower-rich perennial planting, rain gardens, hedges and a extensive green roof.

### Recommendations

- 4.5 The proposed works, habitat creation, and management and monitoring of habits should be completed in accordance with the guidance included within the Biodiversity Survey & Preliminary Ecological Appraisal (Phlorum 2023).

## 5. Conclusions








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### Conclusions

- 5.1 The proposed development will result in an Urban Greening Factor of **0.406**, exceeding both the commercial development target and reaching the required score set by the London Plan Policy G5 target for residential developments of 0.4.
- 5.2 This result reflects the retention of 2,000m<sup>2</sup> of semi-natural vegetation (scrub) and the creation of a 285m<sup>2</sup> area of trees in the southeastern section. This result also reflects the planting of trees, the addition of areas of flower-rich perennial planting and rain gardens, hedge of 480m<sup>2</sup> and an extensive green roof. Areas such as permeable paving and sealed surfaces are also extensive with a total of 17,719m<sup>2</sup>.
- 5.3 On-site enhancements may also include the installation of bird boxes suitable for grey wagtails, and off-site enhancements will include habitat creation and appropriate management within an area of gardens to the north. Whilst these are not captured by the Urban Greening Factor, they do represent a significant overall net gain for biodiversity resulting from the proposed development.

## 6. References

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## Figures and Appendices

# Appendix A

## UGF Masterplan



1:500  
0 5 10 15 20 25 30  
Metres

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**LEGEND**

- SITE BOUNDARY
- PAVING TYPE 1 - PERMEABLE BLOCK PAVING TO PARKING BAYS
- PAVING TYPE 2 - CONCRETE BLOCK PAVING TO FOOTPATHS - DARK GREY TONES
- PAVING TYPE 3 - CONCRETE BLOCK PAVING TO FOOTPATHS - LIGHT GREY TONES
- PAVING TYPE 4 - BLOCK PAVING TO PRIVATE PATIOS
- SURFACE TYPE 1 - TIMBER BRIDGE
- SURFACE TYPE 2 - TARMAC TO ENGINEER SPECIFICATIONS
- BOUNDARY TYPE 1 - 1.8M HIGH TIMBER FENCE
- BOUNDARY TYPE 2 - 1.5M HIGH TIMBER POST AND RAIL FENCE, GATES TO MATCH

- BOUNDARY TYPE 3 - TIMBER KNEE RAIL
- GATE TYPE 1 - 1.8M HIGH DOUBLE SWING GATE
- CONCRETE STEPPING STONES
- NATURAL PLAY EQUIPMENT - TIMBER LOGS, NATURAL BOULDERS, TIMBER STEPPING STONES
- FURNITURE TYPE 1 - TIMBER BENCH
- FURNITURE TYPE 2 - TIMBER CUBE SEATS
- NATURALLY REGENERATED SCRUB TO BE RETAINED AND ENHANCED
- PROPOSED TREES
- NATIVE HEDGE PLANTING

- MIXED SHRUB AND HERBACEOUS PLANTING
- RAINGARDEN PLANTING
- SPECIES RICH FLOWERING LAWN MIX (REAR GARDENS TO BE SEEDED)
- MIX NATIVE SCRUB PLANTING
- AREA RESERVED FOR TINY FOREST INITIATIVE
- MARGINAL PLANTING TO SWALES

P02	06.10.23	AW	UPDATED TO COMMENTS
P01	25.08.23	AW	PLANNING ISSUE
Rev	Date	By	Notes

Client  
**BELLWAY HOMES LIMITED**

Project  
**SGN BELVEDERE, FORMER GAS HOLDERS SITE ON YARNTON WAY**

Title  
**ILLUSTRATIVE MASTERPLAN**

Status  
**FOR PLANNING**

Drawing No.  
**3153-MA-900**

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**AW**

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