

# Biodiversity Net Gain Assessment

Former Gasholder site, Yarnton Way, Belvedere

October 2023

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# **Biodiversity Net Gain Assessment**

Former Gasholder site, Yarnton Way, Belvedere

20/10/2023

Bellway Homes Limited Anchor Boulevard Crossways Buisness Park Dartford Kent, DA2 6QH

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# **1. Introduction**

### Project Background

- 1.1 Phlorum Limited was commissioned by Bellway Homes Limited to compile a Biodiversity Net Gain Assessment in relation to the proposed development of Former Gasholder site, Yarnton Way, Belvedere (hereafter referred to as "the site"). The site address is Former Gasholder site, Yarnton Way, Belvedere, Bexley, DA17 5DD.
- 1.2 This version is to update areas and update the green roofing.

### 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

### Establishing the Baseline Habitat

- 2.1 The desktop study involved conducting database searches for statutory and nonstatutory designated sites, legally protected species and features of interest within a 2km radius of the site. This was carried out by Greenspace Information for Greater London (GIGL, 2023).
- 2.2 Phlorum carried out a Preliminary Ecological Appraisal (Phlorum, 2023) of the site, following the guidance set by the Joint Nature Conservation Committee, handbook for Phase 1 surveys (JNCC 2010).
- 2.3 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 Biodiversity Net Gain/Loss

- 2.4 A Biodiversity Net Gain (BNG) assessment involves making a comparison between the biodiversity value of the present habitat, prior to development (i.e. the baseline) and the predicted biodiversity value of the habitats following completion of the development (i.e. post-development). The comparison is made in terms of 'biodiversity units', with a 'biodiversity metric' providing the mechanism to allow biodiversity values to be calculated and compared.
- 2.5 If the baseline habitat has recently been disturbed/cleared, then the baseline is taken as January 2020.
- 2.6 During 2020 it was noted that the site was cleared in February 2020. Therefore, the baseline has been taken from reports pre-February 2020 and google earth imagery (CT Ecology, 2020).
- 2.7 The calculation of Biodiversity Net Gain (BNG) was undertaken using 'The Biodiversity Metric 4.0 published by Natural England (2023). The metric uses site habitats, as areas and linear lengths, to calculate a score for the site. Each habitat is scored according to its relative biodiversity value. This value is then adjusted depending on various factors, to calculate the 'biodiversity units' for each habitat.

#### **Baseline Calculation**

- 2.8 Site baseline habitats are assessed based on the following:
  - Terrestrial areas;
  - Terrestrial linear lengths; and
  - Aquatic linear lengths.



- 2.9 The baseline habitat map from the previous reports and google earth imagery is used to calculate the individual parcels of habitats on the site, such as terrestrial areas (e.g. woodland, grassland), terrestrial lengths (e.g. hedgerows) and aquatic lengths (e.g. streams, rivers). Each area is measured in *hectares* and each linear feature in *kilometres*.
- 2.10 The Biodiversity Metric 4.0 calculator requires habitats present on site to be described using the UKHabs Classification System. As a result, the calculator in the technical data section includes a tool to translate Phase 1 habitats into UKHabs habitats.
- 2.11 Once the UKHabs habitat names, and areas/lengths have been measured the parcels need to be assessed against the following criteria:
  - Habitat Distinctiveness The calculator creates an automated score based on the type of habitat present. Highly diverse habitats, particularly those habitats of Principal Importance under the NERC Act (2006) or Annex 1 habitats in the Habitats Directive (1992) score 'high', whilst sites with low diversity such as arable crops have 'low' scores.
  - Habitat Condition An assessment of the quality of the habitat parcel assessed during the baseline surveys.
  - Strategic Significance An assessment based on the information set out in local plans or policies.
- 2.12 The calculator realises the importance of individual trees but there is no UKHabs habitat for these in the area calculation. As a result, the 'Street tree helper', which allows numbers of trees to be converted to an area in hectares is used, regardless of if the tree is a street tree or isolated tree in another habitat. Trees are categorised as 'small', 'medium' or 'large'.

#### Post Development Calculation

- 2.13 The post development areas are calculated by initially assessing the areas/length of habitats retained, enhanced, and created plus any offsite areas created or enhanced.
- 2.14 A 'Habitat Condition' and 'Strategic Significance' assessment are carried out on the post-development habitats. Where habitats have been created or enhanced, additional factors are considered, such as time taken for each of these habitats to reach target condition (temporal multiplier) and the difficulty of recreating these habitats (difficulty multiplier).
- 2.15 The baseline biodiversity score and post-development score are then calculated and compared the biodiversity impact loss or gain is calculated for each habitat (e.g. terrestrial habitat, terrestrial linear and /or linear aquatic habitat).
- 2.16 If needed offsite enhancement and/or creation of habitats can be carried out and assessed.



#### Caveats

- 2.17 The BNG calculates habitats and only provide a score to represent the biodiversity on site. As a result, compensation and mitigation should be designed using appropriate expertise and common sense.
- 2.18 As only habitats 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's can significantly enhance the ecosystems on a site, but these enhancement are not calculated by the BNG calculator. The BNG calculator is a good guide to help increase biodiversity, but habitats need both flora (plants) and fauna (animals) enhanced to ensure healthy and sustainable ecosystems.
- 2.19 The existing levels of protection provided to certain habitats or protected species are not changed by this calculator. The impact on protected species are not considered by the calculator, and must be assessed separately.
- 2.20 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 are subjective.
- 2.21 The calculator requires area measurements in *hectares* and linear measurements in *kilometres*, which for small sites can result in smaller areas/lengths not being recorded when only 2 decimals places area used.
- 2.22 As isolated trees are measured separately the overall area of all the habitat parcels can be greater than the actual site area.
- 2.23 The calculator cannot take account of all site-specific features and circumstances that may affect the true value of certain habitats or dictate the nature of habitat creation and enhancement. Such features and circumstances may make it impossible to satisfy trading rules for medium and high distinctiveness habitats, even where a clear net gain for biodiversity is being delivered. Under the Metrix 4.0 meeting the Trading Rules is a requirement and irreplaceable habitats can not be lost on site.
- 2.24 Whilst the calculator provides a valuable guide as to how a development will affect biodiversity, it should be considered as a guide to be used in combination with pragmatic and knowledge-based judgement when reaching conclusions as to how effective biodiversity enhancement will be delivered.



# 3. Biodiversity Net Gain Assessment

### Existing Habitats

- 3.1 The existing habitats identified on site during the review of previous reports pre-February 2020 and google imagery show the site to be developed land; sealed surface, mixed scrub, other neutral grassland, ruderal/ephemeral, and ornamental lake or pond. The habitat map can be seen in Appendix A.
- 3.2 The landscape scheme can be seen in Appendix B.
- 3.3 Where relevant, the following habitats will be referred to using the UK Habitat Classification<sup>1</sup> to help inform the Biodiversity Net Gain (BNG) for the site.
- 3.4 The following habitats will be lost:
  - Developed land; sealed surface: All current areas of hardstanding will be lost.
  - Mixed scrub: This area has previously been removed during the February 2020 clearance.
  - Other neutral grassland: This area will be lost in order for the new building and soft landscaping to be created.
  - Ruderal/ephemeral: This area will be lost in order for the new building and soft landscaping to be created.
  - Ornamental lake or pond: This area will be lost in order for the new building and soft landscaping to be created.
- 3.5 The following habitats will be retained:
  - Mixed scrub: The area that has been designated for the reptile translocation will be retained. The area that will be retained will be 0.2ha.
- 3.6 The following habitats will be created: These descriptions have been provided by Macfarlane and Associates (2023).
  - Other neutral grassland (0.459ha): This area will include species such as species rich grassland GS8 Mix, Italian ryegrass (*Lolium multiflorum*), red clover (*Trifolium partense*), knapweed (*Centaurea nigra*), dropwort (*Filipendula vulgaris*), quaking grass (*Briza media*), betony (*Stachys officinalis*), birds foot trefoil (*Lotus corniculatus*), hop clover (*Medicago lupulina*), bladder campion (*Silene vulgarism*), grannys bonnet (*Aquilegia vulgaris*), bloody cranes bill (*Geranium sanguineum*), agrimony (*Agrimonia eupatoria*), mayweed (*Anthemis arvensis*.

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- Biodiverse Green Roof (0.489ha): Extensive green roof with substrate of minimum settled depth of 80mm (or 60mm beneath vegetation blanket) – meets the requirements of GRO Code 2014
- Developed land sealed surface (1.7719ha): this will include areas of building, drives, and paths.
- Artificial unvegetated, unsealed surface (0.1776ha): This will be an area within the car parking space.
- Urban tree: The tree plans includes that 145 trees will be planted.
  Species to be planted include field maple (*Acer campeste*), common beech (*Fangus sylvatica*), whitebeam (*Sorbus aria*), Juneberry (*Amelanchier lamarcki*), common laburnum (*Laburnum anagyroides*), paperbark maple (*Acer griseum*), Scots pine (*Pinus sylvestris*), English oak (*Quercus robur*).
- Mixed scrub (0.0288ha): This area will be a mixture of native species around the site boundaries.
- Rain gardens (0.0491ha): ): Amenity planting area which will include species such as scaly male fern (*Dryopteris affinis crispa*), common yarrow (*Achillea millefolium*), Mediterranean spurge (*Euphorbia characias wulfenii*), Mexican orange (*Choisya ternate*), sea dock (*Acanthus mollis*), Queen of the meadow (*Filipendula ulmaria*), culvers root (*Veronicastrum 'Fascination'*), blue fescue (*Festuca glauca*), purple moor-grass (*Molinia caerulea*), lavender cotton (*Santolina pinnata*), Harts tongue fern (*Asplenium scolopendrium*), shrubby veronica (*Hebe 'Red Edge'*), purple sage (*Salvia purpurascens*).
- Vegetated garden; Mixed Scrub (0.048ha): This area will include species such as red claws (*Escallionia rubra*), yarrow (*Achillea millefolium*), common hazel (*Corylus avellana*), hawthorn (*Crataegus monogyna*), sallow (*Salix cinerea*), alder buckthorn (*Frangula alnus*), new England aster (*Aster novae-angliae*).
- Vegetated garden (0.438ha): This area will include species such as, dogwood (*Cornus sanguinea*), common hazel (*Corylus avellana*), hawthorn (*Crataegus monogyna*), spindle (*Euonymus europaeus*), box honeysuckle (*Lonicera nitida*), common privet (*Ligustrum vulgare*), crack willow (*Salix fragilis*), basket willow (*Salix viminalis*), guelder rose (*Viburnum opulus*), holly (*Ilex x altaclerensis*), holly (*Ilex aquifolium*), common ninebark (*Physocarpus opulifolius*), redosier dogwood (*Cornus stolonifera*), cornflower (*Centaurea cyanus*).
- Other woodland; mixed (0.0285ha): This area that is being created under the "Tiny Forest by Earth watch" initiative which produces a fast-growing dense native woodland of 285m<sup>2</sup> which is to be used as an engagement programme to support community ownership and provide social benefits.



# Headline Results

3.7 The headline results, including total unit and % change are shown in Table 7 below. **Table 7: Results** 

	Habitat Area Units (Terrestrial area)	Habitat Length Units (Terrestrial linear length)	Aquatic Length Units (Aquatic linear length)
On-site Baseline	27.74	0	0
On-site post- intervention	13.89	0	0
Total net unit change	-13.85	0	0
Total net % change	-49.92%	0	0

# Results Summary

- 3.8 The baseline area habitats on the site are considered by the Biodiversity Net Gain assessment to have a value of **27.74 units**. The post-development area habitats are considered by the Biodiversity Net Gain Assessment to have a value of **13.89 units**. This is a **-13.85 net change** in habitat units which equates to a **-49.92% net loss**.
- 3.9 This reflects the replacement of previously clear mixed scrub, developed land; sealed surface, other neutral grassland, ruderal/ephemeral, and ornamental lake or pond to be replaced with developed land sealed surface, other neutral grassland, other green roof, artificial unvegetated, unsealed surface, urban tree, mixed scrub and a variety of vegetated gardens.
- 3.10 There are no linear/aquatic habitat features on the site pre- or post-development.



# 4. Discussion

- 4.1 A Biodiversity Net Gain Assessment has been carried out for the proposed development of Former Gasholder site, Yarnton Way, Belvedere. The site comprised of developed land; sealed surface, mixed scrub, other neutral grassland, ruderal/ephemeral, and ornamental lake or ponds.
- 4.2 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.
- 4.3 An overall net loss of 49.92% in habitat units from the existing baseline has been calculated. The net loss reflects the replacement of mixed scrub, ruderal/ephemeral, other neutral grassland, ornamental lake or pond and developed land; sealed surface with developed land; sealed surfaces, other neutral grassland, artificial unvegetated, unsealed surface, mixed scrub, trees and varying vegetated gardens. There will be no change 0.2ha of mixed scrub which will be retained as set out in the reptile translocation requirements. However, if this area is created into a tiny forest with dense tree planting, then this area may not be suitable for the reptile translocation area as sunlight may not reach the ground.
- 4.4 Currently the site does not meet the BNG Trading Rules, and it does not reach the 10% biodiversity net gain requirements.
- 4.5 There may also be significant gains for ecology on the site that are not captured by the BNG Assessment, such as species-specific enhancements including bird and bat boxes.



# 5. Conclusions and Recommendations

#### Conclusions

- 5.1 A Biodiversity Net Gain Assessment has been carried out for the proposed development of the Former Gasholder site, Yarnton Way, Belvedere. An overall net loss of 49.92% in habitat units from the existing baseline has been calculated.
- 5.2 As a result the site currently does not meet the 10% biodiversity net gain or the BNG Trading Rules requirements.
- 5.3 It should be noted that the BNG assessment does not capture other methods of ecological enhancement such as the inclusion of bat and bird boxes.

#### Recommendations

- 5.4 In order to achieve a biodiversity net gain on the site, it is recommended that the **planting of native species** onsite and **offsite compensation will be required**.
- 5.5 The use of a tiny forest in the reptile receptor area may not be appropriate for reptiles, and therefore another receptor area may need to be obtained.



# 6. References

- 6.1 Baker J., Hoskins R. and Butterworth T. (2019). Biodiversity Net Gain. Good practice principles for development: A practical guide. Ciria, London. Baker J., Hoskins R. and Butterworth T. (2019). Biodiversity Net Gain. Good practice principles for development: Case studies. Ciria, London.
- 6.2 British Standards Institute (2013). 24040:2013. *Biodiversity-Code of Practice for Planning and Development*. Standards Policy & Strategy Committee. Milton Keynes: BSI.
- 6.3 CIEEM (2017). *Guidelines for Preliminary Ecological Appraisal Second Edition*. Chartered Institute of Ecology and Environmental Management, Winchester.
- 6.4 CIEEM (2018). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*. Chartered Institute of Ecology and Environmental Management, Winchester.
- 6.5 CT Ecology (2018). Belvedere Gasholder Site Habitat Scoping Report. Unpublished Report for SGN. Sussex: CT Ecology
- 6.6 CT Ecology (2020) Belvedere Gasholder Site Reptile Survey Report. Unpublished Report for SGN. Sussex: CT Ecology.
- 6.7 Department for Communities and Local Government (2019) *National Planning Policy Framework (NPPF)* (on-line). Available from: <u>https://www.gov.uk/government/uploads/system/uploads/attachment\_data/file/6077/2116950.pdf</u> [Accessed on 31/08/2023].
- 6.8 Joint Nature Conservation Committee (2010). *Handbook for Phase 1 habitat survey - A technique for Environmental Audit.* JNCC, Peterborough.
- 6.9 Macfarlane and Associates (2023) Landscape statement, Part 3 of 3.
- 6.10 Natural England. (2023). *The Biodiversity Metric*. 4.0 (JP039).
- 6.11 Phlorum (2023) Preliminary Ecological Appraisal for Belvedere Gasholder Site. Unpublished Report.



Figures and Appendices



Appendix A

Habitat Map



Figure 1: Belvedere Gas Holder: Habitat Survey Map

Drawn by: CT Date: 14/11/2018 Not to Scale





Appendix B

Post Development Landscape Plan



HERBACEOUS		
NTING		

P01 Rev	25.08.23 Date	AW By	PLANNING ISSUE Notes
Client	=1 1 \//Δ		MES LIMITED
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		S SI	DERE, FORMER GAS TE ON YARNTON WAY
Title	NUM AND ADDRESS OF		TIVE MASTERPLAN

Appendix C

The Biodiversity Metric 4.0 Headline Results

Southern Gas Network Belvedere Holders Static Headline Results Scroll down for final results A				
	Habitat units	27.74		
On-site baseline	Hedgerow units	0.00		
	Watercourse units	0.00		
On-site post-intervention	Habitat units	13.89		
(Including habitat retention, creation & enhancement)	Hedgerow units	0.00		
(	Watercourse units	0.00		
On-site net change	Habitat units	-13.85	-49.92%	On-site net gain is less than target set 🛦
(units & percentage)	Hedgerow units	0.00	0.00%	
(units a percentage)	Watercourse units	0.00	0.00%	<u> </u>
	1		1	
	Habitat units	0.00		
Off-site baseline	Hedgerow units	0.00		
	Watercourse units	0.00		
Off site react intermention	Habitat units	0.00		
Off-site post-intervention	Hedgerow units	0.00		
(Including habitat retention, creation & enhancement)	Watercourse units	0.00		
	Habitat units	0.00	0.00%	
Off-site net change	Hedgerow units	0.00	0.00%	
(units & percentage)	Watercourse units	0.00	0.00%	

On which have a full server	Habitat units	-13.85
Combined net unit change	Hedgerow units	0.00
(Including all on-site & off-site habitat retention, creation & enhancement)	Watercourse units	0.00
	Habitat units	0.00
Spatial risk multiplier (SRM) deductions	Hedgerow units	0.00
	Watercourse units	0.00

FINAL RESULTS			
	Habitat units	-13.85	
Total net unit change	Hedgerow units	0.00	
(Including all on-site & off-site habitat retention, creation & enhancement)	Watercourse units	0.00	
	Habitat units	-49.92%	Total net gain achieved is less than target set ${f \Delta}$
Total net % change	Hedgerow units	0.00%	
(Including all on-site & off-site habitat retention, creation & enhancement)	Watercourse units	0.00%	
Trading rules satisfied?	No - Check Tradi	ng Summaries 🔺	

Unit Type	Target	Baseline Units	Units Required	Unit Deficit	
Habitat units	10.00%	27.74	30.51	16.62	
Hedgerow units	10.00%	0.00	0.00	0.00	Unit requirement met or surpassed 🗸
Watercourse units	10.00%	0.00	0.00	0.00	Unit requirement met or surpassed $\checkmark$



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