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Appendix 12.11

Biodiversity Net Gain Calculations

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APPENDICES

1. INTRODUCTION

1.1. Background

1.1.1. This document describes the results of the Biodiversity Impact Assessment undertaken. The assessment uses standardised methodologies where appropriate in order to qualify the biodiversity impact. It is also fully recognised within this assessment that a very precautionary approach to assessment has been adopted given the nature of the Local Development Order proposals.

1.2. Biodiversity Net Gain Assessment Methodology

1.2.1. A Biodiversity Net Gain (BNG) Assessment is a tool used to assess whether a project is capable of delivering measurable contributions to local biodiversity.

1.2.2. In order to undertake a BNG assessment, the most recent version of the Defra Biodiversity Metric V3 (hereafter, referred to as the 'Metric') has been applied to the Site.

1.2.3. The methodology for undertaking the BNG is based on the guidance provided within the Technical Supplement and User Guide published by Defra, in addition to the application of professional judgement where appropriate.

1.2.4. The process involves undertaking a quantitative review of the biodiversity value of the Site in its baseline condition, which in this instance is the 2032 Baseline scenario where the extant 2017 Consent has been delivered. This baseline is compared to what will be delivered, post development, once the Proposed Development has been implemented.

1.2.5. In this instance, the strategic landscape parameters plan (included at Appendix 3.1f of the ES) has been used to inform the post development scenario. In light of the detail presented as part of the parameter plan, the proposals have been interpreted on the basis of the very worst case scenario, where biodiversity impacts are considered to be at their potential maximum. For example, where the parameter plan allocates an area of land for development (i.e. the rail corridor), the existing habitats and ecological features are considered to be lost in full, with no habitat delivery as part of the proposals. That scenario is considered the most appropriate to inform the BNG assessment using the Defra Biodiversity Metric because there exists greater certainty with the values used.

1.2.6. It must however, be fully recognised that the assessed worst-case scenario would be highly unlikely to be representative of the final developed scheme.

1.2.7. Net gain can either be achieved directly through site-based measures (i.e. included within the planning boundary), or delivered as an off-site measure through bespoke off-site habitat creation or in certain cases, the purchasing of biodiversity credits through an approved credit broker.

1.3. The DEFRA Metric

1.4. The Metric works by assigning credits to the habitats located within the Development Site (both baseline and post-development). These credits are then used as a proxy to determine the ecological value of the site.

1.5. The respective credit score of each habitat is gauged by calculating key parameters that influence the habitats reported value. These are as follow:

- Habitat type / distinctiveness;
- Habitat area;
- Habitat condition; and,
- Strategic significance.

1.6. For either created or enhanced habitats, the additional main following parameters are applied;

- Habitat target type / distinctiveness;
- Habitat target condition;
- Time until target condition is reached; and,
- Difficulty of creation / enhancement.

1.7. The value for linear habitats are calculated separately, however follow a similar working methodology as those described for area based habitats above.

1.8. Both the 2032 baseline and Proposed Development for the Site have been assessed against the above identified parameters. The 2032 Baseline scenario is set out in detail within the biodiversity chapter (Chapter 12) and the post-development proposals for the Site shown graphically within the strategic landscape parameters plan (included at Appendix 3.1f of the ES).

1.9. In order to account for the use of UK Habitat Classification system (UKHab) within the Metric, a 'best fit' approach has been taken in order to ensure the most representative Phase-1 habitat type is being utilised for each of the baseline and post-development habitats within the Metric. This has been determined using the technical supplements provided within the Metric in addition to guidance published by the UK Habitat Classification Working Group.

Limitations

1.10. Biodiversity Metrics provide a way of measuring the biodiversity value of a site pre-development, and comparing it to what it will be, post-development. Due the nature of this process, whilst undoubtedly a helpful tool in many instances, Metric analysis alone runs the risk of being prejudicial, being limited by the pre-assigned data input categories and algorithms, leaving very little room for professional judgement or for the application of a more nuanced and qualitative approach.

1.11. This is most obviously highlighted by the fact that Metrics do not currently take into consideration measures directly relating to protected or notable species. It only considers proposals from a purely mathematical perspective which is limited to habitat type and composition / quality. For instance, the provision of a bespoke mitigation strategy that would, for example, see the inclusion of a variety of amphibian habitats to aid population success, will not necessarily be reflected within the post development scenario as this will simply assess the habitats in

isolation and not the broader (potentially more valuable) ecological benefits. A further example of this would be that there is no mechanism currently in place that would reward schemes for installing specific features, such as bat and bird boxes or hibernacula that are considered to offer ecological betterment in tandem with habitat enhancement / creation.

1.12. It should be noted that Biodiversity Metrics favour certain habitat types such as those that are typically 'easier' to create and in shorter time frames. This can very often lead to a situation where project design is stifled, with more ambitious projects running the risk of being penalised under the inherent scoring system, due to the timescales involved in a habitat (such as broadleaved woodland) reaching its full ecological potential.

2. BIODIVERSTIY NET GAIN ASSESSMENT RESULTS

2.1. A BIA using the most recent version of the DEFRA Metric (Version 3) has been undertaken for the Proposed Development.

2.2. The approach adopted uses the 2032 Baseline and a worst-case scenario associated with the outcome of the Proposed Development. The completed Metric is included at Appendix 12.11A of this report. It should be noted that as part of the Metric, those habitat areas which feature in the post development calculations are as follows:

- Retained habitat in the northeast: reedbed / grassland and wetland habitat associated with the Puriton Rhynes and Ponds LWS; Borrow Pit LWS (fishing lakes);
- Vegetated linear planning corridor linking Gravity Park and Puriton Rhynes and Ponds LWS;
- Proposed Gravity Park;
- Retained hedgerow along Woolavington Road;
- Retained section of Puriton Ash Ground LWS and associated land west of the rail corridor; and
- Retained parts of North Mead Drove Fields LWS (outside of rail corridor);
- Landscape planting along the northern boundary (between North Mead Drove Fields LWS and the reedbed).

Output

2.3. The Biodiversity Metric returns the following headline results:

- Existing habitat area score: **956.34 credits**
- Existing hedgerow linear score: **140.60 credits**
- Existing river linear score[1]**: 96.4 credits**

1.1 When considering the proposed on-site landscaping measures, the following scores are calculated:

- Post-development habitat area score: **354.11 credits**
- Post-development hedgerow linear score: **94.44 credits**
- Post-development river linear score: **65.40 credits**

2.4. The Metric indicates that when considered solely within the confines the Site boundary, the proposals will result in a 602.23 loss of credits for habitat area, a 46.16 loss for hedgerow linear habitat and a 31.00 loss of credits for river linear habitat.

2.5. Therefore, when applying the Metric, in order to off-set the above losses and additionally provide a 10% gain, 697.864 credits for habitat area will be required. Additional considerations, including further mitigation and compensation to be delivered, are discussed in the following section.

[1] "River Linear score" relates to the rhynes.

3. FURTHER CONSIDERATIONS

3.1. Whilst the Metric approach demonstrates a loss of credits, as highlighted previously, a worst-case scenario was used in the assessment. This has, therefore, generated the maximum biodiversity impact likely to be delivered by the Proposed Development, only recognising mitigation and betterment in strategic landscape / ecology areas at the periphery of the Site (including retained Local Wildlife Site habitat and the proposed Gravity Park), and excluding all planting / habitat creation (green and blue infrastructure) which may be delivered within the development zones. No account has taken of any habitat provision within the rail corridor, a significant area which will almost certainly deliver elements of screen planting as well as sparsely vegetated / ephemeral habitat of significant value to invertebrates.

3.2. A more reasonable scenario is one which is reflective of the wider development aspirations for the Site and what would be delivered as part of a comprehensive package of ecological mitigation and betterment, both onsite and off-site, with reference to the Design Guide and Mitigation Checklist.

Onsite Ecological Mitigation and Betterment

3.3. The Development Proposals include for the significant provision of landscaping, which will include areas of publicly accessible open space available to new residents / workers / visitors, and the delivery of habitats of both intrinsic ecological value, and value to faunal species.

3.4. The Design Guide has a strong focus on delivering well designed, integrated, inclusive and attractive public settings with both pedestrian and cycle routes. The link between placemaking / aesthetics and ecological benefits is fully recognised and as such significant opportunities arise for habitat creation (including extensive tree planting) within the Site.

3.5. New housing provision would trigger requirements to deliver accessible open space for recreation purposes and this would provide an opportunity to further increase the quantum of grassland and tree / scrub / hedgerow planting. Placemaking nodes and localised greenspace will provide focal points within areas of build form. This will provide opportunities for further habitat provision of biodiversity value not currently reflected within the Metric.

3.6. Requirements for blue infrastructure also offer opportunities to provide well designed, connected aquatic habitats and associated species rich bankside habitat.

3.7. There is also the potential for further habitat creation, potentially linked with public access, to be delivered within the "Wellbeing and Arrival Zone" in the south-east of the Site. The Proposed Development seeks to provide green edges to reflect its campus feel as well as provide wellbeing areas at arrival points. Whilst these areas will be multipurpose, one of these purposes will be to deliver habitats of biodiversity value.

3.8. Habitat betterment will also arise across the frontage of the Site, along Woolavington Road. This would be a low energy zone with a range of specific mitigation measures delivered in respect of bats, which would also be of general

biodiversity benefit, with bolster planting comprising new shrub, tree and meadow grassland planting all features of the pallet of measures for this area. This linear corridor will connect into the proposed Gravity Park that will include orchard, scrub, hedgerows and grassland.

3.9. Linear planting in the east will connect Gravity Park with the retained fishing ponds and further north and west, to the mix of grasslands, trees and scrub, rhynes and water attenuation features. Additional betterment may also be provided, through the strengthening of vegetated linear features.

3.10. Habitat delivery associated with the western boundary adds further opportunities to increase the both the matrix of habitats present and connectivity through the site. As previously discussed, the rail corridor has been excluded in its entirety from the Metric calculations, but opportunities exist for new tree / shrub planting and sparse / ephemeral habitats which will link with wider habitat delivery in the west.

Off Site Species Mitigation Provisions

3.11. As part of the wider ecological mitigation strategy for the Site, specific off-site measures for Great Crested Newt (GCN) and Water Vole will be delivered. This will include the provision of new aquatic and terrestrial habitat of good quality and of high biodiversity value. These measures are also not considered within the Metric approach.

3.12. A Great Crested Newt District Level Licence (GCNDLL) will be obtained. This process involves the allocation of funds, calculated on the basis of the level of impact (i.e. number of ponds to be lost and area of terrestrial habitat loss), towards a strategic project designed for the purpose of creating, enhancing and managing habitat for GCN in areas of particular significance for the species (core population areas). This approach will provide greater benefits to the species overall, as the compensation strategies are designed on the landscape level. It is axiomatic that the provision of new ponds and long-term future management of supporting terrestrial habitat of particular value to GCN, will also deliver wider biodiversity gains.

3.13. At least 30 bespoke new ponds will be created as part of this approach to GCN mitigation. In the light of the landscape led approach to GCN mitigation delivered through the GCNDLL scheme, the proposed mitigation scheme is considered to be of ‘strategic’ significance. Schemes of strategic significance are afforded a greater weighting within the metric calculations and as such the value of any habitats delivered would be increased as part of a Metric (with a multiplier of 1.5). At this stage, it is not possible to determine the quantum (in area terms) of aquatic and terrestrial habitat or the increase in quality associated with any terrestrial habitat to be delivered. However, it is clear that such provisions will have ecological benefits, including benefits which extend beyond GCN considerations.

3.14. Similarly, the mitigation associated with Water Voles will include the relocation of the voles to a location (under licence) which will comprise retained / improved or newly created optimal aquatic and marginal / terrestrial habitat of increased biodiversity value. This again is not reflected within the Metric. It is estimated that approximately 1.5km (or equivalent) of new / enhanced, aquatic / bankside

habitat will be delivered. Again, it is axiomatic that this will deliver biodiversity benefits beyond simply considerations relating to Water Vole.

Avalon Marshes

3.15. Avalon Marshes is located close to the site and is within the Somerset Levels, one of the largest lowland wetlands in Britain. It is a landscape consisting of nature reserves (including designated sites), agricultural fields and pastures, drained by a network of rhynes. The area has a long history of peat cutting. It is strategically important for wildlife, especially the large flocks of migrating birds and other wetland animals, as reflect by various nature conservation designations.

3.16. The proposals can facilitate funding towards initiatives at the nearby Avalon Marshes, through the Locality Investment Plan (LIP), wit such funding directed towards land acquisition and habitat rehabilitation with the aim of buffering and connecting existing sensitive habitats and restoring natural processes across the Avalon Marshes landscape. These measures will deliver wetland and grassland habitats of significant ecological value, compensating for biodiversity losses at the Site.

3.17. In the absence of any additional betterment delivered at the Site itself or as part of species mitigation strategies (discussed above), based solely on the Metric results and considering likely scenarios at the Avalon Marshes; habitat improvements would need to be delivered across an area of between 70ha (assuming modified grassland in ‘poor condition’ is enhanced to lowland meadow of ‘good condition’) and 110ha (assuming modified grassland in ‘moderate condition’ is enhanced into floodplain grazing meadow of good condition). However, with reference to the foregoing, it is considered that off-site betterment would need to be delivered across a significantly lower hectarage of land.

Appendices

Appendix 12.11A

BNG Calculations
Results

Headline Results

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On-site baseline	*Habitat units*	956.34
	Hedgerow units	140.60
	River units	96.40
On-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	354.11
	Hedgerow units	94.44
	River units	65.40
On-site net % change (Including habitat retention, creation & enhancement)	*Habitat units*	-62.97%
	Hedgerow units	-32.83%
	River units	-32.16%
Off-site baseline	*Habitat units*	0.00
	Hedgerow units	0.00
	River units	0.00
Off-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	0.00
	Hedgerow units	0.00
	River units	0.00
Total net unit change (including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	-602.23
	Hedgerow units	-46.16
	River units	-31.00
Total on-site net % change plus off-site surplus (including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	-62.97%
	Hedgerow units	-32.83%
	River units	-32.16%
Trading rules Satisfied?		No - Check Trading Summary