

**BAM Construction Ltd.**

## Huddersfield Cultural Heart

### Ecological Design Strategy and Habitat Management Plan

Reference:

P02 | 22 January 2025



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Job number 304647-00

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# Executive Summary

Ove Arup and Partners Ltd. was commissioned by BAM Construction Ltd. to assist with the discharging of Condition 16 Ecological Design Strategy and Condition 18 Habitat Management Plan relating to the planning submission of the Cultural Heart development. The scheme involves the creation of a public realm, food hall and museum and the improvement of the gallery and library in Huddersfield City Centre.

The key points are as follows:

- This report encloses the Ecological Design Strategy and Habitat Management Plan which outlines how to protect biodiversity during construction by avoiding direct impacts to protected species. It also guides on how to safeguard the long-term conservation value and ensure sustainable management of habitats enhanced and created as a part of the scheme.
- The report covers Phase 1 of the masterplan and is a live document. It will be updated when future phases in the masterplan come forward, to incorporate the additional landscaping plans which will contribute to the Biodiversity Net Gain assessment.
- Phase 1 delivers 0.53 habitat units, which means that there is a minimum of 2.02 habitat units to be delivered by the remaining project phases to achieve 10% net gain which was identified as part of the baseline assessment. Phase 1 of the development includes enhancing 'modified grassland' and creating 'vegetated garden' and 'urban tree' habitats, as defined by the Biodiversity Net Gain Metric 3.0, which was used for the initial planning application. These habitats require specific and considered management to ensure their long-term aesthetic value and benefit for biodiversity is maintained. This document outlines guidance for best practice of habitat management for these habitat types, including the type and frequency of practices required.

# 1. Introduction

Ove Arup and Partners Ltd. (Arup) was commissioned by BAM Construction Ltd. to assist with the discharging of Condition 16 (Ecological Design Strategy (EDS)) and Condition 18 (Habitat Management Plan) relating to the planning submission of the Cultural Heart development, approved in 2022 (2022/48/93248/W).

## 1.1 Purpose of this document

This document is prepared on behalf of BAM Construction Ltd. to discharge Condition 16 and Condition 18 of the Cultural Heart development.

Condition 16 states:

*Prior to development commencing, an Ecological Design Strategy (EDS) shall be submitted to, and agreed in writing by, the Local Planning Authority to ensure that a biodiversity net gain is achieved where possible within each component part and at the point of post-development completion. The EDS shall be in broad accordance with the principles of the Biodiversity Metric 3.0 calculations as received by the Local Planning Authority on 4th October 2022, as agreed in principle with the Local Planning Authority prior to determination and shall provide a minimum of a 10% net gain (noting the developments objective to achieve a minimum of 50% net gain) in habitat units post-development. The EDS shall include the following:*

- *Purpose and conservation objectives for the proposed works;*
- *Review of site potential and constraints for each component part;*
- *Detailed design(s) and/or working method(s) to achieve stated objectives for each component part;*
- *Extent and location/area of proposed works within each component part on appropriate scale maps and plans;*
- *Type and source of materials to be used where appropriate, e.g. native species of local provenance, within each component part;*
- *Type and location of a minimum of 10 Swift boxes with the overall development.*
- *Persons responsible for implementing the works;*
- *Details of initial aftercare and long-term maintenance;*
- *Details for monitoring for each component part and (where the results from monitoring show that conservation aims and objectives of the EDS are not being met) how contingencies and/or remedial action will be identified, agreed and implemented so that the development still delivers a measurable biodiversity net gain;*
- *Details for disposal of any wastes arising from works; and*
- *Any subsequent changes to the proposed landscape design for any component part should be assessed using the Biodiversity Metric to ensure the BNG target continues to be met.*

*The EDS shall be implemented in accordance with the approved details and all features shall be retained in that manner thereafter.*

*Reason: To protect biodiversity during construction by avoiding direct impacts to protected species, and to accord with Policy LP30 of the Kirklees Local Plan.*

Condition 18 states:

*A habitat management plan for each component part, or parts (as referred to in condition 3) shall be implemented and all retained and newly created habitats on site to ensure they are appropriately managed and can achieve the target condition specified.*

**Reason:** To protect biodiversity during construction by avoiding direct impacts to protected species, and to accord with Policy LP30 of the Kirklees Local Plan.

The requirements of Condition 18 is deemed to be fulfilled by points covered in Condition 16 (Table 1.1). Namely: *Details for monitoring for each component part and (where the results from monitoring show that conservation aims and objectives of the EDS are not being met) how contingencies and/or remedial action will be identified, agreed and implemented so that the development still delivers a measurable biodiversity net gain.* Consequently, this document is designed to discharge both conditions.

Table 1.1 details the relevant sections of the EDS and Habitat Management Plan which address the eleven points of Condition 16 and Condition 18.

**Table 1.1: Relevant section of the EDS which addresses the eleven points of Condition 16.**

Condition		Section within this document
Condition 16	<i>Purpose and conservation objectives for the proposed works</i>	Section 1.2
	<i>Review of site potential and constraints for each component part</i>	Section 2.2
	<i>Detailed design(s) and/or working method(s) to achieve stated objectives for each component part</i>	Section 3
	<i>Extent and location/area of proposed works within each component part on appropriate scale maps and plans</i>	Section 2.3
	<i>Type and source of materials to be used where appropriate, e.g. native species of local provenance, within each component part</i>	Section 3.1 - 3.3
	<i>Type and location of a minimum of 10 Swift boxes with the overall development</i>	Section 3.5
	<i>Persons responsible for implementing the works</i>	Section 6
	<i>Details of initial aftercare and long-term maintenance</i>	Section 5
	<i>Details for monitoring for each component part and (where the results from monitoring show that conservation aims and objectives of the EDS are not being met) how contingencies and/or remedial action will be identified, agreed and implemented so that the development still delivers a measurable biodiversity net gain</i>	Section 5

Condition		Section within this document
	<i>Details for disposal of any wastes arising from works</i>	Section 3.4
	<i>Any subsequent changes to the proposed landscape design for any component part should be assessed using the Biodiversity Metric to ensure the BNG target continues to be met</i>	Section 4.4 – 4.5
Condition 18	<i>A habitat management plan for each component part, or parts (as referred to in condition 3) shall be implemented and all retained and newly created habitats on site to ensure they are appropriately managed and can achieve the target condition specified.</i>	Section 3.4

## 1.2 Report Objectives

The EDS and Habitat Management Plan objective is:

- to protect biodiversity during construction by avoiding direct impacts to protected species and to accord with Policy LP30 of the Kirklees Local Plan;
- to ensure the long-term interest of nature conservation and landscape structure is safeguarded;
- new habitats are conserved;
- a sustainable and environmentally friendly approach is adopted for all operation and maintenance tasks; and
- the habitat value of the site achieves the target condition as set out in this report.

## 2. Site Information

### 2.1 Site Context

The site is located in Huddersfield City Centre and comprises buildings, hardstanding (roads, pavements and pedestrianised paths) with small pockets of managed amenity grassland and scattered trees.

The proposed development of the site will entail:

*“Demolition of the existing Piazza shopping centre, part removal of elements of Queensgate Market, and demolition/retention of service tunnels; with redevelopment of the site to form new public realm space (including public park and gardens, play areas, public square/outdoor event space); refurbishment and change of use of existing Queensgate Market Hall into new food hall (Use Class E (b) Sale of food and drink for consumption, mostly, on the premises); refurbishment and extension of existing library and art gallery building to form a new museum (Use Class F.1); change of use of part existing market hall building and extension to form a new public library (Use Class F.1); construction of new indoor event venue incorporating multi-storey car park below (Sui-Generis); erection of new public gallery building (Class F.2); and associated infrastructure on land and buildings at Queensgate Market, Huddersfield Library and Art Gallery, and Piazza (and The Shambles) Shopping Centre, Huddersfield.”*

And the aspirations of the project are to:

*“deliver a revitalised urban destination to build a vibrant, animated heart to the town which evokes a sense of pride and ownership in the local community.”<sup>1</sup>*

### 2.2 Baseline Assessment

A Preliminary Ecological Appraisal (PEA) of part of the site was undertaken in December 2019 by AECOM (Appendix A). The report concluded that the habitats recorded on site were of “limited ecological value”, and that the “loss of these habitats would not require specific habitat mitigation”. Nevertheless, the report made recommendations regarding breeding birds on site, noting that habitat removal should be undertaken outside of the breeding season, or immediately after checks by a suitably qualified ecologist. A subsequent Ecological Site Survey and Biodiversity Net Gain (BNG) Assessment was then conducted by Arup in 2022<sup>2</sup> to confirm habitats and the potential or presence of notable species. The BNG assessment identified the potential to support notable fauna such as swifts *Apus apus* and recorded the following habitat types:

- modified grassland;
- urban tree;
- introduced shrub;
- developed land; sealed surface; and
- artificial unvegetated, unsealed surface.

Kirklees Council have set an ambitious target of 50% BNG for this scheme, to be delivered within the site boundary and Arup’s previous report confirmed that, based on current drawings at the time, there was a predicted 55.68% net gain in habitat units on-site, exceeding Kirklees Council’s target.

### 2.3 Site Description

The overall scheme and full masterplan for the site has been previously assessed, however for this document the ‘site’ refers to hereon as that which just concerns ‘Phase 1’ of the masterplan, as detailed in Figure 2.1. Phase 1 encompasses the development of the food hall, public square, outdoor event space and pockets of ornamental planting. Subsequent phases of development shall include public realm, museum and gallery with

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<sup>1</sup> Gillespies (2024) Landscape management Plan. IR430301-GIL-ZZ-00-RP-L-710020

<sup>2</sup> Arup (2022) Ecological Site Survey and Biodiversity Net Gain Assessment. CDT430201-ARP-ZZ-ZZ-RP-YE-000002

a venue and multi storey car park. Therefore, the following information, including BNG, only applies to Phase 1 of the plan. The EDS and Habitat Management Plan should therefore be considered a live document that is subsequently updated when the following phases of the masterplan are brought forward. Following completion of all phases of the masterplan, direct comparison with the previous BNG assessment undertaken which outlined the potential for the site to achieve 55.68% net gain can be undertaken.



**Figure 2.1: The full masterplan of the site is denoted by the red line. Phase 1 which this report refers to as the 'site' is denoted by the dark purple line.**

## 3. Proposed Ecological Design and Habitat Management

### 3.1 Habitat Loss

0.146 hectares of ‘Urban tree’ habitats have been lost within the ‘modified grassland’ habitat area and ‘developed land; sealed surface’ along Queensgate Road and within the ‘developed land; sealed surface’ near Queensgate Market as a consequence of Phase 1 of the scheme. 0.017 hectares of ‘modified grassland habitats’ have also been lost in the east of the site due to Phase 1 of the scheme.

### 3.2 Habitat Retention

There were no ecologically valuable habitats retained on Site, post-development.

### 3.3 Habitat Enhancement

#### 3.3.1 Species Rich Lawn Turf

The species rich lawn turf has been chosen as a species-rich and more biodiverse alternative to a monoculture lawn turf. Based on the species list described in the landscape design plans, detailed in Table 3.1, the species rich lawn turf has been defined as ‘Grassland – Modified Grassland’ and not an alternative grassland type due to the urban setting, fertiliser being applied and the species list having insufficient richness. In the BNG Metric it is described to be in ‘good’ condition, assuming it is suitably managed to meet the criteria outlined in the BNG Condition Assessment sheets (see Appendix B).

**Table 3.1: Species list within the species-rich lawn turf.**

Species Latine Name	Species Common Name
<i>Festuca rubra subsp. commutate</i>	Chewing fescue
<i>Festuca ovina</i>	Sheep’s fescue
<i>Poa pratensis</i>	Smooth meadowgrass
<i>Festuca rubra trichophylla</i>	Slender creeping red fescue
<i>Lolium perenne</i>	Perennial ryegrass
<i>Phleum bertolonii</i>	Smaller cat’s tail

### 3.4 Habitat Creation

#### 3.4.1 Ornamental and Bulb Planting

The designed planting beds proposed in Huddersfield Cultural Heart function primarily as a low maintenance, aesthetic feature to soften hard landscaping. The planting beds are to feature ornamental planting and bulb planting outlined in Table 3.2 and Table 3.3. The planting consists largely of non-native species, but they will support a range of local wildlife species including urban birds, bats and insects. This wildlife will be supported by the creation and provision of a rich, year-round food source and foraging habitat through a combination of deciduous, evergreen and perennial plants as well as seasonal flowers, seed heads and berries. The density and complex structure of these compositions will also offer habitat opportunities for these species, through nesting/roosting/burrowing.

Based on the species lists provided by the landscaping plans (Table 3.2 and Table 3.3), it is justified that the Ornamental and Bulb Planting are defined as ‘Urban – Vegetated Garden’ in the BNG Metric and as in ‘poor’ condition, as this is fixed under the Metric.

**Table 3.2: Species list of ornamental planting.**

Species	Height	Density
<i>Achillea filipendulina</i> ‘Cloth of Gold’	20 - 30cm	6/m <sup>2</sup>
<i>Alchemilla mollis</i>	20 - 30cm	5/m <sup>2</sup>
<i>Anemanthele lessoniana</i>	20 - 30cm	7/m <sup>2</sup>

Species	Height	Density
<i>Astrantia major</i> ‘Ruby Wedding’	20 - 30cm	7/m2
<i>Brunnera macrophylla</i> ‘Jack Frost’	10 - 20cm	7/m2
<i>Calamagrostis x acutiflora</i> ‘Karl Foerster’	40 - 60cm	5/m2
<i>Cornus alba</i> ‘Elegantissima’	40 - 60cm	3/m2
<i>Dryopteris erythrosora</i>	40 - 60cm	5/m2
<i>Dryopteris erythrosora</i> ‘Brilliance’	40 - 60cm	5/m2
<i>Hebe rakaiensis</i>	20 - 30cm	5/m2
<i>Helenium amarum</i>	20 - 30cm	7/m2
<i>Hemerocallis</i> ‘Crimson Pirate’	20 - 30cm	7/m2
<i>Lamium maculatum</i> ‘White Nancy’	10 - 20cm	7/m2
<i>Pachysandra terminalis</i>	10 - 20cm	7/m2
<i>Polypodium vulgare</i>	20 - 30cm	6/m2
<i>Polystichum setiferum</i>	40 - 60cm	5/m2
<i>Sedum</i> ‘Autumn Joy’	20 - 30cm	6/m2
<i>Tellima grandiflora</i>	20 - 30cm	7/m2

**Table 3.3: Species list of bulb planting.**

Species	Density
<i>Galanthus nivalis</i>	15/m2
<i>Tulipa</i> ‘Magic Lavender’	15/m2
<i>Tulipa</i> ‘Queen Of Night’	15/m2

### 3.4.2 Tree Planting

Within the ornamental and bulb planting beds mentioned above, the landscaping plans outline that multiple non-native trees and one species of native tree (field maple *Acer campestre*) will be planted in this area. These trees will frame public realm areas and soften building facades as well as providing habitats and foraging opportunities for local wildlife. Based on the species list provided (Table 3.4), it is justified that the tree planting is defined as ‘Urban – Urban tree’ in the BNG Metric. A ‘moderate’ condition is targeted, according to the Condition Assessment sheet (Appendix B) as the trees will be semi-mature, have limited features for wildlife and be anthropogenically managed. Furthermore, using the Biodiversity Metric 3.0 User Guide, from the details in the landscaping plans, it is justified that all the trees input are defined as ‘small’ size.

**Table 3.4: Species list of trees.**

Species	Height	Girth	Spread
<i>Amelanchier arborea</i> ‘Robin Hill’	350 - 400cm	14 – 16cm	150 - 200cm
<i>Amelanchier lamarkii</i>	350 - 400cm	14 – 16cm	150 - 200cm
<i>Acer campestre</i> ‘Streetwise’	550 - 650cm	25 – 30cm	
<i>Liquidambar styraciflua</i> ‘Worplesdon’	650 - 750cm	35 – 40cm	

## 3.5 Habitat Maintenance and Management

### 3.5.1 General Techniques

The general intent of the maintenance and management of the site is to ensure the establishment of habitats to the target condition outlined within Section 3 of this document. In addition, these measures will ensure the planting develops to form a mature landscape.

The detailed management requirements for each ecological and landscape element will depend on the timing and review of the works year on year, and therefore annual monitoring by those responsible for the maintenance and aftercare will be required. Further to the objectives of maintaining the landscape and

ecological resource as landscape elements in themselves, monitoring and review regimes will also account for any health and safety issues.

The purpose of this document is that it is a live document. The management prescriptions are flexible such that each item can be reviewed and updated on an annual basis or on proposed dates as prescribed which allows targets to be monitored and accurate reporting.

All management and maintenance is to be undertaken in such a way as to allow healthy plants to develop, unhindered by unwanted weed growth or other inhibiting factors.

All maintenance is to be carried out in accordance with good horticultural and silviculture practices including BS 7370-4:1993 *Grounds Maintenance: Recommendations for maintenance of soft landscape* and BS 3998:2010 *Tree work - recommendations*. All maintenance operatives will be suitably experienced and suitably qualified where necessary; with experience of working across a wide range of applications.

The contractor shall collect and remove all litter and other extraneous material from areas of grassland and ornamental planting and hard landscaping during each maintenance visit.

### 3.5.2 Species Rich Lawn Turf

The objectives for the species rich lawn turf are as follows:

*“Maintain a healthy, tidy and dense grass sward. Free from disease, fungal growth, discolouration, scorch, wilt, moss, excessive thatch and weeds.”<sup>1</sup>*

To achieve this the first cut will be undertaken when grass reaches 75mm high. Following this there will be cuts monthly between April and October and fortnightly in the peak growing season. Grass will be cut to between 50-75mm high. All areas of grass to be mown will be cleared of surface litter and other extraneous material immediately prior to mowing. All cuttings will be sent to local composting facilities.

Weed control will generally include hand pulling of weeds. If invasive weeds are identified on site a methodology for their removal should be made with the management company and implemented as soon as possible as outlined in section 4.1.13 of the Landscape Management Plan<sup>1</sup>. Moss and thatch build up will be controlled by spiking to a minimum depth of 75mm in early autumn and subsequent scarifying.

Fertiliser will be applied during the rectification period, following the specification outline in Section 4.2.3 of the Landscape Management Plan<sup>1</sup>.

All damaged turf will be rectified by adding sand filler to depressions and returfing or reseeding worn areas.

### 3.5.3 Ornamental and Bulb Planting

The objectives of the ornamental and bulb planting are as follows:

*“Maintain thriving, healthy, naturalistic plant growth devoid of weeds, providing consistent cover across planting beds.”<sup>1</sup>*

To achieve this there should be sufficient watering of the planting beds in accordance with the watering plan outlined in Section 4.2.5 in the Landscape Management Plan.<sup>1</sup> General maintenance should also include forking over beds to prevent soil compaction.

Weed control will generally include hand pulling of weeds. If invasive weeds are identified on site a methodology for their removal should be made with the management company and implemented as soon as possible as outlined in section 4.1.13 of the Landscape Management Plan<sup>1</sup>. To help suppress weed growth, bark mulch should be maintained to a depth of 50mm around the base of all plants.

A slow-releasing fertiliser will be applied to the specifications outlined in Section 4.2.3 of the Landscape Management Plan.<sup>1</sup>

Pruning to clear dead material and promote new growth should be undertaken when and as frequently as required for individual plant species.

For the bulb planting, it is required that foliage is cut back no sooner than six weeks after flowering has finished and this will vary between growing years and for individual species.

Plants which die, become diseased, damaged or are removed within three years of planting will be replaced with plants of similar sizes and species or as otherwise agreed with the LPA in the first available planting season. If there is repeated and large-scale failure of planting aspects, then a review should be undertaken to assess an appropriate course of action.

In the long-term, large groups of ornamental planting should be divided every three years to manage overcrowding.

### 3.5.4 Urban Tree Planting

The objectives of the tree planting are as follows:

*“To maintain the healthy appearance of all trees in a safe condition, appropriate to the form and growth habit of the species concerned to provide strong architectural form, seasonal interest and promote biodiversity.”<sup>1</sup>*

To achieve this there should be sufficient watering of the planting beds in accordance with the watering plan outlined in Section 4.2.5 in the Landscape Management Plan<sup>1</sup>.

General inspections will be undertaken to monitor tree health and identify the presence of pests and diseases.

Weed control will generally include hand pulling of weeds. If invasive weeds are identified on site a methodology for their removal should be made with the management company and implemented as soon as possible as outlined in section 4.1.13 of the Landscape Management Plan<sup>1</sup>. To help suppress weed growth, gravel or bark mulch should be maintained to a depth of 50mm in a ring around the base of all trees.

A slow-release fertiliser will be applied annually to promote tree growth as specified in Section 4.2.3 in the Landscape Management Plan<sup>1</sup>.

All tree guards/shelters should be biodegradable or non-plastic. They will be checked to ensure they are not loose at maintenance visits. All stakes will be checked to ensure they are firm and ties correctly adjusted. All broken tree guards/shelters, stakes and ties will be replaced. Planted specimens will be inspected at each maintenance visit and after strong winds, frost heave or other disturbances, and any disturbed trees replanted. All tree and shrub guards/shelters, stakes and ties will be removed after five years.

Trees which die, become diseased, damaged or are removed within three years of planting will be replaced with trees of similar sizes and species or as otherwise agreed with the LPA in the first available planting season. If there is repeated and large-scale failure of trees then a review should be undertaken to assess an appropriate course of action.

## 3.6 Swift Boxes

It was noted through consultation with Kirklees Council Biodiversity Officer<sup>2</sup> that the site has potential to support common swift. Therefore, the location of swift boxes in the development has been noted as a key point under Condition 16 of the Cultural Heart Development. However, the proposed buildings in Phase 1 of the scheme are not suitable for swift boxes due to insufficient height, potential for window collision and/or potential disturbance levels from human traffic. There will be opportunities within subsequent phases to discharge this condition.

## 4. Biodiversity Net Gain

### 4.1 Baseline Assessment

A site survey in August 2024 confirmed that no changes had occurred either in habitat type or condition within the site since the baseline survey.<sup>2</sup> A summary of the habitats and their conditions are presented in Table 4.1.

**Table 4.1: Baseline habitat types, condition and Habitat Unit value.**

BNG Habitat Type	Condition Value	Area (ha) <sup>3</sup>	Habitat Unit Value
Modified grassland	Moderate	0.19	0.75
	Poor	0.09	0.18
Urban tree	Good	0.01	0.15
	Moderate	0.14	1.16
Introduced shrub	Poor	0.04	0.08
Developed land; sealed surface	N/A	2.71	0
Artificial unvegetated, unsealed surface	N/A	0.32	0
<b>Total:</b>	-	<b>3.50</b>	<b>2.32</b>

The BNG baseline assessment of the site returned a Habitat Unit value of 2.32.

Due to the absence of hedgerows and watercourses within the site boundary, the site baseline does not include Hedgerow Units or River Units.

### 4.2 Post-Development

The post-development input into the BNG Metric is based on the current iteration of the landscape plan produced by Gillespies (Appendix C) and includes the Phase 1 area of the masterplan only (Figure 2.1).

The current iteration of the landscape plan for the proposed development includes enhancing areas of species rich lawn turf and creating areas of ornamental planting, bulb planting and urban trees. The calculations in the BNG Metric are based on habitats achieving conditions that have been predicted by comparing the landscaping plans with the Biodiversity Metric 3.0 Condition Sheets (see Appendix D for full calculation).

A summary of the baseline Habitat Units that are enhanced are provided in Table 4.2 and those that are created are provided in Table 4.3.

**Table 4.2: Enhanced baseline habitats.**

Enhanced BNG Habitat Type	Condition Value	Area (ha)	Habitat Unit Value
Modified grassland	Good	0.07	0.33
<b>Total:</b>	-	<b>0.07</b>	<b>0.33</b>

<sup>3</sup> Note that total area calculated will differ in the Biodiversity Metric. This is due to the Biodiversity Metric calculator excluding area of urban trees.

**Table 4.3: Created habitat areas.**

Created BNG Habitat Type	Condition Value	Area (ha) <sup>4</sup>	Habitat Unit Value
Vegetated garden	Poor	0.09	0.17
Urban Tree	Moderate	0.01	0.03
<b>Total:</b>	-	<b>0.10</b>	<b>0.20</b>

### 4.3 Biodiversity Net Gain Assessment

Overall, there is a baseline of 2.32 habitat units and 0.53 habitat units are delivered by Phase 1 of the development plan. This leaves a minimum of a further 2.02 units to be delivered in the subsequent phases to achieve 10% Biodiversity Net Gain. This shall be monitored in further phases of the project once landscaping plans have been finalised.

### 4.4 Monitoring Method

Monitoring of these habitats will be undertaken by a suitably qualified ecologist who will survey all enhanced or created habitat parcels using the UK Habitat Classification method to confirm target habitat type is being achieved. The condition of each habitat parcel will be carried out in accordance with Biodiversity Metric 3.0 Condition Sheets (Appendix B) to determine the current condition of that habitat type (poor, moderate and good).

This monitoring will assess progress of the habitat proposals and management regime towards achieving the target type and condition. The monitoring will ensure habitats achieve condition within the anticipated time frames and are appropriately maintained over the 30-year monitoring period.

Monitoring will be carried out to ensure that the habitats will reach their target condition within the specified timeframe outlined in BNG Metric 3.0. The standard time to the target condition/years varies between habitat types and for ‘vegetated garden’, ‘modified grassland’ and ‘urban tree’ habitats respectively the time is 1, 10 and 27 years. After five years, it is recommended that an assessment is made to update and inform on the guidance for future monitoring.

### 4.5 Reporting Requirements

At each monitoring stage (as specified in Section 4.4), a BNG Auditing Report will be completed. The report will document ‘as-built’<sup>5</sup> habitat plans based on the specific habitat condition at time of audit. The ‘as-built’ habitat plans will be compared with the habitat proposals provided for this report and determine requirements for remediation. If remediation is required, the report will specify further management interventions to enable the habitat types to achieve target condition. This may include consultation with Kirklees Council to determine appropriate adjustment to the management regime.

<sup>4</sup> Note that total area calculated will differ in the Biodiversity Metric. This is due to the Biodiversity Metric calculator excluding area of urban trees.

<sup>5</sup> Based upon the specific conditions at the time of the audit (not proposed or predicted conditions).

## 5. Management and Monitoring Actions

### 5.1 Maintenance, Monitoring and Aftercare Programme

Kirklees Council will be responsible for the maintenance of the measures outlined within this document. The works shall be carried out in accordance with their usual public realm maintenance programme. Table 5.1 illustrates an indicative maintenance and aftercare regime, to be implemented for five years from completion of each phase of planting. Table 5.2 illustrates indicative maintenance for the subsequent years. These tables align with the Landscape Management Plan produced by Gillespies.<sup>1</sup>

The condition assessment of relevant habitats must be undertaken by a suitably qualified ecologist, appointed by Kirklees Council. The criteria for achieving the condition of each habitat type must be assessed and any remedial action will be identified following the assessment. The actions will reflect any necessary requirement to achieve the relevant condition criteria e.g. for modified grassland, ensuring scrub present accounts for less than 20% of the total grassland area (Appendix B).

**Table 5.1 Indicative five-year aftercare and maintenance programme (Q1: January, February, March; Q2: April, May, June; Q3: July, August, September; Q4: October, November, December).**

Maintenance operation	Number of operations per year	Year 1				Year 2				Year 3				Year 4				Year 5			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Assessment of newly established habitats, the condition of the existing habitats and preparation of a programme of remedial action as required	Once annually in spring/summer																				
Signs of disturbance to be rectified, litter and other erroneous material to be removed from site	As necessary during maintenance visits																				
Condition assessment of relevant habitats in line with Section 3. The survey information will be included within a monitoring report to be provided to the LPA	Once in Year 1, 3 and 5																				
<b>Grassland – modified grassland</b>																					
Watering until the full depth of the topsoil is wet during establishment. All actions recorded in a written log.	18 times, so weekly in the first two months and monthly for the following 10 months.																				
Maintain grass to a height of between 50 to 75mm or as specified, removing all arisings, disposing at a local composting facility.	12 times, monthly in March, April, May and October and twice a month in June, July, August and September. Can be																				

Maintenance operation	Number of operations per year	Year 1				Year 2				Year 3				Year 4				Year 5			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	adjusted as required.																				
Undertake re-seeding/re-turfing and fertiliser treatment where required to maintain a consistent appearance.	As required, in spring if required.																				
Spike to a minimum depth of 75mm in early Autumn and scarify to remove moss and thatch build up.	Once a year, in early autumn.																				
Control of weeds and unwanted species by hand pulling.	Seven times, monthly between April and October.																				
Apply fertiliser throughout the rectification period.	Twice a year, in April and September. Apply to rates in 4.2.3																				
<b>Urban – vegetated garden</b>																					
General bed maintenance and soil cultivation.	Once a month.																				
Areas to be watered until the full depth of topsoil is wet during establishment. All actions recorded in a written log.	Every 2-3 days for first 2 months and weekly for following 10 months or until established then as required. There should also be increased watering in periods of prolonged drought,																				

Maintenance operation	Number of operations per year	Year 1				Year 2				Year 3				Year 4				Year 5			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	unless there are water restrictions.																				
Top up mulch to 50mm minimum depth.	Once a year.																				
Control of weeds and unwanted species by hand pulling.	Seven times, monthly between April and October and as required.																				
Prune ornamental shrubs as appropriate for individual species to maintain natural form and enhance growth.	Once a year, between September and February as required for individual species.																				
Hand cut deciduous ornamental grasses to clear dead vegetation and remove all arising.	Once a year between February and March.																				
Cut back last season's growth when perennials die back or as appropriate for individual species, retaining seed heads and plants susceptible to frost until late winter/spring.	As required between late autumn/winter or late winter/spring depending on individual species.																				
Deadhead and prune to promote longevity of flowering species and stake where required.	Seven times, monthly between May and November.																				
Divide herbaceous planting where required to promote healthy growth.	Once a year in autumn or spring.																				

Maintenance operation	Number of operations per year	Year 1				Year 2				Year 3				Year 4				Year 5			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Cut foliage from bulb planting back no sooner than six weeks after flowering has finished and remove where necessary.	Once a year in early summer, but not required for all species.																				
Replace any dead or dying plants within next planting season.	Once a year, in winter.																				
<b>Urban – urban tree</b>																					
General inspection and maintenance activities.	As and when required.																				
Watering until the full depth of topsoil is wet during establishment. All actions to be recorded in a written log.	Twice weekly for the first two months and then weekly for the first 10 months or until established. There should also be increased watering in periods of prolonged drought (over 14 days), unless there are water restrictions.																				
Top up of mulch to 50mm minimum depth.	Once a year, in March.																				
Inspections to specimen trees and hand weeding to planting circles (approximately 1m) at base of tree. Remedial works may also be required in response to inspection.	Twice a year, in April and August. Remedial works are as and when required.																				

Maintenance operation	Number of operations per year	Year 1				Year 2				Year 3				Year 4				Year 5			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Crown pruning to maintain form, health and vigour.	As and when required and if required in winter.																				
Replace any dead or dying plants within next planting season.	Once a year, in winter.																				

**Table 5.2 Indicative aftercare and maintenance programme for years 6-30 (Q1: January, February, March; Q2: April, May, June; Q3: July, August, September; Q4: October, November, December).**

Maintenance operation	Number of operations per year	Year 6-30			
		Q1	Q2	Q3	Q4
Condition assessment of relevant habitats in line with Section 3. The survey information will be included within a monitoring report to be provided to the LPA.	Once in Year 10, 15, 20, 25 and 30				
Preparation of a programme of remedial action as required following condition assessments	Once in Year 10, 15, 20, 25 and 30				
Signs of disturbance to be rectified, litter and other erroneous material to be removed from site	As necessary during maintenance visits				
<b>Grassland – modified grassland</b>					
Maintain grass to a height of between 50 to 75mm or as specified, removing all arisings, disposing at a local composting facility.	12 times, monthly in March, April, May and October and twice a month in June, July, August and September. Can be adjusted as required.				
Undertake re-seeding/ re-turfing and fertiliser treatment where required to maintain a consistent appearance.	As required, in spring if required.				
Spike to a minimum depth of 75mm in early Autumn and scarify to remove moss and thatch build up.	Once a year, in early autumn.				
Control of weeds and unwanted species by hand pulling.	Seven times, monthly between April and October.				

Maintenance operation	Number of operations per year	Year 6-30			
		Q1	Q2	Q3	Q4
<b>Urban – vegetated garden</b>					
General bed maintenance and soil cultivation.	Once a month.				
Water planting beds in prolonged periods of drought unless there are water restrictions.	As required, highest risk in summer.				
Top up mulch to 50mm minimum depth.	Once a year.				
Control of weed and unwanted species by hand pulling.	Seven times, monthly between April and October and as required.				
Prune ornamental shrubs as appropriate for individual species to maintain natural form and enhance growth.	Once a year, between as September and February as required for individual species				
Hand cut deciduous ornamental grasses to clear dead vegetation and remove all arising.	Once a year between February and March.				
Cut back last season’s growth when perennials die back or as appropriate for individual species, retaining seed heads and plants susceptible to frost until late winter/ spring.	As required between late autumn/winter or late winter/spring depending on individual species.				
Deadhead and prune to promote longevity of flowering species and stake where required.	Seven times, monthly between May and November.				
Divide herbaceous planting where required to promote healthy growth.	Once a year in autumn or spring.				
Cut foliage from bulb planting back no sooner than 6 weeks after flowering has finished and remove where necessary.	Once a year in early summer, but not required for all species.				
Replace any dead or dying plants within next planting season.	Once a year, in winter.				
<b>Urban – urban tree</b>					
General inspection and maintenance activities.	As and when required.				
Water trees in prolonged periods of drought unless there are water restrictions.	As and when required, highest risk in summer.				

Maintenance operation	Number of operations per year	Year 6-30			
		Q1	Q2	Q3	Q4
Top up of mulch to 50mm minimum depth.	Once a year, in March.				
Inspections to specimen trees and hand weeding to planting circles (approximately 1m) at base of tree. Remedial works may also be required in response to inspection.	Twice a year, in April and August. Remedial works are as and when required.				
Crown pruning to maintain form, health and vigour.	As and when required and if required in winter.				
Replace any dead or dying plants within next planting season.	Once a year, in winter.				

## 6. Role and Responsibilities

Kirklees Council will be responsible for the implementation of all newly planted habitats, including the appointment of one or more landscape contractors directly or through a main contractor. Ongoing management and maintenance will be undertaken by Kirklees Council, in accordance with their usual public realm maintenance programme.

Following construction completion, there will be a joint inspection of the site between the contractor, Kirklees Council and the landowner (Kirklees Council) to ensure all parties are satisfied. The contractor will however be responsible for resolving any issues which should arise within the agreed establishment/defects period.

All management should be undertaken in such a way as to allow healthy plants to develop, unhindered by unwanted weed growth or other inhibiting factors and ensure interventions are safe and functional for use as described in the objectives for each intervention below.

All management is to be carried out as set out and in accordance with good horticultural practices. All people employed to carry out maintenance operations shall be suitably experienced.

The sections above set out the management prescriptions required for each intervention type.

Kirklees Council are responsible for the appointment of a suitably qualified ecologist to undertake monitoring of the habitat conditions. The monitoring will identify any required remedial actions in order to achieve the target condition of each habitat type.

### Disclaimer

This report is produced solely for the benefit of BAM Construction Ltd. and no liability is accepted for any reliance placed on it by any other party. This report is prepared for the proposed uses stated in the report and should not be used in a different context

# Appendix A

## AECOM Huddersfield Sound Space PEA Report January 2020

# Appendix B

## BNG Metric 3.0 Condition Sheets

# Appendix C

## Landscape Plans

# Appendix D

## BNG Calculation