

Biodiversity Mitigation and Enhancement Scheme

Hunshelf BESS

Reference: 80-863-R3

Date: July 24





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Report reference	80-863-R3
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REV REF:	DESCRIPTION	AUTHOR	CHECKED	AUTHORISED	DATE
R3-1	First issue	CE	LT	CK	11/07/24

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1. INTRODUCTION

1.1. BACKGROUND

E3P were commissioned by Harmony MS Ltd to produce a Biodiversity Mitigation and Enhancement Scheme at Hunshelf BESS, hereafter referred to as “the site”.

The current report has been produced by Conor Evans BSc (Hons) MRes Consultant Ecologist at E3P. Conor has experience undertaking Preliminary Ecological Appraisals, protected species surveys and ecological mitigation for a wide variety of projects across the UK.

1.2. DISCHARGE CONDITION

This report has been prepared to discharge Condition 9 of the planning application 2023/0322/FUL as follows:

‘No development shall take place (including vegetation/site clearance) until a Biodiversity Mitigation and Enhancement Scheme has been submitted and approved in writing by the Local Planning Authority. The approved scheme shall be implemented in full according unless otherwise agreed in writing by the Local Planning Authority. The scheme shall include, but not limited to, the following details:

- Precautionary measures to be adopted during construction works in the interest of nesting birds, badger, brown hare and hedgehogs;*
- A recent landscape plan detailing the location of mitigation works and each habitat to be enhanced and/or created;*
- Management aims and prescriptions detailing the methods required to create and/or enhance each habitat;*
- A timetable of delivery for habitats created and/or enhanced;*
- A schedule of ecological monitoring for a minimum 5 year period, identifying when key indicators of habitat maturity should be achieved;*
- Details on the monitoring of habitats and the provision of a report, which shall be provided to the Local Planning Authority on the 1st November of each year of monitoring; and*
- A schedule of actions to be undertaken in case signs of failing are identified. The schedules must include details of technique(s) to be used, equipment to be used, roles and relevant expertise of personnel and organisations involved, and timing of actions, including submission of monitoring report to the Council.’*

1.3. SITE LOCATION

The site is located in the agricultural area of Hunshelf, north-west of Sheffield. Tofts Lane defines the northern site boundary, with Dean Brook located approximately 100 m north-east of the site. A substation is located to the east of the site, with agricultural land surrounding the site on all other aspects. Please refer to Figure 1 below for the approximate site location.



Figure 1 **Approximate Site Location**



1.4. RESPONSIBILITIES

It will be the responsibility of the developer/ operator to appoint a suitable management company for the long-term management and maintenance of the habitats within the site. The management company will then be responsible for implementing the current management plan.



2. PROPOSED LANDSCAPING FEATURES

Landscape proposals are outlined within the General Arrangement Plan which has been prepared by Urban Green (2022) (Drawing Number: UG_1636_LAN_GA_DRW_01).

The current Biodiversity Mitigation and Enhancement Scheme covers the following habitats:

- ✿ Off-Site Enhancement of Wildflower Meadow Planting
- ✿ Off-Site Urban Tree Retention
- ✿ On-Site Sustainable Drainage Systems (SuDS) Pond and Aquatic/Marginal Mixed Planting

2.1. ENHANCED WILDFLOWER MEADOW PLANTING

An off-site area located approximately 100 m south-east of the site is to be enhanced from poor condition modified grassland to moderate condition other neutral grassland. The grassland is to be seeded with EM2 Standard General Purpose Meadow Mixture by Emorsgate at a rate of 4g per m², the composition of which is as follows:

Wildflowers (15.00%):

- ✿ 0.75% *Achilles millefolium* – Yarrow
- ✿ 0.45% *Agrimonia eupatoria* - Agrimony
- ✿ 1.95% *Centaurea nigra* – Common Knapweed
- ✿ 1.05% *Daucus carota* – Wild Carrot
- ✿ 1.20% *Galium verum* – Lady's Bedstraw
- ✿ 0.90% *Knautia arvensis* – Field Scabious
- ✿ 0.30% *Lathyrus pratensis* - Meadow Vetchling
- ✿ 1.80% *Leucanthemum vulgare* – Oxeye Daisy
- ✿ 1.95% *Malva moschata* – Musk Mallow
- ✿ 1.80% *Plantago lanceolata* – Ribwort Plantain
- ✿ 1.20% *Poterium sanguisorba* ssp. *Sanguisorba* – Salad Burnet
- ✿ 0.75% *Primula veris* – Cowslip
- ✿ 0.30% *Prunella vulgaris* - Selfheal
- ✿ 0.60% *Ranunculus acris* – Meadow Buttercup

Grasses (85.00%):

- ✿ 8.50% *Agrotis capillaris* – Common Bent.



- ✿ 29.75% *Cynosurus cristatus* – Crested Dogtail.
- ✿ 25.50% *Festuca rubra* – Red Fescue.
- ✿ 4.25% *Phleum bertolonii* – Smaller Cat's-Tail.
- ✿ 17.00% *Poa pratensis* – Smooth-Stalked Meadow-Grass.

2.2. SUDS POND AND AQUATIC/MARGINAL MIXED PLANTING

The on-site SuDS pond in the north-east of the site is to be planted with a total of 172 container grown aquatic/marginal plants, which are to be planted at 4 per m². The composition of the aquatic/marginal mixes are as follows:

- ✿ Greater Pond Sedge (*Carex riparia*) - 17 (10.00%)
- ✿ Marsh Marigold (*Caltha palustris*) - 26 (15.00%)
- ✿ Soft Rush (*Juncus effusus*) - 43 (25.00%)
- ✿ Purple Loosestrife (*Lythrum salicaria*) - 26 (15.00%)
- ✿ Yellow Iris (*Iris pseudoacorus*) - 34 (20.00%)
- ✿ Common Water-Plantain (*Alisma plantago-aquatica*) - 26 (15.00%)



3. MANAGEMENT

3.1. AIMS AND OBJECTIVES

This management plan sets out how habitats will be protected and managed appropriately during the operational phase of development for the long-term benefit of local wildlife (over a 30-year period). See Appendix II for the Annual Work Plan.

The aims and objectives are as follows:

- ✿ To ensure the successful establishment and long-term health of all landscape elements.
- ✿ To allow the local authority satisfaction that the area will be managed appropriately.
- ✿ To ensure best horticultural and health & safety practices at all times.
- ✿ To ensure that methods employed enhance and encourage wildlife, wherever possible.
- ✿ To identify defects as soon as possible in order to minimise any damage and rectify at the earliest opportunity.

3.2. HABITAT TARGET CONDITION SCHEDULE

Please see below for the schedule detailing the expected condition of each habitat over a 30-year period.

HABITAT	YEAR						TIME TO CONDITION
	1	2	5	10	20	30	
Enhanced Wildflower Meadow	Poor	Poor	Poor	Moderate	Moderate	Moderate	10 years
Retained Urban Trees	Poor	Poor	Poor	Poor	Poor	Poor	N/A
SuDS Pond	Poor	Poor	Moderate	Moderate	Moderate	Moderate	3 years

3.3. PROPOSED MANAGEMENT SUBSCRIPTIONS

The following provides recommendations for how habitats will be managed to maintain an appropriate condition as set out in the Biodiversity Metric Report (80-863-R3).

3.3.1. ENHANCED WILDFLOWER MEADOW

An off-site area of poor condition modified grassland will be enhanced to moderate condition other neutral grassland. The enhanced wildflower meadow will be of value for invertebrates, common amphibians, brown hare (*Lepus europaeus*), badgers (*Meles meles*) and hedgehogs (*Erinaceus europaeus*).

The wildflower meadows will be seeded with Emorsgate EM2 Standard General Purpose Meadow Mix. This will comprise 85% ornamental grasses and 15% wildflowers and will be sown at a rate of 4g/m². The seed mixes will also comprise species tolerant of local conditions (pH, standing water, soil type etc.) and comprise a wide range of native species of grasses and wildflowers. The habitat will be allowed to



grow to tussocky grassland, a more favourable habitat for use by sheltering amphibians, reptiles, and their invertebrate prey.

During the growing season in the first year the wildflower meadow should be cut at regular intervals to maintain a sward height of approximately 75 mm. During the second and subsequent years, the wildflower grassland will be left from March onwards, with cutting taking place in late August/September to allow wildflowers to flower and seed.

As part of the long-term management plan, monitoring of the wildflower meadow will be undertaken to ensure that it achieves its 'Moderate' Condition Assessment Score within 10 years as detailed in the Biodiversity Metric Report. The following measures will be implemented:

- ✿ The appearance and composition of the vegetation will closely match the characteristics of the specific grassland type (other neutral grassland). Management of the grassland will be undertaken to ensure the wildflowers, sedges and indicator species for the grassland remain as per Condition Assessment Criteria 1.
- ✿ Annual cutting at the start and the end of the growing season to create a varied sward (20% less than 7 cm and 20% more than 7 cm, creating microclimates which provide opportunities for insects, birds and small mammals to live and breed as per Condition Assessment Criteria 2.
- ✿ Any scrub or bracken growth or encroachment will be removed to ensure scrub cover is less than 5% and bracken cover is less than 20% as per Condition Assessment Criteria 4.
- ✿ Annual removal of noxious and injurious weeds and invasive plant species as per Condition Assessment Criteria 5.
- ✿ Annual reseedling of grassland if there are less than 9 plant species per m² as per Condition Assessment 6.

3.3.2. RETAINED URBAN TREES

Retained trees will be managed by occasional pruning only to removed damaged or defective limbs. Management of the retained trees will avoid the nesting bird season.

3.3.3. SUDS POND AND AQUATIC/MARGINAL MIXED PLANTING

A SuDS pond is to be created in the north-east of the site. The newly created SuDS pond will be of value for invertebrates, common amphibians and waterfowl.

The SuDS pond is to be planted with a mix of six different aquatic/marginal plant species at a rate of 4 per m², with a total 172 individual plants being planted in two separate areas of the SuDS pond. The aquatic/marginal vegetation will be allowed to grow to a sufficient level to create a more favourable habitat for use by sheltering amphibians and their invertebrate prey.

As part of the long-term management plan, monitoring of the SuDS pond will be undertaken to ensure that it achieves its 'Moderate' Condition Assessment Score within 3 years as detailed in the Biodiversity Metric Report. The following measures will be implemented:

- ✿ New aquatic/marginal plants will be planted if previous plantings have failed to ensure that there is a diverse range of flowering plant species as per Condition Assessment 2.
- ✿ Annual removal of noxious and injurious weeds and invasive plant species as per Condition Assessment Criteria 3.



3.4. SITE RESPONSIBILITIES

Management of the newly created and enhanced habitats will be maintained for the first year by the Landscape Contractor responsible for the implementation of the works. The contract will include a defects liability clause to ensure replacement planting is carried out and successful establishment achieved. Thereafter, maintenance contracts will be organised by a management company on an annual basis.

3.5. FUNDING

During the construction stage, all works associated with the Biodiversity Mitigation and Enhancement Scheme will be funded and delivered directly by the developer/ operator.



4. PROTECTED AND NOTABLE SPECIES MITIGATION

Ecological constraints on-site may influence management. Nesting birds, badger, brown hare, hedgehogs and common amphibians may be present within the site. The potential presence of these species will be considered when addressing management techniques and timings.

Appendix II outlines the timings of work and when ecological supervision will be required due to the potential presence of protected species on and adjacent to the site.

4.1. BADGER

The following precautionary working methods will be adhered to during construction phase to ensure that no badgers within the local area are impacted by the proposed development:

- ✿ All site operatives will be inducted to the presence of the species and their working limits and legal responsibilities.
- ✿ All site operatives will be inducted as to identifying potential badger setts and should be vigilant if they suspect they locate a new sett during works and inform the project ecologist immediately.
- ✿ All excavations will be battered at a 45-degree angle or have a ramp installed to allow escape should animals become trapped. Excavations can also be covered overnight to prevent badgers becoming trapped.
- ✿ All site machinery and materials will be appropriately stored to avoid harm to the species, notably between July and November each year when extra care is needed to avoid potential impacts on pregnant females.

4.2. BREEDING BIRDS

Site works should take place outside of the breeding bird season (March – September inclusive). If this is not possible, then a suitably qualified ecologist should inspect the area no more than 24 hours prior to the commencement of construction works. Should any nests, or nests in construction be located, a suitable stand-off distance should be maintained until the young have fledged. The ecologist will advise on a suitable stand off and provide a toolbox talk to all site contractors regarding their working limits and legal implications.

4.3. BROWN HARE

Brown hare are a UK BAP species. The habitats on-site are common within the wider landscape, and therefore impacts on the local brown hare population are anticipated to be low. It is recommended that a pre-commencement check is undertaken for young hare which may be present on site after the breeding season (February to September).

4.4. COMMON AMPHIBIANS

Any common amphibians encountered during works are to be moved by hand away from construction activities.



4.5. HEDGEHOG

Where vegetation requires removal, it should be checked for the presence of hedgehog prior to removal. If any vegetation is too dense to be fully inspected, it should be strimmed to 50 cm and checked for hedgehog before being cleared to ground level. If the trees or vegetation piles in the south of the site require removal, the bases of trees and the piles should be checked, prior to removal, for sheltering hedgehogs. It is recommended that any clearance takes place outside of December-March to avoid impacting hibernating hedgehogs.



5. FUTURE MONITORING




A habitat monitoring report will be provided to the LPA on the 1st November annually for the first 5 years and thereafter every 5 years. The habitat monitoring report will include a site visit by a suitably qualified ecologist to assess the condition of the on-site habitats. The ecologist will attend site in July/August to ensure that plant species are flowering to fully assess the condition of on-site habitats.

If habitats have not established and are not on track to meet their target condition as specified, additional management may be required with additional visits once a year until targets are on track to being achieved. The ecologist will assess during the site visit as to whether habitats have not established. Additional management may include reseedling and/or planting more plants as required. If habitats are still failing after additional management, then a landscape architect will also be consulted.

The management plans are to be reviewed during years 5, 10, and 15. The plans are to be revised as appropriate and the frequency of visits for certain habitats may be increased or decreased depending on the progress made towards establishment.



6. REFERENCES

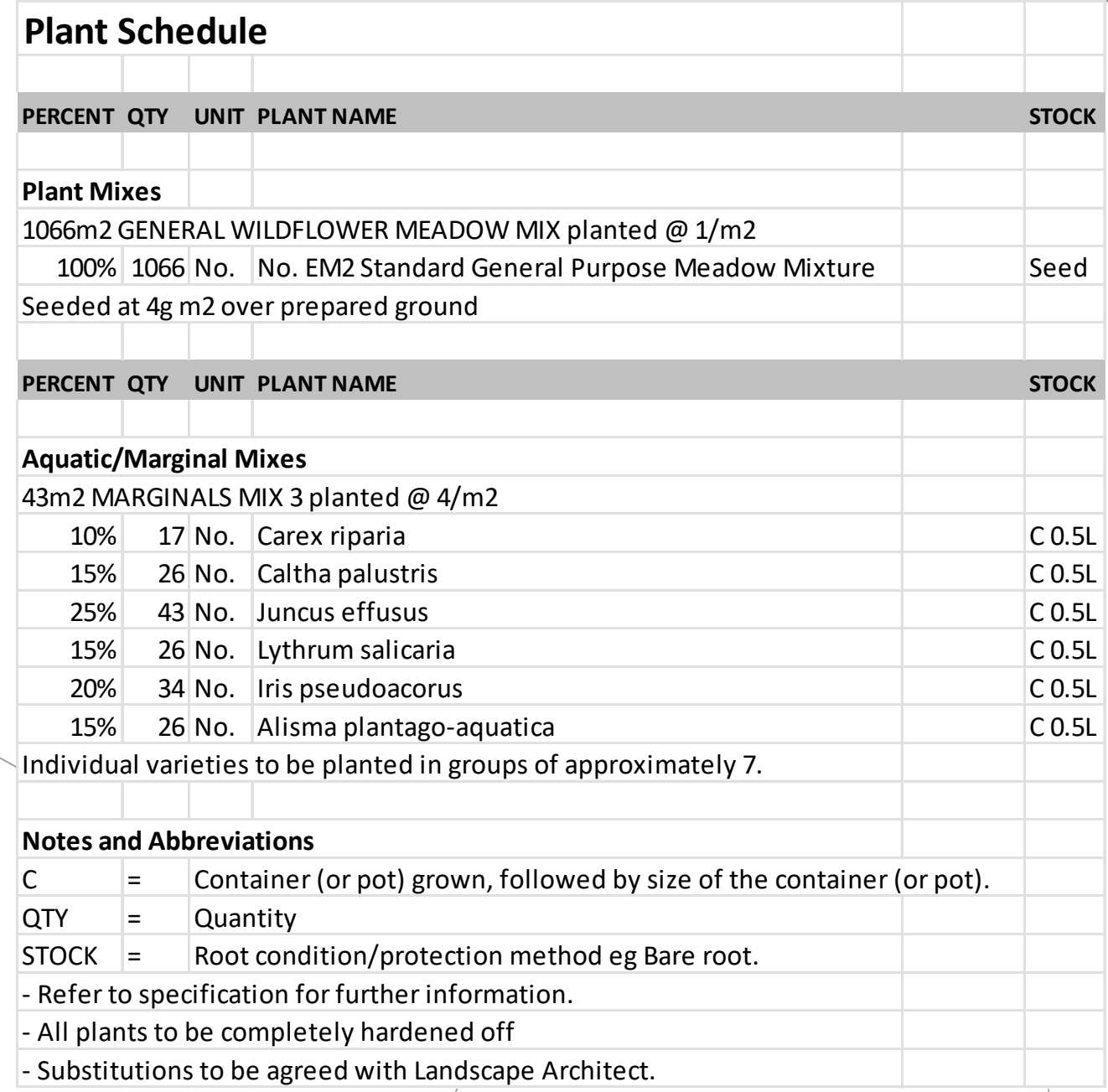
-  E3P (2023). Biodiversity Metric Report - Hunshelf BESS. Report Reference: 80-076-R2-4.
-  Urban Green (2022). General Arrangement Plan. Drawing Reference: UG_1636_LAN_GA_DRW_01.
-  Wildlife and Countryside Act (2010) Schedule 9 of the Wildlife and Countryside Act 1981.

END OF REPORT

APPENDIX I


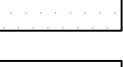


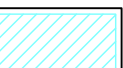
GENERAL ARRANGEMENT PLANS





Notes:-

KEY

	Application Site Red Line Boundary
Hard Landscape	
	Vehicular Asphalt Surface To engineer specification & recommendation
Permeable Gravel To engineer specification & recommendation	
2.4m High Security Fence Green colour	
	
Soft Landscape	
	Enhanced to Wildflower Application Seeded mix applied
	Marginals Mix
	SuDs Basins

Wildflower Seeding Notes:
 Landscape operations to comply with BS 4243:1989. Seed shall be UK grown, obtained from a reputable approved nursery and comply with Floral Locale Code of practice for collectors, growers and suppliers of native flora. Cultivate the site in seed to create a fine, friable seedbed within the subject down to 150mm in depth (removing stones greater than 20mm). Carry out two equal seedings at right angles to each other and diagonally to main axis. Broadcast manually or use seed drill. Sow at a rate of 4 g/m², sowing level and net. Ensure good seed to soil contact.

First Year Maintenance: For Autumns sowing cut to 40-70mm in both March and May. Cut back to 40mm after flowering in August/September. Retain arisings and form on site compost piles. Maintenance thereafter. Cut to 45-70mm in April and again in August/September after flowering. Retain arisings and form on site compost piles. Delay cutting in cases of extreme drought.

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HUNSHELF, TOFTS LANE		
Title:		
GENERAL ARRANGEMENT PLAN		
Issue:		
PLANNING		
Drawn: TH	Checked: SA	Approved: ME
Project: UG1636	Scale @ A1: 1:500	Date: 24/11/22
Dwg No: UG_1636_LAN_GA_DRW_01	Revision: P07	

APPENDIX II

ANNUAL WORK PLAN





ANNUAL WORK PLAN					
MANAGEMENT REQUIRED	FREQUENCY OF MONITORING	REMEDIAL MEASURES	TIME OF YEAR	PROTECTED SPECIES CONSTRAINTS	ECOLOGICAL SUPERVISION REQUIRED?
RETAINED TREES					
Check condition	Twice yearly	Check condition of trees for signs of disease and damage	April and November	Birds - Will avoid nesting bird season (March to August, inclusive) where possible	No (if undertaken outside of nesting bird season)
Pruning	Twice yearly	Trees to be inspected twice a year and pruned where necessary	October to February	Birds - Will avoid nesting bird season (March to August, inclusive) where possible	No (if undertaken outside of nesting bird season)
WILDFLOWER MEADOW PLANTING					
Watering	Ongoing	Watering; apply sufficient water during periods of drought	March to September	No	No
First year growth	Ongoing	Cut wildflower to maintain a sward height of approximately 75 mm	As required	Amphibians Brown hare	Amphibians - No, amphibians to be moved by hand away from active area Brown hare - No (if undertaken outside of February to September); if works required during these time frames, a pre commencement check of the field for leverets will be undertaken by an ecologist



ANNUAL WORK PLAN					
MANAGEMENT REQUIRED	FREQUENCY OF MONITORING	REMEDIAL MEASURES	TIME OF YEAR	PROTECTED SPECIES CONSTRAINTS	ECOLOGICAL SUPERVISION REQUIRED?
Second and subsequent year growths	Twice yearly	Wildflower grassland will remain uncut from March onwards, with cutting to take place in late August/September to allow wildflowers to seed	August - February	Amphibians Brown hare	Amphibians - No, amphibians to be moved by hand away from active area Brown hare - No (if undertaken outside of February to September); if works required during these time frames, a pre commencement check of the field for leverets will be undertaken by an ecologist
Damaged wildflower	Annually	Replace worn or damaged grass areas by overseeding	As required	No	No
Scrub / bracken removal	Annually	Remove scrub and bracken growth or encroachment	As required	Birds - Will avoid nesting bird season (March to August, inclusive) where possible Brown hare	Birds - No (if undertaken outside of nesting bird season) Brown hare - No (if undertaken outside of February to September)
Noxious / injurious weeds and invasive plant species removal	Annually	Remove of any noxious or injurious weed and invasive plant species	As required	No	No

SUDS POND AND AQUATIC/MARGINAL MIXED PLANTING



ANNUAL WORK PLAN

MANAGEMENT REQUIRED	FREQUENCY OF MONITORING	REMEDIAL MEASURES	TIME OF YEAR	PROTECTED SPECIES CONSTRAINTS	ECOLOGICAL SUPERVISION REQUIRED?
Watering	Ongoing	Watering; apply sufficient water during periods of drought	March to September	No	No
Noxious / injurious weeds and invasive plant species removal	Annually	Remove of any noxious or injurious weed and invasive plant species	As required	No	No
Damaged / failed plantings	Annually	Replace any damaged / failed plants with new planting	As required	Birds - Will avoid nesting bird season (March to August, inclusive) where possible	Birds - No (if undertaken outside of nesting bird season)

GENERAL MAINTENANCE OPERATIONS

Litter removal	Weekly	Removal of any litter found throughout site	As required	None	No
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