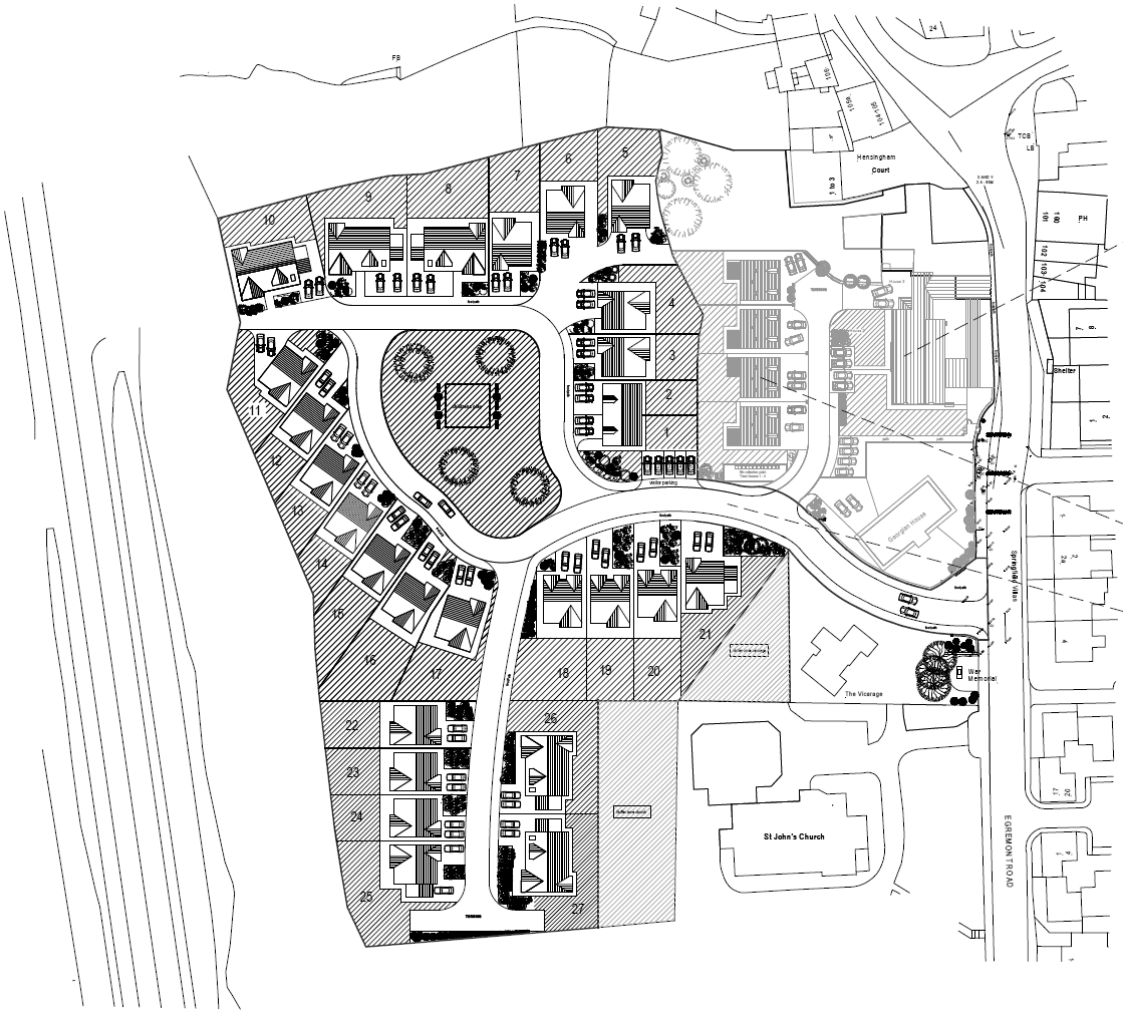
Hensingham House, Whitehaven

Biodiversity Net Gain Calculation



A report by
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For Thomas Milburn Properties Ltd
27 March 2024

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Contents

1. Introduction

This report describes the methodology used to calculate the Biodiversity Net Gain arising from the proposed housing development at Hensingham House, Whitehaven. It has been commissioned by Thomas Milburn Properties Ltd, the developers.

2. Methodology

The Biodiversity Net Gain calculation has been made using the Statutory Biodiversity Net Gain Calculation Spreadsheet.

The development site was surveyed on 2nd February 2023, whilst the proposed off-site habitat creation site at Tarnside, Braystones was surveyed on 5th May 2023.

The information from this report and site plans was digitised in ArcGIS to allow area measurements of the habitat types present to be made for input into the Biodiversity Metric. The results of this digitisation are shown in Map 1.

Site Habitat Creation data was derived from CDL Architecture, Planning & Design's revised site layout dated March 2024, Drawing No. DS/TMP/P3/24. Vegetation types were converted for input into The Metric as shown in Table 1.

Table 1: Post Development Habitat Types

Mapped Habitat	Metric Input Habitat
Buildings	Developed land: sealed surface
Garden	Vegetated garden
Neutral grassland	Other neutral grassland

3. The Calculation

3.1. Baseline Conditions

Table 2 shows the baseline habitat data for the development site whilst Table 3 shows the baseline data for the off-site habitat creation site at Tarnside, Braystones. There are no linear habitats (hedgerows and water courses) on site.

Table 2: Site Habitat Baseline Data

Habitats and areas			Distinctiveness		Condition		Baseline Habitat Units	Retention		
Broad habitat	Habitat type	Area (hectares)	Distinctiveness	Score	Condition	Score		Area Retained	Area Enhanced	Units Lost
Grassland	Other neutral grassland	0.39	Medium	4	Poor	1	1.56	0.00	0.00	1.56
Heathland and shrub	Bramble scrub	1.2	Medium	4	Condition Assessment N/A	1	4.80	0.04	0.00	4.64
Urban	Vegetated garden	0.02	Low	2	Condition Assessment N/A	1	0.04	0.00	0.00	0.04

Table 2: Site Habitat Baseline Data

Habitats and areas			Distinctiveness		Condition		Baseline Habitat Units	Retention		
Broad habitat	Habitat type	Area (hectares)	Distinctiveness	Score	Condition	Score		Area Retained	Area Enhanced	Units Lost
Urban	Artificial land, unsealed surface	0.03	V. Low	0	N/A - Other	0	0.00	0.00	0.00	0.00
Urban	Developed land, sealed surface	0.0016	V. Low	0	N/A - Other	0	0.00	0.00	0.00	0.00
	Total Area	**1.64**					**6.40**	**0.04**	**0.00**	**6.24**

Table 3: Off-Site Habitat Baseline Data

Habitats and areas			Distinctiveness		Condition		Baseline Habitat Units	Retention		
Broad habitat	Habitat type	Area (hectares)	Distinctiveness	Score	Condition	Score		Area Retained	Area Enhanced	Units Lost
Urban	Bare ground	0.1534	Low	2	Moderate	2	0.61	0.1534		0.00
Heathland and shrub	Bramble scrub	0.0874	Medium	4	Condition Assessment N/A	1	0.35	0.0874		0.00
Heathland and shrub	Gorse scrub	0.8039	Medium	4	Moderate	2	7.07	0.8039		0.00
Grassland	Other neutral grassland	0.8348	Medium	4	Good	3	11.02	0.8348		0.00
Lakes	Ponds (priority habitat)	0.1758	High	6	Moderate	2	2.32	0.1758		0.00
Wetland	Reedbeds	0.4358	High	6	Good	3	8.63	0.4358		0.00
Grassland	Modified grassland	1.409	Low	2	Poor	1	2.82	0.52	0.4445	0.89
Grassland	Other neutral grassland	0.2707	Medium	4	Moderate	2	2.17		0.2707	0.00
Heathland and shrub	Willow scrub	0.1914	Medium	4	Moderate	2	0.61	0.1914		0.00
	Total Area	**4.36**					**34.99**	**3.20**	**0.72**	**0.89**

3.2. Post Development Conditions

Tables 4 to 6 show the habitat creation and enhancement proposed.

Table 4: Site Habitat Creation Data

Broad Habitat	Proposed habitat	Area (hectares)	Distinctiveness		Condition		Habitat Units Delivered
			Distinctiveness	Score	Condition	Score	
Urban	Developed land; sealed surface	0.99	V. Low	0	N/A - Other	0	0.00
Urban	Vegetated garden	0.47	Low	2	Condition Assessment N/A	1	0.91

Table 4: Site Habitat Creation Data

Broad Habitat	Proposed habitat	Area (hectares)	Distinctiveness		Condition		Habitat Units Delivered
			Distinctiveness	Score	Condition	Score	
Grassland	Other neutral grassland	0.14	Medium	4	Moderate	2	1.03
	Total area	**1.60**			**Total Units**		**1.94**

Table 5: Off-Site Habitat Creation Data

Broad Habitat	Proposed habitat	Area (hectares)	Distinctiveness		Condition		Habitat Units Delivered
			Distinctiveness	Score	Condition	Score	
Heathland and shrub	Gorse scrub	0.4445	Medium	4	Moderate	2	3.27
	Total area	**0.44**			**Total Units**		**3.27**

Table 6: Off-Site Habitat Enhancement Data

Broad Habitat	Proposed habitat	Area (hectares)	Distinctiveness		Condition		Habitat Units Delivered
			Distinctiveness	Score	Condition	Score	
Grassland	Other neutral grassland	0.4445	Medium	4	Moderate	2	3.03
Wetland	Reedbeds	0.2707	High	6	Good	3	3.55
	Total area	**0.72**			**Total Units**		**6.58**

3.3. Results

Table 8 shows the headline results from the calculation. A net biodiversity gain of 11% is achieved by using off-site habitat creation and enhancement at Tarnside Caravan Parks.

Table 8: Hensingham Phase 3 Headline Results

On-site baseline	*Habitat units*	**6.40**
	Hedgerow units	**0.00**
	Watercourse units	**0.00**
On-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	**2.10**
	Hedgerow units	**0.00**
	Watercourse units	**0.00**
On-site net % change (Including habitat retention, creation & enhancement)	*Habitat units*	**-67.22%**
	Hedgerow units	**0.00%**
	Watercourse units	**0.00%**
Off-site baseline	*Habitat units*	**34.99**
	Hedgerow units	**0.00**
	Watercourse units	**0.00**
Off-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	**42.59**
	Hedgerow units	**0.00**
	Watercourse units	**0.00**
Off-site net % change	*Habitat units*	**21.71%**
	Hedgerow units	**0.00%**
	Watercourse units	**0.00%**
Combined net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	**3.30**
	Hedgerow units	**0.00**
	Watercourse units	**0.00**

Table 8: Hensingham Phase 3 Headline Results

Spatial risk multiplier deductions	*Habitat units*	**1.68**
	Hedgerow units	**0.00**
	Watercourse units	**0.00**
Total net unit change (including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	**1.61**
	Hedgerow units	**0.00**
	Watercourse units	**0.00**
Total on-site net % change plus off-site surplus (including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	**25.18%**
	Hedgerow units	**0.00%**
	Watercourse units	**0.00%**
Trading rules Satisfied?	**Yes✓**	

4. Habitat Creation and Enhancement Specifications

To achieve a biodiversity net gain off-site habitat creation and enhancement is required. It is proposed that an area of land at Tarnside Caravan Park, Braystones is used for this as it is owned by the developer. At Tarnside an area of land, which is currently species-poor semi-improved grassland is to be enhanced by the introduction of native wildflowers, either in the form of plug plants, or as seed sown into scarified grassland and through the planting of gorse scrub. The proportion of enhanced grassland to scrub will be 50:50. If plant plugs are used the species should include common knapweed *Centaurea nigra*, ribwort plantain *Plantago lanceolata*, yarrow *Achillea millefolium*, bird's-foot trefoil *Lotus corniculatus*, cuckoo-flower *Cardamine pratensis*, greater burnet *Sanguisorba officinalis* and wood crane's-bill *Geranium sylvaticum*. Plants should be of Cumbrian origin and a minimum of 8,000 plugs should be planted. Native Cumbrian wildflowers can be obtained from https://www.cumbriawildflowers.co.uk/ . If seed is used Cumbria Wildflower's *Neutral Hay Meadow Wildflower Seeds Only* mix is recommended. To cover the 0.44ha of grassland to be enhanced 13.5kg of seed will be required.

The gorse should be planted in clumps varying is size from 5 to 10m in diameter. Planting at a 1m spacing this will require 20 plants for a 5m diameter clump and 78 plants for a 10m diameter clump. The total number of plants required for 0.44ha is 4,400. Plants should be planted with a biodegradable spiral guard supported by a bamboo cane.

Once the gorse scrub and wildflower grassland is established at Tarnside the area should be lightly grazed, ideally with cattle.

In addition to this common reed *Phragmites australis* is to be planted into the wet grassland surrounding the areas of open water to extend the reedbed that is already present. Approximately 5,000 reed plugs will be required to create 0.27ha of reedbed.

In addition to this off-site habitat creation, it is proposed that the central area of public open space within the development site is seeded with a herb-rich grassland mix containing native wildflowers which will persist if closely mown. Such species include ribwort plantain *Plantago lanceolata*, yarrow *Achillea millefolium*, bird's-foot trefoil *Lotus corniculatus*, common sorrel *Rumex acetosa* and common cat's-ear *Hypochaeris radicata*. These can be sown within a grass mix of crested dog's-tail s-tail *Cynosurus cristatus*, red fescue *Festuca rubra*, smooth meadow-grass *Poa pratensis* and common bent *Agrostis capillaris*.

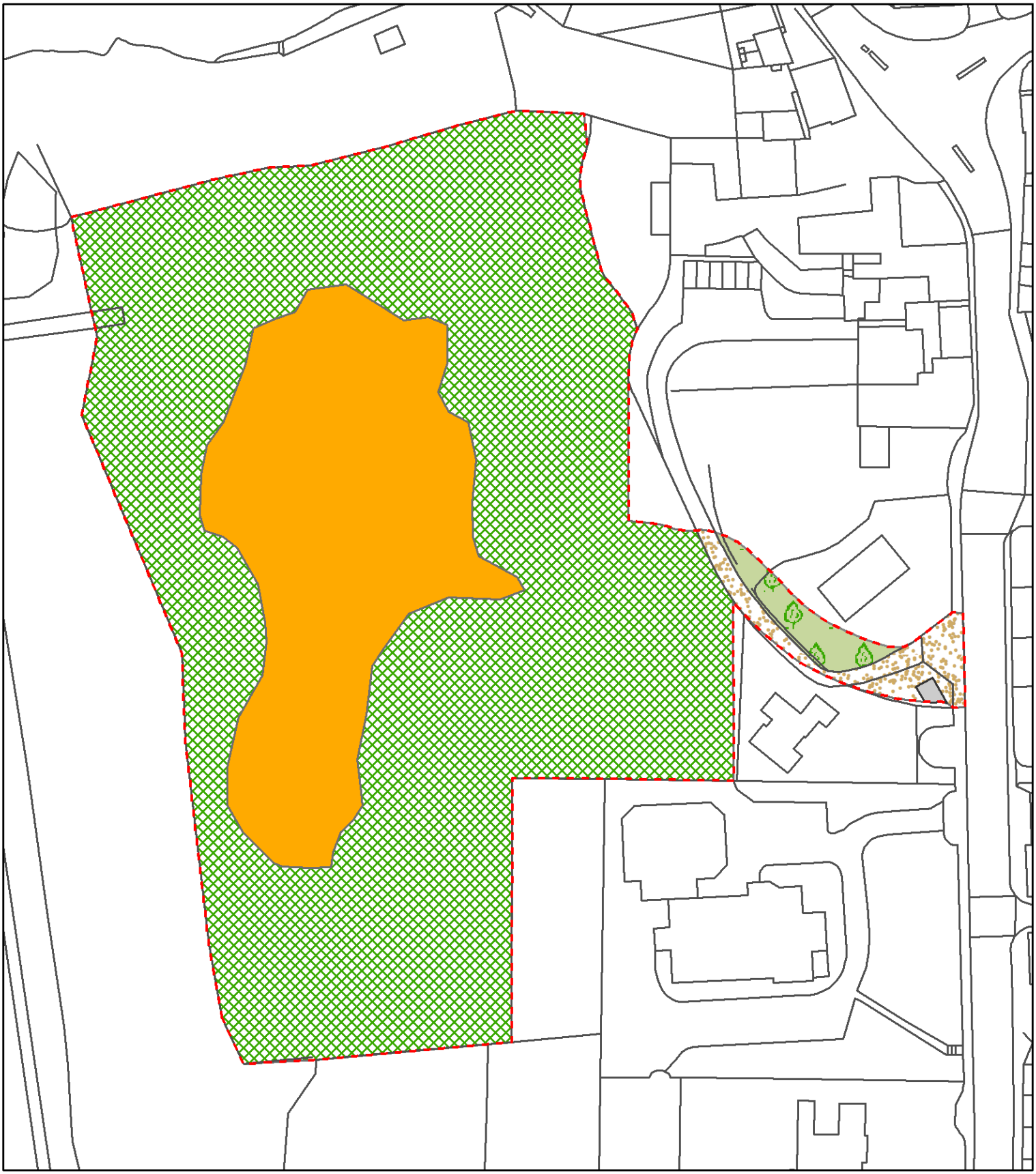
The success of planting of trees and shrubs should be monitored on an annual basis for the first five years and every five years from then on. Planting failures should be replaced at least once during the first five years.

The maps below shows the areas to be planted with scrub and wildflower plugs/seeded.

5. Photographs

Photo 1 Proposed habitat creation and enhancement area at Tarnside Caravan Park

Photo 2 Proposed habitat creation and enhancement area at Tarnside Caravan Park



Hensingham House Phase 3

Map 1 Existing Habitats

0 10 20
Metres
1:1,000

N

- Boundary
- Bramble scrub
- Developed land sealed surface
- Developed land unsealed surface
- Garden
- Other neutral grassland

Drawn by R Jerram 9 May 2023

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Hensingham House Phase 3

Map 2 Post Development Habitats

- Boundary
- Houses & Road (developed land, sealed surface)
- Vegetated garden
- Bramble scrub
- Other Neutral Grassland

0 10 20
Metres
1:1,000
N

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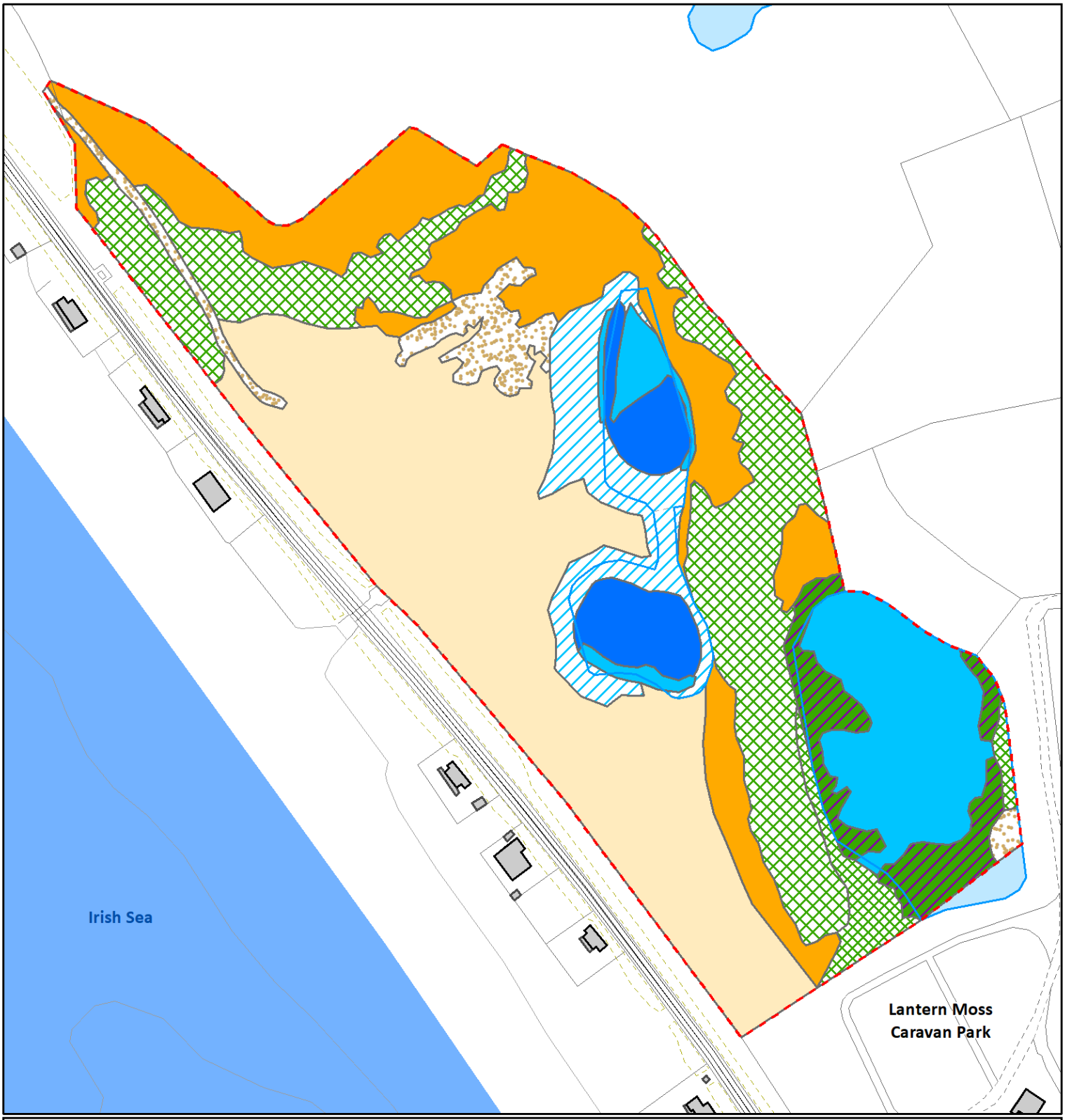

Hensingham House Phase 3

Map 3 Tarnside Caravan Park Existing Habitats

- Site boundary
- Gorse scrub
- Willow scrub
- Bramble scrub
- Other neutral grassland
- Wet other neutral grassland
- Modified grassland
- Reedbed
- Pond
- Bare ground

0 50
Metres
1:1,750
N

Survey by R Jerram 5 May 2023

Drawn by R Jerram 26 March 2024

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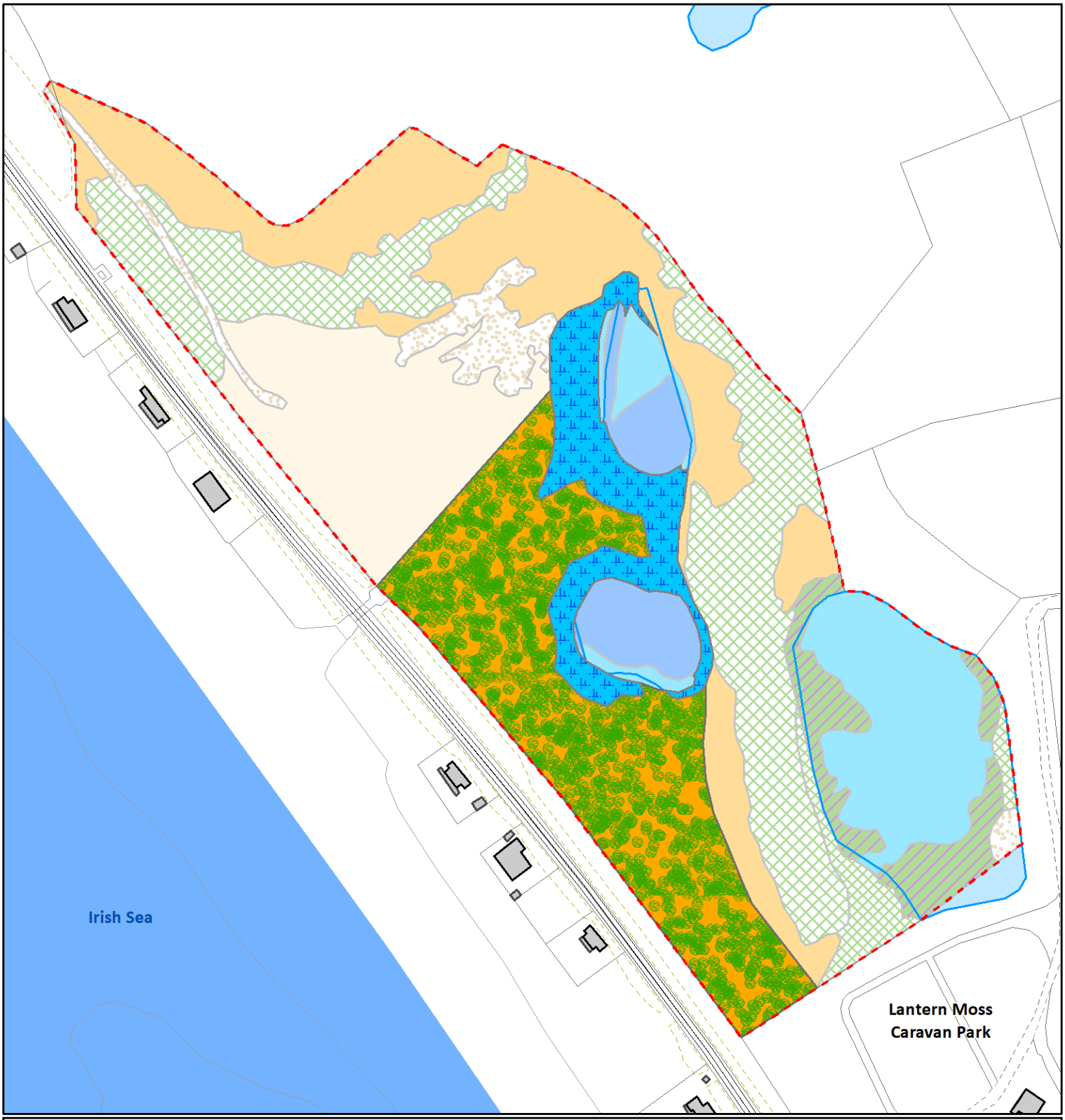

Hensingham House Phase 3

Map 4 Tarnside Caravan Park Habitat Creation

0 50
Metres
1:1,750
N

Site boundary

Existing Habitats

- Gorse scrub
- Willow scrub
- Bramble scrub
- Other neutral grassland
- Wet other neutral grassland
- Modified grassland
- Reedbed
- Pond
- Bare ground

Habitat Creation

- Other neutral grassland - gorse scrub mosaic (50:50)
- Reedbed

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