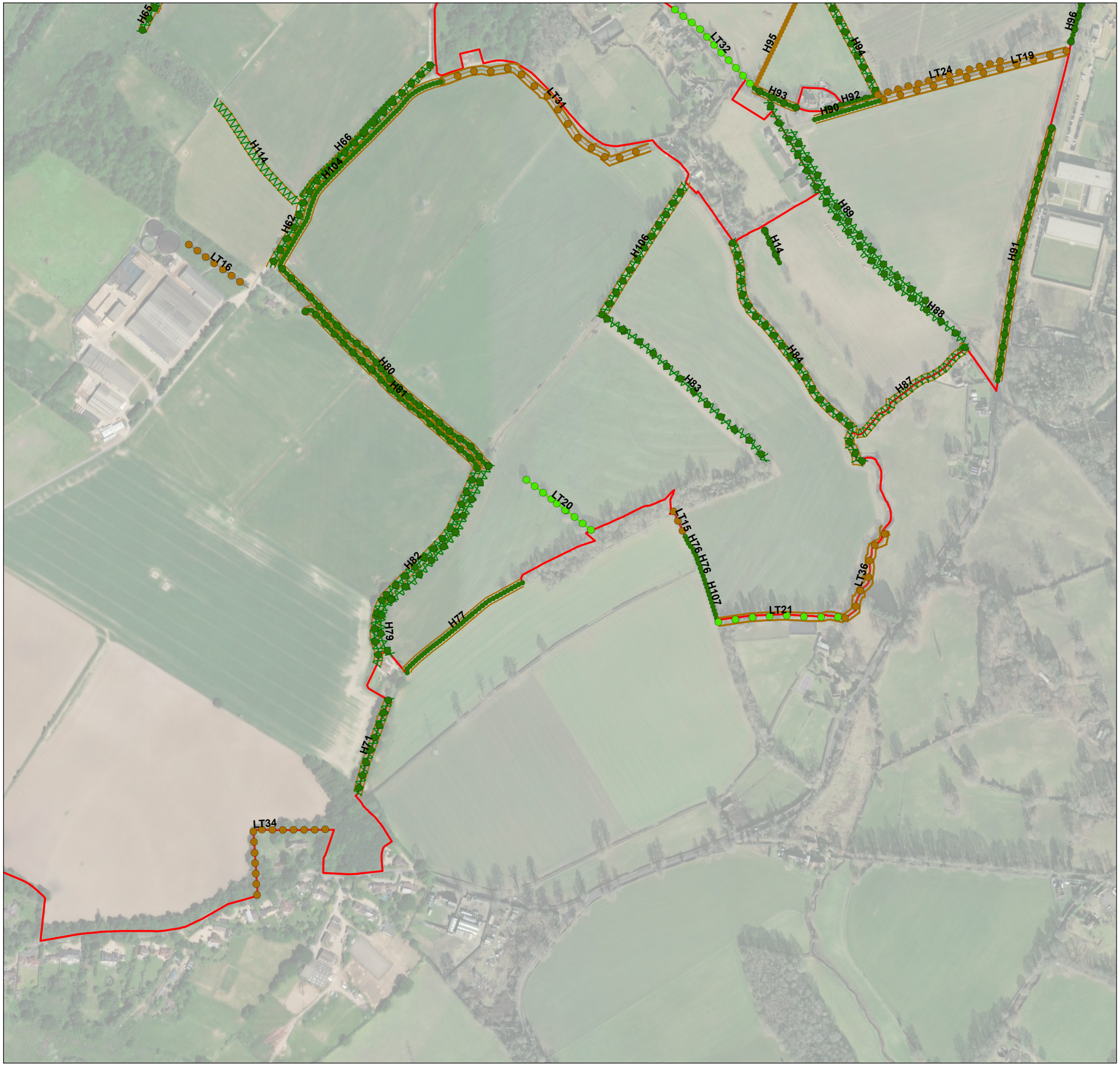

MAP 11.19.3f Baseline Linear Habitats (South-East)

KEY

- Site boundary
- Species-rich native hedgerow with trees - associated with bank or ditch
- Species-rich native hedgerow with trees
- Species-rich native hedgerow - associated with bank or ditch
- Native hedgerow with trees - associated with bank or ditch
- Native hedgerow - associated with bank or ditch
- Native hedgerow with trees
- Ecologically valuable line of trees
- Ecologically valuable line of trees - associated with bank or ditch
- Native hedgerow
- Line of trees
- Line of trees - associated with bank or ditch
- Non-native and ornamental hedgerow

SCALE: 1:5,500 at A3

Metres

0 100 200 300 400

N

EPR

CLIENT: University of Reading

PROJECT: Loddon Garden Village

DATE: 31 July 2025

Y:\Loddon Garden Village, Shinfield 2201\GIS\Planning Application\Technical Appendices\BNG\Map11.19.3f_BaselineLinearHabitats(south-east)_P2342_3965_310725.aprx P23/42

Aerial Image Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

MAP 11.19.3g Baseline Linear Habitats (North-West)

KEY

- Site boundary
- Species-rich native hedgerow with trees - associated with bank or ditch
- Species-rich native hedgerow with trees
- Native hedgerow with trees - associated with bank or ditch
- Native hedgerow - associated with bank or ditch
- Native hedgerow with trees
- Ecologically valuable line of trees - associated with bank or ditch
- Native hedgerow
- Line of trees
- Line of trees - associated with bank or ditch

SCALE: 1:5,500 at A3

Metres

0 100 200 300 400

N

EPR

CLIENT: University of Reading

PROJECT: Loddon Garden Village

DATE: 01 August 2025

Y:\Loddon Garden Village, Shinfield 2201\GIS\Planning Application\Technical Appendices\BNG\Map11.19.3g_BaselineLinearHabitats(north-west)_P2342_3965_010825.aprx P23/42

Aerial Image Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

MAP 11.19.3h Baseline Linear Habitats (North-East)

KEY

- Site boundary
- Species-rich native hedgerow with trees - associated with bank or ditch
- Species-rich native hedgerow with trees
- Species-rich native hedgerow - associated with bank or ditch
- Native hedgerow with trees - associated with bank or ditch
- Native hedgerow - associated with bank or ditch
- Native hedgerow with trees
- Ecologically valuable line of trees
- Ecologically valuable line of trees - associated with bank or ditch
- Native hedgerow
- Line of trees
- Line of trees - associated with bank or ditch
- Non-native and ornamental hedgerow

SCALE: 1:5,500 at A3

Metres

0 100 200 300 400

N

EPR

CLIENT: University of Reading

PROJECT: Loddon Garden Village

DATE: 01 August 2025

Y:\Loddon Garden Village, Shinfield 2201\GIS\Planning Application\Technical Appendices\BNG\Map11.19.3h_BaselineLinearHabitats(north-east)_P2342_3965_010825.aprx P23/42

Aerial Image Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

MAP 11.19.3i Baseline Watercourses

KEY

- Site boundary
- Rivers (Priority habitat)
- Other rivers and streams
- Ditches

SCALE: 1:11,000 at A3

0 100 200 300 400 500 Metres

N

EPR

CLIENT: University of Reading

PROJECT: Loddon Garden Village

DATE: 31 July 2025

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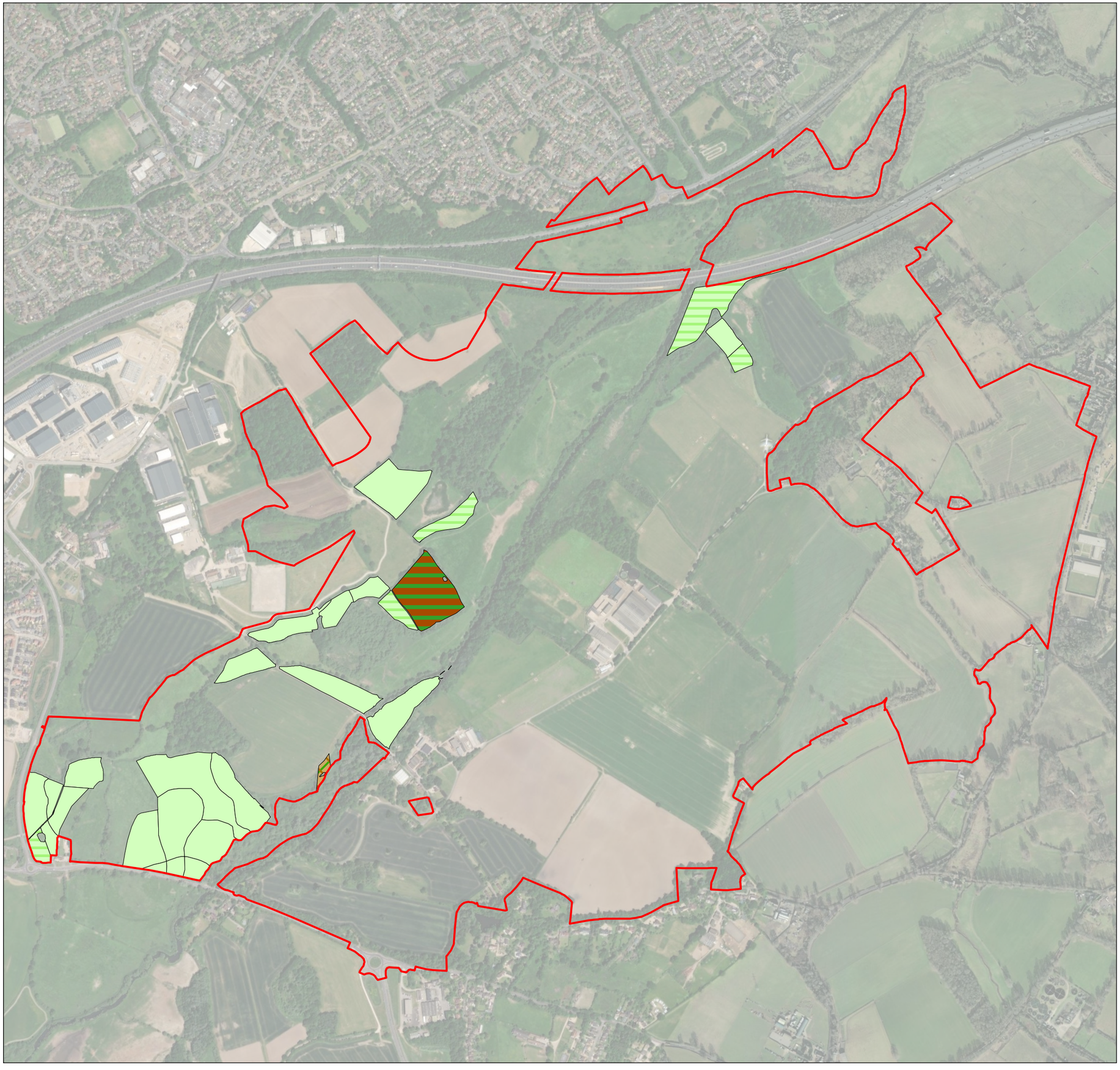

MAP 11.19.4 Baseline Areas of FWM/CFGM Entered as Component Habitat Types

KEY

- Site boundary
- Modified grassland
- Other neutral grassland
- Mixed scrub
- Lowland mixed deciduous woodland

SCALE: 1:11,000 at A3

0 100 200 300 400 500 Metres

N

EPR

CLIENT: University of Reading

PROJECT: Loddon Garden Village

DATE: 31 July 2025

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Aerial Image Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

MAP 11.19.5 Baseline Irreplaceable Habitats

KEY

- Site boundary
- Veteran trees
- Provisional Ancient Woodland

SCALE: 1:11,000 at A3

0 100 200 300 400 500 Metres

N

EPR

CLIENT: University of Reading

PROJECT: Loddon Garden Village

DATE: 31 July 2025

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MAP 11.19.6a Post-development Area Habitats – Retained

KEY

- Site boundary
- Arable field margins pollen and nectar
- Arable field margins tussocky
- Cereal crops
- Temporary grass and clover leys
- Floodplain wetland mosaic and CFGM
- Lowland meadows
- Modified grassland
- Other neutral grassland
- Blackthorn scrub
- Bramble scrub
- Mixed scrub
- Ponds (non-priority habitat)
- Tall forbs
- Artificial unvegetated, unsealed surface
- Developed land; sealed surface
- Vegetated garden
- Fens (upland and lowland)
- Purple moor grass and rush pastures
- Lowland mixed deciduous woodland
- Other woodland; broadleaved
- Other woodland; mixed
- Wet woodland
- Watercourse footprint

SCALE: 1:11,000 at A3

0 100 200 300 400 500 Metres

N

EPR

CLIENT: University of Reading

PROJECT: Loddon Garden Village

DATE: 31 July 2025

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P23/42

Aerial Image Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

MAP 11.19.6b Post-development Area Habitats – Enhanced

KEY

- Site boundary
- Floodplain wetland mosaic and CFGM
- Other neutral grassland
- Fens (upland and lowland)
- Lowland mixed deciduous woodland
- Wet woodland

SCALE: 1:11,000 at A3

0 100 200 300 400 500 Metres

N

EPR

CLIENT: University of Reading

PROJECT: Loddon Garden Village

DATE: 31 July 2025

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MAP 11.19.6c Post-development Area Habitats – Created

KEY

- Site boundary
- Modified grassland
- Other neutral grassland
- Mixed scrub
- Ponds (non-priority habitat)
- Allotments
- Cemeteries and churchyards
- Developed land; sealed surface
- Sustainable drainage system
- Lowland mixed deciduous woodland
- Other woodland; broadleaved
- 70% Developed land sealed surface, 30% Modified grassland
- 90% Other neutral grassland, 10% Modified grassland

SCALE: 1:11,000 at A3

0 100 200 300 400 500 Metres

N

EPR

CLIENT: University of Reading

PROJECT: Loddon Garden Village

DATE: 31 July 2025

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Aerial Image Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

MAP 11.19.6d Post-development Linear Habitats – Retained

KEY

- Site boundary
- Species-rich native hedgerow with trees - associated with bank or ditch
- Species-rich native hedgerow with trees
- Species-rich native hedgerow - associated with bank or ditch
- Native hedgerow with trees - associated with bank or ditch
- Native hedgerow - associated with bank or ditch
- Native hedgerow with trees
- Ecologically valuable line of trees
- Ecologically valuable line of trees - associated with bank or ditch
- Native hedgerow
- Line of trees
- Line of trees - associated with bank or ditch
- Non-native and ornamental hedgerow

SCALE: 1:11,000 at A3

0 100 200 300 400 500 Metres

N

EPR

CLIENT: University of Reading

PROJECT: Loddon Garden Village

DATE: 31 July 2025

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Aerial Image Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

MAP 11.19.6e Post-development Linear Habitats – Created/Enhanced

KEY

Site boundary

Enhanced

- Species-rich native hedgerow with trees - associated with bank or ditch
- Species-rich native hedgerow with trees
- Native hedgerow with trees - associated with bank or ditch
- Native hedgerow - associated with bank or ditch
- Native hedgerow with trees
- Ecologically valuable line of trees - associated with bank or ditch
- Line of trees

Created

- Line of trees

SCALE: 1:11,000 at A3

0 100 200 300 400 500 Metres

N

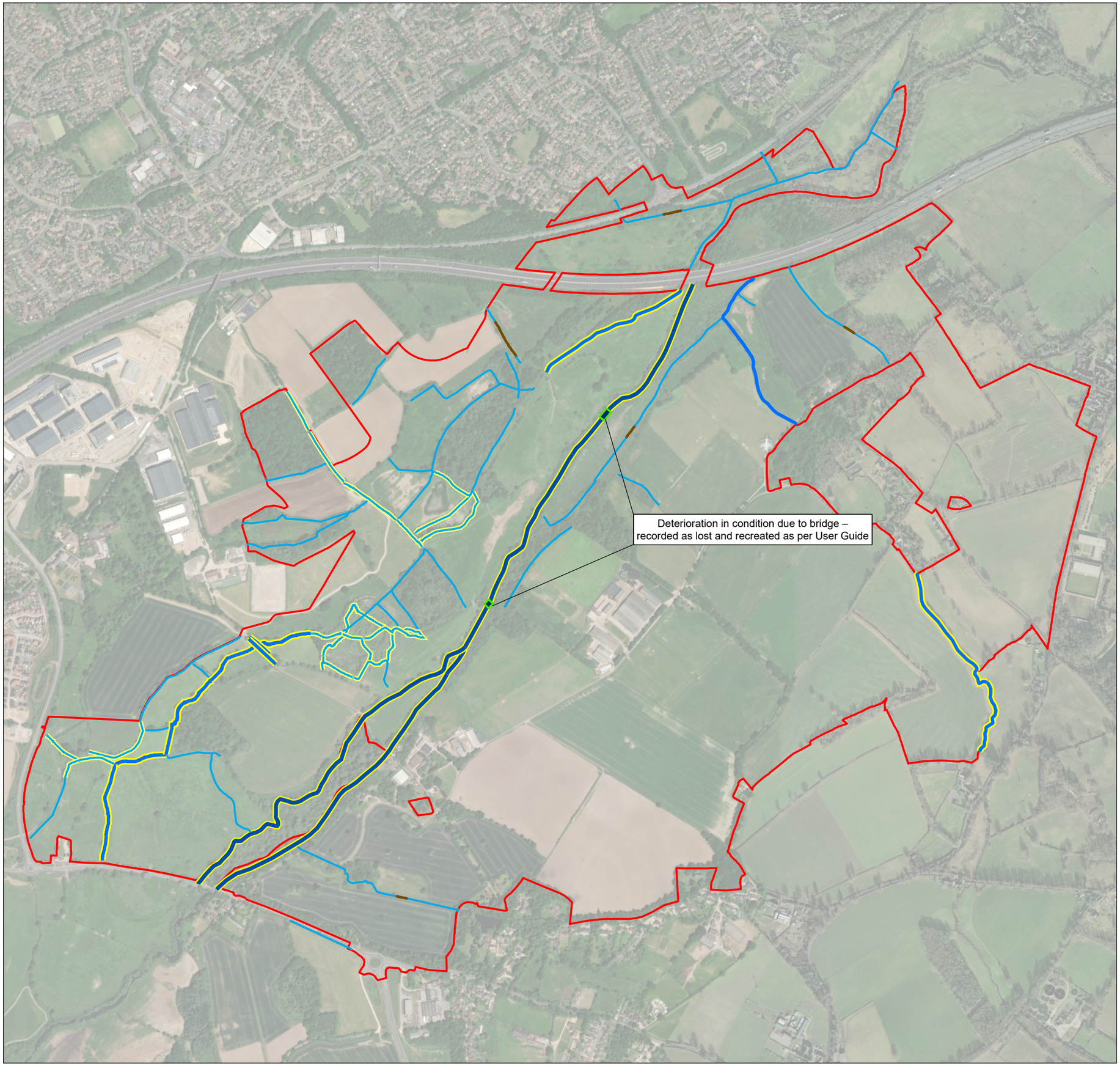
EPR

CLIENT: University of Reading

PROJECT: Loddon Garden Village

DATE: 31 July 2025

Y:\Loddon Garden Village, Shinfield 2201\GIS\Planning Application\Technical Appendices\BNG\Map11.19.6e_Post-developmentLinearHabitatsCreatedEnhanced_P2342_3965_rev3.mxd



MAP 11.19.6f Post-development Watercourse Habitats (Retained/Created/ Enhanced)

KEY

Site boundary

Enhanced

Ditches

Other rivers and streams

Priority habitat

Retained

Ditches

Other rivers and streams

Created

Priority habitat

Culvert

SCALE: 1:11,000 at A3

0 100 200 300 400 500 Metres

N

EPR

CLIENT: University of Reading

PROJECT: Loddon Garden Village

DATE: 31 July 2025

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Aerial Image Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

MAP 11.19.7 Individual Tree Losses Requiring Bespoke Compensation

KEY

Site boundary

Trees

2047 – Medium sized Ash
2093 – Medium sized Alder
3044 – Large sized Ash
6033 – Large sized Common Lime

SCALE: 1:11,000 at A3

0 100 200 300 400 500 Metres

N

EPR

CLIENT: University of Reading

PROJECT: Loddon Garden Village

DATE: 31 July 2025

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Annex 1
River Condition Assessment

Introduction

Four watercourses requiring River Condition Assessment (RCA) have been identified for inclusion within the watercourse category of the Statutory Biodiversity Metric. These are:

- River Loddon (Priority Habitat);
- Barkham Brook (Main river);
- Long Ten (Main river) – part of the modified watercourse referred to as 'Oldhouse Stream' in **Technical Appendix 11.3 Habitats and Landscape;** and
- Arborfield Stream – part of the modified watercourse referred to as 'Lourde's Meadow Stream' in **Technical Appendix 11.3 Habitats and Landscape**.

Whilst designated as a main river, watercourse D70 (also known as the 'Arborfield Cut') (see **Map 11.19-A1**) has been assessed as a ditch based on field conditions. The channel is dry for much of the year and appears to provide seasonal drainage for the surrounding arable fields. Unlike the watercourses listed above, the ditch is not shown on historic maps dating from 1873 indicating it is a more recent addition into the local landscape. It is therefore considered to meet the criteria to be classified as a ditch as a 'artificially created linear water-conveyancing feature' of less than 5m in width.

Methodology

RCAs of watercourses within the Site were completed by Katie Cammack and Katrina Diedericks of EPR, both trained and accredited RCA surveyors. A summary of watercourses surveyed can be found in **Table A1.1**.

The RCA involves a desktop study to determine the River Type, and a field visit to collect data on cross-sections of the watercourse using the Modular River Physical Survey (MoRPh) methodology. MoRPh surveys extend away from the watercourse to 10m from the bank top on both banks and record information relating to the bank tops, faces, channel-water margins and the watercourse bed.

Table A1.1: Watercourses surveyed

Watercourse	Length on-Site (km)	Minimum Survey Length – 20% (km)	Module Length (m)	MoRPh5s completed	Total Area Assessed (km)	RCA Completed
River Loddon	2.25	0.45	30	3	0.45	01/07/2024
Barkham Brook	1.13	0.23	10	5	0.25	04/05/2023
Arborfield Stream	1.00	0.20	10	4	0.20	06/06/2025
Long Ten	0.48	0.1	10	2	0.10	06/06/2025

River Type

The River Type component of the RCA sets out 13 near-natural river types likely to be encountered in England, defined primarily by their planform and bed material, supported by the degree to which they are confined by their valley and the valley gradient. The RCA also includes categories for large rivers and navigable rivers and canals. The watercourses at the Site are all Type K: Straight/sinuous, coarsest SA (sand), average SI (silt).

Baseline River Condition

The summary survey results for the MoRPh5 surveys are set out in **Tables A1.2-A1.5** below. The figures represent the average score from the five modules surveyed in each MoRPh5 subreach, as exported from the Cartographer website.

Positive attributes of the watercourses largely relate to the structure of the banks as well as bankside vegetation, where diverse and structured vegetation is present.

The presence of managed agricultural land alongside the watercourses negatively impacts all of the watercourses, and extensive coverage of Himalayan Balsam along stretches of the River Loddon and Barkham Brook further decreases the score. The lack of natural features within the channel of the watercourses also negatively impacts their condition.

With a river shape figure of less than four (3.22), modules 11-15 of the River Loddon are considered to be ‘overdeep’. In line with guidance, within the metric the final condition assessment score has therefore been decreased from ‘Fairly Good’ to ‘Moderate’.

Table A1.2: River Loddon baseline score

Category	Code	Pos/ Neg	Description	MoRPh Subreach		
				Modules 1-5	Modules 6-10	Modules 11-15
River Type	A1		Braiding index	1.4		
	A2		Sinuosity index	1.056		
	A3		Anabranching index	1.2		
	A4		Level of confinement	Unconfined		
	A5		Valley gradient	0.00056		
	A6		Bedrock reaches	No		
	A7		Coarsest bed material size class	Cobble		
	A8		Average alluvial bed material size class	Silt		
Bank top	B1	+	Bank top vegetation structure	4	1	2
	B2	+	Bank top tree feature richness	2	1	1
	B3	+	Bank top water-related features	2	0	4
	B4	-	Bank top NNIPS cover	-4	0	-1
	B5	-	Bank top managed ground cover	-3	-2	-2
Bank face	C1	+	Bank face riparian vegetation structure	2	2	2
	C2	+	Bank face tree feature richness	3	1	3
	C3	+	Bank face natural bank profile extent	3	3	3
	C4	+	Bank face natural bank profile richness	4	4	4
	C5	+	Bank face natural bank material richness	1	1	1
	C6	+	Bank face bare sediment extent	4	1	1
	C7	-	Bank face artificial bank profile extent	0	0	0
	C8	-	Bank face reinforcement extent	0	0	0
	C9	-	Bank face reinforcement material severity	0	0	0
	C10	-	Bank face NNIPS cover	-4	0	-1

Category	Code	Pos/ Neg	Description	MoRPh Subreach		
				Modules 1-5	Modules 6-10	Modules 11-15
Channel margin	D1	+	Channel margin aquatic vegetation extent	2	2	2
	D2	+	Channel margin aquatic morphophyte richness	2	1	2
	D3	+	Channel margin physical feature extent	0	0	0
	D4	+	Channel margin physical feature richness	0	0	0
	D5	-	Channel margin artificial features	0	-1	0
Channel bed	E1	+	Channel aquatic morphotype richness	2	2	3
	E2	+	Channel bed tree features richness	3	1	1
	E3	+	Channel bed hydraulic features richness	1	1	0
	E4	+	Channel bed natural features extent	0	0	0
	E5	+	Channel bed natural features richness	0	0	0
	E6	+	Channel bed material richness	2	1	1
	E7	-	Channel bed siltation	0	0	0
	E8	-	Channel bed reinforcement extent	0	0	0
	E9	-	Channel bed reinforcement severity	0	0	0
	E10	-	Channel bed artificial features severity	0	0	0
	E11	-	Channel bed NNIPS extent	0	0	0
	E12	-	Channel bed filamentous algae extent	0	0	0
Average Positive Indicators				1.9473684	1.1578947	1.5789474
Average Negative Indicators				-0.84615386	-0.23076923	-0.30769232
Total score - Baseline				**1.1012145 (Moderate)**	**0.9271255 (Moderate)**	**1.271255 (Fairly Good) Adjusted to Moderate as overdeep**

Table A1.3: Barkham Brook baseline score

Category	Code	Pos/ Neg	Description	MoRPh Subreach				
				Modules 1-5	Modules 6-10	Modules 11-15	Modules 16-20	Modules 21-25
River Type	A1		Braiding index	1				
	A2		Sinuosity index	1.112				
	A3		Anabranching index	0				
	A4		Level of confinement	Unconfined				
	A5		Valley gradient	0.00176				
	A6		Bedrock reaches	None				
	A7		Coarsest bed material size class	Gravel/Pebble				
	A8		Average alluvial bed material size class	Silt				
Bank top	B1	+	Bank top vegetation structure	2	2	2	1	1
	B2	+	Bank top tree feature richness	1	0	0	0	0
	B3	+	Bank top water-related features	0	0	0	0	0
	B4	-	Bank top NNIPS cover	-3	-3	0	0	0
	B5	-	Bank top managed ground cover	-3	-2	0	-2	-2
Bank face	C1	+	Bank face riparian vegetation structure	1	2	2	3	3
	C2	+	Bank face tree feature richness	0	1	1	1	1
	C3	+	Bank face natural bank profile extent	3	3	3	3	3
	C4	+	Bank face natural bank profile richness	3	3	3	4	3
	C5	+	Bank face natural bank material richness	2	2	2	2	2
	C6	+	Bank face bare sediment extent	2	1	4	2	3
	C7	-	Bank face artificial bank profile extent	0	0	0	0	0
	C8	-	Bank face reinforcement extent	0	0	0	0	0
	C9	-	Bank face reinforcement material severity	0	0	0	0	0
	C10	-	Bank face NNIPS cover	-4	-4	0	0	0
	D1	+	Channel margin aquatic vegetation extent	2	1	1	2	2

Category	Code	Pos/ Neg	Description	MoRPh Subreach				
				Modules 1-5	Modules 6-10	Modules 11-15	Modules 16-20	Modules 21-25
Channel margin	D2	+	Channel margin aquatic morphophyte richness	1	0	0	2	2
	D3	+	Channel margin physical feature extent	0	1	1	1	1
	D4	+	Channel margin physical feature richness	0	1	1	1	1
	D5	-	Channel margin artificial features	0	0	0	0	0
Channel bed	E1	+	Channel aquatic morphotype richness	1	2	1	2	2
	E2	+	Channel bed tree features richness	1	2	3	1	2
	E3	+	Channel bed hydraulic features richness	1	2	1	1	1
	E4	+	Channel bed natural features extent	0	1	1	1	0
	E5	+	Channel bed natural features richness	0	1	1	1	0
	E6	+	Channel bed material richness	2	3	3	1	2
	E7	-	Channel bed siltation	-2	0	0	0	0
	E8	-	Channel bed reinforcement extent	0	0	0	0	0
	E9	-	Channel bed reinforcement severity	0	0	0	0	0
	E10	-	Channel bed artificial features severity	0	0	-3	-1	0
	E11	-	Channel bed NNIPS extent	0	0	0	0	0
	E12	-	Channel bed filamentous algae extent	-3	-4	-3	-1	0
Average Positive Indicators				1.1052631	1.4736842	1.5789474	1.5263158	1.5263158
Average Negative Indicators				-1.1538461	-1	-0.46153846	-0.30769232	-0.15384616
Total score - Baseline				**-0.04858299 (Fairly Poor)**	**0.47368422 (Moderate)**	**1.1174089 (Moderate)**	**1.2186235 (Fairly Good)**	**1.3724697 (Fairly Good)**

Table A1.4: Arborfield Stream (Lourde's Meadow Stream) baseline score

Category	Code	Pos/ Neg	Description	MoRPh Subreach			
				Modules 1-5	Modules 6-10	Modules 11-15	Modules 16-20
River Type	A1		Braiding index	1			
	A2		Sinuosity index	1			
	A3		Anabranching index	0			
	A4		Level of confinement	Unconfined			
	A5		Valley gradient	0.001			
	A6		Bedrock reaches	None			
	A7		Coarsest bed material size class	Silt			
	A8		Average alluvial bed material size class	Silt			
Bank top	B1	+	Bank top vegetation structure	1	1	3	3
	B2	+	Bank top tree feature richness	0	0	2	0
	B3	+	Bank top water-related features	0	0	0	0
	B4	-	Bank top NNIPS cover	0	0	0	0
	B5	-	Bank top managed ground cover	-2	-2	-2	-3
Bank face	C1	+	Bank face riparian vegetation structure	1	1	3	3
	C2	+	Bank face tree feature richness	0	0	2	1
	C3	+	Bank face natural bank profile extent	3	3	3	3
	C4	+	Bank face natural bank profile richness	1	1	3	3
	C5	+	Bank face natural bank material richness	1	1	1	1
	C6	+	Bank face bare sediment extent	0	0	1	1
	C7	-	Bank face artificial bank profile extent	0	0	0	0
	C8	-	Bank face reinforcement extent	0	0	0	-2
	C9	-	Bank face reinforcement material severity	0	0	0	-2
	C10	-	Bank face NNIPS cover	0	0	0	0
Channel margin	D1	+	Channel margin aquatic vegetation extent	1	3	1	2
	D2	+	Channel margin aquatic morphophyte richness	1	1	1	2

Category	Code	Pos/ Neg	Description	MoRPh Subreach			
				Modules 1-5	Modules 6-10	Modules 11-15	Modules 16-20
	D3	+	Channel margin physical feature extent	0	0	1	0
	D4	+	Channel margin physical feature richness	0	0	1	0
	D5	-	Channel margin artificial features	0	0	0	0
Channel bed	E1	+	Channel aquatic morphotype richness	1	2	0	1
	E2	+	Channel bed tree features richness	1	0	2	2
	E3	+	Channel bed hydraulic features richness	0	0	1	0
	E4	+	Channel bed natural features extent	0	0	0	0
	E5	+	Channel bed natural features richness	0	0	0	0
	E6	+	Channel bed material richness	1	1	1	1
	E7	-	Channel bed siltation	0	0	0	-4
	E8	-	Channel bed reinforcement extent	0	0	0	0
	E9	-	Channel bed reinforcement severity	0	0	0	0
	E10	-	Channel bed artificial features severity	0	0	0	-4
	E11	-	Channel bed NNIPS extent	0	0	0	0
	E12	-	Channel bed filamentous algae extent	0	0	0	-1
Average Positive Indicators				0.6315789	0.7368421	1.3684211	1.2105263
Average Negative Indicators				-0.15384616	-0.15384616	-0.15384616	-1.2307693
Total score - Baseline				**0.4777328 (Moderate)**	**0.58299595 (Moderate)**	**1.2145749 (Fairly Good)**	**-0.020242915 (Fairly Poor)**

Table A1.5: Long Ten baseline score

Category	Code	Pos/ Neg	Description	MoRPh Subreach	
				Modules 1-5	Modules 6-10
River Type	A1		Braiding index	1	
	A2		Sinuosity index	1	
	A3		Anabranching index	0	
	A4		Level of confinement	Unconfined	
	A5		Valley gradient	0.00208	
	A6		Bedrock reaches	None	
	A7		Coarsest bed material size class	Silt	
	A8		Average alluvial bed material size class	Silt	
Bank top	B1	+	Bank top vegetation structure	2	2
	B2	+	Bank top tree feature richness	0	0
	B3	+	Bank top water-related features	0	0
	B4	-	Bank top NNIPS cover	0	0
	B5	-	Bank top managed ground cover	-2	-2
Bank face	C1	+	Bank face riparian vegetation structure	1	2
	C2	+	Bank face tree feature richness	2	0
	C3	+	Bank face natural bank profile extent	3	3
	C4	+	Bank face natural bank profile richness	1	2
	C5	+	Bank face natural bank material richness	1	1
	C6	+	Bank face bare sediment extent	0	0
	C7	-	Bank face artificial bank profile extent	0	0
	C8	-	Bank face reinforcement extent	0	0
	C9	-	Bank face reinforcement material severity	0	0
	C10	-	Bank face NNIPS cover	0	0
Channel margin	D1	+	Channel margin aquatic vegetation extent	3	3
	D2	+	Channel margin aquatic morphophyte richness	1	1

Category	Code	Pos/ Neg	Description	MoRPh Subreach	
				Modules 1-5	Modules 6-10
	D3	+	Channel margin physical feature extent	0	0
	D4	+	Channel margin physical feature richness	0	0
	D5	-	Channel margin artificial features	0	0
Channel bed	E1	+	Channel aquatic morphotype richness	2	2
	E2	+	Channel bed tree features richness	2	2
	E3	+	Channel bed hydraulic features richness	0	0
	E4	+	Channel bed natural features extent	0	0
	E5	+	Channel bed natural features richness	0	0
	E6	+	Channel bed material richness	1	1
	E7	-	Channel bed siltation	0	0
	E8	-	Channel bed reinforcement extent	0	0
	E9	-	Channel bed reinforcement severity	0	0
	E10	-	Channel bed artificial features severity	0	0
	E11	-	Channel bed NNIPS extent	0	0
	E12	-	Channel bed filamentous algae extent	0	0
Average Positive Indicators				1	1
Average Negative Indicators				-0.15384616	-0.15384616
Total score - Baseline				**0.84615386 (Moderate)**	**0.84615386 (Moderate)**

Post-Development River Condition

The new River Loddon and Barkham Brook bridge crossings (pedestrian/cycle and vehicular) will not result in the direct loss of watercourse habitats as a result of the structures, however will cause a decrease in condition and/or increase in encroachment of the sections where the bridges are located, largely due to the artificial engineered features on the banks that are required to support the bridges, and the subsequent shading. As per the User Guide, these sections have been split out and recorded as lost, then recreated with a lower condition score and higher riparian encroachment score to reflect this deterioration in condition.

All watercourses on the Site are proposed to be incorporated into conservation-led management regimes to enhance their condition and value to local biodiversity. Broadly, it is proposed that this may include:

- Control of invasive species;
- Diversification of bankside vegetation:
- Selective thinning to reduce overshading;
- Ongoing management to remove litter and silt;
- Increase watercourse complexity through the inclusion of features such as woody debris;
- Slow movement of water to reduce flows downstream (under advice of hydrologists); and
- Planting of aquatic and marginal vegetation.

Such measures have been taken into consideration in post-development scenarios, and the results are set out in **Tables A1.6-A1.9**. The installation of the new River Loddon bridge crossings have been taken into consideration within Modules 6-10 and 11-15, and the Barkham Brook crossing within Modules 16-20 respectively.

At the detailed application stages, further opportunities to improve the watercourse network may be possible, including more complex channel interventions. Such enhancements will be undertaken in line with advice from relevant experts, including hydrologists and hydromorphologists.

Table A1.6: River Loddon post-development score

Category	Code	Pos/ Neg	Description	MoRPh Subreach				
				Modules 1-5	Modules 6-10	Modules 6-10 (Bridge Crossing)	Modules 11-15 (EcoValley)	Modules 11-15 (Bridge Crossing)
River Type	A1		Braiding index	1.4				
	A2		Sinuosity index	1.056				
	A3		Anabranching index	1.2				
	A4		Level of confinement	Unconfined				
	A5		Valley gradient	0.00056				
	A6		Bedrock reaches	No				
	A7		Coarsest bed material size class	Cobble				
	A8		Average alluvial bed material size class	Silt				
Bank top	B1	+	Bank top vegetation structure	4	4	1	3	1
	B2	+	Bank top tree feature richness	2	2	0	2	0
	B3	+	Bank top water-related features	2	0	0	2	0
	B4	-	Bank top NNIPS cover	-2	0	0	-1	0
	B5	-	Bank top managed ground cover	-2	0	-4	-2	-4
Bank face	C1	+	Bank face riparian vegetation structure	3	4	2	2	0
	C2	+	Bank face tree feature richness	3	1	0	3	0
	C3	+	Bank face natural bank profile extent	3	3	0	3	0
	C4	+	Bank face natural bank profile richness	4	4	0	4	0
	C5	+	Bank face natural bank material richness	1	1	1	1	1
	C6	+	Bank face bare sediment extent	3	1	1	4	1
	C7	-	Bank face artificial bank profile extent	0	0	-4	0	-4
	C8	-	Bank face reinforcement extent	0	0	0	0	0
	C9	-	Bank face reinforcement material severity	0	0	-4	0	-4
	C10	-	Bank face NNIPS cover	-1	0	0	-3	0

Category	Code	Pos/ Neg	Description	MoRPh Subreach				
				Modules 1-5	Modules 6-10	Modules 6-10 (Bridge Crossing)	Modules 11-15 (EcoValley)	Modules 11-15 (Bridge Crossing)
Channel margin	D1	+	Channel margin aquatic vegetation extent	2	2	0	2	0
	D2	+	Channel margin aquatic morphophyte richness	2	2	0	2	0
	D3	+	Channel margin physical feature extent	0	0	0	0	0
	D4	+	Channel margin physical feature richness	0	0	0	0	0
	D5	-	Channel margin artificial features	0	-1	-1	0	0
Channel bed	E1	+	Channel aquatic morphotype richness	2	3	1	2	1
	E2	+	Channel bed tree features richness	3	2	0	3	0
	E3	+	Channel bed hydraulic features richness	1	1	0	1	0
	E4	+	Channel bed natural features extent	0	0	0	0	0
	E5	+	Channel bed natural features richness	0	0	0	0	0
	E6	+	Channel bed material richness	2	1	0	2	1
	E7	-	Channel bed siltation	0	0	0	0	0
	E8	-	Channel bed reinforcement extent	0	0	0	0	0
	E9	-	Channel bed reinforcement severity	0	0	0	0	0
	E10	-	Channel bed artificial features severity	0	0	-3	0	-3
	E11	-	Channel bed NNIPS extent	0	0	0	0	0
	E12	-	Channel bed filamentous algae extent	0	0	0	0	0
Average Positive Indicators				1.94703684	1.6315789	0.315789474	1.8947369	0.2631579
Average Negative Indicators				-0.3846154	-0.07692308	-1.230769231	-0.46153846	-1.1538461
Total score - Baseline				**1.5627531 (Fairly Good)**	**1.5546559 (Fairly Good)**	**-0.914979757 (Fairly Poor)**	**1.4331983 (Fairly Good) reduced to Moderate as overdeep**	**-0.89068824 (Fairly Poor) reduced to Poor as overdeep**

Table A1.7: Barkham Brook post-development score

Category	Code	Pos/ Neg	Description	MoRPh Subreach					
				Modules 1-5	Modules 6-10	Modules 11-15	Modules 16-20	Modules 16-20 (Bridge Crossing)	Modules 21-25
River Type	A1		Braiding index	1					
	A2		Sinuosity index	1.112					
	A3		Anabranching index	0					
	A4		Level of confinement	Unconfined					
	A5		Valley gradient	0.00176					
	A6		Bedrock reaches	None					
	A7		Coarsest bed material size class	Gravel/Pebble					
	A8		Average alluvial bed material size class	Silt					
Bank top	B1	+	Bank top vegetation structure	3	2	2	1	0	1
	B2	+	Bank top tree feature richness	1	2	0	0	0	0
	B3	+	Bank top water-related features	0	2	0	0	0	0
	B4	-	Bank top NNIPS cover	-2	-2	0	0	0	0
	B5	-	Bank top managed ground cover	0	0	0	-2	-4	-2
Bank face	C1	+	Bank face riparian vegetation structure	1	2	2	3	0	3
	C2	+	Bank face tree feature richness	1	1	2	1	0	1
	C3	+	Bank face natural bank profile extent	3	3	3	3	0	3
	C4	+	Bank face natural bank profile richness	2	3	3	4	0	3
	C5	+	Bank face natural bank material richness	2	2	2	2	1	2
	C6	+	Bank face bare sediment extent	2	1	4	2	2	3
	C7	-	Bank face artificial bank profile extent	0	0	0	0	-4	0
	C8	-	Bank face reinforcement extent	0	0	0	0	0	0
	C9	-	Bank face reinforcement material severity	0	0	0	0	-4	0
	C10	-	Bank face NNIPS cover	-2	-2	0	0	0	0
	D1	+	Channel margin aquatic vegetation extent	2	1	1	2	0	2

Category	Code	Pos/ Neg	Description	MoRPh Subreach					
				Modules 1-5	Modules 6-10	Modules 11-15	Modules 16-20	Modules 16-20 (Bridge Crossing)	Modules 21-25
Channel margin	D2	+	Channel margin aquatic morphophyte richness	1	1	1	2	0	2
	D3	+	Channel margin physical feature extent	0	1	1	1	1	1
	D4	+	Channel margin physical feature richness	0	1	1	1	1	1
	D5	-	Channel margin artificial features	0	0	0	0	0	0
Channel bed	E1	+	Channel aquatic morphotype richness	2	2	2	2	0	2
	E2	+	Channel bed tree features richness	1	2	3	1	0	2
	E3	+	Channel bed hydraulic features richness	1	1	1	1	1	1
	E4	+	Channel bed natural features extent	0	1	1	1	1	0
	E5	+	Channel bed natural features richness	0	1	1	1	1	0
	E6	+	Channel bed material richness	2	3	3	1	1	2
	E7	-	Channel bed siltation	-2	0	0	0	0	0
	E8	-	Channel bed reinforcement extent	0	0	0	0	0	0
	E9	-	Channel bed reinforcement severity	0	0	0	0	0	0
	E10	-	Channel bed artificial features severity	0	0	-3	-1	-3	0
	E11	-	Channel bed NNIPS extent	0	0	0	0	0	0
	E12	-	Channel bed filamentous algae extent	-1	-1	-1	-1	-1	0
Average Positive Indicators				1.2631578	1.7368422	1.7368422	1.5263158	0.473684211	1.5263158
Average Negative Indicators				-0.53846157	-0.3846154	-0.30769232	-0.30769232	-1.230769231	-0.15384616
Total score - Baseline				**0.72469634 (Moderate)**	**1.3522267 (Fairly Good)**	**1.4291497 (Fairly Good)**	**1.2186235 (Fairly Good)**	**-0.75708502 (Fairly Poor)**	**1.3724697 (Fairly Good)**

Table A1.8: Arborfield Stream (Lourde's Meadow Stream) post-development score

Category	Code	Pos/ Neg	Description	MoRPh Subreach			
				Modules 1-5	Modules 6-10	Modules 11-15	Modules 16-20
River Type	A1		Braiding index	1			
	A2		Sinuosity index	1			
	A3		Anabranching index	0			
	A4		Level of confinement	Unconfined			
	A5		Valley gradient	0.001			
	A6		Bedrock reaches	None			
	A7		Coarsest bed material size class	Silt			
	A8		Average alluvial bed material size class	Silt			
Bank top	B1	+	Bank top vegetation structure	2	4	3	4
	B2	+	Bank top tree feature richness	2	2	2	1
	B3	+	Bank top water-related features	0	2	0	1
	B4	-	Bank top NNIPS cover	0	0	0	0
	B5	-	Bank top managed ground cover	0	0	-2	-1
Bank face	C1	+	Bank face riparian vegetation structure	2	2	3	3
	C2	+	Bank face tree feature richness	1	1	2	1
	C3	+	Bank face natural bank profile extent	3	3	3	3
	C4	+	Bank face natural bank profile richness	2	3	3	3
	C5	+	Bank face natural bank material richness	1	1	1	1
	C6	+	Bank face bare sediment extent	0	0	1	1
	C7	-	Bank face artificial bank profile extent	0	0	0	0
	C8	-	Bank face reinforcement extent	0	0	0	-2
	C9	-	Bank face reinforcement material severity	0	0	0	-2
	C10	-	Bank face NNIPS cover	0	0	0	0

Category	Code	Pos/ Neg	Description	MoRPh Subreach			
				Modules 1-5	Modules 6-10	Modules 11-15	Modules 16-20
Channel margin	D1	+	Channel margin aquatic vegetation extent	2	3	1	2
	D2	+	Channel margin aquatic morphophyte richness	2	1	1	2
	D3	+	Channel margin physical feature extent	1	0	1	0
	D4	+	Channel margin physical feature richness	1	0	1	0
	D5	-	Channel margin artificial features	0	0	0	0
Channel bed	E1	+	Channel aquatic morphotype richness	2	2	0	3
	E2	+	Channel bed tree features richness	2	0	2	2
	E3	+	Channel bed hydraulic features richness	0	0	1	0
	E4	+	Channel bed natural features extent	0	0	0	0
	E5	+	Channel bed natural features richness	0	0	0	0
	E6	+	Channel bed material richness	1	1	1	1
	E7	-	Channel bed siltation	0	0	0	-4
	E8	-	Channel bed reinforcement extent	0	0	0	0
	E9	-	Channel bed reinforcement severity	0	0	0	0
	E10	-	Channel bed artificial features severity	0	0	0	-4
	E11	-	Channel bed NNIPS extent	0	0	0	0
	E12	-	Channel bed filamentous algae extent	0	0	0	-1
Average Positive Indicators				1.2631578	1.3157895	1.3684211	1.4736842
Average Negative Indicators				0	0	-0.15384616	-1.0769231
Total score - Baseline				**01.2631578 (Fairly Good)**	**1.3157895 (Fairly Good)**	**1.2145749 (Fairly Good)**	**0.39676112 (Moderate)**

Table A1.9: Long Ten post-development score

Category	Code	Pos/ Neg	Description	MoRPh Subreach	
				Modules 1-5	Modules 6-10
River Type	A1		Braiding index	1	
	A2		Sinuosity index	1	
	A3		Anabranching index	0	
	A4		Level of confinement	Unconfined	
	A5		Valley gradient	0.00208	
	A6		Bedrock reaches	None	
	A7		Coarsest bed material size class	Silt	
	A8		Average alluvial bed material size class	Silt	
Bank top	B1	+	Bank top vegetation structure	2	3
	B2	+	Bank top tree feature richness	0	1
	B3	+	Bank top water-related features	0	0
	B4	-	Bank top NNIPS cover	0	0
	B5	-	Bank top managed ground cover	0	0
Bank face	C1	+	Bank face riparian vegetation structure	1	2
	C2	+	Bank face tree feature richness	2	1
	C3	+	Bank face natural bank profile extent	3	3
	C4	+	Bank face natural bank profile richness	1	2
	C5	+	Bank face natural bank material richness	1	1
	C6	+	Bank face bare sediment extent	0	0
	C7	-	Bank face artificial bank profile extent	0	0
	C8	-	Bank face reinforcement extent	0	0
	C9	-	Bank face reinforcement material severity	0	0
	C10	-	Bank face NNIPS cover	0	0

Category	Code	Pos/ Neg	Description	MoRPh Subreach	
				Modules 1-5	Modules 6-10
Channel margin	D1	+	Channel margin aquatic vegetation extent	3	3
	D2	+	Channel margin aquatic morphophyte richness	1	2
	D3	+	Channel margin physical feature extent	1	1
	D4	+	Channel margin physical feature richness	1	1
	D5	-	Channel margin artificial features	0	0
Channel bed	E1	+	Channel aquatic morphotype richness	2	2
	E2	+	Channel bed tree features richness	2	2
	E3	+	Channel bed hydraulic features richness	0	0
	E4	+	Channel bed natural features extent	1	1
	E5	+	Channel bed natural features richness	1	1
	E6	+	Channel bed material richness	1	1
	E7	-	Channel bed siltation	0	0
	E8	-	Channel bed reinforcement extent	0	0
	E9	-	Channel bed reinforcement severity	0	0
	E10	-	Channel bed artificial features severity	0	0
	E11	-	Channel bed NNIPS extent	0	0
	E12	-	Channel bed filamentous algae extent	0	0
Average Positive Indicators				1.2105263	1.4210526
Average Negative Indicators				0	0
Total score - Baseline				**1.2105263 (Fairly Good)**	**1.4210526 (Fairly Good)**

Biodiversity Net Gain

Updated biodiversity net gain guidance issued on 3rd July 2025 includes '*management practice (including agriculture)*' as a type of riparian encroachment. No further guidance is provided on the extent and severity of agricultural management required to qualify as riparian encroachment. Therefore, for the purposes of this assessment, where land is comprised of permanent pasture is it recorded as minor encroachment to reflect that the extent and quality of the ecological function has been reduced but is not completely lost. Intensively managed cereal crops and ley grasslands are recorded as major encroachment.

Based on the above, the Site supports 125.18 watercourse units arising from rivers, streams and ditches. Following the interventions as set out above (and in **Section 3** of this report in relation to ditches), an additional 25.73 units may be generated through habitat enhancements, resulting in 150.95 post-development units, equivalent to a net gain of **+20.59%** with all Trading Rules met.