A large circular graphic composed of various white line-art icons on a teal background. The icons include a person with a headset, a cloud with circuit lines, a "net zero" icon with a leaf, a checkmark in a circle, a target, a microscope, a person at a presentation board, a hand holding a water drop, a globe with a thermometer, a group of people, a leaf, a person silhouette, a water drop with a checkmark, and a glass of water. The central text is overlaid on a white circle within this graphic.

**APPENDIX  
SES036  
ENVIRONMENT  
AND  
BIODIVERSITY  
EVIDENCE**

# Contents

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# PART A: BIODIVERSITY PERFORMANCE COMMITMENT: NOMINATED LAND

## A. Introduction

As part of our Long-Term Delivery Strategy (LTDS) and PR24 business plan we intend to nominate four discrete sites (all owned by SES Water) into the Biodiversity performance commitment. These four sites together comprise over 80% of our land holding and play key parts in the local community and environment.

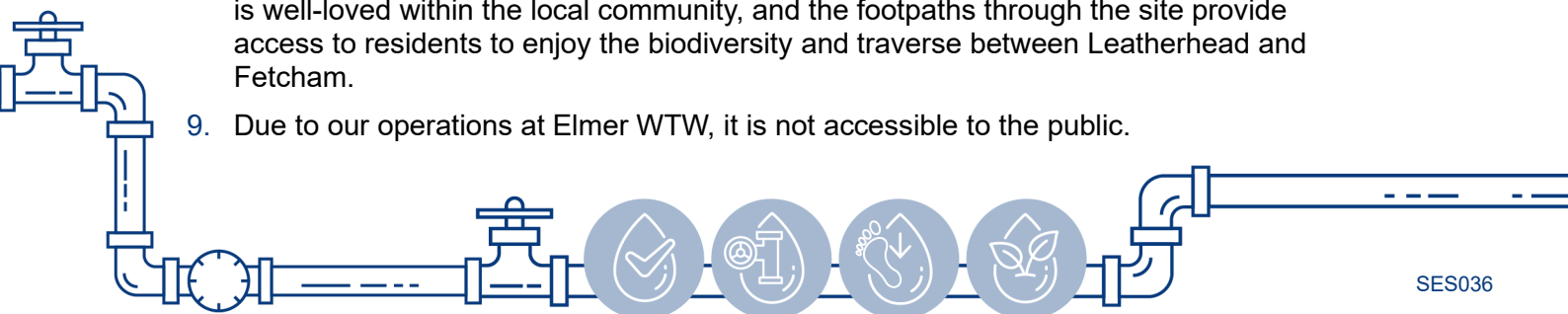
## B. The sites

### Bough Beech and Chiddingstone

1. Bough Beech (217 ha) and Chiddingstone (11.81 ha) are in Edenbridge. They are situated within a kilometre of each other and a plan is provided as part of this appendix.
2. Both sites edge into the High Weald and Kent Downs AONB and are in close proximity to Polebrook Farm SSSI.
3. In addition, Bough Beech is a registered Local Wildlife site, and houses a nature reserve in the northern part of the site. There are parcels of Ancient and Semi-Natural Woodland in and adjacent to the reservoir site.
4. Bough Beech hosts several tenants and user groups, whom we work closely to curate and care for the site, including:
  - Long term agricultural and outdoor pursuits enterprises, supporting the local economy and management of the land holding, and
  - Volunteer organisations, which focus on the nature and historical landscape areas and support restorative land management.
5. For legal restrictions, Chiddingstone is not open to the public.

### Fetcham Springs and Elmer Water Treatment Works

6. Fetcham (20.96) and Elmer (10.7 ha) are near Leatherhead, Surrey. The two sites are in close proximity of each other and a plan is provided as part of this appendix.
7. Fetcham is bordered at the north by the River Mole, which is named as a key habitat in Surrey Nature Partnership's local strategy. Our Elmer WTW is bordered at the west by the Hawk's Hill SNCI, and there are several Local Nature Reserves close to both sites.
8. In addition to statutory and non-statutory designations near these sites, Fetcham Springs is well-loved within the local community, and the footpaths through the site provide access to residents to enjoy the biodiversity and traverse between Leatherhead and Fetcham.
9. Due to our operations at Elmer WTW, it is not accessible to the public.



# PART B: BIODIVERSITY BASELINE CALCULATIONS

## A. Introduction

For our PC nominated land, a baseline value – comprising of habitat, hedgerow and watercourse units – is required. The Biodiversity Metric 4.0 Calculation tool has been used and input data was collated from a combination of desk- and field- studies into the ecology of the sites, carried out between 2019 and 2023.

## B. Surveys used in calculations

### 10. Bough Beech surveys used:

- Bough Beech South PEA Report, *Surrey Wildlife Trust, 2021*
- Bough Beech North PEA Report, *Surrey Wildlife Trust, 2021*

### 11. Chiddingstone surveys used:

- Chiddingstone River Intake Biodiversity Report, *Atkins, 2021*

### 12. Elmer WTW surveys used:

- Extrapolation from data at Fetcham Springs
- Incoming, updated survey due November 2023 with condition assessment completed for the site under Biodiversity Metric 4.0

### 13. Fetcham Springs surveys used:

- Fetcham Springs PEA Report, *Surrey Wildlife Trust, 2021*
- Fetcham Pumping Station and Springs Biodiversity Report, *Atkins, 2021*
- Grassland and Wetland Condition Assessment 2022, *Surrey Wildlife Trust, 2022*

### 14. The following tables set out our assessments of the baseline values, and have indicated our confidence in the following components:

- The condition using third party survey information, and
- Strategic significance, from Local Policy information and material.



## C. Fetcham Springs

### A-1 – On-site habitat baseline

**Table 1: Fetcham Springs justification of baseline values – A-1**

Habitat	Area / ha	Condition	Strategic Significance	Confidence Level
<b>Grassland – Other neutral grassland</b>  SNG1	14.48 - Atkins Biodiversity Survey Site Report Nov 2021	POOR – Grassland Conditions Assessment CG 2022, under Metric 3.1.	MEDIUM – sits within ‘River’ area as defined in Appendix 9: River Biodiversity Opportunity Area Policy Statements by Surrey Nature Partnership. Has connectivity to woodland and watercourses within the site.	Condition Assessment: <b>AMBER</b> . Taken from 3 <sup>rd</sup> party survey.  Strategic significance: <b>GREEN</b> . Taken from local policy documents.
		Grassland was assessed as MODERATE under Metric 2.0 in November 2021, and then re-assessed under 3.1 in September 2022 and deemed as POOR. <i>We do not expect that the grassland’s condition has deteriorated in this time</i> , but that the Conditions Assessment for Grassland under 3.1 is much stricter.		
		POOR – Grassland Conditions Assessment CG 2022, under Metric 3.0		
		POOR – Grassland Conditions Assessment CG 2022, under Metric 3.0		
SNG2		POOR – Grassland Conditions Assessment CG 2022, under Metric 3.0		
SNG3		POOR – Grassland Conditions Assessment CG 2022, under Metric 3.0		
SNG4,5,6,7		POOR – extrapolated from above^		
<b>Woodland and forest – Wet woodland</b>	1.4 – Atkins Biodiversity Survey Site Report Nov 2021	GOOD – Atkins Biodiversity Survey Site Report Nov 2021 under Metric 2.0	HIGH – identified in Appendix 9: River Biodiversity Opportunity Area Policy Statements by Surrey Nature Partnership.	Condition Assessment: <b>AMBER</b> . Taken from 3 <sup>rd</sup> party survey.  Strategic significance: <b>GREEN</b> . Taken from local policy documents.



<p><b>Woodland and forest – Other woodland; broadleaved</b></p>	<p>1.41 – Atkins Biodiversity Survey Site Report Nov 2021</p>	<p>GOOD – Atkins Biodiversity Survey Site Report Nov 2021 under Metric 2.0</p>	<p>MEDIUM – sits within ‘River’ area as defined in Appendix 9: River Biodiversity Opportunity Area Policy Statements by Surrey Nature Partnership. Has connectivity to woodland and watercourses within the site.</p>	<p>Condition Assessment: <b>AMBER.</b> Taken from 3<sup>rd</sup> party survey.</p> <p>Strategic significance: <b>GREEN.</b> Taken from local policy documents.</p>
<p><b>Wetland – Reedbeds</b></p>	<p>0.25 – Atkins Biodiversity Survey Site Report Nov 2021</p>	<p>GOOD – Atkins Biodiversity Survey Site Report Nov 2021 under Metric 2.0</p>	<p>HIGH– identified in Appendix 9: River Biodiversity Opportunity Area Policy Statements by Surrey Nature Partnership.</p>	<p>Condition Assessment: <b>GREEN.</b> Taken from 3<sup>rd</sup> party survey.</p> <p>Strategic significance: <b>GREEN.</b> Taken from local policy documents.</p>
<p><b>Heathland and shrub – Mixed scrub</b></p> <p><b>DS1, DS2</b></p>	<p>0.96 – Atkins Biodiversity Survey Site Report Nov 2021</p>	<p>MODERATE – Atkins Biodiversity Survey Site Report Nov 2021 under Metric 2.0</p>	<p>MEDIUM – sits within ‘River’ area as defined in Appendix 9: River Biodiversity Opportunity Area Policy Statements by Surrey Nature Partnership. Has connectivity to woodland and watercourses within the site.</p>	<p>Condition Assessment: <b>GREEN.</b> Taken from 3<sup>rd</sup> party survey.</p> <p>Strategic significance: <b>GREEN.</b> Taken from local policy documents.</p>
<p><b>Urban – Developed land; sealed surface</b></p>	<p>0.53 – Atkins Biodiversity Survey Site Report Nov 2021</p>	<p>N/A – V. Low distinctiveness does not require condition ass.</p>	<p>LOW</p>	<p>Condition Assessment: <b>GREEN.</b> Taken from 3<sup>rd</sup> party survey.</p> <p>Strategic significance: <b>GREEN.</b> Taken from local policy documents.</p>
<p><b>Lakes – Ponds (priority habitat)</b></p>	<p>1.48 – Atkins Biodiversity Survey Site Report Nov 2021</p>	<p>MODERATE – based on PEA and Biodiversity Summary and Recommendations – passes 6-8 conditions, meeting the requirements for ‘Moderate’.</p> <p>Note: Pond can never reach ‘GOOD’ condition due to artificial management and connectivity</p>	<p>HIGH – identified in Appendix 9: River Biodiversity Opportunity Area Policy Statements by Surrey Nature Partnership.</p>	<p>Condition Assessment: <b>GREEN.</b> Taken from 3<sup>rd</sup> party survey.</p> <p>Strategic significance: <b>GREEN.</b> Taken from local policy documents.</p>

Source: SES Water, Atkins Realis, Surrey Wildlife Trust



## B-1 – On-site hedgerow baseline

**Table 2: Fetcham Springs justification of baseline values – B-1**

Habitat	Length / km	Condition	Strategic Significance	Confidence Level
Species-rich native hedgerow	0.15 (Measured through Magic Map as no metrics provided)	MODERATE – No conditions assessment provided. Carried out via Magic Maps, Google maps, and PEA	MEDIUM – HPI but not specifically mentioned in Surrey BAP	Condition: <b>AMBER</b> . Deduced from 3 <sup>rd</sup> party survey. Good information to support.  Strategic Significance: <b>GREEN</b> – taken from local policy document.

Source: SES Water, Atkins Realis, Surrey Wildlife Trust, Magic Maps

## C-1 – On-site watercourse baseline

**Table 3: Fetcham Springs justification of baseline values – C-1**

Habitat	Length / km	Condition	Strategic Significance	Confidence Level
Other rivers and streams	0.4 – Atkins Biodiversity Survey Site Report Nov 2021	MODERATE - Assessed under RCA and so unaffected by changes between 2.0 and 4.0 Metrics  Assumed NO ENCROACHMENT as none described in report.	HIGH – identified in Appendix 9: River Biodiversity Opportunity Area Policy Statements by Surrey Nature Partnership.	Condition: <b>AMBER</b> . Deduced from 3 <sup>rd</sup> party survey. Level of encroachment not recorded.  Strategic Significance: <b>GREEN</b> – taken from local policy document.

Source: SES Water, Atkins Realis, Surrey Wildlife Trust



## Baseline Biodiversity units at Fetcham

**Table 2 Biodiversity Baseline Units at Fetcham**

Biodiversity	BU
Habitat	145.35
Hedgerows	1.32
Watercourses	5.52
Total	152.19
Site area / ha	20.96

Source: SES Water

### D. Bough Beech Estate

15. Due to the size of the estate, it was previously surveyed in two sections: the southern part, encompassing the treatment works, sailing club and angling club. The northern survey contained the northern portion of the site but excluded land to the east of the causeway.
16. Bough Beech South PEA surveyed a total area of 79.70 ha, where the northern portion was 18 ha. Together, these combine to give 97.70 ha.
17. The entire land area at Bough Beech is 103 ha. For the purposes of the baseline assessment, the total biodiversity units have been proportionally extrapolated from the surveyed 97.70 ha, through to the entire 103 ha.
18. This can be done due to local knowledge of the site. Key assumptions can be made:
  - Consistency across the site in the types of habitats seen
  - Consistency across the site in the condition of habitats, and the ways in which they are currently managed.
19. The whole of the Bough Beech estate will be surveyed in its entirety before the commencement of AMP8.





## Bough Beech South

### A-1 On site habitat units baseline

**Table 3: Bough Beech – South. Justification of baseline values – A-1**

Habitat	Area / ha	Condition	Strategic Significance	Confidence Level
Lowland mixed deciduous woodland	8.65 - Atkins Biodiversity Survey Site Report Dec 2021	GOOD - Atkins Biodiversity Survey Site Report Dec 2021	HIGH - Formally identified in local strategy – Kent Biodiversity Strategy. Priority habitat.	Conditions assessment: <b>GREEN</b> . Taken from 3 <sup>rd</sup> party survey  Strategic Significance: <b>GREEN</b> – taken from local policy document
Other neutral grassland	51.64 - Atkins Biodiversity Survey Site Report Dec 2021	MODERATE - Atkins Biodiversity Survey Site Report Dec 2021	MEDIUM – Connectivity to Priority habitats	Conditions assessment: <b>GREEN</b> . Taken from 3 <sup>rd</sup> party survey  Strategic Significance: <b>GREEN</b> – taken from local policy document
Other woodland; broadleaved	3.61 - Atkins Biodiversity Survey Site Report Dec 2021	GOOD - Atkins Biodiversity Survey Site Report Dec 2021	HIGH - Formally identified in local strategy – Kent Biodiversity Strategy. Priority habitat. Described as irreplaceable.	Conditions assessment: <b>GREEN</b> . Taken from 3 <sup>rd</sup> party survey  Strategic Significance: <b>GREEN</b> – taken from local policy document
Bramble scrub	0.08 - Atkins Biodiversity Survey Site Report Dec 2021	N/A - Not required for habitats of V. Low distinctiveness	LOW – not recognised in local strategy. Habitat of low distinctiveness.	Conditions assessment: <b>GREEN</b> . Taken from 3 <sup>rd</sup> party survey  Strategic Significance: <b>GREEN</b> – taken from local policy document



Mixed scrub	0.08 - Atkins Biodiversity Survey Site Report Dec 2021	POOR - Atkins Biodiversity Survey Site Report Dec 2021	LOW – not recognised in local strategy. Habitat of low distinctiveness.	Conditions assessment: <b>GREEN</b> . Taken from 3 <sup>rd</sup> party survey  Strategic Significance: <b>GREEN</b> – taken from local policy document
Ponds (Priority Habitat)	0.074	GOOD – Passes 9/9 criteria. 80% macrophyte cover, 50% shade. No record of INNS.	HIGH - Formally identified in local strategy – Kent Biodiversity Strategy. Priority habitat.	Conditions assessment: <b>AMBER</b> . Desk study information from 3 <sup>rd</sup> party survey.  Area: <b>AMBER</b> . Overall taken from 3 <sup>rd</sup> party survey. Individual bodies determined through GIS application.  Strategic Significance: <b>GREEN</b> – taken from local policy document
	0.474	MODERATE – artificially stocked pond. Otherwise in good condition. 8/9 criteria passed.		
	0.318	MODERATE – Passes 7/9 criteria.		
	0.15	MODERATE – Passes 6/7 criteria.		
	0.114	MODERATE – Passes 6/7 criteria.		
Ruderal / ephemeral	2.09 - Atkins Biodiversity Survey Site Report Dec 2021	MODERATE – Passes 2/3 criteria.	LOW – not recognised in local strategy. Habitat of low distinctiveness.	Conditions assessment: <b>AMBER</b> . Desk study information from 3 <sup>rd</sup> party survey.  Strategic Significance: <b>GREEN</b> – taken from local policy document
Developed land; sealed surface	12.42 - Atkins Biodiversity Survey Site Report Dec 2021	N/A - Not required for habitats of V. Low distinctiveness	LOW – not recognised in local strategy. Habitat of low distinctiveness.	Conditions assessment: <b>GREEN</b> . Not required for this habitat.  Strategic Significance: <b>GREEN</b> – taken from local policy document



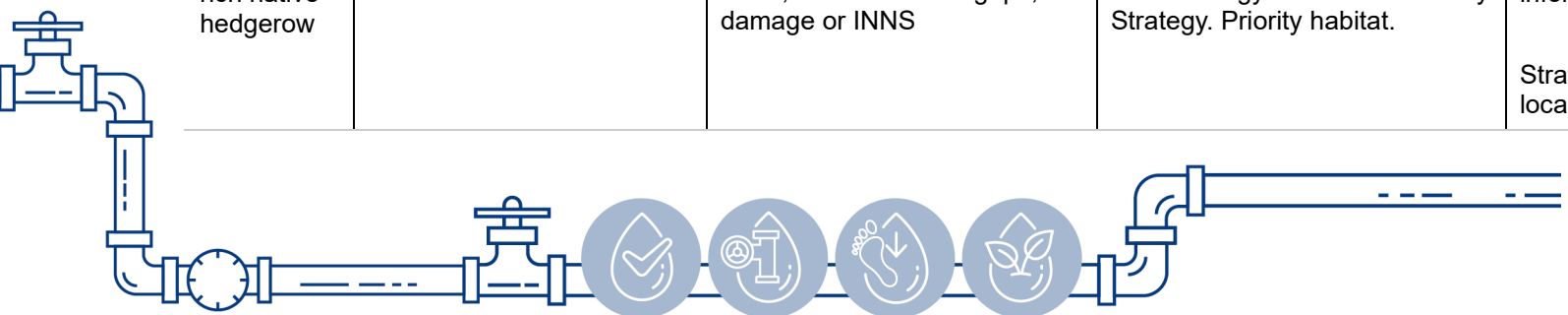
Individual trees - Urban	0.4587 – Number of trees from Atkins Biodiversity Survey Site Report Dec 2021. Area from ‘tree helper’ in metric tool. Assumptions: trees are ‘large’ and in ‘Moderate’ condition.	GOOD - Native, individual tree, no evidence of adverse impact on tree health by human activities. More than 20% oversailing vegetation beneath	LOW	Conditions assessment: <b>RED</b> . Desk study with incomplete information from 3 <sup>rd</sup> party survey.  Strategic Significance: <b>GREEN</b> – taken from local policy document
Individual trees – Rural	0.5352 – Number of trees from Atkins Biodiversity Survey Site Report Dec 2021. Area from ‘tree helper’ in metric tool. Assumptions made that the trees were ‘large’ and in ‘Moderate’ condition.	GOOD - Native, individual tree, no evidence of adverse impact on tree health by human activities. More than 20% oversailing vegetation beneath	LOW	Conditions assessment: <b>RED</b> . Desk study with incomplete information from 3 <sup>rd</sup> party survey.  Strategic Significance: <b>GREEN</b> – taken from local policy document

Source: SES Water, Atkins Realis, Kent Nature

### B-1 On site hedgerow units baseline

**Table 4: Bough Beech – South. Justification of baseline values – B-1**

Habitat	Area / ha	Condition	Strategic Significance	Confidence Level
Species rich native hedgerow	0.03 - Atkins Biodiversity Survey Site Report Dec 2021	GOOD - 1.5m in height and width, no evidence of gaps, damage or INNS	HIGH - Formally identified in local strategy – Kent Biodiversity Strategy. Priority habitat.	Conditions assessment: <b>AMBER</b> . Desk study information from 3 <sup>rd</sup> party survey.  Strategic Significance: <b>GREEN</b> – taken from local policy document
Species rich native hedgerow	0.14 (Measured via MM)	GOOD - 1.5m in height and width, no evidence of gaps, damage or INNS	HIGH - Formally identified in local strategy – Kent Biodiversity Strategy. Priority habitat.	Conditions assessment: <b>AMBER</b> . Desk study information from 3 <sup>rd</sup> party survey.  Strategic Significance: <b>GREEN</b> – taken from local policy document



Line of trees	0.065 (Magic Maps)	MODERATE – No undisturbed naturally vegetated strip, no veteran trees identified. Sizes estimated as ‘Large’	LOW	Conditions assessment: <b>RED</b> . Desk study with incomplete information from 3 <sup>rd</sup> party survey.  Strategic Significance: <b>GREEN</b> – taken from local policy document
Line of trees	0.032 (Magic Maps)	MODERATE – No undisturbed naturally vegetated strip, no veteran trees identified. Sizes estimated as ‘Large’	LOW	Conditions assessment: <b>RED</b> . Desk study with incomplete information from 3 <sup>rd</sup> party survey.  Strategic Significance: <b>GREEN</b> – taken from local policy document

Source: SES Water, Atkins Realis, Surrey Wildlife Trust, Kent Nature, Magic Maps

**Table 5: Bough Beech – South. Justification of baseline values – C-1**

Watercourse type	Length	Condition	Strategic Significance	Extent of encroachment	Extent of encroachment for both banks	Confidence Levels
Culvert	0.03 (Measured in MM)	N/A	N/A	N/A	N/A	Conditions assessment: <b>GREEN</b> . Not required for this habitat.

Source: SES Water, Atkins Realis, Magic Maps

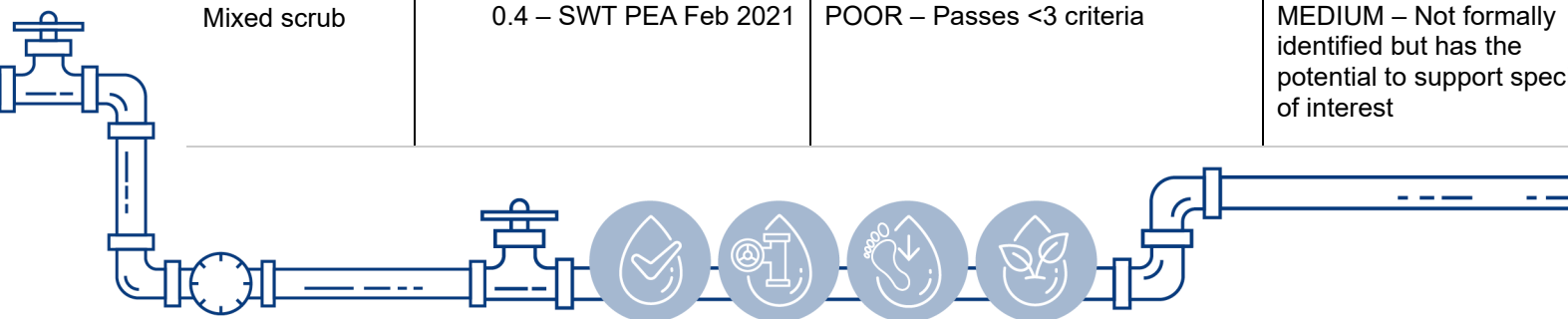


## Bough Beech North

### A-1 On site habitat units baseline

**Table 6: Bough Beech – North. Justification of baseline values – A-1**

Habitat	Area / ha	Condition	Strategic Significance	Confidence Level
Other neutral grassland 1 – SNG 1, 2, 4, 5, 7, 8, 9, 10	6.78 – SWT PEA Feb 2021 minus area of orchards determined from Magic Maps	POOR – Passes 2/6 criteria. Fails essential criteria F.	MEDIUM – HPI. Not nominated in local strategy.	Conditions assessment: <b>RED</b> . Desk study with incomplete information from 3 <sup>rd</sup> party survey.  Strategic Significance: <b>GREEN</b> – taken from local policy document
Other neutral grassland (recorded under Phase 1 survey as Marshy Grassland)	0.5 – SWT PEA Feb 2021	MODERATE – Passes 3/6 criteria including essential criteria A. Fails F.	MEDIUM – HPI. Not nominated in local strategy.	Conditions assessment: <b>RED</b> . Desk study with incomplete information from 3 <sup>rd</sup> party survey.  Strategic Significance: <b>GREEN</b> – taken from local policy document
Lowland mixed deciduous woodland	7.5 – SWT PEA Feb 2021	GOOD – Passes >32/39 criteria. No INNS recorded. Good mix of native species. No damage recorded.	HIGH – HPI and named in Kent Biodiversity Strategy	Conditions assessment: <b>RED</b> . Desk study with incomplete information from 3 <sup>rd</sup> party survey.  Strategic Significance: <b>GREEN</b> – taken from local policy document
Mixed scrub	0.4 – SWT PEA Feb 2021	POOR – Passes <3 criteria	MEDIUM – Not formally identified but has the potential to support species of interest	Conditions assessment: <b>RED</b> . Desk study with incomplete information from 3 <sup>rd</sup> party survey.



				Strategic Significance: <b>GREEN</b> – taken from local policy document
Traditional Orchards	0.72 – Determined from Magic Maps	GOOD – No INNS recorded and ancient/veteran trees present. Passes 6/8 of criteria, including essential criteria A and B.	HIGH – Ancient woodland. HPI.	Conditions assessment: <b>RED</b> . Desk study with incomplete information from 3 <sup>rd</sup> party survey.  Strategic Significance: <b>GREEN</b> – taken from local policy document
Lakes - Ponds	0.46	MODERATE – Presence of Crassula confirmed. Passes remaining 6 criteria.	HIGH – HPI and named in Kent Biodiversity Strategy	Conditions assessment: <b>RED</b> . Desk study with incomplete information from 3 <sup>rd</sup> party survey.  Strategic Significance: <b>GREEN</b> – taken from local policy document
	0.02	MODERATE – Presence of Crassula confirmed. Passes remaining 8 criteria.		
	0.02	MODERATE – No information supplied.		
	0.1	MODERATE – Woodland ponds/ Sparse vegetation. Passes remaining 6 criteria.		
Ruderal/ephemeral	0.023 (Measured via Magic Map)	MODERATE – Passes 2/3 criteria	MEDIUM – Not formally identified but has the potential to support reptile species	Conditions assessment: <b>RED</b> . Desk study with incomplete information from 3 <sup>rd</sup> party survey.  Strategic Significance: <b>GREEN</b> – taken from local policy document
Developed land; sealed surface	0.14 (Measured via Magic Map)	N/A	LOW	Conditions assessment: <b>GREEN</b> . Not required for this habitat.  Strategic Significance: <b>GREEN</b> – taken from local policy document

Source: SES Water, Magic Maps, Surrey Wildlife Trust



**B-1 On site hedgerow units baseline**

**Table 7: Bough Beech – North. Justification of baseline values – B-1**

Habitat	Area / ha	Condition	Strategic Significance	Confidence Level
Species-rich native hedgerow with trees	0.895	MODERATE	HIGH – HPI and named in Kent Biodiversity Strategy.	Conditions assessment: <b>RED</b> . Desk study with incomplete information from 3 <sup>rd</sup> party survey.  Strategic Significance: <b>GREEN</b> – taken from local policy document
Native hedgerow with trees	0.249	MODERATE	HIGH – HPI and named in Kent Biodiversity Strategy	Conditions assessment: <b>RED</b> . Desk study with incomplete information from 3 <sup>rd</sup> party survey.  Strategic Significance: <b>GREEN</b> – taken from local policy document
Native hedgerow	1.16	MODERATE	HIGH – HPI and named in Kent Biodiversity Strategy	Conditions assessment: <b>RED</b> . Desk study with incomplete information from 3 <sup>rd</sup> party survey.  Strategic Significance: <b>GREEN</b> – taken from local policy document

Source: SES Water, Surrey Wildlife Trust, Kent Nature



### C-1 On site watercourse units baseline

**Table 8: Bough Beech – North. Justification of baseline values – C-1**

Habitat	Area / ha	Condition	Strategic Significance	Confidence Level
Priority habitat	0.346	MODERATE, with NO watercourse encroachment, MINOR riparian encroachment only – No information provided. RCA required.	HIGH – HPI and named in Kent Biodiversity Strategy	<p>Conditions assessment: <b>RED</b>. Desk study with incomplete information from 3<sup>rd</sup> party survey.</p> <p>Strategic Significance: <b>GREEN</b> – taken from local policy document</p>

Source: SES Water, Kent Nature, Surrey Wildlife Trust





## Overview of Bough Beech Baseline Biodiversity Units

**Table 9 Bough Beech South baseline biodiversity units**

<b>Total Site Area / ha</b>	<b>79.70</b>
Biodiversity / BU	
Habitat	720.34
Hedgerows	2.73
Watercourses	0.11
Total	723.18

Source: SES Water

**Table 10 Bough Beech North baseline biodiversity units**

<b>Total Site Area / ha</b>	<b>18</b>
Biodiversity / BU	
Habitat	214.37
Hedgerows	19.98
Watercourses	6.05
Total	240.40

Source: SES Water

### Bough Beech – Whole land area

20. Combined, Bough Beech South and Bough Beech North comprise of 97.70 ha.

21. The whole land coverage at the Bough Beech estate amounts to 103 ha. The remaining 5.3 ha was not surveyed, and in order to gain a comprehensive view of the site, the land biodiversity status has been extrapolated like so:

- Extrapolate (weighted averages of BU per hectare) to cover the whole of the land area

$$BU_{BB} = \frac{(BU_{BBS} + BU_{BBN})}{A_{BBS} + A_{BBN}} \times A_{BB}$$

- This assumes that the general ecology of the entirety of the Bough Beech site is well-represented across the surveyed North and South sites.



**Table 11: Bough Beech – Entire site: Baseline units**

Site	Area / ha	BU density / BU ha <sup>-1</sup>	BU
Bough Beech South	79.7	9.07	723.18
Bough Beech North	18.0	13.36	240.40
Bough Beech	103.0	9.86	1015.85

Source: SES Water

## Bough Beech – Reservoir

22. The conditions assessment for a large body of water, such as a reservoir is based on four categories: Physical, Hydrological, Biological and Chemical.

23. Physical and hydrological condition assessment will be fixed at 5/5 (Poor). This is because we do not expect to change the physical infrastructure, or the use case at Bough Beech in the next 25 years

24. Chemical component

- Improvements expected from WINEP / River Restoration work, as we expect an increase in the water quality.
- SESW has in-house testing capabilities – meaning we can monitor and record this frequently.
- Likely to have a score between 1-3

25. Biological

- The biological component of the condition assessment contains information about the riparian zone, which can be surveyed as part of surrounding land surveys in 2024
- The reservoir cannot be in condition 1 due to presence of Crassula
- The reservoir will not fall into condition 5 as there is no evidence of a high conc<sup>n</sup> or diversity of INNS. This is something that will be monitored.

26. Therefore:

- We assume that the baseline condition assessment for Bough Beech reservoir is 'Fairly Poor'
- We also estimate that this will improve 'Moderate' over time

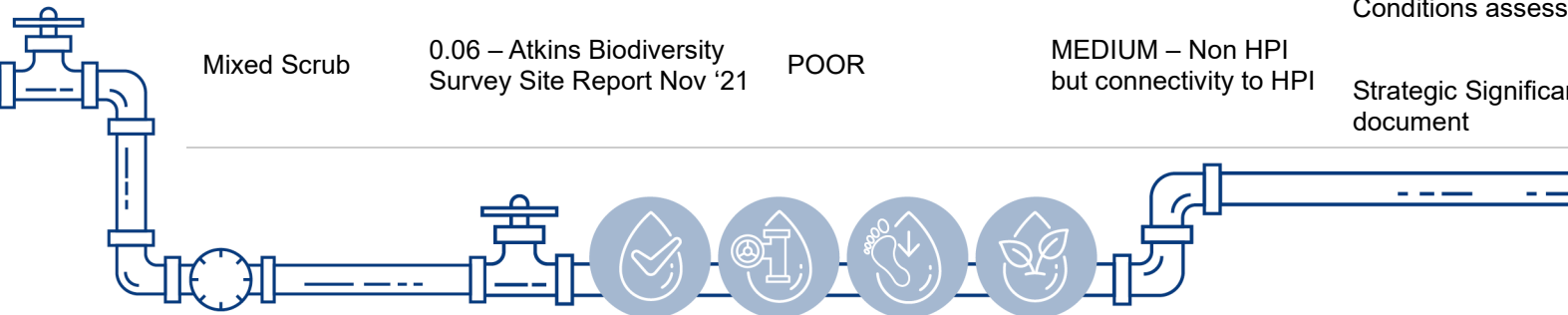


## E. Chiddingstone

### A-1 On-site Habitat Baseline

**Table 12: Chiddingstone. Justification of baseline values – A-1**

Habitat	Area	Condition	Strategic Significance	Confidence Level
Other Neutral Grassland	9.65 – Atkins Biodiversity Survey Site Report Nov '21	MODERATE	MEDIUM – Non HPI but connectivity to HPI	Conditions assessment: <b>GREEN</b> . Taken from 3 <sup>rd</sup> party survey Strategic Significance: <b>AMBER</b> – taken from local policy document
Other Neutral Grassland	0.86 – Atkins Biodiversity Survey Site Report Nov '21	POOR	MEDIUM – Non HPI but connectivity to HPI	Conditions assessment: <b>GREEN</b> . Taken from 3 <sup>rd</sup> party survey Strategic Significance: <b>AMBER</b> – taken from local policy document
Other woodland; broadleaved	0.51 – Atkins Biodiversity Survey Site Report Nov '21	GOOD	HIGH – Designated HPI in Kent Biodiversity Strategy	Conditions assessment: <b>GREEN</b> . Taken from 3 <sup>rd</sup> party survey Strategic Significance: <b>GREEN</b> – taken from local policy document
Blackthorn Scrub	0.19 – Atkins Biodiversity Survey Site Report Nov '21	MODERATE	MEDIUM – Non HPI but connectivity to HPI	Conditions assessment: <b>GREEN</b> . Taken from 3 <sup>rd</sup> party survey Strategic Significance: <b>AMBER</b> – taken from local policy document
Mixed Scrub	0.06 – Atkins Biodiversity Survey Site Report Nov '21	POOR	MEDIUM – Non HPI but connectivity to HPI	Conditions assessment: <b>GREEN</b> . Taken from 3 <sup>rd</sup> party survey Strategic Significance: <b>AMBER</b> – taken from local policy document



Open Water	0.29 – Atkins Biodiversity Survey Site Report Nov '21		MODERATE – Desk study. Passes 6-8/9 criteria in conditions assessment.	HIGH – Designated HPI in Kent Biodiversity Strategy	Conditions assessment: <b>AMBER</b> . Taken from 3 <sup>rd</sup> party survey  Strategic Significance: <b>GREEN</b> – taken from local policy document
Developed land; sealed surface	0.25 – Atkins Biodiversity Survey Site Report Nov '21	N/A		LOW	Conditions Assessment: <b>GREEN</b> . Not required for this habitat.  Strategic significance: <b>GREEN</b> . Low.

Source: SES Water, Atkins Realis, Surrey Wildlife Trust, Kent Nature

## B-1 On-site Hedgerow Baseline

Table 13: Chiddingston. Justification of baseline values – B-1

Hedgerow type	Length / km	Condition	Strategic Significance	Confidence Levels
Native Hedgerow	0.02 – Measured using Magic Maps GIS referencing Garmin GIS provided in Atkins Biodiversity Survey Site Report Nov '21	POOR – No information other than 'heavily flailed'	HIGH – Designated in Kent Biodiversity Strategy	Conditions assessment: <b>RED</b> . Desk study with incomplete information from 3 <sup>rd</sup> party survey.  Strategic Significance: <b>GREEN</b> – taken from local policy document
Line of trees	1.097 – Measured using Magic Maps GIS referencing Garmin GIS provided in Atkins Biodiversity Survey Site Report Nov '21	MODERATE – No information provided.	MEDIUM – Non HPI but connectivity to HPI	Conditions assessment: <b>RED</b> . Desk study with incomplete information from 3 <sup>rd</sup> party survey.  Strategic Significance: <b>AMBER</b> – taken from local policy document

Source: SES Water, Atkins Realis, Surrey Wildlife Trust, Kent Nature, Magic Maps



## Chiddingstone Baseline Biodiversity Units

**Table 14: Chiddingstone baseline biodiversity units**

Total Site Area / ha	11.81
<b>Biodiversity / BU</b>	
Habitat	101.68
Hedgerows	4.87
Watercourses	0
<b>Total</b>	<b>106.55</b>

Source: SES Water

### F. Elmer

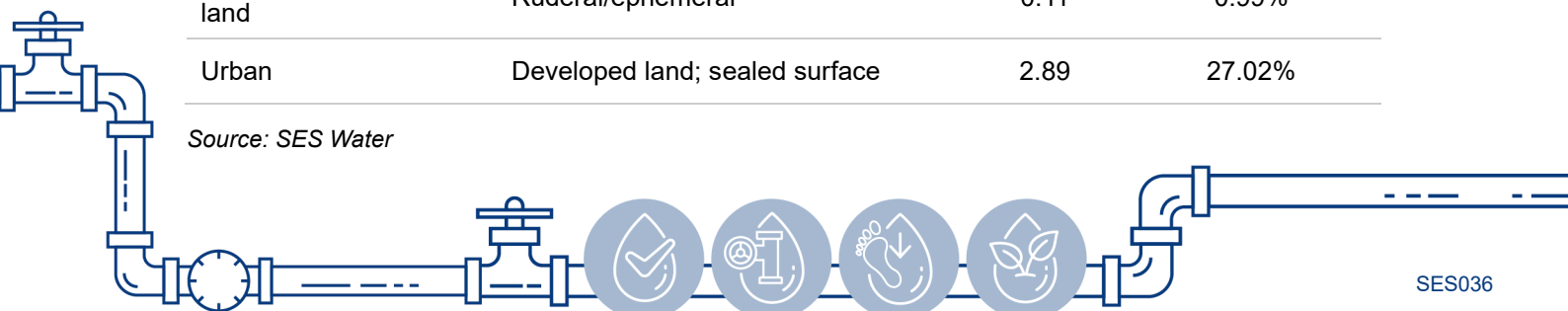
27. Currently, we do not have a complete conditions assessment for the entirety of the Elmer site.
28. Surrey Wildlife Trust are currently completing the 2023 Biodiversity Report for the site, which will assess the conditions of the habitats at the site under the Biodiversity Metric 4.0. This is expected to be completed in November 2023.
29. Therefore, in this draft, we assume that the ecology of Elmer is very similar to that of Fetcham
  - Both dominated by grassland
  - Close proximity to each other
30. Therefore

$$\frac{BU_{Elm}}{A_{Elm}} = \frac{BU_{Fetch}}{A_{Fetch}}$$

**Table 15: Estimation of habitats, areas and conditions at Elmer site used for baseline calculations**

Broad	Habitat	Area / ha	As % of area
Woodland and forest	Lowland mixed deciduous woodland	2.61	24.41%
Scrub	Mixed scrub	1.08	10.10%
Woodland and forest	Other woodland; broadleaved	0.35	3.26%
Grassland	Lowland calcareous grassland	1.90	17.71%
Grassland	Other neutral grassland	1.77	16.51%
Sparsely vegetated land	Ruderal/ephemeral	0.11	0.99%
Urban	Developed land; sealed surface	2.89	27.02%

Source: SES Water



# PART C: BIODIVERSITY PC - 25 Year Projections

## Fetcham

31. Grassland can move from 'Poor' to 'Good'
32. Mixed scrub can move from 'Moderate' to 'Good'
33. Standing water on the Fetcham site must remain at 'Moderate' condition – due to artificial connectivity and management of water levels. See conditions assessment for 'Ponds' for further information

## Elmer

34. Assuming same  $\Delta$ BU / ha as Fetcham

## Chiddingstone

35. All habitats and hedgerows at Chiddingstone can move from current condition to 'Good'

## Bough Beech – South

36. Grassland can move from 'Poor' to 'Good'
37. Mixed scrub can move from 'Poor' to 'Good'
38. Ruderal/ephemeral land can move from 'Moderate' to 'Good'
39. SW2 and SW3 (ponds at the Southern-most area of the site) are limited in improvements due to use as stock pond and connectivity to other water bodies.
40. SW4 and SW5 can move from 'Moderate' to 'Good'
41. All hedgerows and treelines can move to 'Good'
42. Culvert remains as culvert and therefore cannot improve in condition

## Bough Beech – North

43. All hedgerows and treelines can move to 'Good'
44. Grassland can move from 'Poor'/'Moderate' to 'Good'
45. Mixed scrub can move from 'Poor' to 'Good'
46. Ruderal/Ephemeral land can move from 'Moderate' to 'Good'
47. SW5 and 6 remain at Moderate condition throughout
48. Remaining standing water bodies (SW1, 2, 3,4, 7, 8, 9, 10) can move to 'Good'
49. Watercourse can move from 'Moderate' to 'Good'

## Bough Beech – Total



50. As with baseline, BU is based on weighted average BU density (BU/ha) between BB South and BB North surveys

## Progression Timelines

51. For: Fetcham, Chiddingstone, Bough Beech Reservoir:

- Based on the temporal risk multipliers used in the Biodiversity Metric

52. For Elmer:

- Assume same BU density increases in line with Fetcham

53. For Bough Beech land

- Weighted average of BBS and BBN BU density increases

54. Assuming work (new management plans etc.) is started in earnest at beginning of AMP8 (2025)

55. Surveys to be repeated every 4 years – so changes in condition can only be reported at those 4-year time stamps



# PART D: BIODIVERSITY PERFORMANCE COMMITMENT: NOMINATED LAND

## Fetcham

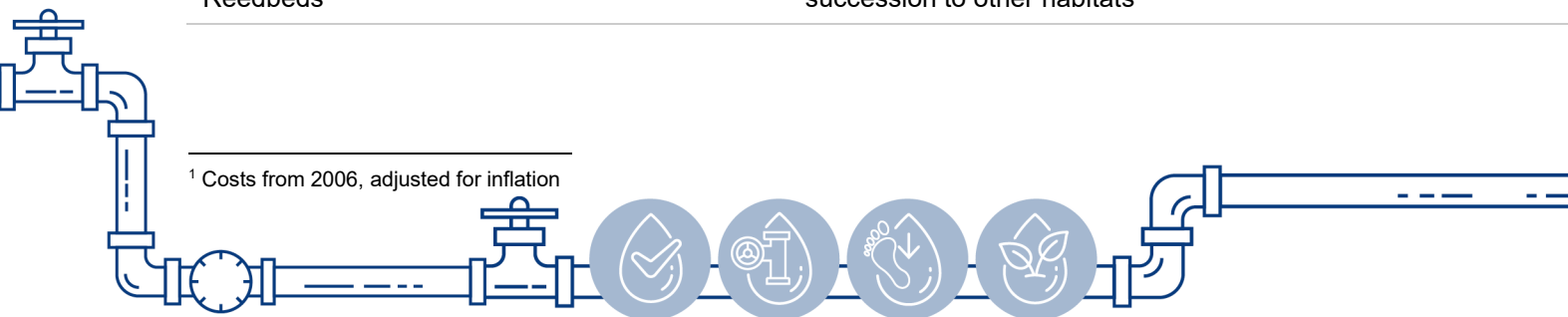
56. Surveys every four years. Costs based on previous quotes from SWT<sup>1</sup>

57. Based on existing management plan from 2021

**Table 16: Fetcham habitats management and incurred costs**

Habitat Parcel	Area	Condition	Management Approach	Cost	Sources
A-1: 1 Other Neutral Grassland	14.48	Poor → Moderate (2037) → Good (2041)	Cut and collect: Mix of annual/biennial Creation of grass-laying piles, dead wood piles	£330/ ha / yr.	<a href="https://ruralpayments.org/">Species-rich Grassland Management (ruralpayments.org)</a>
A-1: 2 Wet Woodland	1.4	Good (Maintain)	As current. No direct management. Keep under observation and adjust if required	£125/ha/yr.	<a href="#">Build a bug hotel (sharepoint.com)</a> <a href="#">Technical Doc (cbd.int)</a>
A-1: 3 Other woodland; broadleaved	1.41	Good (Maintain)	As current. No direct management. Keep under observation and adjust if required	£125/ha/yr.	<a href="#">Build a bug hotel (sharepoint.com)</a> <a href="#">Technical Doc (cbd.int)</a>
A-1: 4 Reedbeds	0.25	Good (Maintain)	Maintenance required to prevent succession to other habitats	£100/ha/yr.	<a href="#">Heading 1 (publishing.service.gov.uk)</a>

<sup>1</sup> Costs from 2006, adjusted for inflation





A-1:5 Mixed scrub	0.96	Moderate → Good (2029)	Management to maintain but prevent further spread. Cut back ~1/2 every two years	£250/ha	<a href="#">Build a bug hotel (sharepoint.com)</a> <a href="#">Technical Doc (cbd.int)</a>
A-1: 6 Urban	0.53	Poor (Maintain)	N/A	£0/ha/yr.	
A-1:7 Standing water	1.48	Moderate (Maintain)	Professional advice – algae management. Requires further survey and MP.	£1500 - MP determination £188.94 / 100m <sup>2</sup> / year annual management	<a href="#">Technical Doc (cbd.int)</a> <a href="#">Build a bug hotel (sharepoint.com)</a>
B-1:1 Hedgerows	0.15km	Moderate → Good (2029)	General annual management	£330/km/yr.	<a href="#">Management or Restoration of Hedgerows (ruralpayments.org)</a>
C-1:1 Watercourse	0.4km	Moderate → Good (2029)	Monitor to ensure free flowing water, lack of INNS. General annual management.	£985/km/yr.	<a href="#">Build a bug hotel (sharepoint.com)</a> <a href="#">Technical Doc (cbd.int)</a>

Source: SES Water, Surrey Wildlife Trust, GHK Consulting Ltd, Scot Gov

## Elmer

58. Surveys as above. Management costs calculated as proportional (based on site area) to Fetcham



## Chiddingstone

59. No existing management plan to work with.

**Table 17: Fetcham habitats management and incurred costs**

Habitat Parcel	Area	Condition	Management Approach	Cost	Sources
A-1:1 - Other Neutral Grassland	9.65	Moderate → Good (2037)	General annual management	£330/ ha / yr.	<a href="#">Technical Doc (cbd.int)</a>
A-1:2 - Other Neutral Grassland	0.86	Poor → Moderate (2037) → Good (2041)		£330/ ha / yr.	
A-1:3 - Other woodland; broadleaved	0.51	Good		£125/ha/yr.	
A-1:4 - Blackthorn Scrub	0.19	Moderate → Good (2029)		£250/ha/yr.	
A-1:5 - Mixed Scrub	0.06	Poor → Moderate (2033) → Good (2037)		£250/ha/yr.	
A-1:6 - Open Water	0.29	Moderate → Good (2029)		£188.94 / 100m <sup>2</sup> / year	
A-1:7 - Developed land; sealed surface	0.25	N/A		N/A	
B-1:1 Hedgerows	0.02 km	Poor → Moderate (2029) → Good (2033)		£330/km/yr.	
B-1:2 Treelines	1.097 km	Moderate → Good (2037)		£330/km/yr.	

Source: SES Water, GHK Consulting Ltd, Surrey Wildlife Trust



## Bough Beech South

60. Based on draft management plan provided.

**Table 18: Fetcham habitats management and incurred costs**

Habitat Parcel	Area / ha	Condition	Management Approach	Cost	Sources
A-1:1 Woodland	8.65	Good	General annual management	£125/ha/yr.	<a href="#">Draft Biodiversity Management Plan for Bough Beech.pdf (sharepoint.com)</a>  <a href="#">Technical Doc (cbd.int)</a>
A-1:2 Grassland	51.64	Moderate → Good (2036)		£330/ha/yr.	
A-1:3 Grassland	3.61	Good		£330/ha/yr.	
A-1:4 Bramble Scrub	0.08	Poor		£250/ha/yr.	
A-1:5 Mixed Scrub	0.08	Poor → Moderate (2032) → Good (2036)		£250/ha/yr.	
A-1:6 Pond	0.074	Good		£188.94 / 100m <sup>2</sup> / year	
A-1:7 Ruderal	2.09	Moderate → Good (2028)		£250/ha/yr.	
A-1:8 Urban	12.42	N/A		-	
A-1:9 Trees	0.4587	Good		£125/ha/yr.	
A-1:10 Trees	0.5352	Good		£125/ha/yr.	
A-1:11 Pond	0.474	Moderate		£188.94 / 100m <sup>2</sup> / year	
A-1:12 Pond	0.318	Moderate		£188.94 / 100m <sup>2</sup> / year	
A-1:13 Pond	0.15	Moderate → Good (2028)		£188.94 / 100m <sup>2</sup> / year	
A-1:14 Pond	0.114	Moderate → Good (2028)		£188.94 / 100m <sup>2</sup> / year	
B-1:1&2 Hedgerow	0.17	Good		£330/km/yr.	
B-1:3&4 Treeline	0.097	Moderate → Good (2036)	£330/km/yr.		

Source: SES Water, Surrey Wildlife Trust, GHK Consulting Ltd



## Bough Beech North

**Table 19: Fetcham habitats management and incurred costs**

Habitat Parcel	Area / ha	Condition	Management Approach	Cost	Sources
A-1:1 Grassland	6.78	Poor → Moderate → Good	General annual management	£330/ha/yr.	<a href="#">Technical Doc (cbd.int)</a>
2 Grassland	0.5	Moderate → Good		£330/ha/yr.	
3 Woodland	7.5	Good		£125/ha/yr.	
4 Mixed scrub	0.4	Poor → Moderate → Good		£250/ha/yr.	
5 Orchard	0.72	Good		£125/ha/yr.	
6 Pond	0.46	Moderate → Good		£188.94 / 100m <sup>2</sup> / year	
7 Ruderal	0.023	Moderate → Good		£250/ha/yr.	
8 Urban	0.14	Poor		N/A	
9 Pond	0.02	Moderate → Good		£188.94 / 100m <sup>2</sup> / year	
10 Pond	0.02	Moderate → Good		£188.94 / 100m <sup>2</sup> / year	
11 Pond	0.1	Moderate		£188.94 / 100m <sup>2</sup> / year	
B-1:1 Hedgerow	0.895	Moderate → Good		£330/km/yr.	
2 Hedgerow	0.249	Moderate → Good		£330/km/yr.	
3 Hedgerow	1.16	Moderate → Good		£330/km/yr.	
C-1:1 Watercourse	0.346	Moderate → Good	£985/km/yr.		

Source: SES Water, GHK Consulting Ltd, Surrey Wildlife Trust

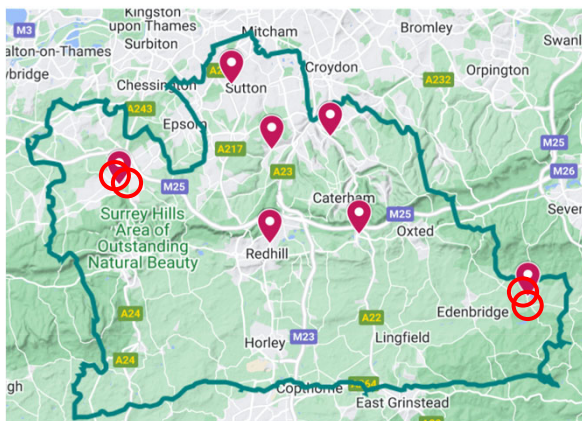


## Biodiversity

PR24 Common PC



## Nominated land



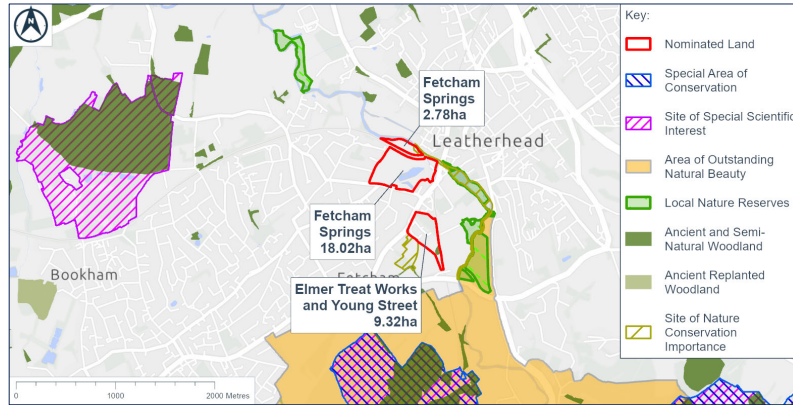
### Leatherhead, Surrey

- Fetcham Springs (20.96 ha)
- Elmer Treatment Works (10.70 ha)

### Edenbridge, Kent

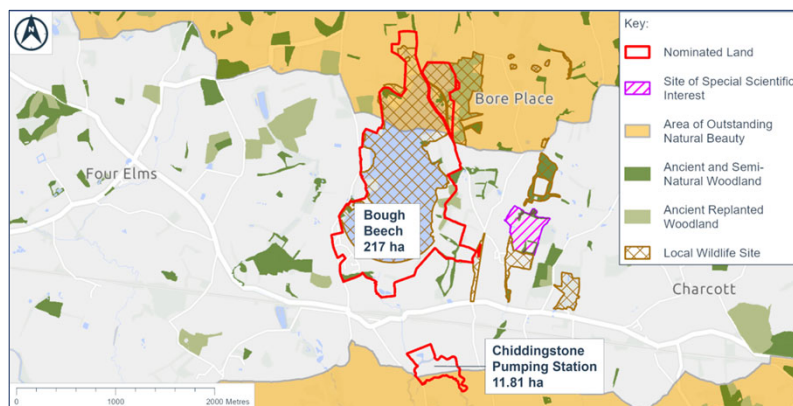
- Bough Beech Reservoir & Treatment Works (217 ha)
- Chiddingstone River Intake (11.81 ha)

# Fetcham Springs and Elmer



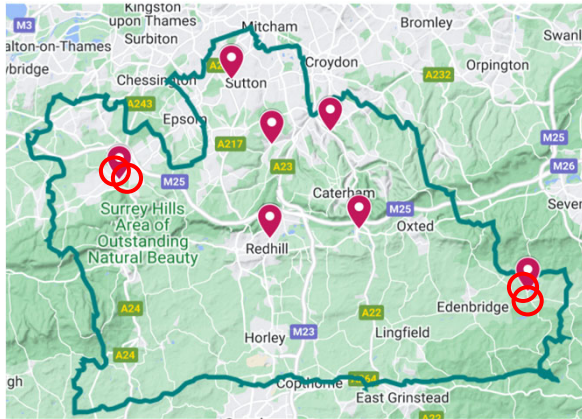
3

# Bough Beech and Chiddingstone



4

# Nominated land



Total nominated land (AMP8) = 260.47 ha

Total company land = 322.01 ha

Percentage of company land nominated into PC: 80.9%

# Biodiversity Baseline 2025-2050



## Sensitivity Analysis

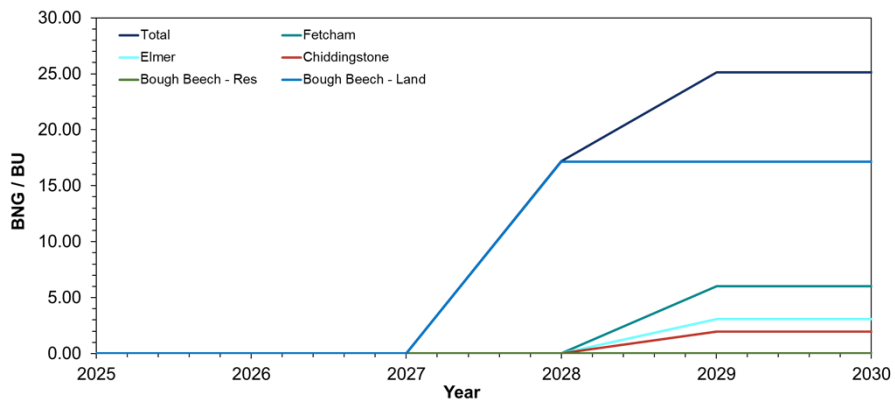
Site	Area / ha	BNG – ‘Best Guess’		BNG 2050 - Low baseline	BNG - High baseline
		BU	%	BU	BU
Fetcham	20.96	80.68	53.01%	82.55	50.02
Elmer	10.70	41.19	53.01%	42.14	25.54
Chiddingstone	11.81	38.22	35.87%	39.04	35.29
Bough Beech - Land	103.00	226.39	22.29%	235.12	191.92
Bough Beech - Reservoir	114.00	147.01	18.69%	147.01	0.00
<b>Total</b>	<b>260.47</b>	<b>533.49</b>	<b>24.94%</b>	<b>545.86</b>	<b>302.76</b>

# Biodiversity Net Gain 2025-2050

Year	AMP8						AMP 9	AMP1 0	AMP1 1	AMP1 2
	2025	2026	2027	2028	2029	2030	2035	2040	2045	2050
Total BU	2138.88	2138.88	2138.88	2156.05	2164.01	2164.01	2169.03	2625.18	2672.37	2672.37
BNG / BU	0.00	0.00	0.00	17.17	25.13	25.13	30.15	486.30	533.49	533.49
BNG / %	0.00 %	0.00 %	0.00 %	0.80 %	1.17 %	1.17 %	1.41 %	22.74 %	24.94 %	24.94 %
BNG for land area served / BU 100km <sup>2</sup>	0.00	0.00	0.00	2.06	3.01	3.01	3.61	58.24	63.89	63.89

7

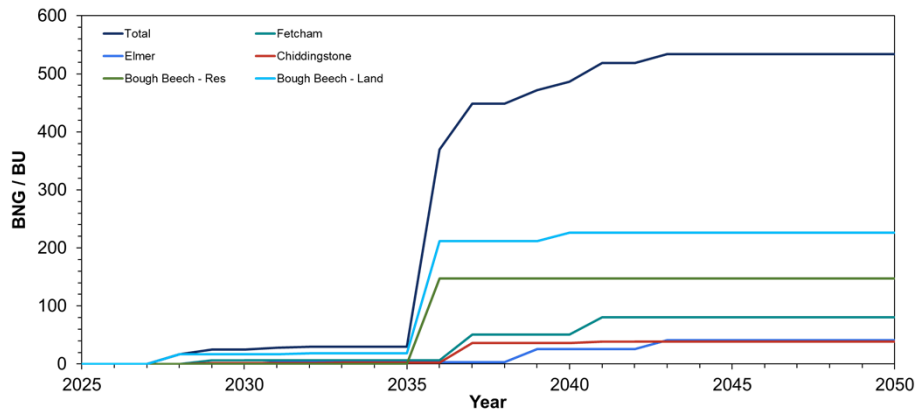
# AMP8 BNG – Biodiversity Units



8



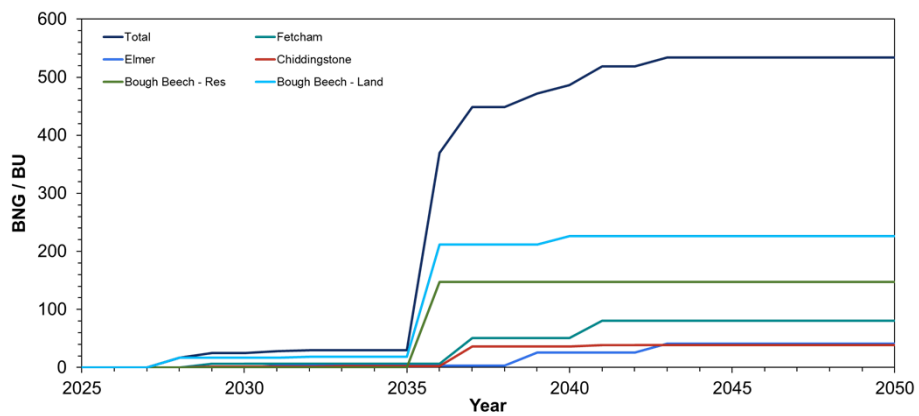
# LTDS BNG – Biodiversity Units



# LTDS BNG



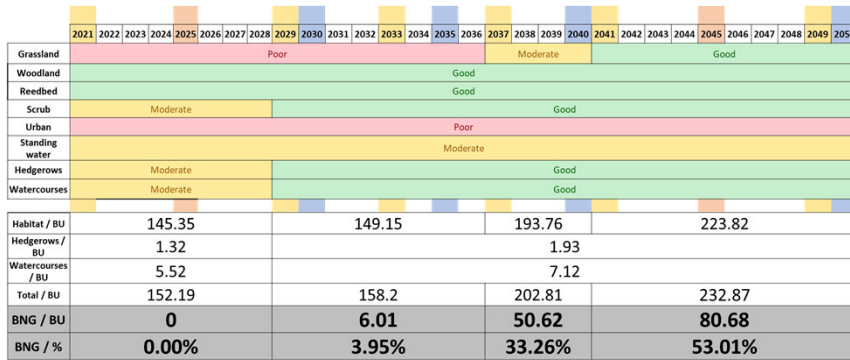
Per 100km<sup>2</sup> land served



# Fetcham Springs



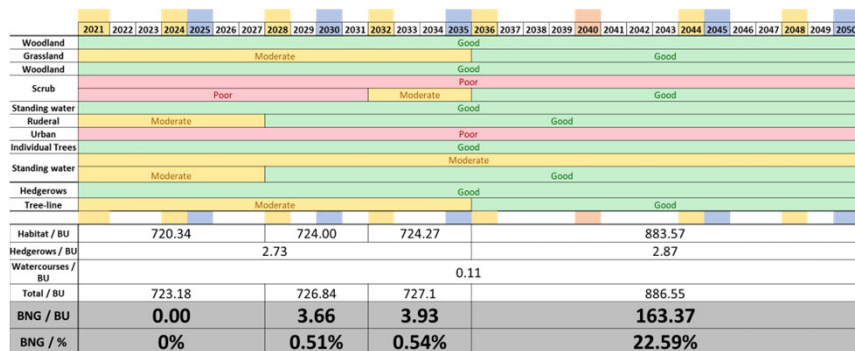
## Conditions, baseline units (BU) and BNG trajectory



# Chiddingstone



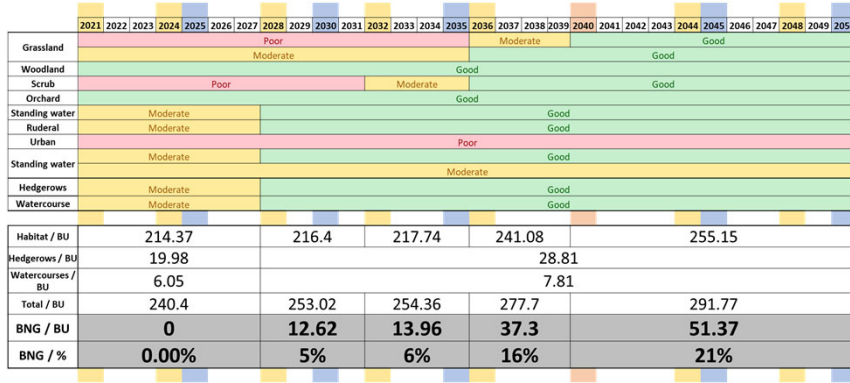
## Conditions, baseline units (BU) and BNG trajectory



# Bough Beech (North)



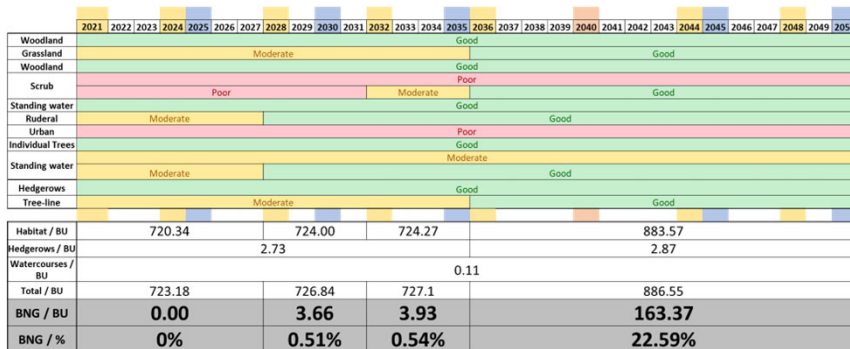
## Conditions, baseline units (BU) and BNG trajectory



# Bough Beech (South)



## Conditions, baseline units (BU) and BNG trajectory



# Fetcham Springs



## Conditions, baseline units (BU) and BNG trajectory

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Grassland	Poor																Moderate				Good									
Woodland	Good																Good													
Reedbed	Good																Good													
Scrub	Moderate								Good																					
Urban	Poor																													
Standing water	Moderate																													
Hedgerows	Moderate								Good																					
Watercourses	Moderate								Good																					
Habitat / BU	145.35								149.15								193.76				223.82									
Hedgerows / BU	1.32																1.93													
Watercourses / BU	5.52																7.12													
Total / BU	152.19								158.2								202.81				232.87									
BNG / BU	0								6.01								50.62				80.68									
BNG / %	0.00%								3.95%								33.26%				53.01%									

# Bough Beech (whole)



## Total land area

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
BU / ha	9.86								10.03								10.05				11.92									
Total / BU	1015.85								1033.02								1034.71				1227.41									
BNG / BU	0.00								17.16								18.86				211.56									
BNG / %	0.00%								1.69%								1.86%				20.83%									

## Total reservoir area

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Condition	Fairly Poor																Moderate													
BU	786.6																933.61													
BNG / BU	0																147.01													
BNG / %	0.00%																18.69%													

## Survey timelines



Site	AMP7			AMP8			AMP9			AMP10			AMP11			AMP12			AMP13											
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Fetcham																														
Elmer																														
Chiddingstone																														
Bough Beech																														

17

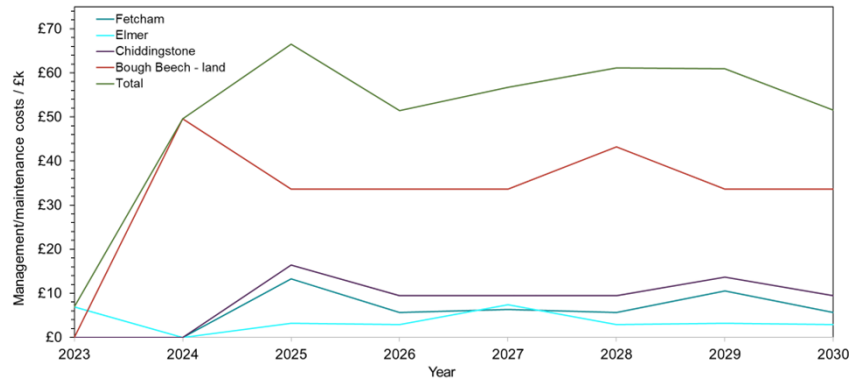
## AMP8 Management Plan Costs



Site	2023	2024	2025	2026	2027	2028	2029	2030
Fetcham	£ -	£ -	£ 13,273.15	£ 5,598.15	£ 6,318.15	£ 5,598.15	£ 10,498.15	£ 5,598.15
Elmer	£ 6,955.00	£ -	£ 3,225.39	£ 2,857.83	£ 7,405.39	£ 2,857.83	£ 3,225.39	£ 2,857.83
Chiddingstone	£ -	£ -	£ 16,397.42	£ 9,443.42	£ 9,444.42	£ 9,445.42	£ 13,626.42	£ 9,447.42
Bough Beech	£ -	£ 49,562.15	£ 33,589.69	£ 33,589.69	£ 33,589.69	£ 43,189.24	£ 33,589.69	£ 33,589.69
<b>Total</b>	<b>£ 6,955.00</b>	<b>£ 49,562.15</b>	<b>£ 66,485.65</b>	<b>£ 51,489.09</b>	<b>£ 56,757.65</b>	<b>£ 61,090.65</b>	<b>£ 60,939.65</b>	<b>£ 51,493.09</b>

18

# AMP8 Management Plan Costs







- Key:**
- Nominated Land
  - Special Area of Conservation
  - Site of Special Scientific Interest
  - Area of Outstanding Natural Beauty
  - Local Nature Reserves
  - Ancient and Semi-Natural Woodland
  - Ancient Replanted Woodland
  - Site of Nature Conservation Importance
  - Local Wildlife Site

**Notes:**

Coordinate System: British National Grid  
 Projection: Transverse Mercator  
 Datum: OSGB 1936

**Interest:**  
 N/A

**Location:**  
 Fetcham Springs, Elmer Treatment Works  
 and Young Street

**Coords:** 515843, 155960

**Scheme Name:**  
 Scheme Name

**Drawing Name:**  
 Information Plan

**Drawing No:** 23008274\_PLN\_INFO\_1.1

Rev	Date	Description
-	28.09.2023	First Issue

**Drawn:** ML  
**Approved:** JU  
**Sheet No:** 1 of 1  
**Sheet Size:** A3



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