GATWICK AIRPORT BIODIVERSITY PROJECT

2024 WOODLAND CONDITION BASELINE SURVEYS

AUTHORED BY RACHEL BICKER (MSc) DECEMBER 2024

TABLE OF CONTENTS

Cover image: English Bluebells in Lower Picketts Wood, Land East Zone (June 2024)

SUMMARY

- A repeated baseline survey of habitat condition for five woodlands at Gatwick Airport was completed in 2023 and 2024
- Results were analysed using two distinct assessments: the West Weald Landscape Partnership Woodland Survey, and the Biodiversity Net Gain Woodland Condition Assessment
- No woodlands showed a decline in condition score since the previous baseline year in 2017
- There were slight increases in scores for Upper Picketts Wood, Brockley Wood North and Brockley Wood South.
- No changes in scores were observed for Horleyland Wood or Lower Picketts Wood
- All woodlands achieved similar condition categories within the two different assessments, being either in moderate or low-good
- The greatest improvers in score over the 12 year monitoring period are Lower Picketts and Horleyland Wood, both by 7.5 points.
- Improvements in score are largely attributed to a programme of management and enhancement works, including selective coppicing, invasive species control, tree thinning and haloing, removal of waste and old plastic tree guards, planting of new species-diverse understory and deer exclusion fencing to encourage regeneration.
- Minor decreases in attribute scores are attributed to the lack of diversity of tree ages, a lack of regeneration, herbivore damage, tree disease and the loss of openness of rides and glades
- A successful regime of habitat management works contributes to maintaining the overall condition of the woodlands.

RECOMMENDATIONS

Habitat management recommendations are targeted to maintain or increase the overall condition scores.

- LEZ Upper Picketts Wood:
  Continue selective coppicing of Hazel and Hawthorn on a rotational basis. Continue to encourage natural regeneration or the establishment of newly planted areas through protective deer fencing. The deer fencing should be moved every few years to a new part of the wood. Continue maintaining and extending footpath board walks
- LEZ Lower Picketts Wood:
  Continue selective coppice of old Hazel stools while using brash to protect the regrowth from Roe Deer. Continue controlling Sycamore saplings and seedlings where prevalent. Encourage natural regeneration in a block of the main woodland using protective deer fencing
- LEZ Horleyland Wood:
  Begin selective thinning of the woodland plantation in the south. Consider the translocation or plug planting of woodland ground flora, referring to NVC W10 woodland floristic tables for natural species ratios. Continue Himalayan Balsam control. Continue understory planting in new areas to encourage diversity in the understory, particularly around the boundaries as a buffer to negative effects from the openness of car parks and urban lighting
- NWZ Brockley Wood North:
  Continue to encourage natural regeneration or the establishment of newly planted areas through protective deer fencing
- NWZ Brockley Wood South:
  Selective coppicing of Hazel and Hawthorn on a rotational basis. Begin understory planting to increase diversity, encourage natural regeneration or the establishment of newly planted areas through protective deer fencing
- A veteran tree assessment across all of the woodlands would be useful to inform the targeted management, halo-thinning or veteranisation of trees across all woodlands, aiming for a minimum of 2 veteran trees per hectare
- Repeating the woodland habitat condition assessment within the next five to six years ensures habitat management continues to be targeted and effective, and any problems rapidly addressed.

[1] INTRODUCTION

LOW WEALD WOODLANDS IN SUSSEX

The National Forest Inventory definition of a UK woodland is a minimum area of land covered in trees and/or shrubs of at least 0.5ha in size, a minimum width of 20m and with (or with the potential to achieve) tree crown cover of more than 20%. Woodlands in the UK are often classified into different types based on their characteristics, such as ancient woodlands (which have existed for several centuries), plantations (usually for commercial forestry production), and semi-natural or mixed woodlands, undergoing both natural ecosystem dynamics and human activity impacts. Woodlands can be variable in size and contain a variety of tree species, both native and non-native. These ecosystems provide important habitats for wildlife and are often important recreational spaces for local communities.

The Low Weald National Character Area is a broad, low-lying clay vale which largely wraps around the northern, western and southern edges of the High Weald in Sussex. It is a landscape of mainly pastoral farming, dissected by low-lying floodplains with impermeable clay soil, making many areas prone to localised flooding. The area is generally wet and woody with a high proportion of ancient woodland. 'Lowland Mixed Deciduous Woodland' is a Section 41 habitat under the Natural Environment and Rural Communities (NERC) Act 2006. Notable species associated with this habitat includes various bryophytes, vascular plants, fungi, insects, spiders, breeding birds and bats. Oak-hornbeam woods are a typical woodland type of the Low Weald, with damp soils and a rich flora of spring-flowering herbs. National Vegetation Classification (NVC) generally classifies these stands as the *Anemone nemorosa* sub-community of W8 and W10 woodland. Many woodlands contain relics of the Wealden Iron Industry such as glassworks, ironstone works, brickworks and lime kilns. There can be much structural variation within these communities and today many woods are semi-natural derelict broadleaved coppice or conifer plantations, with stands of different management history and character.

Sussex is relatively rich in ancient woodland, and this is a nationally important and threatened habitat. Ancient woodlands are defined as areas that have been continuously wooded since at least 1600 in England, 1750 in Wales, and 1800 in Scotland and Northern Ireland. Their existence over hundreds of years has preserved irreplaceable ecological and historical features, such as ancient veteran trees, centuries-old soil composition and structure, microclimates, and the specific assemblages of flora and fauna. Many of the ancient woodlands in Sussex have been lost within the past two centuries and are now small, fragmented and vulnerable to the pressures of development, invasive species and climate change. These woodlands cannot be properly compensated for on human time scales through the expansion of more recent woodland. Therefore they remain a priority in UK conservation, with restoration projects acting at best as a complementary action.

A lack of financial incentives in recent decades means much woodland in the UK remains unmanaged with traditional management techniques no longer being implemented. This has resulted in homogenous stands of even-aged woodland lower in value for wildlife. The extent of tree cover in Sussex has been increasing through planting projects, rewilding, scrub and tree encroachment into adjacent areas, although this secondary woodland tends to be of lower value in the short-term and can lead to undesirable effects such as the loss of other priority habitats.

GATWICK AIRPORT WOODLANDS

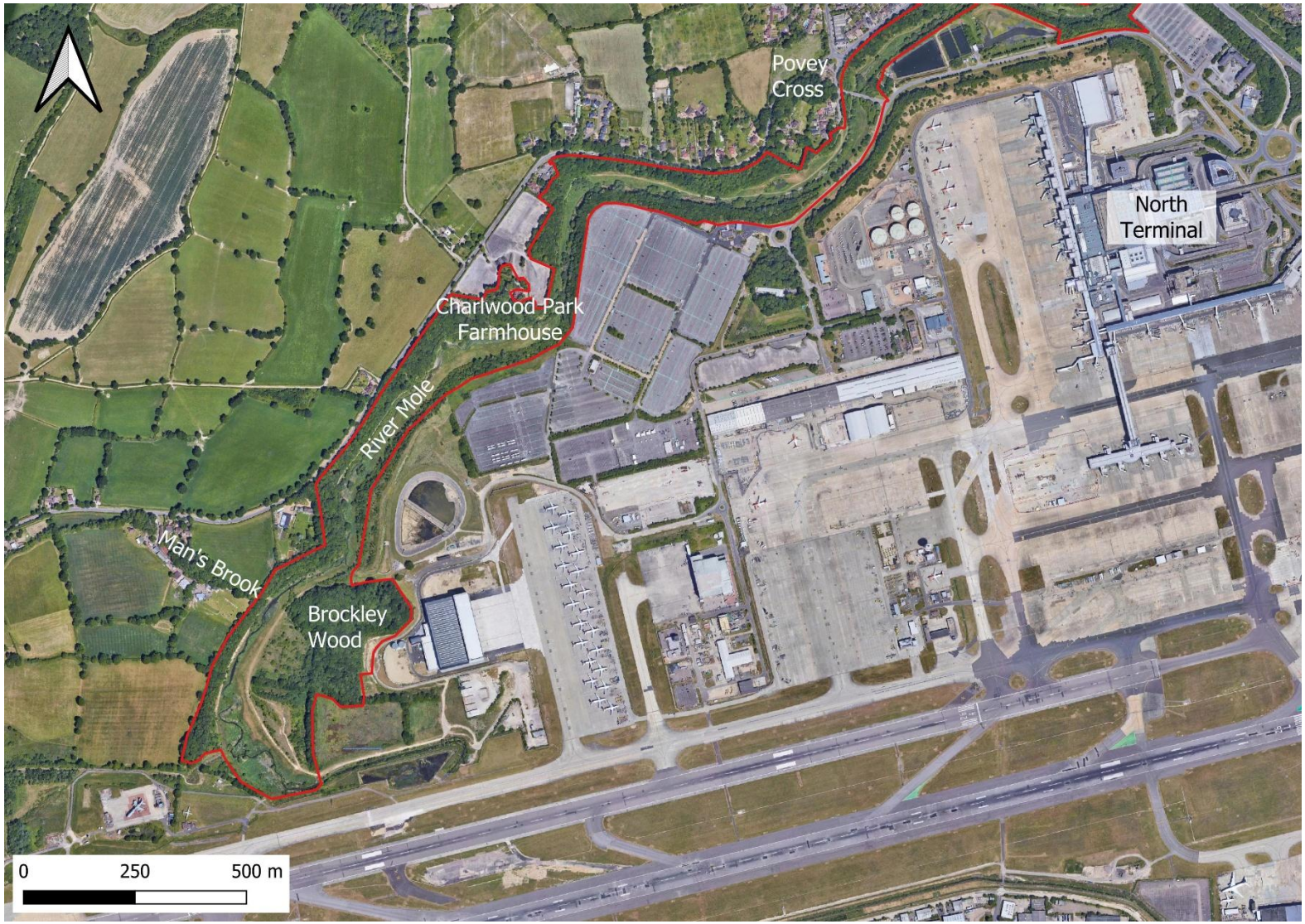
Gatwick Airport Ltd commenced a Biodiversity Action Plan (BAP) in 2012, providing a framework for the management of around 75ha of the airport landside areas for biodiversity. The airport wildlife areas are separated geographically into the North West Zone (NWZ) and the Land East Zone (LEZ), with both containing a range of habitat types including ancient woodland, rivers, floodplain meadow, wildlife ponds, semi-improved grassland and scrubland. The habitat management plan is directed by Gatwick Airport's Senior Ecologist and implemented by a combined force of landscaping contractors, in-house ground maintenance team and a strong volunteer base led by the Gatwick Greenspace Partnership. The plan contributes toward the airport continually upholding The Wildlife Trusts' Biodiversity Benchmark, the only standard that certifies the management of business sites for wildlife. It also contributes toward other business sustainability targets and awards for the airport.

Tree cover by semi-natural woodland, outgrown hedgerows, recent plantations, copses and shaws make up a significant part of the biodiversity areas at Gatwick, estimated to be over 50% of the land area within the current boundary. Brockley Wood, Horleyland Wood and Lower Picketts Wood are all confirmed as containing some ancient semi-natural woodland, whereas Upper Picketts Wood is a more recent plantation with maps indicating in the 1930s. They are all largely characterised by abundant mature Pedunculate Oak trees along with frequent Ash, stands of Hornbeam, Silver Birch, Willow, Alder, Wild Cherry, Field Maple and Hazel, along with some planted Scots Pine. All of the present characteristics for these woodlands broadly fit the W10 NVC community. They are varied in nature with patches of old coppice, newer plantations and recently cut glades, along with ditches and areas of wet and boggy ground, providing a variety of conditions to suit a broad range of wildlife. Historic features within the woods include ancient banks, ditches, ponds and a wooded lane, as well as excavations potentially relating to charcoal or brick making.

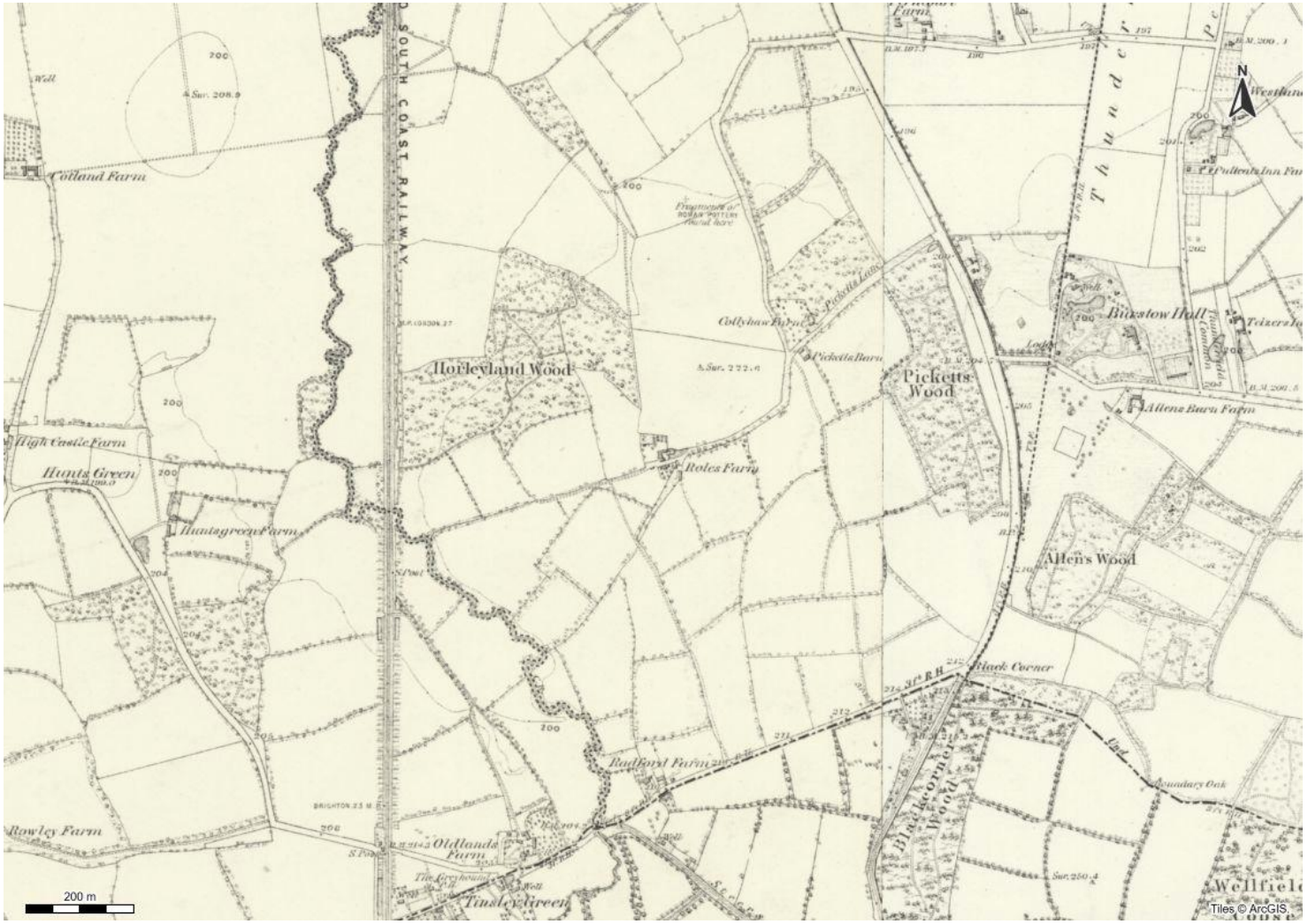
Local Wildlife Sites (LWS), formerly known as Sites of Nature Conservation Importance, are a non-statutory designation, recognised for their substantive nature conservation value. The Sussex LWS Initiative aims to gather sufficient ecological evidence through site surveys to review these sites in accordance with guidance. During 2024, the LWS status of Horleyland Wood at Gatwick was reviewed and confirmed to be retained, with adjustments to the site boundary made to include recent additional areas of plantation.

Photo 1. Brockley Wood North with a rich ground flora of English Bluebell, Dog's Mercury and Greater Stitchwort. (May 2023)

Map 1. North West Zone area circa 1874, with Brockley Wood in the lower left, Charlwood Park centre and Povey Cross in the upper right hand side. Reproduced with the permission of the National Library of Scotland.



Map 2. North West Zone area boundary with the North Terminal long stay car parks where Charlwood Park used to be. Satellite imagery circa. 2022. Web source: google.com/maps



Map 3. Land East Zone area circa 1874, with the South Coast Railway (Brighton Main Line) to the west of Horleyland Wood. Picketts Wood is presented as two blocks to the east, and the future site of Upper Picketts Wood is within an open field complex bounded by hedgerows. Reproduced with the permission of the National Library of Scotland.

Map 4. Land East Zone biodiversity area with Horleyland, Lower Picketts and Upper Picketts Wood. Tree cover of these areas has increased overall, although a large proportion of the ancient Picketts Wood is lost. Satellite imagery circa. 2022. Web source: google.com/maps

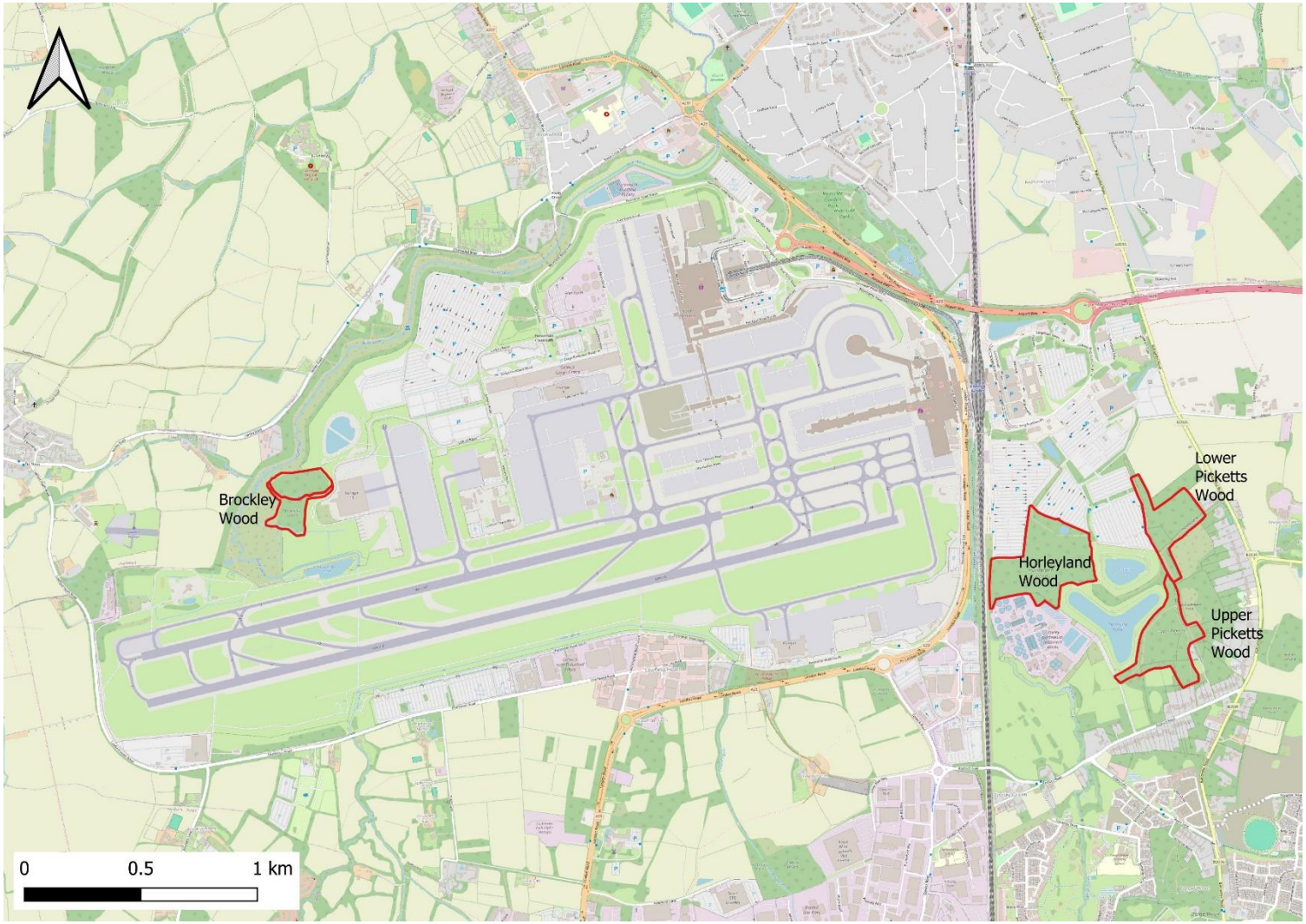
GATWICK'S WOODLAND CONDITION BASELINES 2012 - 2017

Five distinct woodlands at Gatwick Airport were identified as a priority for monitoring and management at the beginning of the Biodiversity Action Plan. Two adjoining woodland blocks situated within the North West Zone are Brockley Wood North and Brockley Wood South, separated by Man's Brook Ditch. Three connected blocks in the Land East Zone are Horleyland Wood, Upper Picketts Wood and Lower Picketts Wood. The first round of baseline condition surveys were carried out during 2012, utilising the survey methodology adapted by the West Weald Landscape Partnership. A repeated baseline survey of all the same woodlands was then conducted in 2017. Condition scores increased across all woodlands, with the greatest Improvements seen in Horleyland Wood and Lower Picketts Wood. These improvements were largely due to targeted positive conservation management practices such as the reintroduction of sensitive coppicing, new understory planting and the reduction of browsing pressure from deer through temporary exclusion fencing.

SURVEY AIMS

The purpose of this assessment is to provide a robust baseline dataset for the current ecological condition of selected woodlands at Gatwick Airport, comparing their statuses to the previous baseline years. The results will help in reviewing management approaches and identifying targeted conservation interventions for the protection and enhancement of these woodlands.

[2] MAP OF SURVEY AREA



Map 5. Locations of Gatwick Airport woodlands surveyed for habitat condition from 2012 - 2024

[3] METHODOLOGY

FIELDWORK VISITS

Survey work was conducted by Rachel Bicker, an independent ecologist with experience in a range of ecological survey techniques. Survey visits were conducted for five selected woodlands within the Gatwick biodiversity areas, staggered over two years (May 2023 and early June 2024). Early summer is considered the optimal period for documenting woodland ground flora while also assessing features such as the canopy extent and understory layers.

Equipment used were a mobile device with GPS, a portable tablet PC, four 2m bamboo canes to form a quadrat, and wildflower books and guides. Each survey visit began with a walk through the woodland to re-familiarise surveyor with the extent and to note any significant features. Survey stops of either six or seven fixed GPS points were selected for each woodland during the first round of baseline surveys in 2012, representing variation in the woodland stands. A 10m radius was estimated for each stop and then records made relating to attributes such as woodland structure, species composition, estimations of the density of understorey, amount of deadwood, and tree regeneration. The abundances of tree and shrub species were recorded using the DAFOR scale, and ground flora species within $4m^2$ quadrats using the Domin scale. Notes were also made of adjacent land-use, signs of woodland management, presence of open areas such as rides and glades, and any other features of interest such as woodland archaeology. Aerial maps, general descriptions and photographs of each surveyed woodland are presented in Appendix I of this report.

Table 1. Gatwick Airport woodland names, locations and survey dates during 2023 and 2024

Zone	Woodland name	Grid ref location	What3Words	Survey date
North West Zone	Brockley North	TQ 25801 40886	rated.thin.pure	11/05/23 and 22/05/23
North West Zone	Brockley South	TQ 25770 40760	invite.sorry.recent	23/05/23
Land East Zone	Lower Picketts	TQ 29558 40738	parks.wage.crust	25/05/23 and 29/05/2023
Land East Zone	Upper Picketts	TQ 29507 40247	bolt.chip.brand	26/05/23 and 30/05/23
Land East Zone	Horleyland	TQ 29014 40552	modern.abode.sprint	10/06/24 and 11/06/24

Photo 2. Survey stop in Brockley Wood North, with 4m^2 quadrat, mobile PC and folding chair. (May 2023)

WOODLAND CONDITION ASSESSMENT CRITERIA

The woodland condition attribute scoring system used in the original 2012 assessments at Gatwick Airport was derived from the West Weald Landscape Project (WWLP) woodland condition survey, a method based on Common Standards Monitoring guidance for woodland habitats (2004) and Forestry Commission Native Woodland Condition Surveys (1996). This survey form was slightly adapted for the baseline surveys at Gatwick Airport during 2012, with a positive scoring system being applied. The scored assessment attributes included environmental features such as woodland structure, species composition, evidence of regeneration and management. The theoretical maximum score for any wood is 30, which would mean the best possible condition and requiring no specific interventions excepting for ongoing maintenance. Woodlands with lower scores are likely to be in poorer condition and not reaching their full potential due to the impact of one or more stressors, such as poor habitat structure, invasive species, lack of regeneration and disease. The likelihood of woodlands being scored at either end of this spectrum is low, and for Gatwick the all-time previous lowest condition score was 16.5 and the highest is 27. To create categories for interpreting these scores, the lowest score was subtracted from the highest and a subjective division then made; 0 – 22.5 represents poor condition, 23 – 26 is moderate condition and 26.5

– 30 a woodland in good condition. These categories help to assign priority levels to the woodlands for the purposes of targeting management interventions.

Table 2. Ten woodland condition assessment criteria used at Gatwick Airport based on the West Weald Landscape Project woodland surveys. A score of up to 3 points for each attribute results in a total possible score of 30.

Attribute assessed	Excellent (3)	Good (1.5)	Poor (0)
1. Average canopy cover	Open 30-80%	Growing over 80-100%	Closed 100%
2. Average understorey cover	Patchy	Dense	Limited or absent
3. Age structure	3-4 ages classes; no age class more than 50%	3-4 ages classes; 51%+ in one class	1-2 age classes
4. Deadwood	Standing and fallen	Standing or fallen	Limited or absent
5. Invasive non-native species	None	Some - being controlled	Present
6. Evidence of regeneration	All 4 types of regeneration at 25%> of stops	Some regeneration present	None
7. Open rides/glades	Yes	/	Growing over/absent
8. Evidence of grazing/browsing	Limited	Some	Extensive
9. Evidence of recent good management practice	Some	Little	None
10. Evidence of damage	None	Some	Extensive

Condition Assessment Result	Condition Assessment Status
Total score 26.5 – 30	Good
Total score 23 - 26	Moderate
Total score 0 – 22.5	Poor

2024 ASSESSMENT CRITERIA UPDATE

The Woodland Condition Assessment (WCA) was developed in 2020 as part of the Biodiversity Net Gain (BNG) framework in the UK. Its uses 13 woodland ecological condition indicators developed by the National Forest Inventory and the England Woodland Biodiversity Group (EWBG), providing the first systematic measure of woodland ecological condition for national reporting purposes. These assessment criteria are detailed below in Table 3 and have been applied during the 2023 and 2024 Gatwick surveys. The assessment results in a calculation of the total woodland condition score, with the maximum possible of 39. Woodlands scoring greater than 35 are considered to be in good condition, between 26 to 35 in moderate condition and in poor condition at 25 or less.

Table 3. The 13 BNG woodland habitat assessment criteria. A score of up to 3 for each attribute results in a total possible score of 39. An asterisk (*) indicates the criteria which are in addition to the original WWLP Gatwick Woodland Condition Survey attributes.

Indicator		Good (3 points)	Moderate (2 points)	Poor (1 point)
1	Age distribution of trees	Three age classes present	Two age classes present	One age class present
2	Wild, domestic and feral herbivore damage	No significant browsing damage evident in woodland[2]	Evidence of significant browsing pressure is present in 40% or less of whole woodland	Evidence of significant browsing pressure is present in 40% or more of whole woodland
3	Invasive plant species	No invasive species present in woodland	Rhododendron or laurel not present, other invasive species < 10% cover	Rhododendron or laurel present, or other invasive species > 10% cover
4	Number of native tree species *	Five or more native tree or shrub species found across woodland parcel	Three to four native tree or shrub species found across woodland parcel	None to two native tree or shrub species across woodland parcel
5	Cover of native tree and shrub species *	> 80% of canopy trees and >80% of understory shrubs are native	50-80% of canopy trees and 50-80% of understory shrubs are native	< 50% of canopy trees and <50% of understory shrubs are native

6	Open space within woodland	10 – 20% of woodland has areas of temporary open space, unless woodland is <10ha in which case lower threshold of 10% does not apply	21- 40% of woodland has areas of temporary open space	More than 40% of woodland has areas of temporary open space
7	Woodland regeneration	All three classes present in woodland; trees 4-7cm dbh, saplings and seedlings or advanced coppice regrowth	One or two classes only present in woodland	No classes or coppice regrowth present in woodland
8	Tree health	Tree mortality less than 10%, no pests or diseases and no crown dieback	11% to 25% mortality and/or crown dieback or low risk pest or disease present	Greater than 25% tree mortality and or any high risk pest or disease present
9	Vegetation and ground flora *	Ancient woodland flora indicators present	Recognisable NVC plant community present	No recognisable NVC community
10	Woodland vertical structure	Three or more storeys across all survey plots or a complex woodland	Two storeys across all survey plots	One or less storey across all survey plots
11	Veteran trees *	Two or more veteran trees per hectare	One veteran tree per hectare	No veteran trees present in woodland
12	Amount of deadwood	50% of all survey plots within the woodland parcel have standing deadwood, large dead branches/ stems and stumps	Between 25% and 50% of all survey plots within the woodland parcel have standing deadwood, large dead branches/ stems and stumps	Less than 25% of all survey plots within the woodland parcel have standing deadwood, large dead branches/ stems and stumps
13	Woodland disturbance	No nutrient enrichment or damaged ground evident	Less than 1 hectare in total of nutrient enrichment across woodland area and/or less than 20% of woodland area has damaged ground	More than 1 hectare of nutrient enrichment and/or more than 20% of woodland area has damaged ground

Condition Assessment Result	Condition Assessment Status
Total score 33 to 39	Good
Total score 26 to 32	Moderate
Total score 13 to 25	Poor

BIOLOGICAL RECORDS AND DATA SHARING

The iRecord mobile app was used to accumulate species lists in the field, with the particular focus for this survey on woodland plants. This data is stored offline within the mobile device until the user is connected to the internet, then the species information is submitted to the iRecord platform to be checked by experts (called verifiers), ensuring the correct species has been determined and accurate information given. Every month these verified records are downloaded and collated by the Sussex Biodiversity Record Centre to be added to their database. This ensures species distribution data are as up to date as possible and are made available to relevant individuals and organisations.

SURVEY LIMITATIONS

The assessment is inevitably a simplification of an exceptionally complex ecosystem, however, it acts as an effective tool to highlight where potential issues may lie or where potential positive trends are occurring. Much of the methodology involves rapid qualitative estimates for which there will inevitably there will be some subjectivity involved. As the same ecological surveyor is repeating these baselines, this establishes some consistency in the data gathering.

Inherent challenges with using GPS devices in broadleaf woodland means there is a chance of survey stop point misalignment and high variability of quadrat placement, which will potentially skew data summaries. Through using two quadrats at each stop and increasing the number of stops for the more complex woodlands, it is expected to help average out the variations in data.

Lists of plant species and their abundances are recorded as part of the assessment, however it should be noted that this does not constitute a detailed botanical survey, and only a few incidental species were recorded outside of quadrats. For rarer species or those occurring at naturally low-abundances, there is a likelihood of being missed entirely from the sampling.

.

[4] RESULTS

WOODLAND CONDITION SCORES

Table 4. Baseline woodland condition scores for the five surveyed woodland compartments 2012 – 2024, out of a possible maximum score of 30.

Geen cells indicate an increase in condition score, yellow cells where it has remained the same, and orange where it has declined. Appendix II shows the detailed results for the woodlands against individual attributes within the survey criteria.

Woodland name	2012 score	2017 score	2023 / 2024 score	7-year difference	Woodland size (ha)
Horleyland Wood	16.5	24	**24**	0	11.5
Upper Picketts Wood	21	22.5	**24**	1.5	7.2
Lower Picketts Wood	19.5	27	**27**	0	5.4
Brockley North	24	25.5	**27**	1.5	2.5
Brockley South	21	24	**25.5**	1.5	2.2

All of the woodlands have shown improvement in scores since the first round of surveys conducted in 2012. In the 7 years since the previous baseline, there is a slight increase in score for three of the woodlands, and no change for two others. No woodlands have decreased in score. Lower Picketts was the highest scoring woodland in 2017 and continues to hold the joint-highest score with Brockley North at 27. Brockley South achieved 25.5 and the joint-lowest scores are Upper Picketts and Horleyland at 24.

Figure 1. Baseline woodland condition scores for the five surveyed woodland compartments 2012 – 2024, out of a possible maximum score of 30.

The woodlands range in size from 2.2ha in area to 11.5ha, and the above graph indicates there is no association between woodland condition score and woodland size.

ASSESSMENT SCORE COMPARISONS

Table 5. 2023 / 2024 WWLP and BNG assessment scores with condition ratings applied

Area	Woodland name	WWLP score	Condition rating	BNG score	Condition rating
Land East Zone	Horleyland Wood	24	Moderate	31	Moderate
Land East Zone	Upper Picketts Wood	24	Moderate	33	Good
Land East Zone	Lower Picketts Wood	27	Good	33	Good
North West Zone	Brockley North	27	Good	31	Moderate
North West Zone	Brockley South	25.5	Moderate	32	Moderate

The BNG assessment results provide a slightly different picture of relative scores between the woodlands. The top score is achieved by both Upper Picketts and Lower Picketts at 33, followed by Brockley South at 32, and the lowest score is for both Horleyland and Brockley North at 31. The maximum WWLP score difference between the woods is 3, and the maximum BNG score difference is 2. As a result the woodlands are judged as achieving similar condition categories between assessment types, being either in moderate or low good condition.

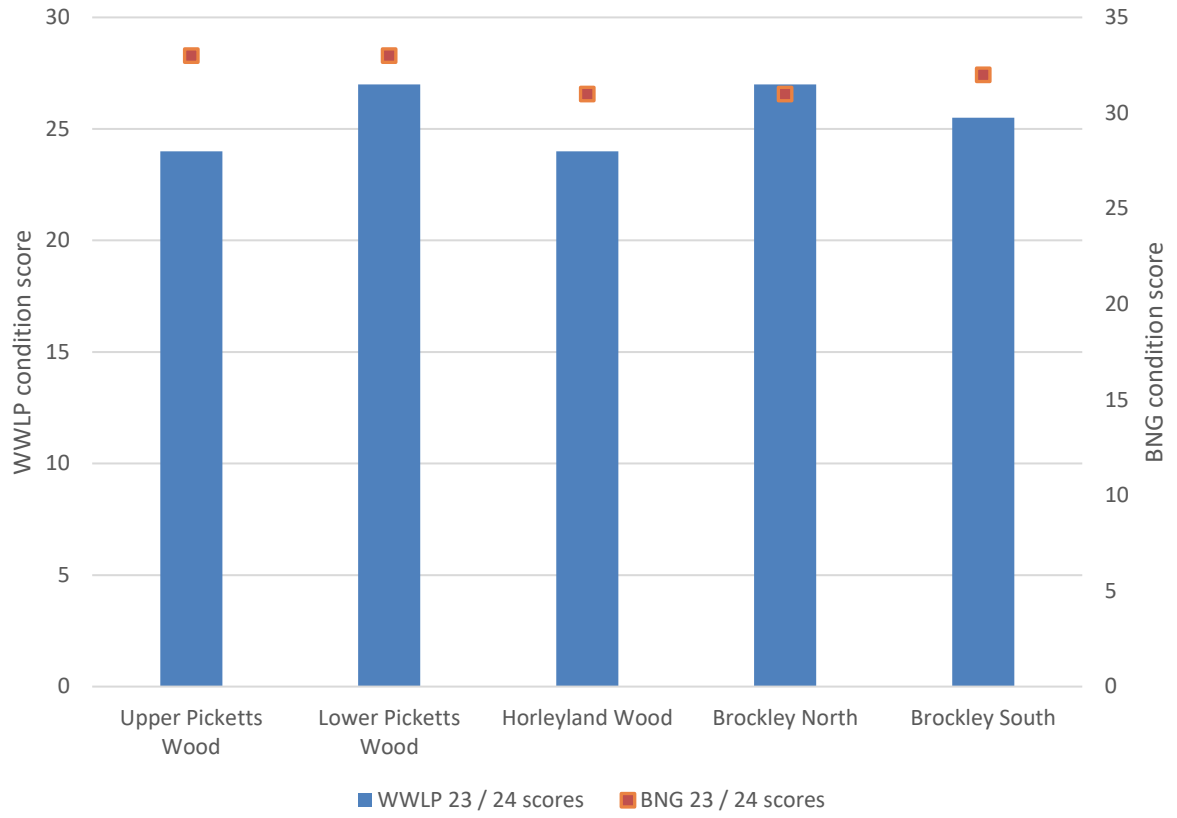


Figure 2. 2023 / 2024 woodland condition assessment score comparisons, with WWLP represented on the left hand axis, BNG on the right hand. Note the separate scales for the different scoring systems

The above graph compares the results between the two assessments, with the blue columns representing WWLP scores and the red squares the BNG. There are two main discrepancies in terms of performance between the woodlands; Upper Picketts Wood scores highly for the BNG assessment but lower in the WWLP, and it is the opposite case for Brockley North. As previously mentioned, the maximum difference between the highest and lowest woodland scores is by 3 points and so these differences in performance are not considered particularly meaningful.

VEGETATION ASSESSMENT SUMMARIES

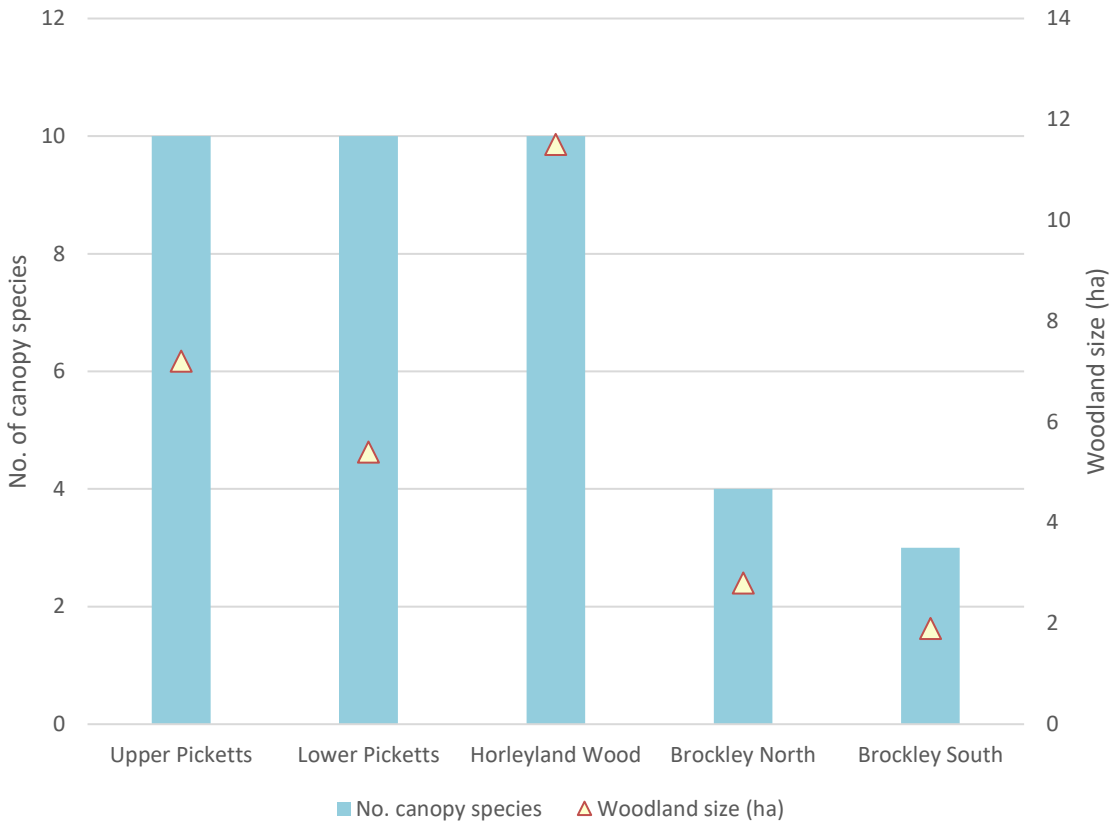


Figure 3. Number of canopy species recorded across surveyed woodlands during 2023 / 2024 surveys

The three Land East Zone woodlands all contain the greatest number of canopy species (10), with Brockley Wood North and South containing just four and three species respectively.

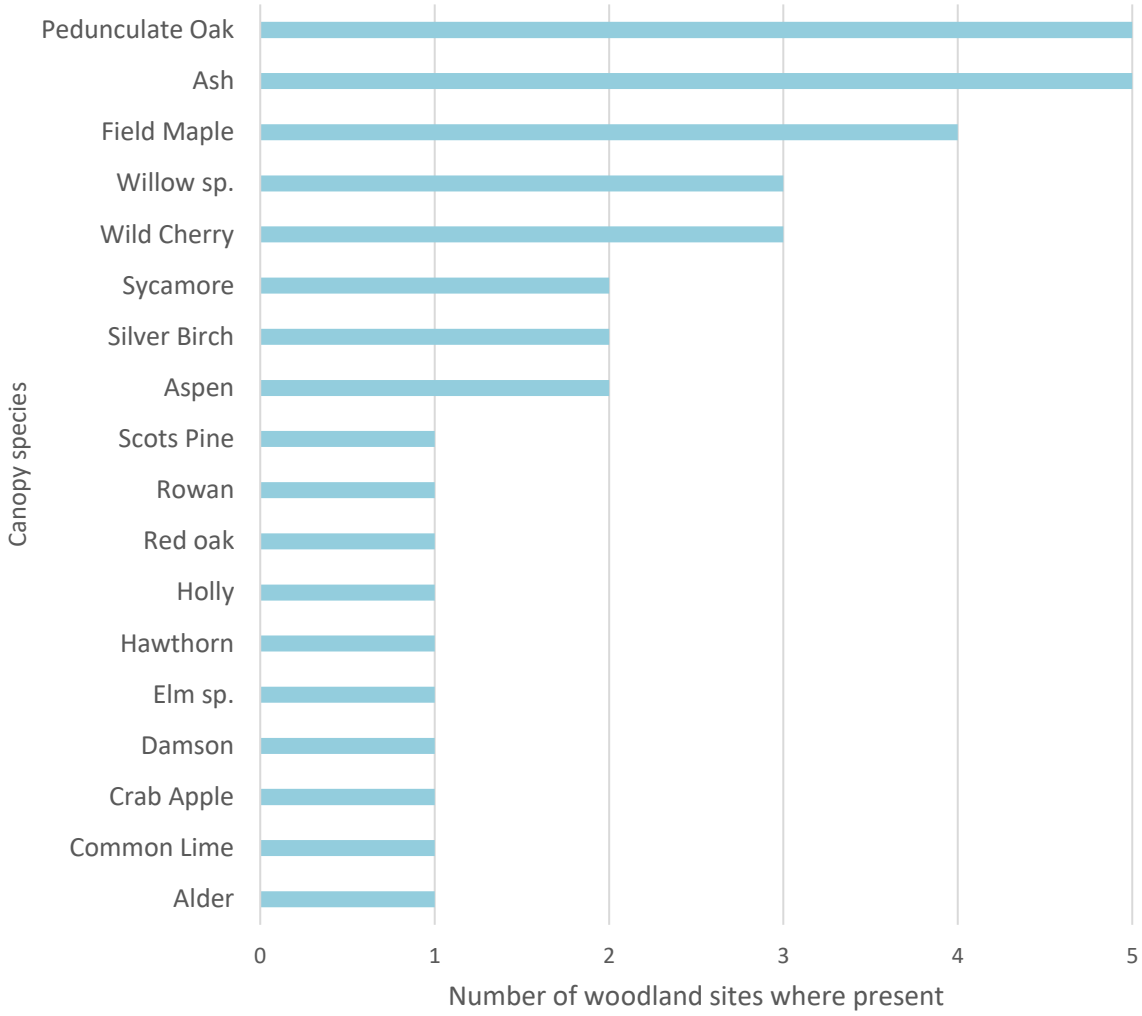


Figure 4. Commonality of canopy species across all Gatwick woodlands during 2023 / 2024 surveys

Pedunculate Oak and Ash are the most widespread species across Gatwick's woodland canopies, followed by Field Maple, willow and Wild Cherry. Several species were only recorded in a single woodland, however many of these such as Hawthorn and Holly occur more commonly as understory shrubs rather than being tall enough to form the canopy layer.

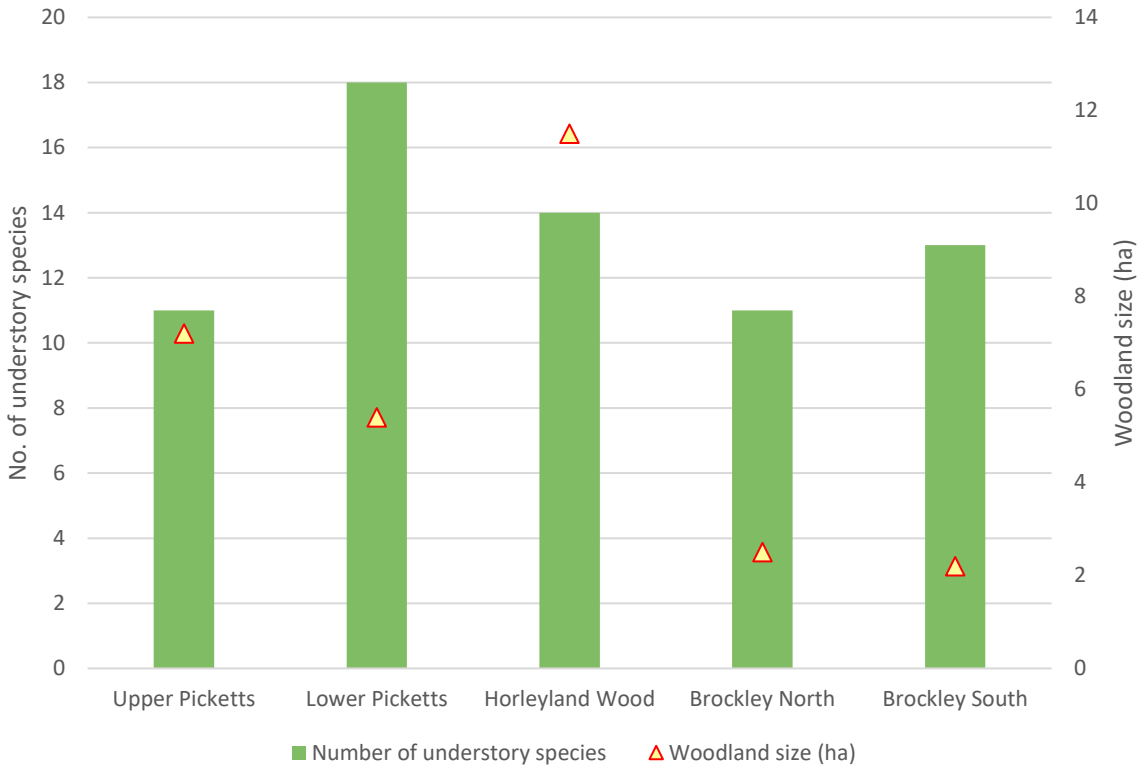


Figure 5. Number of understory species recorded across surveyed woodlands during 2023 / 2024 surveys

Lower Picketts Wood contains the highest number of understory species at 18 followed by Horleyland Wood at 14 and Brockley South at 13 .

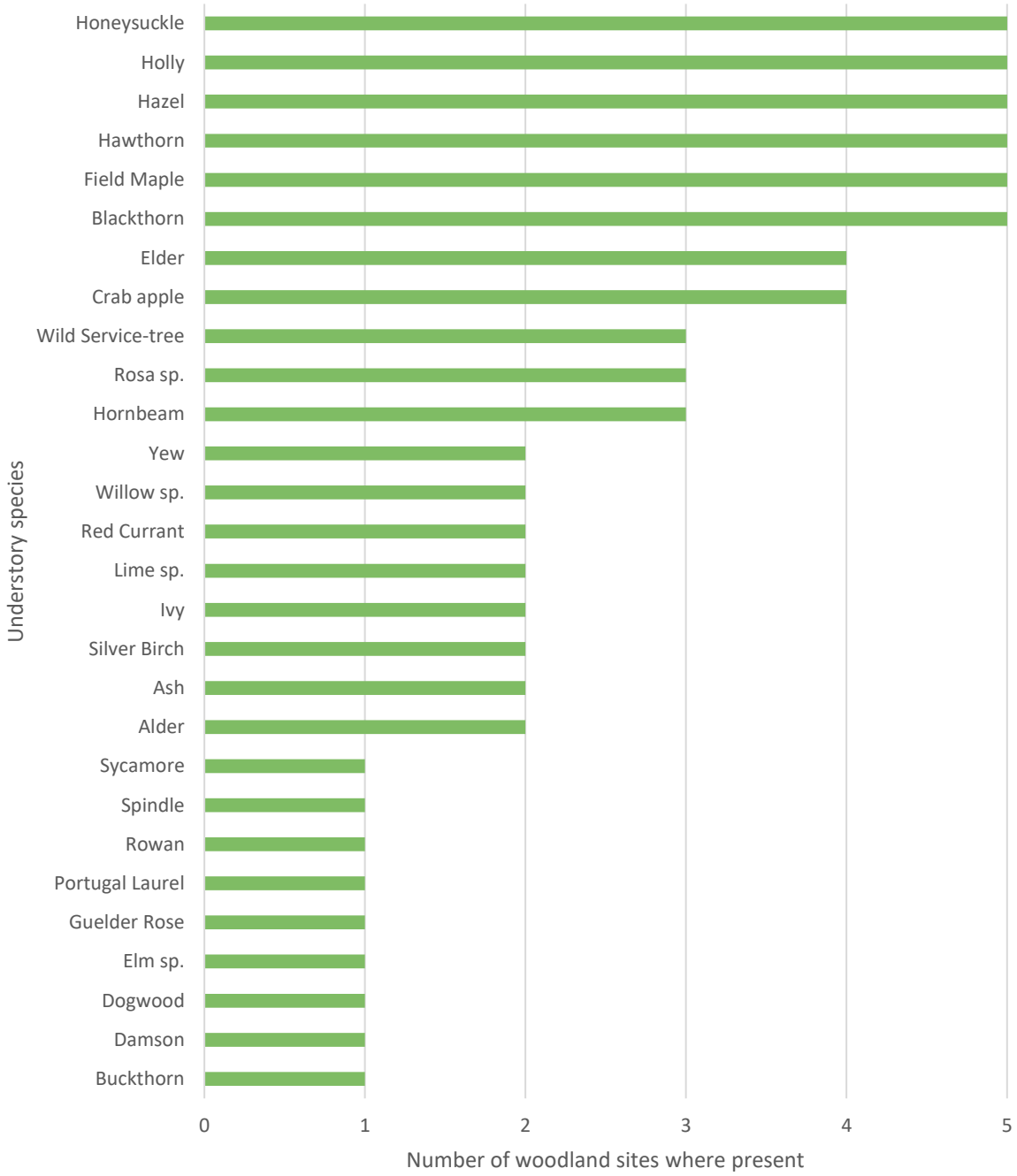


Figure 6. Commonality of understory species across all five of Gatwick woodlands during 2023 / 2024 surveys

The graph illustrates Honeysuckle, Holly, Hazel, Hawthorn, Field Maple and Blackthorn are present across all the woodlands.

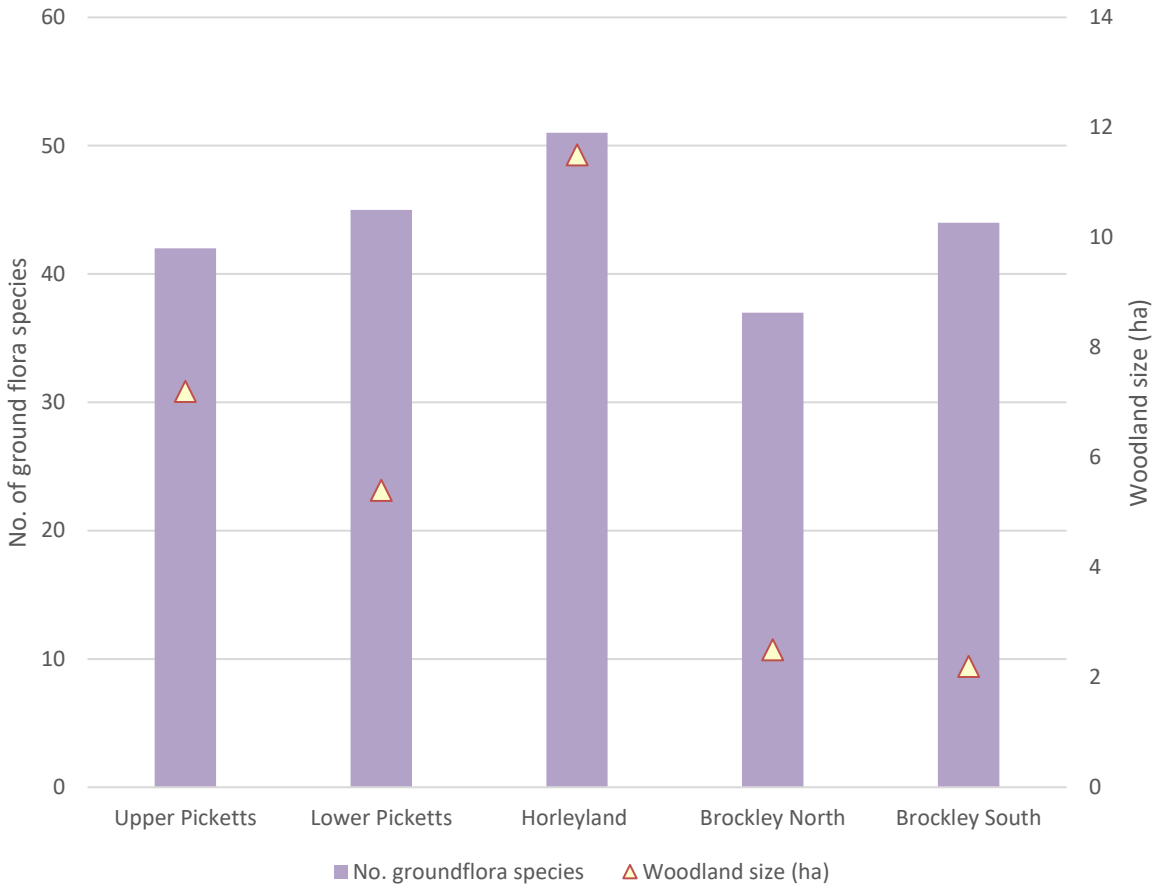


Figure 5. Number of ground flora species recorded within quadrats across surveyed woodlands during 2023 / 2024 surveys

Horleyland Wood contained the highest total number of ground flora species recorded within quadrats at 51, and Brockley North the lowest at 37.

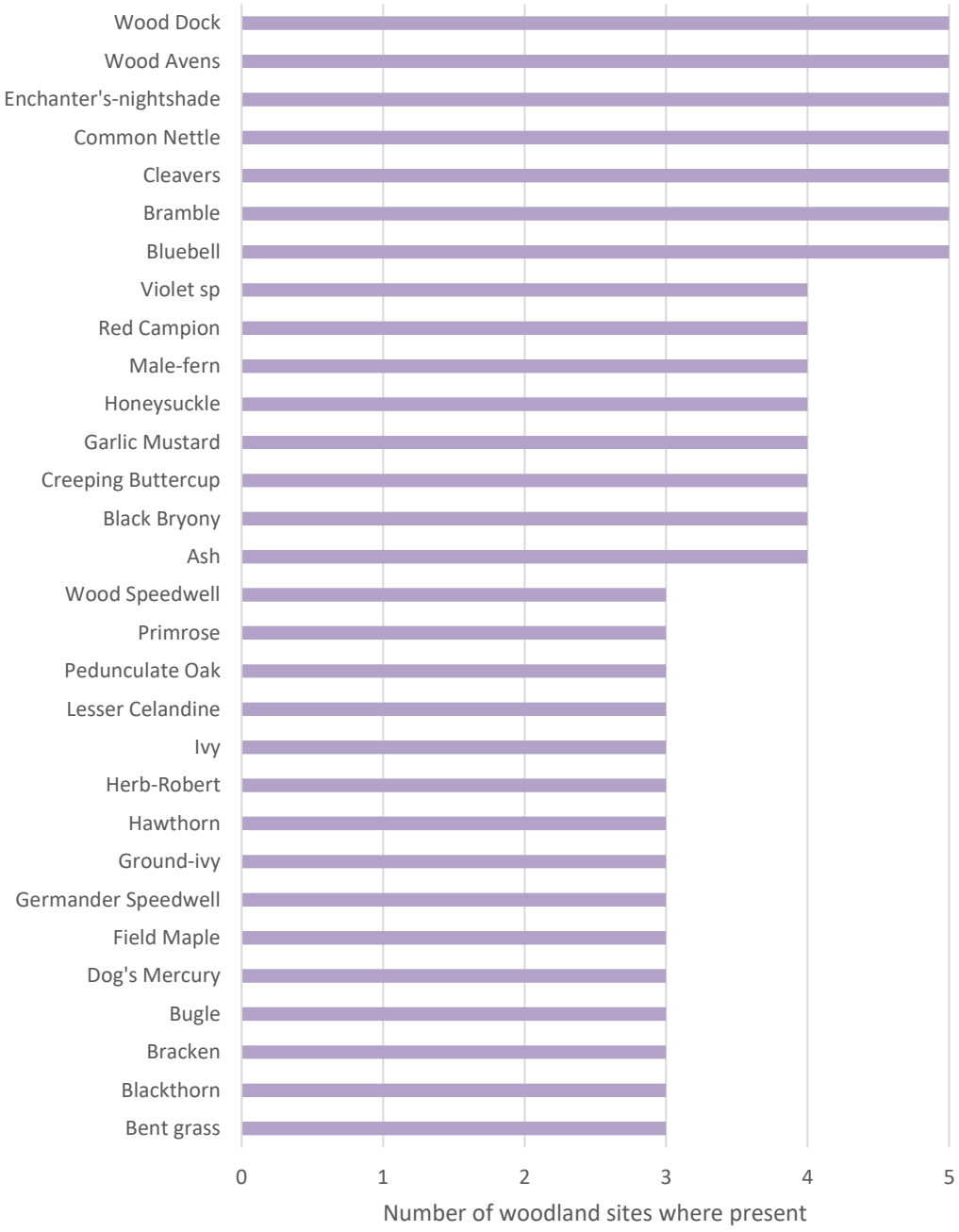


Figure 7. Ground flora species recorded within quadrats across all Gatwick woodlands during 2023 / 2024 surveys

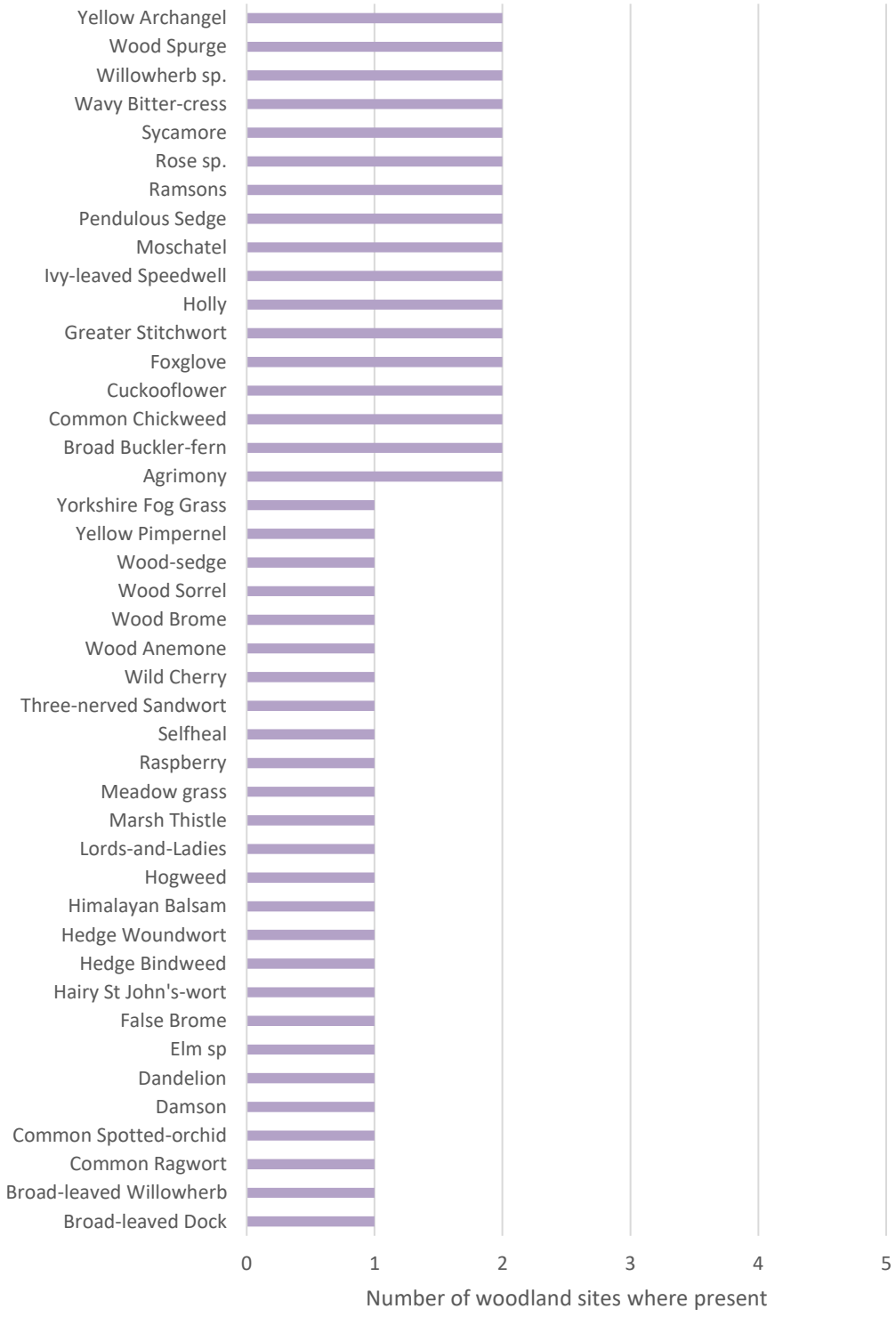


Figure 7. continued. Ground flora species recorded within quadrats across all Gatwick woodlands during 2023 / 2024 surveys

[5] DISCUSSION

CHANGES ON PREVIOUS WWLP BASELINES

Since the previous baseline assessment in 2017 there are slight increases in score for Upper Picketts Wood, Brockley North and Brockley South. The greatest overall improvers in score over the 12 year assessment period are both Lower Picketts and Horleyland Wood by 7.5 points. These improvements are largely attributed to a programme of management and enhancement works, which has included selective coppicing, invasive species control, tree thinning and haloing, removal of rubbish and old plastic tree guards, planting of new diverse understory and the use of temporary deer exclusion fencing to encourage regeneration. Minor decreases in attribute scores are attributed to the lack of diversity of tree ages (potentially in part relating to the loss of small to medium-sized Ash trees), a lack of regeneration, and the loss of openness of rides and glades. Even with continual improvements it is likely the woodlands are approaching their maximum possible achievable scores, while accounting for their different management histories, characters and landscape contexts. Additional enhancements and continued management will provide ongoing benefits, although these improvements may not be as readily picked up on within future assessments. Appendix II contains the detailed tables of individual attribute scores for all five woodlands assessed during the 2023 / 2024 surveys.

Since the first round of surveys in 2012, a particularly dramatic change has been the increasing impacts from Ash Dieback (Chalara) disease *Hymenoscyphus fraxineus*, which has visibly reduced the integrity of woodland canopy. As Ash trees have succumbed over the years, new gaps in the woodland canopy and understory are likely effecting changes in the shrub and ground flora layers. Ash Dieback has also resulted in high quantities of large standing and fallen deadwood, a likely boon for saproxylic invertebrates. Despite the potential for additional positive impacts, the presence of Ash Dieback is deemed as negative overall and assigns a reduction in score for all woodlands.

With on average wetter winters and drier summers combining with extreme weather events, landscapes and habitats are coming under new pressures. Climate change may result in lowland woodlands staying wetter for longer, putting trees and other vegetation under strain through the waterlogging of roots. Also considered an increasing problem are extreme drought events which in turn may increase the risk of woodland fires, and may be something to consider for the protection of woodlands into the future.

WWLP VS BNG ASSESSMENTS

A few differences were noted between assessments in the weighting of the similar attributes (also called indicators). The WWLP assessment averages outcomes of the majority of

attributes, producing a percentage presence across the woodlands. However, it has slightly stricter requirements around presence of woodland regeneration than BNG. Within the BNG assessment, some indicators are required to be present across all woodland stops to achieve maximum score, such as vertical structure complexity, whereas others such as regeneration only needs to be present at a single stop in order to achieve maximum points. The presence of Ash Dieback automatically awards a minimum score for the disease risk indicator to all the woodlands, even where Ash is only a rarely occurring species within a woodland. There is no equivalent indicator for the BNG assessment regarding signs of woodland management, and in WWLP there is less emphasis given to the presence veteran trees, which are only included as part of the age structure attribute.

By necessity the assessments simplify indicators to a fairly broad level, in order for surveys to be rapid and to minimise observer bias while still being ecological meaningful. Inevitably some detail is lost by averaging results, reducing the resolution in the data and increasing potential for small differences to skew overall assessment scores. Both the assessments disregard potential interactions between the attributes, and do not necessarily provide a clear indication of extent or severity of an issue. Despite their limitations, the assessments evidently function well to provide an overall picture of woodland condition, providing insights for individual attributes which can be helpfully tied to targeted management interventions.

2023 / 2024 CONDITION ASSESSMENT ATTRIBUTES

The following section discusses the individual attributes in further detail. Appendix II contains the tables of individual attribute scores achieved for all five woodlands.

1. Average canopy cover

There has likely been an increase in percentage openness of canopy in the majority of woodlands where a high proportion of Ash occurs. However, the percentage cover of canopy estimates are rather subjective in nature and averages may be easily skewed by isolated stands. In particular Brockley Wood North and South are relatively small and species-poor woodland blocks clearly displaying the impacts of Ash Dieback, with many of the mature canopy trees now completely dead or presenting reduced crowns.

2. Average understorey cover

Upper Picketts Wood, Lower Picketts and Horelyland Wood have all received some areas of planting within deer fenced enclosures, helping to establish new areas of young trees and shrubs. Some planting in Brockley North without protective deer fencing has had only limited success, potentially due to shading and browsing pressure.

3. Age structure

The age structure across the woodlands is mostly a higher proportion of medium to large trees, with some sapling recruitment in isolated patches. New understory planting in discreet areas within all woodlands has successfully increased the presence of stands of small and young trees, while in some areas stands of naturally regenerating Ash trees have succumbed to Ash Dieback.

4. Deadwood

The variety and quantity of deadwood was high across all woodlands and has increased in recent years due to Ash Dieback. This has been coupled with the active management and felling for tree safety works around footpaths, with log piles and whole felled trees retained where possible around Lower Picketts and Upper Picketts Wood.

5. Invasive non-native species

Only a couple of small, isolated stands of Himalayan Balsam were located in Horleyland Wood which is a large improvement on quantities recorded in the western portion in previous years. Continuous encroachment of this invasive plant along the shared southern boundary fence line with Crawley Sewage Works has been reduced by past spot-spraying and continuous volunteer effort. Upper Picketts Wood had no Himalayan Balsam detected on this occasion, and so this seems to have been eliminated. A single mature Portuguese Laurel remains in Brockley Wood South with no sign of spreading.

6. Evidence of regeneration

Regeneration is present to a degree across all woodlands, however tends to be limited to isolated patches. Upper Picketts and Brockley South show only limited signs of seedlings, saplings or suckering, despite the increasing openness of the canopies.

7. Open rides/glades

This attribute is tempered by the fact that all of the surveyed woodlands are relatively small with a high proportion of edge habitat. Woodlands with recent glade works are Upper Picketts and Lower Picketts. Ash Dieback has again contributed to openness within woodlands along several footpaths and rides where tree safety works have taken place. Mature Ash tree crowns dying back within Brockley North have created more openness and light within an old glade at its centre. Further thinning or opening up of woodland where there is a high prevalence of Ash should therefore be avoided.

8. Evidence of grazing/browsing

Roe Deer are the main browsing herbivore present in Gatwick's woodlands and reportedly more prevalent in the Land East Zone areas. There is visible evidence of browsing of new shoots from Hazel coppice regrowth where it has been left unprotected. The 'brashing up' of

newly coppiced Hazel stools by volunteers using the cut materials has provided some protection. Understory planting within deer fenced areas has taken place at some point in all three LEZ woodlands within the past 12 years, allowing new plantation areas to establish well. There is less impact from Roe Deer around Brockley Wood, potentially due to lower numbers in this area. Grey Squirrels continue to impact trees through bark chewing, and this has been particularly notable on young oak trees throughout the woodlands.

9. Evidence of recent good management practice

The majority of woodlands have undergone targeted management for wildlife enhancement purposes in recent years, including selective coppicing, tree ring barking, deadwood retention, understory planting and protection from deer. Only Brockley Wood south showed few signs of recent management. A sensitive approach to thinning and coppicing should be continued while the impacts of Ash Dieback are being felt, and efforts to target and reduce regenerating Sycamore where it is at risk of becoming dominant.

10. Evidence of damage

The levels of litter and fly tipping has improved on previous baselines, with little observed during the most recent survey visits. This might be due to increased effort by members of public assisting with litter picking. The impacts of dog walking are more obvious with dog poo and plastic bags noted on many of the public paths through the Land East Zone woodlands. Increased poaching of the ground resulting in widening paths has also caused some loss of ground flora in Upper Picketts Wood. These impacts have been mitigated through the building of board walks, and this volunteer work is gradually continuing. Machinery and excavator works by Crawley Sewage Works to replace a chain-link fence line along the southern boundary of Horelyland took place during March 2019. There was resulting damage to multiple mature English Oak trees, with exposed root plates and the severing of large tree roots. Two or more of these mature oaks have died and required removal, while the remaining oaks show signs of stress and crown dieback. There was also heavy disturbance to an area of ground (around 0.3ha in size), with machinery having churned the top layers of woodland soil and brought up clay subsoils. This area has been colonised by flushes of ruderal vegetation such as Cleavers, Common Nettle and Foxglove, along with pockets of Himalayan Balsam which continue to be managed by volunteers.

ADDITIONAL BNG INDICATORS

The following criteria are those in addition to the original WWLP assessments.

Indicator 4: Number of native tree species:

All of the woodlands at Gatwick are semi-natural broadleaf, with a diverse mix of at least five native tree and shrub species, so they all achieve the maximum points.

Indicator 5: Cover of native tree and shrub species:

As above, the majority of the recorded species in the woodlands are native and so all the surveyed woodlands score the maximum for this.

Indicator 9: Vegetation and ground flora

This indicator applies the National Vegetation Classification to ground flora, using the presence of certain species to assign categories to specific woodland botanical communities. All of the woodlands present largely as the W10 *Quercus robur–Pteridium aquilinum–Rubus fruticosus* woodland community, and contain at least ten ancient woodland indicator species (AWIS), so achieve the maximum score.

Indicator 11: Veteran trees

None of the woodlands scored the highest possible for this (two or more veteran trees per hectare). However this attribute has not been assessed in detail during previous baselines, and was not a focus during the 2023 /2024 surveys, therefore there is a chance of this result being an under estimate. An additional in-depth survey for veteran and ancient trees across Gatwick's woodlands is recommended.

CONCLUSIONS

Structurally diverse and well-connected woodlands provide the widest variety of niches and microclimates, which is important for functional ecosystems and biodiversity. The results of these condition assessments indicate that woodlands at Gatwick are generally achieving similar scores, with all in the moderate to low-good condition categories. The woodlands are varied in character, while also displaying typical features of ancient semi-natural woodland. The continuous efforts by the Gatwick Greenspace Partnership volunteers, along with targeted tree surgeon and landscape contractor works has resulted in the successful maintenance and improvement of these valuable woodlands.

[6] REFERENCES

Bicker, R. 2018. Gatwick Biodiversity Action Plan Five Year Review 2012-2017. Unpublished report on behalf of Gatwick Airport Ltd

Ditchburn, B., Bellamy, C., Wilson, T., Steel, P., Henderson, L., Kirby, K. 2020. NFI woodland ecological condition in Great Britain: Methodology. Forestry Commission National Forest Inventory, Edinburgh

Foreman, B., Jackson, L.E. and Billings, P. 2013. Report on Woodland Condition in the West Weald of Sussex and Surrey 2012. The West Weald Landscape Project, Sussex Wildlife Trust

Website resources:

Forestry Commission: Definition of trees and woodland (updated October 2024) https://www.gov.uk/government/publications/definition-of-trees-and-woodland/definition-of-trees-and-woodland

National Forestry Inventory Woodland England 2015 (updated June 2024) https://www.data.gov.uk/dataset/ae33371a-e4da-4178-a1df-350ccfcc6cee/national-forest-inventory-woodland-england-2015

National Library Scotland Map Images: https://maps.nls.uk/

Natural England: National Character Area 121. Low Weald – Description (2025) https://nationalcharacterareas.co.uk/low-weald/description/

Natural England. Biodiversity Metric 3.0: Auditing and accounting for biodiversity - Technical Supplement Part 1a. (2021) [https://publications.naturalengland.org.uk/file/5940273380327424]

Sussex Biodiversity Partnership (1996) Woodland Habitat Action Plan for Sussex [online: archived] Accessed 30 December 2023 https://crawley.gov.uk/sites/default/files/documents/PUB228562.pdf

West Sussex County Council: The West Sussex Landscape Character Guidelines. The Low Weald Character Area (publication year unknown) https://www.westsussex.gov.uk/media/1758/lds_lowweald.pdf

Woodland Wildlife Toolkit, Sylva Foundation (publication year unknown) https://woodlandwildlifetoolkit.sylva.org.uk/

Upper Picketts Wood, Land East Zone

Map 6. Upper Picketts Wood survey boundary and stops

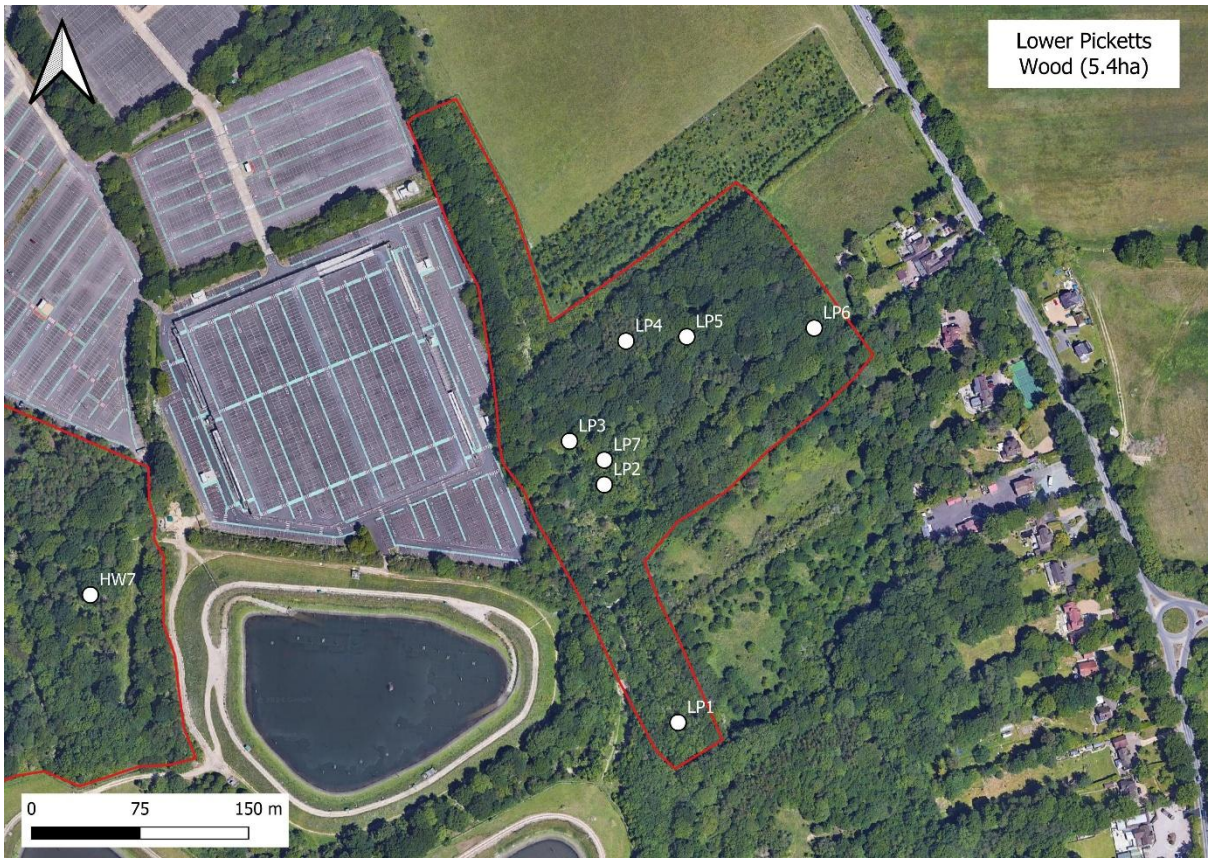
A plantation woodland dating back to around 1935-1940 (judged by map archives available online via the National Library of Scotland). It is well-connected to the wider landscape via old outgrown hedgerows, woodland fragments, outgrown shaws, wooded lanes, recent plantations and areas of natural regeneration. The canopy comprises of mature Ash and Pedunculate Oak standards, also with frequent Scots Pines, Silver Birch and areas of Alder and willows in the wettest parts. A line of mature Pedunculate Oak and very large Wild Cherry trees are on an old internal bank (UP4) which marks a very old field boundary. A large specimen Oak has recently fallen close by and been left largely intact in situ, with only a few branches cleared away which were blocking the path. Adjacent to this is a very large hollow Wild Cherry stump, with the rest of tree logged and large pieces left stacked nearby. A bench was constructed from some of this fallen wood by the local volunteer group. It has a diverse understory structure consisting largely of Hazel coppice, Elder, Dog Rose, Hawthorn and Honeysuckle. Recent plantations include the eastern entrance off the Sewage Works access track (UP1), dated to the 1990s (post construction of the Y Lagoon) which consists of young Alder, Ash, Aspen and Field Maple. Many of the the tall, medium-sized Ash trees are

succumbing to Ash Dieback. A similarly dated plantation connects the woodland to Lower Picketts in the north (below LP1) which is dominated by even-aged tall Ash trees, again suffering from Ash Dieback, with more recent diverse understory planting. Within the main body of the woodland there is plentiful low-lying areas of wet ground and shallow ditches (sometimes called grips) and deeper boundary ditches which often hold water into late spring. Previously deer fenced areas of Hazel coppice and new understory plantation areas show little damage from deer of browsing and have established well (UP5). During spring a patchy but rich ground flora consists of a small stand of likely native Wild Daffodil in the south, and Primrose, Lesser Celandine and Lady's Smock in abundance throughout. Later in spring arrives a mix of English Bluebell, Greater Stitchwort, Enchanter's Nightshade, Dog's Mercury, various ferns and Red Campion. Wild Strawberry, Solomon's Seal, Moschatel and Wood Speedwell are also occasionally recorded. Widespread regeneration of Ash and Field Maple saplings was noted. An area of bare ground from forest school activities is apparent at UP4. Other impacts include the widening of main paths and extensive poaching of the ground in wetter months winter by walkers. Dog waste and dropped dog poo bags are highly evident. Recent slubbing out and widening of ditches, along with the installation of leaky dams by volunteers has help direct water off the main footpath and retain wetland into the spring. Sections of board walk have been installed along the main path in the north and west since 2014, and these continue to be maintained and extended by volunteers.

Photo 3. Upper Picketts ground flora with Cuckooflower, Lesser Celandine and English Bluebell. (late April 2023)

Photo 4. A recently constructed shallow scrape fed by woodland ditches with leaky dams adjacent to the board walk. (late April 2023)

Lower Picketts Wood, Land East Zone



Map 7. Lower Picketts Wood survey area boundary and stops

A small rectangular block of ancient semi-natural woodland with additional recent areas of planation adjoining to the north of LP4 and further south at LP1, dating from around the early 2000s and 1990 respectively. It connects to Horleyland Wood, Upper Picketts Wood and the wider countryside via old outgrown hedgerows, woodland fragments, wooded lanes, recent plantations and areas of natural regeneration. The main ancient portion of the woodland is on slightly higher ground with better-draining soils than the surrounding lower-lying areas. The canopy is largely comprised of Pendculate Oak and Silver Birch standards, with mature Hornbeam, Wild Cherry, Sycamore and Ash particularly around the southern portion. It contains a dense and highly diverse understory, with a count of 18 species boosted by the recent planting efforts in areas around LP1 and LP2 circa 2016. The oldest areas are comprised of old Hazel coppice, Hawthorn, Elder and Dog Rose with plentiful Honeysuckle (LP5). Redcurrant, Spindle and Holly are occasionally encountered. The majority of the woodland ground flora consists of dominant English Bluebell with some ferns, Bracken, Enchanter's Nightshade and Cleavers. Moschatel, Primrose and Ramsons are occasionally recorded. The south-west corner is quite scrubby in structure, with a recently opened and regularly maintained glade (LP2) surrounded by mature Pedunculate Oak, suckering English Elm, mature Ash, Sycamores and European Lime. The canopy is very fragmented around this

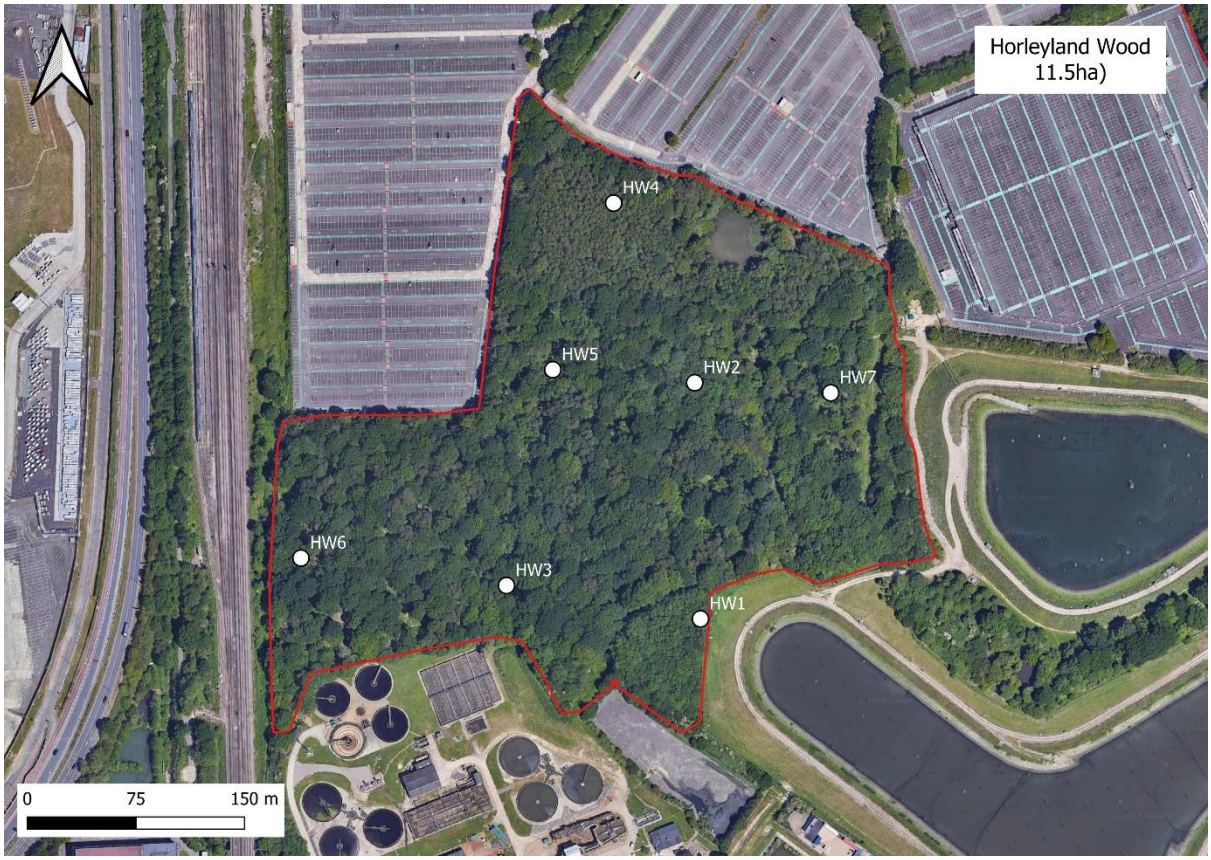
part of the woodland (LP7) with Damson shrubs (*Prunus* sp.) forming a dense understory immediately north and east of the glade. Within the glade itself is a mixed ground flora indicative of disturbed soils with Bugle, Creeping Buttercup, Germander Speedwell, Red Campion, Wood Dock, Common Nettle and Bramble. Planting of diverse shrub species within the glade took place around 2016 and most of the shrubs established well. Sycamore seedlings and saplings threaten to dominate this space, along with the flushes of bramble and nettle. Plentiful deadwood stacks are seen around the edges, along with a large partially buried beetle loggery situated close to a big Sycamore stump and recently ring-barked mature specimen. The medium-sized English Elm trees to the north and east of the glade have completely died, resulting in standing deadwood while continuing to produce suckering regrowth. Along the southern boundary on Picketts Lane is a high old bank with frequent mature Hornbeams. Along the northern side of the lane are two large veteran Oak pollards and an ancient Hornbeam coppice. At the north-eastern end of Picketts Lane, a large Pedunculate Oak has naturally fallen in the last couple of years and left largely intact. There are good signs of regenerating seedlings and saplings throughout the majority of the woodland, with mostly Pedunculate Oak and Wild Cherry at LP6, and plentiful Sycamore around LP2.

Photo 5. The ancient portion of Lower Picketts Wood showing Oak standards with Hazel and Field Maple understory, a ground flora dominated by English Bluebell and scattered ferns. (May 2023)

Photo 6. Lower Picketts Wood south-west glade with large Sycamore stump and nettles in the foreground, Hazel coppice and dead English Elms at the back. (May 2023)

Photo 7. Dead English Elms and abundant ferns within the glade. (May 2023)

Horleyland Wood, Land East Zone



Map 8. Horleyland Wood survey boundary and stops

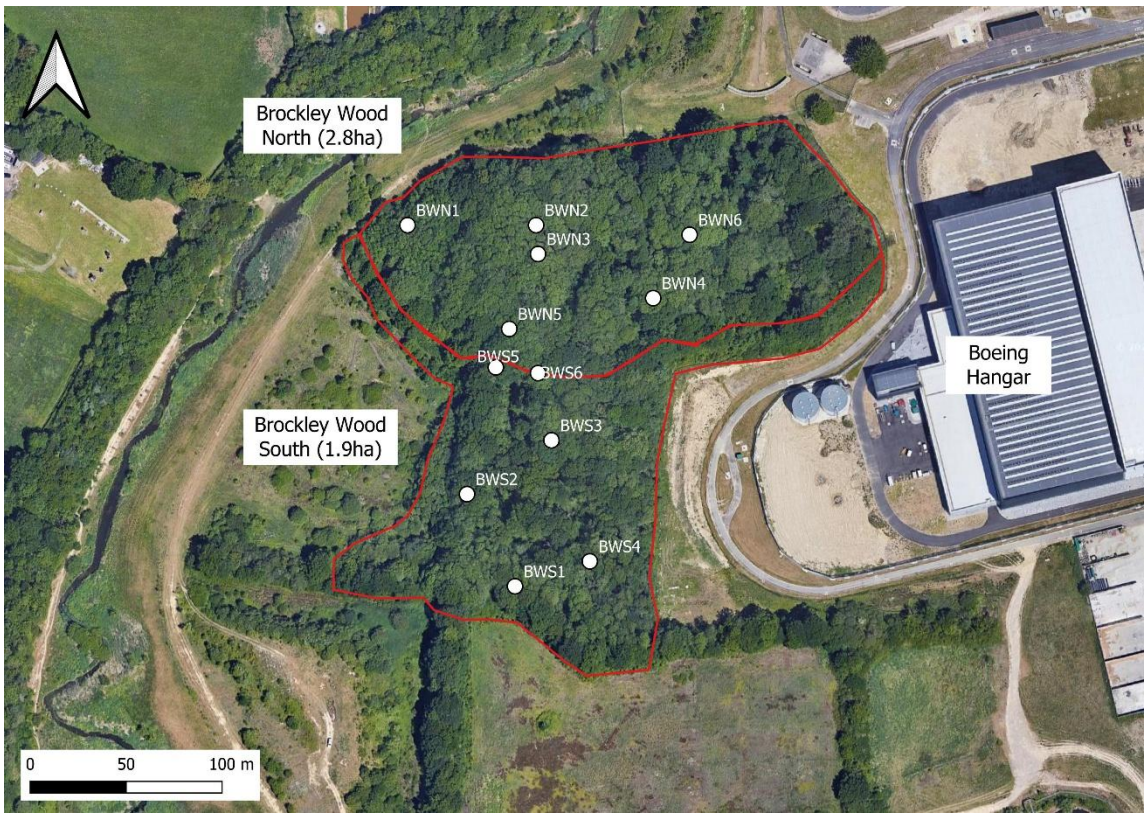
This ancient semi-natural woodland is the largest continuous block of woodland at Gatwick and is almost entirely bounded by a man-made landscape of sewage treatment infrastructure, balancing reservoirs, a railway line and airport car parks. It is connected to Lower Picketts Wood in the east through an outgrown hedgerow north of the lagoons and the wide wooded lane which contains two interesting wildlife ponds. The canopy consists of mature Pedunculate Oak standards, together with frequent mature Silver Birch and occasional Ash, Aspen, Hornbeam and Wild Cherry. The western portion of the woodland (HW6) consists almost entirely of mature oak standards with crown dieback and stag-horning, resulting in plentiful standing and fallen deadwood. There is little understory except for an isolated planted area, dating back to 2016 with deer fencing which has recently been removed. The central portions of the wood contains relict Hazel coppice and the understory is patchy with Holly, mature Willow, old Hawthorn, Honeysuckle and old Crab Apple trees (HW2). In the northern most section (HW4) are plentiful medium-sized Silver Birch and willow standards which look to have regenerated naturally. The field layer in the majority of the woodland is dominated by English Bluebell, with some patches of diversity in damper areas including Wood Sorrel, Wood Anemone, Lords and Ladies, Dog Violet, Honeysuckle, Bramble and Cleavers. Later in the season a dense coverage of Bracken forms throughout the

central and western portions of woodland. Patches of frequent to occasional Himalayan Balsam in the western portion of the woodland and encroaching in the south from the sewage works site receive ongoing management by volunteers. The Powerline Ride wayleave (immediately east of HW7) is an open ride with recently maintained Hazel coppice at the edges. Pignut can be found at its northern end. The newest portion of the woodland is the plantation to the south (HW1) on artificially raised ground, resulting from the construction of the Y-shaped lagoon in the late 1990s. The plantation is even-aged and diverse in species, with surviving Ash and Field Maple in abundance along with occasional Pedunculate Oak, Common Lime, Elder, Yew and a few non-native Red Oaks. A large proportion of the planted shrubs have died out from dense shading due to a lack of follow up management. The ground flora is sparse here with mostly bare clay soil. Little regeneration is evident through the woodland, limited mainly to seedlings of Holly and occasional oak and Ash, with areas of willow and Silver Birch saplings. A fence line replacement project along the southern boundary adjacent to the sewage works during March 2019 resulted in damage to oak trees and extensive disturbance to woodland soils, with bare clay and ruderal herbaceous vegetation evident. A large and open pond east of HW4 is situated at the northern boundary to the wood, adjacent to the South Terminal long-stay car park. It was likely constructed in the 1970s with old maps showing a that Timber Yard used to be situated here. The pond has been previously stocked with carp and other coarse fish species for angling purposes, but contains a diverse variety of marginal vegetation and is rich in wildlife.

Photo 8. Horleyland Wood western portion with mixed patches of Himalayan Balsam and Bracken shading out the ground flora (June 2024)

Photo 9. Mature Silver Birch next to a dead oak standard and old Hazel coppice (June 2024)

Brockley Wood (North and South), North West Zone



Map 9. Brockley Wood North and South survey boundary and stops

A remnant block of ancient semi-natural woodland, relatively isolated in the landscape with a water treatment pond (Pond M) to the north, a newly constructed aircraft hangar (2019) immediately adjacent on the eastern side, and the 1999 diverted River Mole to the south and west. Further south of the river is the northern perimeter fence line of the airfield. The woodland is divided in two halves by the redundant stub of Man's Brook (as a result of the River Mole diversion), which is now a very steep-sided, wide, non-flowing ditch. Brockley Wood was surveyed in 2014 as part of the Ancient Woodland Inventory Review by ecologist Kate Ryland, and the entire site was designated as ancient semi-natural woodland.

Brockley Wood North:

The majority of the woodland consists of mature Pedunculate Oak and Ash standards, with Ash Dieback clearly impacting the canopy resulting in a loss of integrity. A secondary plantation of mostly young Ash persists to the west (BWN1), mixed with Hawthorn, Field Maple, Honeysuckle and Hazel. This area is also showing extensive signs of Ash Dieback. The main portion of the woodland contains a structurally diverse understory of old Hazel coppice, Hawthorn, Blackthorn, Field Maple and the occasional Crab Apple. Signs of regeneration are evident with young Ash and Field Maple seedlings. There is a limited patch of recent understory planting to the north (BWN2) dating from around 2016, with young specimens of Hornbeam,

Hazel, Wild Service and Guelder Rose. There seems to have been reduced survival and slow growth due to shading and impacts from deer. A good diversity of ground flora persists throughout the woodland including English Bluebell, Greater Stitchwort, Dog's Mercury, Ground Ivy, Yellow Archangel, Cleavers and plentiful Bramble. There are large patches of Ramsons (Wild Garlic) along the northern bank of Man's Brook stub. Some wet flushes and systems of internal banks and ditches have created further variation in the ground flora. There is little sign of recent management.

Brockley Wood South:

The area to the south of Man's Brook contains characteristics of ancient semi-natural woodland, but was deemed more likely to be a Plantation on an Ancient Woodland Site (PAWS) by ecologist Kate Ryland. Highlighted were the uniform age Ash and Pedunculate Oak standards, and the grid of shallow ditches internally within the woodland, indicating this area was more recently managed as a plantation. Plentiful old Hazel coppice, Hawthorn and regenerating Ash form a structurally diverse understory, with occasional Blackthorn, Ivy and mature Holly. In the central and northern sections (BWS3 and BWS6) are frequent-occasional Yew trees which were likely planted around 1999. A single mature Portuguese Laurel persists on the bank of Man's Brook (BWS6). The canopy has lost integrity with many of the mature Ash standard showing strong signs of Ash Dieback. Plentiful standing and large fallen deadwood are evident, including a large mature Hawthorn fallen across the single access path. There is a good diversity of ground flora with patches of English Bluebell, Greater Stitchwort, Wood Speedwell, Wood Sedge and Wood Spurge. Ramsons are particularly abundant along the southern bank of Man's Brook stub. There is deep ditch running along the eastern boundary and ditch and banks to the south-west. Signs of regeneration are particularly evident with young oak and willow on the western edge where the wood is naturally expanding. Ash, Field Maple and Holly seedlings are evident throughout the majority of the block. Between the eastern edge of the woodland and the large wildflower bank has been some scattered mitigation planting (from around 2019) with Alder and Pedunculate Oak standards. A high rate of failure was likely due to the waterlogged soils. There are some old log stacks around BWS3 but otherwise little sign of recent management within the woodland.

Photo 10. Man's Brook ditch dividing Brockley Wood into two halves. Ramsons (Wild Garlic) grows in abundance on both sides of the ditch.(May 2023)

Photo 11. Brockley Wood North with a rich ground flora of English Bluebell, Dog's Mercury and Greater Stitchwort. (May 2023)

Photo 12. Canopy view of Brockley Wood North showing extensive crown dieback of Ash standards resulting in gaps. (May 2023)

Photo 13. Self-seeded Ash saplings regenerating in Brockley Wood North (May 2023)

Photo 14. Brockley Wood South with a patchy understory and sunlight through canopy gaps. (May 2023)

Photo 15. An old stump in Brockley Wood South. (May 2023)

Photo 16. Canopy view of Brockley Wood South showing the crowns of Ash trees with various degrees of severity of Ash Dieback. (May 2023)

APPENDIX II – WOODLAND CONDITION SURVEY ATTRIBUTE SCORES

Table 6. Baseline WWLP woodland condition assessment criteria scores for the five woodland compartments across all baseline survey years. The maximum possible score for each attribute is 3, with a maximum total achievable score of 30. Green cells indicate an increase in the total score, yellow cells where it has remained the same, and orange where it has declined.

Woodland Condition Scores	Upper Picketts			Lower Picketts			Horleyland			Brockley North			Brockley South		
Attribute	**2012**	**2017**	**2023**	**2012**	**2017**	**2023**	**2012**	**2017**	**2023**	**2012**	**2017**	**2023**	**2012**	**2017**	**2023**
Canopy cover	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Amount of understory	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Diversity of tree ages	3	3	1.5	3	3	3	3	3	3	3	3	1.5	3	3	1.5
Diversity of deadwood	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Invasive non-natives	3	1.5	3	3	3	3	0	0	1.5	3	3	3	1.5	3	3
Signs of regeneration	1.5	3	1.5	1.5	3	3	1.5	3	3	3	3	3	1.5	1.5	1.5
Openness of rides and glades	0	0	3	0	3	3	0	3	1.5	0	0	3	0	0	3
Levels of grazing/browsing	0	1.5	1.5	0	1.5	1.5	0	1.5	1.5	3	3	3	3	3	3
Signs of recent good management	3	3	3	1.5	3	3	1.5	3	3	0	3	3	0	1.5	1.5
Evidence of damage	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	3	1.5	1.5	3	3	3
Total scores	21	**22.5**	**24**	19.5	**27**	**27**	16.5	**24**	**24**	24	**25.5**	**27**	21	**24**	**25.5**

Table 7. Baseline BNG woodland condition scores for the five woodland compartments 2023 / 2024 (total scores out of a possible 39).

Indicator	Upper Picketts	Lower Picketts	Horleyland	Brockley North	Brockley South
1. Age distribution of trees	2	2	2	2	2
2. Wild, domestic and feral herbivore damage	2	2	2	2	2
3. Invasive plant species	3	3	2	3	3
4. Number of native tree species	3	3	3	3	3
5. Cover of native tree and shrub species	3	3	3	3	3
6. Open space within woodland	3	3	3	3	3
7. Woodland regeneration	3	3	3	2	3
8. Tree health	1	1	1	1	1
9. Vegetation and ground flora	3	3	3	3	3
10. Woodland vertical structure	3	2	2	2	2
11. Veteran trees	2	2	2	1	1
12. Amount of deadwood	3	3	3	3	3
13. Woodland disturbance	2	3	2	3	3
Total scores	33	33	31	31	32

APPENDIX III – WOODLAND FLORA SPECIES

Table 8. Occurrence and average DAFOR scores for canopy species across assessed woodland stops 2023 / 2024
DAFOR Scale: Dominant, Abundant, Frequent, Occasional or Rare. L = local, P = present outside of woodland stop
Green highlights = Ancient Woodland Indicator Species

Common name	Taxon name	Family	Upper Picketts	Lower Picketts	Horleyland Wood	Brockley North	Brockley South	Frequency
Alder	*Alnus glutinosa*	Betulaceae	F-O	O				5
Ash	*Fraxinus excelsior*	Oleaceae	F-O	F-O	O	D-F	A-F	8
Aspen	*Populus tremula*	Salicaceae	O		O			6
Blackthorn	*Prunus spinosa*	Rosaceae	O	O	O	F-O	O	8
Buckthorn	*Rhamnus cathartica*	Rhamnaceae		R				4
Crab apple	*Malus sylvestris*	Rosaceae		O	O	O	R	8
Damson	*Prunus sp.*	Rosaceae	O	LA-O				5
Dogwood	*Cornus sanguinea*	Cornaceae		O				4
Elder	*Sambucus nigra*	Adoxaceae	O	F-O	O	O		7
Elm sp.	*Ulmus sp.*	Ulmaceae		F-O				4
Field Maple	*Acer campestre*	Sapindaceae	F-O	O	LA-O	F-O	F-O	9
Guelder Rose	*Viburnum opulus*	Adoxaceae					R	5
Hawthorn	*Crataegus monogyna*	Rosaceae	A-F	F-O	F-O	A-F	D-F	8
Hazel	*Corylus avellana*	Betulaceae	A-F	A-F	LA-O	A-F	F-O	8
Holly	*Ilex aquifolium*	Aquifoliaceae	O	O	O	R	A-O	9
Honeysuckle	*Lonicera periclymenum*	Caprifoliaceae	F-O	F	F-O	O	O	8
Hornbeam	*Carpinus betulus*	Betulaceae		F-O	O	O		7
Ivy	*Hedera helix*	Araliaceae				R	F-O	5
Lime sp.	*Tilia x europaea*	Malvaceae		O	O			5

Pedunculate Oak	*Quercus robur*	Fagaceae	A-F	A-F	D-F	F	A	8
Portugal Laurel	*Prunus lusitanica*	Rosaceae					R	4
Red Currant	*Ribes rubrum*	Grossulariaceae	O	R			P	7
Red Oak	*Quercus rubra*	Fagaceae			R			4
Rosa sp.	*Rosa sp*	Rosaceae	O		R		R	6
Rowan	*Sorbus aucuparia*	Rosaceae		O				4
Scots Pine	*Pinus sylvestris*	Pinaceae	F-O					4
Silver Birch	*Betula pendula*	Betulaceae	F	F-O	LA-O			6
Spindle	*Euonymus europaeus*	Celastraceae		R				4
Sycamore	*Acer pseudoplatanus*	Sapindaceae	O	LA-O				5
Wild Cherry	*Pruns avium*	Rosaceae	O	LF	O			7
Wild Service-tree	*Sorbus torminalis*	Rosaceae		O	R	O	P	8
Willow sp.	*Salix sp.*	Salicaceae	R	O	O	R	F-O	8
Yew	*Taxus baccata*	Taxaceae			O		O	5

Table 9. Occurrence and average Domin scores for understory species across assessed woodlands 2023 / 2024
Domin Scale: 10= 91-100%, 9= 76-90%, 8= 51-75%, 7= 34-50%, 6= 26-33%, 5= 11-25%, 4= 4-10%, 3= <4% (many), 2=<4% (several), 1= <4% (few).
P = Present outside of quadrat
Green highlight = Ancient Woodland Indicator Species

Common name	Taxon name	Family	Upper Picketts	Lower Picketts	Horleyland	Brockley North	Brockley South	Frequency
Agrimony	*Agrimonia eupatoria*	Rosaceae		0.21			0.08	2
Ash (seedling)	*Fraxinus excelsior*	Oleaceae	2.92	0.50	0.71		1.83	4
Bent grass	*Agriostis sp.*	Poaceae	1.58	1.07	0.07			3
Black Bryony	*Dioscorea communis*	Dioscoreaceae	0.42	0.14	0.07	P	P	5
Blackthorn	*Prunus spinosa*	Rosaceae		0.79	0.21		0.08	3
Bluebell	*Hyacinthoides non-scripta*	Asparagaceae	4.58	6.14	5.36	6.08	2.75	5
Bracken	*Pteridium aquilinum*	Dennstaedtiaceae	0.83	2.07	4.21			3
Bramble	*Rubus fruticosus agg.*	Rosaceae	2.00	0.93	4.29	2.75	3.33	5
Broad Buckler-fern	*Dryopteris dilatata*	Dryopteridaceae	1.75		0.50			2
Broad-leaved Dock	*Rumex obtusifolius*	Polygonaceae					0.08	1
Broad-leaved Willowherb	*Epilobium montanum*	Onagraceae		0.07				1
Bugle	*Ajuga reptans*	Lamiaceae	0.08	0.50	0.36	P		4
Burdock sp.	*Arctium sp.*	Asteraceae					P	1
Cleavers	*Galium aparine*	Rubiaceae	3.92	2.93	2.57	3.17	4.00	5
Cock's-foot	*Dactylis glomerata*	Poaceae			P			1
Common Chickweed	*Stellaria media*	Caryophyllaceae				0.00	0.33	2
Common Dog-violet	*Viola riviniana*	Violaceae	P		P			2
Common Figwort	*Scrophularia nodosa*	Scrophulariaceae	P	F				2
Common Hemp-Nettle agg.	*Galeopsis tetrahit agg. sensu lato*	Lamiaceae			P			1

Common Nettle	*Urtica dioica*	Urticaceae	0.92	1.57	0.50	0.50	0.50	5
Common Ragwort	*Jacobaea vulgaris*	Asteraceae	0.08					1
Common Spotted-orchid	*Dactylorhiza fuchsii*	Orchidaceae		P	P	0.25		3
Cow Parsley	*Anthriscus sylvestris*	Apiaceae				P		1
Creeping Buttercup	*Ranunculus repens*	Ranunculaceae	0.58	1.36	0.14	0.33	P	5
Creeping Jenny	*Lysimachia nummularia*	Primulaceae			0.64			1
Cuckooflower	*Cardamine pratensis*	Brassicaceae		P		0.75	0.83	3
Damson (seedling)	*Prunus domestica subsp. insititia*	Rosaceae		0.36				1
Dandelion	*Taraxacum sp.*	Asteraceae	0.08					1
Devil's-bit Scabious	*Succisa pratensis*	Caprifoliaceae			P			1
Dog-rose	*Rosa canina*	Rosaceae				P	P	2
Dog's Mercury	*Mercurialis perennis*	Euphorbiaceae	1.58			5.67	4.83	3
Dogwood	*Cornus sanguinea*	Cornaceae		P				1
Enchanter's-nightshade	*Circaea lutetiana*	Onagraceae	3.25	1.07	0.64	0.42	0.67	5
English Elm	*Ulmus procera*	Ulmaceae		0.36				1
False Brome	*Brachypodium sylvaticum*	Poaceae					1.25	1
Field Forget-me-not	*Myosotis arvensis*	Boraginaceae	P					1
Field Maple (seedling)	*Acer campestre*	Sapindaceae	0.67	0.14			0.17	3
Foxglove	*Digitalis purpurea*	Plantaginaceae		P	0.14		0.08	3
Garlic Mustard	*Alliaria petiolata*	Brassicaceae	0.50	0.29	0.14		1.17	4
Germander Speedwell	*Veronica chamaedrys*	Plantaginaceae		0.93	P	2.58	0.50	4
Gooseberry	*Ribes uva-crispa*	Grossulariaceae		P				1
Greater Stitchwort	*Stellaria holostea*	Caryophyllaceae			P	1.50	1.00	3
Ground-ivy	*Glechoma hederacea*	Lamiaceae		1.71		1.33	1.75	3
Hairy St John's-wort	*Hypericum hirsutum*	Hypericaceae				0.17		1
Hawthorn (seedling)	*Crataegus monogyna*	Rosaceae	0.58		0.21		0.58	3
Hedge Bindweed	*Calystegia sepium*	Convolvulaceae		0.21				1
Hedge Woundwort	*Stachys sylvatica*	Lamiaceae		0.14				1
Herb-Robert	*Geranium robertianum*	Geraniaceae	0.58			0.25	0.58	3
Himalayan Balsam	*Impatiens glandulifera*	Balsaminaceae			0.07			1

Hogweed	*Heracleum sphondylium*	Apiaceae		0.29				1
Holly (seedling)	*Ilex aquifolium*	Aquifoliaceae		0.14	0.29			2
Honeysuckle	*Lonicera periclymenum*	Caprifoliaceae	0.33	0.07	0.79	0.92		4
Ivy	*Hedera helix*	Araliaceae	0.08		0.21		1.00	3
Ivy-leaved Speedwell	*Veronica hederifolia*	Plantaginaceae				0.17	0.75	2
Lesser Celandine	*Ficaria verna*	Ranunculaceae		0.64		0.33	0.25	3
Lords-and-Ladies	*Arum maculatum*	Araceae	0.58			P	P	3
Male-fern	*Dryopteris filix-mas*	Dryopteridaceae	2.00	1.14	0.43	0.33	P	5
Marsh Thistle	*Cirsium palustre*	Asteraceae		0.07				1
Meadow Buttercup	*Ranunculus acris*	Ranunculaceae		P		P	P	3
Meadow grass	*Poa sp.*	Poaceae			0.57			1
Moschatel	*Adoxa moschatellina*	Adoxaceae	P	P		0.25	0.92	4
Pedunculate Oak (seedling)	*Quercus robur*	Fagaceae	0.33	0.57	0.57			3
Pendulous Sedge	*Carex pendula*	Cyperaceae	P		0.29		0.42	3
Pignut	*Conopodium majus*	Apiaceae			P			1
Primrose	*Primula vulgaris*	Primulaceae	0.25	0.29	0.14			3
Ramsons	*Allium ursinum*	Amaryllidaceae	P	P	P	0.17	0.42	5
Raspberry	*Rubus idaeus*	Rosaceae			0.71			1
Red Campion	*Silene dioica*	Caryophyllaceae	0.75	1.07	P	0.25	0.33	5
Red Clover	*Trifolium pratense*	Fabaceae			P			1
Ribwort Plantain	*Plantago lanceolata*	Plantaginaceae			P			1
Rose sp.	*Rosa sp.*	Rosaceae	0.08				0.25	2
Selfheal	*Prunella vulgaris*	Lamiaceae	0.33					1
Slender St John's-wort	Hypericum pulchrum	Hypericaceae			P			1
Solomon's-seal	*Polygonatum multiflorum*	Asparagaceae	P					1
Sycamore (seedling)	*Acer pseudoplatanus*	Sapindaceae	0.17	1.07				2
Three-nerved Sandwort	*Moehringia trinervia*	Caryophyllaceae			0.14			1
Tutsan	*Hypericum androsaemum*	Hypericaceae			P			1
Violet sp	*Viola sp.*	Violaceae	1.50		0.29	2.00	2.33	4

Wavy Bitter-cress	*Cardamine flexuosa*	Brassicaceae		0.07	0.21			2
Wild Cherry (seedling)	*Prunus avium*	Rosaceae		0.07				1
Wild Daffodil	*Narcissus pseudonarcissus*	Amaryllidaceae	P					1
Willowherb sp.	*Epilobium sp.*	Onagraceae	0.08		0.07			2
Wood Anemone	*Anemone nemorosa*	Ranunculaceae			0.43	P	P	3
Wood Avens	*Geum urbanum*	Rosaceae	1.58	0.21	0.14	1.58	0.67	5
Wood Brome	*Brachypodium sylvaticum*	Poaceae			0.71			1
Wood Dock	*Rumex sanguineus*	Polygonaceae	1.08	0.86	0.29	0.08	2.50	5
Wood Melick	*Melica uniflora*	Poaceae				P		1
Wood Sorrel	*Oxalis acetosella*	Oxalidaceae			0.64			1
Wood Speedwell	*Veronica montana*	Plantaginaceae	0.17			1.00	0.58	3
Wood Spurge	*Euphorbia amygdaloides*	Euphorbiaceae				0.17	0.17	2
Wood-sedge	*Carex sylvatica*	Cyperaceae					0.50	1
Yellow Archangel	*Lamiastrum galeobdolon*	Lamiaceae				2.08	1.08	2
Yellow Pimpernel	*Lysimachia nemorum*	Primulaceae				P		1
Yorkshire Fog Grass	Holcus lanatus	Poaceae			0.57			1

APPENDIX IV – WOODLAND SURVEY STOP LOCATIONS

Table 10. Ten-figure Ordnance Survey National Grid references for Gatwick Airport woodland condition survey stops 2012 - 2024

Survey Stop No.	Brockley Wood North	Brockley Wood South	Lower Picketts Wood	Upper Picketts Wood	Horleyland Wood
1	TQ25689 40898	TQ25745 40710	TQ29549 40497	TQ29377 40086	TQ29053 40429
2	TQ25756 40898	TQ25720 40758	TQ29498 40661	TQ29414 40142	TQ29049 40592
3	TQ25757 40883	TQ25764 40786	TQ29474 40691	TQ29565 40107	TQ28919 40452
4	TQ25817 40860	TQ25784 40723	TQ29513 40760	TQ29516 40198	TQ28993 40716
5	TQ25742 40844	TQ25735 40824	TQ29555 40763	TQ29579 40266	TQ28951 40601
6	TQ25836 40893	TQ2575740821	TQ29643 40769	TQ29540 40257	TQ28777 40471
7	N/A	N/A	TQ29498 40678	N/A	TQ 29143 40585