



Wokingham Borough Council

SOUTH WOKINGHAM DISTRIBUTOR ROAD

Bat Survey Report





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Bat Survey Report

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SUMMARY OF BAT SURVEY RESULTS

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EXECUTIVE SUMMARY

Wokingham Borough Council (WBC) has instructed WSP UK Ltd to conduct ecological surveys to support the detailed design and discharge of planning conditions for the South Wokingham Distributor Road (SWDR) Scheme. The SWDR is located between Easthampstead Road and Finchampstead Road, south of Wokingham. The main objective of the SWDR is to facilitate access for strategic housing allocations and reduce the impact of increased traffic on local roads.

Following the Scheme's planning permission in 2021 (planning ref. 192928), an ecology gap analysis and Preliminary Bat Roost Assessment (PBRA) were conducted by WSP in 2024. The PBRA identified 40 trees with potential roosting features suitable for multiple bats or otherwise requiring further assessment to be potentially impacted by the Scheme works; recommending further surveys, comprising at-height inspections and dusk emergence surveys for trees that could not be climbed.

Upon reassessment on-site, it was found that only 35 trees were within the Scheme footprint, so the survey was limited to these trees. An updated PBRA subsequently downgraded six trees to PRF-I. Of the remaining trees, 24 trees were subject to at-height inspections, while five were deemed unsafe to climb. Thirteen of the 24 trees inspected were further downgraded. Dusk emergence surveys were carried out for the remaining five trees which were unsafe to climb.

No bat roosts or evidence of bat presence were found during the surveys. However, the Site and its vicinity offers foraging and commuting habitats for bats. Bats and their roosts are protected under a range of national legislation and planning policy. Where feasible, trees with potential to support roosting bats should be retained to ensure continued suitability for bats. Where this is not possible, a pre-works check should be undertaken on all trees with bat roost suitability that are to be removed during the Scheme. If a bat roost is identified in this check, it will be necessary to apply for a licence from Natural England prior to tree removal and potentially further surveys may be required (to be undertaken between March and October).

If roosting bats are absent during the pre-felling inspection, then these trees can be soft-felled by a suitably qualified arborist. The loss of potential roosting features should be compensated for by provision of a proportionate number of bat boxes on retained trees. A sensitive lighting plan during the construction and operation of the Scheme is also recommended to ensure compliance with national legislation and planning policy.

1 INTRODUCTION

1.1 PROJECT BACKGROUND

- 1.1.1. Wokingham Borough Council (WBC) secured planning permission in 2021 (planning ref. 192928) to construct the South Wokingham Distributor Road (SWDR) between Easthampstead Road and Finchampstead Road, hereafter the 'Site'. The SWDR aims to facilitate access to strategic housing allocations and to reduce the impact of increased traffic on local roads. The SWDR is hereafter referred to as the 'Scheme'. The Scheme location is presented in **Figure 1**.

1.2 ECOLOGICAL BACKGROUND

- 1.2.1. WSP completed ecological surveys of the Site plus a suitable buffer area between 2017 and 2021 to support the planning application. In addition, ecological survey work for areas targeting the South Wokingham Strategic Development Location (SDL), an associated major phased development which includes the Scheme, were carried out by ECOSA and The Ecology Partnership between 2013 and 2022.
- 1.2.2. The SDL is defined as the following:
- '...an urban extension of Wokingham town, Montague Park and south of the railway between the boundary with Bracknell Forest and Finchampstead Road. It will include new homes, new primary schools, local shopping and community facilities in two new neighbourhood centres, open spaces and roads including a South Wokingham Distributor Road.'*
- 1.2.3. In 2019, WSP completed bat surveys at the Site which comprised Preliminary Bat Roost Assessment (PBRA) of trees, emergence and/or re-entry surveys of suitable trees and bat activity surveys (automated/static). Since a significant period of time had passed since the previous surveys, an Ecology Gap Analysis (WSP, 2024a) was completed by WSP for the Scheme in January 2024 to identify the requirements for any further ecological surveys required, in line with any relevant conditions, or otherwise to appropriately inform pre-construction mitigation measures.
- 1.2.4. The Ecology Gap Analysis identified that an updated PBRA of trees within the Scheme footprint and a buffer area was required to externally assess and establish the suitability of potential bat roosts. The PBRA was completed by WSP in March 2024. Ninety-three trees were inspected, and 83 were found suitable for supporting roosting bats. It recommended further surveys for 40 trees that were impacted by the Scheme development and could support multiple bats or required additional assessment to determine the presence or likely absence of bat roosts (WSP, 2024b). These surveys comprise an updated PBRA, at-height inspections and endoscope surveys, with dusk emergence surveys recommended when the former methods are not feasible.

1.3 BRIEF AND OBJECTIVES

- 1.3.1. WSCC commissioned WSP to complete further bat surveys of the Site in August 2024. The brief was to:
- complete at-height/climbed inspection surveys for trees with potential roost features (PRFs) identified with suitability to support multiple roosting bats or requiring further assessment, where

appropriate, to confirm, upgrade or downgrade the bat roosting suitability assigned during the PBRA;

- undertake dusk emergence surveys on trees which are unsuitable for an at-height survey and have been previously identified during the PBRA as having suitability to support multiple roosting bats or requiring further assessment, to establish the presence or likely absence of bat roosts on Site; and;
- make recommendations as to how the Scheme should account for roosting bats with respect to legislation, planning and biodiversity policy.

1.3.2. The results of these surveys, and subsequent recommendations, are included within this report.

2 METHODS

2.1 BACKGROUND

- 2.1.1. Of the 93 trees assessed during the PBRA within the Scheme Boundary and a 10m buffer (Survey Area) as shown in **Figure 2**, 83 were identified as having potential to support roosting bats (PRF or FAR) according to the categorisation set out in **Table 2-1**.

Table 2-1 - Guidelines for assessing the suitability of trees (Collins, J (ed.), 2023)

Suitability	Description
NONE	Either no PRFs in the tree or highly unlikely to be any.
FAR	Further Assessment Required to establish if Potential Roosting Features are present in the tree
PRF	A tree with at least one PRF present, further categorised based on Table 2-2.

- 2.1.2. Trees with PRFs were further categorised to provide information on the nature of their suitability for roosting bats as set out in **Table 2-2**.

Table 2-2 - Guidelines for categorising the potential suitability of PRFs for bats (Collins, J (ed.), 2023)

Suitability	Description
PRF-I	PRF is only suitable for individual bats or very small numbers of bats either due to the size or the lack of suitable surrounding habitats.
PRF-M	PRF is suitable for multiple bats and therefore may be used by a maternity colony.

- 2.1.3. Of the trees identified to be affected by the Scheme as suggested by the tree removal plan (WSP, 2018), trees categorised as PRF-I in the PBRA were not recommended for further surveys but would be subject to soft-felling under supervision of a qualified ecologist.
- 2.1.4. A total of 40 trees identified as PRF-M or FAR in the PBRA were initially found to be impacted by the Scheme. However, upon review, only 35 trees were confirmed to lie within the works footprint. Consequently, the following 35 trees were subject to further survey as detailed in this report and summarised in **Table 2-3**.

Table 2-3 - Summary of trees impacted by Scheme development which require further survey

Suitability – PBRA results	Tree Count	Tree Number
FAR	1	T32
PRF-M	34	N19, N20, N21, N22, N23, N24, N25, N26, N27, N30, N31, N39, T02, T03, T04, T05, T07, T08, T09, T10, T11, T12, T17, T18, T19, T22, T23, T24, T36, T37, T44, T47, T48, T50

2.2 UPDATED PRELIMINARY BAT ROOST ASSESSMENT

- 2.2.1. All 35 trees identified as PRF-M or FAR, and identified as being impacted by the Scheme, were subject to an updated inspection to enable an assessment of their current potential to support bat roosts, and to search for evidence indicating their current or historic use by roosting bats.
- 2.2.2. A visual inspection of the exterior of trees, assisted by binoculars, was completed by a Level 2 licence holder or accredited agent to search for features which may provide potential roosting opportunities for bats. Where suitable features were noted, their location and a brief description of their character was recorded. Additionally, each feature was visually inspected for evidence indicating use by roosting bats such as droppings, urine staining, and scratch marks/characteristic staining (from fur oils).
- 2.2.3. Based on the results of this assessment, the roosting suitability of the trees was either confirmed, upgraded or downgraded accordingly to provide the most accurate representation of suitability for roosting bats. Trees N19, N20, N21, N23, T11 and T32 were reassessed as PRF-I at this stage and not subject to further at height or emergence surveys.

2.3 AT-HEIGHT INSPECTION OF TREES

- 2.3.1. A total of 29 trees identified as having potential to support multiple bats based on the results of the updated PBRA (detailed above) were taken forward for at-height inspections. Five of these trees (N22, N31, N39, T03, and T44) were deemed unsuitable for at-height inspections due to health and safety concerns about the condition of these trees.
- 2.3.2. During the at-height surveys (survey dates given in **Table 2-4**), previously identified PRFs were checked using climbing ropes and equipment, a high-powered torch and endoscope. Where suitable features were noted, their location and a brief description of their character was recorded. Each feature was closely inspected for evidence indicating use by roosting bats such as droppings, urine staining and scratch marks / characteristic staining (from fur oils), or the presence of bats.
- 2.3.3. Based on the results of these at-height inspections, the roosting suitability of the trees was either confirmed, upgraded or downgraded accordingly to provide the most accurate representation of suitability for roosting bats.

2.4 BAT DUSK EMERGENCE SURVEY

- 2.4.1. Five trees (N22, N31, N39, T03, and T44) identified as having bat roosting potential to support multiple bats, and deemed unsafe for climbed inspection, were subject to dusk emergence surveys to watch and listen for bats emerging from the roost, if present. Surveyor locations were utilised to fully cover the potential roosting features present.
- 2.4.2. The surveyors used Elekon M and M2 bat detectors to listen to and record echolocation calls of bats observed. Infra-red (IR) cameras (Canon XA11 HD Camcorders with two infra-red illuminating lights) were also used to record the features during the survey to ensure bats were not missed during times of low light (Bat Conservation Trust, 2022). The cameras were positioned adjacent to the tree and IR illuminators placed either side of the surveyor and camera at an angle so that the PRFs were 'cross-lit'.
- 2.4.3. During the survey, surveyors mapped the flight-lines used by any bats observed and noted any features used by the bats to exit the trees. Incidental records of bat activity in the vicinity of the surveyor locations were also collected.
- 2.4.4. The level of survey effort employed was proportional to the level of potential for roosts to be present, with the number and timing of survey visits is shown in **Table 2-5** which are based on best practice guidance (Collins, J (ed.), 2023). Surveyor locations were utilised to fully cover the PRFs on all suitable trees. The dusk emergence surveys began 15 minutes before sunset and continued for at least 90 minutes after sunset.

2.5 DATES OF SURVEY AND PERSONNEL

At-height inspection

- 2.5.1. Three survey visits for each tree were undertaken during the active bat season (March to October inclusive) and led by an experienced surveyor (Natural England survey licence number: 2019-39048-CLS-CLS) including appropriate accreditation of agent/assistant as required) due to the risk of encountering live bats during the survey. The lead surveyor has over five years' experience of ecological survey, including extensive bat survey (including aerial survey) experience.
- 2.5.2. A summary of at-height inspection survey dates for each tree is provided in **Table 2-4**. Where a tree was downgraded to PRF-I or NONE after Visit 1, a second or third visit was no longer required.

Table 2-4 - At-height inspection survey dates

Tree Number	Survey date		
	Visit 1	Visit 2	Visit 3
N24	10/06/2024	N/A	N/A
N25	17/07/2024	12/08/2024	06/09/2024
N26	10/06/2024	N/A	N/A

Tree Number	Survey date		
	Visit 1	Visit 2	Visit 3
N27	10/06/2024	N/A	N/A
N30	10/06/2024	17/07/2024	N/A
T02	10/06/2024	17/07/2024	12/08/2024
T04	10/06/2024	17/07/2024	12/08/2024
T05	10/06/2024	17/07/2024	12/08/2024
T07	10/06/2024	17/07/2024	12/08/2024
T08	10/06/2024	17/07/2024	12/08/2024
T09	10/06/2024	N/A	N/A
T10	10/06/2024	N/A	N/A
T12	10/06/2024	17/07/2024	12/08/2024
T17	10/06/2024	17/07/2024	12/08/2024
T18	10/06/2024	17/07/2024	12/08/2024
T19	10/06/2024	N/A	N/A
T22	10/06/2024	N/A	N/A
T23	11/06/2024	N/A	N/A
T24	11/06/2024	N/A	N/A
T36	11/06/2024	N/A	N/A
T37	11/06/2024	N/A	N/A

Tree Number	Survey date		
	Visit 1	Visit 2	Visit 3
T47	12/06/2024	N/A	N/A
T48	12/06/2024	12/08/2024	06/09/2024
T50	12/06/2024	N/A	N/A

Dusk Emergence

2.5.3. The dusk emergence surveys were undertaken by a team of experienced bat surveyors and the lead surveyor has five years' experience of ecological survey, including extensive bat survey experience. Each of the surveyors has experience in undertaking bat emergence surveys with using IR as night vision aids.

2.5.4. Details of the surveys for each tree are provided in **Table 2-5**.

Table 2-5 – Dusk emergence survey dates

Tree Reference	Bat Roosting Suitability	No. Survey Visits Required	Survey Details		
			Visit No.	Dates	No. of surveyors
N22	PRF-M	3	1	31/07/2024	2
			2	13/08/2024	2
			3	02/09/2024	2
N31	PRF-M	3	1	19/08/2024	2
			2	09/09/2024	2
			3	24/09/2024	2
N39	PRF-M	3	1	19/08/2024	2
			2	09/09/2024	2
			3	24/09/2024	2
T03	PRF-M	3	1	19/08/2024	2
			2	09/09/2024	2

Tree Reference	Bat Roosting Suitability	No. Survey Visits Required	Survey Details		
			Visit No.	Dates	No. of surveyors
T44	PRF-M	3	3	24/09/2024	2
			1	23/07/2024	2
			2	05/08/2024	2
			3	28/08/2024	2

2.6 DATA ANALYSIS

- 2.6.1. Sound files were checked using Wildlife Acoustics Kaleidoscope-Pro™ version 5.4.2 where unknown bats were noted during the surveys and confirmed to species or species group level by a competent analyst. Where possible, bat calls are identified to species level. However, species of the genus *Myotis* are grouped together in most cases as their calls are similar in structure and have overlapping call parameters, making species identification problematic (Russ, 2013). For *Pipistrellus* species, the following criteria based on measurements of peak frequency are used to classify calls:
- common pipistrelle *Pipistrellus pipistrellus* ≥ 42 and <49 KHz;
 - soprano pipistrelle *Pipistrellus pygmaeus* ≥ 51 KHz;
 - Nathusius' pipistrelle *Pipistrellus nathusii* <39 KHz;
 - common/ soprano pipistrelle ≥ 49 and <51 KHz; and
 - common/ Nathusius' pipistrelle ≥ 39 and <42 KHz.
- 2.6.2. In addition, the following categories are used for calls which cannot be identified with confidence due to the overlap in call characteristics between species or species groups.
- *Myotis/Plecotus* sp.
 - *Nyctalus* sp. (either Leisler's bat *Nyctalus leisleri* or common noctule *Nyctalus noctula*).
 - Serotine *Eptesicus serotinus*/Leisler's.
 - Serotine/*Plecotus* sp.
- 2.6.3. Once the surveys were completed, camera footage from the IR and thermal cameras was reviewed for any bats emerging from the trees where it had been noted by the surveyor that a possible emergence had occurred.

2.7 NOTES AND LIMITATIONS

- 2.7.1. Five trees, namely N01, N02, N03, N04, and T51, were scoped out from further survey following a review of the Scheme impact areas, after clarification on site as being outside the impact area. Hence, no surveys were carried out for these trees.

- 2.7.2. Best practice indicates that survey data is generally considered valid for up to 18 months (CIEEM, 2019). The data presented in this report enables an evaluation of bat activity within the Site at the time of survey.
- 2.7.3. Absence of roosting bats from potential roosting features in trees is difficult to confirm conclusively due to regular roost switching behaviour of crevice dwelling species and faster rates of degradation for droppings in trees when compared to buildings. Specific survey limitations associated with trees include restricted observation from foliage, lack of light and height of trees (Collins, 2023), however, these specific limitations were not present within the current survey effort. The conclusions drawn in this report should be considered as a reasonable likelihood of presence or absence where appropriate.

3 RESULTS

3.1 OVERVIEW

- 3.1.1. Out of the 40 trees identified for further surveys in the PBRA, five were scoped out as they were found to lie outside the impact areas of the Scheme. Hence only 35 trees were subjected to the surveys as detailed in this report.
- 3.1.2. Details of all survey work undertaken, and the resultant final roost categorisation for each tree is presented at **Table A-1**, Appendix A, and shown in **Figure 3**. A summary of the results is given below.

3.2 UPDATED PRELIMINARY BAT ROOST ASSESSMENT

- 3.2.1. Following the updated PBRA, five trees (N19, N20, N21, N23, and T11) were downgraded from PRF-M to PRF-I, and one tree (T32), initially marked as FAR, was re-assessed to PRF-I. These trees were not subjected to further inspections. The other 29 trees were confirmed as having the same suitability as in the previous PBRA.

3.3 AT-HEIGHT INSPECTION OF TREES

- 3.3.1. Five trees (all PRF-M) initially recommended for at-height inspection were not accessible due to health and safety concerns and were instead recommended for dusk emergence surveys.
- 3.3.2. Climbed inspections were undertaken of the remaining 24 trees initially assigned as PRF-M. No bats or evidence of roosting bats were recorded during the at-height inspections.
- 3.3.3. Of the 24 trees inspected, the suitability of 11 trees were confirmed as PRF-M (no change), nine trees were downgraded to PRF-I and four were downgraded to NONE. A summary of these results is provided in **Table 3-1**.

Table 3-1 – Summary of tree suitability for roosting bats after at-height inspection surveys

Bat Roost Suitability	Tree Count	Tree Number
NONE	4	T10, T19, T37, T50
PRF-I	9	N24, N26, N27, T09, T22, T23, T24, T36, T47
PRF-M	11	N25, N30, T02, T04, T05, T07, T08, T12, T17, T18, T48
Unsuitable for at-height inspection	5	N22, N31, N39, T03, T44

3.4 BAT DUSK EMERGENCE SURVEY

- 3.4.1. Five trees, namely N22, N31, N39, T03, and T44, were subject to three dusk emergence surveys. No bats were recorded emerging from any of the trees that have been surveyed and therefore the likely absence of bat roosts from these trees is concluded.

3.4.2. Low incidental bat activity was recorded on Site throughout the surveys. Five species were incidentally recorded likely commuting but potentially foraging around the Site during the surveys:

- common pipistrelle,
- Soprano pipistrelle,
- *Myotis* sp.,
- common noctule,
- Leisler's bat.

3.4.3. A summary of the incidental results is provided in **Table B-1**, Appendix B along with meteorological data collected by the surveyors during the dusk emergence surveys.

3.5 FINAL SUITABILITY OF TREES SURVEYED

3.5.1. A summary of final suitability of the 35 trees surveyed in this assessment, and understood to be impacted by the Scheme, is given in **Table 3-2**.

Table 3-2 - Final suitability of trees surveyed

Tree Suitability	Tree Count	Tree Reference
NONE	4	T10, T19, T37, T50
PRF-I	15	N19, N20, N21, N23, N24, N26, N27, T09, T11, T22, T23, T24, T32, T36, T47
PRF-M	16	N22, N25, N30, N31, N39, T02, T03, T04, T05, T07, T08, T12, T17, T18, T44, T48

4 Implications for development

4.1 OVERVIEW

- 4.1.1. In the absence of mitigation, the Scheme has the potential to affect roosting bats, through direct effects upon removal of potential roost features and degradation of the habitat used by roosting bats. The legislation and planning policy relevant to bats and their roosts set out below is therefore relevant.
- 4.1.2. Recommendations have been included in Section 5 to ensure compliance with the legislation set out below.

4.2 LEGISLATION

- 4.2.1. Bats and their roosts are afforded a high level of protection under the Conservation of Habitats and Species Regulations 2017 (as amended) (the 'Habitats Regulations'). The legislation means that it is an offence to:
- *deliberately capture, injure or kill a wild bat;*
 - *deliberately disturb wild bats; 'disturbance of animals includes in particular any disturbance which is likely:*
 - (a) to impair their ability —*
 - (i) to survive, to breed or reproduce, or to rear or nurture their young; or*
 - (ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate; or*
 - (b) to affect significantly the local distribution or abundance of the species to which they belong.'*
 - *damage or destroy a breeding site or resting place used by this species.*
- 4.2.2. Protection is also afforded under the Wildlife and Countryside Act 1981 (as amended) with respect to disturbance of animals when using places of shelter, and obstruction of access to places of shelter.
- 4.2.3. Due to the high level of protection afforded to bats and their habitat, mitigation for this species is governed by a strict licensing procedure administered by Natural England (normally, planning permission must be obtained before a licence can be sought). Licencing is subject to three tests, as defined under the Habitats Regulations 2017 (as amended); these must also be applied by the planning authority before granting permission for activities affecting bats. For permission to be granted, the following criteria must be satisfied:
- The proposal is necessary *'to preserve public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment'*;
 - *'There is no satisfactory alternative'*; and
 - The proposals *'will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range'*.
- 4.2.4. Certain species of bats recorded during the emergence surveys, including soprano pipistrelle, are also listed as a Species of Principal Importance (SPI) for the Conservation of Biodiversity in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Under Section 40 of the NERC Act (2006), public bodies (including local planning authorities) have a duty

to have regard for the conservation of SPI when carrying out their functions, including determining planning applications.

- 4.2.5. In addition, barbastelle *Barbastella barbastellus* bat is listed under Annexe II of the Habitats Directive, which places a requirement on member states to designate Special Areas of Conservation (SACs) for such species, in order to contribute to a European-wide ecological network of protected sites. No SACs with barbastelle listed as a qualifying feature for designation are present within 30km of the Survey Area.

4.3 PLANNING POLICY

- 4.3.1. At the national level, the National Planning Policy Framework (NPPF) (2023) forms the basis for planning system decisions with respect to conserving and enhancing the natural environment, including bats. The ODPM circular 06/2005 also provides supplementary guidance, including confirmation that *'the presence of a protected species is a material consideration when a planning authority is considering a development proposal'*.
- 4.3.2. The NPPF (2023) makes clear the expectations for development to achieve biodiversity net gain, including references to net gains in biodiversity in the following sections:
- *'Planning policies and decisions should contribute to and enhance the natural and local environment by...(d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures'* (paragraph 174);
 - *'To protect and enhance biodiversity and geodiversity, plans should:...(b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity'* (paragraph 179); and
 - *'when determining planning applications, local planning authorities should apply the following principles: (a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused.'* (paragraph 180).
- 4.3.3. At a local level, Core Policy CP7 of the Wokingham Borough Core Strategy (2010) states that *'development which may harm habitats or, species of principal importance in England for nature conservation... will only be permitted if it has been clearly demonstrated that:*
- *the need for the proposal outweighs the need to safeguard the nature conservation importance;*
 - *No alternative site that would result in less or no harm is available which will meet the need; and*
 - *Mitigation measures can be put in place to prevent damaging impacts or appropriate compensation measures to offset the scale and kind of losses are provided.'*
 - *'ensure, where appropriate, habitat creation and enhancement within the road curtilage and seek such measures off-site, on land secured specifically for this purpose'; and*
 - *'limit the extent and intensity of lighting to the levels required for road safety.'*
- 4.3.4. Certain species of bats, including soprano pipistrelle, were also listed as priority species in the UK Biodiversity Action Plan (UKBAP). This was replaced by the UK Post-2010 Biodiversity Framework in 2012 which lists the UK's most threatened species and habitats and sets out targets and objectives for their management and recovery and was itself replaced by the UK Biodiversity Framework (JNCC and 4CBG, 2024) which aims to address the UK's commitments under the

Kunming-Montreal Global Biodiversity Framework (GBF). However, the UK BAP contains useful information on how to characterise important species assemblages and habitats which is still relevant. The priority species were identified as being the most threatened and therefore requiring conservation under the UKBAP.

- 4.3.5. Without appropriate measures, it is considered that the Scheme will contravene legislation and planning policy through the loss of trees with roost suitability and the loss of commuting and foraging habitat for bats. Mitigation, compensation and enhancement measures are recommended in Section 5 to enable the Scheme to be compliant with the above legislation and planning policy.

5 RECOMMENDATIONS

5.1 AVOIDANCE AND MITIGATION MEASURES

- 5.1.1. A confirmed bat roost has been identified in T42 as part of previous survey work undertaken to inform the planning application (WSP, 2019). It is understood that this tree will be retained under current designs and therefore no further inspections are required. Notwithstanding this, mitigation in relation to sensitive lighting as set out in 5.1.10 and 5.1.11 will be relevant to avoid disturbance impacts to this tree.
- 5.1.2. In the event the designs change to include the unavoidable loss of T42, a licence should be sought from Natural England prior to felling. This licence will include a detailed method statement setting out the appropriate mitigation measures and any required compensation measures. Given the time which has elapsed since the previous surveys, updated roost characterisation surveys would likely be required to inform the licence application, completed in the appropriate window (May to September inclusive).
- 5.1.3. While roosting bats are considered to be likely absent from the trees surveyed as part of this report, a number of the trees are suitable to support roosting bats and may be colonised in the future. Therefore, mitigation should be undertaken to avoid direct and indirect impacts to bats present on Site, as set out below.
- 5.1.4. Wherever possible, trees with bat roosting suitability should be retained as part of the Scheme, to avoid impacts. Where it is not possible to avoid impacts to trees with bat roosting suitability (either PRF-I or PRF-M), these should be subject to supervised soft-felling as set out below.

SUPERVISED SOFT FELLING INCLUDING PRE-WORKS INSPECTION

- 5.1.5. Whilst the number of surveys undertaken to date is sufficient to establish the likely absence of bats within the trees surveyed on Site, there will be a period of time between the surveys and when the trees may be removed. As bats use PRFs within trees on a transient basis, and the PRFs in the trees are intact and suitable to support roosting bats, there is the potential for the trees to be used by roosting bats in the future. As such, immediately prior to the removal or management of trees with suitability to support roosting bats (PRF-I and PRF-M trees), an at-height inspection by a licenced bat ecologist, or an arborist under the direct supervision of the licenced ecologist, should be undertaken to enable a thorough assessment of PRFs for the presence of roosting bats.
- 5.1.6. If roosting bats are absent during the pre-works inspection, then these trees can be soft-felled (or limbs removed for crown management) by a suitably qualified arborist. In the event that the presence of a bat roost is highlighted at this stage, the roost must be left in-situ and works affecting the trees stopped immediately while a licence is sought from Natural England to permit works to proceed. The licence application would be subject to a detailed method statement.
- 5.1.7. It is recommended, where possible, works to remove trees with bat roosting suitability are undertaken outside of the maternity (May – August (inclusive)) or hibernation (November – February

(inclusive)) periods as these are sensitive periods for bats. As such, it is recommended that tree felling works are undertaken between September and October or March and April where possible¹.

- 5.1.8. A summary of trees identified to require supervised soft felling is given in **Figure 4** and **Table A-1**, Appendix A.
- 5.1.9. Following the principle of no net loss of roosting opportunity and in line with best practice guidance (Collins, 2023), bat boxes should be provided on suitable retained trees in compensation for PRFs lost. The numbers and types of bat boxes that are required in compensation should be determined by the available roost resource affected, not only by the number of confirmed roosts that will be lost (Reason and Wray, 2023). The number of PRFs for each tree can be found in **Table A-1**, Appendix A.

SENSITIVE LIGHTING

- 5.1.10. Lighting both during the construction phase and operational phase of the Scheme could have a negative effect upon foraging and commuting bats. Guidance Note 08/23 states that *“in all cases where impacts from lighting on bats are possible, the Local Planning Authority will require some form of documentation to be produced by the lighting engineer, either in collaboration with the ecologist, or working to the constraints set out within the bat habitat plan...”* (ILP, 2023). As such, a sensitive lighting regime is required for any new temporary or permanent lighting associated with the Scheme, based on principles set out in good practice guidance (ILP, 2023). Such a regime is recommended to include the following measures:
 - Using the minimum light levels necessary for the relevant task / function, this may equate to reducing light intensity, and/or using the minimum number or light sources or minimum column height.
 - Use narrow spectrum light sources where possible to lower the range of species affected by lighting, specifically avoiding shorter wavelength blue light, using instead warm/neutral colour temperature <2,700 kelvin lighting (ILP, 2023).
 - LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.
 - Use light sources which emit minimal ultraviolet light to avoid attracting night-flying insects which in turn may attract bats to the light.
 - Ensure that any temporary or permanent lighting used during the construction or operational phases of the Scheme does not directly illuminate retained trees and vegetation, thus ensuring maintenance of dark corridors for bats.
 - A buffer zone divided into smaller zones of increasing illuminance limits from the Scheme to habitats of lower importance and to key bat habitat. This has the effect of a gradual decrease in lighting from the developed zone.
 - Only if all other options have been explored, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed.

¹ This may pose a risk of delays due to nesting birds, depending on the weather conditions

- 5.1.11. Where possible, consideration should also be given to varying the lighting levels. For example, it may be possible to reduce lighting levels or perhaps even switch installations off after certain times. This use of “adaptive lighting” can tailor the installation to suit human health and safety as well as wildlife needs (BCT, 2014).

5.2 ECOLOGICAL ENHANCEMENT MEASURES

- 5.2.1. Planning policy promotes the inclusion of ecological enhancement. Accordingly, it is recommended that consideration is given to the following enhancement measures:
- Inclusion of nectar-rich plant species in soft landscaping areas that are attractive to night-flying insects to enhance foraging opportunities for bats;
 - Creation of linear vegetation (treelines and hedgerows) within the landscaping scheme to provide additional commuting corridors across the Site for bats;
 - Provision of standing waterbodies to provide an additional foraging resource for bats using the Site, which may benefit *Myotis* and *Nyctalus* bats in particular; and
 - Installation of additional bat boxes to suitable retained trees, which are buffered from the existing carriageway, to increase the roosting opportunities on Site for bats.

6 CONCLUSIONS

- 6.1.1. WSP has undertaken bat surveys of the Scheme comprising PBRA, at-height inspection, and dusk emergence survey. No bats or evidence of bats were identified in the trees surveyed, but incidental sightings of five bat species were made during the dusk emergence surveys.
- 6.1.2. The Scheme will result in the loss of suitable foraging and commuting habitat for bats, as well as loss of some PRFs through felling of trees with bat roosting suitability. Provided that the recommendations for mitigation and enhancement are adhered to, the Scheme should be compliant with legislation and planning policy regarding bats.
- 6.1.3. Due to the intervening time between the surveys and commencement of the Scheme, all trees which have bat roost suitability should have a pre-works inspection immediately prior to felling, to confirm the presence or absence of bats. If roosting bats are absent during the pre-works inspection, then these trees can be soft-felled by a suitably qualified arborist. If the presence of a bat roost is confirmed at this stage, the roost must be left in-situ and works affecting the trees stopped immediately and a licence should be sought from Natural England to permit works to proceed.
- 6.1.4. Recommendations for a sensitive lighting design during the construction and operation of the Scheme have been made to limit any negative effects to roosting, foraging and commuting bats present in the area. This is to ensure legislation and policy compliance for bats.

7 REFERENCES

7.1 PROJECT REFERENCES

- WSP (2018) SWDR Spine Road & Western Gateway – Detailed Arboricultural Report
- WSP (2019) SWDR Spine Road & Western Gateway – Bat Survey Report
- WSP (2021) South Wokingham Distributor Road – Central section - Vol. 1 Environmental Statement Addendum - Main Text
- WSP (2024a) South Wokingham Distributor Road – Ecological Gap Analysis
- WSP (2024b) South Wokingham Distributor Road – Preliminary Bat Roost Assessment Report

7.2 TECHNICAL REFERENCES

- Bat Conservation Trust (2014). Artificial Lighting and Wildlife – Interim Guidance: Recommendations to help minimise the impact of artificial lighting.
- Bat Conservation Trust (2022) Interim Guidance Note: Use of night vision aids for bat emergence surveys and further comment on dawn survey.
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- HMSO (2005). Biodiversity and Geological Conservation – Statutory Obligations and Their Impact Within the Planning System. Office of the Deputy Prime Minister (ODPM) Circular 06/2005 HMSO, Norwich.
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- Wokingham Borough Council (2010). Wokingham Borough Core Strategy Local Plan.
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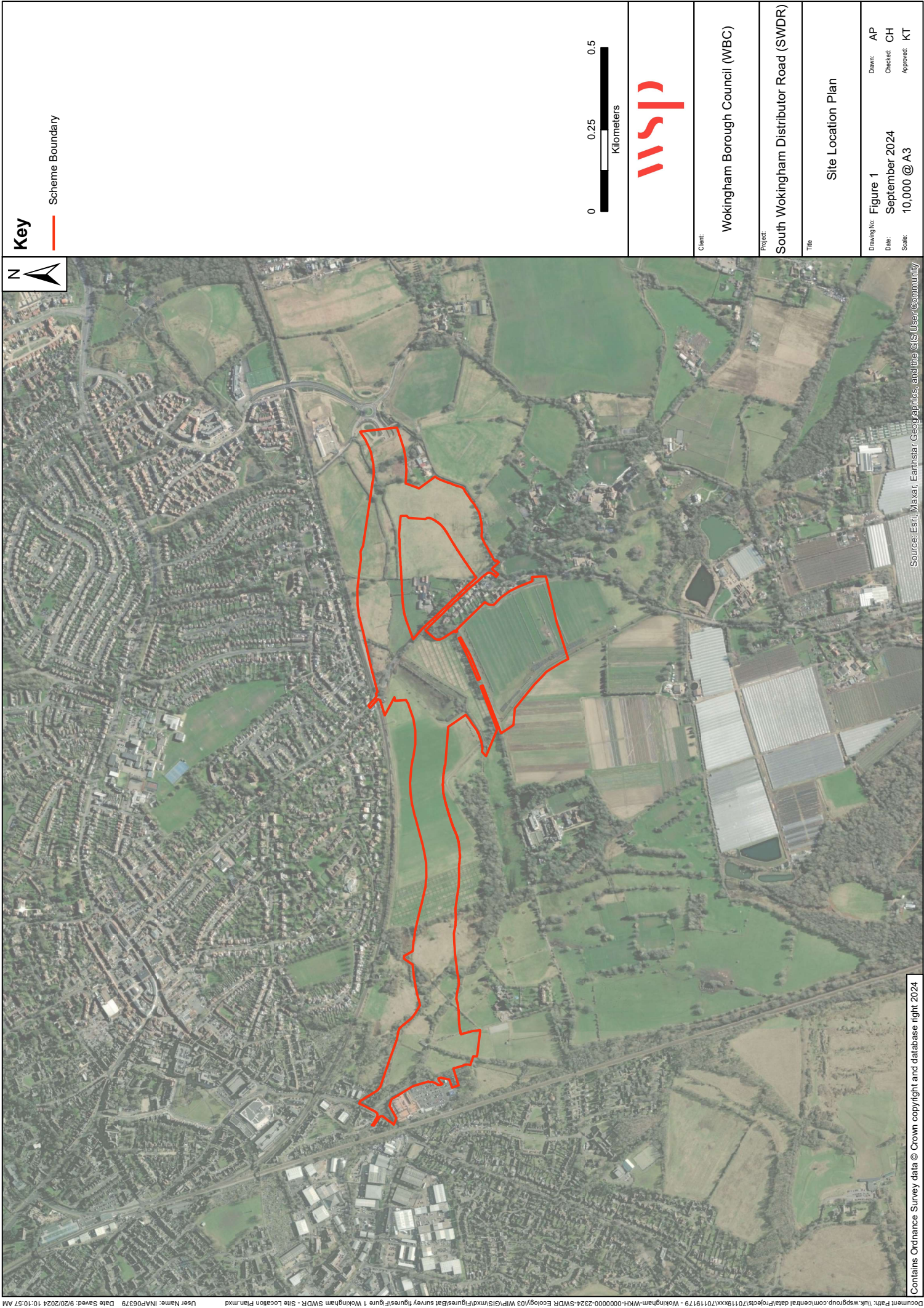
8 FIGURES

Figure 1 - Site Location Plan

Figure 2a to 2e – PBRA Results

Figure 3a to 3e – Bat Survey Results – Final Tree Suitability

Figure 4a to 4g – Supervised Precautionary Felling Requirement



Key

— Scheme Boundary

0 0.25 0.5
Kilometers



Client:

Wokingham Borough Council (WBC)

Project:

South Wokingham Distributor Road (SWDR)

Title

Site Location Plan

Drawing No: Figure 1

Drawn: AP

Date: September 2024

Checked: CH

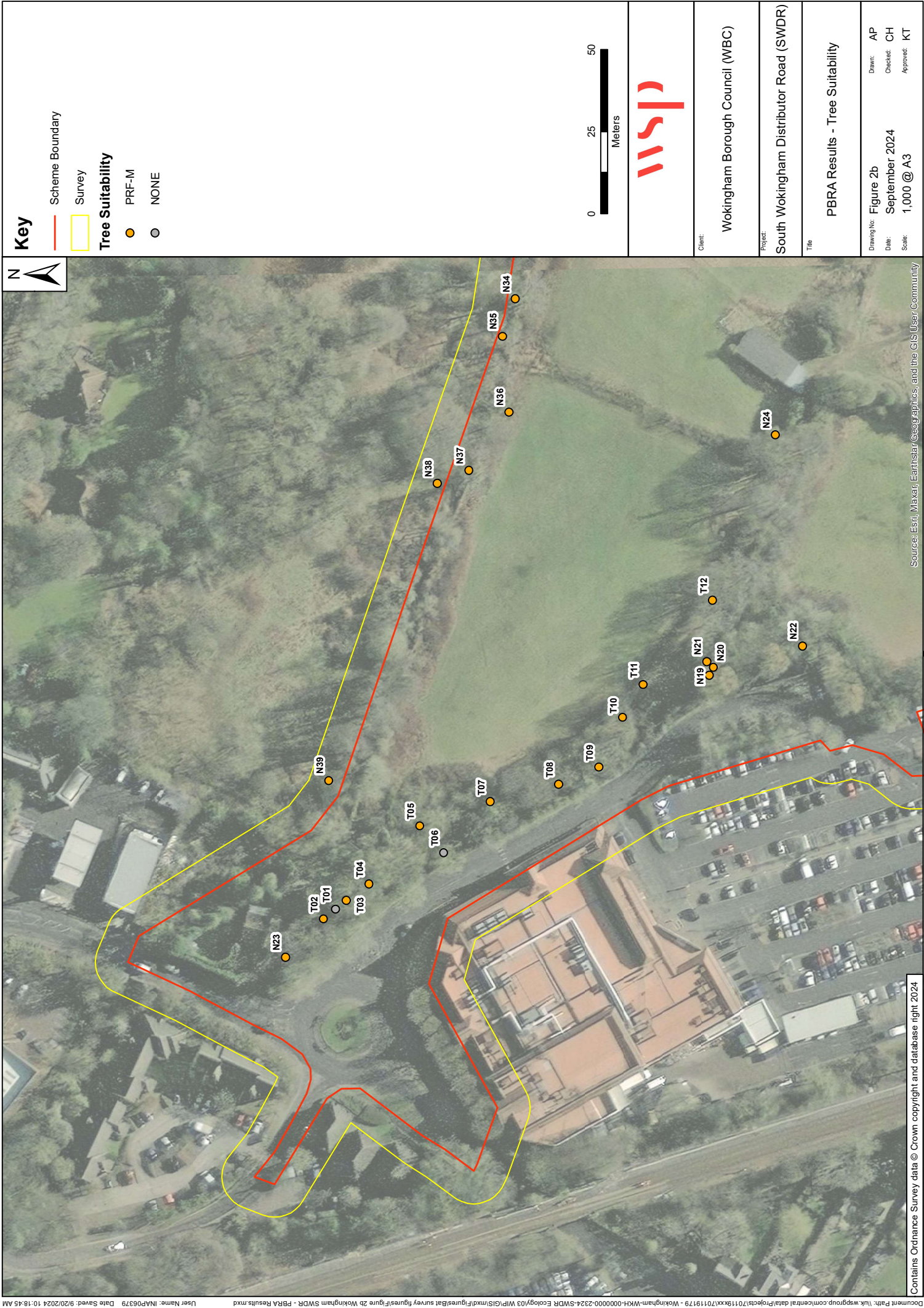
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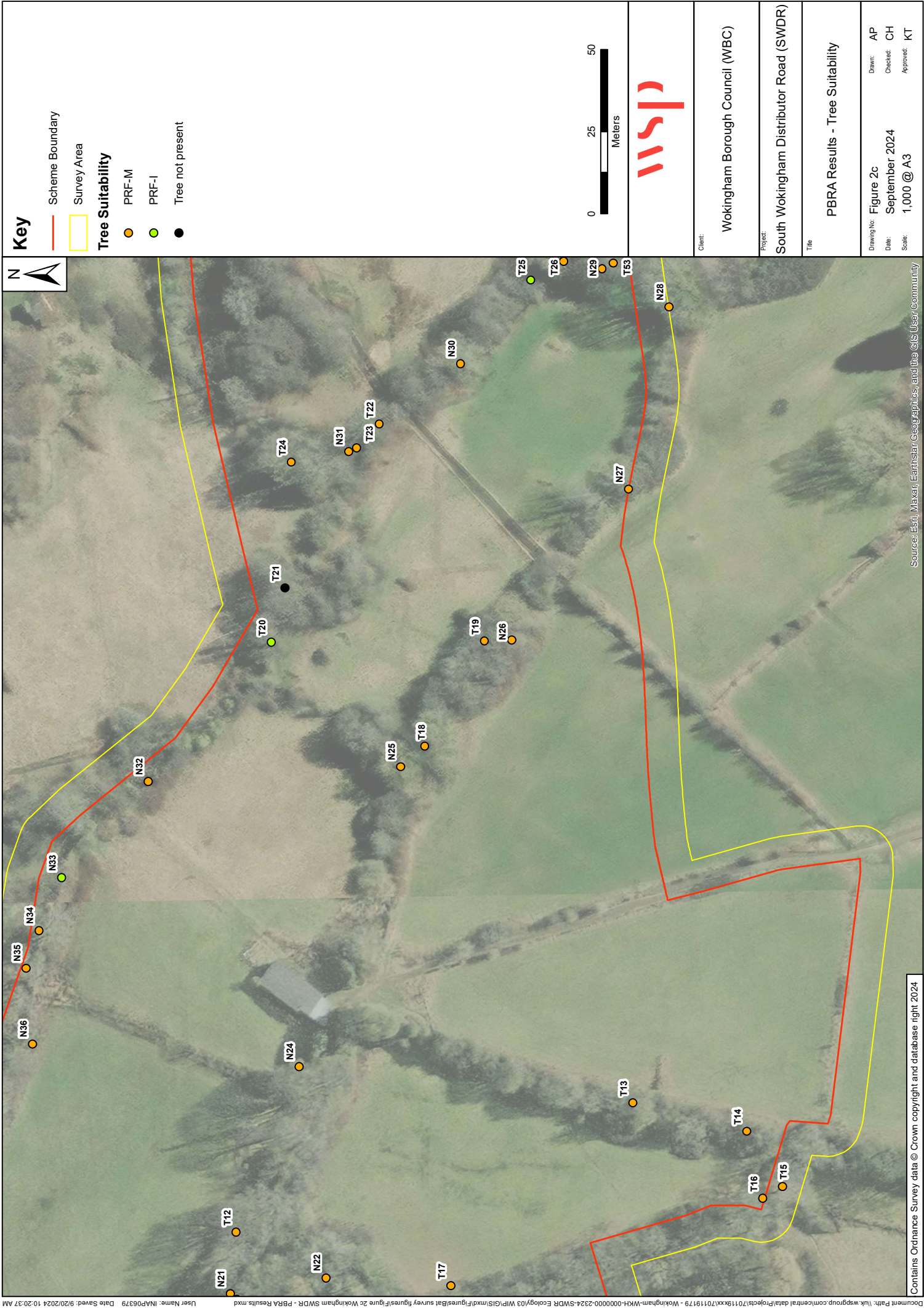
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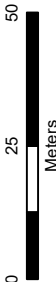
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Key

- Scheme Boundary
- Survey Area
- Tree Suitability**
 - PRF-M
 - PRF-I
 - Tree not present

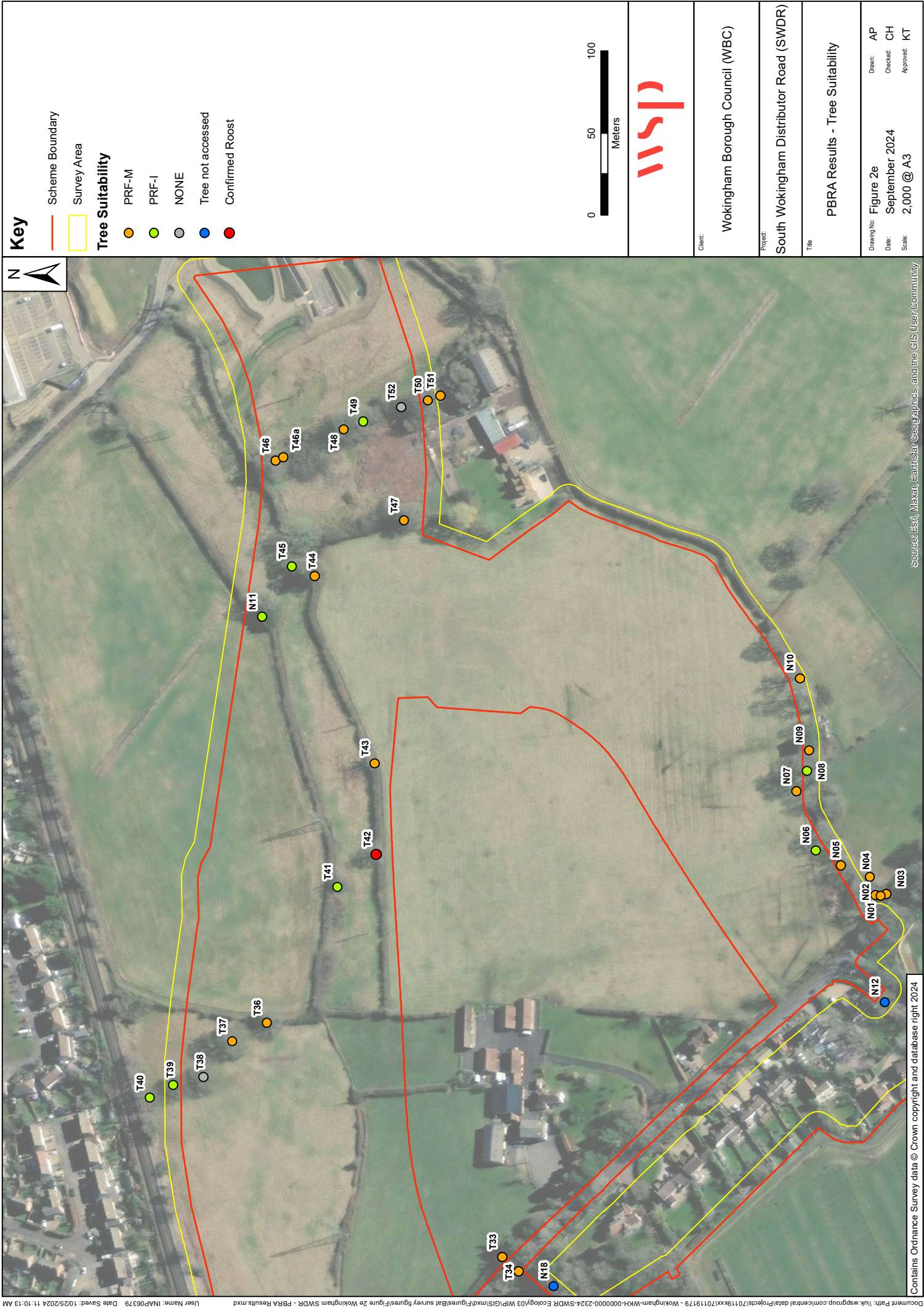


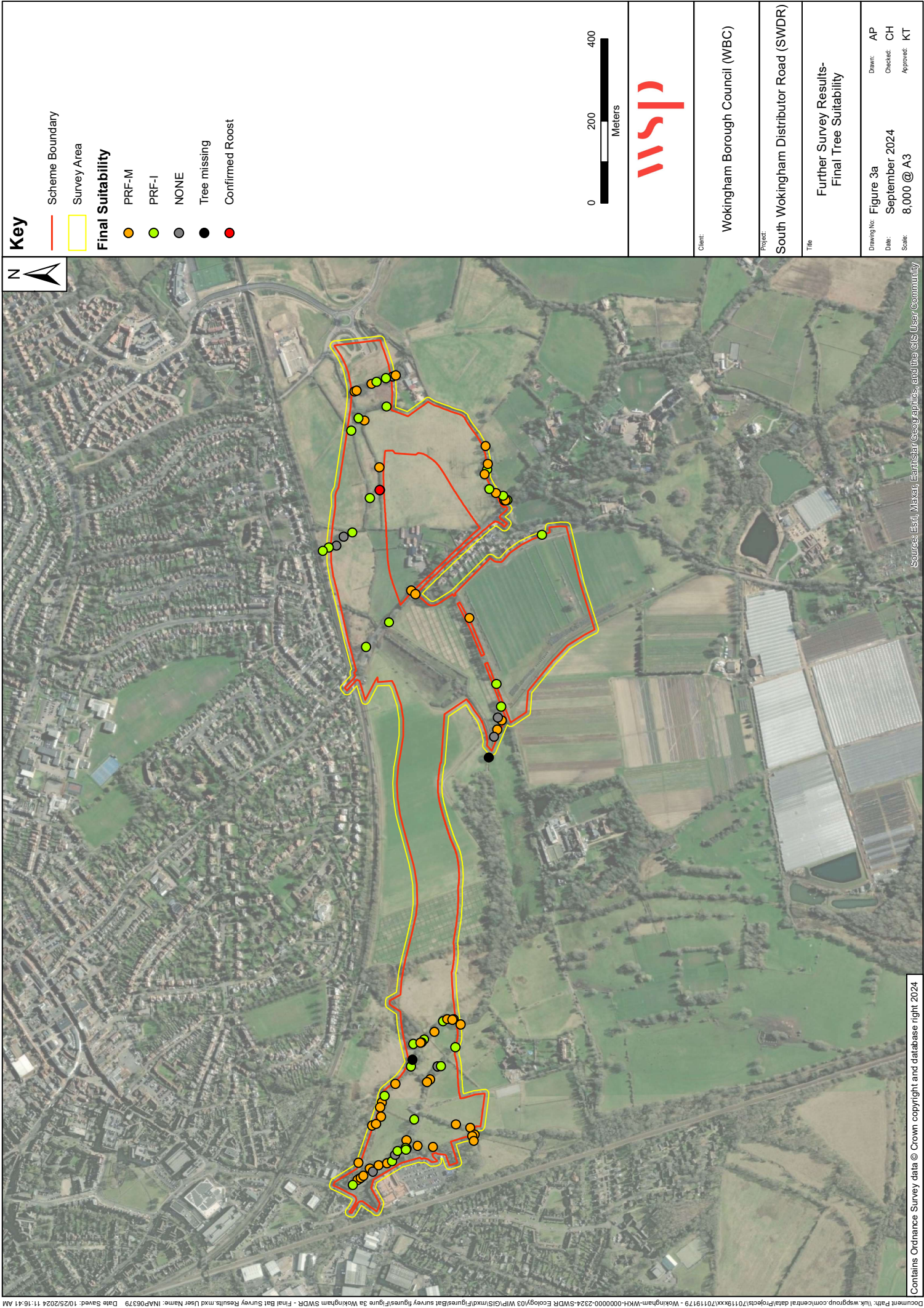
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Project:	South Wokingham Distributor Road (SWDR)
Title:	PBRA Results - Tree Suitability
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Approved:	KT

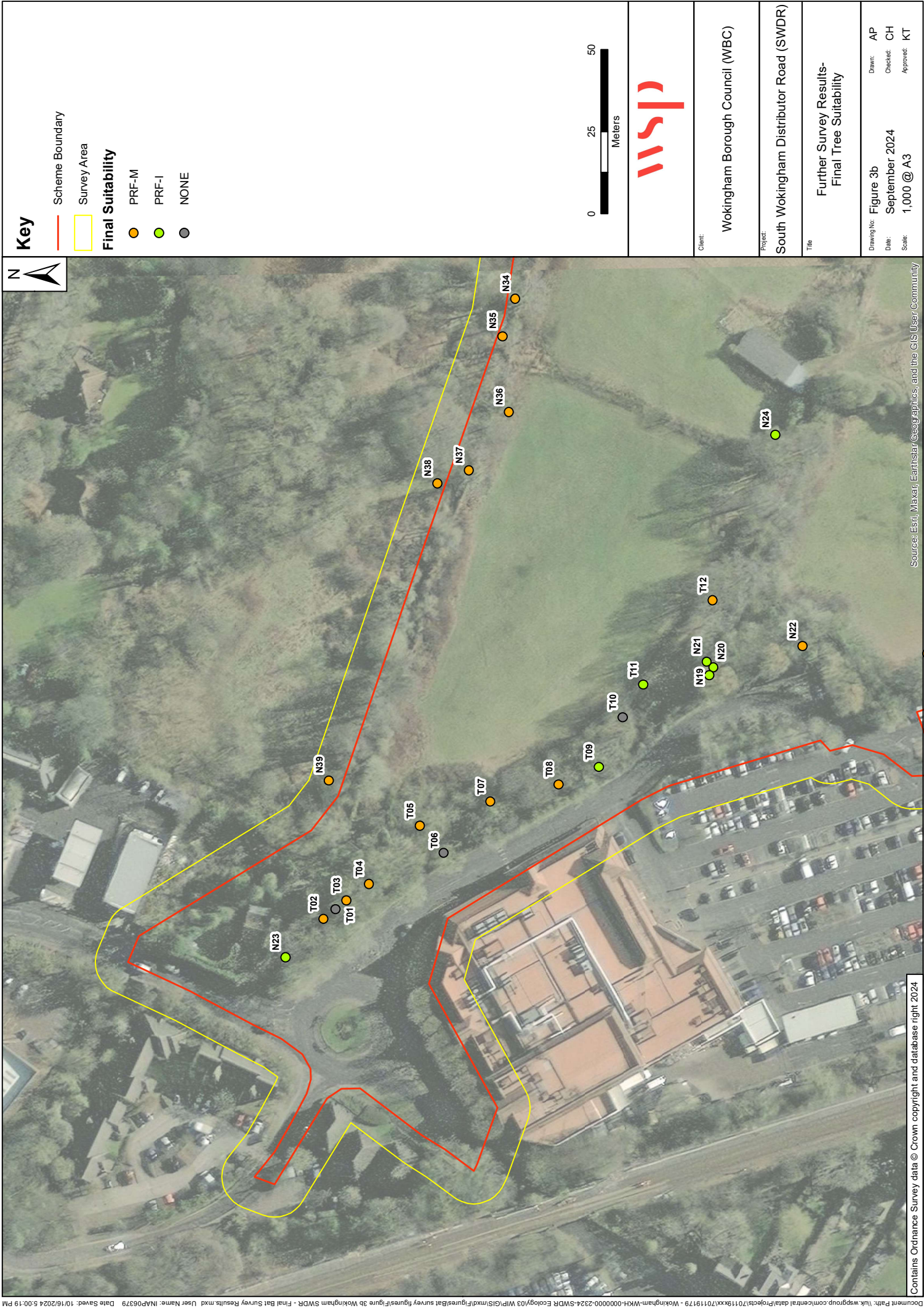
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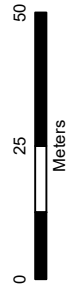






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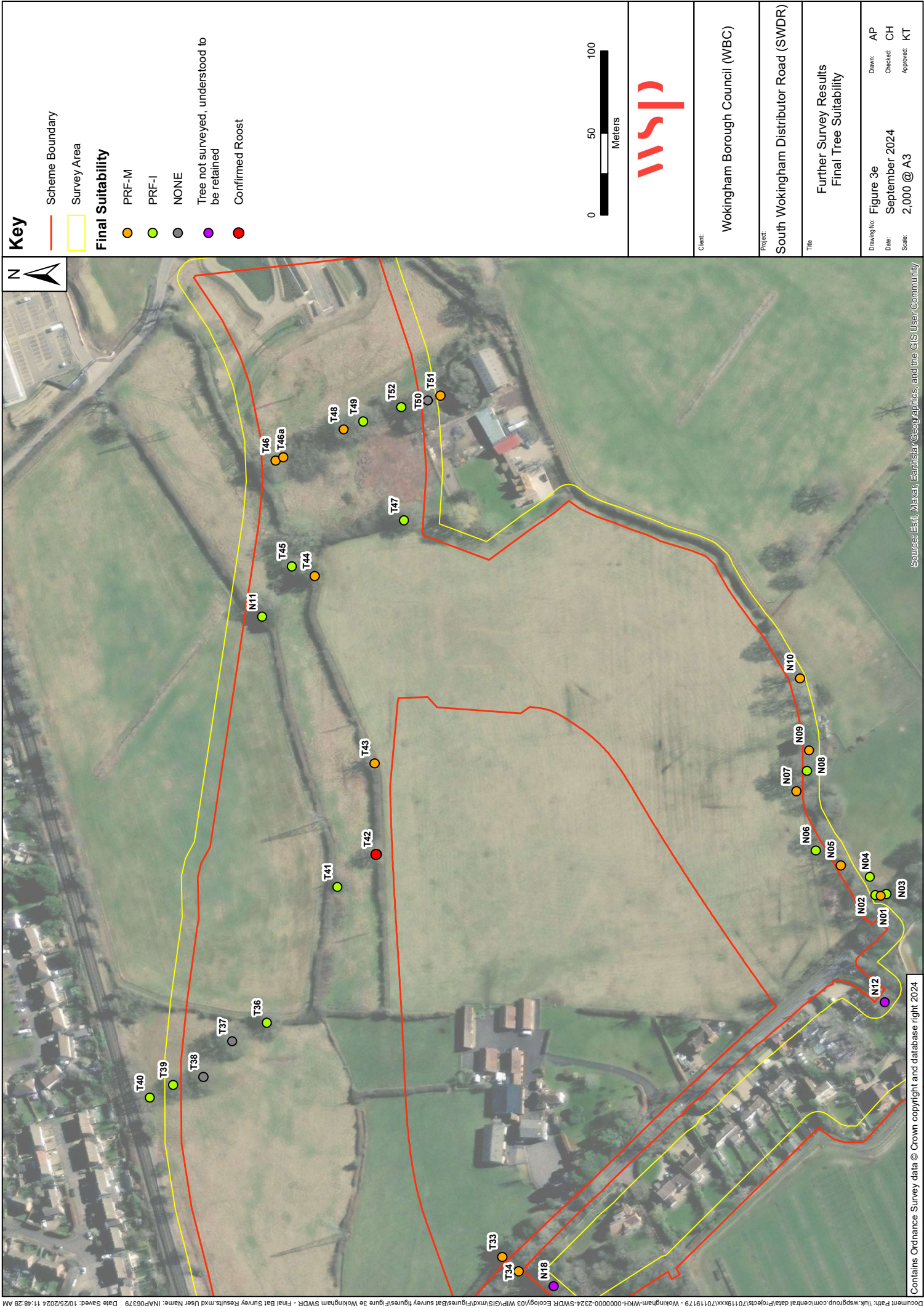
- Scheme Boundary
- Survey Area
- Final Suitability**
- PRF-M
- PRF-I
- NONE

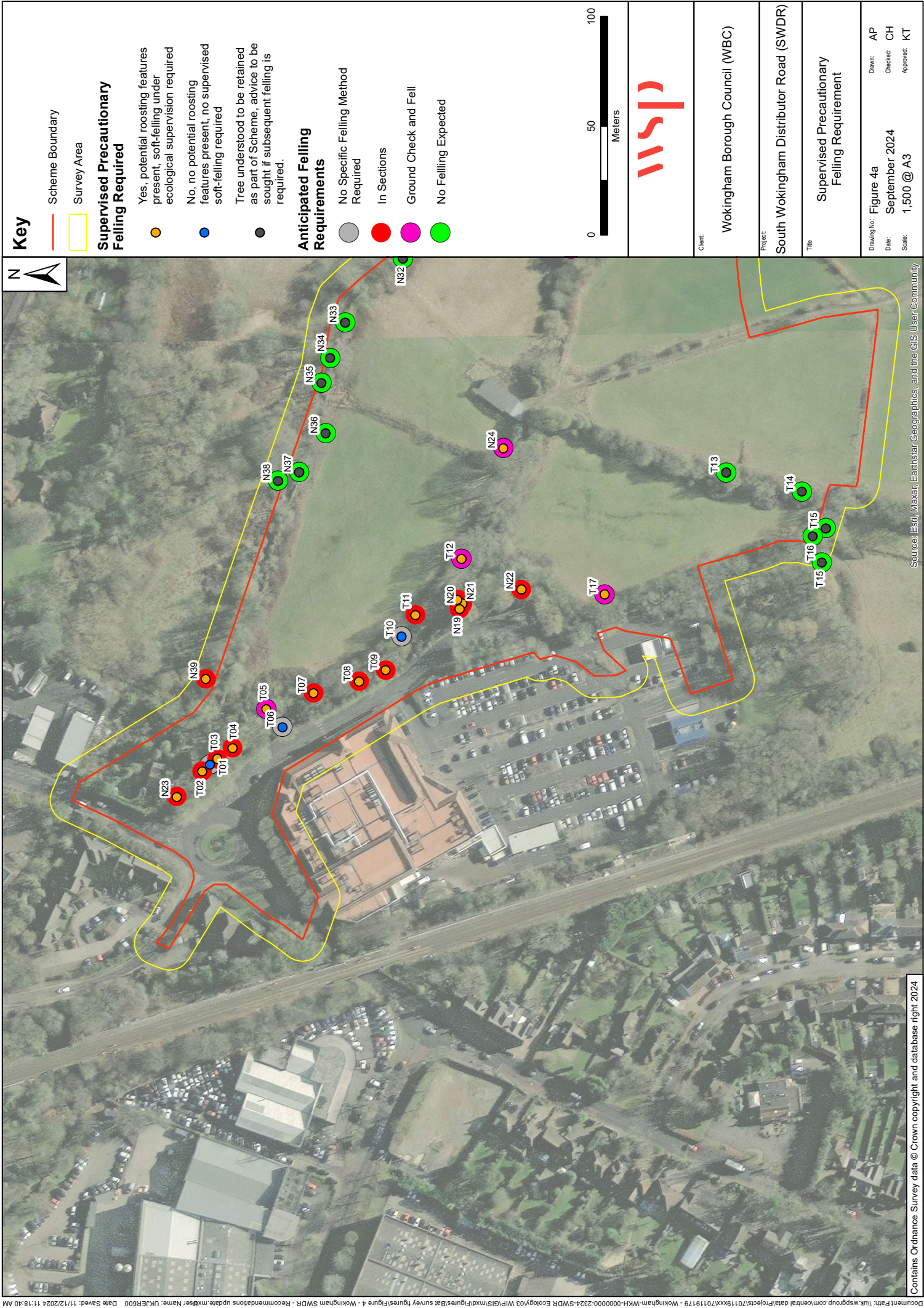


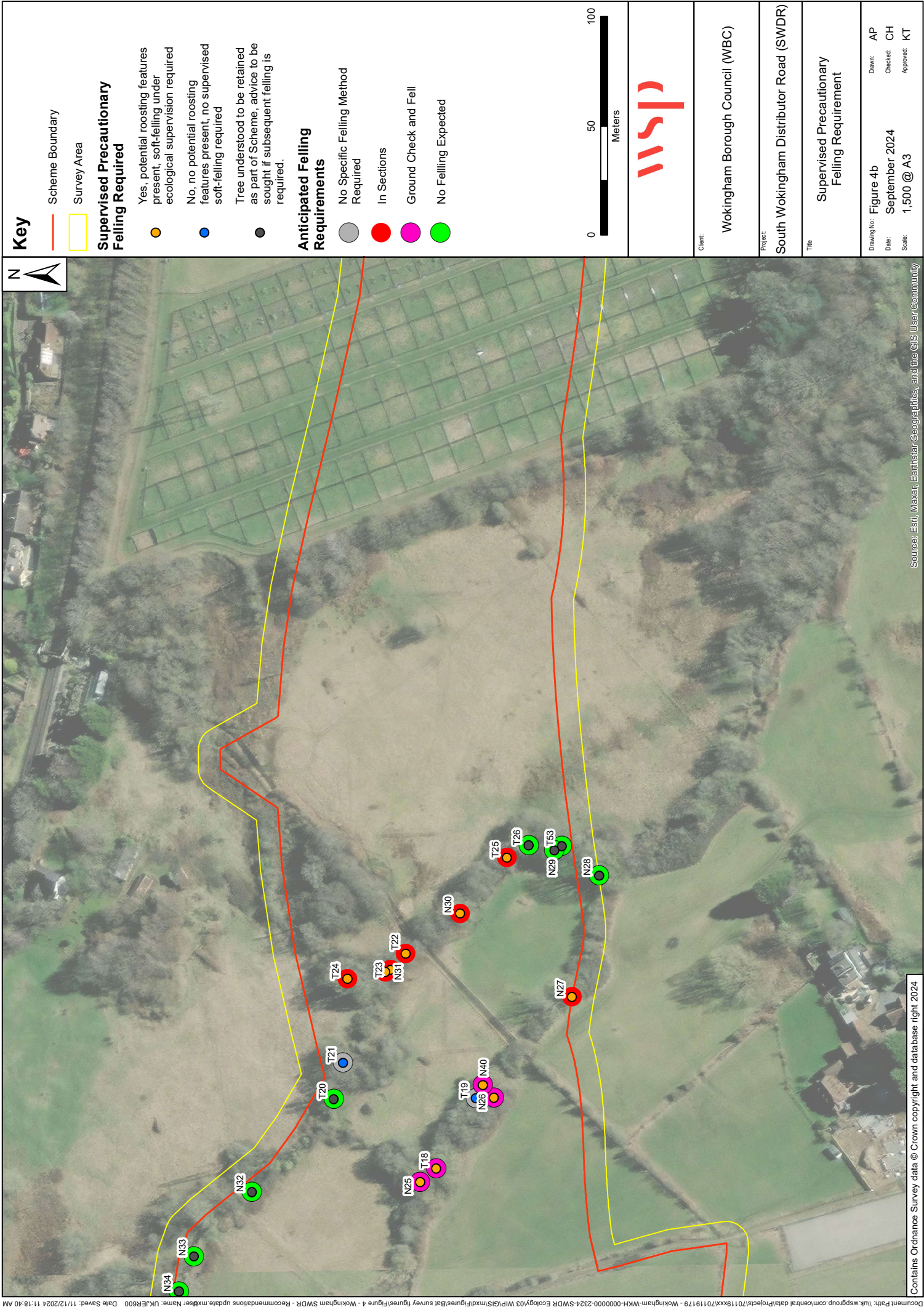
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Project:	South Wokingham Distributor Road (SWDR)
Title:	Further Survey Results- Final Tree Suitability
Drawing No:	Figure 3b
Date:	September 2024
Scale:	1,000 @ A3
Drawn:	AP
Checked:	CH
Approved:	KT











Key

- Scheme Boundary
- Survey Area

Supervised Precautionary Felling Required

- Yes, potential roosting features present, soft-felling under ecological supervision required
- No, no potential roosting features present, no supervised soft-felling required
- Tree understood to be retained as part of Scheme, advice to be sought if subsequent felling is required.

Anticipated Felling Requirements

- No Specific Felling Method Required
- In Sections
- Ground Check and Fell
- No Felling Expected



Client:

Wokingham Borough Council (WBC)

Project:

South Wokingham Distributor Road (SWDR)

Title:

Supervised Precautionary Felling Requirement

Drawing No: Figure 4b

Drawn: AP

Date: September 2024

Checked: CH

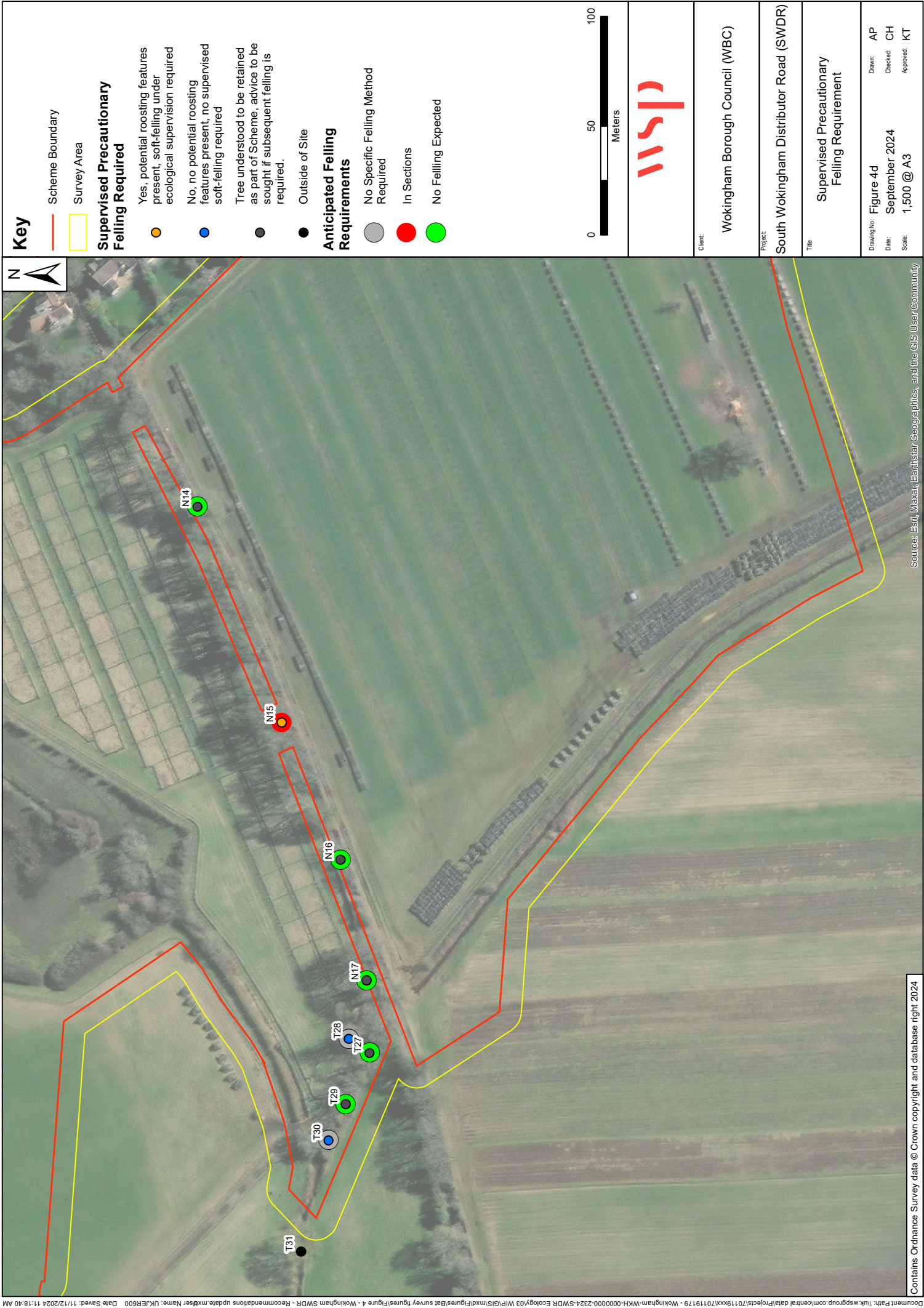
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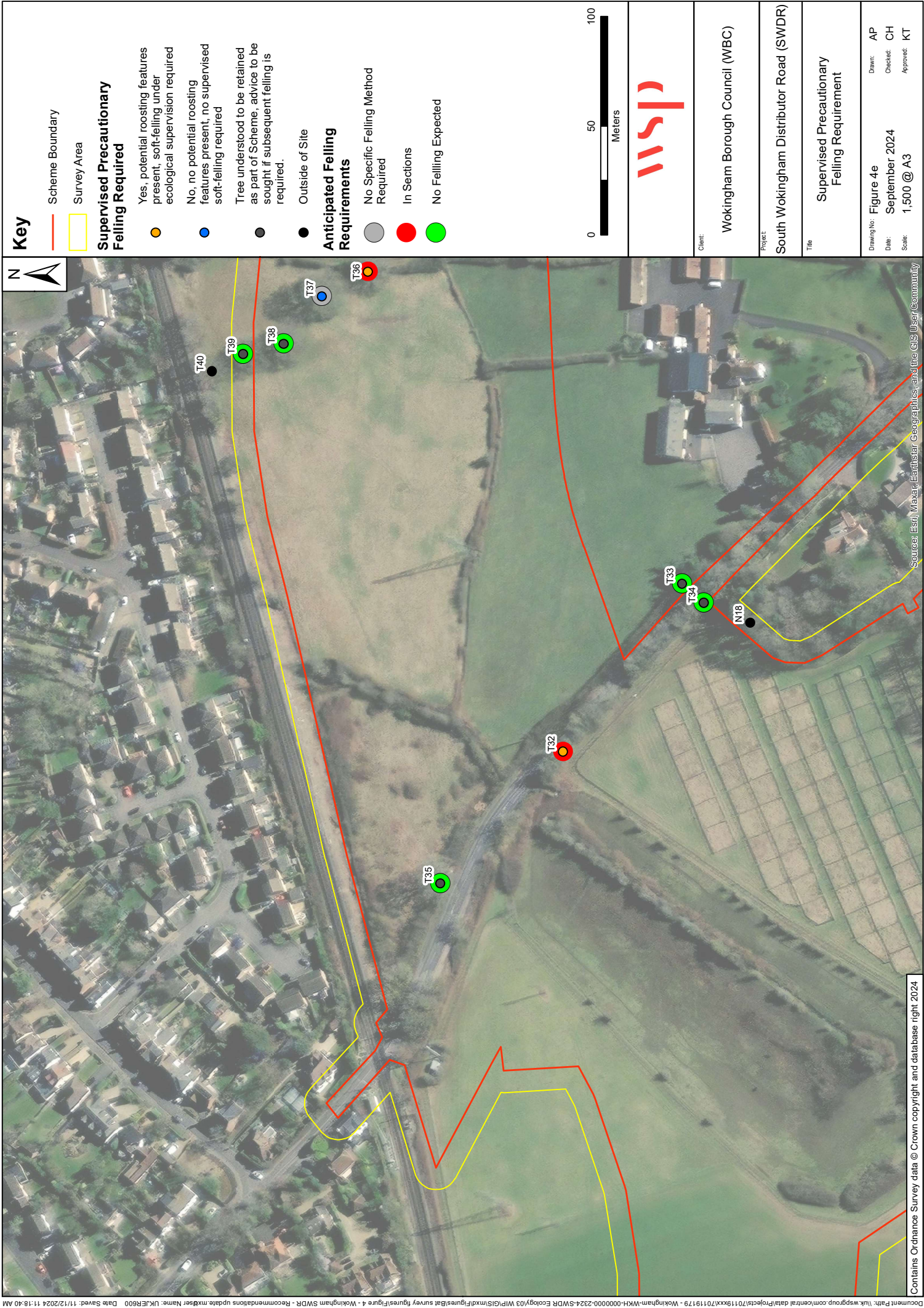
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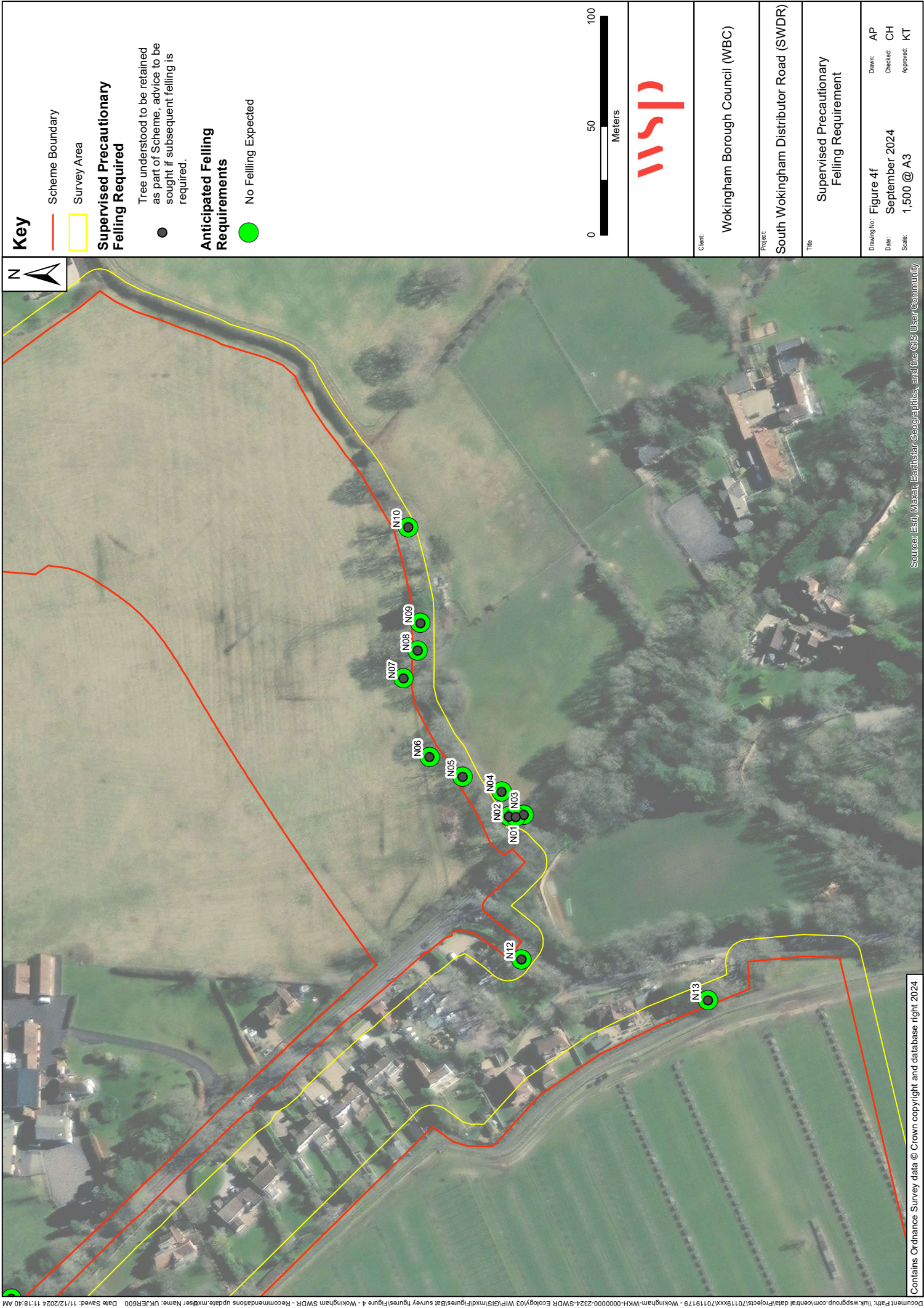
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Key

- Scheme Boundary
- Survey Area

Supervised Precautionary Felling Required

Tree understood to be retained as part of Scheme, advice to be sought if subsequent felling is required.

Anticipated Felling Requirements

- No Felling Expected



Client:

Wokingham Borough Council (WBC)

Project:

South Wokingham Distributor Road (SWDR)

Title:

Supervised Precautionary Felling Requirement

Drawing No: Figure 4f

Drawn: AP

Date: September 2024

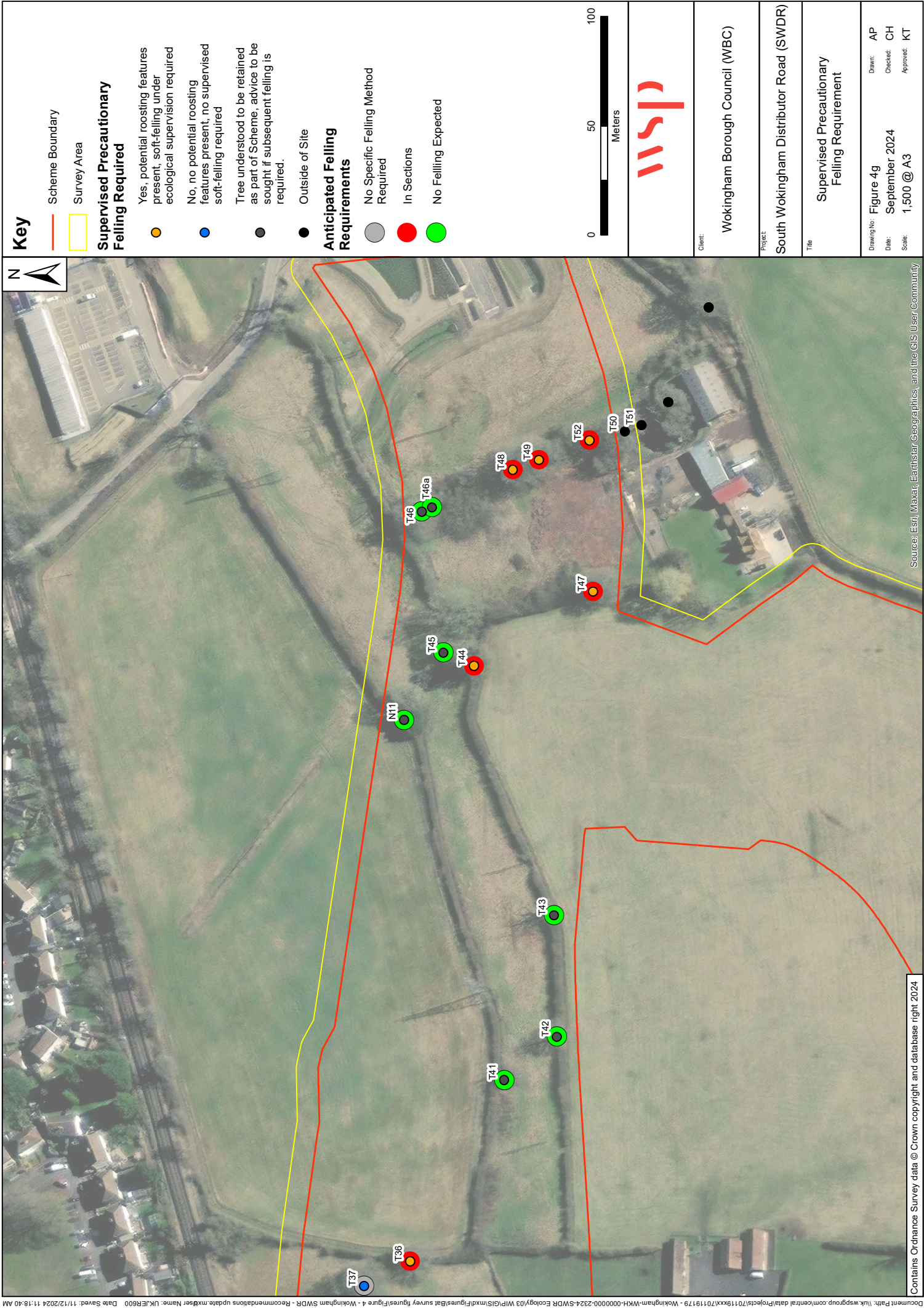
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Scale: 1,500 @ A3

Approved: KT

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Appendix A

SUMMARY OF BAT SURVEY RESULTS



Table A- 1 Summary of Bat Survey Results for the 40 trees identified for further survey

Tree No.	Arboriculture Survey Reference No.	Description	Suitability following updated PBRA	Suitability following Climb 1	Suitability following Climb 2	Suitability following Climb 3	Dusk Emergence Survey required?	Roost identified?	Features with Suitability to Support Roosting Bats	Overall Assessment	Number of PRF-M features	Number of PRF-I features	Supervised precautionary felling required?
N01	0	Sweet chestnut (<i>Castanea sativa</i>), DBH approx. 80cm	Scoped out – outside of impact areas	-	-	-	No	No	PRF1 – multiple woodpecker holes (listed top to bottom): Hole 1 and 2 – small holes present on east aspect, could not be inspected fully using endoscope, PRF-M. Hole 3 – extends 3cm inside, PRF-I. Hole 4 – exposed feature, present on west aspect, 3x3cm wide and extends in for 6cm, fully inspected, PRF-I. Hole 5 – present on eastern aspect above hole 1, 2x3cm and extends in for 4cm, dry hole, PRF-I. Hole 6 – present on eastern aspect above hole 1, 3x3cm and extends in for 6cm, PRF-I. Hole 7 and 8 – present on southern aspect, entrance about 3x3cm and extends in for 6cm, PRF-I. Hole 9 and 10 – present on south aspect, 3x3cm and extends in for 7cm, both dry, all holes not fully inspected, PRF-I. PRF2 – a limb fissure on limb on western aspect about 3m from the ground level, fully inspected, no bats, PRF-I.	PRF-M	2	9	No – not impacted
N02	0	Dead tree (species ID limited due to level of wood degradation), DBH approx. 30cm	Scoped out – outside of impact areas	-	-	-	No	No	PRF1 – a large trunk cavity, entire trunk hollow with entrance at base and at top of trunk. Multiple entrances making feature well-lit and exposed, fully inspected, no bats found, PRF-I.	PRF-I	0	1	No – not impacted
N03	0	Dead tree, Oak (<i>Quercus sp.</i>), DBH 35cm	Scoped out – outside of impact areas	-	-	-	No	No	PRF1 – fissure cracks and plate bark across tree due to age, fully inspected, no bats found, PRF-I. PRF2 – an upward facing feature at top of the trunk, extending 40cm down, fully inspected, no bats found, PRF-I. PRF3 – a south facing cavity in a dead limb, about 2m from ground level, extends about 4cm, narrow cavity, fully inspected, no bats, PRF-I.	PRF-I	0	3	No – not impacted
N04	0	Oak (<i>Quercus sp.</i>), DBH approx. 50cm	Scoped out – outside of impact areas	-	-	-	No	No	PRF1 – deadwood present in crown of the tree, upwards facing fissures and crevices	PRF-I	0	1	No – not impacted

Tree No.	Arboriculture Survey Reference No.	Description	Suitability following updated PBRA	Suitability following Climb 1	Suitability following Climb 2	Suitability following Climb 3	Dusk Emergence Survey required?	Roost identified?	Features with Suitability to Support Roosting Bats	Overall Assessment	Number of PRF-M features	Number of PRF-I features	Supervised precautionary felling required?
			impact areas						present on the trunk, fully inspected, no bats found, PRF-1.				
N19	0	Poplar (<i>Populus sp.</i>), mature, DBH over 100cm	PRF-M	PRF-I	-	-	No	No	PRF1 - a recent and extensive dense ivy coverage with significant stem diameter, PRF-I	PRF-I	0	1	Yes
N20	0	Poplar (<i>Populus sp.</i>), mature, DBH over 100cm	PRF-M	PRF-I	-	-	No	No	PRF1 - a recent and extensive dense ivy coverage with significant stem diameter, PRF-I	PRF-I	0	1	Yes
N21	0	Poplar (<i>Populus sp.</i>), mature, DBH over 100cm	PRF-M	PRF-I	-	-	No	No	PRF1 - a recent and extensive dense ivy coverage with significant stem diameter, PRF-I	PRF-I	0	1	Yes
N22	0	Ash (<i>Fraxinus excelsior</i>)	PRF-M	Could not climb	Could not climb	Could not climb	Yes	No	PRF1 - a major dieback with a large crevice in a seemingly hollow trunk from 2-6m above the ground level, PRF-M. PRF2 - a large stress fracture with a crack which may continue into a potentially hollow stem, PRF-M.	PRF-M	2	0	Yes
N23	0	Leyland cypress (<i>Cupressus x leylandii</i>), mature, DBH over 100cm	PRF-I	-	-	-	No	No	PRF1 - significant ivy coverage across the trunk which may potentially promote cavity formation, PRF-M.	PRF-I	0	1	Yes
N24	0	Ash (<i>Fraxinus excelsior</i>), Semi-mature, DBH approx. 40cm	PRF-M	PRF-I	-	-	No	No	PRF1 - a small cavity, entrance about 5x5cm, cavity about 7x7cm, the cavity has a simple roof that does not go up into trunk. Cavity fully inspected during at-height inspection - no roosting bats found, PRF-I	PRF-I	0	1	Yes
N25	0	Field maple (<i>Acer campestre</i>)	PRF-M	PRF-M	PRF-M	PRF-M	No	No	PRF1 - a trunk cavity present at 1.5m above the ground level on the northeastern aspect, does not extend up. Deadwood present. PRF-I. PRF2 - a trunk cavity on the southeastern aspect at approx. 1.5m above the ground level facing the northeastern aspect where two features join, PRF-M. PRF3 - newly identified cavity at 1.5m height above the ground level in the trunk.	PRF-M	1	2	Yes

Tree No.	Arboriculture Survey Reference No.	Description	Suitability following updated PBFA	Suitability following Climb 1	Suitability following Climb 2	Suitability following Climb 3	Dusk Emergence Survey required?	Roost identified?	Features with Suitability to Support Roosting Bats	Overall Assessment	Number of PRF-M features	Number of PRF-I features	Supervised precautionary felling required?
N26	0	Oak (<i>Quercus sp.</i>), mature, multi-stemmed, DHB approx. 100cm, located on the water course bank	PRF-M	PRF-I	-	-	No	No	Fully inspected during at-height inspection, no bats found, PRF-I. PRF1 - feature on the second trunk facing southeastern aspect, feature extends about 10cm up and narrows to 1cm. Found damp, fully inspected, no bats found, PRF-I. PRF2 - cavity on central trunk, extends about 5cm up into the trunk. Exposed feature, fully inspected, no bats found, PRF-I. PRF3 - cavity on the southeastern stem, goes up into the trunk about 20cm, damp, fully inspected, no bats found, PRF-I due to cluttered environment. PRF4 - a knothole on the southeastern aspect about 2m above the ground level, entrance 5x10cm, extends up to a cone shaped roof 5cm wide. Damp, fully inspected, no bats found, PRF-I.	PRF-I	0	4	Yes
N27	26	Ash (<i>Fraxinus excelsior</i>), twin trunk,	PRF-M	PRF-I	-	-	No	No	PRF1 - a dual trunk with large fissure in the right-hand trunk at the ground level, upwards facing with potential cavity, extends 6cm. Fully inspected during at-height inspection, no bats found, PRF-I. PRF2 - a hole on left hand trunk, very cluttered entrance about 5x10cm, and opens into a bowl about 6cm. Fully inspected during at-height inspection, no bats found, PRF-I. PRF3 - a narrow knothole above PRF1, extends 5cm inside, Negligible.	PRF-I	0	2	Yes
N30	0	Oak (<i>Quercus sp.</i>), mature	PRF-M	PRF-M	PRF-M	-	No	No	PRF1 - a large basal cavity with cluttered entrance, begins 30cm above ground level and extends upwards to 75cm, narrows to flat roof with crevices throughout. Feature is dry, no evidence of bat, PRF-M.	PRF-M	1	0	Yes
N31	0	Alder (<i>Alnus glutinosa</i>), multiple stems	PRF-M	Could not climb	Could not climb	Could not climb	Yes	No	PRF1 - the southeastern aspect trunk has trunk rot present up majority of the length at 2-4m facing northeastern aspect, with the feature over watercourse, PRF-M.	PRF-M	1	0	Yes

Tree No.	Arboriculture Survey Reference No.	Description	Suitability following updated PBFA	Suitability following Climb 1	Suitability following Climb 2	Suitability following Climb 3	Dusk Emergence Survey required?	Roost identified?	Features with Suitability to Support Roosting Bats	Overall Assessment	Number of PRF-M features	Number of PRF-I features	Supervised precautionary felling required?
N39	0	Alder (<i>Alnus glutinosa</i>)	PRF-M	Could not climb	Could not climb	Could not climb	Yes	No	PRF1 – a large woodpecker hole likely leading into a cavity as the adjacent branch has snapped off, PRF-M.	PRF-M	1	0	Yes
T02	1	Oak (<i>Quercus sp.</i>)	PRF-M	PRF-M	PRF-M	PRF-M	No	No	PRF1 – a large opening on the front of the tree at about 2m height, about 20cm long and 5cm wide, found dry with slugs and woodlouse present, descends downwards and extends back into small cavity about 3x3cm. Fully inspected, no bats found, PRF-M. PRF2 – a woodpecker hole where branch has been removed, overhanging path at about 5m high. Hole opens into a cavity leading 20cm down and 10cm up (with fissures present within), about 10cm wide. Found to be dry with old nesting material and woodlouse present. Fully inspected and no bats found, PRF-M.	PRF-M	2	0	Yes
T03	3	Ash (<i>Fraxinus excelsior</i>) Note: access limitation, tree is within residential property.	PRF-M	Could not climb	Could not climb	Could not climb	Yes	No	PRF1 – a mature ash with large pruning cut, PRF-M. Otherwise in good condition, PRF-M.	PRF-M	1	0	Yes
T04	4	Ash (<i>Fraxinus excelsior</i>), twin stem, DBH over 100cm combined	PRF-M	PRF-M	PRF-M	PRF-M	No	No	PRF1 – an exposed woodpecker hole, approx. 3m high on the westerly aspect of the trunk, cavity present 3x4cm which does not lead up or down, mammal nesting material present, PRF-I. PRF2 – a knothole slightly obscured by ivy approx. 4m high on the westly aspect, mammal nesting material and dry moss present, extends 10cm inside into 10x10cm cavity, no bats recorded, PRF-M. PRF3 – significant ivy coverage. Feature exposed with large fissures present between ivy stems, PRF-I.	PRF-M	2	1	Yes
T05	0	Willow (<i>Salix sp.</i>)	PRF-M	PRF-M	PRF-M	PRF-M	No	No	PRF1 – dense ivy coverage and suitably mature, Negligible.	PRF-M	1	2	Yes

Tree No.	Arboriculture Survey Reference No.	Description	Suitability following updated PBRA	Suitability following Climb 1	Suitability following Climb 2	Suitability following Climb 3	Dusk Emergence Survey required?	Roost identified?	Features with Suitability to Support Roosting Bats	Overall Assessment	Number of PRF-M features	Number of PRF-I features	Supervised precautionary felling required?
		Note: access limitation, adjacent to water course							PRF2 – feature splits and leads up into two channels, both extending about 10cm. Feature lo, nesting material present, no bats found. PRF-M PRF3 - A broken point in trunk with heavy clutter of dead wood, bird nest present, PRF-I				
T07	0	Oak (<i>Quercus</i> sp.)	PRF-M	PRF-M	PRF-M	PRF-M	No	No	PRF1 – a knothole with a potential void cavity at about 3m above ground level facing the footpath, PRF-M. PRF2 – lifted bark about 2m from ground level with large space formed, PRF-M.	PRF-M	2	1	Yes
T08	5	Oak (<i>Quercus</i> sp.)	PRF-M	PRF-M	PRF-M	PRF-M	No	No	PRF1 – multiple large woodpecker holes seen from ground at 5m (x2) on right hand branch as you view the tree from the path. Additionally, off main central trunk branch has another woodpecker hole with knothole next to it at about 10m height, PRF-M. PRF1a - woodpecker hole at 8m above the ground level, about 5x5cm entrance and extending 20cm. Currently filled with debris and dust but suitably would increase if flushed out. Fully inspected, PRF-M. PRF2 – woodpecker hole, approximately 15m. Entrance about 5x5cm and opens to internal cavity 10x10cm. Cavity goes 20cm down and 10cm up. Mammal activity noted with nesting material (likely squirrel) present. Dry and dusty, fully inspected, PRF-M. PRF3 - a cavity formed due to dead limb tear present 2m above ground on the west aspect. Cavity extends into tip of branch, narrow with no opening. Fully inspected, bird nesting material present, no bats found, PRF-M PRF4 - a knothole present on the southern aspect about 4m above ground. Entrance about 5x5cm is full of debris. Assessed as	PRF-M	3	1	Yes

Tree No.	Arboriculture Survey Reference No.	Description	Suitability following updated PBRA	Suitability following Climb 1	Suitability following Climb 2	Suitability following Climb 3	Dusk Emergence Survey required?	Roost identified?	Features with Suitability to Support Roosting Bats	Overall Assessment	Number of PRF-M features	Number of PRF-I features	Supervised precautionary felling required?
									PRF-I due to current condition, but PRF-M with time. Feature dry and dusty with cobwebs, fully inspected with no bats recorded, PRF-I.				
T09	7	Oak (<i>Quercus</i> sp.), mature, DBH over 100cm	PRF-M	PRF-I	-	-	No	No	PRF1 – no feature present. PRF2 – dense ivy coverage with wide diameter stems, PRF-I.	PRF-I	0	1	Yes
T10	8	Oak (<i>Quercus</i> sp.)	PRF-M	NONE	-	-	No	No	No feature present, NONE.	NONE	0	0	No – No PRF present
T11	0	Willow (<i>Salix</i> sp.)	PRF-I	-	-	-	No	No	PRF1 – recent and very dense ivy coverage obscuring most of the tree, PRF-I.	PRF-I	0	1	Yes
T12	0	Willow (<i>Salix</i> sp.)	PRF-M	PRF-M	PRF-M	PRF-M	No	No	PRF1 – tear/wound from ground level up to 1.5m, entrance 10x5cm, extends 100cm upwards with a complex roof, dry cavity. Fully inspected, no bats found, PRF-M. PRF2 - feature present about 2.5m from the ground level on the east facing trunk, entrance about 2x2cm, extends up. Fully inspected, no bats, PRF-M. PRF3 - a basal cavity, 25x7cm, and extends upwards for 1m, 5x5cm constant width cavity with a complex roof. Cobweb and woodlouse present, fully inspected, no bats recorded, PRF-M.	PRF-M	3	0	Yes
T17	0	Ash (<i>Fraxinus excelsior</i>) <i>Note: Wrong tree previously IDed during PBRA</i>	PRF-M	PRF-M	PRF-M	PRF-M	No	No	PRF1 - feature present on the south facing trunk, entrance about 7x7cm extending 1m up with a cone roof. Fully inspected, no bats found, PRF-M. PRF2 - feature on central stem, entrance about 7x7cm extending up 6cm. Mammal nesting material present, fully inspected, no bats found, PRF-M. PRF3 - open feature on northern stem, does not extend back, PRF-I.	PRF-M	2	1	Yes

Tree No.	Arboriculture Survey Reference No.	Description	Suitability following updated PBFA	Suitability following Climb 1	Suitability following Climb 2	Suitability following Climb 3	Dusk Emergence Survey required?	Roost identified?	Features with Suitability to Support Roosting Bats	Overall Assessment	Number of PRF-M features	Number of PRF-I features	Supervised precautionary felling required?
T18	0	Willow (<i>Salix sp.</i>)	PRF-M	PRF-M	PRF-M	PRF-M	No	No	PRF1 – trunk densely covered with ivy, dead limbs found on the fallen tree, exposed feature, PRF-I. PRF2 - cavity present on northeast facing trunk, entrance about 5x5cm, cavity stretches 30cm to northwest within the branch. Fully inspected, no bats present, PRF-M. PRF3 – open cavity feature present on trunk, does not go further, Negligible.	PRF-M	1	1	Yes
T19	0	Willow (<i>Salix sp.</i>)	PRF-M	NONE	-	-	No	No	No feature present, NONE.	NONE	0	0	No – No PRF present
T22	29	Oak (<i>Quercus sp.</i>)	PRF-M	PRF-I	-	-	No	No	PRF1 – dense ivy and holly coverage. Ivy with large diameter stems, obscuring entrance of the feature and most of the tree, which is suitably large and mature, PRF-I. PRF2 - a basal feature on stem on the southwest aspect. Cavity starts at 50cm above ground, entrance about 25x10cm, extending upwards to a 20cm diameter dry cavity. Very sizable feature, extremely cluttered, fully inspected, no bats found, PRF-I.	PRF-I	0	2	Yes
T23	0	Alder (<i>Alnus glutinosa</i>), DBH approx. 50cm	PRF-M	PRF-I	-	-	No	No	PRF1 – a basal cavity not extending into the tree, approx. 1m above ground level on the easterly aspect, 2cm upwards, slugs present, fully inspected, no bats found, PRF-I.	PRF-I	0	1	Yes
T24	28	Oak (<i>Quercus sp.</i>)	PRF-M	PRF-I	-	-	No	No	PRF1a and PRF1b – two tear outs, exposed and about 15m above the ground level, fissures present, fully inspected, no bats found, PRF-I. PRF2 – lots of dead wood and ivy coverage, small cavity, PRF-I. PRF3 - low down platy bark about 3m above the ground level till 4m. Crevices present but exposed, no cavities, fully exposed, no bats, PRF-I.	PRF-I	0	3	Yes

Tree No.	Arboriculture Survey Reference No.	Description	Suitability following updated PBFA	Suitability following Climb 1	Suitability following Climb 2	Suitability following Climb 3	Dusk Emergence Survey required?	Roost identified?	Features with Suitability to Support Roosting Bats	Overall Assessment	Number of PRF-M features	Number of PRF-I features	Supervised precautionary felling required?
T32	0	Ash (<i>Fraxinus excelsior</i>)	PRF-I	-	-	-	No	No	PRF1 – dense ivy coverage, large gaps present between stems resulting in exposed feature, PRF-I.	PRF-I	0	1	Yes
T36	76	Oak (<i>Quercus sp.</i>), mature, DBH over 100cm	PRF-M	PRF-I	-	-	No	No	PRF1 – knothole approx. 5m above ground, facing southwestern aspect, entrance about 5x5cm and exposed, ants present, fully inspected, no bats found, PRF-I. PRF2 – eastern aspect assessed, PRF-I. PRF3 - cavity due to dead branch, fissures present, fully inspected, no bats found, PRF-I. PRF4 - a tear out on branch extending west, fissure about 50cm long, entrance 3-4cm wide. Internal cavity dry, extends 5-6cm down exposing the fissures, fully inspected, no bats, PRF-I.	PRF-I	0	4	Yes
T37	74	Oak (<i>Quercus sp.</i>)	PRF-M	NONE	-	-	No	No	No features found, NONE.	NONE	0	0	No – No PRF present
T44	93	Oak (<i>Quercus sp.</i>), mature, DBH over 100cm	PRF-M	Could not climb	Could not climb	Could not climb	Yes	No	PRF1 – significant ivy coverage with stems over 20cm thick potentially providing/obscuring a feature, PRF-I. PRF2 – a woodpecker hole on a broken branch (upwards facing), potentially providing access to internal structures approx. 10m above the ground level on the western aspect, PRF-M. PRF3 – dead wood present throughout canopy with no significant features present, PRF-I. PRF4 – a large tree of size and maturity where full assessment could not be made during PRFA, PRF-M.	PRF-M	2	2	Yes
T47	95	Oak (<i>Quercus sp.</i>)	PRF-M	PRF-I	-	-	No	No	PRF1 – dead wood feature, PRF-I after close inspection.	PRF-I	0	1	Yes
T48	101	Oak (<i>Quercus sp.</i>), mature	PRF-M	PRF-M	PRF-M	PRF-M	No	No	PRF1 - dead wood and peeling bark on extending limb, about 6m above the	PRF-M	1	4	Yes

Tree No.	Arboriculture Survey Reference No.	Description	Suitability following updated PBRA	Suitability following Climb 1	Suitability following Climb 2	Suitability following Climb 3	Dusk Emergence Survey required?	Roost identified?	Features with Suitability to Support Roosting Bats	Overall Assessment	Number of PRF-M features	Number of PRF-I features	Supervised precautionary felling required?
T50	107	Oak (<i>Quercus</i> sp.)	PRF-M	NONE	-	-	No	No	Dead wood inspected, no PRF found, NONE.	NONE	0	0	No – No PRF found
T51	N/A	Oak (<i>Quercus</i> sp.)	Scoped out – outside impact area	-	-	-	No	No	PRF1 – a large knot hole/woodpecker hole about 6m above the ground level on a branch leaning over a pond, potentially provides a suitable void cavity, PRF-M. PRF2 – dead wood and multiple broken branches, PRF-I.	PRF-M	1	1	No – not impacted

Appendix B

METEOROLOGICAL DATA FROM DUSK EMERGENCE SURVEY

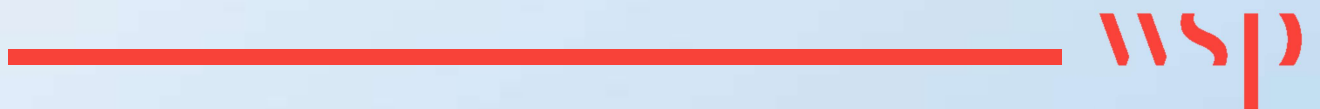


Table B- 1 Meteorological data collected by surveyors and summary of incidental bat records during dusk emergence survey

Tree Reference	Date (Survey Number)	Sunset Times	Start/End	Time	Weather Conditions				
					Temp (°C)	Cloud (Okt)	Wind (Bft)	Precipitation	Humidity (%)
N22	31/07/2024 (1)	20:51	Start	20:36	23	2	0	0	51
			End	22:35	21	1	0	0	52
	Species Recorded Incidentally: Common pipistrelle, soprano pipistrelle, <i>Pipistrellus</i> sp.								
	13/08/2024 (2)	20:28	Start	20:13	22	3	0	0	58
			End	21:58	22	3	0	0	58
	Species Recorded Incidentally: Common pipistrelle								
	02/09/2024 (3)	19:46	Start	19:31	19	8	1 (S-SW)	0	67
			End	21:16	19	8	1(S)	0	66
	Species Recorded Incidentally: Common pipistrelle, <i>Pipistrellus</i> sp.								



Tree Reference	Date (Survey Number)	Sunset Times	Start/End	Time	Weather Conditions				
					Temp (°C)	Cloud (Okt)	Wind (Bft)	Precipitation	Humidity (%)
N31	19/08/2024 (1)	20:16	Start	20:01	19	8	2 (SW)	0	62
			End	22:16	19	8	2 (SW)	0	62
			Species Recorded Incidentally: Common pipistrelle, soprano pipistrelle.						
	09/09/2024 (2)	19:30	Start	19:14	14	5	1 (W)	0	85
			End	21:00	11	2	1 (NW)	0	80
			Species Recorded Incidentally: Common pipistrelle						
	24/09/2024 (3)	18:56	Start	18:41	15	8	1 (NE)	0	73
			End	20:56	14	8	1 (NE)	0	74
Species Recorded Incidentally: None									
N39		20:16	Start	20:01	19	8	2 (SW)	0	59



Tree Reference	Date (Survey Number)	Sunset Times	Start/End	Time	Weather Conditions					
	19/08/2024 (1)		End	21:54	19	8	2 (SW)	0	62	
			Species Recorded Incidentally: Common pipistrelle, soprano pipistrelle.							
			Start	19:15	14	5	1 (W)	0	85	
	End			21:00	11	2	1 (NW)	0	80	
	Species Recorded Incidentally: Common pipistrelle, soprano pipistrelle.									
	24/09/2024 (3)		Start	18:41	15	8	1 (NE)	0	73	
			End	20:56	14	8	1 (NE)	0	74	
			Species Recorded Incidentally: Common pipistrelle.							
	T03	19/08/2024 (1)	20:16	Start	20:01	19	8	2 (SW)	0	59
				End	21:46	19	8	2 (SW)	0	62



Tree Reference	Date (Survey Number)	Sunset Times	Start/End	Time	Weather Conditions				
					Temp (°C)	Cloud (Okt)	Wind (Bft)	Precipitation	Humidity (%)
			Species Recorded Incidentally: Common pipistrelle.						
	09/09/2024 (2)	19:30	Start	19:15	14	5	1 (W)	0	85
			End	21:00	13	5	1 (W)	0	68
	Species Recorded Incidentally: Common pipistrelle, noctule.								
	24/09/2024 (3)	18:56	Start	18:41	15	8	1 (NE)	0	73
			End	20:56	15	8	1 (NE)	0	73
	Species Recorded Incidentally: Common pipistrelle, soprano pipistrelle, <i>Pipistrellus</i> sp., noctule.								
	T44 23/07/2024 (1)	21:03	Start	20:49	19	6	0.3 (NE)	0	64
			End	23:03	19	7	0.2 (NE)	0	67



Tree Reference	Date (Survey Number)	Sunset Times	Start/End	Time	Weather Conditions				
					Temp (°C)	Cloud (Okt)	Wind (Bft)	Precipitation	Humidity (%)
			Species Recorded Incidentally: Common pipistrelle, soprano pipistrelle, <i>Pipistrellus</i> sp., <i>Myotis</i> sp., Leisler, noctule.						
	05/08/2024 (2)	20:43	Start	20:28	20	4	7 (N)	0	75
			End	22:13	18	5	0	0	65
			Species Recorded Incidentally: Common pipistrelle, soprano pipistrelle, <i>Myotis</i> sp.						
	28/08/2024 (3)	19:57	Start	19:42	21	6	1 (N)	0	64
			End	21:27	20	7	3 (N)	0	61
			Species Recorded Incidentally: Common pipistrelle, soprano pipistrelle.						



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