Palmers Green to Winchmore Hill, London

Ecological Constraints Report

Network Rail

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Contents

1. Introduction

1.1.1 Ecus Ltd. was commissioned by Network Rail in January 2015 to undertake an ecological walkover survey of both sides of the 2.2 km section of the HBD London line. The study area was located between Palmers Green Train Station (OS Grid Ref.: TQ 30909 92733) at the south and the Vicar's Moor Lane road bridge to the north of Winchmore Hill Train Station (OS Grid Ref.: TQ 31591 94720), at the northern end.

1.1.2 The survey aimed to identify any ecological receptors or other constraints that may affect the planned vegetation removal works. This included an assessment of the potential of the site to support protected, rare or invasive species that may result in delays to the programme. In particular a detailed ground based inspection of all trees and tree groups detailed in the Lineside Tree Safety Survey (Forbes-Laird, 2014) was undertaken to assess their potential to support roosting bats.

1.1.3 The length of line surveyed comprises heavily vegetated embankments typically 10-20 m in width, generally with more established mature trees adjacent to the fenced railway boundary. Adjacent land use comprises residential housing and gardens and minor roads. Greenspace within the local area comprises a number of municipal parks.

2. Methodology

2.1 Desk Study

2.1.1 Data consultation with the Greenspace Information for Greater London (GiGL) biological recording centre was undertaken in January 2015 to obtain ecological records within a 1 km buffer of the track length..

2.1.2 Natural England's MAGIC website (http://www.magic.gov.uk/) was consulted for information on statutory designated sites of nature conservation interest within 1 km of the survey area in January 2014. Information obtained from GiGL and MAGIC is included within the below as appropriate.

2.2 Extended Phase 1 Habitat Survey

2.2.1 The site was surveyed on 27-28th January 2015 following an extended Phase 1 habitat survey methodology (JNCC, 2010) by senior ecologist Robert Bell, MCIEEM (Bat Survey Licence Class 2: CLS02006;). This survey method aims to characterise habitats and communities present and is not intended to provide a complete list of all plants occurring across the site.

2.2.2 Habitats and vegetation types present were recorded with notable, rare or scarce plant species highlighted if present. Evidence of protected species or species of nature conservation importance was recorded where present at the time of survey.

2.2.3 Invasive plant or animal species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) were recorded if seen.

2.3 Protected and Key Species

2.3.1 Any evidence of protected species or groups encountered during the survey was recorded. This included observations of field signs and an assessment of the suitability of the habitats present to support protected species. For full details of legislation relating to all habitats and species discussed within this report visit http://www.legislation.gov.uk.

Amphibians and Riparian Mammals

2.3.2 No watercourses were identified within 30 m of the track using an Ordnance Survey (OS) map, therefore no direct or indirect to impacts upon water vole (*Arvicola amphibius*) or otter (*Lutra lutra*) are envisaged as a result of this scheme.

2.3.3 A single pond present was recorded within 500 m of the site using an OS map and is described and considered in more detail in relation to amphibians within Section 3.3.

Bats

2.3.4 All trees within the 3.5 m buffer strip identified by Network Rail and all additional trees or tree groups included in the Lineside Tree Safety Survey (Forbes-Laird, 2014) were inspected in accordance with the recommended tree survey protocol relating to trees scheduled for arboricultural works (Hundt, 2012).

2.3.5 Close focusing binoculars were used to examine the trees for features which may provide roosting opportunities for bats, such as woodpecker holes, tear outs and knot holes leading to rot columns. Where present, any evidence of roosting bats was also noted including live or dead bats, flies around entry points and staining due to fur oils or droppings.

2.3.6 Any individual tree may have several features of potential interest to roosting bats associated with it. It is not always possible to confirm usage of a feature by bats, as animals may be present on one day and no evidence of occupation may be found on the next. The bat roosting potential of trees was categorised as shown in Table 1.

Table 1. **Protocol for classification and further survey of trees in relation to bats**

Tree Category and Description	Requirement for Further Survey	Required Mitigation
Known or confirmed roost		The tree can be felled only under EPS licence
Category 1* Trees with multiple, highly suitable features capable of supporting larger roosts	More detailed, off the ground visual assessment or further dusk and pre-dawn survey to establish more accurately the presence, species, numbers of bats present and the type of roost, and to inform the requirements for mitigation if felling is required.	Felling would be undertaken taking reasonable avoidance measures, such as "soft felling", to minimise the risk of harm to individual bats.
Category 1 Trees with definite bat potential, supporting fewer suitable features that category 1* trees or with potential for use by single bats	Avoid disturbance to trees, where possible. More detailed, off the ground visual assessment. Further dusk and pre-dawn survey to establish more accurately the presence, species, numbers of bats present and the type of roost, and to inform the requirements for mitigation if felling is required.	Trees with confirmed roosts following further survey are upgraded to Category 1* and felled under licence as above. Trees with no confirmed roosts may be downgraded to Category 2 dependent on survey findings.
Category 2 Trees with no obvious potential, although the tree is of a size and age that elevated surveys may result in cracks or crevices being found; or the tree supports some feature which may have limited potential to support bats	Avoid disturbance to trees, where possible	Trees may be felled taking reasonable avoidance measures. Stop works and seek advice in the event bats are found, in order to comply with relevant legislation.
Category 3 Trees with no potential to support roosting bats	None	No mitigation for bats required.

2.4 Limitations

2.4.1 Field survey was undertaken early in the year, during the time when many botanical species are dormant. However, the habitats present on site are not species rich and can be sufficiently characterised, without the need for further survey.

2.4.2 Dense bramble and ivy scrub prevented full inspection of the entire embankment. However, an ecological clerk of works will be present throughout the proposed vegetation clearance and will undertake detailed check in advance of vegetation clearance.

3. Survey Findings and Constraints

3.1 Designated Sites

3.1.1 No statutory designated sites of importance to nature conservation are present within 1 km of the survey area.

3.2 Habitats

3.2.1 The 3.5 m wide buffer strip bordering the cess also known as the 'kill zone' heavily vegetated with immature to early semi-mature mainly broadleaved trees. The vegetation beyond the "kill zone" comprises older more established trees, including numerous mature specimens. A variety of tree species are present including abundant sycamore (*Acer psuedoplatanus*) and frequent ash (*Fraxinus excelsior*), gean (*Prunus avium*) and pedunculate oak (*Quercus robur*).

3.2.2 Understorey vegetation comprises locally abundant bramble (*Rubus fruticosus*) and ivy (*Hedera helix*) with frequent shrub species including dog rose (*Rosa canina*), hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*) also present. Outgrown semi-improved grassland is present where bankside trees are absent or infrequent, with false oat grass (*Arrhenatherum elatius*) and cocksfoot (*Dactylis glomerata*) abundant.

3.3 Species

Amphibians

3.3.1 No great crested newt (*Triturus cristatus*) records were received for locations within 1 km of the site and. A series of four lakes within Broomfield Park are present 450 m south west of the track. The lakes are known to support fish and separated from the site by housing and roads. Due to the lack of records and suitable water bodies, neither great crested newt or other common amphibians are considered likely to pose a constraint to the work.

3.3.2 As a precautionary measure, the ecological clerk of works will manually check any piles of dense vegetation or dead wood piles check in advance of vegetation clearance works. Where possible, the ecological clerk of works will notify site staff of any common amphibians encountered and animals will be allowed to move of their own volition prior to works. If this approach is not possible the clerk of works will ensure any animals are moved to sheltered areas away from the works.

Badgers

3.3.3 Badgers (*Meles meles*) and their setts are protected under the Protection of Badgers Act 1992. It is an offence under the act to kill, injure or take a badger. It is also an offence to destroy, damage or obstruct a currently active badger sett, or to disturb animals within the sett.

3.3.4 No badger records were obtained from GiGL and no evidence of their presence was obtained during the walkover survey. However, given the widespread distribution of badgers and the suitability of the embankment habitats the presence of setts within the study area cannot be ruled out.

3.3.5 The ecological clerk or works will check vegetation in advance of clearance works. In the unlikely event a badger sett is recorded the ecologist will work with the vegetation clearance team to establish an acceptable method of working in the area surrounding the sett. Any badgers present are likely to be tolerant of moderate to high level of disturbance and are unlikely to affected by vegetation works.

Bats

3.3.6 A total of eight bat species were recorded with 1 km of the site area. The closest records to the survey area were collected from Grovelands Park, approximately 700 m west of the nearest section of line. The closest bat records to site are presented by species in Table 2.

Table 2. Bat Records Received from GiGL

Taxon Name	Common Name	Distance and Orientation	Date
Myotis daubentonii	Daubenton's bat	795 m NW	2007
Myotis nattereri	Natterer's bat	795 m NW	2007
Nyctalus leisleri	Leisler's bat	795 m NW	2007
Nyctalus noctula	Noctule	795 m NW	2007
Pipistrellus	Pipistrelle bat species	795 m NW	2007
Pipistrellus nathusii	Nathusius's pipistrelle	795 m NW	2007
Pipistrellus pipistrellus	Common pipistrelle	795 m NW	2007
Pipistrellus pygmaeus	Soprano pipistrelle	795 m NW	2007
Plecotus auritus	Brown long-eared	1 km	1980

3.3.7 Ten individual trees or tree groups were classified as either Category 1* or 1 trees displaying high or very high bat roosting potential, which require tree climbing bat inspection prior to felling.

3.3.8 Twenty-two trees were classified as Category 2 trees that supporting a low number of superficial features or which lack clear bat roosting features but are considered to be of a size or age to likely to support features. Felling of Category 2 trees will require reasonable avoidance measures including; sectional felling and a post felling check by ecologist.

3.3.9 All remaining surveyed trees are classified as Category 3 trees and no precautionary measures relating to bats are required when felling these trees.

3.3.10 The full details of the ground based bat inspection of trees are included in Appendix 1.

Table 3. Trees included within Categories 1*, 1 and 2

Tree Category	Tree or Tree Group Number
1*	3041
1	3024, 3031, 3034, 3040, TG3002, TG3007, TG3008, TG3009 and TG3021
2	3001, 3002, 3003, 3012, 3013, 3014, 3019, 3023, 3025, 3027, 3030, 3032, 3043, 3044, 3046, TG3001, TG3013, TG3015, TG3016, TG3017, TG3018, TG3026 and TG3027

3.3.11 In accordance with best practice, it is recommended that five tree mounted bat boxes are installed on retained trees spread across the length of the impacted rail corridor, to mitigate for the loss of potential bat roosting features.

Birds

3.3.12 Bird species recorded during the walkover survey comprised blackbird (*Turdus merula)*,

wren (*Troglodytes troglodytes)*, collared dove (*Streptopelia decaocto)*, great tit (*Parus major)*, blue tit (*Cyanistes caeruleus*) and wood pigeon (*Columba palumbus*). Twenty one additional bird species, with some potential to use site habitats, were included within records returned by GiGL (Table 4).

3.3.13 Of the bird species detailed in Table 4, firecrest (*Regulus ignicapilla)* and brambling (*Fringilla montifringilla)* are included on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). In 2009, a re-assessment of Birds of Conservation Concern (BoCC) was published by Eaton *et al*. (2009), which defined rare and threatened bird species on two lists (Red and Amber) describing the level of threat to each species of concern.

Table 4. Bird Species Recorded Within 1 km

Scientific Name	Common Name	Status	Record Source
Regulus ignicapilla	Firecrest	Schedule 1, Amber	GiGl
Fringilla montifringilla	Brambling	Schedule 1	GiGl
Passer domesticus	House sparrow	Red	GiGl
Acanthis cabaret	Lesser redpoll	Red	GiGl
Dendrocopos minor	Lesser spotted woodpecker	Red	GiGl
Turdus philomelos	Song thrush	Red	GiGl
Muscicapa striata	Spotted flycatcher	Red	GiGl
Sturnus vulgaris	Starling	Red	GiGl
Pyrrhula pyrrhula	Bullfinch	Amber	GiGl
Prunella modularis	Dunnock	Amber	GiGl
Falco tinnunculus	Kestrel	Amber	GiGl
Turdus viscivorus	Mistle thrush	Amber	GiGl
Emberiza schoeniclus	Reed bunting	Amber	GiGl
Delichon urbicum	House martin	Amber	GiGl
Columba oenas	Stock dove	Amber	GiGl
Hirundo rustica	Swallow	Amber	GiGl
Apus apus	Swift	Amber	GiGl
Phylloscopus trochilus	Willow warbler	Amber	GiGl
Acanthis flammea	Common (mealy) redpoll	Green	GiGl
Regulus regulus	Goldcrest	Green	GiGl
Strix aluco	Tawny owl	Green	GiGl
Turdus merula	Blackbird	Green	Site survey
Erithacus rubecula	Robin	Green	Site survey
Cyanistes caeruleus	Blue tit	Green	Site survey
Parus major	Great tit	Green	Site survey
Streptopelia decaocto	Collared dove	Green	Site survey
Columba palumbus	Wood pigeon	Green	Site survey
Columba livia	Feral pigeon	Green	Site survey

3.3.14 All birds nests are protected from damage or destruction whilst they are in use or being built under Section 1 of the Wildlife and Countryside Act, 1081 (as amended). The proposed vegetation clearance works have the potential to result in a offence if undertake during the breeding bird season (March – September inclusive). Therefore, from the end of February onwards, nesting bird checks will be undertaken by the ecological clerk of works prior to vegetation being cleared. Should active nests be found, exclusion zones will be established around the nests to and monitored by the clerk of works to prevent damage and disturbance until the chicks have fledged.

Hedgehog

3.3.15 Whilst hedgehogs (*Erinaceus europaeus*) are not afforded a high level of protection, they are a species in decline and listed as a priority species under Section 41 of the Natural Environment and Rural Communities Act 2006. Hedgehogs typically hibernate in enclosed area, under the roots of trees or within old mammal burrows Although, site habitats have the potential to support hedgehogs, this species would be expected to be dormant throughout the duration of the vegetation clearance works (February-March).

3.3.16 The ecological clerk of works will manually check any piles of dense vegetation or dead wood piles prior to works. Should any animals be encountered the ecological clerk of works will notify the site staff. Any animals will be allowed to move of their own volition or moved to a sheltered areas away from the works.

Invertebrates

3.3.17 One hundred and twenty-two records of stag beetle within 1 km of the site, were provided by GIGL. The closest record is immediately adjacent to the railway line. The stag beetle (*Lucanus cervus*) receives limited protection from trade under the Wildlife and Countryside Act 1981(as amended).

3.3.18 The mature trees on site may sustain stag beetles and felling of trees containing significant amounts of deadwood has the potential to affect stag beetle habitat.

3.3.19 As a best practice measure, it is recommended that stumps of felled trees are left *in situ*, and consideration is given to the retention of deadwood piles at a number of safe locations along the rail corridor. Stag beetles are unlikely to be active until May, however, should any be observed the ecological clerk of works should be informed and they should be allowed to move of their own volition or moved to a suitable sheltered location away from the works.

Reptiles

3.3.20 Grass snakes (*Natrix natrix)*, common lizard (*Zootoca vivipara*) and slow worm (*Anguis fragilis*) are afforded protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended).

3.3.21 Six records of slow worm were provided for locations within 1 km of the site, with the closest record from a residential garden approximately 200 m west of the track.

3.3.22 Slow worm are often encountered on railway embankments (Ings, 2009). The proposed vegetation clearance works are scheduled to be undertaken late in the slow worm hibernation period, when the animals are typically hibernating underground or in shelters.

3.3.23 The ecological clerk of works will manually checking any piles of dense vegetation or trackside debris in advance of vegetation clearance works and will notify site staff of any slow worms encountered. Where possible the area will be left undisturbed, however, if this is not possible the clerk of works will oversee the creation of a new hibernaculum away from the works area, moving the slow worm to this shelter to continue its hibernation if necessary.

Invasive Species

3.3.24 Five patches of Japanese knotweed (*Fallopia japonica*) were recorded and marked on the survey plan, with patches varying in size between 1 - 45 m^2 and the location of all patches shown in Appendix 1.

3.3.25 Japanese knotweed is listed on Schedule 9 of the Wildlife and Countryside Act (1981) (as amended) and as such it is an offence to plant or cause this species to grow in the wild.

3.3.26 It is understood that an Method Statement and control programme is in place to cover works undertaken around Japanese knotweed.

3.3.27 It is recommended that the clerk of works identifies an exclusion zone around all stands with either marking paint or tape in advance of vegetation removal works to reduce the likelihood of inadvertent spread.

3.3.28 It is further recommended that all contractors are made aware of the presence of Japanese knotweed and biosecurity measures are implemented to ensure plant fragments or contaminated material is not transported throughout or off the site.

4. Summary of Constraints and Further Survey

4.1.1 A summary of potential constraints to development are detailed in Table 5 below.

Table 5. Ecological Constraints and Further Survey Requirements

Potential Constraint/risk	Recommendations/Further Survey
Amphibians	Clerk of works will check area in advance of vegetation clearance works and will notify site staff if any amphibians found. Amphibians to remain in place undisturbed and allowed to move of their volition or moved to a sheltered area away from the working area.
Badgers	Clerk or works to check area in advance of vegetation clearance works. In unlikely event badger setts recorded, ecologist will work with the clearance team to establish an acceptable method of working in the area surrounding the sett.
Bats	Category 1* and 1 trees to be subject to climbing inspection by licensed bat surveyor and arborist. Category 2 trees to be subject to sectional felling and a post felling check by the clerk of works. Five bat boxes to be installed on retained trees, spread along the impacted railway corridor.
Birds	Vegetation clearance works undertaken during the bird nesting season (March-August inclusive) to be preceded by a nesting bird check by clerk of works. Should active nests be found, exclusion zones should be established
Hedgehog	Clerk of works will check in advance of vegetation clearance works and will notify site staff if any hedgehogs found. Hedgehogs to remain in place undisturbed and allowed to move of their volition or moved to a sheltered area away from the working area.
Invertebrates	Standing deadwood to be retained along the rail corridor, stumps of felled trees left *in situ*. Consideration to be given to creation of deadwood piles at locations along the rail corridor. Construction to be overseen by ecological clerk of works and any stag beetles encountered to remain in place undisturbed and allowed to move of their volition or moved to a sheltered area away from the working area.
Invasive species/ Japanese knotweed	Network Rail Japanese knotweed Method Statement to be implemented. Clerk of works to identify and mark patches of Japanese knotweed in advance of clearance works.
Reptiles	Clerk of works will check area in advance of vegetation clearance works and will notify site staff if any retiles found. Reptiles to remain in place undisturbed Hedgehogs to remain in place undisturbed and allowed to move of their volition or moved to a sheltered area away from the working area.

5. References

Forbes-Laird (2014) *Nr Dragon Lane. Lineside Tree Safety Survey, Palmers Green to Winchmore Hill*. Forbes-Laird Arboricultural Consultancy, Bedford.

Hundt, L. (2012) *Bat Surveys – Good Practice Guidelines Version 2*. Bat Conservation Trust, London.

Inns, H. (2009) *Britain's Reptiles and Amphibians.* WildGuides, Hampshire.

Appendix 1. Tree Bat Inspection Findings Table

Appendix 1. Tree bat inspection findings

Tree	Location	Species	Tree category	Notes
3041	7m 18ch Down	Pedunculate oak	1*	Veteran tree. X6 woodpecker holes at 16 m on south side. Rotten knot hole at 6 m on east side. Hollow in dead wood at 14 m on east side. X 4 woodpecker holes at 12 m on west limb. Works appear not to impact on tree features but scope to be agreed with tree workers on day works to proceed.
3024	7m 5ch Up	Ash	1	Open knot hole at 10 m on south side of stem
TG3007	7m 63ch Up	Sycamore, holly, oak	1	Two trees with tear outs at 5 m in west facing section of stems, further inspection required
TG3008	7m 64ch Up	Sycamores x 3, pedunculate oak x 3	1	Tear out between 5-8 m in west facing section of stem, tear out at 6 m on north side of stem
TG3009	7m 65ch Up	Sycamores x 3	1	Southern tree with rot hollow at base of branch at 10 m on north side of stem
3031	Winchmore Hill St., back of platform D	Sycamore	1	Large open knot hole at 2.5 m on south side of stem
3034	7m 30ch Down	Pedunculate oak	1	Mature tree. Multiple rotten flush cuts on north side at 2, 4 and 6 m. Probable additional features when climbed.
TG3021	7m 20ch Down	Hornbeam x 2	1	Northern tree has tear out to 4 m leading into hollow stem - inspect from ladder. Wood pecker hole at 9 m on south side of north stem
3040	7m 19ch Down	Hornbeam	1	Rot hollow leading into side limb at 4 m on north side - further inspection required
TG3002	6m 62ch Down	Sycamore x 14	1	Tear outs/fire damage at base of number of trees - further inspection with a 6 mm endoscope required prior to felling
3001	6m 64ch Up	Sycamore	2	Dense ivy cover, probable squirrel drey in top
3002	6m 64ch Up	Sycamore	2	Inspected tear out at 2 m on north of stem
3003	6m 64.5ch Up	Ash	2	Dense ivy growth
3013	6m 65ch Up	Sycamore	2	Tight union - no cavity
3019	7m 1ch Up	Ash	2	Dense ivy growth
3023	7m 2ch Up	Sycamore	2	Dense ivy growth
3025	7m 6ch Up	Pedunculate oak	2	Large tree
3027	7m 57ch Up	Sycamore	2	Large tree
TG3013	7m 69ch Down	Sycamore x 11	2	Second tree from north has tear out to 1 m long rot column at base, subject to

Appendix 1. Tree bat inspection findings

Tree	Location	Species	Tree category	Notes
				full inspection - no evidence of bats
3030	Winchmore Hill St., back of platform D	Sycamore	2	Large tree
3032	7m 58ch Down	Sycamore	2	Dense ivy growth
TG3015	7m 57ch Down	Sycamore x 4	2	Dense ivy growth. Difficult to fully inspect - advise climbers to notify ecologist if features found during sectional felling
TG3016	7m 54ch Down	Ash x 2	2	Dense ivy growth. Difficult to fully inspect - advise climbers to notify ecologist if features found during sectional felling
TG3017	7m 52ch Down	Sycamore, ash > 25	2	Dense ivy growth, 4 m long section of hollowed trunk with tear out on south side of central ash - no sign of bats. Difficult to fully inspect - advise climbers to notify ecologist if features found during sectional felling.
TG3018	7m 24ch Down	Pedunculate oak x 2	2	No features recorded
3043	7m 14.5ch Down	Pedunculate oak	2	
3044	6m 74ch Down	Sycamore	2	Large tree
3046	6m 72ch Down	Gean	2	Difficult to fully inspect
TG3026	6m 69ch Down	Horse chestnut x 2	2	Lifted bark at base of stem - inspection required prior to felling
TG3027	6m 62ch Down	Sycamore, ash > 35	2	Dense ivy cover
TG3001	6m 64ch Down	Sycamore x 11, ash x 1	2	Dense ivy cover
3012	6m 54ch Down	Sycamore	2	Dense ivy cover
3014	6m 65ch Up	Sycamore	2	Tear out at 2 m on west face
3004	6m 65ch Up	Sycamore	3	
3015	6m 67ch Up	Sycamore	3	
3016	6m 79.5ch Up	Ash	3	
3017	6m 79.5ch Up	Ash	3	
3018	6m 79.5ch Up	Ash	3	
3020	7m 1ch Up	Sycamore	3	

Appendix 1. Tree bat inspection findings

Tree	Location	Species	Tree category	Notes
3021	7m 1ch Up	Sycamore	3	
3022	7m 1ch Up	Sycamore	3	
TG3003	7m 11ch Up	Pedunculate oak x 2, gean x 4	3	
TG3004	7m 20ch Up	Pedunculate oak x 3	3	Trees potentially Category 1 but works have negligible potential to impact bat roosting features
TG3005	7m 41ch Up	Sycamore x 2	3	
3026	7m 54ch Up	Sycamore	3	
TG3006	7m 58ch Up	Sycamore x 7	3	
3028	7m 65ch Up	Pedunculate oak	3	Negligible damage around pruning points
TG3010	7m 69ch Up	Sycamore x 1, horse chestnut x 2, pedunculate oak x 2	3	
3029	7m 72ch Up	Pedunculate oak	3	Negligible potential around ivy cutting points or beneath ivy
TG3011	7m 72ch Up	Sycamore x 3	3	
TG3012	7m 72ch Down	Goat willow x 3	3	
TG3014	Winchmore Hill St., back of platform U	Sycamore x 6	3	
3033	7m 44ch Down	Gean	3	
3035	7m 26ch Down	Pedunculate oak	3	Negligible potential for the proposed pruning to impact bats
TG3019	7m 24ch Down	Gean x 3, Norway maple x 1	3	
TG3020	7m 21ch Down	Pedunculate oak x 6	3	Trees comprise mature oaks which are classed as a 1 overall, however ivy cutting has negligible potential to impact roosting bats
3037	7m 21ch Down	Sycamore	3	
3038	7m 20ch Down	Hornbeam`	3	
3039	7m 20ch Down	Pedunculate oak	3	Trees overall classed as a 1 overall; however ivy cutting has negligible potential to impact roosting bats. Several broken branches with rot hollows at 8 m

Appendix 1. Tree bat inspection findings

Tree	Location	Species	Tree category	Notes
TG3022	7m 18ch Down	Hornbeam x 2	3	
3042	7m 17ch Down	Pedunculate oak	3	
TG3023	7m 17ch Down	Pedunculate oak x 1, gean x 1	3	
TG3024	7m 17ch Down	Gean x 10	3	
TG3025	7m 72ch Down	Poplar, sycamore, goat willow, pedunculate oak	3	
3045	6m 74ch Down	Gean	3	
3047	6m 72ch Down	Pedunculate oak	3	
3048	6m 70ch Down	Pedunculate oak	3	Tear out at 10 m on east side, 2 m from centre of tree. Tree is overall a Class 1 however works have negligible potential to impact potential bat roosting features.
3005	6m 61ch Down	Gean	3	
3006	6m 61ch Down	Gean	3	
3007	6m 61ch Down	Sycamore	3	
3008	6m 55ch Down	Gean	3	
3009	6m 55ch Down	Gean	3	
3010	6m 55ch Down	Gean	3	
3011	6m 55ch Down	Gean	3	
3036	7m 21ch Down	Hornbeam	-	Tree felled prior to survey

Appendix 2. Survey Findings Plans

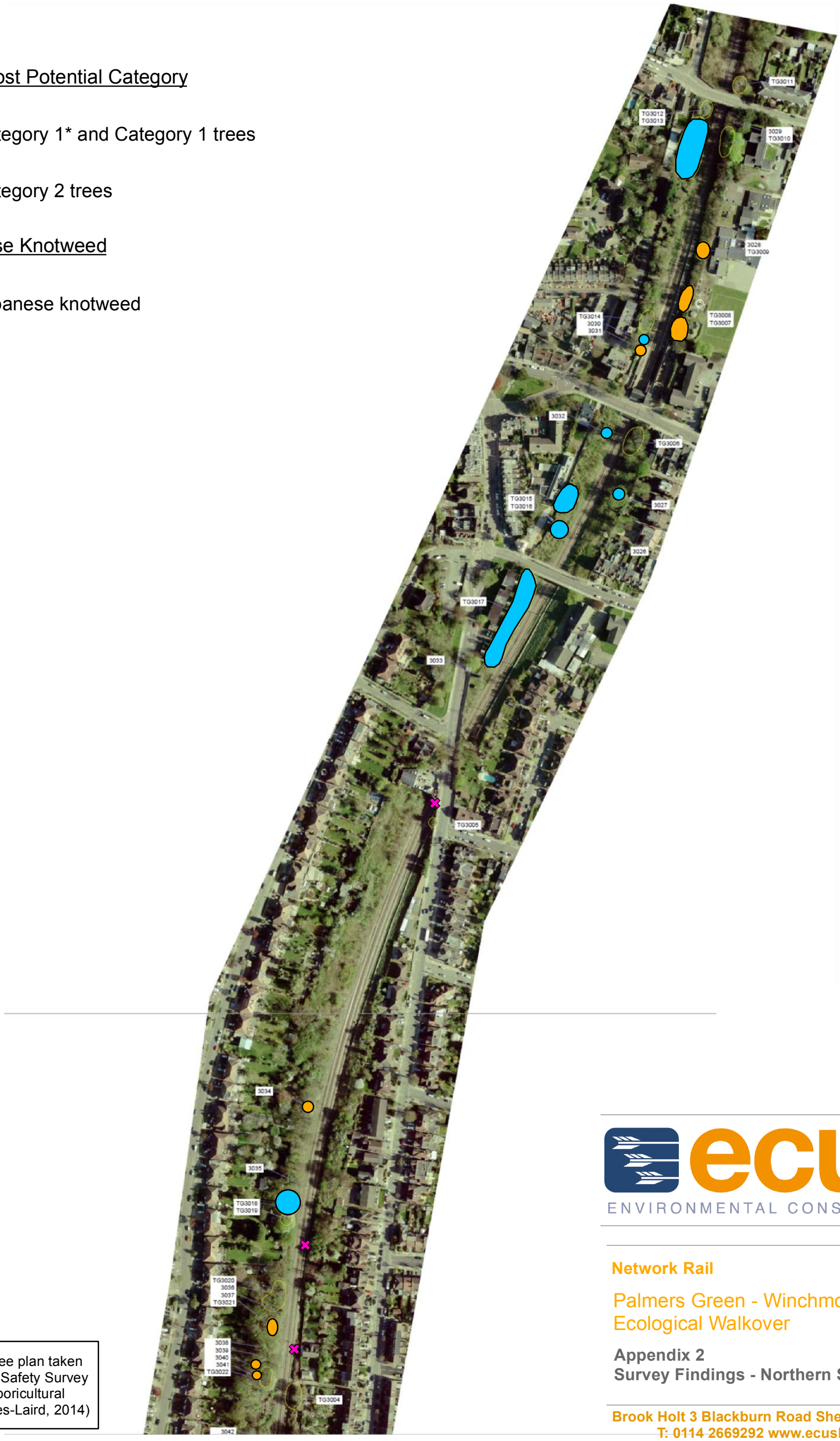
Legend

Bat Roost Potential Category

- Category 1* and Category 1 trees
- Category 2 trees

Japanese Knotweed

- Japanese knotweed



Aerial image and tree plan taken from Lineside Tree Safety Survey by Forbes-Laird Arboricultural Consultancy (Forbes-Laird, 2014)

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Appendix 2
Survey Findings - Northern Sheet

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Legend

Bat Roost Potential Category

- Category 1* and Category 1 trees
- Category 2 trees

Japanese Knotweed

- Japanese knotweed

Aerial image and tree plan taken from Lineside Tree Safety Survey by Forbes-Laird Arboricultural Consultancy (Forbes-Laird, 2014)

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Palmers Green - Winchmore Hill Ecological Walkover

Appendix 2
Survey Findings - Southern Sheet

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Appendix 3. Survey Images

3041 -Pedunculate Oak - Category 1

TG 3021 - Hornbeam - Category 1

3031 –Sycamore - Category 1

3034 - Pedunculate oak- Category 1

Looking north along railway

Example of tree group

Example of dense ivy cover on trunk

Example outgrown semi-improved grassland

Example of dense ivy cover in field layer

3016 - Ash - Category 2

TG3004 - Pedunuclate oak - Category 3

ecus
ENVIRONMENTAL CONSULTANTS

Network Rail

Palmers Green to Winchmore Hill – Ecological Constraints

Appendix 3

Survey Images

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