

Land at Piccadilly Wharf, Store Street, Manchester M1 2WA

ECOLOGICAL SURVEY AND ASSESSMENT

December 2021

[ERAP (Consultant Ecologists) Ltd ref: 2021-033]

ERAP (Consultant Ecologists) Ltd
Building N2
Chorley Business and Technology Centre
East Terrace
Euxton Lane
Euxton
Chorley
PR7 6TE

Tel: 01772 750502

mail@erap.co.uk
www.erap.co.uk



CONTENTS

Summary	3
1.0 Introduction	4
1.1 Background and Rationale	4
1.2 Scope of Works.....	4
2.0 Method of Survey.....	4
2.1 Desktop Study and Data Search	4
2.2 Vegetation and Habitats.....	5
2.3 Animal Life	5
2.4 Survey and Reporting Limitations	7
2.5 Evaluation Methods	8
3.0 Survey Results.....	8
3.1 Desktop Study and Data Search	8
3.2 Vegetation and Habitats.....	10
3.3 Animal Life	11
4.0 Evaluation and Assessment.....	12
4.1 Introduction and Description of Proposals.....	12
4.2 Designated Sites for Nature Conservation	12
4.3 Vegetation and Habitats.....	13
4.4 Protected Species and Other Wildlife.....	13
5.0 Recommendations and Ecological Enhancement	13
5.1 Introduction.....	13
5.2 Recommendations in Relation to Lighting onto Ashton Canal (West) SBI	13
5.3 Enhancing Habitats for Roosting Bats.....	14
5.4 Birds.....	15
5.5 Further Ecological Enhancements	17
6.0 Conclusion	18
7.0 References	20
8.0 Appendix: Photographs, Tables and Figures	22
8.1 Plant Species List.....	22
8.2 Photographs.....	23
8.3 Figures.....	24

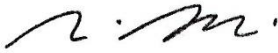
List of Tables

Table 2.1: Survey Equipment used during Daylight Bat Survey	6
Table 2.2: Consideration of Suitability of Foraging and Commuting Habitat for Bats	7
Table 2.3: Important Habitat Characteristics for Reptiles.....	7
Table 3.1: Records of Protected Species Within a 2 Kilometre Radius of the Site	9
Table 3.2: Bird species Detected on 22 nd April 2021.....	11
Table 5.1: Recommended Plants for Use as Roof Terrace Planting	18
Table 8.1: Plant Species List for the Site.....	22

List of Figures

Figure 1: Aerial Image of the Site and its Surroundings.....	24
Figure 2: Phase 1 Habitat and Vegetation Map	25

Document Control

Survey Type:	Surveyors¹	Survey Date(s)
Phase 1 Habitat survey	Brian Robinson B.Sc. (Hons) MCIEEM and Catie Haworth B.Sc. (Hons) M.Sc.	22 nd April 2021
Reporting	Personnel	Date
Author	Brian Robinson B.Sc. (Hons) MCIEEM Senior Ecologist	23 rd April 2021
Signature(s)		
Checked	Catie Haworth B.Sc. (Hons) M.Sc.	4 th May 2021
Revised and issued	Brian Robinson B.Sc. (Hons) MCIEEM	Version 1: 14 th May 2021 Version 2: 9 th December 2021
Report issued to	M1 Piccadilly Ltd	
Version Number	2: Version 1, dated 14 th May 2021, updated 9 th December 2021 to include information provided in respect of shading to the canal by Gia Chartered Surveyors. Reference to the National Planning Policy Framework have also been updated to reflect the current version.	

¹ Licence reference number

Wild plants

Victoria Burrows, Natural England WML-A31 Taking Wild Plants Licence Number 2020-50615-SCI-SCI

SUMMARY

Introduction and Scope

- i. This ecological survey and assessment presents the ecological, biodiversity and nature conservation status of land at Piccadilly Wharf, Manchester. The assessment was requested in connection with proposals to develop the site to a 15 storey block of apartments.
- ii. This report presents the results of a desktop study and extended Phase 1 Habitat Survey carried out in April 2021. The scope of survey undertaken is appropriate to identify potential ecological constraints, the remit of mitigation required and opportunities for biodiversity associated with the development proposals.
- iii. The site comprises a fenced off area of recently felled Italian Alder and scrub vegetation.

Results of Survey and Assessment

- iv. The proposals will have no adverse effect on the statutory designated sites for nature conservation present in the wider area. Impacts to non-statutory designated sites can be reasonably discounted at this stage; recommendations for an appropriate lighting scheme to ensure artificial light is from the proposals is not detrimental to the Ashton Canal (West) Site of Biological Importance are presented at **Section 5.2**.
- v. The site supports an area of recently (i.e. within the last 12 months) felled trees and scrub surrounded by walls and fencing. Only common and widespread plant species were detected at the site. None of the habitats within the site are currently of significant interest in terms of their plant species composition. None of the habitats present (or that were present prior to the felling operations) are representative of semi-natural habitat. It is considered that, prior to felling, the trees and scrub would have been of 'local' value in terms of their geographical context, as they would have provided structural diversity and suitable habitat for nesting birds. It is not considered that the site supports Priority Habitat, or that the trees and scrub present prior to the felling operations would have been representative of a Priority Habitat.
- vi. No invasive plant species listed on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended) were detected.
- vii. A single tree is present at the southern site boundary, and is suitable for use by nesting birds. Recommendations for the protection of nesting birds are presented at **Section 5.2**. Otherwise the presence of protected or notable species is reasonably discounted at the site.

Recommendations

- viii. The recommendations in **Section 5.0** outline all the mandatory measures and additional actions to be applied to ensure compliance with wildlife legislation, the National Planning Policy Framework (NPPF) and best practice.
- ix. The proposals will secure an opportunity to implement beneficial measures and habitat creation that will safeguard habitats for wildlife such as birds and bats, in accordance with the principles of the NPPF.

Conclusion

- x. This ecological assessment has demonstrated that the proposed development at the site is feasible and acceptable in accordance with ecological considerations and the National Planning Policy Framework.

1.0 INTRODUCTION

1.1 Background and Rationale

- 1.1.1 ERAP (Consultant Ecologists) Ltd was commissioned by M1 Piccadilly Ltd to carry out an ecological assessment of land at Piccadilly Wharf, Store Street, Manchester M1 2WA (hereafter referred to as the 'site'). The Ordnance Survey (OS) grid reference at the centre of the 0.06 hectare site is SJ 84986 98079. An aerial image of the site and its surrounding habitats is appended at **Figure 1** (source image: ESRI World Imagery).
- 1.1.2 The assessment was requested in connection with a planning application to develop the site to a 15 storey block of residential apartments.

1.2 Scope of Works

- 1.2.1 The scope of ecological works undertaken in April 2021 comprised:
- A desktop study and data search for known ecological information at the site and the local area;
 - An Extended Phase 1 Habitat Survey and assessment;
 - Assessment of the ecological value of the habitats within the site with the use of the National Vegetation Classification (NVC) and the Ratcliffe criteria, as presented in *A Nature Conservation Review* (Ratcliffe, 1977);
 - Survey and assessment of all habitats for relevant statutorily protected species¹ and other wildlife including badger (*Meles meles*), bird species and reptiles;
 - A licensed daylight bat survey of the trees;
 - The identification of any potential ecological constraints on the proposals and the specification of the scope of mitigation and ecological enhancement required in accordance with wildlife legislation, planning policy guidance and other relevant guidance; and
 - The identification of any further surveys or precautionary actions that may be required to inform the planning process and / or prior to the commencement of any development activities.

2.0 METHOD OF SURVEY

2.1 Desktop Study and Data Search

- 2.1.1 The following sources of information and ecological records were consulted:
- MAGiC: A web-based interactive map which brings together geographic information on key environmental schemes and designations, including details of statutory nature conservation sites;
 - Greater Manchester Local Record Centre (GMLRC); and
 - Greater Manchester Biodiversity Action Plan (BAP).

¹ In accordance with *Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and Their Impact on the Planning System* (Ministry of Housing, Communities & Local Government, 2005) developers should not be required to undertake surveys for protected species unless there is reasonable likelihood of the species being present and affected by the development. In this instance (for example) there are no ponds within 500 metres of the site, and no ditches or watercourses within or in proximity to the site; there has therefore been no requirement to consider great crested newt (*Triturus cristatus*), water vole (*Arvicola amphibius*) or otter (*Lutra lutra*) as part of this assessment.

2.2 Vegetation and Habitats

- 2.2.1 An Extended Phase 1 Habitat Survey of the site was carried out by Brian Robinson and Catie Haworth on 22nd April 2021. The weather conditions at 9 am were sunny, dry and calm (Beaufort 0) with an air temperature of 5°C.
- 2.2.2 A habitat and vegetation map was produced for the site and the immediate surrounding area at a scale of 1:500 (refer to **Figure 2**). The mapping is based on the Joint Nature Conservation Committee Phase 1 Habitat Survey methodology (JNCC, 2010) with minor adjustments to illustrate and examine the habitats with greater precision.
- 2.2.3 On site habitat mapping was assisted via use of GPS technology and QField on-site mapping software, using *Piccadilly Wharf Store Street: Proposed Site Plan, Red Line Boundary 05868_MP-00_2201 Rev 0* (5plus Architects, 2021) and *Topographical Survey of Land at Store Street, Manchester S20-SST-T* (G.E.O.(UK) Ltd, 2021) as base plans.
- 2.2.4 The plant species within the site boundary were determined with estimates of the distribution, ground cover, abundance and constancy of individual species. The estimation of abundance was based on the DAFOR system, where D = Dominant, A = Abundant, F = Frequent, O = Occasional and R = Rare, this being a widely used and accepted system employed by ecological surveyors. The terms L = Locally and V = Very were additionally used to describe the plant species distributions with greater precision.
- 2.2.5 Stands of vegetation and habitats were described and evaluated using the National Vegetation Classification (NVC). The NVC provides a systematic and comprehensive analysis of British vegetation and is a reliable framework for nature conservation and land-use planning.
- 2.2.6 Habitats within the site were assessed in accordance with the UK Habitats Classification / UKHAB (Group, et al., 2020). The UKHAB has been designed to function at two scales: fine scale (25m² or 5 metres length) and large scale (400m² or 20m length). It has been considered for the purposes of this survey that the fine scale of 25m² is appropriate for the classification of habitats.
- 2.2.7 Searches were made for uncommon, rare and statutorily protected plant species, those species listed as protected in the *Wildlife and Countryside Act 1981* (as amended) and species which are indicators of important and uncommon plant communities. Plant nomenclature follows *New Flora of the British Isles 3rd Edition* (Stace, 2010).
- 2.2.8 A search for aquatic and emergent vegetation along the length of the Ashton Canal within proximity to the site was conducted. The method followed comprised walking the canal bank (the 100 metres closest to the site) to search for any emergent / aquatic vegetation at the water surface, and searching for submerged aquatic vegetation using a grapnel at 5 metre intervals along the length of the surveyed canal bank.
- 2.2.9 Searches were carried out for the presence of invasive species, including those listed on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended), including Japanese Knotweed (*Fallopia japonica*), Indian Balsam (*Impatiens glandulifera*) and Giant Hogweed (*Heracleum mantegazzianum*).

2.3 Animal Life

Badger

- 2.3.1 The survey area for badger covered the site (as annotated on **Figure 2**) and extended to accessible land within a radius of 50 metres from the site boundary. Private gardens / land were excluded from the survey.
- 2.3.2 The survey was conducted in accordance with guidance presented within *Badgers and Development* (Natural England, 2007) and *Badgers: surveys and mitigation for development projects* (Natural England, 2015).
- 2.3.3 The following signs of badger activity were searched for:

- a. Sett entrances, e.g. entrances that are normally 25 to 35cm in diameter and shaped like a 'D' on its side;
- b. Large spoil heaps outside sett entrances;
- c. Bedding outside sett entrances;
- d. Badger footprints;
- e. Badger paths;
- f. Latrines;
- g. Badger hairs on fences or bushes;
- h. Scratching posts; and
- i. Signs of digging for food.

2.3.4 Habitats within and surrounding the site were assessed in terms of their suitability for use by foraging and sheltering badger in accordance with their known habitat preferences as detailed in current guidance and *Badger* (Roper, 2010).

Bat Species

Daylight Survey: Trees

2.3.5 The site was assessed for its suitability to support roosting bats by Brian Robinson, Natural England Class Survey Licence WML CL18 (Bat Survey Level 2), Registration Number 2015-13161-CLS-CLS. The surveyor's qualifications and experience meet the criteria as defined in the *Technical Guidance Series Competencies for Species Survey: Bats* (CIEEM, 2013).

2.3.6 A list of equipment used is detailed at **Table 2.1**, below:

Table 2.1: Survey Equipment used during Daylight Bat Survey

Ladders
LED Lenser P14 torch
Panasonic DMC- FT1 digital camera
8x20 binoculars
Ridgid Micro Inspection Camera Borescope CA-100

2.3.7 A preliminary assessment of the trees within the site was conducted to assess their suitability for use by roosting bats, and to inform whether further surveys or precautionary measures were required.

2.3.8 Trees were assessed from the ground using binoculars and a high-powered torch. Each tree was searched for the presence of the following features:

Woodpecker holes, rot holes, hazard beams, other vertical or horizontal cracks or splits in stems and branches, partially decayed platey bark, knot holes, man-made holes, tear-outs, cankers in which cavities have developed, other hollows or cavities, including butt-rots, double-leaders forming compression forks with included bark, gaps between overlapping stems or branches, partially detached Ivy (Hedera helix) with stem diameters in excess of 50mm and bat, bird or dormouse (Muscardinus avellanarius) boxes.

2.3.9 Terms used to describe any features present follow (where possible) those outlined and described in *Bat Tree Habitat Key, 2nd Edition* (Andrews, H (ed), 2013) and *Bat Roosts in Trees: A Guide to Identification and Assessment for Tree-care and Ecology Professionals* (BTHK, 2018).

Habitat Assessment for Commuting / Foraging Bats

2.3.10 Habitats within and adjacent to the site were assessed for their value and suitability for commuting and foraging bats in accordance with Table 4.1 of *Bat Surveys for Professional Ecologists: Good Practice*

Guidelines (3rd edn), (Collins, J. (ed), 2016). Reference has been made to the categories and descriptions / examples, presented at **Table 2.2**, below.

Table 2.2: Consideration of Suitability of Foraging and Commuting Habitat for Bats

Suitability	Commuting Habitat	Foraging Habitat
Negligible	Negligible habitat features on site likely to be used by commuting bats.	Negligible habitat features on site likely to be used by foraging bats.
Low	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated i.e. not very well connected to the surrounding landscape by other habitat.	Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree or patch of scrub.
Moderate	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens.	Habitat that is linked to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	Continuous, high-quality habitat that is well connected to the wider landscape and is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. Habitats close to and connected to known roosts.	High-quality habitat that is well-connected to the wider landscape and is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Habitats close to and connected to known roosts.

Bird Species

- 2.3.11 Bird species observed and heard during the survey were recorded.
- 2.3.12 Habitats throughout the site and in the immediate surrounding area were assessed for their value to roosting, feeding and nesting birds, as indicated by the amount of shelter, feeding value, woody vegetation structure and species diversity of tree and shrub species in the site.

Reptile Species

- 2.3.13 The site and its surroundings were assessed in terms of their suitability for use by reptile species using the important characteristics for reptiles outlined in the draft document '*Reptile Mitigation Guidelines*' (Natural England, 2011), and the *Reptile Habitat Management Handbook* (Edgar, et al., 2010). These habitat characteristics are outlined in **Table 2.3**, below.

Table 2.3: Important Habitat Characteristics for Reptiles

1. Location (in relation to species range)	7. Connectivity to nearby good quality habitat
2. Vegetation Structure	8. Prey abundance
3. Insolation	9. Refuge opportunity
4. Aspect	10. Hibernation habitat potential
5. Topography	11. Disturbance regime
6. Surface geology	12. Egg-laying site potential

2.4 Survey and Reporting Limitations

- 2.4.1 The survey was conducted in spring, when many plant species are not yet in flower, and was completed after the trees and shrubs within the site had been felled; identification of the species formerly present at the site was possible as stems and branches had been left on site however, and the surveyors are experienced in surveying plant species from their vegetative characteristics.
- 2.4.2 It is considered that a reliable assessment of the habitats currently present at the site was possible, and a reasonable assessment of the habitats present prior to the recent felling was also possible.

2.4.3 The time of year was not favourable for the detection and identification of aquatic plants, however, the examination of the canal for aquatic and emergent vegetation was for additional information purposes only and this is not considered to be a limitation to the objectives of this report.

2.4.4 All measurements within this report are approximate only, and have been either measured (using QField) or estimated whilst on site or calculated using mapping software (QGIS) or internet-based mapping services such as MAGiC and Google Earth.

2.5 Evaluation Methods

2.5.1 The habitats, vegetation and animal life were evaluated with reference to standard nature conservation criteria as described in *A Nature Conservation Review* (Ratcliffe, 1977) and *Guidelines for the Selection of Biological SSSIs* (Bainbridge, et al., 2013). These are size (extent), diversity, naturalness, rarity, fragility, typicality, recorded history, position in an ecological or geographical unit, potential value and intrinsic appeal.

2.5.2 Habitats have been assessed to determine whether they meet those described in *UK Biodiversity Action Plan: Priority Habitat Descriptions* (Maddock, A (ed), 2008); these lists are used to help draw up the statutory lists of Priority Habitats, as required under Section 41 of the *Natural Environment and Rural Communities (NERC) Act 2006*. Where suitable, the ecological value of the habitats present has been assessed using the terms outlined in *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* (CIEEM, 2018).

2.5.3 Government advice on wildlife, as set out in the *National Planning Policy Framework* (Ministry of Housing, Communities and Local Government, 2021) and associated government circulars has been taken into consideration. Legislation relating to protected species, such as those listed under Schedules 1, 5, 6 and 8 of the *Wildlife and Countryside Act 1981* (as amended) and *The Conservation of Habitats and Species Regulations 2017*, is referenced where applicable, and any impacts to protected species are evaluated in accordance with current guidance.

2.5.4 The presence of any Priority Species, as listed under Section 41 of the *Natural Environment and Rural Communities (NERC) Act 2006* is noted, and habitats are assessed in terms of their suitability and value for these species. The presence of habitats and/or species listed by the Greater Manchester Biodiversity Action Plans has been taken into account in the evaluation of the site.

3.0 SURVEY RESULTS

3.1 Desktop Study and Data Search

Statutory Designated Sites for Nature Conservation and SSSI Impact Risk Zones

3.1.1 The site has no statutory designation for nature conservation.

3.1.2 The site lies within the SSSI Impact Risk Zone for the Rochdale Canal Site of Special Scientific Interest (SSSI) and the overlapping Rochdale Canal Special Area of Conservation (SAC), located 5 kilometres to the north-east of the site and designated for their importance for submerged aquatic plants and emergent vegetation, including extensive colonies of Floating Water-plantain (*Luronium natans*), a European Protected Species.

3.1.3 The SSSI Impact Risk Zone requires the Local Planning Authority to consult with Natural England on likely risks from the following development categories (Ordnance Survey, 2021):

- a. Airports, helipads and other aviation proposals;

- b. Any industrial / agricultural development that could cause air pollution, including industrial processes, livestock and poultry units with floorspace greater than 500m², slurry lagoons greater than 750m² and manure stores greater than 3500 tonnes; and
- c. General combustion processes greater than 50 megawatt energy input, including energy from waste incineration, Other incineration, landfill gas generation plant, pyrolysis / gasification, anaerobic digestion, sewage treatment works, other incineration / combustion.

3.1.4 The proposals do not meet any of the above categories for which the local planning authority must consult Natural England on likely risks on nearby statutory designated sites.

Non-statutory Designated Sites for Nature Conservation

3.1.5 The site has no non-statutory designated site for nature conservation.

3.1.6 The site lies 20 metres to the south-west of Ashton Canal (West) Site of Biological Importance (SBI), designated for its importance as a wildlife corridor and for its important accessible natural greenspace in an otherwise urban landscape. Canals are a Greater Manchester Biodiversity Habitat.

3.1.7 Rochdale Canal: Stott's Lane to Ducie Street Basin SBI is located 180 metres to the north of the site and is designated for its artificial manmade habitats and the aquatic plant species it supports.

Priority Habitats Inventory

3.1.8 The Priority Habitats Inventory² was checked via MAGiC map. No Priority Species are listed for the site, and the site does not lie within any National Habitat Network Expansion Zones.

Protected and Notable Species

3.1.9 GMLRC hold no records of protected and notable species for the site.

3.1.10 Records of protected and notable species for a 2 kilometre radius of the site are summarised at **Table 3.1** below.

Table 3.1: Records of Protected Species Within a 2 Kilometre Radius of the Site

Taxon Group	Species Name and Designations ¹ and Notes
Birds	WCAs1 & GMBAP Black redstart (<i>Phoenicurus ochruros</i>).
	WCAs1 Hobby (<i>Falco subbuteo</i>), kingfisher (<i>Alcedo atthis</i>), little ringed plover (<i>Charadrius dubius</i>) and peregrine (<i>Falco peregrinus</i>).
	PS Bullfinch (<i>Pyrrhula pyrrhula</i>), cuckoo (<i>Cuculus canorus</i>), dunnoek (<i>Prunella modularis</i>), herring gull (<i>Larus argentatus</i>), house sparrow (<i>Passer domesticus</i>), lapwing (<i>Vanellus vanellus</i>), lesser redpoll (<i>Carduelis cabaret</i>), linnet (<i>Carduelis cannabina</i>), song thrush (<i>Turdus philomelos</i>), spotted flycatcher (<i>Muscicapa striata</i>), starling (<i>Sturnus vulgaris</i>) and yellow wagtail (<i>Motacilla flava</i>).
	A grey heron heronry (a nesting site for herons) is located 1 kilometre to the west of the site. Nesting birds, their nests and eggs are protected under the <i>Wildlife and Countryside Act 1981</i> (as amended).
Flowering Plants	PS Grass-wrack Pondweed (<i>Potamogeton compressus</i>) and Yellow Bird's-nest (<i>Monotropa hypopitys</i>)
Insects (moths)	A record of an unspecified Priority Species of moth is reported for the wider area.
Terrestrial mammals	Brown long-eared bat (<i>Plecotus auritus</i>): EPS, PS, WCAs5 & GMBAP. 1 record of activity located 1.8 kilometres to the west of the site.

² A spatial dataset that describes the geographic extent and location of Natural Environment and Rural Communities Act (2006) Section 41 habitats of principal importance.

Taxon Group	Species Name and Designations ¹ and Notes
	Common pipistrelle (<i>Pipistrellus pipistrellus</i>): EPS, WCAs5 & GMBAP. 20 records of roosts and at least 65 records of activity. The closest record is approximately 100 metres from the site.
	Daubenton's bat (<i>Myotis daubentonii</i>): EPS, WCAs5 & GMBAP. 1 record of activity located 1.2 kilometres to the north-west of the site.
	Myotis species (<i>Myotis</i> sp.): EPS, WCAs5 & GMBAP. 1 record of a roost located 400 metres to the south of the site.
	Pipistrelle species (<i>Pipistrellus</i> sp.): EPS, WCAs5 & GMBAP. 4 records of roosts and 15 records of activity. The closest record is 200 metres from the site.
	Soprano pipistrelle (<i>Pipistrellus pygmaeus</i>): EPS, PS, WCAs5 & GMBAP.
	Badger (<i>Meles meles</i>): PBA92. 4 records, including 1 sett; the closest record is over 1 kilometre from the site.
	Hedgehog (<i>Erinaceus europaeus</i>): PS. 1 record of a roost and 2 records of activity, the closest of which is 500 metres to the west of the site.
¹ Key to Designation Codes: EPS = European Protected Species under the <i>Conservation of Habitats and Species Regulations 2017</i> . WCAs1 = Species receives full protection under Schedule 1 of the <i>Wildlife and Countryside Act 1981</i> (as amended). WCAs5 = Species receives full protection under Schedule 5 of the <i>Wildlife and Countryside Act 1981</i> (as amended). PBA92 = Protection of Badger Act 1992 PS = Priority Species listed under Section 41 of the NERC Act 2006 GMBAP = Species listed on the Greater Manchester Action Plan	

- 3.1.11 The presence of these protected and notable species within the wider area has been taken into account throughout this report.

3.2 Vegetation and Habitats

- 3.2.1 A Phase 1 Habitat Survey map is appended at **Figure 2**, and can be referred to for all habitat descriptions. Photographs are appended at **Section 8.2**.
- 3.2.2 The northern-western site boundary is defined by a fence and wall, beyond which lies Store Street and buildings. The north-eastern site boundary is defined by fencing, beyond which lies an area of trees and ornamental planting. The south-eastern site boundary is defined by fencing, beyond which lies a car park associated with residential dwellings, and the south-western site boundary is defined by fencing, beyond which lies an industrial building.
- 3.2.3 Refer to **Photos 1 to 3**. The approximately 0.06 hectare site is located within urban surroundings and supports recently felled (estimated to be within the last 12 months) trees and scrub, the majority of which was (as based on the felled stems and branches) composed of Italian Alder (*Alnus cordata*) with locally abundant Elm species (*Ulmus* sp.) and Bramble (*Rubus fruticosus* agg.).
- 3.2.4 The site currently supports a single Italian Alder tree, occasional Ash (*Fraxinus excelsior*), Wild Cherry (*Prunus avium*) and Elder (*Sambucus nigra*) saplings, occasional Bramble and very locally frequent Common Nettle (*Urtica dioica*) and Ivy (*Hedera helix*), a majority of which is growing on the north-western wall of the site. A plant species list for the site is appended at **Table 8.1**.
- 3.2.5 The vegetation is not typical of any NVC community, and is described in the UKHAB habitat as w1g7 Other broadleaved woodland types with the following secondary codes: 36 Plantation, 48 Non-native and 53 Felled.

Invasive Plant Species

- 3.2.6 No invasive plant species listed under Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended) were detected within the site.

Ashton Canal

- 3.2.7 Refer to **Photo 4**. A 100 metres long section of the canal closest to the site was surveyed; plant species detected comprised locally abundant Nuttall's Waterweed (*Elodea nuttallii*) and rare Small Pondweed (*Potamogeton berchtoldii*). No other aquatic plant species were detected.

3.3 Animal Life

Badger

- 3.3.1 No badger or signs of badger were detected within the site or within the accessible 50 metres around the site. The presence of badger is reasonably discounted.

Bat Species

Daylight Survey: Trees

- 3.3.2 No features suitable for use by roosting bats was detected at the tree within the site. The presence of roosting bats is reasonably discounted.

Habitat Assessment for Commuting and Foraging Bats

- 3.3.3 The former trees and scrub would have been suitable for and would have contributed to the wider foraging area of low numbers of common species of edge-feeding foraging bats associated with urban habitats, such as common pipistrelle (*Pipistrellus pipistrellus*).
- 3.3.4 A diverse range of species and / or a large number of bats are considered unlikely at the site owing to the small size of the site. Overall the site is assessed to be of 'low' suitability for use by foraging bats.

Bird Species

- 3.3.5 Birds detected in the habitats surrounding the site in April 2021 are listed in **Table 3.2**, below.

Table 3.2: Bird species Detected on 22nd April 2021

Scientific Name	Common Name (number seen)	BOCC Status ¹	Priority Species?
<i>Columba palumbus</i>	Wood pigeon	Green	
<i>Cyanistes caeruleus</i>	Blue tit	Green	
<i>Erithacus rubecula</i>	Robin	Green	
<i>Parus major</i>	Great tit	Green	
<i>Passer domesticus</i>	House sparrow	Red	Yes
<i>Pica pica</i>	Magpie	Green	
<i>Troglodytes troglodytes</i>	Wren	Green	
<i>Turdus merula</i>	Blackbird	Green	

¹BOCC: Birds of Conservation Concern (Eaton, et al., 2015)

- 3.3.6 The former trees and shrubs were suitable for use by nesting passerine (i.e. perching) species, including those detected close to the site during the survey. This is considered further at **Section 4.4**, below.

Reptiles

- 3.3.7 The 0.06 hectare site is located within an area characterised by urban development and is not linked to any habitats favourable for use by reptile species, and there are no records of reptile for the site or the wider area. The presence of reptiles within the site is reasonably discounted.

4.0 EVALUATION AND ASSESSMENT

4.1 Introduction and Description of Proposals

- 4.1.1 In accordance with development plans provided by 5Plus Architects it is proposed to develop the site to a 15 storey block of residential apartments.
- 4.1.2 **Section 4.2** provides an assessment of any impacts of the proposed development on the designated sites for nature conservation present in the wider area. The ecological value of habitats within the site are evaluated at **Section 4.3**, and protected and notable species are considered at **Section 4.4**.

4.2 Designated Sites for Nature Conservation

- 4.2.1 It is considered that the site is sufficiently small and distant from all statutory designated sites for nature conservation that the proposed development will have no impact upon them.
- 4.2.2 An assessment in relation to the potential for the development to cause additional shading upon the Ashton Canal (West) SBI (and thereby create negative effects on aquatic plant species associated with the canal) has been completed by Gia Chartered Surveyors. The results of this assessment are presented below:

'Whilst there will be additional evening shade from the proposed development on the canal, this will be transient and limited to the early afternoon and evening. In order to understand the potential impact, and where substantial permanent shade may be caused by the proposed development, the BRE Guide provides the 'sun-on-ground indicator' (SHOG) methodology for the assessment of overshadowing from proposed developments. The assessment applies to both new and existing gardens/amenity areas, which are affected by new developments. The BRE Guidelines suggest that the Spring Equinox (21st March) is a suitable date for the assessment. Using specialist software, the path of the sun is tracked to determine where the sun would reach the ground and where it would not.

The BRE Guidelines recommend that at least half of a garden or amenity area should receive at least 2 hours of sunlight on March 21st or the area which receives 2 hours of direct sunlight should not be reduced to less than 0.8 times its former value (i.e. there should be no more than a 20% reduction).

The canal will continue to receive direct sunlight throughout the morning up to around 1pm. After that point, the sun will be sufficiently low enough to project the shadowing from the proposed development onto the canal, however only onto areas which will have received high levels of direct sunlight throughout the morning, and into the afternoon. In our view therefore, there will be no increase in the area of the canal that does not receive 2 hours of sunlight on March 21st and there is no potential for meaningful impact.

- 4.2.3 The above shading assessment concludes that there will be no meaningful impact in terms of shading from the proposed development to the aquatic life associated with the canal and impacts can therefore be reasonably discounted.
- 4.2.4 Due to the proposed height of the building it is considered that the proposals could create impacts (in terms of increased artificial lighting) on the Ashton Canal (West) SBI, which could create negative effects on the canal's suitability as a wildlife corridor and for foraging and commuting bats. It is recommended (at **Section 5.2**) that an assessment of the impacts of the proposals in terms of artificial lighting to the wider area is completed to inform the proposals, and that this may be completed under a suitably worded planning condition.
- 4.2.5 Otherwise impacts to other non-statutory designated sites are reasonably discounted.

4.3 Vegetation and Habitats

- 4.3.1 Only common and widespread plant species were detected at the site. None of the habitats within the site are currently of significant interest in terms of their plant species composition. None of the habitats present (or that were present prior to the felling operations) are representative of semi-natural habitat. It is considered that, prior to felling, the trees and scrub would have been of 'local' value in terms of their geographical context³, as they would have provided structural diversity and suitable habitat for nesting birds. It is not considered that the site supports Priority Habitat, or that the trees and scrub present prior to the felling operations would have been representative of a Priority Habitat.
- 4.3.2 No invasive plant species listed under Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended) were detected within the site.

4.4 Protected Species and Other Wildlife

- 4.4.1 The single tree within the site is suitable for use by nesting birds. Measures for the protection of nesting birds are presented at **Section 5.4**, below. The site formerly supported habitats suitable for use by nesting birds (i.e. the felled trees and scrub); measures to incorporate into the site design for the benefit of nesting birds are presented at **Section 5.3**.
- 4.4.2 Otherwise the presence of protected and notable species is reasonably discounted.

5.0 RECOMMENDATIONS AND ECOLOGICAL ENHANCEMENT

5.1 Introduction

- 5.1.1 These recommendations aim to ensure that the development is implemented in accordance with relevant wildlife legislation, Natural England guidance, the principles of the National Planning Policy Framework (NPPF), local planning policy and best practice.
- 5.1.2 In accordance with Chapter 15, paragraph 180(d) of the NPPF:
- 'opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate'.*
- 5.1.3 Where possible, opportunities to enhance the ecological interest and habitat connectivity and seek biodiversity gain through appropriate landscape planting and habitat creation have been identified.
- 5.1.4 All recommendations are appropriate to the geographical area, the habitats in the wider area, the wildlife present in the local area (and likely to use the site post-construction) and take into consideration the end use of the site as an apartment building.

5.2 Recommendations in Relation to Lighting onto Ashton Canal (West) SBI

Lighting

- 5.2.1 Paragraph 185(c) in Chapter 15 (conserving and enhancing the natural environment) of the NPPF states that development should:

³ ¹In relation to its geographic context, using the terms presented at Section 4.7 of *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* (CIEEM, 2018), i.e. International and European, National, Regional, Local Authority-wide area, River Basin District, Estuarine system/Coastal cell or Local. The term 'site' value is additionally used to highlight ecological features considered to be of importance in the context of the wider site habitats, but which are of negligible value in the context of the local area.

'limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.'

Construction Phase

- 5.2.2 Any lighting to be used at the site during construction should be directional and screened where possible, this specification should be included within a Construction Environment Management Plan (CEMP), or similar.

Development Lighting Design

- 5.2.3 The lighting scheme to be implemented at the developed site must involve the use of appropriate products and screening, where necessary, to ensure no excessive artificial lighting shines over the Ashton Canal (West) SBI, as lighting overspill may deter use by wildlife such as foraging and commuting bats.
- 5.2.4 The lighting scheme will be designed with reference to current guidance, namely:
- a. *Guidance Note 8: Bats and Artificial Lighting in the UK* (Institution of Lighting Professionals & Bat Conservation Trust, 2018); and
 - b. *Bats and lighting: Overview of current evidence and mitigation guidance* (Stone, 2014).
- 5.2.5 It is respectfully suggested that this may be completed under a suitably worded planning condition.

5.3 Enhancing Habitats for Roosting Bats

- 5.3.1 Whilst the site is not currently suitable for use by roosting bats and is currently of negligible suitability for foraging bats, evidence shows that common pipistrelle can hibernate within large buildings such as apartment blocks within urban areas (Korsten, et al., 2016). Due to the type of building proposed, it is considered that bat access panels installed at the upper floors of the proposed buildings may provide suitable features for use by roosting bats (including hibernating common pipistrelle), despite the lack of favourable surrounding foraging and commuting habitats within the immediate surroundings of the site.
- 5.3.2 The bat access panels, which can be faced to match the external render or cladding of the proposed building, should not be positioned over windows or doorways where bat droppings may become a nuisance. Once the development layout has been finalised, an Ecologist should advise on appropriate positions for the bat access panels. Suitable bat access panels are available from NHBS Ecology (www.nhbs.com) or Habibat (<http://www.habibat.co.uk/>) and are presented at **Insert 1**, below:



Insert 1: Example of commercially available bat access panels (Schwegler 2FR and Habibat). Note that both types can be faced to match external render or cladding.

5.4 Birds

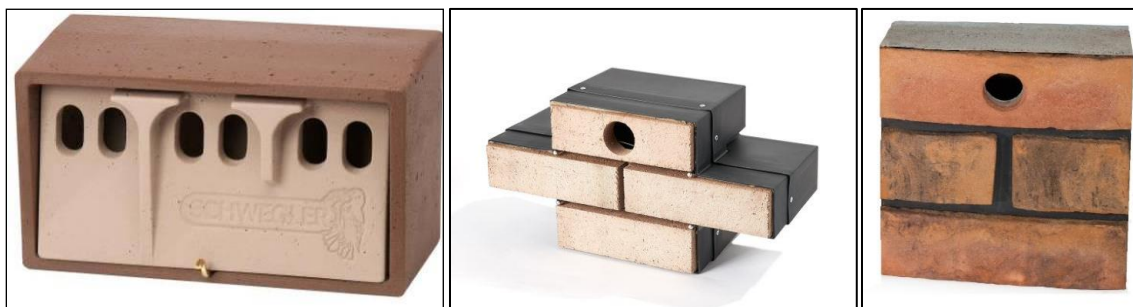
Protection

- 5.4.1 All wild birds are protected under the *Wildlife and Countryside Act 1981* (as amended) while they are breeding. It is advised that any works such as vegetation clearance that will affect habitats suitable for use by nesting birds are scheduled to commence outside the bird nesting season. Commencement of works in the nesting season must be informed by a pre-works nesting bird survey, carried out by a suitably experienced ecologist. The bird breeding season typically extends between March to August inclusive (Natural England, 2015).
- 5.4.2 If breeding birds are detected the ecologist will issue guidance in relation to the protection of the nesting birds in conjunction with the scheduled works. This may involve cordoning off an area of the site until the young birds have fledged.

Enhancing Habitats for Nesting Birds

House Sparrow

- 5.4.3 House sparrows are associated with suburban areas. Monitoring suggests a severe decline in the UK house sparrow population, estimated as halving in rural areas, and dropping by 60% in towns and cities since the mid-1970's (RSPB, 2018).
- 5.4.4 The installation of house sparrow terrace nest boxes is recommended at any proposed new building; integral boxes may provide a suitable option to allow habitat creation to be discrete within a scheme. The boxes will not be positioned over windows or doorways where droppings may become a nuisance. RSPB advice states that boxes should ideally be sited facing north to east, to avoid exposure to direct sunlight, which may cause overheating of chicks in the nest. An example of a suitable house sparrow bird box is given below, in **Insert 2**, below:



Insert 2: House Sparrow Nesting Terrace, Bird Brick Houses integral box and Habitat integral bird box

- 5.4.5 Such bird boxes are available from the NHBS (www.nhbs.com), Wild Care Shop (www.wildcareshop.com), Bird Brick Houses (<http://www.birdbrickhouses.co.uk>) or Habitat (<http://www.habibat.co.uk/>). ERAP Ltd will advise on the siting of bird boxes.

Black Redstart

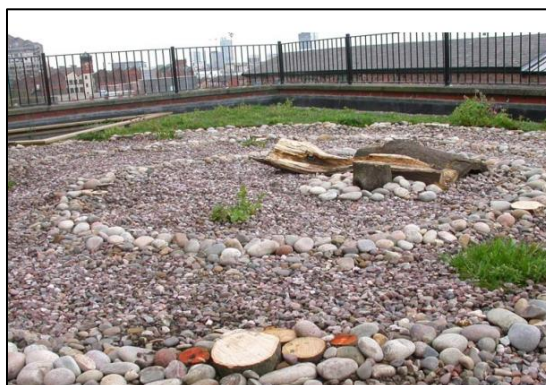
- 5.4.6 If flat roofs are proposed at the new development at the site, the opportunity to create suitable habitats for use by black redstart (*Phoenicurus ochruros*), a GM BAP Priority Species, should be taken.
- 5.4.7 The species action plan (Greater Manchester Biodiversity Project, 2008) states that:

'Records held from 1992 to 2007 show that black redstarts have bred or attempted to breed within the Piccadilly Basin area of central Greater Manchester every year except 2003. The total city population is unknown, but may be as low as 2 to 3 pairs.'

- 5.4.8 The inclusion of feeding and nesting habitat onto any proposed areas of flat roof at the proposed development will enhance the ecological value of the site.

Habitat for Feeding Black Redstart

- 5.4.9 To boost the availability of invertebrate food for black redstart it is recommended that a section of the roof is covered with a mixed sized aggregate to a varied depth of between 0.05 and 0.2 metres.
- 5.4.10 The aggregate pieces should range in size from 0.10 to 0.15 metres diameter. The aggregate must cover a minimum area of 30m² to be effective.
- 5.4.11 **Insert 3** shows an example of a more extensive aggregate covered roof as an example. The aggregate will be colonised by small plants and will attract invertebrates for foraging black redstart and their young.



Insert 3: Example of aggregate placed on city roof for the attraction of black redstart

Installation of Two Black Redstart Boxes

- 5.4.12 Two Schwegler 2HW nest boxes will be installed on a north-facing wall within the roofing area. These nest boxes are recommended in the GM BAP for black redstart.
- 5.4.13 The model of box is shown at **Insert 4**, below.



Insert 4: Suitable bird boxes for black redstart

- 5.4.14 Suitable boxes can be purchased from www.nhbs.com.

Management and Maintenance

- 5.4.15 The black redstart nest boxes are to be checked annually in September/October. Old nest material and other debris will be removed and any damaged or fallen boxes to be repaired/reinstated.

5.5 Further Ecological Enhancements

5.5.1 The potential for creating ecological enhancements within urban surroundings such as those present at the site is limited due to the lack of available planting opportunities and limited range of wildlife that can be realistically expected to be attracted to the site.

5.5.2 These further ecological enhancements are suggested as measures which, if adopted, would further enhance the ecology of the site, provided it is possible to integrate them into the site design.

Green Walls

5.5.3 Areas of green wall, either using modern trellis systems or installing living wall systems could be integrated into the design of the building to provide an opportunity for further greenspace within the site, adding an attractive feature to the building and site, and providing valuable habitat for foraging and sheltering invertebrates and potentially bird species.

5.5.4 Stainless steel trellis systems provided by (for example) Green Wall Systems (<http://www.green-walls.co.uk/>) could be installed at areas of the building, and climbing plants such as Ivy or *Pyracantha* used to create the green wall.

5.5.5 A living wall system of integrated boxes filled with a suitable growing media, such as those supplied by Tree Box (<http://www.treebox.co.uk/products/easiwall-green-wall.html>) could alternatively be used to create a different planting regime.

5.5.6 **Insert 5**, below gives the minimum dimensions of a green wall box as provided by Tree Box⁴ and example of a green wall space.



Insert 5: Minimum dimensions of Tree Box green wall, and example of usage within a courtyard area

Bee Hotels

5.5.7 Bee hotels such as those presented at **Insert 6**, below, can provide suitable nesting habitat for solitary bees associated with suburban and urban areas such as the red mason-bee (*Osmia bicornis*), mining bee species (*Andrena* sp.) and other pollinating invertebrates found within urban areas and would be suitable to install at rooftop areas.

⁴ i.e. 1 metre in height, 0.5 metres width and 150 millimetres depth.



Insert 6: Bee hotels

- 5.5.8 Such bee hotels are available from the NHBS (www.nhbs.com) and Wild Care Shop (www.wildcareshop.com). If used, ERAP Ltd will advise on the siting of the bee hotels.

Recommended Plants for Use as Roof Terrace Planting

Table 5.1: Recommended Plants for Use as Roof Terrace Planting

Flowers for Borders		Herbs
Aubretia (spring to early summer)	Mexican aster (summer to autumn)	Angelica
Candytuft (summer to autumn)	Michaelmas daisy	Bergamot (summer to early autumn)
Cherry pie (summer to autumn)	Night-scented stock (summer)	Borage (spring to early autumn)
Corncockle	Ox-eye daisy (summer)	Coriander (summer)
Cornflower	Phacelia (summer to autumn)	English marigolds
Corn marigold	Poached egg plant (summer)	Fennel (summer to early autumn)
Corn poppy	Primrose (spring)	Feverfew (summer to autumn)
Echinacea	Red campion (spring)	Hyssop (summer to early autumn)
English Bluebell (spring)	Red valerian	Lavenders
Evening primrose	Scabious (summer)	Lemon balm
Field poppies (summer)	St John's wort (spring)	Marjoram (summer)
Honesty (spring)	Sweet William (summer)	Rosemary (spring)
Ice plant 'Pink lady' (early autumn)	Tobacco plant	Sweet Cicely
Knapweed (summer to autumn)	Verbena (summer to autumn)	Thyme (summer)
Mallow (summer to autumn)	Wallflowers	

- 5.5.9 The understorey and ground cover planting design should be prepared to optimise the attraction of invertebrates such as feeding bumblebees and butterflies. Where possible the use of native species should be maximised but where necessary non-native species known to be attractive to invertebrates should be used.
- 5.5.10 Planting schemes that include flowering species such as *Viburnum*, *Ceanothus*, *Hebe*, *Lavandula*, *Lonicera*, *Potentilla*, *Rosmarinus* and *Vinca* can maximise opportunities for feeding invertebrates and for the attraction of foraging bats and birds.
- 5.5.11 For further plants suitable for the attraction of pollinators please refer to the *Perfect for Pollinators Plant List* (Royal Horticultural Society, 2012). It is recommended that the selection of plant species at the site ensures that a variety of flowering species are available throughout the year

6.0 CONCLUSION

- 6.1 This ecological assessment has demonstrated that the proposed development at the site is feasible and acceptable in accordance with ecological considerations and the National Planning Policy Framework.
- 6.2 It is possible to implement reasonable actions for the protection and long-term conservation of fauna such as nesting birds associated with the site.

-
- 6.3 Development at the site will provide an opportunity to secure ecological enhancement for fauna typically associated with urban areas such as breeding birds and roosting bats.

7.0 REFERENCES

- 5plus Architects, 2021. *Piccadilly Wharf Store Street: Proposed Site Plan, Red Line Boundary 05868_MP-00_2201 Rev 0*, Manchester: 5plus Architects.
- 5plus Architects, 2021. *Piccadilly Wharf, Store Street: Plan Development*, Manchester: 5plus Architects.
- Andrews, H (ed), 2013. *Bat Tree Habitat Key, 3rd Edition*. Bridgewater: AEcol Ltd.
- Bainbridge, I. et al., 2013. *Guidelines for the Selection of Biological SSSIs*. Peterborough: Joint Nature Conservancy Council.
- Bat Conservation Trust, 2014. *Artificial Lighting and Wildlife: Interim Guidance: Recommendations to help minimise the impact of artificial lighting*. [Online]
Available at: http://www.bats.org.uk/pages/bats_and_lighting.html
- BTHK, 2018. *Bat Roosts in Trees - A Guide to Identification and Assessment for Tree-Care and Ecology Professionals*, Exeter: Pelagic Publishing.
- CIEEM, 2013. *Technical Guidance Series Competencies for Species: Bats*. Winchester: Chartered Institute of Ecology and Environmental Management.
- CIEEM, 2018. *Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*, Winchester: Chartered Institute of Ecology and Environmental Management.
- Collins, J. (ed), 2016. *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)*. London: The Bat Conservation Trust.
- Eaton, M. A. et al., 2015. Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man. *British Birds*, Issue 108, pp. 708-746.
- Edgar, P., Foster, P & Baker, J., 2010. *Reptile Habitat Management Handbook*. Bournemouth: Amphibian and Reptile Conservation.
- Edwards, J., Knight, M. & Crosher, I. E., 2020. *National Habitat Network Maps V2*, Peterborough: Natural England.
- G.E.O.(UK) Ltd, 2021. *Topographical Survey of Land at Store Street, Manchester S20-SST-T*, Wigan: G.E.O.(UK) Ltd.
- Great Britain, 1981. *Wildlife and Countryside Act*. London: H.M.S.O.
- Great Britain, 2006. *Natural Environment and Rural Communities Act*. London: H.M.S.O.
- Great Britain, 2017. *The Conservation of Habitats and Species Regulations*. London: H.M.S.O.
- Greater Manchester Biodiversity Project, 2008. *Make Room for Black Redstarts: A Species Action Plan for Greater Manchester*, Manchester: Greater Manchester Biodiversity Project.
- Group, U. H. C. W. et al., 2020. *UK Habitats Classification User Manual Version 1.1*, Stockport: UKHab Ltd.
- Institution of Lighting Professionals & Bat Conservation Trust, 2018. *Guidance Note 8: Bats and Artificial Lighting in the UK*. [Online]
Available at: <https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/>
[Accessed 30 March 2021].
- JNCC, 1995. *The UK Biodiversity Steering Group Report, Volume 2, Action Plans*. London: H.M.S.O.
- JNCC, 2010. *Handbook for Phase 1 Habitat Survey: A technique for Environmental Audit*. Peterborough: NCC.
- Korsten, E. et al., 2016. Swarm and switch: on the trail of the hibernating common pipistrelle. *Bat News*, No. 110 (Summer 2016), pp. 80-10.
- Maddock, A (ed), 2008. *UK Biodiversity Action Plan: Priority Habitat Descriptions*. [Online]
Available at: <http://jncc.defra.gov.uk/page-5718>
- Marchant, J., 1983. *Common Birds Census Instructions*. Tring: BTO.
- Ministry of Housing, Communities & Local Government, 2005. *Circular 06/05: Biodiversity and Geological Conservation - Statutory Obligations and Their Impact Within The Planning System*, London: Office of the Deputy Prime Minister.
- Ministry of Housing, Communities and Local Government, 2021. *National Planning Policy Framework*. London: H.M.S.O.
- Natural England, 2007. *Badgers and Development*, Peterborough: Natural England.

- Natural England, 2011. *The Reptile Mitigation Guidelines*. Peterborough: Natural England.
- Natural England, 2015. *Badgers: Surveys and mitigation for development projects*. [Online]
Available at: <https://www.gov.uk/guidance/badgers-surveys-and-mitigation-for-development-projects>
[Accessed 22 April 2021].
- Natural England, 2015. *Wild birds: surveys and mitigation for development projects*. [Online]
Available at: <https://www.gov.uk/guidance/wild-birds-surveys-and-mitigation-for-development-projects>
[Accessed 23 April 2021].
- Ordnance Survey, 2021. *Site Check Report Centroid Grid Ref: SJ84989807*. [Online]
Available at: <http://magic.defra.gov.uk/magicmap.aspx>
[Accessed 03 February 2021].
- Ratcliffe, D. A., 1977. *A Nature Conservation Review*. Cambridge: Cambridge University Press.
- Rodwell, J. S., 1991. *British Plant Communities: Volume 1, Woodlands and Scrub*. Cambridge: Cambridge University Press.
- Rodwell, J. S., 1995. *British Plant Communities, Volume 4, Aquatic Communities, Swamps and Tall-herb Fens*. Cambridge: Cambridge University Press.
- Roper, T., 2010. *Badger (Collins New Naturalist Library, Book 114)*. Glasgow: Harper Collins.
- Royal Horticultural Society, 2012. *Perfect for Pollinators, Garden Plants*. [Online]
Available at: <https://www.rhs.org.uk/science/conservation-biodiversity/wildlife/encourage-wildlife-to-your-garden/plants-for-pollinators>
- RSPB, 2018. *Population Trends: The Recent Decline of House Sparrows*. [Online]
Available at: <https://www.rspb.org.uk/birds-and-wildlife/wildlife-guides/bird-a-z/house-sparrow/population-trends/>
[Accessed 23 April 2021].
- Stace, C. A., 2010. *New Flora of the British Isles 3rd Edition*. Cambridge: Cambridge University Press.
- Stone, E. L., 2014. *Bats and Lighting: Overview of current evidence and mitigation guidance*. Bristol: University of Bristol.
- Willby, N., Eaton, J. & Clarke, S., 2003. *Monitoring the Floating Water-plantain Luronium natans, Conserving Natura 2000 Rivers: Monitoring Series No. 9*, Peterborough: English Nature.

8.0 APPENDIX: PHOTOGRAPHS, TABLES AND FIGURES

8.1 Plant Species List

Table 8.1: Plant Species List for the Site

Scientific Name	Common Name	DAFOR	% Cover
Woody Species			
<i>Acer pseudoplatanus</i>	Sycamore	R	<1%
<i>Alnus cordata</i>	Italian Alder	R	<1%
<i>Fraxinus excelsior</i>	Ash	O	<1%
<i>Lonicera nitida</i>	Wilson's Honeysuckle	R	<1%
<i>Prunus avium</i>	Wild Cherry	O	<1%
<i>Salix caprea</i>	Goat Willow	R	<1%
<i>Sambucus nigra</i>	Elder	O	<1%
<i>Ulmus</i> sp.	Elm species	R	<1%
Herb Species			
<i>Aquilegia vulgaris</i>	Columbine	R	<1%
<i>Hedera helix</i>	Ivy	VLF	<1%
<i>Rubus fruticosus</i> agg.	Bramble	O	<1%
<i>Rumex obtusifolius</i>	Broad-leaved Dock	R	<1%
<i>Urtica dioica</i>	Common Nettle	VLF	<1%

¹**Key to DAFOR:** D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species

8.2 Photographs



Photo 1: Felled trees and scrub within site



Photo 2: Felled trees and scrub within site



Photo 3: Wall at north-western site boundary

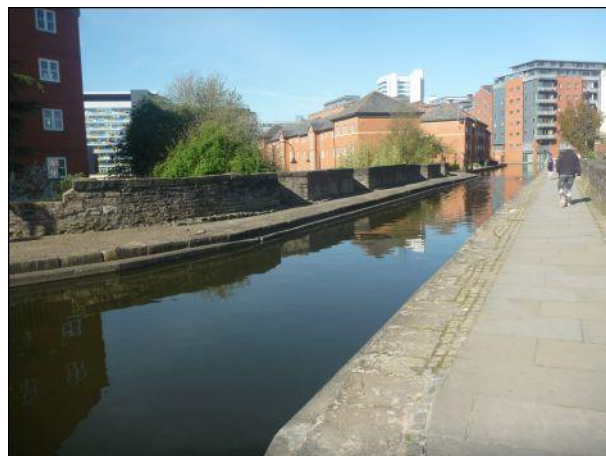


Photo 4: Section of Ashton Canal (West) SBI located in proximity to the site

8.3 Figures

Figure 1: Aerial Image of the Site and its Surroundings

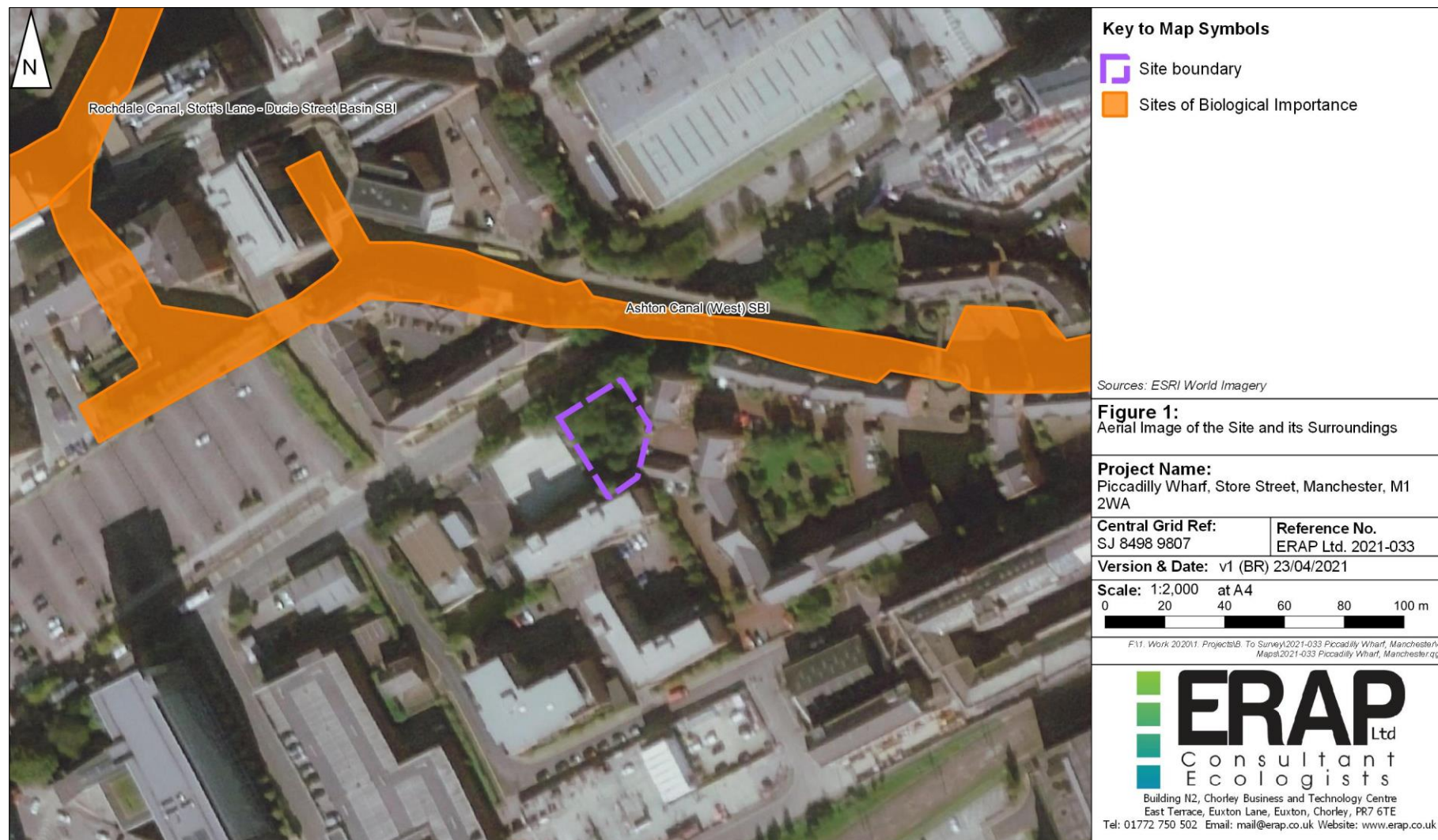


Figure 2: Phase 1 Habitat and Vegetation Map

