Science and Industry Museum

Manchester

(New Warehouse and SEG)

Ecological Appraisal

2023

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ECOLOGY

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Executive Summary

Development Details

The client is proposing repair and maintenance works at the Science and Industry Museum, Manchester, hereafter referred to as the 'site'.

This report describes the ecological features of the site and its surroundings and assesses the potential impacts of the development on the ecological interest. Recommendations are provided so that the development is compliant with biodiversity policy and legislation.

Outcomes

The New Warehouse was found to support a day roost used by small numbers of Common Pipistrelle bats. Works have the potential to impact on bats and their roosts. Mitigation will be required to minimise risks to bats and a licence will be required to avoid the risk of an offence.

The proposed works can be undertaken in accordance with the planning policy and legislation protecting bats and their roosts. Opportunities to enhance the value of the site for wildlife have been identified.

1. Introduction

1.1 Project Brief

1.1.1 Rachel Hacking Ecology Limited was commissioned by the Science Museum Group to carry out an ecological appraisal at The Science and Industry Museum, Manchester, hereafter referred to as the 'site'. The site is in Castlefield on the site of the former Liverpool Road railway station at O.S. grid reference: SJ 830978 (see Figure 1).

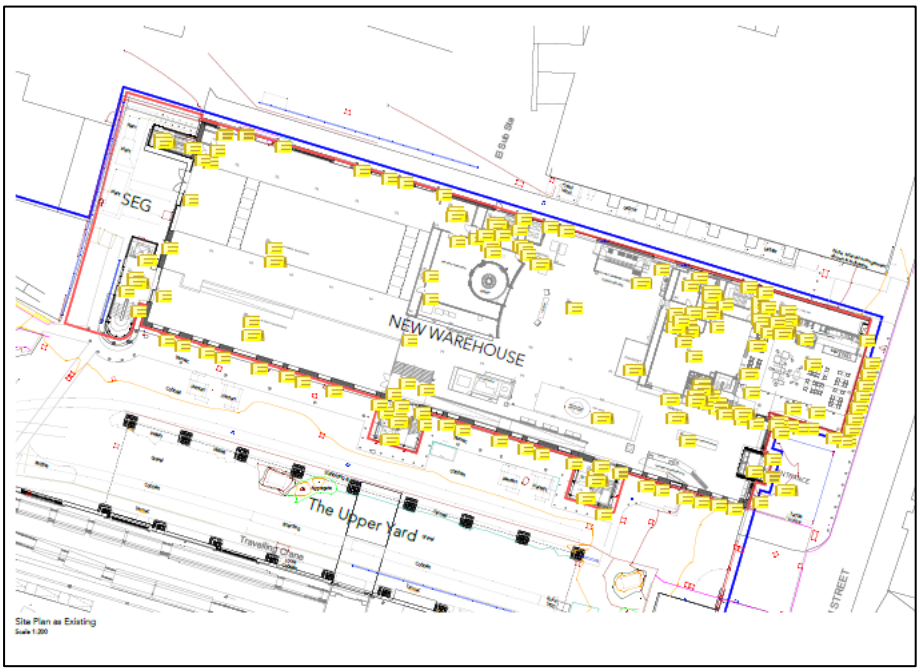


Figure 1. Map showing the red line boundary

Description of Development

1.1.2 Planning and listed building consent is being sought for phased refurbishment works at the New Warehouse, Science and Industry Museum where Phase 1 works shall include the full replacement of the roof with new insulation, downpipes and gutters, access gantries and ladders and revised rooflight arrangement, fabric repairs and decoration works to the façades, waterproofing works to the Special Exhibitions Gallery at basement level including some excavation of the Upper Yard to allow for access, the installation of a new entrance porch on the west elevation, installation of scaffolding and hoarding during construction works, and other associated works, and Phase 2 works which shall include the reinstatement of the Upper Yard hard landscaping following completion of the waterproofing works to the Special Exhibitions Gallery.

1.2 Scope of Work

1.2.1 The Client commissioned Rachel Hacking Ecology to carry out the following works:

- Desk-based study to obtain details of designated sites within 2km
- Record the extent, type, and condition of habitats within the site
- Assess the sites potential to support protected and notable species
- Identify the requirement for any further detailed surveys
- Establish the status of roosting bats at the site.

2. Methods

2.1 Desk Study

2.1.1 The Magic (Multi-Agency Geographical Information for the Countryside) was interrogated for the presence of Statutory Designated Sites (and European Protected Species licences) within 2km radius of the site.

2.1.2 The Impact Risk Zones for any Site of Special Scientific Interest (SSSI) within 5km of the site was checked to determine whether the Local Planning Authority will need to consult with Natural England.

2.2 Extended Phase 1 Habitat Survey

2.2.1 In accordance with JNCC guidelines[1] the site was walked over and the habitats and features of ecological interest were mapped and described. Habitats and features of particular interest were target noted.

2.2.2 During the walkover habitat and features were assessed for their suitability to support of protected and notable species in accordance with CIEEM guidelines[2]. Field signs of protected, notable, and invasive non-native species, if encountered, were mapped, and described.

2.2.3 The exterior of the buildings on site were surveyed from the ground using binoculars and a high-powered torch. Features offering potential access to roosting bats were recorded. Such features may include suitable gaps in roof coverings, gaps behind external cladding/facia and gaps in masonry.

2.2.4 Evidence indicating the presence of roosting bats was also searched for. This may include bat droppings on walls, windows or on the ground below roost entrances or staining from fur oil around roost entry points.

2.2.5 The Extended Phase 1 Habitat Survey was undertaken by Simon Holden MCIEEM (Associate Ecologist) on 2nd February 2023. Simon has 18 years' professional experience and is suitably qualified to undertake this type of assessment.

2.2.6 Weather during the survey was dry and overcast with a temperature of 10°C.

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[1] JNCC (2010). *Handbook for Phase 1 Habitat Survey: A Technique for Environmental Audit*. Joint Nature Conservation Committee, Peterborough

[2] CIEEM (2017). *Guidelines for Preliminary Ecological Appraisal*. Chartered Institute of Ecology and Environmental Management, Winchester.

2.3 Dusk Emergence Bat Surveys

2.3.1 Two dusk emergence bat surveys were undertaken in accordance with current guidelines[3]. Three surveyors and an infra-red camera monitored the building to ensure visual coverage. The emergence surveys began 15 minutes before sunset and continued for 90 minutes after sunset. The surveyors used Echometer Touch 2 Pro bat detectors to record the echolocation calls of bats.

2.3.2 The surveys were led by Simon Holden BSc (Hons), MCIEEM (Associate Ecologist), assisted by Jasmin West, Steve Smith and Jess Rogers. All surveyors are experienced and trained in nocturnal bat surveys. Simon has 18 years' professional experience and a Level 2 class licence for bats (ref: 2019-42937-CLS-CLS).

2.3.3 Survey details are shown in Table 1.

Table 1. Conditions during emergence surveys

15/05/2023	Time	Temp (^{o}C)	Cloud cover	Wind (Beaufort scale)	Rain
Sunset	21:00				
Start	20:45	12	4/8	4	Dry
End	23:05	11	0/8	3-5	Dry
27/06/2023	Time	Temp (^{o}C)	Cloud cover	Wind (Beaufort scale)	Rain
Sunset	21:42				
Start	21:27	18	8/8	3	Light rain till 21:50
End	23:03	16	8/8	2	Dry

2.3.4 Surveyor locations are shown in Figure 2.

[3] Collins, J. (Ed.) (2016) *Bat Surveys for Professional Ecologists-good practice guidelines. 3rd edn.* The Bat Conservation Trust, London.

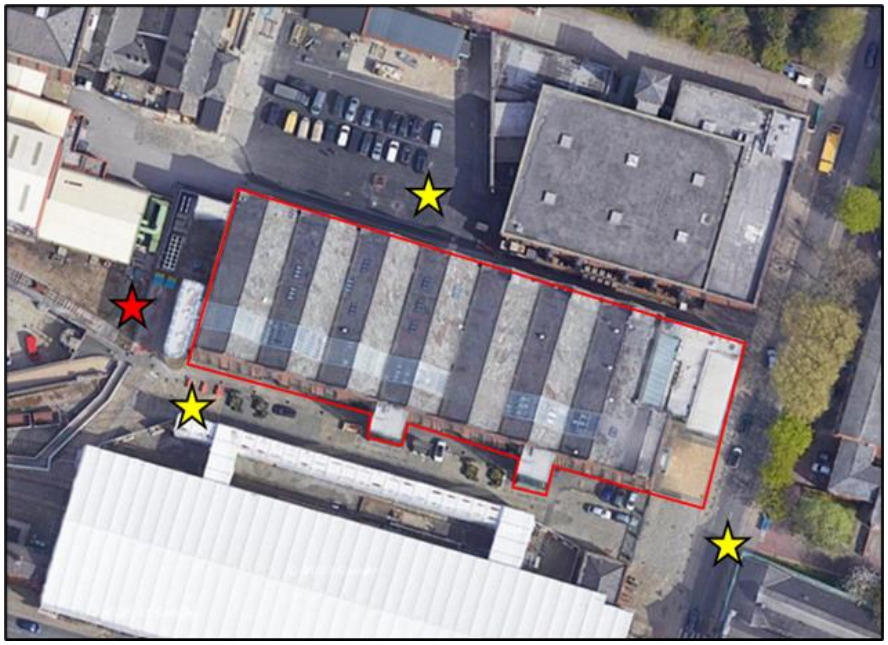


Figure 2 showing the building surveyed and the surveyor locations (yellow stars) and camera (red star)

2.4 Mitigation Hierarchy

2.4.1 Mitigation measures should be embedded within the masterplan design and planning application process. Measures during the construction phases should be included in a Construction Environmental Management Plan: (CEMP: Biodiversity) which can be attached as a planning condition to the Decision Notice of the forthcoming consent. This process from proposal to implementation needs to consider the 'mitigation hierarchy' of avoid, reduce, compensate, and enhance:

- Aim to avoid negative effects through the design process.
- Mitigate if negative effects cannot be avoided.
- Use compensation measures to offset residual impacts.
- Identify and implement opportunities to enhance biodiversity.

3. Results

3.1 Constraints

3.1.1 Field survey results are valid for a limited duration and no investigation can provide a complete description and characterisation of a site. The composition of habitats and species can change depending on environmental variables and the mobility of species, so the results of a study become less reliable over time. In some cases, surveys that are 3 years old may be acceptable for a project assuming that habitats have not significantly changed in the intervening period, but for protected species it is likely that survey data will need to be no more than 18 months old.

3.2 Designated Sites

3.2.1 No statutory designated sites were identified within the study area.

3.2.2 The site is not within an Impact Risk Zone.

3.2.3 No non-statutory designated sites were identified within the study area.

3.3 Habitats

3.3.1 The habitats survey plan is provided at Appendix 2 (the plan covers a wider area than the application area).

Developed Land; Sealed Surface

3.3.2 The site is surfaced with cobblestones or tarmac (see Photograph 1). This is mapped as bare ground.



Photograph 1 showing the bare ground/sealed surface

Buildings

3.3.3 The New Warehouse building is described in detail below in relation to bats.

3.4 Species

Bats

3.4.1 The New Warehouse Building is an 1830s Grade I listed, brick-built building that previously formed part of the Liverpool Road railway station complex. The building is three storeys, built in red brick with sandstone dressings and slate roofs (see Photograph 2). The slate tiles that were visible appeared intact. Ridge vents are present. Several modern flat roofed glass extensions are present (see Photograph 3).



Photograph 2 showing the south elevation of the New Warehouse building



Photograph 3 showing the west elevation

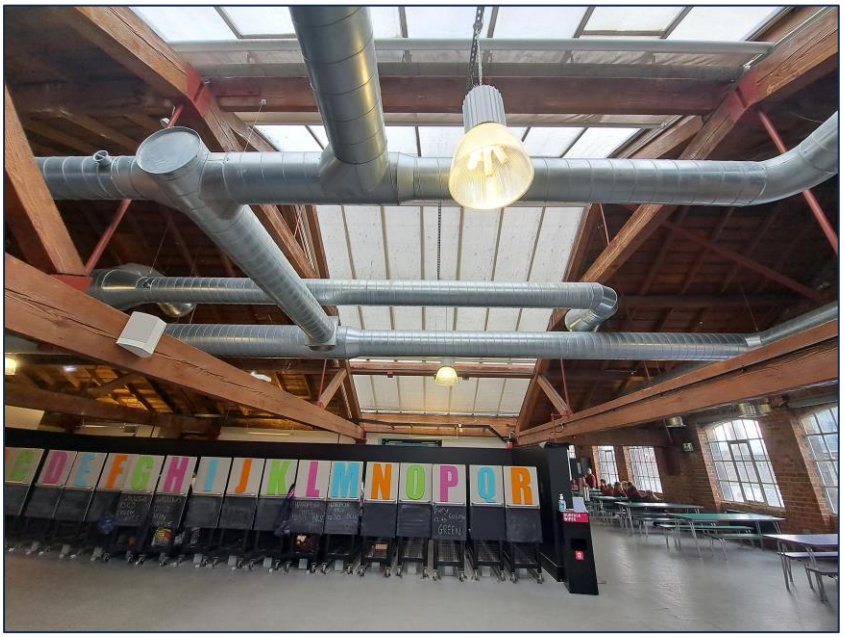
3.4.2 The brickwork appears in good condition with only occasional small gaps around the metal window frames noted. There are large, multi-storey doors on the north elevation with several gaps around the edges (see Photograph 4). There are occasional gaps below the coping stones.



Photograph 4 showing the north elevation

3.4.3 Internally, the building comprises a ground floor, 1st floor and 2nd floor spaces. The museum itself operates on the ground and 1st floor only. The 2nd storey comprises three sections consisting of an admin space, a learning zone and a conferencing space.

3.4.4 The 2nd floor is open to the roof which is pitched and supported by large wooden beams. The space is extremely well maintained and is centrally heated. There is no separate roof void. The roof is lined with traditional bitumen lining felt and wooden sarking. There are several skylights as well as pitched glass sections that appear well sealed (see Photograph 5).



Photograph 5 showing the interior

Dusk Emergence Survey

15th May 2023

3.4.5 A single Common Pipistrelle *Pipistrellus pipistrellus* was recorded emerging from around a downpipe on the southern elevation of the building during the first survey (see Figure 2). A second Common Pipistrelle was recorded as probably emerging from crevices between the brickwork and a window frame on the southern elevation. Very low levels of bat activity were recorded during the survey; one to two Common Pipistrelles were recorded foraging and commuting in the vicinity of the building throughout the survey.

27th June 2023

3.4.6 A single Common Pipistrelle was recorded as probably emerging from the same area as recorded during the first survey. Very low levels of bat activity were recorded during the survey; one to two Common Pipistrelles were recorded foraging and commuting in the vicinity of the building throughout the survey.



Figure 2 showing roost location (red circle)

4. Assessment

4.1 Methods

4.1.1 The surveys were undertaken during suitable weather conditions and seasonal timing.

4.1.2 The scale of the building meant it was not possible to observe all elevations thoroughly during the surveys. However, very low levels of bat activity were recorded during the surveys and given the urban environment and low number of potential roosting features, this has not affected confidence in the assessment.

4.2 Development Context

4.2.1 The following assessment is based on the description of proposed works in the document *Capital Works 22-25 New Warehouse* (David Brown 2023).

4.3 Interpretation of Results

4.3.1 The presence of a roof lining and sarking boards means there is likely to be a gap between the slate tiles and the lining. The building and roof are large and likely to have a high thermal mass. The building is centrally heated and is very warm, increasing the suitability for a maternity roost (where female bats gather to give birth and raise their young). The features within the brickwork recorded during the survey offer potential to be used by individual or small numbers of crevice dwelling bat species. The building was assessed as offering low potential to support roosting bats.

4.3.2 The dusk emergence survey results indicate the presence of a day roost used by up to two Common Pipistrelles. The roost location is likely to be a crevice in brickwork on the south elevation of the building.

4.3.3 Common Pipistrelle is a common and widespread species and a day roost is of low conservation significance.

4.4 Impacts on Designated Sites

4.4.1 No impacts to any statutory or non-statutory designated sites are predicted due to the absence of any impact pathways.

4.5 Impacts on Habitats

4.5.1 The proposed works will result in the temporary disturbance of the habitats on site, but these are of negligible ecological importance.

4.6 Impacts on Species

4.6.1 The proposed works have the potential to result in impacts to bats and their roosts. In the absence of mitigation small numbers of bats could be killed or injured and a day roost could be destroyed.

4.6.2 These impacts would be significant at the site level but would not affect the favourable conservation status of the local population. They would also result in an offence.

5. Recommendations

5.1 Mitigation and Enhancement Measures

Nesting Birds

5.1.1 Nest boxes could be installed on buildings to enhance the site for species of conservation concern such as House Sparrow *Passer domesticus*. These should be installed facing northeast to northwest at least 3m high.

Bats

5.1.2 To minimise potential impacts to bats and avoid the risk of an offence the following measures will be required:

- The site should be registered under the Bat Mitigation Class Licence. This can be undertaken once any planning consent has been obtained.
- Prior to works commencing the Registered Consultant (or Accredited Agent) will deliver a toolbox talk to contractors to ensure they area aware of the legal status of bats, where bats may be encountered and what to do should a bat be encountered during unsupervised works.
- A bat box will be installed on a building unaffected by the proposed works.
- The Registered Consultant will inspect the building from scaffolding to check for the presence of roosting bats. Should any bats be present, they will be carefully captured and moved to safety in the bat box.

5.1.3 There will be no seasonal restrictions on working.

5.1.4 Bat boxes could be installed on buildings to enhance roosting opportunities for bats on the site. These should be installed facing southeast to southwest at eaves level, but not directly above windows or doorways.

5.2 Conclusion

5.2.1 The survey aims have been met. The status of roosting bats has been determined with a high degree of confidence. Potential impacts have been identified and appropriate mitigation can be provided to ensure the proposed development can be undertaken in accordance with the planning policy and legislation protecting bats and their roosts.

5.2.2 The recommendations within this report can be secured through an appropriately worded planning condition.

Appendix 1: Planning Policy & Legislation

National Policy

The National Planning Policy Framework (NPPF 2021) describes the Government's planning policy for England and how it should be applied. Within this framework, the requirements in relation to biodiversity are included within several policies. The two most relevant to individual planning decisions are Paragraphs 174 and 180, shown below:

- 174. Planning policies and decisions should contribute to and enhance the natural and local environment by:

a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);

b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;

c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate;

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; etc…

- 180. 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;

b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;

c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and

d) development whose primary objective is to conserve or enhance biodiversity should be supported; while 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.

Legislation

The Wildlife and Countryside Act 1981 (as amended by the CRoW Act 2000) includes the notification and confirmation of Sites of Special Scientific Interest (SSSIs). SSSIs can be notified for their floral, faunal, geological, or physiographical features. Protection against damaging operations and management of SSSIs is also included within the Act. Impact Risk Zones (IRZs) are zones around an SSSI account for the particular sensitivities of the features for which it is notified and identify development proposal which could have adverse impacts.

The Wildlife and Countryside Act 1981 (as amended by the CRoW Act 2000) protects native animals, plants and habitats. Under the Act it is an offence to intentionally kill, injure or take any wild animal listed on Schedule 5 and it is an offence to interfere with places used for shelter or protection, or intentionally disturb animals occupying such places. The Act prohibits picking, uprooting or destroy any wild plant (or any attached seed or spore) listed in Schedule 8.

European Protected Species (EPS) such as bats, Hazel Dormouse, Otter, Natterjack Toad, Smooth Snake, Sand Lizard and Great Crested Newt are protected by the Wildlife and Countryside Act 1981 (as amended by the CRoW Act 2000) and the Conservation of Habitats and Species Regulations 2017. The Acts make it an offence to:

a) Deliberately capture, injure or kill an EPS;
b) Deliberately impair an EPS's ability to survive, breed, reproduce, rear or nurture young; to hibernate or migrate; or significantly affect the local distribution or abundance of the EPS.
c) Possess or control live or dead EPS or any part of, or anything derived from a EPS;
d) Damage or destroy a breeding site or resting place of an EPS;
e) Intentionally or recklessly obstruct access to any place that is used for shelter or protection by an EPS;
f) Intentionally or recklessly disturb a structure or place that it uses for shelter or protection that is occupied by an EPS.

All common herptiles are protected under the Wildlife and Countryside Act 1981 (as amended by the CRoW Act 2000). Grass Snake, Slow Worm, Common Lizard, Adder are protected against intentional killing or injury.

Common Frog, Common Toad, Smooth Newt and Palmate Newt is protected against sale. In addition, all British reptiles, Common toad and Great Crested Newt are listed as Species of Principal Importance.

All nesting birds are protected under the Wildlife and Countryside Act 1981 (as amended). It is an offence to intentionally kill, injure or take any wild bird or take, damage, or destroy its nest whilst in use or being built, or take or destroy its eggs. It is an offence to intentionally or recklessly disturb a species listed on Schedule 1 of the Act while they are nest building or at or near a nest with eggs or young, or to disturb the dependent young.

The Protection of Badgers Act 1992 makes it an offence to wilfully, or to attempt to kill, injure, take, possess or cruelly ill-treat a Badger, or intentionally or recklessly interfere with a sett. Interference of a sett includes disturbing badgers during occupation of a sett, or damaging or destroying a sett, or obstructing access to the sett.

Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006 places a duty on every public authority to have regard to conserving biodiversity. Section 41 of the same Act requires the Secretary of State to publish a list of the living organisms and types of habitats that are of 'Principal Importance' for the purpose of conserving biodiversity. The Secretary of State must take steps, as appear reasonably practicable, to further the conservation of those living organisms and habitats in any list published under this section. The list of species and habitats of principal importance currently includes 943 species and 56 habitats. These are the species and habitats found in England which are regarded as conservation priorities under the UK Post-2010 Biodiversity Framework

The Hedgerows Regulations 1997 protect 'important' hedgerows from destruction or damage. A hedgerow is 'important' if it (a) has existed for 30 years or more; and (b) satisfies at least one of the criteria listed in Part II of Schedule 1 of the Regulations. Under the Regulations, it is against the law to remove or destroy 'important' hedgerows unless permitted by the local planning authority.

Appendix 3: Habitats Plan

