

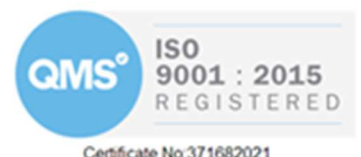
NEPTUNE WORKS WAREHOUSES – ABP NEWPORT PRELIMINARY ROOST ASSESSMENT (PRA) AND ACTIVITY SURVEYS FOR BATS



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NEPTUNE WORKS WAREHOUSES – ABP NEWPORT

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1.0 EXECUTIVE SUMMARY

This report is a brief summary of findings and recommendations of the Preliminary Roost Assessment (PRA) and activity survey for bats undertaken on behalf of Associated British Ports (hereafter referred to as the client / ABP) at survey buildings designated as Neptune Works warehouses, Alexandra Docks, Newport, NP20 2UW. The report should be read in its entirety for full details of the survey.

- The survey comprised of an internal and external inspection of the buildings to assess their potential to support roosting bats, and identify whether any evidence of bats within the survey buildings was present;
- The proposed development consists of the demolition of the existing buildings to enable a new development at the site;
- These proposals will result in the potential disturbance and/or destruction of bat roosts if these are present within the survey buildings. Furthermore, noise and vibration from the works may cause disturbance if bats are roosting within different parts of the building or within wider areas of the site;
- Local Record Searches were undertaken using Department for Environment, Food & Rural Affairs 'MAGIC' geographic mapping software and the Welsh Government and Natural Resources Wales 'DataMapWales' in order to determine the importance of the site from a biodiversity perspective in the context of its surroundings, and to determine the site's proximity to statutory designated sites (if present) within a 1km radius of the survey area;
- The data search returned 2 records of statutory sites within 1km of the survey site. Both records relate to the River Usk, which is located approximately 70m to the north-east of the site, and which is classified as both a Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI);
- A total of 2 records of non-statutory designated sites (in the form of a Special Landscape Area (SLA) and Site of Importance for Nature Conservation (SINC)) were also returned during the search, with these being located approximately 70m and 250m to the north-east. There are 0 ancient woodlands within 1km of the site;
- Connectivity between the site and better foraging habitat further afield is poor, although the nearby River Usk does offer some commuting and foraging opportunity for bats. The habitat surrounding the survey buildings consists largely of hardstanding, owing to the site's industrial use, although dense scrub consisting of buddleia is situated immediately to the east of the survey buildings;
- The PRA was undertaken on Thursday 23rd April 2026;
- The survey consisted of the inspection of a number of buildings (designated as the Main Survey Buildings (MSB) & Standalone Brick Building);
- Numerous potential access/egress points to the building interiors were recorded during the survey. These include; Open Roller Shutter Doors / Gaps Around Closed Roller Shutter Doors on (N) & (S) Aspect of MSB, Open Pedestrian Doorway at 1st Floor Level on (W) Side of Neptune Works, Open Windows at 1st Floor Level on (E) Side of Building, Small Damaged Areas to Roof / Wall Sheets of MSB, Open Plan Nature of Building Interiors and Gaps beneath Corrugated Roof Panels / Ridge Tiles of Standalone Brick Building, all of which enable the potential free access/egress of bats to the respective building interiors in these locations;
- A number of Potential Roosting Features (PRFs) for bats were identified during the survey. These include; Steel Roof Features and Intersections between Adjoining Sections within MSB, Cracks within Intersections between Steel Framework of Roof and Brickwork Walls of MSB, Missing Bricks / Cracks within Exterior Brickwork on (W) Wall of MSB, Open and Well-Connected Nature of MSB, Loft & Associated Steel Features within Standalone Brick Building, Brick / Block Walls in Loft Space and a Small Area of Lagging on Underside of Roof at (S) End of MSB. It should be noted however that the survey buildings are not thought to provide sufficient space, shelter, protection or possess suitable conditions to be used on a regular basis by larger numbers of bats;

- **Direct evidence of bats in the form of a small number of droppings was identified during the PRA.** The droppings are situated on girders which are stored at the southern end of the Neptune Works warehouse interior. No additional evidence of bats was identified throughout any of the remaining building interiors;
- As such, due to the presence of PRFs being identified within the building interior, in conjunction with numerous potential access/egress points for bats being recorded around the building and evidence of bats in the form of a small number of droppings being identified during the PRA, the survey buildings was concluded to possess **low (confirmed roost)** potential to support bats;
- Based upon the results of the PRA, it was recommended that **a minimum of 1 activity survey in the form of a dusk emergence survey for bats should be undertaken** in order to determine how bats are utilising the survey buildings;
- An initial dusk emergence survey was subsequently undertaken on Wednesday 27th May 2026. A total of **2 bats (consisting of common pipistrelles) were observed foraging directly within the main Neptune Works warehouse**, before leaving the building via open roller shutter doors;
- **The Neptune Works warehouses are therefore a confirmed bat roost;**
- Following the results of the initial dusk emergence survey, the recommendation was made that a second dusk emergence survey of the buildings should be undertaken, to gain further information recording the roosting bats, and determine whether any additional species are also utilising the survey building for roosting purposes;
- A second dusk emergence survey was subsequently undertaken on Tuesday 23rd June 2026. **No bats were identified within the survey buildings or were seen to emerge** during the second dusk emergence survey;
- Survey activity during both of the dusk emergence surveys was very low, likely owing to the industrial setting of the building. A small amount of buddleia scrub is present along the eastern side of the warehouses however, and bats were observed to utilise this scrub habitat for foraging purposes;
- Based upon the results of the PRS and subsequent activity surveys, the survey building is a **confirmed summer day roost for a small number (<5) of common pipistrelle**;
- No further survey effort is recommended as the findings allow an accurate assessment of the status of bats and the characterisation of roost types within the survey building to be made;
- **A European Protected Species Licence (EPSL) will be required from NRW to proceed with the works.** This will be accompanied by a dedicated **bat mitigation and compensation strategy**, which will be appropriate to the scale and scope of the proposed development works;
- Full mitigation recommendations are made in Section 7.3 of this report.

2.0 INTRODUCTION

2.1 Brief

ExCAL Limited was commissioned by Associated British Ports (hereafter referred to as the client / ABP) to undertake a Preliminary Roost Assessment (PRA) for bats within outbuildings located at Neptune Works, Alexandra Docks, Newport, NP20 2UW.

The survey buildings are scheduled for demolition, to facilitate a future new development at the site.

2.2 Objectives

The purpose of the survey was to assess the buildings' potential to support roosting bats, and to identify any Potential Roosting Features (PRF's) on or within the buildings which may be utilised by bats.

Furthermore, the buildings were also subjected to a thorough internal and external inspection to determine whether they have historically been / continue to be actively used by bats.

2.3 Site Context

The survey buildings are situated within the grounds of ABP Newport Docks and are located at the Neptune Works complex.

The OS grid reference for the approximate centre of the survey buildings is ST 31642 86029.

The buildings are located within Newport docks; therefore, the surrounding area consists primarily of industrial buildings, offices and temporary cabins.

North Dock is located approximately 175m to the west of the survey buildings, whilst the immediate surroundings of the survey buildings consist primarily of hardstanding.

The site is bound by East Way Road, which runs along the western boundary of the site, beyond which additional industrial units are located. The main site access and associated security gate meanwhile is situated 25m to the west of the northernmost point of the survey buildings. The River Usk is located approximately 75m to the east of the survey buildings, and connectivity from the survey buildings to better foraging habitat further afield is poor, with limited vegetation being situated in the immediate surroundings of the survey buildings.

The wider landscape of the area consists of a combination of pastoral fields and associated hedgerows, with Newport Wetlands being located approximately 3km to the south-east of the site, whilst significant industrial sites including a landfill and Cogent Power are located approximately 1.1km west and 0.6km east of the survey building respectively. Newport city centre is located approximately 1.5km to the north of the site.

2.4 Proposed Development

The proposed development consists of the wholesale demolition of the existing buildings in order to enable a new development to occur at the site. These works will result in the potential disturbance and destruction of bat roosts if these are present within any areas of the buildings.

Furthermore, noise and vibration from the works may cause disturbance if bats are roosting within different parts of the building or within wider areas of the site.

2.5 Legislation

All UK bat species and their roosts are protected under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). All bats are also included in Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended) (Habitats Regulations), which defines "European protected species of animals".

The combined legislation makes it illegal to: -

- Intentionally kill, injure or capture bats;

- Deliberately disturb bats (whether in a roost or not);
- Damage, destroy or obstruct access to bat roosts;
- Possess or transport a bat or any part of a bat, unless acquired legally; and
- Sell, barter or exchange bats, or parts of bats.

As a signatory to the Bonn Convention (Agreement of Bats in Europe) the UK is also required to protect their habitats, requiring the identification and protection from damage or disturbance of important feeding areas.

2.6 Limitations

This report has been prepared for the benefit of the client and its contents should not be relied upon by others without the written authority of ExCAL Ltd. Unauthorised third party use of this report is done so at the parties' own risk and ExCAL Ltd owe these parties no duty of care or skill.

3.0 SITE LOCATION

3.1 Site Details

The approximate centre of the survey buildings is located at Grid Reference ST 31642 86029 and the site address is listed below: -

Neptune Works Warehouses
Associated British Ports
East Way Road
Newport
NP20 2UW

The location of the survey buildings is visible in Figure 1 below: -

Figure 1 – Survey Buildings



4.0 PRELIMINARY ROOST ASSESSMENT

This report has been designed to comply with the British Standard Biodiversity – Code of practice for planning and development – BS 42020:2013 (BSI, 2013); the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Report Writing, Second Edition (CIEEM, 2017) and Bat Conservation Trust – Bat Survey Guidelines, Fourth Edition (Collins, J. 2023).

The buildings were subjected to an internal and external inspection to assess their potential to support roosting bats.

4.1 Desk Study

Local Record Searches were undertaken using Department for Environment, Food & Rural Affairs 'MAGIC' geographic mapping software and the Welsh Government and Natural Resources Wales 'DataMapWales' resource in order to determine the importance of the site from a biodiversity perspective in the context of its surroundings, and to determine the site's proximity to statutory designated sites within a 1km radius of the survey area (if present).

4.2 Field Survey

The buildings were surveyed both externally and internally for evidence of (and potential for) bats. The survey was undertaken by Steve Owen, a licenced surveyor (NRW Licence no: **S096241/1**) on Thursday 23rd April 2026.

The external inspections were undertaken during daylight hours from ground level. The interior of the buildings were also surveyed extensively for evidence of bats and for potential access/egress points for bats. All interior areas of the buildings were accessible during the survey, and the buildings possess no loft spaces.

4.2.1 Preliminary Roost Assessment for Bats

During the PRA, the following evidence was sought: -

- The presence of potential access and egress routes for bats into and out of likely roosting sites and evidence of the use of such potential access points by bats such as scattered droppings, urine staining or scratching around entrances;
- Corpses or skeletons;
- Feeding remains;
- Bat droppings;
- Likely commuting routes and nearby habitat assessment for potential use by bats;
- Any other signs of use by bats including the presence of bats themselves.

In addition the overall site and its associated wider surroundings were also evaluated for the potential to support commuting and/or foraging bat species.

The internal inspections were undertaken during daylight hours and were aided by the use of a high-powered torch. All areas accessible to bats were searched for evidence of bats, including droppings and feeding remains.

Internal signs of roost access and egress points were also sought out during the survey, examples of these could include; light shining into internal building spaces from the exterior of the building or damage to any internal roof linings.

Bats regularly utilise specific areas within buildings which were searched as a priority for any bat fields signs. Examples of these are outlined below: -

- Dividing walls;
- Underneath ridge beams;
- Beneath hip joints and junctions;
- Timber/wall joints;
- Voids between blockwork;

The Usk is of special interest as a fine example of a river running over sandstones and for its associated plant and animal communities. Its character spans a wide range of types from an upland, base-poor stream to a large lowland river with extensive tidal reaches. Its overall diversity is a product of its underlying geology, soil type, adjacent land-use and fluvio-geomorphological regime.

With respect to bats, the frequent tree cover located along the length of the of the lower River Usk provides valuable feeding and roosting habitats for several bat species including Daubenton's bat (*Myotis daubentonii*).

Full citations are available for review in Appendix B – Citations of Designated Sites.

4.4.2 Non-Statutory Designated Sites

The Newport Local Development Plan (LDP) mapping resource was utilised in order to determine whether any non-statutory designated sites are located within 1km of the survey building.

The desk study subsequently returned 2 records of a non-statutory ecologically designated site within 1km of the survey area.

The first of these records consists of the River Usk Special Landscape Area (SLA), with this being located approximately 70m to the north-east of the survey buildings. The second record meanwhile consists of an unnamed Site of Importance for Nature Conservation (SINC) located adjacent to the eastern side of the River Usk 250m to the north-east.

SLAs represent a non-statutory designation which was identified following a formal assessment of the landscape qualities of the county. In this regard their designation seeks to utilise 'outstanding' categorisations supported where appropriate by those classified as 'high'.

Whilst not intended to necessarily preclude development, it is intended to reflect the emphasis placed upon the term 'special' in their definition. The design of developments should be sensitive enough to ensure that the scheme makes a positive contribution to the landscape. In this regard, proposals will be expected to show that they will not have an unacceptable impact on their specific distinctive features or characteristics of the SLA.

Although there are no protections afforded to SINC's as a result of their designation, they often contain nationally rare, threatened or priority species and habitats, therefore playing a critical role in conservation of the UK's natural heritage.

The non-statutory designated sites located within 1km of the proposed development site suggest that the habitats surrounding the site are likely ecologically rich in nature and in turn likely support protected or priority species.

4.4.3 Ancient Woodland

There are no ancient woodlands within 1km of the survey site.

4.5 Preliminary Roost Assessment for Bats

4.5.1 Building Exteriors

The survey consisted of the inspection of three distinct buildings on site. These are outlined below: -

- **Main Survey Buildings (MSB)** – consists of a number of adjoined warehouses constructed largely from a combination of brick, steel and asbestos corrugated sheeting. The roofs of the buildings are a mixture of gable, mono-pitch and flat, but all are constructed from single-skinned materials. The warehouses are approximately 265m x 75m at their widest point and are irregularly shaped. The building is largely utilised for the continued storage and distribution of timber products by a tenant of ABP;
- **Standalone Brick Building at (S) of Neptune Works Warehouses** – This building is constructed from brick and consists of a two-storey section of 8.5m x 12m dimension with gable asbestos sheet roof, and

a single-storey lean-to of 5m x 8m with a mono-pitched steel roof affixed to the western side. This building possesses a loft.

Photographs of the survey buildings are visible in Figures 3 – 13 below and overleaf: -

Figure 3 – (NW) Corner of MSB Looking (SE)



Figure 4 – (N) Aspect of MSB, Looking (S)



Figure 5 – (E) Aspect of MSB, Looking (S)



Figure 6 – (S) Aspect of MSB, Looking (N)



Figure 7 – (W) Aspect of Neptune Works, Looking (E)



Figure 8 – Standalone Brick Building to (S) of Neptune Works, Looking (NW)



Figure 9 – Closer View of Standalone Brick Building to (S) of Neptune Works, Looking (NW)



Figure 10 – (S) Aspect of MSB Looking (N).



Figure 11 – (E) Side of MSB. Small Holes Present in Brickwork along (E) Side of Bld.



Figure 12 – Additional view of (E) Side of MSB



Figure 13 – Buddleia Present along (E) Side of MSB, Looking (N)



Main Survey Buildings (MSB)

The Neptune Works warehouses are of approximate 265m x 75m dimension at its widest points, and consist largely of an industrial warehouse which has been affixed to a brick building (as visible in Figures 11 & 12) present on the eastern side of the complex.

The northern end of the building possesses a loading bay / lean-to (visible in Figure 4) which is open in design, to enable vehicular access to the main warehouses via roller shutter door on the northern side of the building. The interior space of the main warehouse is being utilised for the storage of wood products by a tenant of ABP.

The interior of the main Neptune Works warehouses subsequently consist largely of a singular space, with an aforementioned brick structure present along the eastern side of the warehouse.

The warehouse is constructed largely of a combination of steel and asbestos, with corrugated asbestos sheets being used for the construction of much of the roof (although some areas of prior damage have been replaced by steel sheets), whilst the walls of the warehouse are largely constructed from a combination of steel sheets and brick. All steel and asbestos sheeting was found to be single-skinned in design, with no significant voids between panelling being noted during the survey.

Translucent UPVC sheets have been set within the roof of the main warehouse along the entirety of the building, leading to the interior space of Neptune Works being well-lit by natural light during the day.

As discussed, brick walls are present along the eastern side of the building, whilst brickwork is also present along the western wall. The brickwork was observed to be in generally excellent condition given the likely age of the building. It should be noted however that small cracks and holes were recorded in some areas from the exterior of the building, particularly within along the eastern exterior wall of the building, which may offer both roosting potential and potential access/egress for bats to the building interior in these locations.

The interior of Neptune Works is still active, and vehicular movements (consisting of large forklifts) are frequent, with timber being frequently unloaded within the northern lean-to and moved into the shed for storage. Frequent vehicular movements were observed within the interior of the Neptune Works' warehouses and exterior areas across the duration of the PRA.

Steel roller shutter doors are situated within both the northern and southern walls of Neptune Works, and these doors remain open during the day to enable vehicles to move in and out of the shed to undertake the aforementioned operations.

Pedestrian accesses are present within both the eastern and western walls of the building. The eastern pedestrian access points are largely unusable, owing to the growth of dense buddleia along the exterior of the western side of the building (between the survey buildings and the adjacent River Usk). The western pedestrian accesses are still utilised however.

Although the pedestrian access ways are generally well-sealed, gaps are present around the roller shutter doors which may permit access for both crevice and void-dwelling bats to the interior of Neptune Works.

Furthermore, the open nature of the building means that bats which may be able to gain access to the main warehouse interior are likely to be able to access a number of the PRFs situated throughout the building.

Neptune Works possesses a combination of steel and concrete type fascia boards, with steel guttering also being located along the western and eastern exterior walls of the building. These features were observed to be in moderate condition during the PRA, with some areas of damage being recorded which may offer limited roosting potential for opportunistic crevice-dwelling bats.

The corrugated steel walls were observed to be in excellent condition during the survey, with no substantial areas of damage being recorded. Some small areas of damage were identified on the western / southern side of the building however, which may offer some potential access/egress to the warehouse interior for both void and crevice-dwelling bats. The single-skinned design of the walls does however mean that there is no interior void present which may be utilised by bats within this feature.

As discussed, the roof of the Neptune Works warehouses have been constructed from single-skinned corrugated steel / asbestos sheets. The roof sheets across the buildings were observed to be in largely excellent condition, although some small areas of damage were recorded which may permit the access/egress of bats to the warehouse interior.

A number of windows are set within the eastern wall of the survey building, enabling additional light ingress to the building interior during the day. Furthermore, the interior of the main warehouse is also lit by artificial

lighting, with these being kept on for most of the time (including at night), significantly reducing the interior space of Neptune Works from being utilised as either a significant day or night roost.

A small pedestrian access point is present along the eastern side of the main warehouses making up Neptune Works, with this leading to a platform and additional structure present over the River Usk, which was not surveyed as part of this PRA.

Standalone Brick Building to (S) of Neptune Works

An additional building surveyed during the PRA consists of a standalone brick building which was formerly used as a workshop.

The building consists of a two-storey section of 8.5m x 12m dimension, with a single storey lean-to of 5m x 8m also being affixed on the western side of the survey building.

The building has been constructed from brick. The two-storey section of the building possesses a gable roof, which has been finished with single-skinned asbestos sheeting. The lean-to section of the building meanwhile has also been constructed from brick, although the roof in this location is mono-pitched and constructed from single-skinned corrugated steel sheeting.

A loft is present within the two-storey section, and potential access points to both the space beneath the panels making up both the main roof and lean-to roof were recorded during the PRA, as presented in Figures 14 & 15 below: -

Figure 14 – Gap beneath Ridge Tiles on Gable Roof May Permit Access to Loft



Figure 15 – Gap beneath Corrugated Roof Sheets on Lean-to May Permit Access/Egress for Bats to Interior



As visible within Figures 14 & 15, small gaps are present beneath the ridge tiles of the gable roof present on the two-storey section of the brick standalone building which may permit access/egress for bats to the loft within this area, whilst the gap beneath the corrugated roof of the lean-to may also permit access/egress for crevice-dwelling bats to a void situated within this location.

Although the overall brickwork of the standalone brick building was observed to be in generally good condition, some small areas of damage were recorded which were assessed to offer some further roosting opportunity for crevice-dwelling bats.

No significant additional PRFs for bats were recorded across the exterior of the building.

4.5.2 Building Interiors

Main Survey Building (MSB)

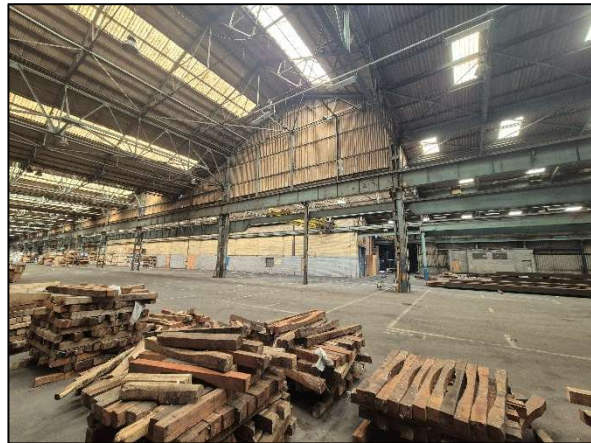
The connected nature of the affixed buildings making up the larger Neptune Works warehouses means that any bats which are able to enter the building via any of the identified exterior potential access/egress points are able to access all of the respective warehouse interiors, and any associated PRFs situated within.

Photographs of the interior of the interconnected warehouses making up the Neptune Works complex are visible in Figures 16 & 17 below: -

Figure 16 – Neptune Works Interior, Looking (SW)



Figure 17 – Neptune Works Interior, Looking (NE)



The Neptune Works warehouses possess a combination of mono-pitched and gable roofs (owing to the numerous warehouses which have been affixed to one another), and the roof is supported by a steel framework and associated bracing beams, purlins and rafters.

The roofs are constructed from a combination of single-skinned corrugated steel and asbestos sheets (interlaced with numerous skylights within the main Neptune Works warehouses), with the vast majority of the roof sheets being observed to be undamaged within the MSB during the survey.

The interior of the MSB is subsequently extremely well-lit by natural light (owing to the presence of the aforementioned skylights within the MSB), whilst significant amounts of artificial lighting are also present within the interior of the MSB, owing to the building still being in operational use by a tenant of ABP.

The well-lit nature of the building interior by a combination of natural and artificial light significantly reduces this section of the building from being utilised as a consistent day roost by bats.

The interior space of the MSB was observed to be in constant operational use during the survey. Traffic movements within the shed were frequent, with forklifts being utilised to transport timber from the northern exterior of the survey building to the warehouse for storage purposes. The MSB is subsequently subject to significant levels of noise, vibration and general human disturbance on a day-to-day basis, reducing the building's potential to be utilised by significant numbers of bats.

A number of steel purlins, joists and other steel features which make up the roof of the MSB are present within the building interior, and these were identified to be potentially suitable for free-hanging bats, whilst there is also adequate space within the building which would be suitable for void-dwelling bats. Small gaps present between intersections of these steel features were assessed to offer some roosting potential for opportunistic crevice-dwellers.

There is however a lack of shelter within the building (owing to the open interior nature, with the interior rooms of most buildings progressing from ground level straight up to the roof). Subsequently, there are no lofts or other areas present within the MSB which are of sufficient space, shelter, protection or possess the suitable conditions to be used on a regular basis by larger numbers of bats, particularly with respect to aforementioned void-dwellers.

The interior of the buildings are not thought to be suitable for hibernation or maternity roosts. This is due to a number of reasons, including; variable interior temperatures resulting from numerous open doorways, high levels of human disturbance on a daily basis, the open nature of the building interiors leading to a lack of shelter and a lack of suitable PRFs which could be used for either of these roost types.

As stated, the MSB has been constructed from a combination of brick and steel cladding, with potential asbestos corrugated roof sheets. All steel and asbestos features making up either cladding or roof sheets of the building were observed to be single-skinned, meaning that no void is present between sheets which may be utilised by roosting bats.

For the most part, the brickwork across the walls of the MSB was observed to be in excellent condition given the age of the building, with limited areas of damage being identified within the building interior.

It should be noted however that some areas of damage were identified which could be utilised by crevice-dwelling bats. These areas of damage are almost exclusively located where steel features making up the roof of the building intersect with brickwork. These small areas of damage were assessed to potentially offer roosting opportunities for small numbers of crevice-dwelling bats.

Furthermore, the brickwork making up the walls of the MSB likely consist of at least 2 layers. Subsequently, any surface damage to brickwork may open up into small voids situated between the different layers of bricks making up these walls, particularly toward the eastern side of the building.

The eastern side of the building is affixed to a two-storey brick structure. Both floors of the structure are accessible from the MSB warehouse interior.

The ground floor of the eastern brick section of the MSB is dark in nature, owing to the windows along the eastern wall of this section of the building having been boarded up for protection purposes.

Photographs of the ground floor of the eastern section of the MSB are visible in Figures 18 & 19 below: -

Figure 18 – Access Point to Ground Floor of Affixed Brick Building at (E) Side of MSB via Open Double-Doors



Figure 19 – Interior of Ground Floor of Affixed Brick Building at (E) Side of MSB. The Room is Dark and Cooler than the Main Warehouse Building.



A standalone access point enables access to the ground floor of the brick structure to the east of the MSB, and this is via a double access on the southern side, as visible in Figure 18.

The interior of the ground floor is very dark in nature, owing to the windows having been tightly boarded up on the eastern side of the building in this location. This area of the building is subsequently cooler than that exhibited in nearby areas. PRFs within the ground floor were however limited, and although steel girders at roof level offer some roosting potential for free-hanging bats, general PRFs were limited, and no evidence of bats was identified within this area of the building.

The 1st floor of the eastern brick section of the MSB meanwhile is accessible via a stairway adjacent to the aforementioned double-doors on the southern side of the structure. The access stairway to the 1st floor along with photographs of the 1st floor interiors, are visible in Figures 20 – 23 overleaf: -

Figure 20 – Access Stairway to 1st Floor of Brick Section of Building at (E) Side of MSB

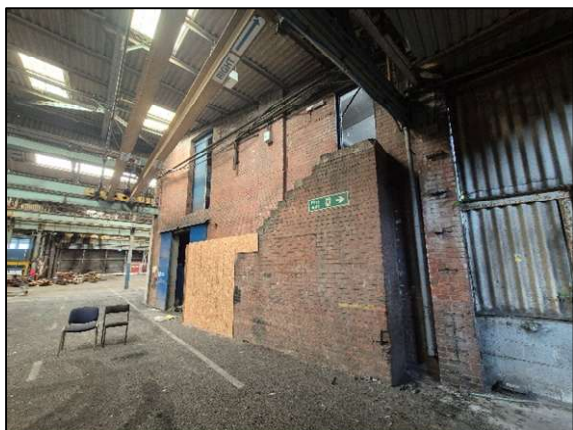


Figure 21 – 1st Floor Interior at Top of Staircase. This Section of the Bld. Possesses a Flat Roof with No Loft

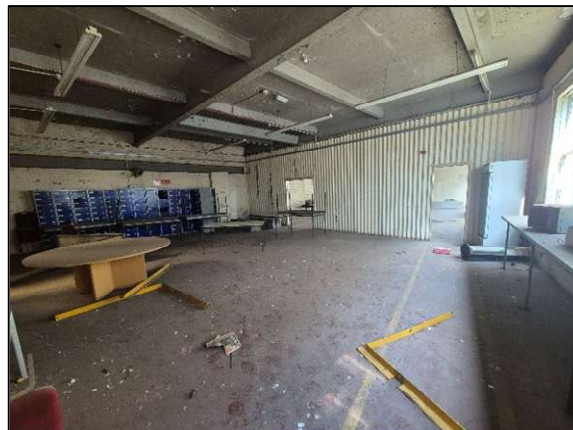


Figure 22 – Corridor at 1st Floor Level of Brick Section of Building at (E) Side of MSB. Substantial Pigeon Activity Noted at 1st Floor Level

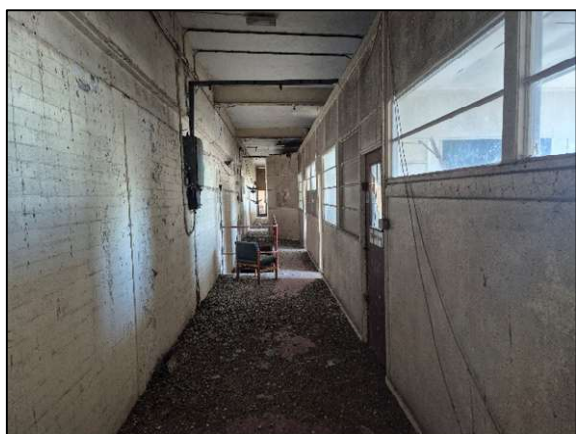
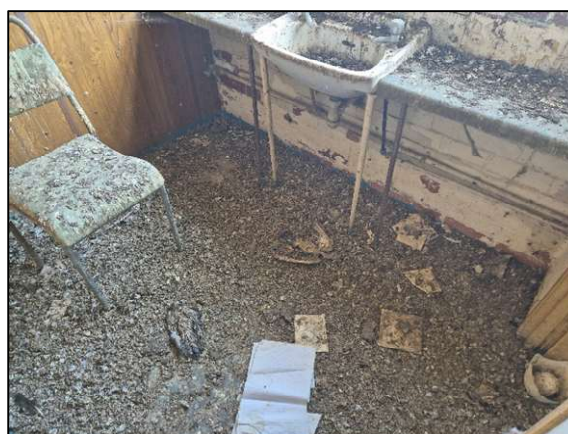


Figure 23 – Example of Side-Room at 1st Floor Level of Brick Section of Building at (E) Side of MSB. Substantial Pigeon Droppings and Some Corpses Visible, Suggest Prolonged Pigeon Use over Time



As stated, the 1st floor section of the brick building along the (E) side of the MSB is accessed via a dedicated stairwell along the southern wall, as visible in Figure 20.

A corridor runs along the entirety of the brick section of the building, with a number of side-rooms being accessible along the right-hand side. A small stairwell also permits access to additional rooms at ground floor level.

Evidence of substantial pigeon use was recorded across the entirety of both floors within this section of the building. A number of pigeons were observed to be resting and roosting within the building interior, and vast quantities of pigeon droppings were identified across all areas, as visible in Figures 22 & 23.

This section of the building possesses a flat roof and no loft. The interior at 1st floor level was observed to be very well-lit by natural light, owing to the numerous windows present within the easternmost wall of the building in this location. The ground floor level was however much darker, owing to the windows at ground floor level having been tightly boarded, as previously discussed.

No evidence of bats was identified within this section of the building, although it should be noted that evidence may have been obscured by the substantial pigeon droppings present across most surfaces. With this being said, PRFs for bats within the interior of this section of the building across both floors was rather limited.

All areas of the MSB and associated structures were inspected for evidence of bats.

Evidence throughout the buildings was extremely limited, however it should be noted that **direct evidence of bats was recorded in the form of droppings, which were observed on girders which were being stored within the MSB.**

A small area of the underside of the roof in this location possessed some residual lagging, and it is thought that opportunistic crevice-dwellers may be able to utilise this space for roosting purposes.

Standalone Brick Building to (S) of Neptune Works

A standalone brick building to the south of Neptune Works was also surveyed during the PRA.

The interior of the building has been split into two sections, with the first section consisting of a single two-storey room which served as a former workshop at the northern end of the building, whilst a steel stairwell rises to a 1st floor 'mezzanine' mess area, with a canteen and office.

PRFs for bats within the workshop area of the building are largely limited, owing to the ceiling being in excellent condition, along with the brickwork making up the interior walls also being observed to be largely undamaged, with no suitable PRFs for bats being recorded.

The brickwork making up this structure was observed to be in excellent condition, with no PRFs for bats being identified.

It should be noted however that this building possesses a loft, which is accessed via a loft hatch set within the ceiling at 1st floor level within the kitchen to the south of the building. The loft extends across the entirety of the two-storey section of the building.

Photographs of the interior of the brick building, along with loft access and interior loft photographs are presented in Figures 24 – 27 below and overleaf: -

Figure 24 – Workshop Covering Two Floors at (N) End of Brick Building

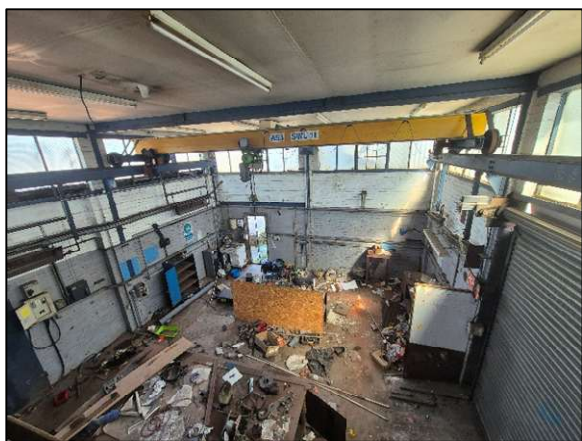


Figure 25 – Loft Hatch at 1st Floor Level within Kitchen at (S) End of Brick Building



Figure 26 – Interior of Loft of at (S) End of Brick Building. Exposed Steel Framework visible, suitable for Free-Hanging Bats



Figure 27 – Brick Wall at (S) End of Loft Interior. Brickwork in Generally Good Condition, Reducing Potential for Crevice-Dwellers



Although a loft is present within the brick building, interior conditions are suboptimal for bats. The single-skinned asbestos roof is set on a steel framework, which may offer some limited potential for free-hanging bats. However, the brick walls at either end of the loft were observed to be in good condition, with limited PRFs for crevice-dwelling bats being noted.

Potential access points to the loft interior for bats were recorded at the apex of both the southern and northern walls of the building, with additional access points also being recorded beneath the ridge tiles of the main roof.

No evidence of bats was identified within the loft; however PRFs were identified which may be suitable for opportunistic bat use. Furthermore, no direct evidence of bats was recorded throughout the entirety of the standalone brick building during the PRA.

4.5.3 Signs of Bats

The survey buildings were inspected for evidence of bats including but not limited to; feeding remains, droppings, smudging, staining and other evidence during the PRA.

Although extremely limited throughout all of the survey buildings, **direct evidence of bats in the form of droppings was identified during the PRA.**

The droppings were identified on girders which are being stored within the MSB.

Photographs of the girders along with bat droppings are presented in Figures 28 & 29 below: - .

Figure 28 – Girders Stored at (S) End of MSB

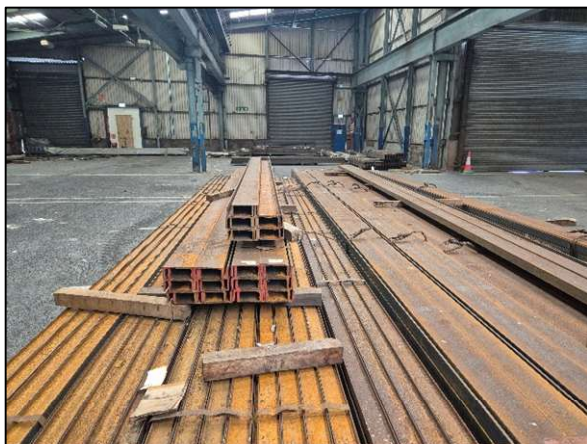
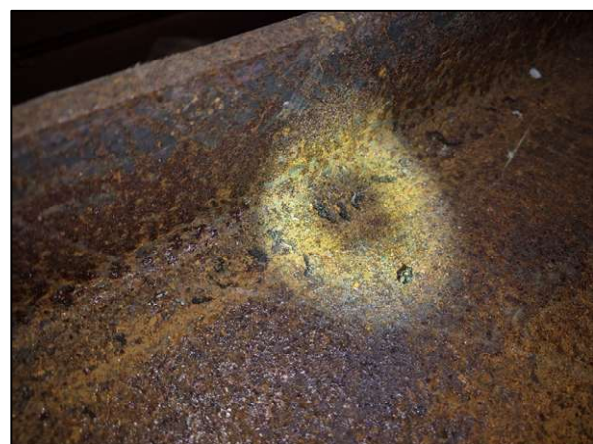


Figure 29 – Bat Droppings Identified on Girders



4.5.4 Potential Access for Bats

Potential access/egress points for bats to the building interiors and associated PRFs were recorded during the PRA walkover survey.

Potential access areas and locations within the buildings are outlined in further detail below:-

- **Open Roller Shutter Doors / Gaps Around Closed Roller Shutter Doors on (N) & (S) Aspect of MSB** – Open roller shutter doors were visible around Neptune Works along the northern and southern aspects of the building during the PRA. Although the roller shutter doors are closed overnight for security purposes, gaps are present around the closed doors which are of sufficient size to enable both crevice and void dwelling bats potential access to the building;
- **Open Pedestrian Doorway at 1st Floor Level on (W) Side of Neptune Works** – An open pedestrian doorway is present at 1st Floor level of the western side of Neptune Works which enables the access/egress of bats to the interior via this location;
- **Open Windows at 1st Floor Level on (E) Side of Building** – A small number of open windows were recorded around the building, particularly at 1st Floor Level on the eastern side which may permit access/egress for bats to the building interior;
- **Small Damaged Areas to Roof / Wall Sheets of MSB** – Although the vast majority of the steel / asbestos sheets making up the roof / walls of the MSB were in excellent condition during the survey, small isolated areas of damage were recorded which may permit access/egress for both crevice and void-dwelling bats to the interior of the main Neptune Works warehouses;
- **Open Plan Nature of MSB Interior** – Due to the open plan nature of the interior of the MSB, any bats which are able to access the interior of the MSB are subsequently able to fly freely throughout the vast majority of the building interior, and access any PRFs situated within;
- **Gaps beneath Corrugated Roof Panels / Ridge Tiles of Standalone Brick Building** – Small gaps are present beneath the exposed end of the roofing panels on the northern and southern sides of the standalone brick building. Additional gaps are present beneath the corrugated steel sheet making up the western lean-to, and beneath the ridge tiles of the main roof of the building, which may permit access to a void / loft in each respective location and any PRFs situated within.

4.5.5 Potential Features for Bats

The interior of the building was inspected thoroughly for suitable features for bats and any evidence of bat use.

As discussed, a number of potential access / egress points to the building are present which may allow bats to enter the building interior and access potential roosting features identified during the survey.

Potential roosting areas identified within the buildings include: -

- **Steel Roof Features and Intersections between Adjoining Sections within MSB** – A number of exposed steel roof support features, including joists and purlins were identified on the underside of the roof of the MSB which may be suitable for both free-hanging bats, whilst offering very limited roosting potential for opportunistic crevice-dwelling bats within areas in which the steel framework intersect. Although the steel framework making up the roof features of the building were identified to provide some limited roosting habitat for free-hanging bats, the interior of the building is open and exposed in nature, reducing the building's potential to be utilised consistently and by a larger number of bats;
- **Cracks within Intersections between Steel Framework of Roof and Brickwork Walls of MSB** – Although the majority of the brickwork within the building interior was in excellent condition, some small gaps are present, particularly where the steel framework making up the roof of the Neptune Works warehouses intersects with brickwork on the eastern and western interior walls of the building. These gaps offer some limited potential roosting opportunity for crevice-dwelling bats;

- **Missing Bricks / Cracks within Exterior Brickwork on (W) Wall of MSB** – Although in generally excellent condition given the age of the building, some missing bricks and cracks were recorded within the exterior brickwork making up the (E) wall of the MSB. These cracks may offer potential roosting opportunity for crevice dwelling bats, whereby the cracks may open up into larger voids situated within the brickwork;
- **Loft & Associated Steel Features within Standalone Brick Building** – The standalone brick building possesses a loft. Although the single-skinned asbestos roof and lack of interior felt reduce the potential for the loft to support bats, exposed steel roof support features were identified within the loft which may offer some opportunity for both free-hanging and crevice-dwelling bats, particularly where these features intersect (in the case of crevice-dwellers);
- **Brick / Block Walls in Loft Space** – Small brick walls are present within the loft space above the standalone brick building. Although in generally good condition, small gaps may be present which could offer potential roosting for crevice-dwelling bats;
- **Small Area of Lagging on Underside of Roof at (S) End of MSB** – A small area of residual lagging was recorded on the underside of the roof above the steel girders where bat droppings were identified. The presence of a small amount of lagging here creates a double-skin between the lagging and the asbestos roof sheets, and may create a small void which could provide roosting opportunity for crevice-dwelling bats.

Given that direct evidence of bats was recorded during the survey, the Neptune Works warehouses are a confirmed roost for bats.

PRFs for bats were recorded within the majority of the building interiors, and potential access/egress points to these features were also recorded.

It should be noted however that the PRFs for bats within the survey buildings are suboptimal in nature and would likely be used by opportunistic bats, and the buildings are not thought to provide sufficient space or suitable conditions to support a larger number of bats, or roost of higher conservation value (maternity or hibernation roost, for example).

With the above in mind, the survey concluded that the Neptune Works warehouses possess a **low (confirmed roost) potential to support roosting bats**.

5.0 DISCUSSION AND RECOMMENDATIONS

5.1 BCT Good Practice Guidelines

5.1.1 Suitability of Proposed Development Sites for Bats

Table 4.1 within the BCT Good Practice Guidelines state the following guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of habitat features within the landscape, to be applied using professional judgement: -

- **None:** - No habitat features on site likely to be used by any roosting bats at any time of the year (complete absence of crevices / suitable shelter);
- **Negligible:** - No obvious habitat features on site likely to be used by roosting bats, however a small element of uncertainty remains as bats can use small and apparently unsuitable features on occasion;
- **Low:** - A structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of the year. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger number of bats; (i.e. unlikely to be suitable for maternity or hibernation);
- **Moderate:** - A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat, but unlikely to support a roost of high conservation status (with respect to roost type only, such as maternity and hibernation);
- **High:** - A structure or tree with one or more potential roost sites that are obviously suitable for use by larger number of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat. These structures have the potential to support high conservation status roosts e.g. maternity or classic cool/sable hibernation site.

5.1.2 Presence / Absence Surveys for Bats

Furthermore, BCT Good Practice Guidelines state that further surveys (particularly presence/absence surveys) are required if: -

- The preliminary roost assessment has not ruled out the reasonable likelihood of a roost being present (because there are locations with potential for bats to roost undetected in concealed cracks, crevices or voids), but no definitive evidence of the presence of bat roosts has been recorded;
- Potential roost features inspection survey has identified moderate and high suitability potential roost features, but no definitive evidence of the presence of bats has been established;
- A comprehensive inspection survey is not possible due to restricted access, but features are present with a reasonable likelihood of supporting bats;
- There is a risk that evidence of bat use may have been removed by weather or human activities.

The aims of these surveys would be to determine the presence or absence of bats at the time of the survey and the need for further surveys and/or mitigation.

If sufficient areas of a structure have been inspected and no evidence found, then further surveys may not be appropriate.

However, if there is a reasonable likelihood that bat roosts could be present and particularly if there are areas inaccessible for survey, then further surveys may be required proportionate to the circumstances encountered.

5.1.3 Roost Characterisation Surveys

Where evidence of bats has been established during a PRA (for example, where droppings are found), roost characterisation surveys in the form of dusk emergence surveys should be undertaken.

The aim of roost characterisation surveys and dusk emergence surveys is to establish: -

- Are bat roosts present or likely to be absent;
- Which bat species use the site for roosting;
- How many bats do these roosts support;
- Where are the bat roost access points;
- Where are the bat roosts;
- At what times of the year are bats present, and how does use change seasonally;
- What types of bat roost are present;
- What flight-lines do the bats use after emerging from the roost has been identified during a PRA.

By answering the above questions, a licenced ecologist will be able to undertake an impact assessment, and design a mitigation, enhancement and monitoring strategy where relevant.

The level of survey effort required to collect the relevant information to design an impact assessment and associated mitigation strategy is site-specific, and appropriate surveys should be repeated until the above information has been collected. Appropriate methods and equipment should be used to minimise the number of repeat visits however, and effort should always be proportionate to impact.

Where presence of bats is established during a PRA, but roost characterisation surveys have not recorded any bat presence, it may be necessary to carry out further surveys at alternative times of the year.

It should be noted however that further surveys may provide no return, and it may be necessary to proceed with the information collected from both the PRA and surveys undertaken to date in this instance.

5.2 Discussion

5.2.1 Preliminary Roost Assessment Summary

The Neptune Works warehouses were surveyed in detail on 23rd April 2026 to assess their potential to support roosting bats.

The PRA concluded that the survey building possesses a **low (confirmed roost)** potential to support roosting bats.

A small amount of droppings were recorded on steel girders which are stored within the main warehouse. No further evidence of bats was identified during the walkover survey however.

A number of potential access/egress points to the building interior(s) were recorded during the survey, and the building interiors were concluded to be of sufficient size to potentially support void-dwelling bats.

However, the poor quality of PRFs identified during the survey reduces the likelihood that the building could be utilised on a regular basis, or by a larger number of bats, particularly with respect to void-dwellers. The buildings were assessed to provide some potential to support crevice-dwelling species however.

The PRA concluded that the survey buildings possess some potential to be utilised by bats, for example as either a day or night roost.

The buildings were concluded as being unlikely to be suitable for a maternity or hibernation roost however, and no evidence was identified during the PRA which would support the presence of either of these roost types.

5.3 Recommendations

The survey buildings were assessed as having **low (confirmed roost)** potential to support roosting bats, and subsequently **roost characterisation surveys** in the form of **dusk emergence surveys** will be required in order to establish how bats are utilising the survey buildings.

The methodology of the surveys requires a suitably qualified surveyor to visit the property at dusk to listen for and record bats via the use of a bat detector, and watch for bats emerging from roosts where present within the building.

The recommendation is subsequently made that a **minimum of one dusk emergence survey** should be undertaken in order to provide additional information regarding the survey buildings, and to determine how the buildings are being utilised by bats.

The timing of the survey should be undertaken during the optimal time of May to September with respect to bats.

As a result, the following measures are recommended with regard to the building: -

- Roost characterisation surveys will be required in the form of **a minimum of one dusk emergence survey** to determine how the buildings are being utilised by bats, and to gather additional information regarding said species should they be utilising the buildings for roosting purposes. This will inform any further survey work where required, and will enable appropriate mitigation relative to the proposals and species to be designed, which will inform an EPSL application (as appropriate).

6.0 DUSK EMERGENCE SURVEYS

The PRA had previously concluded that the survey buildings possess **low (confirmed roost)** potential to support roosting bats, due to the buildings possessing a number of PRFs which may be used opportunistically by both crevice and void dwelling bats.

Furthermore, numerous potential access / egress points to these roosting features were also recorded, and a small amount of direct evidence of bats in the form of droppings was identified on steel girders stored within the main warehouse of the building.

Further to the result of the PRA, it was determined that **the buildings should be subjected to a minimum of one roost characterisation dusk emergence survey** to determine how the buildings are being utilised by bats, and enable the numbers and species of bats which are utilising the buildings to be determined.

The results of the survey(s) will then be used to inform appropriate mitigation which will be required to enable the proposals whilst minimising any detrimental impact on bats.

The dusk emergence survey therefore aims to provide further evidence to support or contradict the conclusions of the PRA report in order to inform whether further survey work is required, and ultimately determine if and how bats utilise the buildings for roosting purposes.

The results will also enable necessary mitigation to be designed in order to facilitate the proposals at the site whilst minimising the impact on roosting bats.

6.1 Activity Surveys

An initial dusk emergence survey was undertaken on 27th May 2026 by Steve Owen; a licenced bat surveyor (NRW Licence no: **S093409/1**) who was assisted by additional experienced ecologists.

Visual observations were supported by the use of ultra-sonic bat detectors. A combination of frequency division and real time expansion hand-held detectors (Anabat Express, Elekon Batlogger M2, Elekon Batlogger S2, Echo Meter Pro 2 & Heterodyne) were used, which detect ultrasonic bat calls.

Furthermore, Night Vision Aids (NVAs) were also utilised during the survey, whereby Nightfox Whisker IR, Guide TK612 and Pixfra Arc A613 thermal imaging cameras were also deployed facing different aspects of the survey building.

Dusk emergence surveys using bat detectors are techniques used for locating roosts and gauging general bat activity in the area, and in this instance to determine whether the buildings within the survey area support roosting bats. The technique is based on the following principles: -

- The earlier a bat is observed at sunset, then the closer the roost (species dependent) is likely to be in relation to the surveyor's location;
- Bats fly away from their roost at sunset and the property was observed for emerging bats.

6.2 Analysis

Bat echolocation calls were analysed using Analook software and bat species identified by comparison of sonograms with a reference of echolocation call parameters and library of known echolocation calls. Echolocation calls were assigned to species level where possible. Where this was not deemed possible, identification to genus level was made.

6.3 Survey Limitations

The emergence survey was undertaken within the optimal time of year to undertake activity surveys (May – September), with the survey having been undertaken on 27th May 2026. Furthermore, based on the results of the initial survey, a second dusk emergence survey was also undertaken on 23rd June 2026.

Weather conditions in the preceding days had been fine, whilst the conditions on the days of both surveys were optimal.

The emergence survey provides a snapshot of the bat activity within the survey area at the time of survey itself. However, the survey results are considered to provide a realistic picture of the bat activity within the survey area, and best practice survey guidelines were followed.

Bat surveys undertaken using bat detectors are inherently biased as bats with louder calls (such as the *Nyctalus* species) will be recorded at a greater distance (and therefore more frequently) than species which use quiet calls such as *Plecotus* spp.

Long-eared bat (*Plecotus* spp.) is a species that generally only emerges in full darkness and which has a very quiet echolocation call, generally not detectable in the open if more than 2-3 m from the bat detector. As a result, long-eared bats are difficult to detect during activity surveys and it is likely this species is under-recorded during such surveys.

Species identification by sonogram is limited (to a certain extent) by similarities in call structure. In addition, all bats can modulate their calls according to the habitats they are navigating, their behaviour and the information they require at the time. This imposes limitations on reliable analysis particularly between species in the genera *Plecotus*, *Myotis* and *Nyctalus*.

No rainfall occurred during either survey, and the weather conditions were considered to be optimal to undertake activity surveys, with low wind speeds and a temperature which remained above 10°C throughout the duration of the activity.

The above survey limitations are unavoidable, and it is considered that they have not affected the robustness of the survey results for the purpose of this study. Therefore, it is considered that there were no limitations to the activity survey works.

6.4 First Survey for Bats – Dusk Emergence Survey, 27/05/26

An initial dusk emergence survey was undertaken on Wednesday 27th May 2026.

The dusk survey commenced 30 minutes before sunset and continued for 2 hours after sunset. Details of the survey are provided in Table 1 below: -

Table 1 – First Dusk Emergence Survey Details

	Dusk Emergence Survey
Date	27/05/26
Weather Conditions	28°C, 20% cloud cover, wind Beaufort Scale 2-3, no rain throughout survey
Sunset	21.14
Start time	20.44
Finish time	23.14

The following equipment was utilised for the survey: -

- **Anabat Express 15** – this detector remained in a static location, facing toward the (W) aspect of Neptune Works;
- **Anabat Express 16** – this detector remained in a static location, facing toward the (E) aspect of Neptune Works;
- **Echo Touch Pro 2** – each surveyor had a dedicated detector to identify emerging, foraging and commuting bats;
- **Nightfox Whisker** – deployed to face (N) aspect of survey building;
- **Nightfox Whisker** – deployed to face (S) aspect of survey building.

Observations made during the survey are listed below: -

Table 2 – First Dusk Emergence Survey Results

Record Number	Time	Description
n/a	20.44	SURVEY START
1	21.40	Common pipistrelle (<i>Pipistrellus pipistrellus</i>) observed foraging around buddleia along (E) side of survey buildings;
2	21.44 – 21.46	Common pipistrelle observed foraging around buddleia along (E) side of survey buildings;
3	21.50	Common pipistrelle observed foraging within the (S) end of warehouse interior;
4	21.52	Common pipistrelle observed commuting from (NE) to (SW) above survey building;
5	21.54	Common pipistrelle observed foraging in loops above and around (S) end exterior of Neptune Works warehouses;
6	22.00	Noctule (<i>Nyctalus noctula</i>) detected on heterodyne, but not observed;
7	22.07	Common pipistrelle observed foraging between exterior brick building and (S) end of Neptune works warehouses;
8	22.15	Common pipistrelle observed foraging along (E) side of Neptune Works warehouse exterior;
9	22.22	Noctule detected on heterodyne, but not observed;
10	22.34	Common pipistrelle observed foraging within the (S) end of warehouse interior;
11	22.38	Common pipistrelle observed foraging along (S) side of Neptune Works warehouse exterior;
12	22.54	Common pipistrelle observed foraging along (E) side of Neptune Works warehouse exterior.
n/a	23.14	SURVEY END

6.5 Summary of First Dusk Emergence Survey

Acoustic analysis of the Anabat Express bat detector was undertaken using Analook Insight software, allowing the full frequency of the bat call to be analysed in greater detail.

Furthermore, the Echo Touch Pro 2 detector enables live readouts of the species encountered during the survey to be made.

A number of bat calls were recorded over the duration of the survey, and these calls were analysed against the observations made by the surveyor, and the sonographs utilised to aid with the identification of bats to species level. The analysis of these data also validates the observations made by the surveyor at the same time both visually and on the heterodyne detectors.

A summary of the findings of the dusk emergence surveys is provided below: -

- A total of **2 bats were observed directly foraging within the interior of the Neptune Works Warehouses** during the dusk emergence surveys;
- **The Neptune Works warehouses are therefore a confirmed bat roost;**
- Bats observed within the survey building consisted entirely of **common pipistrelle**;
- Bat abundance on the survey night was low. Although a lack of substantial foraging habitat is present within the immediate vicinity of the survey building, a small amount of buddleia scrub is present between the eastern side of the survey building and the adjacent River Usk, which offers some foraging opportunity for bats;
- Only 2 species of bat were recorded during the survey, with these consisting of common pipistrelle and noctule;

- Commuting opportunity between the survey site and higher quality feeding habitat further afield is generally poor, although the River Usk and associated riparian zone situated to the east of the survey buildings does offer commuting and foraging opportunity for bats;
- Foraging activity was primarily focused along the eastern exterior and within the interior of the main warehouse making up the Neptune Works complex, with common pipistrelles observed to be opportunistically foraging invertebrates which were gathering around the interior lights present within the warehouse.

6.6 Second Survey for Bats – Dusk Emergence Survey, 23/06/26

Based upon the results of the initial dusk survey undertaken in May 2026, the recommendation was made that an additional dusk emergence survey should be undertaken in order that the confirmed roost within the building could be further categorised, and to identify whether additional species are utilising the survey building.

A second dusk emergence survey was subsequently undertaken on Tuesday 23rd June 2026.

The dusk survey commenced 30 minutes before sunset and continued for 2 hours after sunset. Details of the survey are provided in Table 1 below: -

Table 3 – Second Dusk Emergence Survey Details

	Dusk Emergence Survey
Date	23/06/26
Weather Conditions	27°C, 0% cloud cover, wind Beaufort Scale 1, no rain throughout survey.
Sunset	21.33
Start time	21.03
Finish time	23.33

The following equipment was utilised for the survey: -

- **Echo Touch Pro 2** – each surveyor had a dedicated detector to identify emerging, foraging and commuting bats;
- **3x Batlogger M2** – these detectors remained with the thermal cameras for identification purposes;
- **2x Batlogger S2** – these detectors remained in a static location, within the interior of Neptune Works;
- **2x Guide TK612 & 3x Pixfra Arc A613** – thermal imaging cameras set up to capture all exterior aspects of the survey buildings.

Observations made during the survey are listed below: -

Table 4 – Second Dusk Emergence Survey Results

Record Number	Time	Description
n/a	21.03	SURVEY START
1	21.48	Common pipistrelle observed foraging along (S) side of Neptune Works exterior;
2	21.56	Common pipistrelle observed foraging around buddleia along (E) side of survey buildings;
3	21.58	Soprano pipistrelle (<i>Pipistrellus pygmaeus</i>) observed foraging along (SE) side of Neptune Works exterior;
4	22.12	Common pipistrelle observed foraging along (E) side of Neptune Works warehouse exterior;
5	22.38	Soprano pipistrelle observed commuting from (E) to (W) above Neptune Works warehouses;
6	22.42	Common pipistrelle observed commuting from (E) to (W) above Neptune Works warehouses;
7	22.58	Common pipistrelle observed foraging around buddleia along (E) side of survey

		buildings;
8	23.08	Common pipistrelle detected on heterodyne, but not observed;
n/a	23.33	SURVEY END

6.7 Summary of Second Dusk Emergence Survey

A summary of the findings of the second dusk emergence survey is provided below: -

- **No additional bats were observed to forage or emerge from the survey buildings during the second dusk emergence survey;**
- Bat activity across the site during the second dusk emergence survey was limited. Activity was confined to two species, namely common pipistrelle and soprano pipistrelle (*Pipistrellus pygmaeus*), both of which were recorded only occasionally over the course of the survey;
- Bats were noted flitting intermittently across the site, with no sustained foraging or commuting behaviour observed and no evidence of the site supporting a regularly used flight line;
- The activity recorded is consistent with low-level, transient use of the wider site by widespread and common species, rather than any significant association with the building itself.

6.8 Thermal Imaging from Second Dusk Emergence Survey

Thermal imaging of the survey building from the second dusk emergence survey is visible in Figures 30 – 33 below and overleaf: -

Figure 30 – Thermal Imaging of (E) Aspect of Neptune Works Warehouses



Figure 31 – Thermal Imaging of (S) Aspect of Neptune Works Warehouses & External Brick Building



Figure 32 – Thermal Imaging of (E) Aspect of Neptune Works Warehouses and Structure over Usk

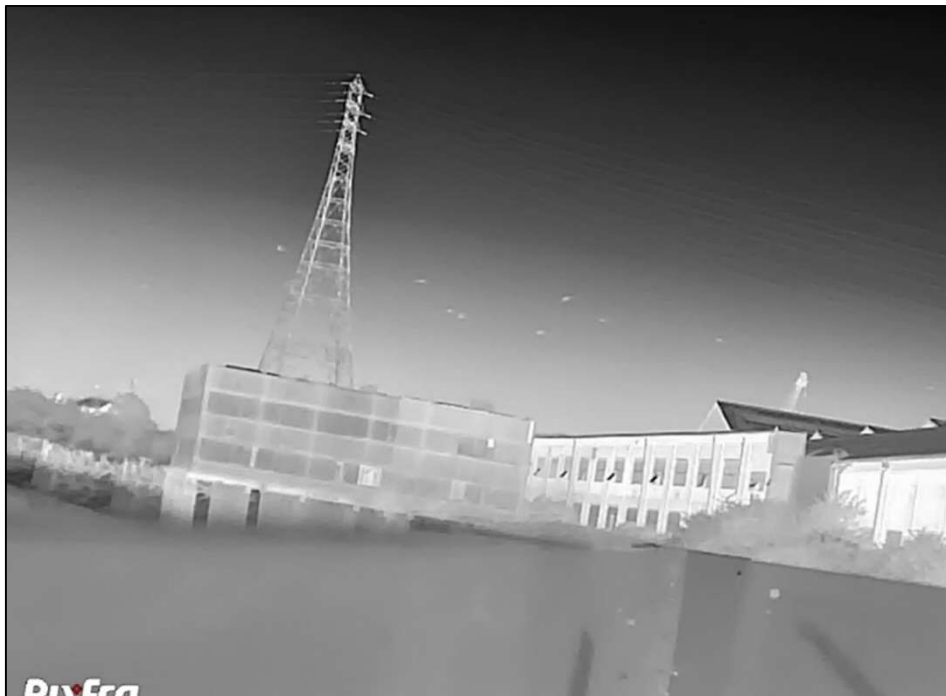


Figure 33 – Thermal Imaging of Brick Building at (S) of Neptune Works Warehouses



7.0 PRA AND DUSK EMERGENCE SURVEY – DISCUSSION AND RECOMMENDATIONS

7.1 Summary of Survey Effort

7.1.1 Preliminary Roost Assessment Summary

The Neptune Works warehouses were assessed as having the potential to support roosting bats due to the presence of a number of PRFs for both void and crevice-dwelling bats being identified within the building interiors during the PRA.

Furthermore, several potential access points to the building interiors were recorded, which have the potential to enable bats to freely access the PRFs located within the buildings.

A small amount of droppings was identified on steel girders stored within the southern end of the warehouse. No additional evidence of bats was identified throughout the interior of the survey building.

Due to the presence of PRFs within the buildings along with potential access/egress points to these features being identified during the PRA, and direct evidence of bats in the form of a small number of droppings being present within the building, the survey building's potential to support roosting bats was classified as **low (confirmed roost)**.

As a result of the above, the recommendation was made that roost characterisation surveys should be undertaken in order to determine where the bats may be roosting within the building, and to further identify which species utilise the buildings, their likely numbers, roost locations, type and access points.

Subsequently, **the recommendation was made that a minimum of one dusk emergence survey should be undertaken** in order to determine the above information.

7.1.2 Summary of Dusk Emergence Surveys Undertaken in May & June 2026

An initial dusk emergence survey for bats was undertaken on 27th May 2026 to fully assess the status of bats at the survey buildings and inform of potential constraints upon the proposed project.

Based upon the results of the initial dusk emergence survey (whereby direct evidence of bats foraging within the Neptune Works Warehouses was observed), the recommendation was made that the buildings should be subjected to a second survey, to ensure that sufficient information relating to bat roosts within the buildings was obtained.

Subsequently, a second dusk emergence survey was also undertaken at the Neptune Works warehouses on 23rd June 2026.

Both surveys were undertaken during the peak bat survey period and in accordance with current best practice bat survey guidelines.

A summary of the findings of the dusk emergence surveys is provided below: -

- The building and its condition offered some opportunities for bat occupation and roosting potential;
- A low number of bat calls were recorded during the emergence surveys, with a total of 3 bat species being recorded across both surveys (namely, noctule, common pipistrelle and soprano pipistrelle);
- A total of **2 confirmed individual bats across a single species** were recorded foraging within the southern end of the Neptune Work warehouses during the first survey (May 2026), with these consisting of **2 common pipistrelles**;
- No additional bats were recorded either foraging within the Neptune Works interior or emerging from the survey buildings during the second dusk emergence survey;

- Based upon the results of the preliminary roost assessment and subsequent activity surveys, the survey building is a **confirmed summer non-breeding day roost for a small number (<5) of common pipistrelles**;
- **The building is now a confirmed bat roost. No work that could affect the bat roost is permitted by law, without the permission and/or under licence from Natural Resources Wales, including any works to the roof. Direct illumination of the building is also not permitted, as this could constitute disturbance**;
- The emergence surveys did not identify a maternity roost. Based upon the evidence gained during the PRA and subsequent emergence surveys, the bats using the building as a roost are likely to be males or non-breeding females;
- The conditions encountered within the survey buildings were not considered suitable to offer either significant maternity or hibernation roost potential for bats;
- Evidence of nesting bird use of the building was observed during the surveys, whereby a number of pigeons were identified within the Neptune Works interior, and gulls observed nesting on the roofs of the building. All building / demolition works should subsequently, wherever possible, be completed outside of the bird nesting season (March to August inclusive) to minimise the impact on nesting birds. Where works are scheduled within the nesting bird season, these must be preceded by a site visit by a suitably qualified ecologist in order to determine whether the building is being actively used by nesting birds. No works will be permitted to commence until any identified any active nests become vacant;
- If careful consideration is made to incorporate improved roosting conditions into the proposals, the project could offer ecological gain for resident bats which have been identified to be utilising the survey building. New roost creation will subsequently be required to accommodate crevice-dwelling species of bats. The incorporation of new roosting facilities (bat tubes and/or boxes for crevice-dwelling bats & bird boxes for nesting birds etc.) will offer a Net Benefit for Biodiversity for bats and nesting birds in the local vicinity. As such, the recommendation is made that the creation of new roosting features are incorporated into the proposals. The installation of these features can be achieved at very little expense and with limited impact to the schedule of works;
- If planning is approved, the developer must apply for an EPSL to commence with the works. This typically takes approximately 40 working days to be issued. This licence would have to offer a methodology to ensure that any roosting sites are maintained or replaced and preferably enhanced in the new build, and the project undertaken in a way which minimises any risk to bats. An Ecological Clerk of Works (ECoW) will be appointed and retained for the duration of the project;
- A detailed external lighting plan will be required to minimise any external light disturbance to the bats using the building and surrounding area.

To conclude, the Neptune Works warehouses are a **confirmed summer non-breeding day roost for a small number (<5) of common pipistrelles**, based upon the evidence gathered during the PRA, dusk emergence surveys and data obtained from static monitors within the survey building.

Subsequently, a detailed mitigation strategy will be required to ensure the proposals have minimal impact on bats which utilise the building, and to generate a Net Benefit for Biodiversity at the site.

Furthermore, **a European Protected Species Licence (EPSL) will be required**, including a mitigation strategy approved by NRW, prior to commencement of the works.

7.2 Potential Impact of Proposals

The proposed works will likely directly impact upon the confirmed bat roost within the Neptune Works warehouses, and these potential impacts include: -

- Destruction of a summer non-breeding common pipistrelle day roost;
- Roost obstruction and possible entrapment with injury and death through the closure of bat access/egress points to interior PRFs;

- Noise and vibration disturbance during the renovation / conversion works.

It is not feasible to avoid the above impacts to bats by modifying the programme of works. As such, in order to proceed with the development proposals, a bat mitigation licence must be granted by Natural Resources Wales (NRW) prior to the commencement of any impactful works.

The implementation of an appropriate bat mitigation and compensation strategy is thought to be sufficient to ensure that the impacts to bats as a result of the proposals are minimised, and that the favourable conservation status of the species of concern is maintained.

The mitigation strategy will pose constraints upon the proposals, which will likely include timing constraints upon the commencement of works, restrictions upon the use of certain building materials and provision of compensatory roost features to ensure that roosting opportunity for bats is not minimised as a result of the proposals.

7.3 Mitigation Strategy

The results of the surveys have identified that crevice-dwellers (common pipistrelle) are utilising the building as a summer non-breeding day roost.

As such, the following sections outline the mitigation recommendations made to minimise the impact of the proposals on protected species which are utilising the survey building, and to improve the conservation status of the site for both bats and nesting birds.

The recommendation is subsequently made that these mitigation methods are adopted within a European Protected Species Licence (EPSL) application which will be required prior to the commencement of the proposals.

7.3.1 Mitigation Strategy Details

The following section recommends mitigation in order to maintain and enhance the site's potential to support both crevice and void-dwelling bats along with nesting birds.

In order to comply with both Chapter 6 of Planning Policy Wales and the Environment Act (Wales) 2016, a Net Benefit for Biodiversity will be required as part of the development proposals. This will consist of: -

- 2 no. Schwegler 1FF Bat Boxes to be installed on retained trees on site;
- 2 no. Nestbox Company Large Bird Nest Box to be installed on retained trees on site;
- 2 no. Schwegler 1B Nest Box to be installed on retained trees on site.

If any of the above products / enhancements are not available, then further advice must be sought from a suitably qualified ecologist regarding a suitable replacement product / proposal.

Crevice-dweller Mitigation

Additional new roosting for bats will be created by fitting 2 no. Schwegler 1FF Bat Boxes on trees within habitat to the north-east of East Way Road to be retained as part of the proposals.

These are to be fitted as high as possible on a suitable tree, and care must be taken to leave the access/egress slot at the bottom exposed for access. Where practical, all bat features should be located far enough from any windows to avoid any direct light spill, at least a minimum of 2 metres away.

The installation will be dependent on permissions from the LPA and must be undertaken by a licenced ecologist.



The above methods are relatively unintrusive in nature and are an effective way at improving the site's long-term potential to support crevice-dwelling bats.

It is important to ensure that there is to be no direct illumination of any roost exit points. Any external lighting will be controlled by passive infrared.

The installation of bat mitigation features is to be undertaken under supervision by a suitably qualified ecologist.

Nesting Bird Mitigation

2 no. Nestbox Company Large Nestbox (or similar) and 2 no. Schwegler 1B Nest Boxes are to be installed in retained trees within habitat to the north-east of East Way Road to be retained as part of the proposals.

Any nesting bird mitigation will not be suited on the south elevation as this may experience excess heat from the sun.

Direct and prolonged illumination of the buildings, especially near any roost entry points or bird boxes must be avoided as this will cause disturbance.

On occasions the suggested mitigation can be in short supply. Mitigation should subsequently be ordered as soon as is practicable in order to avoid potential supply issues during the construction phase.

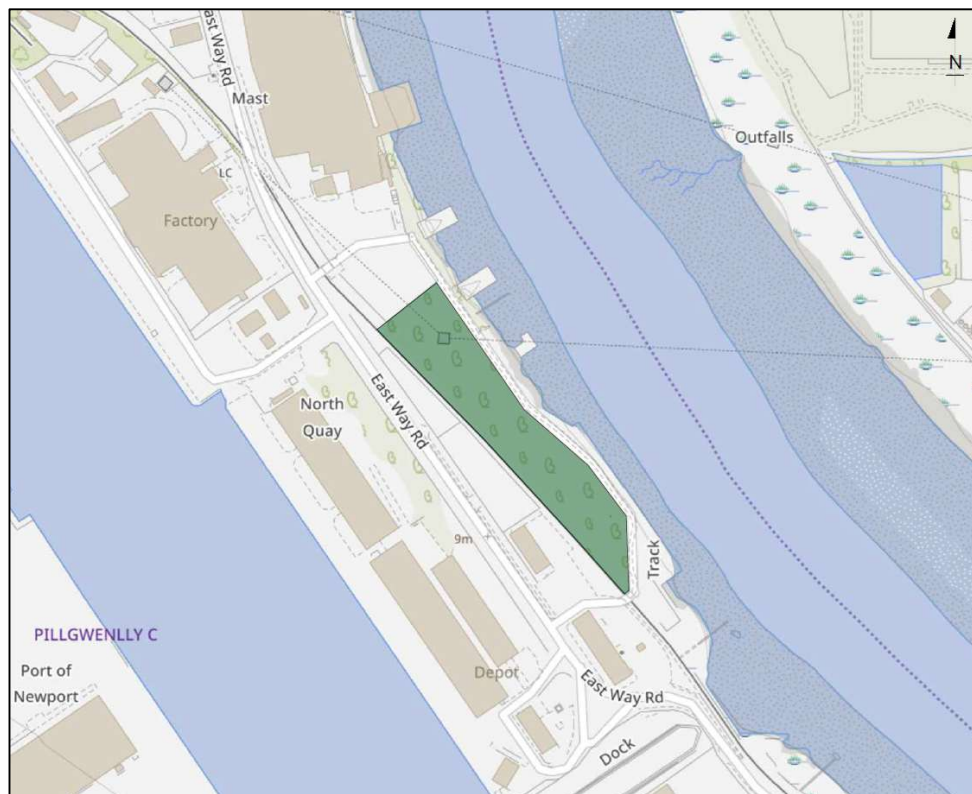
If supply is depleted, advice should be sought from a suitably qualified ecologist on a suitable replacement prior to the purchase.

7.3.2 Mitigation Location Details

The proposed mitigation should be installed on mature trees to be retained on site.

These are situated to the north-east of East Way Road beyond the survey buildings, and the proposed mitigation location is visible in Figure 34 below: -

Figure 34 – Proposed Mitigation Location, Highlighted in Green



Mitigation must not be placed within locations on site in which future development is anticipated, in order to protect any species which may nest or roost within these features from harm in the future.

7.3.3 Lighting

The potential impacts of lighting during and post-development on bats must be considered. The lighting of all areas of the site both during and post-development must be designed to avoid any impacts on bats.

Light spill onto sensitive areas which have the potential to be used by commuting and foraging bats should be limited, with no directed light onto hedges or trees, or enhancement roost features.

Suggestions for achieving this and for mitigating the lighting impact on bats are outlined in the best practice guidance developed by the Institute of Lighting Professionals (ILP) document 'Bats and Artificial Lighting at Night' (Guidance Note GN08/23) (2018) which was chaired by the Bat Conservation Trust Bats (BCT), and Lighting in the UK (BCT, 2007). These include: -

- Using low or high pressure sodium lights instead of mercury or metal halide lamps;
- Directing lighting to where needed and avoiding spillage, and design luminaires appropriately using hoods, cowls, shields etc. to avoid spillage;
- Any proposed roadways, footways and car parks should where possible be lit using bollards to keep the light below head height (~1.5m);
- Using lighting modelling programs to indicate where the light spill will occur if appropriate;
- Using the minimal level of lighting required to comply with guidance such as Institute of Lighting Engineers Guidance Notes for the Reduction of Obtrusive Light (2005);
- Using movement sensors or timers on security lighting;
- Not using a lamp greater than 150W for security lighting.

Any lights associated with on-site buildings must be angled or screened to minimise light spill up onto the soffits/eaves, and on any newly installed roost openings.

Lighting considerations should also be included within the EPSL application, prior to commencement of the proposals.

7.4 Recommendations

A European Protected Species Licence (EPSL) will be required from NRW to proceed with the works.

This will be accompanied by a dedicated **bat mitigation and compensation strategy (as informed by this report)**, which will be appropriate to the scale and scope of the proposed development works.

8.0 REFERENCES

CIEEM (2017) *Guidelines on Ecological Report Writing, Second Edition*. Chartered Institute of Ecology and Environmental Management, Winchester.

Collins, J. (2023) *Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition)*. The Bat Conservation Trust, London.

DEFRA Magic Mapping Resource (2026) Biodiversity Information. *magic.defra.gov.uk*. Available: <https://magic.defra.gov.uk/magicmap.aspx>

HM Government (2010) Wildlife and Countryside Act 1981. HM Government.

Mitchell-Jones, A.J, & McLeish, A.P. Ed., (2004), 3rd Edition Bat Workers' Manual, JNCC.

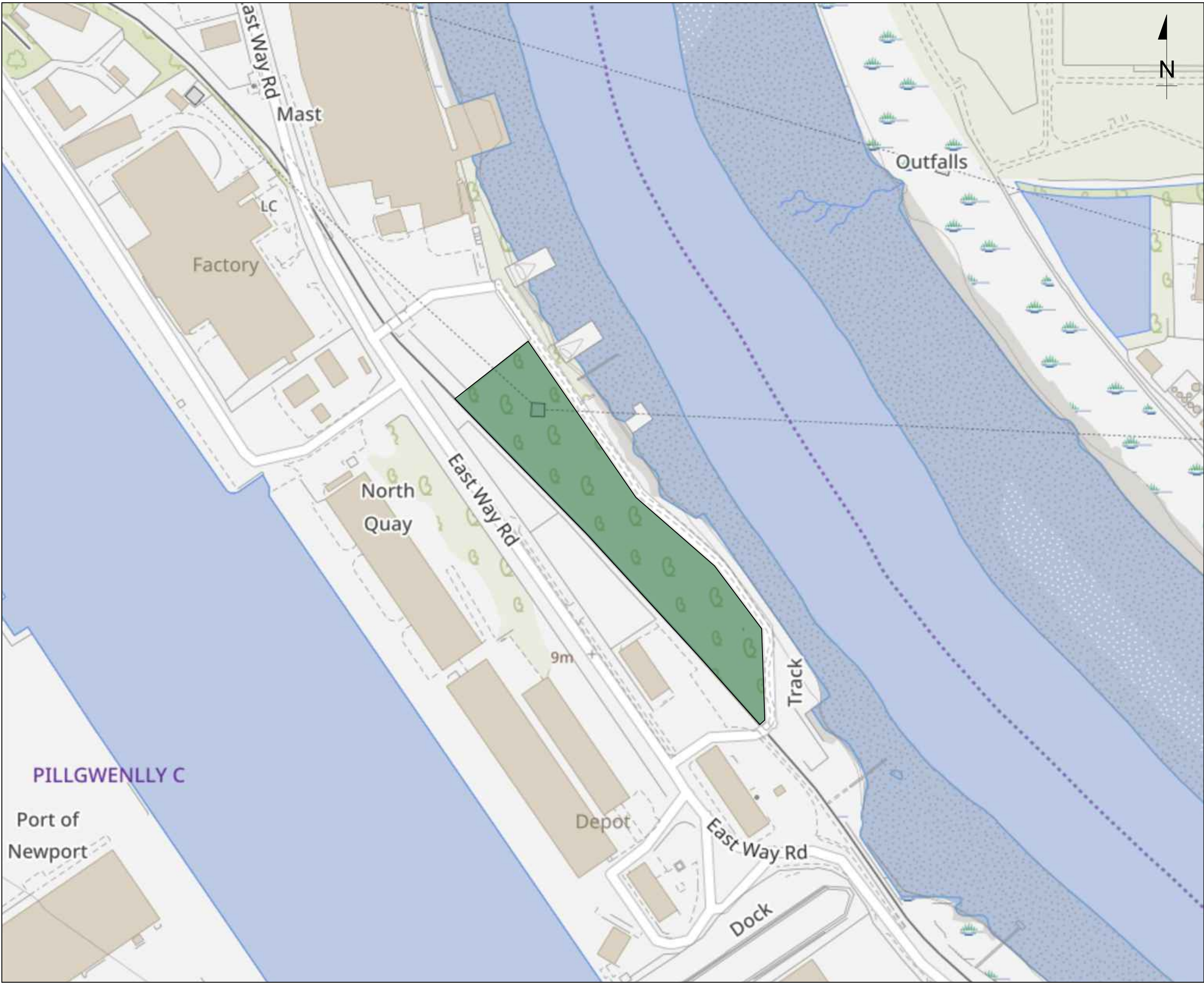
Welsh Government & Natural Resources Wales, DataMapWales (2026) Biodiversity Information. *datamapwales.gov.wales*. Available: <https://datamap.gov.wales/>

APPENDIX A

Drawings



Notes:		A3
Survey Buildings		
Job: Associated British Ports, Newport - Preliminary Roost Assessment (PRA) and Activity Surveys for Bats		
Title: Survey Building Red Line Boundary		
Date: July 2026		
Scale: NTS		
Drawn by: SO		
Checked by: ER		
 ExCAL House, Capel Hendre Ind. Est. Ammanford Carmarthenshire SA18 3SJ Tel: 01269 831606 Fax: 01269 841867 Website: www.excaluk.com E-mail: info@excaluk.com		
Drawing No: 238-03-32.D01		
Revision No: 1	Date: 30/07/2026	



Notes:		A3
Proposed Mitigation Enhancement Area		
Job: Associated British Ports, Newport - Preliminary Roost Assessment (PRA) and Activity Surveys for Bats		
Title: Proposed Mitigation Area		
Date: July 2026		
Scale: NTS		
Drawn by: SO		
Checked by: ER		
ExCAL ExCAL House, Capel Hendre Ind. Est. Ammanford Carmarthenshire SA18 3SJ Tel: 01269 831606 Fax: 01269 841867 Website: www.excaluk.com E-mail: info@excaluk.com		
Drawing No: 238-03-32.D02		
Revision No:	Date: 20/07/2026	



Notes:

A3

Survey Buildings

Key	Bat Identified	Time	Comments
—	BAT 01 - C. Pip	21:40	Foraging around buddleia along (E) of survey bld.
—	BAT 02 - C. Pip	21:44 21:46	Foraging around buddleia along (E) of survey bld.
—	BAT 03 - C. Pip	21:50	Foraging in (S) end of warehouse interior
—	BAT 04 - C. Pip	21:52	Commuting from (NE) to (SW) above survey bld.
—	BAT 05 - C. Pip	21:54	Foraging in loops around (S) end of Neptune Works
—	BAT 06 - N. Noc	22:00	Heard not seen
—	BAT 07 - C. Pip	22:07	Foraging between brick bld. and Neptune Works
—	BAT 08 - C. Pip	22:15	Foraging along (E) side of survey bld.
—	BAT 09 - N. Noc	22:22	Heard not seen
—	BAT 10 - C. Pip	22:34	Foraging in (S) end of warehouse interior
—	BAT 11 - C. Pip	22:38	Foraging along (S) side of warehouse exterior
—	BAT 12 - C. Pip	22:54	Foraging along (E) side of warehouse exterior

Job:

Associated British Ports, Newport - Preliminary Roost Assessment (PRA) and Activity Surveys for Bats

Title:

First Dusk Emergence Survey Results - 25th May 2026

Date:

July 2026

Scale:

NTS

Drawn by:

SO

Checked by:

EP

ExCAL



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Drawing No:

238-03-32.D03

Revision No:

1

Date:

30/07/2026

APPENDIX B

Citations of Designated Sites

**CYNGOR CEFN GWLAD CYMRU
COUNTRYSIDE COUNCIL FOR WALES**

SITE OF SPECIAL SCIENTIFIC INTEREST CITATION

MONMOUTHSHIRE/NEWPORT

**RIVER USK (LOWER USK)/
AFON WYSG (WYSG ISAF)**

Date of Notification: 1996

National Grid References: SN 239239- ST317837

O.S. Maps:

1:50000 Sheet Numbers:	160, 161, 171
1:10000 Sheet Numbers:	ST 38 SW, ST 30 SW ST 38 NW, ST 30 SE ST 39 SW, ST 30 NE ST 39 SE, ST 30 NW ST 39 NE, SO 31 SW SO 21 SE

Site Area: 543.9 ha

Description:

River Usk

The River Usk comprises a large, linear ecosystem which acts as an important wildlife corridor, an essential migration route and key breeding area for many nationally and internationally important species. The Usk is of special interest as a fine example of a river running over sandstones and for its associated plant and animal communities. Its character spans a wide range of types from an upland, base-poor stream to a large lowland river with extensive tidal reaches. Its overall diversity is a product of its underlying geology, soil type, adjacent land-use and fluvio-geomorphological regime.

The River Usk is one of the largest rivers in Wales. From its source to its confluence, the main channel is over 120 kilometres long, and drains a catchment of 1358 km². Rising at an altitude of 500 metres on Mynydd Ddu on the Carmarthenshire/Powys border, the Usk flows eastwards along the northern scarp of the Brecon Beacons, turning south below Abergavenny and meandering down through Monmouthshire to its confluence with the Severn Estuary below Newport.

River Usk (Lower Usk) (Abergavenny - Newport)

The River Usk (Lower Usk) is a rare example of a large mesotrophic lowland river which has not been subject to significant modification by man. Of particular significance to the river's morphology and biology are the extensive deposits of fluvio-glacial and alluvial material in the Usk valley between Abergavenny and Newport. The Lower Usk has developed a wide floodplain with a complex and active system of meanders, cut-off and back channels which

contribute to the biological interest and diversity of the site.

The main plant communities present are those that are characteristic of rivers running over hard and soft sandstones with changing base status merging into brackish waters in its lowest reaches.

The river shows a clear downstream succession in plant communities due in part to the rapid transition from mesotrophic to nutrient rich in its lower reaches and increasing salinity as it nears its confluence with the Severn Estuary.

The invertebrate fauna is characteristic of a large lowland river. Of special interest are the crane flies associated with silty river margins in the vicinity of Newbridge on Usk. The fish fauna is of international significance including several rare and scarce species and there is an expanding population of otters *Lutra lutra*. Several scarce higher plant species occurring along the river's tidal reaches are also of special interest.

Whilst not a special feature of the site, there is a good range of breeding birds associated with riverine habitats.

The SSSI incorporates adjacent areas of riparian habitat which directly support the special interest of the river. These include woodlands dominated by alder *Alnus glutinosa* and willows *Salix spp.*, marshy grassland, stands of tall herb, swamp and fen vegetation, salt-marsh and coastal grassland.

Geology and Topography

The catchment of the Lower Usk is predominantly low lying, the eastern part of the Brecon Beacons and South Wales Coalfield Massif being the most significant upland areas within it. The River Usk (Lower Usk) is thus lowland in character, meandering across a floodplain up to 3 km across and falling from 100m AOD at Abergavenny to sea level over a distance of 68 km.

Between Abergavenny and Llanfair Kilgeddin, the river flows over the marls, mudstones and sandstones of the Raglan and St Maughan's beds of the Lower Old Red Sandstone Series. The river bed of the Lower Usk is however, also strongly influenced by the extensive fluvio-glacial and alluvial deposits between Abergavenny and Usk. At Llanfair Kilgeddin the river initially follows the line of the Pontypool Road Fault separating the Lower Old Red Sandstone rocks in the north-west from the older limestones and mudstones of the Ludlow (Silurian) series in the south. As the river crosses onto the more resistant Silurian Ludlow Series it has cut down to the bedrock in a number of places creating a rock based channel that is in marked contrast to the silt and gravel based channel upstream.

Above Usk, the valley narrows cutting through the resistant limestones and marls of the Ludlow Series to form the Llanbadoc Gap. Below this point the river again flows over the marls, mudstones and sandstones of the Raglan and St Maughan's beds until it crosses onto the Triassic Keuper Marls at Newport Docks. The great depth of alluvial and glacial deposits within the valley from Llanbadoc Gap to the River's confluence with the Severn Estuary means that the underlying geology has little direct influence on the river.

The Lower Usk has a relatively natural fluvio-geomorphic regime and has remained relatively free from straightening, widening or deepening schemes. The section of the river between Caerleon and Usk is particularly active with migrating meanders depositing shingle point bars and islands and cutting vertical earth cliffs. The pattern of meander loops along the entire length of the river from Abergavenny to Newport is complex, steep outer slopes contrasting with shallow slip-off slopes. Large abandoned meander loops such as the one at Llanfihangel Gobion indicate the former course of the River Usk as it flowed across and created its floodplain. Oxbow lakes and active back channels remain adjacent to the river in places.

Flora

In its middle and upper reaches the river channel is characterized by the frequent occurrence of floating and submerged plants including water crowfoot and water milfoils *Myriophyllum spp.* Aquatic macrophytes disappear below the tidal limit at Newbridge on Usk although emergent species are able to tolerate the transition zone between brackish and freshwater conditions.

Riverside rocks and boulders are characterised by a flora of mosses, such as *Amblystegium fluviatile*, *Cinclidotus fontinalioides*, *Fontinalis antipyretica*, *Rhynchostegium riparioides* and *Thamnobryum alopecurum*, liverworts, such as *Chiloscyphus polyanthus*, *Conocephalum conicum*, and *Marchantia polymorpha*, the filamentous alga *Lemanea fluviatilis* and lichens of the genera *Verrucaria*.

Marginal vegetation is dominated variously by reed canary-grass *Phalaris arundinacea*, branched bur reed *Sparganium erectum*, common spike-rush *Eleocharis palustris* and lesser pond-sedge *Carex acutiformis* with a variety of other species including brooklime *Veronica beccabunga*, water forget-me-not *Myosotis scorpioides*, water mint *Mentha aquatica* and yellow cress *Rorippa spp.* Below Newbridge the upper mud banks of the river are colonized by saltmarsh species such as sea aster *Aster tripolium*, saltmarsh-grass *Puccinellia spp.* and scurvygrass *Cochlearia spp.*

Characteristic riverbank plants include stinging nettle *Urtica dioica*, great willowherb *Epilobium hirsutum* and Indian balsam *Impatiens glandulifera*. Locally the river bank vegetation can be more diverse and supports species such as common knapweed *Centaurea nigra*, Meadowsweet *Filipendula ulmaria* and comfrey *Symphytum spp.*. Occasionally inundated grassland along the tidal reaches is dominated by couch grass *Elytrigia repens* and supports regionally rare species including bulbous foxtail *Alopecurus bulbosus*, marsh-mallow *Althaea officinalis* and marsh helleborine *Epipactis palustris*.

The river banks are frequently lined with willows and alder. In addition, there are larger areas of woodland adjacent to the river dominated by these species or by sycamore *Acer pseudoplatanus*, pedunculate oak *Quercus robur* and ash *Fraxinus excelsior*.

The River Usk (Lower Usk) floodplain retains a number of important geomorphological features and associated wetland habitats. In particular at Llanvihangel Gobion, south of Abergavenny, a large cut off meander has areas of standing water, emergent and marshy vegetation and shingle. The areas of standing water support diverse still water plant communities dominated by Canadian waterweed *Elodea canadensis* with frequent broad-leaved pondweed *Potamogeton natans*, sweet-grasses *Glyceria spp.*, fool's water-cress *Apium nodiflorum*, pink water-speedwell

Veronica catenata and common water-plantain *Alisma plantago aquatica*, together with by stands of common spike-rush, rushes *Juncus spp.* and lesser spearwort *Ranunculus flammula*.

Mammals

The common otter *Lutra lutra* is widespread along the length of the river where appropriate bankside cover exists. The frequent tree cover provides valuable feeding and roosting habitats for several bat species including Daubenton's bat *Myotis daubentonii*.

Birds

The River Usk (Lower Usk) supports a wide range of riverside breeding birds such as sand martin *Riparia riparia* and kingfisher *Alcedo atthis* nesting in eroding earth cliffs. Yellow wagtail *Motacilla flava*, grey wagtail *M. cinerea* and dipper *Cinclus cinclus* occur with increasing frequency above the tidal limit at Newbridge. In addition marsh warbler *Acrocephalus palustris* breeds in riparian habitat along the river banks. The cut-off meander at Llanfihangel Gobion is an important area for wintering and passage migrants including teal *Anas crecca*, greenshank *Tringa nebularia* and green sandpiper *Tringa ochropus*.

Fish

The river has a wide range of migratory and non-migratory fish species. The most abundant coarse fish include chub *Leuciscus cephalus*, roach *Rutilus rutilus* and dace *Leuciscus leuciscus* which, together with the bullhead, are the most widely distributed fish along the river.

The rare river lamprey *Lampetra fluviatilis* and twaite shad *Alosa fallax* and the very rare allis shad *Alosa alosa* all migrate from the Severn Estuary and spawn at various localities in the river. Large numbers of elvers *Anguilla anguilla* migrate up the river with spring tides.

The Usk is a notable game fish river with species including brown trout *Salmo trutta fario*, sea trout *Salmo trutta trutta* and Atlantic salmon *Salmo salar*, the latter migrating up along the lower river, in order to reach spawning grounds in the headwaters and tributaries of the River Usk (Upper Usk). The river also supports an important population of the non-migratory brook lamprey *Lampetra planeri*.

Invertebrates

The lower Usk has important assemblages of craneflies including rare and scarce species such as *Limonia omissinervis*, *Erioptera limbata* and *Rhabdomastix hilaris*, *Gonomyia abbreviata* and *Cheilotrichia imbuta*. The rare mayfly *Potamanthus luteus* can be found in the river and there are also localised populations of the Atlantic stream crayfish *Austropotamobius pallipes*, an endangered species in Europe.

Remarks:

The site supports the following habitats and species covered by the EC Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna:

Common otter *Lutra lutra* - Annex II and IV
Allis shad *Alosa alosa* - Annex II and V
Twaite shad *Alosa fallax* - Annex II and V
Brook lamprey *Lampetra planeri* - Annex II
River lamprey *Lampetra fluviatilis* - Annex II and V
Bullhead *Cottus gobio* - Annex II
Atlantic salmon *Salmo salar* - Annex II and V
Atlantic stream crayfish *Austropotamobius pallipes* - Annex II and V

Otter and Atlantic stream crayfish are also listed in schedule 5 of the Wildlife and Countryside Act 1981, as amended.

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STANDARD DATA FORM for sites within the 'UK national site network of European sites'

Special Protection Areas (SPAs) are classified and Special Areas of Conservation (SACs) are designated under:

- the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales (including the adjacent territorial sea) and to a limited extent in Scotland (reserved matters) and Northern Ireland (excepted matters);
- the Conservation (Natural Habitats &c.) Regulations 1994 (as amended) in Scotland;
- the Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland; and
- the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) in the UK offshore area.

Each SAC or SPA (forming part of the UK national site network of European sites) has its own Standard Data Form containing site-specific information. The information provided here generally follows the same documenting format for SACs and SPAs, as set out in the [Official Journal of the European Union recording the Commission Implementing Decision of 11 July 2011 \(2011/484/EU\)](#).

Please note that these forms contain a number of codes, all of which are explained either within the data forms themselves or in the end notes.

More general information on SPAs and SACs in the UK is available from the [SPA homepage](#) and [SAC homepage](#) on the JNCC website. These webpages also provide links to Standard Data Forms for all SAC and SPA sites in the UK.

<https://jncc.gov.uk/>



NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE UK0013007
SITENAME River Usk/ Afon Wysg

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- [1. SITE IDENTIFICATION](#)
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- [5. SITE PROTECTION STATUS AND RELATION WITH CORINE BIOTOPES](#)
- [6. SITE MANAGEMENT](#)

1. SITE IDENTIFICATION

1.1 Type B	1.2 Site code UK0013007	Back to top
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1.3 Site name

River Usk/ Afon Wysg

1.4 First Compilation date 1998-03	1.5 Update date 2015-12
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1.6 Respondent:

Name/Organisation: Joint Nature Conservation Committee

Address: Joint Nature Conservation Committee Monkstone House City Road Peterborough
PE1 1JY

Email:

Date site proposed as SCI: 1998-03

Date site confirmed as SCI: 2004-12

Date site designated as SAC: 2004-12

National legal reference of SAC designation:

Regulations 11 and 13-15 of the Conservation of Habitats and Species Regulations 2010
(<http://www.legislation.gov.uk/ukxi/2010/490/contents/made>).

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

-3.013888889

51.79583333

967.97

0.0

0.0

2.5 Administrative region code and name

Region Name

UKL2	East Wales
UKL1	West Wales and The Valleys

2.6 Biogeographical Region(s)

Atlantic (100.0%)

3. ECOLOGICAL INFORMATION

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3.1 Habitat types present on the site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A B C D	A B C		
						Representativity	Relative Surface	Conservation	Global
1130 0			134.55	0	G	D			
1140 0			123.9	0	G	D			
1330 0			29.04	0	M	D			
3260 0			29.04	0	M	B	C	B	C
9130 0			4.84	0	G	D			
9180 0	X		21.3	0	G	D			
91A0 0			12.58	0	G	D			
91D0 0	X		2.9	0	G	D			

91E0 B	X		43.56	0	G	D				
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- **PF:** for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.
- **NP:** in case that a habitat type no longer exists in the site enter: x (optional)
- **Cover:** decimal values can be entered
- **Caves:** for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A B C D	A B C		
						Min	Max				Pop.	Con.	Iso.	Gl
F	1102	Alosa alosa			p				P	DD	C	C	C	C
F	1103	Alosa fallax			p				P	DD	A	B	C	A
I	1092	Austropotamobius pallipes			p				P	DD	D			
F	1163	Cottus gobio			p				P	DD	B	B	C	B
F	1099	Lampetra fluviatilis			p				P	DD	B	A	C	A
F	1096	Lampetra planeri			p				P	DD	B	B	C	A
M	1355	Lutra lutra			p	11	50	i		M	C	B	C	B
I	1029	Margaritifera margaritifera			p				P	DD	D			
F	1095	Petromyzon marinus			p				P	DD	B	B	C	B
M	1303	Rhinolophus hipposideros			p				P	DD	D			
F	1106	Salmo salar			p				P	DD	A	C	C	A

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see [reference portal](#))
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

4. SITE DESCRIPTION

4.1 General site character

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Habitat class	% Cover
N03	4.5
N07	3.8
N14	2.0
N16	10.1
N02	26.8
N08	3.4
N23	2.1
N06	37.9
N09	8.0
N10	1.4
Total Habitat Cover	99.99999999999999

Other Site Characteristics

1 Terrestrial: Soil &
 Geology: alluvium, mud, nutrient-rich, limestone, basic, neutral, shingle, sandstone, acidic, peat, clay, nutrient-poor, sediment
 Terrestrial: Geomorphology and landscape: valley, floodplain, coastal, lowland, upland, island
 3 Marine:
 Geology: mud
 4 Marine: Geomorphology: estuary

4.2 Quality and importance

Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation for which the area is considered to support a significant presence. Petromyzon marinus for which this is considered to be one of the best areas in the United Kingdom. Lampetra fluviatilis for which this is considered to be one of the best areas in the United Kingdom. Lampetra planeri for which this is considered to be one of the best areas in the United Kingdom. Alosa alosa for which the area is considered to support a significant presence. Alosa fallax for which this is considered to be one of the best areas in the United Kingdom. Salmo salar for which this is considered to be one of the best areas in the United Kingdom. Cottus gobio for which this is considered to be one of the best areas in the United Kingdom. Lutra lutra for which this is considered to be one of the best areas in the United Kingdom.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i o b]
M	I01		B
H	A04		I
L	B07		B
H	H01		B
L	H05		O
H	J02		I
M	B02		B
M	J03		I

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i o b]
M	J03		I

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification, T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions

i = inside, o = outside, b = both

4.5 Documentation

The Natural Resources Wales weblink below provides access to information on its designated sites. Detailed information about this Natura 2000 site can be accessed via the Management Plan link provided in Section 6.2. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): <https://naturalresources.wales/guidance-and-advice/environmental-topics/wildlife-and-biodiversity/protected-areas-of-land>
http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

5. SITE PROTECTION STATUS (optional)

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5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK04	100.0				

6. SITE MANAGEMENT

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6.1 Body(ies) responsible for the site management:

Organisation:	Natural Resources Wales
Address:	
Email:	

6.2 Management Plan(s):

An actual management plan does exist:

☒	Yes	Name: RIVER USK / AFON WYSG Link: https://www.naturalresources.wales/media/673384/River_Usk%20SAC%20core%20plan.pdf
☐	No, but in preparation	
☐	No	

EXPLANATION OF CODES USED IN THE SPECIAL AREA OF CONSERVATION (SAC) AND SPECIAL PROTECTION AREA (SPA) STANDARD DATA FORMS

The codes in the table below generally follow those explained in the [official European Union guidelines for the Standard Data Form](#) (also referencing the relevant page number).

1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	SPA (classified Special Protection Area)	53
B	cSAC, SCI or SAC (candidate Special Area of Conservation, Site of Community Importance, designated Special Area of Conservation)	53
C	SPA area/boundary is the same as the cSAC/SCI/SAC i.e. a co-classified/designated site (Note: this situation only occurs in Gibraltar)	53

3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
1140	Mudflats and sandflats not covered by seawater at low tide	57
1150	Coastal lagoons	57
1160	Large shallow inlets and bays	57
1170	Reefs	57
1180	Submarine structures made by leaking gases	57
1210	Annual vegetation of drift lines	57
1220	Perennial vegetation of stony banks	57
1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	57
1310	Salicornia and other annuals colonizing mud and sand	57
1320	Spartina swards (Spartinion maritimae)	57
1330	Atlantic salt meadows (Glaucio-Puccinellietalia maritimae)	57
1340	Inland salt meadows	57
1420	Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	57
2110	Embryonic shifting dunes	57
2120	Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")	57
2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	57
2140	Decalcified fixed dunes with Empetrum nigrum	57
2150	Atlantic decalcified fixed dunes (Calluno-Ulicetea)	57
2160	Dunes with Hippophya• rhamnoides	57
2170	Dunes with Salix repens ssp. argentea (Salicion arenariae)	57
2190	Humid dune slacks	57
21A0	Machairs (* in Ireland)	57
2250	Coastal dunes with Juniperus spp.	57
2330	Inland dunes with open Corynephorus and Agrostis grasslands	57
3110	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)	57
3130	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea	57
3140	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	57
3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	57

CODE	DESCRIPTION	PAGE NO
3160	Natural dystrophic lakes and ponds	57
3170	Mediterranean temporary ponds	57
3180	Turloughs	57
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation	57
4010	Northern Atlantic wet heaths with Erica tetralix	57
4020	Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix	57
4030	European dry heaths	57
4040	Dry Atlantic coastal heaths with Erica vagans	57
4060	Alpine and Boreal heaths	57
4080	Sub-Arctic Salix spp. scrub	57
5110	Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)	57
5130	Juniperus communis formations on heaths or calcareous grasslands	57
6130	Calaminarian grasslands of the Violetalia calaminariae	57
6150	Siliceous alpine and boreal grasslands	57
6170	Alpine and subalpine calcareous grasslands	57
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	57
6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	57
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	57
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	57
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	57
6520	Mountain hay meadows	57
7110	Active raised bogs	57
7120	Degraded raised bogs still capable of natural regeneration	57
7130	Blanket bogs (* if active bog)	57
7140	Transition mires and quaking bogs	57
7150	Depressions on peat substrates of the Rhynchosporion	57
7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae	57
7220	Petrifying springs with tufa formation (Cratoneurion)	57
7230	Alkaline fens	57
7240	Alpine pioneer formations of the Caricion bicoloris-atrofuscae	57
8110	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)	57
8120	Calcareous and calcshist scree of the montane to alpine levels (Thlaspietalia rotundifoliae)	57
8210	Calcareous rocky slopes with chasmophytic vegetation	57
8220	Siliceous rocky slopes with chasmophytic vegetation	57
8240	Limestone pavements	57
8310	Caves not open to the public	57
8330	Submerged or partially submerged sea caves	57
9120	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robur-petraeae or Ilici-Fagenion)	57
9130	Asperulo-Fagetum beech forests	57
9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, scree and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

3.1 Habitat representativity (abbreviated to 'Representativity' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent representativity	57
B	Good representativity	57
C	Significant representativity	57
D	Non-significant presence representativity	57

3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	58
B	> 2%-15%	58
C	≤ 2%	58

3.1 Degree of conservation (abbreviated to 'Conservation' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

3.1 Global assessment (abbreviated to 'Global' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	> 15%-100%	62
B	> 2%-15%	62
C	≤ 2%	62
D	Non-significant population	62

3.2 Degree of conservation (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

3.2 Global Grade (abbreviated to 'Glo.' or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

3.3 Other species – essentially covers bird assemblage types

CODE	DESCRIPTION	PAGE NO
WATR	Non-breeding waterbird assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code

BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code
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4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Screes, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65
C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65

CODE	DESCRIPTION	PAGE NO
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic resources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
I01	Invasive non-native species	65
I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced changes in hydraulic conditions	65
J03	Other ecosystem modifications	65
K01	Abiotic (slow) natural processes	65
K02	Biocenotic evolution, succession	65
K03	Interspecific faunal relations	65
K04	Interspecific floral relations	65
K05	Reduced fecundity/ genetic depression	65
L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65