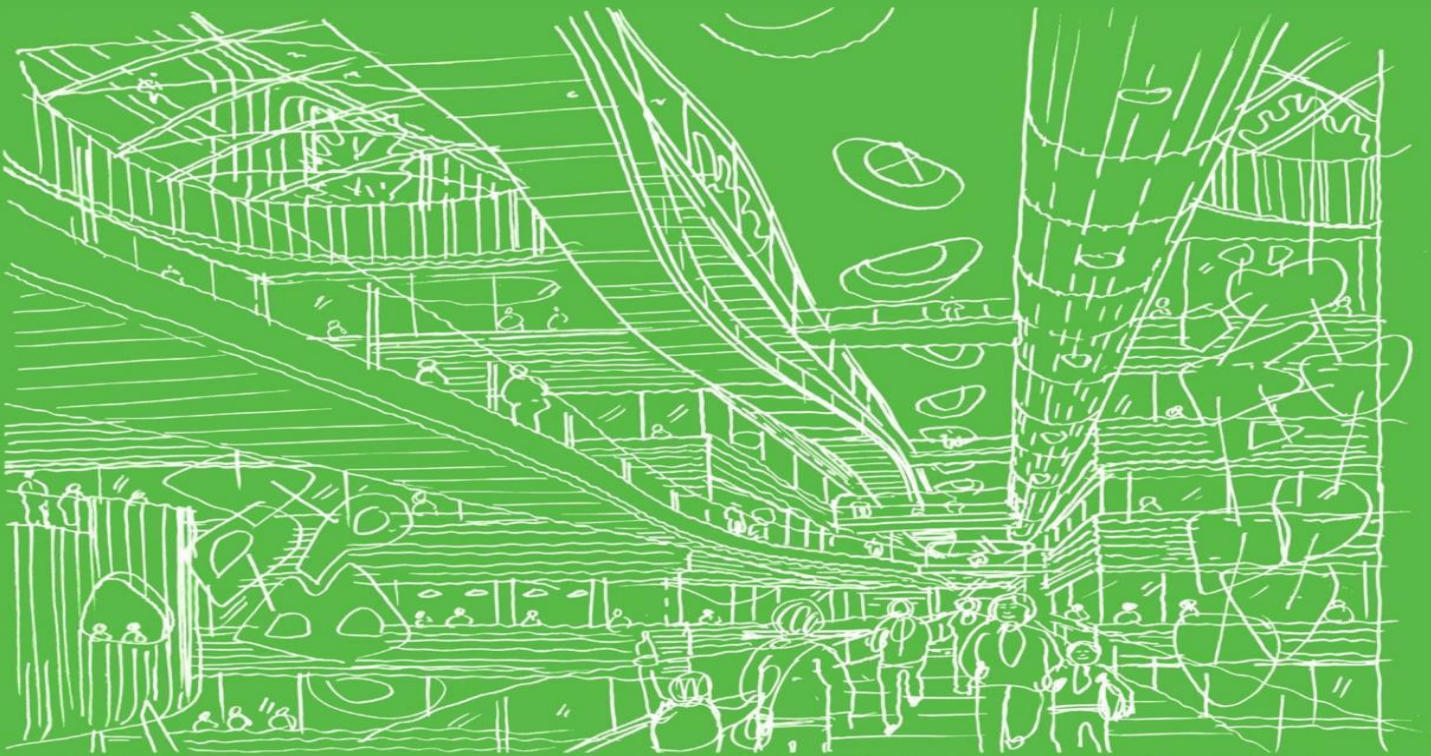


National Paediatric Hospital Project

Planning Application

Appendix 9.1 – Bat Surveys



August 2015

NPH Development Board Dublin Bat Surveys

**Bat Surveys of new children's hospital at St. James
Campus, and satellite centres at Tallaght & Connolly
Hospitals. Dublin.**



Planning & Environmental Consultants

DOCUMENT DETAILS

Client National Paediatric Hospital Development Board

Project title: Bat Surveys of new children's hospital at St. James Campus, and satellite centres at Tallaght & Connolly Hospitals. Dublin.

Project Number: 140517

Document Title: Bat Survey

Doc. File Name: 140517 – BS – 2014.07.25 - F

Prepared By: McCarthy Keville O'Sullivan Ltd.

Planning & Environmental Consultants
Block 1, G.F.S.C.
Moneenageisha Road, Galway



Document Issue:

| Rev | Status | Issue Date | Document File Name | Author(s) | Approved By: |
|-----|--------|------------|-------------------------------|-----------|--------------|
| 01 | Draft | 21.07.2014 | 140517 – BS – 2014.07.21 – D1 | PR/JH | PR |
| 02 | Final | 25.07.2014 | 140517 – BS – 2014.07.25 - F | PR/JH | PR |
| | | | | | |
| | | | | | |
| | | | | | |

Table of Contents

| | | |
|------------|--|----------|
| 1 | Introduction..... | 1 |
| 1.1 | General Introduction..... | 1 |
| 1.2 | Location & Characteristics of the Proposed Developments..... | 1 |
| 1.2.1 | St. James's Hospital | 1 |
| 1.2.2 | Connolly Hospital | 1 |
| 1.2.3 | Tallaght Hospital | 2 |
| 2 | Desk Study | 3 |
| 2.1 | Legislation..... | 3 |
| 2.2 | Bat Records Bat Conservation Ireland | 3 |
| 2.2.1 | St. James's Hospital | 3 |
| 2.2.2 | Connolly Hospital | 3 |
| 2.2.3 | Tallaght Hospital | 4 |
| 3 | Survey of Development Sites (June 2014) | 5 |
| 3.1 | Survey Methodology..... | 5 |
| 3.2 | Results | 6 |
| 3.2.1 | St. James's Hospital | 6 |
| 3.2.1.1 | Daytime Inspection Surveys | 6 |
| 3.2.1.1.1 | Building 27 (figure 1.2)..... | 7 |
| 3.2.1.1.2 | Building 29 (figure 1.2)..... | 9 |
| 3.2.1.1.3 | Building 30 (figure 1.2)..... | 10 |
| 3.2.1.1.4 | Building 31 (figure 1.2)..... | 11 |
| 3.2.1.1.5 | Building 33 (figure 1.2)..... | 12 |
| 3.2.1.1.6 | Building 34 (figure 1.2)..... | 13 |
| 3.2.1.1.7 | Building 35 (figure 1.2)..... | 14 |
| 3.2.1.1.8 | Building 36 (figure 1.2)..... | 15 |
| 3.2.1.1.9 | Building 38 (figure 1.2)..... | 16 |
| 3.2.1.1.10 | Building 39 (figure 1.2)..... | 17 |
| 3.2.1.1.11 | Building 40 (figure 1.2)..... | 18 |
| 3.2.1.1.12 | Building 41 (figure 1.2)..... | 19 |
| 3.2.1.1.13 | Building 42 (figure 1.2)..... | 20 |
| 3.2.1.1.14 | Building 43 (figure 1.2)..... | 21 |
| 3.2.1.1.15 | Buildings 44 & 45 (figure 1.2) | 22 |
| 3.2.1.1.16 | Building 46 (figure 1.2)..... | 23 |
| 3.2.1.1.17 | Buildings 47 & 48 (figure 1.2) | 24 |
| 3.2.1.1.18 | Building 49 (figure 1.2)..... | 25 |
| 3.2.1.1.19 | Building 53 (figure 1.2)..... | 26 |
| 3.2.1.1.20 | Inspection of various relocation sites..... | 27 |
| 3.2.1.1.21 | Inspection of the trees on the site | 33 |
| 3.2.1.2 | Detector Survey Results | 33 |
| 3.2.1.3 | Additional Species Recorded | 34 |
| 3.2.1.4 | Conclusions..... | 34 |
| 3.2.2 | Connolly Hospital | 35 |
| 3.2.2.1 | Daytime Inspection Surveys | 35 |
| 3.2.2.2 | Detector Survey Results | 38 |
| 3.2.2.3 | Additional Species Recorded and ecological records..... | 39 |
| 3.2.2.4 | Conclusions..... | 39 |

| | | |
|---------|-----------------------------------|----|
| 3.2.3 | Tallaght Hospital | 40 |
| 3.2.3.1 | Daytime Inspection Surveys | 40 |
| 3.2.3.2 | Detector Survey Results | 40 |
| 3.2.3.3 | Additional Species Recorded | 41 |
| 3.2.3.4 | Conclusions..... | 41 |

1 INTRODUCTION

1.1 General Introduction

The National Paediatric Hospital Development Board (NPHDB) is responsible for the planning, design, building and equipping of the National Paediatric Hospital Project. The NPHDB have requested that a Bat surveys be carried out by suitably qualified professionals on the St. James's Hospital Campus and the two satellite centres at Tallaght and Connolly Hospitals.

McCarthy Keville O'Sullivan has been appointed to carry out a Bat Potential, Roost and Activity Survey at the three proposed development locations.

Under current planning policy, 'where there is a reasonable likelihood of bats being present and being affected by the development surveys must be carried out before planning permission is considered'. Bat surveys can only be undertaken when bats are active, between May and August (September subject to suitable weather); therefore significant delays could result if bat surveys are not undertaken in advance of planning.

1.2 Location & Characteristics of the Proposed Developments

The locations of the three hospitals are shown in Figure 1.1.

1.2.1 St. James's Hospital

The hospital is located near Kilmainham in Dublin city centre (Grid Ref: E313660 N233540). The defined development site is located on the western side of the existing campus, and extends from an existing Energy Centre immediately south of the Mount Brown Road to the southern boundary of the campus (near Rialto). The total site area of 4.86 ha is presently occupied by existing buildings that are in use as part of the hospital, two car parking areas and an ambulance centre. The site is located either side of the main east west vehicular route connecting the Rialto and James street access points to the campus. A plan of the site showing the existing buildings is shown in Figure 1.2.

The proposed development is centred on, and will replace all existing development located within the site boundary. This will involve demolition of the existing buildings and the construction of new hospital units.

1.2.2 Connolly Hospital

The hospital is located on a 21.8 hectare site to the north west of the M50 motorway to the north east of the N3 (Grid Ref E308620 N239180). It is located at the eastern edge of the old village of Blanchardstown and adjacent to the Tolka River. There are two possible locations for the proposed development within this large site. Both are in close proximity to the existing hospital buildings and avoid the wider site area. Only one of the options will be used. These are highlighted in Figure 1.3.

- Option 1: This covers an area of amenity grassland and an existing car park at the north end of the main hospital campus. As shown on Figure 1.3. No buildings will be demolished to facilitate this option.

- Option 2: The covers an area of amenity grassland to the south of the main entrance between the hospital and the main car park. This site is shown on Figure 1.3. No buildings will be demolished to facilitate this option.

1.2.3 Tallaght Hospital

The Hospital is situated in southwest Dublin to the north of the Tallaght town centre (Grid Ref:E308070 N228030). The preferred development location is shown in drawing Figure 1.4. and consists of a single story extension which would provide an extra of 1,070m² at ground level. No buildings will be demolished to facilitate this proposal.

2 DESK STUDY

2.1 Legislation

All bat species in Ireland are protected under both national legislation – (Wildlife Act, 1976, as amended in 2000) and European legislation – (Habitats Directive (92/43/EEC)). There is additional protection for lesser horseshoe bats because of their inclusion in Annex II of the Habitats Directive. The Habitats Directive is transposed into Irish law in the European Communities (Natural Habitats) Regulations (S.I. 94 of 1997). The Irish Government is also a signatory to the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animals (Bonn, 1979)) and the Bern Convention, 1982 (The Convention on the Conservation of European Wildlife and Natural Habitats) and has a commitment to the “Eurobats” Agreement (Agreement on the Conservation of Bats in Europe, 1991).

2.2 Bat Records Bat Conservation Ireland

A search of the Bat Conservation Ireland for all bat records within a radius of 1km of each of the proposed sites was conducted on the 17th of July 2014. The results of the database searches are described below.

2.2.1 St. James’s Hospital

There were no records on the BCI database for the proposed development site within the grounds of St James’s Hospital. There is one known roost, of an unidentified bat species, from the nearby Inchicore Road. The roost was identified in October 1999 and consists of a residential dwelling.

There is a National Waterway Survey Transect on the Grand Canal, at Inchicore, located less than 1km from the proposed development site. Daubenton’s Bat (*Myotis daubentonii*) and an unidentified bat species have been recorded from this survey transect. The latest record from this transect is from August 2011.

As part of the Batlas 2010 Survey, in August 2008, Leisler’s Bat (*Nyctalus leisleri*), Common Pipistrelle (*Pipistrellus pipistrellus*) and Pipistrelle sp. (*Pipistrellus* sp.) were recorded within one kilometre of St. James Hospital from the Grand Canal at Kilmainham, Co. Dublin.

In addition to the above, Common Pipistrelle (*Pipistrellus pipistrellus*) and Pipistrelle sp. (*Pipistrellus* sp.) have been recorded during EIA and EIS surveys from within 1km of St James’s Hospital.

Whilst not recorded on the database, anecdotal reports of bats using the hospital church were considered as part of the desk study.

The hospital staff volunteered that they had never encountered bats around the campus.

2.2.2 Connolly Hospital

There are 56 identified bat roosts located within 1km of the proposed development site at Connolly Hospital. Roosts of the following species have been identified within the 1km radius: Common Pipistrelle (*Pipistrellus pipistrellus*), Soprano Pipistrelle

(*Pipistrellus pygmaeus*), Leisler's Bat (*Nyctalus leisleri*), Daubenton's Bat (*Myotis daubentonii*), Natterer's Bat (*Myotis nattereri*) and Brown Long-eared Bat (*Plecotus auritus*). Of the 56 known roosts, only one roost relates to Whiskered Bat (*Myotis mystacinus*).

In addition, to identified and known roost sites, there are numerous and multiple transect and ad-hoc records for the species listed above, from within 1km of the proposed development site. These records have been collected as part of the Batlas Survey, Bat Survey Transects, from EIA and EIS reports and from volunteer records.

Whilst not in the database, the hospital staff were aware of a roost within one of the flat roofs of the existing hospital building.

2.2.3 Tallaght Hospital

There are no records on the BCI database for the proposed development site within the grounds of Tallaght Hospital Campus. In addition, there are no bat records on the database within a 1km radius of the proposed development site.

3 SURVEY OF DEVELOPMENT SITES (JUNE 2014)

3.1 Survey Methodology

This report is based on a combination of a desk study and field surveys undertaken in June 2014.

Prior to conducting night surveys the sites of each hospital were systematically walked during the day the potential roost sites and foraging and commuting corridors noted.

In relation to buildings, Table 8.2 of BCT Guidelines identifies features of buildings and built structures that are correlated with their use by bats in summer. Built structures are divided into two Categories i.e. Higher and Lower potential. All buildings on the site were surveyed in accordance with Table 8.2. Close-focusing binoculars were used to inspect the outside of two story buildings from the ground. Signs of bat activity that were searched for included droppings, the animals themselves, staining at potential roost entrances and features that may lend themselves to use by bats.

The trees on the sites were assessed for potential as bat roosting habitat using a protocol set out in the Bat Conservation Trust '*Bat Survey Good Practice Guidelines*' 2012'. A systematic search of the proposed development site and adjacent habitats, likely to support bat roosts, was conducted at each site. Close-focusing binoculars were used to inspect trees from the ground to the canopy for potential bat roosts. Features indicative of bat roosts (As per Table 8.3 – BCT Guidelines) include natural holes, cracks/splints in major limbs, loose bark, hollows/cavities, dense epicormic growth and bat boxes.

Table 8.4 of BCT Guidelines identifies a protocol for visual inspection of trees for bat roost potential and assessing the value of trees to bats. The protocol is divided into Categories 1-3. Category 1 trees are identified as having multiple highly suitable features capable of supporting larger roosts while Category 3 trees are identified as having no potential to support bats.

At St James's hospital there is a requirement for the demolition of the existing buildings. A search of the roof spaces and attics of all accessible buildings was conducted by the survey team using ladders, torches and appropriate safety equipment. A member of the hospital security staff was present with the survey team during the surveys and provided access to restricted areas including roofs. The areas where additional buildings (relocations) are proposed on the site were similarly inspected.

As no demolition works are required at Connolly and Tallaght Hospitals searches of attics of roof spaces was not required or conducted.

Emergence, dawn and dusk survey were completed at the locations of the proposed developments at the three hospital sites. Given the large size of the development site at St James's hospital the surveys were conducted over a two night period by a team of two surveyors. As the development sites at Connolly and Tallaght hospitals are small in size they were surveyed in one night.

The Surveyor/s were present at the critical dawn and dusk periods to observe as much of the area as possible at any one time to spot bats emerging from or returning to any roosts within the area and to observe behavior of bats throughout the site. The surveyor

walked around the site from the commencement of the dusk survey at shortly before sunset, and continued until 2.5 hours after sunset. The dawn survey followed a similar methodology and was carried out between 3.30am and around dawn at 05:00am. Weather conditions during the surveys were warm with the exception of the morning of June 25th when wet weather conditions persisted. All three development sites were very sheltered with little or no wind throughout the survey period.

An EM3 wildlife acoustic real time expansion bat detector and a Petersen Ultrasound D200 heterodyne bat detector were used by the surveyors to pick up the echolocation calls of any bats on the site. The heterodyne detector was set to 45KHz in order to pick up the majority of bat calls and varied to suit where contacts were made. Where possible, a positive identification to species level was made. Information on the behaviour was also recorded where available. The survey methodology was devised following the Bat Conservation Trust 'Bat Surveys – Good Practice Guidelines'.

In addition, an AnaBat Detector was positioned at strategic points, identified during the walkover survey, where it was deemed bats may occur. The detector was placed at a high point, greater than 2.5m above ground level, and was left in place to record from approximately 30 minutes before sunset through to half an hour after sunrise. The data recorded were analysed using appropriate bat detection software (Wildlife Acoustics Kaleidoscope version 1.13)

All mammals species observed or heard within the proposed development sites were recorded.

3.2 Results

3.2.1 St. James's Hospital

3.2.1.1 Daytime Inspection Surveys

All buildings on the site of the proposed National Pediatrics Hospital at St James' Hospital, Dublin were surveyed for their potential as bat habitat and also for any signs of usage by bat species. In addition, the sites where additional development is proposed were similarly inspected. The results of these surveys are described below. Figure 1.2 shows the buildings on the site that were surveyed and lists them by number.

3.2.1.1.1 Building 27 (figure 1.2)

External Inspection

This building consisted of a linear, brick built hospital building with a pitched, slated roof (Plate 3.1). This is likely to have been of early 20th Century construction. Subsequent large scale flat roofed, concrete extensions had been added to this building and significantly increased its size (Plate 3.2). The older pitched roof section was considered to be of **Higher** likelihood for bat presence due to its age and construction type. The concrete extensions were considered to be of **Lower** potential.

The entire building was searched from ground level using binoculars where necessary and access was gained to the flat roofs of the extensions. A section of the pitched roof was accessed for close external inspection from the flat roof extension (Plate 3.3).

No signs of bat activity were recorded during the external inspection. However, potential access points were identified (mainly within the roof of the older section of the hospital building).

Internal Inspection

No access was gained to the roofspaces or anywhere other than the working hospital area. No evidence of bat activity was recorded.



Plate 3.1. Old Brick section of hospital.



Plate 3.2. Flat roofed concrete sections of the building.



Plate 3.3. Slated, pitched roof as viewed from flat roofed extension.

3.2.1.1.2 Building 29 (figure 1.2)

External Inspection

This building consisted of a brick built chapel with a pitched, slated roof (Plate 3.4). This is likely to have been of early 20th Century (or earlier) construction. There were circular louvred openings into the attic space that offered potential access points to roosts. This building was considered to be of **Higher** likelihood for bat presence due to its age and construction type.

The entire building was searched from ground level using binoculars where necessary. No signs of bat activity were recorded during the external inspection. However, potential access points were identified (mainly within the roof section).

Internal Inspection

The interior of the church has a timbered ceiling and the entire church was searched for signs of activity such as droppings or staining. No such signs were recorded. No access to the roofspace was gained.



Plate 3.4. Hospital Chapel Building

3.2.1.1.3 Building 30 (figure 1.2)

External Inspection

This was a single storey pre-fabricated, flat roofed building and was considered to have **Lower** potential to support bat species. See Plate 3.5.

The entire building was searched from ground level using binoculars where necessary. No signs of bat activity were recorded during the external inspection.

Internal Inspection

No access was gained to the interior of this building other than the working area that was not suitable for bats.



Plate 3.5. Building 30. Prefabricated building with Lower Bat potential

3.2.1.1.4 Building 31 (figure 1.2)

External Inspection

This was a two storey pre-fabricated, flat roofed building and was considered to have **Lower** potential to support bat species. See Plate 3.6.

The entire building was searched from ground level using binoculars where necessary. No signs of bat activity were recorded during the external inspection.

Internal Inspection

No access was gained to the interior of this building other than the working area that was not suitable for bats.



Plate 3.6. Building 31. Prefabricated building with Lower Bat potential

3.2.1.1.5 Building 33 (figure 1.2)

External Inspection

This was a single storey pre-fabricated, flat roofed building and was considered to have **Lower** potential to support bat species. See Plate 3.7.

The entire building was searched from ground level using binoculars where necessary. No signs of bat activity were recorded during the external inspection.

Internal Inspection

No access was gained to the interior of this building other than the working area that was not suitable for bats.



Plate 3.7. Building 33 Lower bat potential.

3.2.1.1.6 Building 34 (figure 1.2)

External Inspection

This was a single storey pre-fabricated, flat roofed building and was considered to have **Lower** potential to support bat species. See Plate 3.8.

The entire building was searched from ground level using binoculars where necessary. No signs of bat activity were recorded during the external inspection.

Internal Inspection

No access was gained to the interior of this building other than the working area that was not suitable for bats.



Plate 3.8. Building 34 Lower bat potential.

3.2.1.1.7 Building 35 (figure 1.2)

External Inspection

This was an early 20th century brick built construction with two storeys and a pitched slate roof. The fascia and soffit were in a poor state of repair and there were gaps in the roof slates. It was considered to have **Higher** potential to support bat species. See Plate 3.9.

The entire building was searched from ground level using binoculars where necessary. No signs of bat activity were recorded during the external inspection although many potential roost entry points were identified.

Internal Inspection

Access was gained to the interior of this building and the entire roofspace was searched for signs of bat activity, though none were found. The roofspace was open to the rafters with all areas visible. The remains of wasps nests were recorded in this roofspace.



Plate 3.9. Building 35 with Higher bat potential.

3.2.1.1.8 Building 36 (figure 1.2)

External Inspection

These were two storey modern buildings of brick and glass construction with slated, pitched roofs. They were modern and well maintained and were considered to have **Lower** potential to support bat species. See Plate 3.10.

The entire buildings were searched from ground level using binoculars where necessary. No signs of bat activity were recorded during the external inspection.

Internal Inspection

No access was gained to the interior of the buildings other than the working area that was not suitable for bats.



Plate 3.10. Buildings 36 & 37 with Lower potential for bats.

3.2.1.1.9 Building 38 (figure 1.2)

External Inspection

This was an early 20th century brick built construction with a single storey and a pitched slate roof. The fascia and soffit were in a poor state of repair and there were gaps in the roof slates. It was considered to have **Higher** potential to support bat species. See Plate 3.11.

The entire building was searched from ground level using binoculars where necessary. No signs of bat activity were recorded during the external inspection although many potential roost entry points were identified.

Internal Inspection

There was no access to the roofspace in this building with the interior working area of the building taking up most of this area and no access point to the roof.



Plate 3.11. Building 38 with Higher Bat Potential.

3.2.1.1.10 Building 39 (figure 1.2)

External Inspection

This was a single storey modern building of brick and glass construction with a slated, pitched roof. It was modern and well maintained and was considered to have **Lower** potential to support bat species. See Plate 3.12.

The entire building was searched from ground level using binoculars where necessary. No signs of bat activity were recorded during the external inspection.

Internal Inspection

No access was gained to the interior of the building other than the working area that was not suitable for bats.



Plate 3.12. Building 39 with Lower Bat potential.

3.2.1.1.11 Building 40 (figure 1.2)

External Inspection

This was a single storey pre-fabricated, flat roofed building and was considered to have **Lower** potential to support bat species. See Plate 3.13.

The entire building was searched from ground level using binoculars where necessary. No signs of bat activity were recorded during the external inspection.

Internal Inspection

No access was gained to the interior of this building other than the working area that was not suitable for bats.



Plate 3.13. Building 40 with Lower Bat Potential.

3.2.1.1.12 Building 41 (figure 1.2)

External Inspection

This was a single storey modern building of brick construction. There were lower sections around the edge of the building with pitched, slated roofs and a central section with a metal roof. It was modern and well maintained and was considered to have **Lower** potential to support bat species. See Plate 3.14.

The entire building was searched from ground level using binoculars where necessary. No signs of bat activity were recorded during the external inspection.

Internal Inspection

Access was gained to the interior of the building including the pitched roofspaces. These were modern and well sealed with no signs of bat activity recorded.



Plate 3.14. Building 41 with Lower bat potential.

3.2.1.1.13 Building 42 (figure 1.2)

External Inspection

This was a single storey modern building of brick construction with a slated, pitched roof. It was modern and well maintained and was considered to have **Lower** potential to support bat species. See Plate 3.15.

The entire building was searched from ground level using binoculars where necessary. No signs of bat activity were recorded during the external inspection.

Internal Inspection

No access was gained to the interior of the building other than the working area that was not suitable for bats.

5



Plate 3.15. Building 42 with Lower Bat potential.

3.2.1.1.14 Building 43 (figure 1.2)

External Inspection

These were two storey modern buildings of brick and glass construction with slated, pitched roofs. They were modern and well maintained and were considered to have **Lower** potential to support bat species. See Plate 3.16.

The entire buildings were searched from ground level using binoculars where necessary. No signs of bat activity were recorded during the external inspection.

Internal Inspection

Access was gained to a small section of the roofspace. It was modern and well sealed with no evidence of bat activity recorded.



Plate 3.16. Building 43 with Lower Bat potential.

3.2.1.1.15 Buildings 44 & 45 (figure 1.2)

External Inspection

These were waste and services buildings to the north of the site. They are not being demolished but were included within the scope of the survey. They were tall modern buildings of brick and concrete construction with concrete roofs. They were modern and well maintained and were considered to have **Lower** potential to support bat species. See Plate 3.17.

The entire buildings were searched from ground level using binoculars where necessary. No signs of bat activity were recorded during the external inspection.

Internal Inspection

These buildings were largely open to the roof and supported little suitable bat habitat.

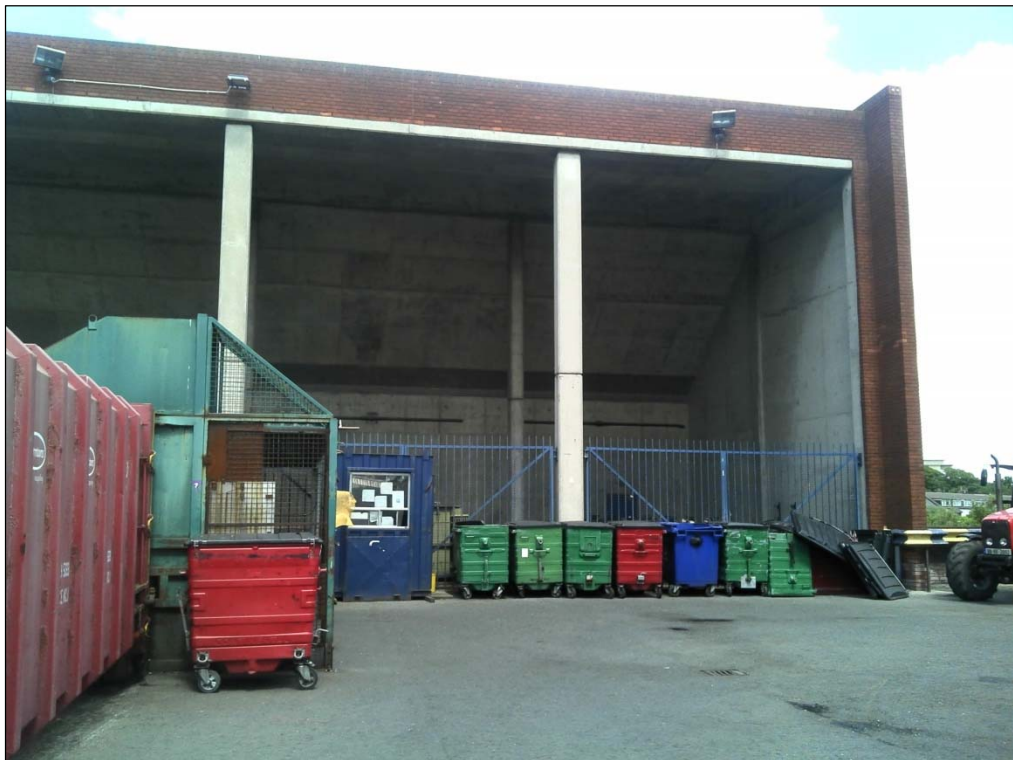


Plate 3.17. Buildings 44 & 45 with Lower Bat potential.

3.2.1.1.16 Building 46 (figure 1.2)

External Inspection

This was an early 20th century construction with rendered walls. It had two storeys and a pitched slate roof. The fascia and soffit were in a poor state of repair and there were gaps in the roof slates. It was considered to have **Higher** potential to support bat species. See Plate 3.18.

The entire building was searched from ground level using binoculars where necessary. No signs of bat activity were recorded during the external inspection although many potential roost entry points were identified.

Internal Inspection

Access was gained to the interior of this building and the entire roofspace was searched for signs of bat activity, though none were found. The roofspace was open to the rafters with all areas visible. The remains of wasps nests were recorded in this roofspace.



Plate 3.18. Building 46 with Higher bat potential.

3.2.1.1.17 Buildings 47 & 48 (figure 1.2)

External Inspection

These were maintenance buildings.. They were modern buildings with metal roofs. They were modern and well maintained and were considered to have **Lower** potential to support bat species. See Plate 3.19.

The entire buildings were searched from ground level using binoculars where necessary No signs of bat activity were recorded during the external inspection.

Internal Inspection

These buildings were largely open to the roof and supported little suitable bat habitat.



Plate 3.19. Buildings 47 & 48 with Lower bat potential.

3.2.1.1.18 Building 49 (figure 1.2)

External Inspection

This was a single storey concrete, flat roofed building with a concrete chimney stack and was considered to have **Lower** potential to support bat species. See Plate 3.20.

The entire building was searched from ground level using binoculars where necessary. No signs of bat activity were recorded during the external inspection.

Internal Inspection

No access was gained to the interior of this building other than the working area that was not suitable for bats.



Plate 20. Building 49 with Lower bat potential.

3.2.1.1.19 Building 53 (figure 1.2)

External Inspection

This was a single storey modern building of brick construction with a slated, pitched roof. It was modern and well maintained and was considered to have **Lower** potential to support bat species. See Plate 3.12.

The entire building was searched from ground level using binoculars where necessary. No signs of bat activity were recorded during the external inspection.

Internal Inspection

No access was gained to the interior of the building other than the working area that was not suitable for bats.



Plate 3.21. Building 53 with lower bat potential.

3.2.1.1.20 Inspection of various relocation sites.

The various sites where existing hospital services are to be relocated were included within the daytime survey. These sites are numbered in Figure 1.5. and listed below.

1. This site is located within an area of waste ground that is overgrown with low growing scrub that is unlikely to support bat roosts. It is surrounded by residential housing. There were no buildings on this site and no bat roosting habitat likely to be affected by the proposed works
2. This will involve the use of an existing building, which is described in the previous section of this report as building 53.
3. This area was visited and it is presumed that the new facilities will occupy an existing building on this site.
4. There were existing prefabricated containers at this site in an area surrounded by modern hospital buildings with no vegetation. This area is highly unlikely to support a bat roost. These will be replaced with a new building.



Plate 3.22. Prefabricated containers to be replaced

5. This area is located within an existing recycling compound within the hospital grounds. Any development of this area should seek to retain and protect the existing trees surrounding this site. The existing buildings at this site consist of single storey metal buildings with open fronts. They offer very low bat roosting potential.



Plate 3.23. Recycling area where facilities are proposed

6. This is a large, recently completed building. The fitting out of this building is highly unlikely to impact on bats. No access was gained to the internal areas of this building but it is flat roofed and without attic spaces or other suitable areas and offers little bat habitat.

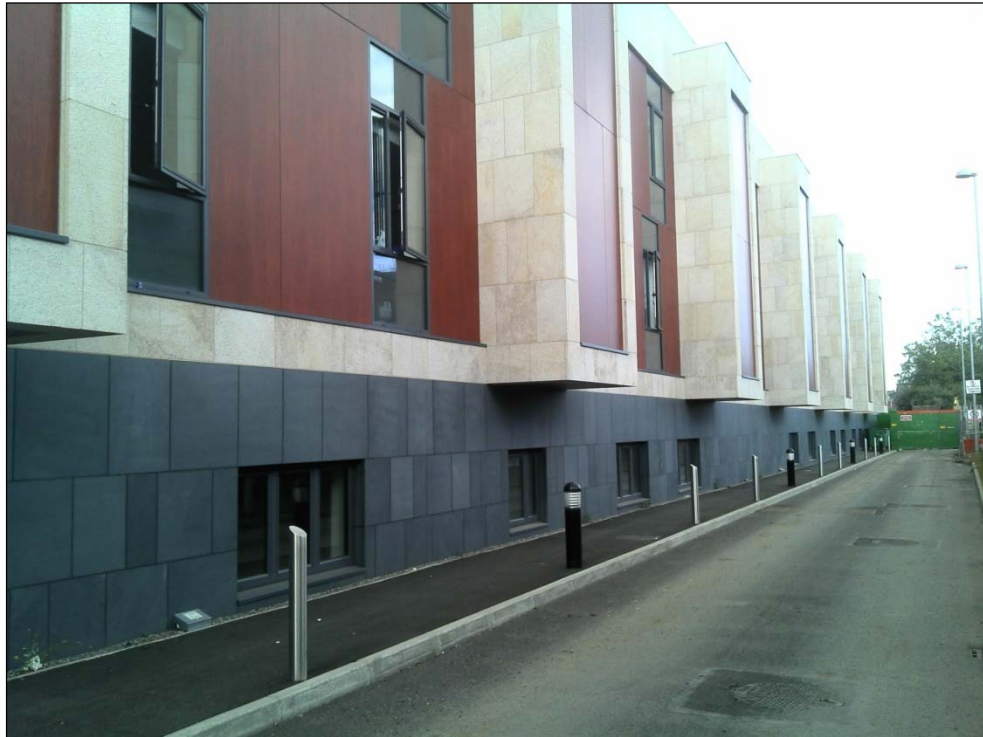


Plate 3.24. Recently Constructed building. Fit out is unlikely to impact on bats.

7. The development of this area is currently underway on an area of amenity grassland that is surrounded on all sides by hospital buildings. Development of this site is highly unlikely to impact on bats. The surrounding hospital buildings will remain in position following completion of the chapel and are unlikely to be impacted upon by this development. The surrounding hospital buildings are flat roofed constructions that have **Lower** potential to support bat species.



Plate 3.25. Construction of new chapel underway

8. This will involve the use of an existing room, which is located within the main hospital building. There will be no works undertaken outside the working area of the existing hospital and thus no impacts on Bat species are anticipated..
9. This will involve the use of an existing room, which is located within the main hospital building. There will be no works undertaken outside the working area of the existing hospital and thus no impacts on Bat species are anticipated.
10. This area is currently in use as a car park with pre-fabricated, flat roofed buildings that were considered to have Lower potential to support bat species. The buildings

were searched from ground level using binoculars where necessary. No signs of bat activity were recorded during the external inspection. No access was gained to the interior of this building other than the working area that was not suitable for bats. Development of this site is highly unlikely to impact on bats.



Plate 3.26. Car park and prefabricated buildings where the works are proposed.

11. This area is currently in use as a car park and development of this site is highly unlikely to impact on bats. The surrounding buildings are of stone construction but are unlikely to be impacted upon by the temporary modular units that are proposed at this location.

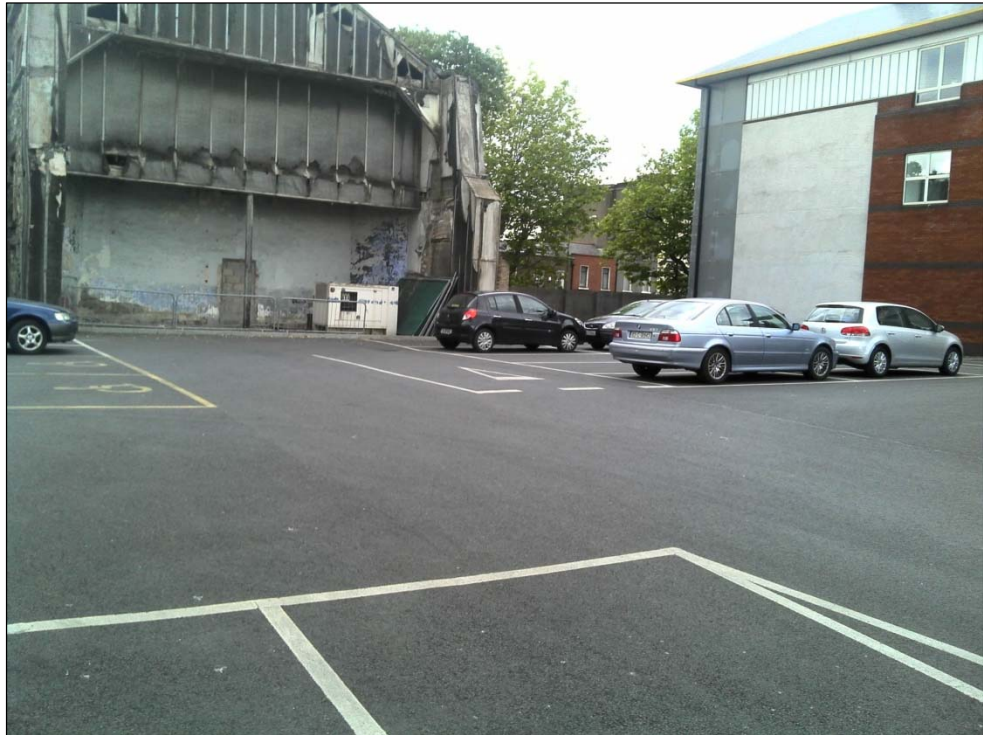


Plate 2.27. Car park area where some temporary modular units are proposed.

12. This site is located in amenity grassland in the vicinity of neighbouring flats. There are some small trees in this area but not that are considered likely to support significant bat roosting habitat given their size, age and general condition. Development of this site is highly unlikely to impact on bats.



Plate 3.28. Greenfield area where development is proposed.

13. No access was gained to this site but from aerial photographs, it appears to be a concrete school yard with very little potential as bat habitat. The buildings surrounding the yard are flat roofed concrete constructions of Lower potential as bat habitat.

3.2.1.1.21 Inspection of the trees on the site

In the course of the daytime inspections at St James Hospital, the trees and vegetation on the site were inspected. None of the trees on the site were considered to represent category one trees with multiple features that could support roosting bats. Some of the trees were regarded as category two trees with some potential as roosting habitat but with no big cracks or fissures with the potential to be used by multiple bats or to support a significant roost. In addition groups of trees that formed potential foraging or commuting habitats were identified. These are shown in Figure 1.6. No evidence of bat usage was recorded during the inspection surveys but particular attention was paid to these areas during the night time detector survey as these were the most likely areas to support foraging or commuting bats.

3.2.1.2 Detector Survey Results

The surveys at St James Hospital were conducted on evening of the 23rd and morning of the 24th June 2014 and again on the evening of the 24th and morning of the 25th of June 2014. On both nights the weather was warm (max 16 celsius on both evenings and min 14 celsius during the dawn survey on the 24th June) and calm with no rain. The entire survey area and surrounding city were subject to extensive light pollution from streetlights.

The dusk survey on the 23rd commenced at 21:50 and concluded at 00:10. The dawn survey on the 24th commenced at 03:30 and continued until 05:00. The surveyors were positioned around the southern sections of the site and were focusing on the following areas as identified in the daytime inspections (listed as in Figure 1.2.

- Building 27, the old section of the hospital.
- Building 29, the hospital chapel.
- Building 35.
- Building 38
- Identified tree lines and individual trees around this southern section of the site.

Whilst the primary focus was on the features described above, the survey also included the other buildings on the southern section of the campus. A fixed point detector was placed in the vicinity of the Hospital chapel and aligned to the opening from the roofspace.

The dusk survey on the 24th commenced at 21:50 and concluded at 00:10. The dawn survey on the 24th commenced at 03:30 and continued until 05:00. The surveyors were positioned around the northern sections of the site and were focusing on the following areas as identified in the daytime inspections (listed as in Figure 1.2.

- Building 46
- Identified tree lines and individual trees around this southern section of the site.

Whilst the primary focus was on the features described above, the survey also included the other buildings on the southern section of the campus. A fixed point detector was placed in the vicinity of Building 46.

During the entire survey period, no bat activity was recorded by either surveyors with hand held detectors or by the fixed point detector.

3.2.1.3 Additional Species Recorded

A family group of Foxes (*Vulpes vulpes*) was recorded during the surveys. The Foxes have a den under an abundance portable cabin located adjacent to the ambulance building. A second den was recorded under prefabricated building located to the west of the church. The foxes were continually observed throughout the dawn and dusk surveys.

3.2.1.4 Conclusions

During the survey of the site of the proposed National Childrens Hospital at St James' Hospital, Dublin, No evidence of bat activity was recorded in either the daytime inspection survey or the night time detector survey.

Many of the affected buildings offered low potential as bat roosting habitat being relatively modern and well maintained or else flat roofed and pre-fabricated constructions. Five of the buildings, however offered good potential roosting habitat but no evidence to suggest that they were in use by bats was recorded.

Vegetation was sparse on the site and many of the trees offered little or no potential as bat roosting habitat. Those trees that could be considered to have some potential as bat roosting sites were inspected from ground level and no evidence of bat roosting activity was recorded. In addition, no foraging or commuting behavior was recorded around the tree lines on the site during the night time detector surveys.

Whilst the presence of a roost within the NPH site cannot be entirely discounted based on the survey undertaken in June, the absolute lack of bat activity during the survey period would indicate that no significant roost is present within the site as it is highly likely that some evidence of this would have been recorded either in the form of evidence during the daytime inspections or contact with bats during the night time survey.

The reason for the absolute lack of bat activity is unclear but may be attributable to the general lack of vegetation on the site and in the surrounding area providing limited foraging areas. It may also be as a result of the streetlighting within the site and surrounding areas or a combination of the two factors. There is roosting habitat on the site and this does not appear to be the limiting factor.

It is recommended that the tree lines and individual trees be retained where possible and that the proposed new development includes proposals to plant new areas of vegetation to replace any that are lost and to increase vegetative cover on the site if possible.

It is not considered necessary to complete further night time detector surveys on the site but recommended that the buildings 27, 29, 35, 38 and 46 that support good bat roosting habitat are re-inspected by a suitably qualified ecologist prior to demolition to ensure that no bats are present at that time and to ensure that should bats be encountered, they are appropriately cared for.

It is recommended that in order to ameliorate for any loss of potential bat roosting habitat, some bat roosting habitat is incorporated into the design of any proposed building on the site. This could take the form of simple bat boxes or bat bricks and should be designed in conjunction with a bat ecologist.

Any lighting associated with the proposed hospital should be designed following the guidelines set out in the Bat Conservation Trust's Guidance on Bats and Lighting in the UK (Included as Appendix 1).

3.2.2 Connolly Hospital

3.2.2.1 Daytime Inspection Surveys

The grounds of Connolly Hospital were wooded and included the nearby Tolka River. This represented good quality foraging and roosting habitat for bat species when compared to the urban sites of St James' and Tallaght Hospitals. In addition, the desk study and preliminary communication with the staff at the hospital indicated the presence of roosting bats both in the hospital grounds and within the hospital itself. It was within the context of these records and ad-hoc reports that the inspection surveys of both potential sites were undertaken.

Option One

This site was located within the curtilage of the existing Buildings at Connolly Hospital. It is located on an area that is partly in use as a car park and partly amenity grassland surrounding the car park. There were a number of small, amenity trees planted around this area, none of which were considered to offer good potential bat roosting habitat or to provide significant cover for commuting or foraging. A section of the site was in use as a construction compound at the time of the site visit in June 2014. There was street lighting throughout this area. There were broadleaved woodlands located to the north and west of this The Tolka River was located within these woodlands and flowed to the west of the hospital.

In addition, a known bat roost was located in one of the older hospital buildings approximately 50metres to the south of the proposed site. Staff described surveys of this roost having been undertaken in the past and bats having been recorded emerging from an expansion joint in the flat roof of the hospital (Plate 3.23). Some staining was noted around this joint but no other signs of bat activity were recorded from ground level or when searching through high powered binoculars. The location of this roost is shown in Figure 1.3.



Plate 3.22 Car Park and Amenity Grassland with small trees at the site of option 1.



Plate 3.23. Bat roost in expansion joint in roof of hospital building (adjacent to drain pipe).

Option 2

This site was also located within the curtilage of the existing hospital complex between the main entrance and the main public car park. It was centred on an area of amenity grassland with only two young Beech trees located adjacent to the existing hospital building (Plate 3.24). No other trees were located within the site area. However some saplings had been planted in the south eastern section of the grassed area in the recent past. No anecdotal evidence of roosts in this area was recorded. The two trees on the site were classified as category two trees with some potential as roosting habitat but with no big cracks or fissures with the potential to be used by multiple bats or to support a significant roost. Neither did the site provide habitat features to offer good quality foraging habitat or to provide linkage between other foraging areas.



Plate 3.24. Amenity Grassland where Option 2 is proposed

3.2.2.2 Detector Survey Results

The surveys of Connolly Hospital were conducted on the night of the 25th of June 2014. The dusk survey commenced at 21:50 and concluded at 00:30. The ambient air temperature was 14 Celsius and the wind speed was recorded at <0.1m/s. Weather conditions during the survey were warm, calm and overcast with a light drizzle between 22:15 and 22:30. On the morning of the 26th there was heavy rain, which precluded a dawn survey. During the survey period, surveyors were positioned at the proposed option sites at the dusk period. The survey of the option one site encompassed the site of the known bat roost in the hospital roof. Following the initial dusk period (approx 1.5 hours after sunset) the surveyors, moved around the hospital site to pick up bat activity in the wider area. A fixed point detector was left in position close to the known roost entrance for the entire survey period. Bat species recorded during the dusk survey at Connolly Hospital are presented in Table 3.1 below.

No bats were recorded during the dusk period at the site of either Option One or Option Two. No bats were recorded leaving the known roost during the 1.5 hours following sunset. However, the fixed point detector recorded one contact with a Soprano Pipistrelle (*Pipistrellus pipistrellus*) at 23:42. No other contacts with bat species were made at either the site of Option One or Option Two.

On the survey of the wider grounds, Common Pipistrelle was recorded on the entrance road to the north amongst the existing woodlands and feeding at the Tolka River to the west of the hospital site. A Leisler's Bat was recorded flying over the streetlit car park area to the south east of the hospital building and close to the Tolka River.

Table 3.1 Bats recorded during detector surveys at Connolly Hospital

| Species | Contacts |
|--------------------|----------|
| Common Pipistrelle | 2 |
| Leisler's Bat | 2 |

3.2.2.3 Additional Species Recorded and ecological records

One Fox (*Vulpes vulpes*) was recorded during the dusk detector survey in a wooded area to the west of the proposed development site.

The management of the grassland and woodland areas on the site includes measures to increase species diversity and habitat connectivity throughout the hospital campus. The aim is to allow the natural surroundings of the hospital to encroach around the campus with the wildlife being clearly visible from the hospital area. The outlying grasslands are being managed as wildflower meadows and as a result grassland species diversity has increased in these areas. In addition proposed tree planting and management will ensure that woodland connectivity around the site is maximized. This is beneficial for bats (which are the subject of this report) and also for the overall biodiversity within the site.

3.2.2.4 Conclusions

During the survey of the sites of the options for the proposed National Childrens Hospital at Connolly Hospital, Dublin, no contacts with bats were made at either site. However, bats were recorded in the general area and are known to roost (or have roosted) within 50 metres of the site of Option One. In addition, the grounds surrounding the hospital offer very good foraging and roosting potential for bats with mature broadleaved woodland and the Tolka River.

Two species of bat were recorded in the grounds of the hospital and are considered likely to forage within the development areas from time to time, although they are street lit and do not offer good roosting potential or habitat connectivity that may be of significance as a commuting route.

In addition to these species, Daubenton's Bat (*Myotis daubentonii*), Natterer's Bat (*Myotis nattereri*), Brown Long-eared Bat (*Plecotus auritus*), and Whiskered Bat (*Myotis mystacinus*) have all been recorded within one kilometre of the hospital.

It is recommended that no lighting is focused onto areas of ecological sensitivity such as the woodlands surrounding the buildings

It is recommended that the tree lines and individual trees be retained where possible and that the proposed new development includes proposals to plant new areas of vegetation to shield the development from the surrounding area and woodlands. This is especially important in relation to Option One, where vegetative screening between any building and the adjacent roost should be included in the design to provide both cover and a commuting route in and out of the roost site

It is recommended that some bat roosting habitat is incorporated into the design of any proposed building on the site. This could take the form of simple bat boxes or bat bricks and should be designed in conjunction with a bat ecologist.

Any lighting associated with the proposed hospital should be designed following the guidelines set out in the Bat Conservation Trust's Guidance on Bats and Lighting in the UK (Included as Appendix 1).

3.2.3 Tallaght Hospital

3.2.3.1 Daytime Inspection Surveys

The section of Tallaght Hospital where the building is proposed was surveyed for its suitability as bat roosting, foraging or commuting habitat. The proposed building is located on a lawn of amenity grassland that is located to the east of the existing hospital building (Plate 3.25). There are a number of young trees and shrubs within the garden area of the hospital. None of this vegetation was considered to have potential as a bat roosting habitat but some of the surrounding vegetation was considered to offer some potential foraging habitat in an otherwise very urban area. The desk study revealed no records of bats within one kilometre of the site and it is located in a very urban setting. The hospital building itself is modern and there was no access to a roofspace. It was considered to have low potential as bat roosting habitat and was inspected from the ground using high powered binoculars. No signs of bat activity were recorded on this building.



Plate 3.2.5. Area where the new building is proposed on lawns associated with Tallaght Hospital

3.2.3.2 Detector Survey Results

The dusk survey of Tallaght Hospital was conducted on the night of the 25th of June 2014. The dusk survey commenced at 21:50 and concluded at 00:30. The ambient air temperature was 15 Celsius and the wind speed was recorded at <0.1m/s. Weather conditions during the survey were warm with some mist. On the morning of the 26th June, heavy rain prevented the survey team from conducting a dawn survey. No bat species were recorded during the dusk survey at Tallaght Hospital.

The surveyor was located at the site of the proposed building throughout the dusk survey period and recorded no bat activity.

A fixed point detector was positioned on the site but also recorded no bat activity.

3.2.3.3 Additional Species Recorded

No other species or habitats of ecological note were recorded during the survey.

3.2.3.4 Conclusions

During the survey of the site of the proposed National Childrens Hospital at Tallaght Hospital, Dublin, No evidence of bat activity was recorded in either the daytime inspection survey or the night time detector survey.

Vegetation was sparse on the site and the trees and shrubs offered little or no potential as bat roosting habitat.

Whilst the presence of a roost within the NPH site cannot be entirely discounted based on the survey undertaken in June, the absolute lack of bat activity during the survey period would indicate that no significant roost is present within the site as it is highly likely that some evidence of this would have been recorded either in the form of evidence during the daytime inspections or contact with bats during the night time survey.

The reason for the absolute lack of bat activity is unclear but may be attributable to the general lack of vegetation on the site and in the surrounding area providing limited foraging areas. It may also be as a result of the streetlighting within the site and surrounding areas or a combination of the two factors. There is roosting habitat on the site and this does not appear to be the limiting factor.

It is recommended that vegetation surrounding the site be retained where possible and that the proposed new development includes proposals to plant new areas of vegetation to replace any that are lost and to increase vegetative cover on the site if possible.

It is not considered necessary to complete further night time detector surveys on the site

It is recommended that in order to increase potential bat roosting habitat, some such habitat is incorporated into the design of any proposed building on the site. This could take the form of simple bat boxes or bat bricks and should be designed in conjunction with a bat ecologist.

Any lighting associated with the proposed hospital should be designed following the guidelines set out in the Bat Conservation Trust's Guidance on Bats and Lighting in the UK (Included as Appendix 1).

Appendix 1

BCT Guidelines. Bats and Lighting in the UK

Bat Conservation Trust



BATS AND LIGHTING IN THE UK

Bats and the Built Environment Series

This document is aimed at lighting engineers, lighting designers, planning officers, developers, bat workers and anyone specifying lighting. It is intended to raise awareness of the impacts of lighting on bats and mitigation is suggested for various scenarios. It also offers an explanation of the facts associated with the lighting industry for the benefit of bat workers.

This is a working document and as such the information contained will be updated in line with advances in our knowledge both into the impact on bats and also to reflect the advances in technology available in the lighting industry.

The information provided here is believed to be correct. However, no responsibility can be accepted by the Bat Conservation Trust, the Institution of Lighting Engineers or any of their partners or officers for any consequences of errors or omissions, nor responsibility for loss occasioned to any person acting or refraining from action as a result of information and no claims for compensation for damage or negligence will be accepted.

ABOUT BATS – FOR THE LIGHTING INDUSTRY

General Ecology

Bats are the only true flying mammals. Like us, they are warm-blooded, give birth and suckle their young. They are also long-lived, intelligent and have a complex social life. In Britain there are 17 species, all of which are small (most weigh less than a £1 coin) and eat insects.

Bats have evolved a number of unusual features, mainly connected with their ability to fly. Their wings are formed from a web of highly elastic skin stretched over greatly elongated finger bones, the legs and tail, though their thumbs remain free to help them cling on when roosting. Bats have also developed a highly sophisticated echolocation system that allows them to avoid obstacles and catch tiny insects, which they seize in flight or pick off water, the ground or foliage, even in complete darkness. When they're flying, bats produce a stream of high-pitched calls and listen to the echoes to produce a sound picture of their surroundings.

Some bats specialise in catching large insects such as beetles or moths but others eat large numbers of very small insects, such as gnats, midges and mosquitoes. Bats gather to feed wherever there are lots of insects, so the best places for them include traditional pasture, woodland, marshes, ponds and slow moving rivers.

During the winter there are relatively few insects available, so bats hibernate. In September and October they put on weight and then, as the weather gets colder, they seek out appropriate sheltered roosts, let their body temperature drop to close to that of their surroundings and slow their heart rate to only a few beats per minute. This greatly reduces their energy requirements so that their food reserves last as long as possible. Bats don't hibernate right through the winter but may wake up and go out to feed on mild evenings when insects are active.

During the spring and summer period female bats gather together into maternity colonies for a few weeks to give birth and rear their young (called pups). Usually only one pup is born each year. This is looked after carefully and suckled for between four and six weeks until it is old enough to fly out and hunt for itself. Bats don't build nests and don't bring food back to the roost to feed their young, so the baby lives only on its mother's milk until it is old enough to fly. Once the baby is independent, the colony breaks up and the bats generally move to other roosts. Bats may gather together from a large area to form these maternity roosts, so any disaster at the summer breeding site can affect the whole colony of bats from a wide surrounding area. Many of these maternity sites are used every summer as bats have a strong tradition of returning to the same site year after year.

Legal Protection of bats

Due to the decline in bat numbers, all species of bat are protected by the Wildlife & Countryside Act (1981) (as amended) and the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). This makes it illegal to: kill, injure, capture or disturb bats, obstruct access to bat roosts or damage/destroy bat roosts. Lighting in the vicinity of a bat roost causing disturbance could constitute an offence, so it is important that Natural England, Countryside Council for Wales, Scottish Natural Heritage or Environment and Heritage Service, Northern Ireland is consulted and allowed time to provide advice on lighting proposals in the vicinity of bats and roosts.

Impacts on bats

Roosts

Illuminating a bat roost creates disturbance and may cause the bats to desert the roost. Light falling on a roost access point will at least delay bats from emerging and this shortens the amount of time available to them for foraging. As the main peak of nocturnal insect abundance occurs at and soon after dusk, a delay in emergence means this vital time for feeding is missed.

Insects and foraging

In addition to causing disturbance to bats at the roost, artificial lighting can also affect the feeding behaviour of bats. There are two aspects to this. One is the attraction that light from certain types of lamps has to a range of insects; the other is the presence of lit conditions.

Many night flying species of insect are attracted to light, especially those lamps that emit an ultra-violet component and particularly if it is a single light source in a dark area. As well as moths a range of other insects can be attracted to light such as crane flies, midges and lacewings. Studies have shown that, although noctules, Leisler's, serotine and pipistrelle bats swarm around white mercury street lights (this would also apply to metal halide) feeding on the insects attracted to the light, this behaviour is not true for all bat species. The slower flying broad winged species such as long-eared bats, *Myotis* species (which include Brandt's, whiskered, Daubenton's, Natterer's and Bechstein's), Barbastelle and greater and lesser horseshoe bats generally avoid street lights. In addition it is also thought that insects are attracted to lit areas from further afield. This is thought to result in adjacent habitats supporting reduced numbers of insects. This is a further impact on the ability of the light avoiding bats to be able to feed. It is noticeable that most of Britain's rarest bats are among those species listed as avoiding light. Clearly, effective mitigation where there is potential for impact on bats has importance in the conservation of these species.

Artificial lighting is thought to increase the chances of bats being preyed upon. Many avian predators will hunt bats which may be one reason why bats avoid flying in the day. Observations have been made of kestrels (diurnal raptors) hunting at night under the artificial light along motorways.

Lighting can be particularly harmful if used along river corridors, near woodland edges and near hedgerows used by bats. In mainland Europe, in areas where there are foraging or 'commuting' bats, stretches of road are left unlit or lighting is designed in such a way as to avoid isolation of bat colonies.

Other behaviours

Artificial lighting disrupts the normal 24-hour pattern of light and dark which is likely to affect the natural behaviour of bats. Bright light may reduce social flight activity and cause bats to move away from the light area. Studies have shown that continuous lighting along roads creates barriers which some bat species cannot cross. For example, Daubenton's bats move their flight paths to avoid street lamps. The following images indicate possible scenarios where bats' commuting routes may cross a road. They are linear features such as tree lines, river corridors, hedgerows or where tree canopies form a link over the road.



ABOUT THE LIGHTING – FOR BAT WORKERS

Types of lights in use

A range of lighting equipment is available:

- 1) **Low pressure sodium lamps (SOX)** (typical orange lamps seen along roadsides). Light is emitted at one wavelength, contains no ultraviolet (UV) light and has a low attraction to insects. The lamps tend to be large which makes it more difficult to focus the light from these lamps. These are in the gradual process of being removed or replaced.
- 2) **High pressure sodium lamps (SON)** (brighter pinkish-yellow lamps). Commonly used as road lighting. Light is emitted over a moderate band of long wavelengths including a small UV component. Insects are attracted to the brighter light. The lamp is of medium size and the light can be more easily directed than low pressure sodium. This is the predominant lamp now in use.
- 3) **Mercury lamps (MBF)** (bluish-white lamps). These emit light over a moderate spectrum including a larger component of UV light to which insects are particularly sensitive. Insects are attracted in large numbers along with high densities of bat species. (Rydell & Racey 1993). They are rare now and are not used in new developments.
- 4) **White SON**. This is whiter than High Pressure Sodium and has a larger component of UV light.
- 5) **Metal Halide**. A small lamp and therefore more easy to focus light and make directional. Emits less UV light than mercury but more than high pressure sodium. It comes in three forms a) Quartz arc tube (HQI); b) Ceramic arc tube (CDM-T) and c) Cosmo which is a new ceramic form.

- 6) **Light Emitting Diodes (LEDs)**. Predicted to compete with metal halide and high pressure sodium as a widely used light source within the next few years. The light emitted is more directional. The light is produced in a narrow beam. It is instant light.
- 7) **Tungsten Halogen** (more directional). It is not used in new lighting schemes but may be encountered as security light on a private household.
- 8) **Compact Fluorescent** Mostly in use in residential street lighting. It produces a white light that does include UV light. It can be used at a low wattage and therefore on a low output to achieve low lux.

Legal requirements for lighting

There is no legislation requiring an area or road to be lit.

The Building Regulations specify that 150 W is the maximum for exterior lighting of buildings but this does not apply to private individuals.

There are a number of British Standards that relate to various components of lighting and there are also guidelines that relate to crime prevention, prevention of vehicular accidents and amenity use.

Many County councils and less often District and Borough councils set out standards in local guidance policy documents. These are sometimes based on the advice given by the Highways Authority 'TA49 – Approval of new and replacement lighting on trunk roads and trunk road motorways'.

In assessing the need for lighting it would be beneficial to ask the local authority for their lighting policy document as this should incorporate all of the above.

The installation of lighting and the planning system

Domestic lighting needs no planning permission and depends on direct advice being given to the householder. Lighting associated with new development or a listed building does require planning permission. Planning officers or developers when dealing with applications for lighting in an area of suitable bat habitat eg. woodland, old pasture, linking hedgerows and water habitats) should seek information on bat roosts in the area.



If assistance is needed they can contact the BCT Bat Helpline 0845 1300 228 who may be able to suggest how best to access information on bat roosts known in the area. If bat roosts are suspected, it may be necessary to conduct a bat survey. A survey may need to

determine the species of bat affected, their population levels, the likely impact of the lighting on the bats and possible mitigation.

The need to install lighting should be questioned. Where lighting is permitted, as may be necessary for public safety, conditions should be imposed to ensure the impact of the lighting on the bats is kept to a minimum. The use of a lighting design computer program that predicts where light will fall should be used to predict the potential impact and to plan mitigation.

The consultation on the addition to PPS23 on Pollution Control of Annex 3 on lighting is on hold at the present time (July 2007) until the outcome of the Baker review is known.

MITIGATION OF LIGHTING IMPACTS ON BATS

1. BAT ROOSTS

No bat roost (including access points) should be directly illuminated. If it is considered necessary to illuminate a building known to be used by roosting bats, the lights should be positioned to avoid the sensitive areas. Close offset accent lighting causes less light pollution; it is more specific and can be designed to avoid bat sensitive areas, and better highlights the features of the subject of the illumination.

2. FORAGING AND COMMUTING

Type of lamp (light source)

The impact on bats can be minimised by the use of low pressure sodium lamps or high pressure sodium instead of mercury or metal halide lamps where glass glazing is preferred due to its uv filtration characteristics.

Luminaire and light spill accessories

Lighting should be directed to where it is needed and light spillage avoided. This can be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvres and shields to direct the light to the intended area only. Planting can also be used as a barrier or manmade features that are required within the build can be positioned so as to form a barrier.

Lighting column

The height of lighting columns in general should be as short as is possible as light at a low level reduces the ecological impact. However, there are cases where a taller column will enable light to be directed downwards at a more acute angle and thereby reduce horizontal spill. For pedestrian lighting this can take the form of low level lighting that is as directional as possible and below 3 lux at ground level. The acceptable level of lighting may vary dependent upon the surroundings and on the species of bat affected.

Predicting where the light cone and light spill will occur

There are lighting design computer programs that are widely in use which produce an image of the site in question, showing how the area will be affected by light spill when all the factors of the lighting components listed above are taken into consideration. This should be a useful tool to inform the mitigation process.

Light levels

The light should be as low as guidelines permit. If lighting is not needed, don't light.

Timing of lighting

The times during which the lighting is on should be limited to provide some dark periods. Roads or trackways in areas important for foraging bats should contain stretches left unlit to avoid isolation of bat colonies. These unlit stretches should be 10 metres in length either side of commuting route.

3. FLOODLIGHTING OF SPORTS OR EVENTS

The use of asymmetric beam floodlights (as opposed to symmetric) orientated so that the glass is parallel to the ground will ensure that the light is cast in a downward direction and avoids horizontal spill.



See the National Trust guide to 'Events, concerts and bats' at www.nationaltrust.org.uk/main/w-bat05_event.pdf for further advice on ways to reduce the impact of event lighting.

4. SECURITY LIGHTING

Power It is rarely necessary to use a lamp of greater than 2000 lumens (150 W) in security lights. The use of a higher power is not as effective for the intended function and will be more disturbing for bats.

Movement sensors Many security lights are fitted with movement sensors which, if well installed and aimed, will reduce the amount of time a light is on each night. This is more easily achieved in a system where the light unit and the movement sensor are able to be separately aimed.

Timers If the light is fitted with a timer this should be adjusted to the minimum to reduce the amount of 'lit time'.

Aim of light The light should be aimed to illuminate only the immediate area required by using as sharp a downward angle as possible. This lit area must avoid being directed at, or close to, any bats' roost access points or flight paths from the roost. A shield or hood can be used to control or restrict the area to be lit. Avoid illuminating at a wider angle as this will be more disturbing to foraging and commuting bats as well as people and other wildlife.

Alternatives

It may be a better solution for security lighting on domestic properties to use a porch light.

Ongoing areas of research

- The impact of light on commuting corridors used by lesser horseshoe bats. Emma Stone, University of Bristol
- The effects of lighting on prime bat foraging areas within London, concentrating on riparian habitats and open spaces. Alison Fure.
- The effect of light and noise on British bat species. Frank Greenaway.

References

Institution of Lighting Engineers(2005) Guidance Notes for the Reduction of Light Pollution

Institution of Lighting Engineers (2003) Domestic Security Lighting, Friend or Foe.

Jones, J. (2000) The Impact of lighting on bats.

Mitchell-Jones, A. J. (2004) Bat Mitigation Guidelines. English Nature

Richardson, P.(2003) Events, concerts and bat. National Trust Guidance Note No. 5

Rydell J & Racey, P A (1993) Street lamps and the feeding ecology of insectivorous bats. Recent Advances in Bat Biology Zool Soc Lond Symposium abstracts

Glossary of terms

(used in this article or that may be used by the lighting industry)

| | |
|---------------------------|--|
| Arc tube | A tube normally ceramic or quartz enclosed by the outer glass envelope of a HID lamp that contains the arc stream. |
| Asymmetric beams | Lamp is off-centre in a reflector more steeply curved at one end. |
| Candela | The intensity of a light source in a specific direction. Unit of Luminous intensity |
| Contrast | The relationship between the luminance of an object and its background. The higher the contrast the more likely it is an object can be seen. |
| Cowl | Physical light spill control accessory. |
| Diffuse | Term describing dispersed light distribution referring to the scattering of light. |
| Efficacy | A measure of light output against energy consumption measured in lumens per watt. |
| HID | High Intensity Discharge. Describes mercury vapour, metal halide and high pressure sodium lamps. |
| High Pressure Sodium Lamp | A HID lamp whose light is produced by radiation from high pressure sodium vapour which usually includes a small |

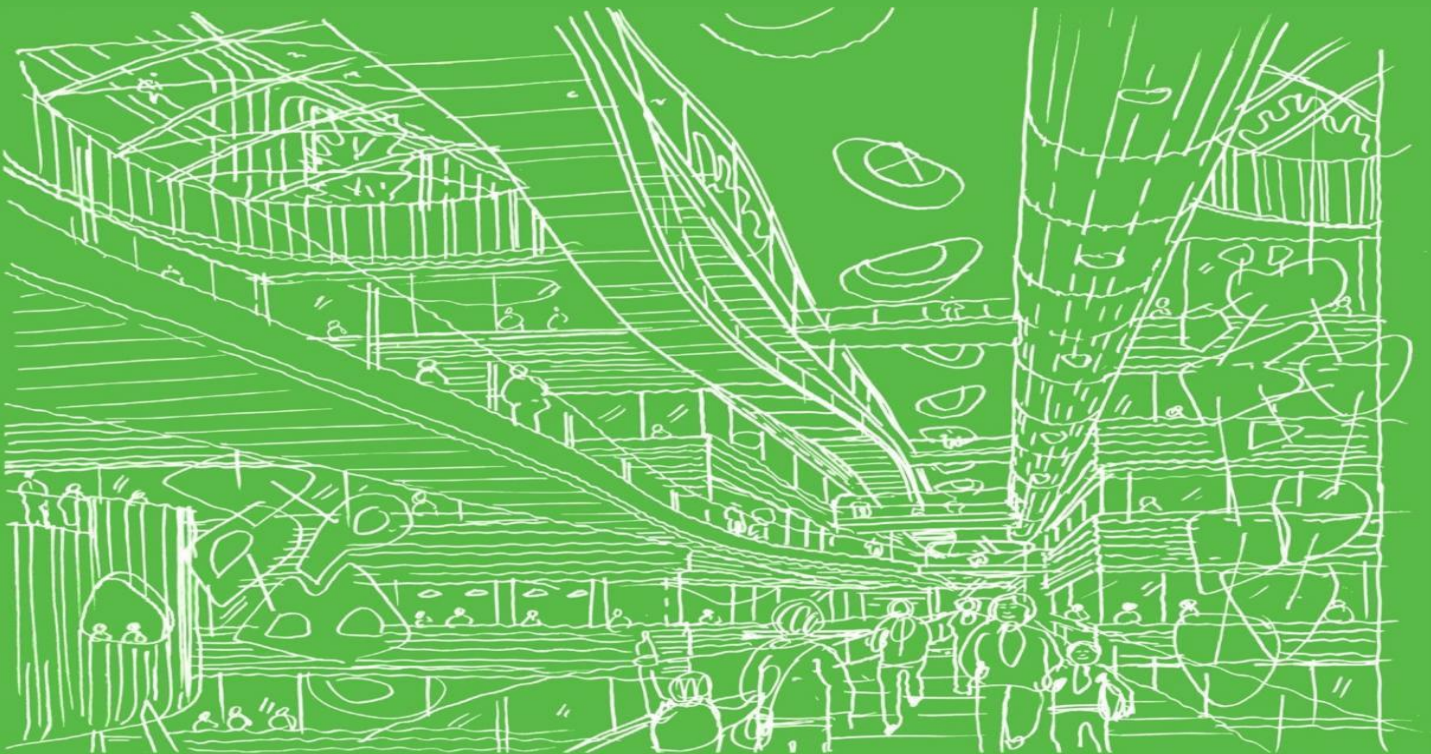
| | |
|-------------------------------|---|
| | amount of UV light. |
| Hood | Physical light spill control accessory. |
| Illuminance | Illuminance is the quantity of light, or luminous flux, falling on a unit area of a surface. It is designated by the symbol E. The unit is the lux (lx). |
| Lamp | Light source. |
| Light cone | The angle at which the beam falls off to 50% of peak intensity. |
| Light Pollution | The spillage of light into areas where it is not required. Also known as obtrusive light. |
| Light spill | The light that falls outside the light cone. |
| Light Trespass (nuisance) | Light that impacts on a surface outside of the area designed to be lit by a lighting installation. The correct legal term is nuisance. |
| Louvres | Physical light spill control accessory. |
| Low Pressure Sodium | A discharge lamp in which light is produced by radiation from low pressure sodium vapour. Emits light at only 589nm ie. monochromatic. |
| Lumen | The unit of light output from a lamp. |
| Luminaire | Light fitting or unit designed to distribute light from a lamp or lamps. |
| Luminance | The physical measure of the stimulus that produces the sensation of brightness measured by the luminous intensity reflected in a given direction. The unit is the candela per square metre (cd/m ²). |
| Lux (LX) | Illuminance is the quantity of light or luminous flux, falling on a unit area of a surface in the environment. It is designated by the symbol E. The unit is lux (lx). |
| Metal Halide (includes CDM-T) | <p>A type of HID lamp in which most of the light is produced by radiation of metal halide and mercury vapours in the arc tube. Emits UV light.</p> <p>UV poor variants are available.</p> <p>It comes in three forms a) Quartz arc tube (HQL); b) Ceramic arc tube (CDM-T) and c) Cosmo which is a new ceramic form</p> |

| | |
|-------------------|--|
| | |
| Mercury | High pressure white light lamp that emits significant UV light. |
| Optic | The components of a luminaire such as reflectors, refractors, protectors which make up the directional light control section. |
| Photocell | A unit which senses light to control luminaires. |
| Reflector | A device used to reflect light in a given direction. |
| Refractor | A device used to redirect the light output from a lamp when the light passes through it. It is usually made from prismatic glass or plastic. |
| Shield | Physical light spill control accessory. |
| Sky glow | The brightening of the night sky caused by artificial lighting. |
| Symmetric beams | Lamp mounted in the centre of the reflector. |
| Ultra violet (UV) | Radiation that is shorter in wavelength and higher in frequency than visible violet light. |
| Voltage | The difference in electrical potential between two points of an electrical circuit. |
| Watt (W) | The unit for measuring electrical power. |

National Paediatric Hospital Project

Planning Application

Appendix 9.2 – Response from the Department of Heritage, Arts & Gaeltacht



August 2015



An Roinn
Ealaíon, Oidhreachta agus Gaeltachta

Department of
Arts, Heritage and the Gaeltacht

Your Ref: -----

Our Ref: **G Pre00173/2015**

(Please quote in all related correspondence)

19 June 2015

Matthew Hague CEnv MCIEEM
Consultant Ecologist
Brady Shipman Martin
Dundrum Business Park
Dundrum
Dublin 14

Via email to: haquematt@gmail.com

Re: EIS and AA scoping for proposed new National Children's Hospital, Dublin

A chara

On behalf of the Department of Arts, Heritage and the Gaeltacht, I refer to the consultation received in connection with the above-mentioned proposed development.

Outlined below are heritage-related observations from this Department under the stated heading(s).

Nature Conservation

This Department notes that there will also be two satellite centres, one at Tallaght and one at Blanchardstown. It is unclear from the documents supplied to this Department whether these satellites have already been through the planning process or not. However, in any assessment the cumulative impact of the three developments will need to be assessed. Please find below some general scoping comments for EIA and appropriate assessment screening/appropriate assessment and for licensing requirements, if applicable.

EIA

Ecological Survey

With regard to scoping for an EIA for the proposed development, in order to assess impacts on biodiversity, fauna, flora and habitats, an ecological survey should be carried out of the proposed development site including the route of any access roads, pipelines or cables etc. to survey the habitats and species present. Where ex-situ impacts are possible survey work may be required outside of the development sites. Such surveys should be carried out by suitably qualified persons at an appropriate time of the year depending on the species being surveyed for. The EIS should include the results of the surveys, and detail the survey methodology and timing of such surveys. It is expected by this Department that in any survey methodology used that best practice will be adhered to. The EIS should cover the whole project, including construction, operation and, if applicable, demolition and restoration or decommissioning phases. Alternatives examined should

also be included in the EIS. For information on Geological and Geomorphological sites the Geological Survey of Ireland should be consulted.

Baseline data

With regard to the scope of baseline data, details of designated sites can be found at www.npws.ie. For flora and fauna in the SEA, the data of the National Parks and Wildlife Service (NPWS) should be consulted at www.npws.ie. Where further detail is required on any information on the website www.npws.ie, a data request form should be submitted. This can be found at <http://www.npws.ie/maps-and-data/request-data>. Other sources of information relating to habitats and species include that of the National Biodiversity Data Centre (www.biodiversityireland.ie), Inland Fisheries Ireland (www.fisheriesireland.ie), BirdWatch Ireland (www.birdwatchireland.ie) and Bat Conservation Ireland (www.batconservationireland.org). Data may also exist at a County level within the Planning Authority.

Impact assessment

The impact of the development on the flora, fauna and habitats present should be assessed. In particular the impact of the proposed development should be assessed, where applicable, with regard to:

- Natura 2000 sites, i.e. Special Areas of Conservation (SAC) designated under the EC Habitats Directive (Council Directive 92/43/EEC) and Special Protection Areas designated under the EC Birds Directive (Directive 2009/147 EC),
- Other designated sites, or sites proposed for designation, such as Natural Heritage Areas and proposed Natural Heritage Areas, Nature Reserves and Refuges for Fauna or Flora, designated under the Wildlife Acts 1976 to 2010,
- Species protected under the Wildlife Acts including protected flora,
- ‘*Protected species and natural habitats*’, as defined in the Environmental Liability Directive (2004/35/EC) and European Communities (Environmental Liability) Regulations, 2008, including Birds Directive – Annex I species and other regularly occurring migratory species, and their habitats (wherever they occur) and Habitats Directive – Annex I habitats, Annex II species and their habitats, and Annex IV species and their breeding sites and resting places (wherever they occur),
- Important bird areas such as those identified by Birdlife International,
- Features of the landscape which are of major importance for wild flora and fauna, such as those with a “stepping stone” and ecological corridors function, as referenced in Article 10 of the Habitats Directive.
- Other habitats of ecological value in a national to local context (such as those identified as locally important biodiversity areas within Local Biodiversity Action Plans and County Development Plans).
- Red data book species,
- and biodiversity in general.

Reference should be made to the National Biodiversity Plan and any relevant County Biodiversity Plan. Any losses of biodiverse habitat associated with this Application (including access roads and cabling) such as woodland, scrub, hedgerows and other habitats should be mitigated for.

Alien invasive species

The EIS should also address the issue of invasive alien plant and animal species, such as Japanese Knotweed, and detail the methods required to ensure they are not accidentally introduced or spread during construction. Information on alien invasive species in Ireland can be found at <http://invasives.biodiversityireland.ie/> and at <http://invasivespeciesireland.com/>.

Bats

Bat roosts may be present in trees, buildings and bridges. Bat roosts can only be destroyed under licence under the Wildlife Acts and a derogation under the Habitats Regulations and such a licence would only be given if suitable mitigation measures were implemented. Where so called bat friendly lighting is proposed as mitigation then it should be proven to work as mitigation.

CMPs

Complete project details including construction management plans (CMPs) need to be provided in order to allow an adequate appropriate assessment to be undertaken. Applicants need to be able to demonstrate that CMPs and other such plans are adequate and effective mitigation, supported by scientific information and analysis, and that they are feasible within the physical constraints of the site. The positions, locations and sizes of construction infrastructure and mitigation, such as settlement ponds, disposal sites and construction compounds, may significantly affect European sites, other designated sites, habitats, and species in their own right and could have an effect for example on drainage, water quality, habitat loss, and disturbance. If these are undetermined at time of the assessment, all potential effects of the development on the site are not being considered. If applicants are not in a position to decide the exact location and details of these at time of application, then they need to consider the range of options that may be used in their assessment so that all issues are covered.

Appropriate Assessment

Guidance

With regard to appropriate assessment (AA) and screening for AA, some Guidance documents are referred to below which may help. However CJEU case law has to some extent clarified certain issues and should be consulted. In particular case C-258/2011- N6 Galway City Outer Bypass is relevant as is the recent opinion on the Briels case, C-521/12.

Guidance on AA is available in the Departmental guidance document on Appropriate Assessment, which is available on the NPWS web site at

http://www.npws.ie/sites/default/files/publications/pdf/NPWS_2009_AA_Guidance.pdf and in the EU Commission guidance entitled "*Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*" which can be downloaded from

http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/natura_2000_assess_e_n.pdf

Conservation objectives

In order to carry out the appropriate assessment screening, and/or prepare the Natura Impact Statement (NIS), information about the relevant Natura 2000 sites including their conservation objectives will need to be collected. Details of designated sites and species and conservation objectives can be found on www.npws.ie. Site-specific, as opposed to generic, conservation objectives are now available for some sites. Each conservation objective is defined by a list of attributes and targets and supporting documentation. Where these are not available for a site the detailed conservation objectives for other sites which have the same qualifying interests should be examined. For example if a site without detailed conservation objectives has otters as a qualifying interest one could refer to the River Barrow and River Nore SAC detailed conservation objectives to see how otters are treated. It is now advised, as per the notes and guidelines in the detailed conservation objectives, that any reports quoting conservation objectives should give the version

number and date. This will allow statutory consultees and others assessing reports to be confident that the correct and most up to date version of the conservation objectives is used at the time of writing any report.

Where further detail is required on any information on the website www.npws.ie , a data request form should be submitted. This can be found at <http://www.npws.ie/maps-and-data/request-data> .

Cumulative and ex situ impacts

A rule of thumb often used is to include all Natura 2000 sites within a distance of 15km. It should be noted however that this will not always be appropriate. In some instances where there are hydrological connections a whole river catchment or a groundwater aquifer may need to be included. Similarly where bird flight paths are involved the impact may be on an SPA more than 15 km away.

Other relevant Local Authorities should be consulted to determine if there are any projects or plans which, in combination with this proposed development, could impact on any Natura 2000 sites

Water and wastewater

If this development is not on mains sewerage then impacts from wastewater, including cumulative impacts, on groundwater and any nearby surface waters or wetland habitats should be assessed. In addition if it is not on mains water supply then impacts, including cumulative impacts, relating to water abstraction should be assessed. This may require hydrogeological information. Where connection will be to existing infrastructure the impact of the demand for additional potable water, waste water treatment, and additional surface runoff should be assessed.

Alien invasive species

If the proposed development is adjacent to a Natura 2000 site and involves landscaping or a garden, care should be taken to ensure that no terrestrial or aquatic invasive species are used which could impact negatively on these sites. Information on alien invasive species in Ireland can be found at <http://invasives.biodiversityireland.ie/> and at <http://invasivespeciesireland.com/> .

CMPs

Complete project details including construction management plans (CMPs) need to be provided in order to allow an adequate appropriate assessment to be undertaken. Applicants need to be able to demonstrate that CMPs and other such plans are adequate and effective mitigation, supported by scientific information and analysis, and that they are feasible within the physical constraints of the site. The positions, locations and sizes of construction infrastructure and mitigation, such as settlement ponds, disposal sites and construction compounds, may significantly affect European sites, designated sites, habitats, and species in their own right and could have an effect for example on drainage, water quality, habitat loss, and disturbance. If these are undetermined at time of the assessment, all potential effects of the development on the site are not being considered. If applicants are not in a position to decide the exact location and details of these at time of application, then they need to consider the range of options that may be used in their assessment so that all issues are covered. The CMP should also include methods to ensure invasive alien species are not introduced or spread.

Licenses

Where there are impacts on protected species and their habitats, resting or breeding places, licenses may be required under the Wildlife Acts or derogations under the Habitats Regulations. In particular bats and otters are strictly protected under annex IV of the Habitats Directive and a copy of Circular Letter NPWS 2/07 entitled "Guidance on Compliance with Regulation 23 of the Habitats Regulations 1997 – strict protection of certain species/applications for derogation licences" can be found on the Departmental web site at

<http://www.npws.ie/media/npws/publications/circulars/media,6686,en.pdf>.

In addition licenses will be required if there are any impacts on other protected species or their resting or breeding places, such as on protected plants, badger setts or birds' nests. Where possible hedges and trees should not be removed during the nesting season (i.e. March 1st to August 31st). Bird's nests can only be intentionally destroyed under licence issued under the Wildlife Acts of 1976 and 2000.

In order to apply for any such licenses or derogations as mentioned above the results of a survey should be submitted to NPWS which should have been carried out by appropriately qualified person/s at an appropriate time of the year. Details of survey methodology should also be provided. Such licences should be applied for in advance of planning to avoid delays and in case project modifications are necessary.

Should the original survey work take place well before construction commences it is recommended that an ecological survey of the development site should take place immediately prior to construction to ensure no significant change in the baseline ecological survey has occurred. If there has been any significant change mitigation may require amendment and where a licence has expired will be a need for new licence applications with regard to protected species.

The above observations and recommendations are based on the papers submitted to this Department on a pre-planning basis and are made without prejudice to any observations that the Minister may make in the context of any consultation arising on foot of any development application referred to the Minister, by the planning authority/ies, in her/his role as statutory consultee under the Planning and Development Act, 2000, as amended.

You are requested to send the acknowledgement to this letter and any further correspondence to this Department's Development Applications Unit at manager.dau@ahg.gov.ie (team monitored); if this is not possible, correspondence may, alternatively, be sent to:

The Manager
Development Applications Unit
Department of Arts, Heritage & the Gaeltacht
Newtown Road
Wexford

Is mise, le meas



Muiris Ó Conchúir
Development Applications Unit
Tel: 053-911 7387