CELBRIDGE HAZELHATCH MOBILITY CORRIDOR

Supporting Information for Derogation Application

MDT0902-RPS-00-XX-RP-Z-0065
October 2025

DEROGATION LICENCE APPLICATION REPORT

Document status

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RPS

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Kildare County Council

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1 INTRODUCTION

This derogation licence is being sought to permit works associated with the proposed Celbridge Hazelhatch Mobility Corridor Scheme. In particular, the removal of two ash trees, coded BT17 and BT27, in which bat roost emergence/re-entry surveys confirmed bat roosts of two soprano pipistrelles and one common pipistrelle, respectively.

The document has been prepared by suitably qualified and experienced RPS ecologists.

The document is structured as follows:

- **Section 2: Background to proposed activity**
- **Section 3: Details of proposed activity to be covered by the** derogation
- **Section 4: Ecological survey and site assessment**
- **Section 5: Evidence to support the derogation tests**
- **Section 6: Monitoring the impacts of the derogations**

1.1 Objective of the proposed works

Kildare County Council have contracted RPS for the design and environmental assessment for the "Celbridge Hazelhatch Mobility Corridor" hereafter referred to as the 'Proposed Scheme'. The Proposed Scheme includes constructing a new road approximately 2 km long, connecting Clane Road to Loughlinstown Road Roundabout near Hazelhatch Train Station. Key components include a new bridge over the River Liffey, road cross-sections with cycle tracks and footpaths, junction improvements, drainage systems, and landscaping.

1.2 Name, qualifications and relevant experience of scientific staff

Dr Miles Newman (Associate Ecologist)

Dr Miles Newman is an Associate terrestrial ecologist with over 17 years of ecology experience. He is a full member of CIEEM (MCIEEM) and a Chartered Environmentalist (CEnv). Miles currently coordinates and leads the bat survey work carried out by RPS in the Republic of Ireland. He is an experienced bat activity surveyor and bat roost assessor (including ground-based assessment, tree climbing, visual aid emergence, and endoscopy). Dr Newman has held the following derogation licences in relation to bat roost disturbance for assessment:

- DER-BAT-2025-297 (Survey Derogation); 8/9/2025-31/12/2025
- DER/BAT 2023-116 (survey licence) (Amended); 18/01/2024-31/12/2024;
- DER/BAT 2023-116 (survey licence);12/10/2023-31/12/2023;
- DER-BAT-2020-44 (survey licence); 22/5/2020-22/05/2021
- DER/BAT 2019-25 (survey licence); 28/03/2019-28/3/2020
- DER/BAT 2017-144 (amended); 27/04/2017-10/11/2018

2 BACKGROUND TO PROPOSED ACTIVITY

2.1 Site Location

The project is situated in the south west of Celbridge, County Kildare. Refer to drawing **MDT0902-RPS-01-XX-DR-Z-IX0001** (Location Plan) and **Figure 2-1** below.

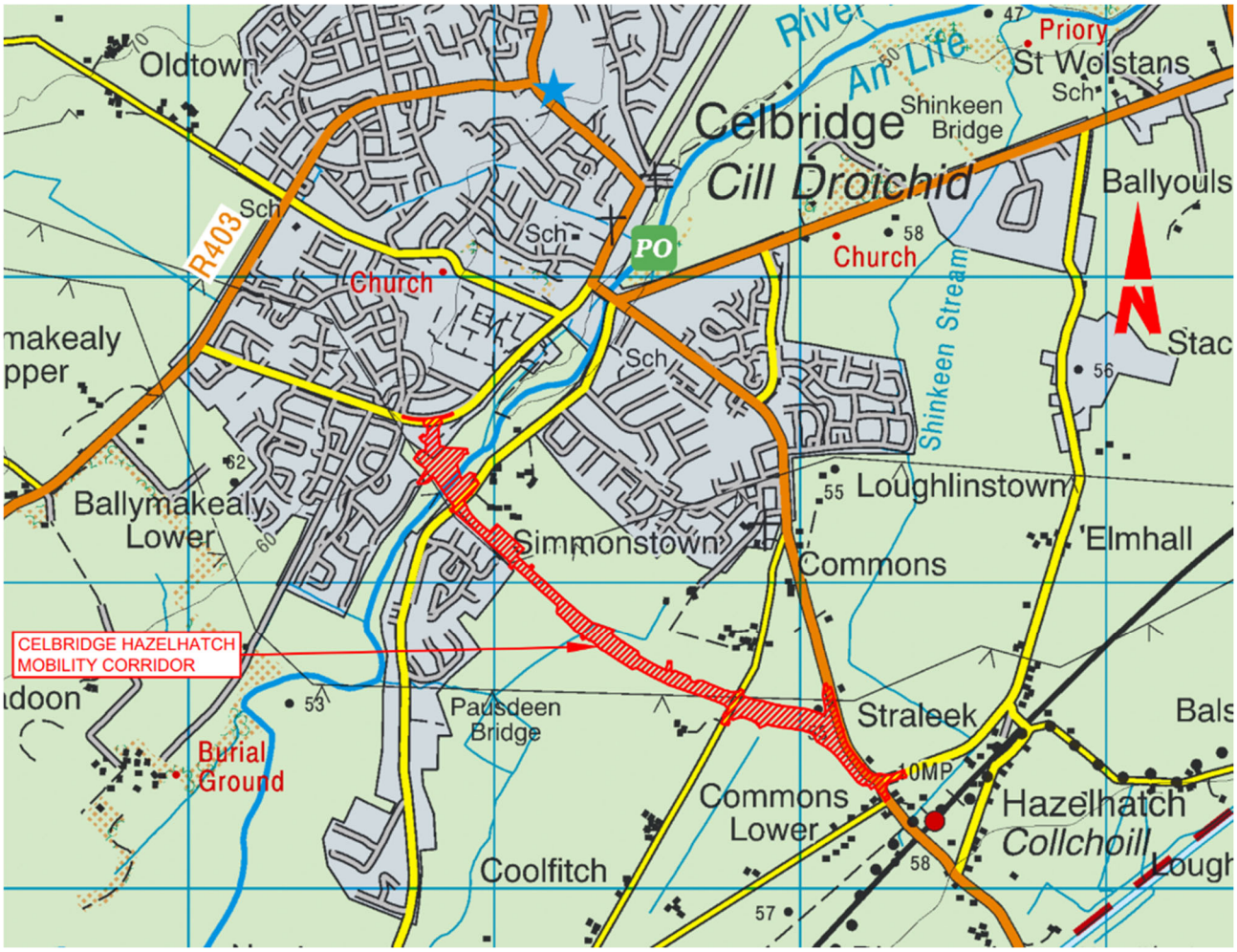

Figure 2-1: Site Location

2.2 Description of Route

The proposed route is approximately 2km long, beginning at a proposed junction with Clane Road and heading in a south easterly direction, predominantly through greenfield lands until it ties into the existing R405 Hazelhatch Road, before terminating at the existing Loughlinstown Road Roundabout near Hazelhatch Train Station. The route also includes proposed junctions with Newtown Road, Simmonstown Manor Road and R405 Hazelhatch Road. A new bridge crossing is required over the River Liffey, located approximately 200m south of the beginning of the route at Clane Road.

2.3 Lighting

New public lighting will be provided for the full extent of the proposed project. The proposed lighting columns are illustrated on drawings **MDT902- RPS-01-XX-DR-Z-GA0001 – GA0015**.

The lighting will be provided by energy efficient light emitting diode (LED) lanterns providing a neutral white output with each mounted on lighting columns that will be designed to the minimum height required. All lanterns will be fully cut-off type to minimise light spill and ensure that light is concentrated on the proposed

roads, cycleways and footpaths. The lighting will be designed to the appropriate Lighting Class in compliance with BS 5489-1: Code of Practice for the Design of Road Lighting.

All cables for the lighting installation will be ducted underground.

2.4 Site Clearance

The site shall be cleared of any obstructions to the construction of the project.

Existing buildings and polytunnels currently used for horticulture purposes will be demolished between approximately Ch. 0+050 to Ch. 0+150.

The following lengths of existing walls are to be removed:

- Approximately 23m of stone wall to be removed at R403 Clane Road.
- Approximately 92m of stone and blockwork walls to be removed at Newtown Road.

An Arboricultural Survey was carried out in accordance with BS5837:2012 *Trees in Relation to design, demolition and construction* for a study area covering the full extent of the proposed Project. Following completion of the survey, a Tree Constraints Plan and a Tree Schedule were produced identifying the locations of the trees, their assessment category, their crown spreads and their Root Protection Areas (RPAs). A check was carried out to confirm that no trees within the study area were subject to any statutory designations e.g. Tree Protection Orders.

Subsequently an Arboricultural Impact Assessment (AIA) was carried out to evaluate the impact of the proposed project on the trees in the study area and determine required tree removals, required pruning works and recommended measures to mitigate impacts. A Tree Protection and Removal Plan was produced identifying the trees to be removed, trees to be retained and recommended locations of temporary tree protection fencing. A Tree Removal Schedule was also produced listing the trees to be removed.

The AIA has identified the following quantities of trees and hedgerows that require removal:

- Individual Trees: 126 No.
- Groups of Trees: 4,446 m^2
- Length of Hedgerow: 445 m
- Scrub: 135 m^2

The trees protection and removal plan are illustrated on drawings **MDT0902-RPS-01-XX-DR-Z-LA1000-LA1007**.

No contaminated land was identified during the ground investigation works.

2.5 Fencing

The proposed fencing and environmental barrier design is illustrated on drawings **MDT0902-RPS-01-XX-DR-Z-FE0000-FE0007**.

Mammal-resistant fencing will be required to prevent badgers and otter crossing the new roadway and guide them to the proposed mammal underpasses and mammal ledges in box culverts. The specification for mammal-resistant fencing for badgers and otters is outlined in the NRA “Guidelines for the Treatment of Badgers prior to the construction of National Road Schemes” and “Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes” respectively.

The mammal resistant fencing will be constructed as per TII standard details CC-SCD-00319 or CC-SCD-00324. At some locations it will be necessary to incorporate mammal-resistant measures into the construction of the proposed noise barriers and security fencing.

Where mammal-resistant measures are not required, boundary fencing for the project will generally be timber post and rails fence as per TII standard details CC-SCD-00301.

Paladin style security fencing is proposed where required to prevent unauthorised access such as around proposed attenuation basins.

Steel field gates will be provided where required for landowner accesses and maintenance accesses. These gates will be constructed as per TII standard details CC-SCD-00309 (steel single field gate) and CC-SCD-00310 (steel double field gate). Paladin style security gates are proposed where required to prevent unauthorised access. At some locations it will be necessary to incorporate mammal-resistant measures into the construction of the proposed gates.

2.6 Landscaping

A preliminary landscape design has been prepared for the scheme and is illustrated on drawings **MDT0902-RPS-01-XX-DR-Z-LA0000-LA0008**. A detailed Landscape Design Plan will be prepared at the detailed design stage.

The landscape design for the Celbridge to Hazelhatch Mobility Corridor was developed, having regard for the baseline landscape character and to mitigate adverse landscape and visual effects. The scheme features native species woodland and hedgerow planting along with standard trees and was designed to link in with existing retained vegetation. The proposed Scheme as a whole sought to minimise vegetation losses. The landscape scheme details serve to enhance biodiversity and incorporate sustainable drainage features.

Where the drainage bio-retention trenches are proposed, trees will be planted at circa 25m spacing within the grassed verge between the proposed road and cycleways. It is also proposed to provide tree and vegetation planting in other available green spaces, so long as it does not impact on sightlines and safe operation of the scheme, or maintenance requirements.

The proposed planting is as follows:

Standard Trees: 219 No.

Hedge (linear metres): 2,207m

Woodland (square metres): 7,152m^2

Woodland (damp conditions, square metres): 4,191m^2

Shrub mix near overhead lines (square metres): 1,411m^2

3 FULL DETAILS OF PROPOSED ACTIVITY TO BE COVERED BY THE DEROGATION

The felling of 2no. trees with confirmed bat roosts (BT17 and BT27) is proposed. Mitigation measures have been proposed within Chapter 9 Biodiversity of the Environmental Report submitted as part of the planning consent for the Proposed Scheme.

These mitigation measures are outlined in the following sections.

3.1 Ecological Roles

A Project Ecologist shall be appointed by Kildare County Council before the commencement of works. This suitable qualified and experienced ecologist (hereafter referred to as 'the Project Ecologist') shall be utilised in the implementation of the mitigation measures and survey requirements outlined here.

The ecologist shall be a full member of a relevant institution, such as the Chartered Institute of Ecology and Environmental Management (CIEEM) or similar, have relevant experience in the management of mitigation measures and ecological constraints on construction sites/restoration projects, and hold or have previously held a protected species derogation licence in the Republic of Ireland. It shall be their responsibility to supervise and provide recommendations on the execution of any works which have the potential to give rise to negative or positive effects on biodiversity. The Project Ecologist shall be suitable qualified and experienced and have a minimum of five years' experience completing similar tasks on linear infrastructure projects.

The Contractor shall appoint an Environmental Manager / Clerk of Works (hereafter referred to as the 'ECoW') before the commencement of works. This person shall be responsible for carrying out environmental monitoring of the works and ensuring that the mitigation measures, proposed in this EcIA and identified by the Project Ecologist, are adhered to. The ECoW shall be suitable qualified and experienced and have a minimum of five years' experience completing similar tasks on linear infrastructure projects.

3.2 Pre-construction Surveys

At least one month in advance, but no greater than six months in advance, of commencing any enabling or advance works, a pre-construction survey for protected and invasive alien species shall be undertaken (within a suitable season) within the Proposed Scheme area, including areas which could not be accessed during the establishment of the baseline. The surveys shall be undertaken by a suitable qualified and experienced ecologist. The ecologist shall also advise, in writing, on any additional relevant protective measures and/or licensing requirements resulting from the pre-construction survey findings.

3.3 Tree Protection

Prior to construction commencement, Root Protection Areas (RPAs) for retained trees shall be put in place. The purpose of protective barriers is to avoid any harmful construction activity that may damage the retained trees. Tree protection barriers shall be fit for the purposes of excluding construction activities and be durable to withstand an impact. The extent of the RPA shall be an area equivalent to a circle with a radius 12 times the stem diameter (stem diameter measured at 1.5 m above ground level) (NRA, 2006b).

3.4 Bats (roosting)

The following measures are required to lessen or avoid the identified or potential significant effects on roosting bats caused by biodiversity loss, fragmentation and alteration:

- The bat roost potential of any buildings to be demolished and trees to be felled to enable construction will be confirmed through the completion of update surveys by the ECoW (and appropriately qualified personnel, if required). The surveys will be completed with reference to the following guidance (or relevant guidance at time of survey):
  - *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (Collins, 2023)
  - *Bat Mitigation Guidelines for Ireland* (Marnell *et al*., 2022); and

  - *UK Bat Mitigation Guidelines* (Reason and Wray, 2023).

- The findings of the pre-construction survey will be reviewed with respect to the Proposed Scheme in relation to whether the updated findings trigger a requirement for a species derogation licence from NPWS. Based on the current baseline, derogation licensing is deemed necessary for felling two trees with confirmed roosts (i.e. BT17 and BT27);
- The findings of the pre-construction survey will be reviewed with respect to the Proposed Scheme in relation to whether precautions (e.g. section-felling) are required for trees that have low roost potential, but the absence of bats cannot be confirmed;
- No demolition of buildings or the removal of any trees with bat roost potential (potential to be determined by the ECoW based on findings of pre-construction surveys) will be undertaken unless the ECoW has confirmed that the buildings or trees do not support roosting bats (confirmed via survey) or unless the demolition/removal is completed under the provisions of a derogation licence;
- Following the pre-construction survey, bat roosts located within the CPO boundary will be clearly identified to all personnel working in the vicinity of the roost. Temporary boundary tape fencing (or similar) will be used at the discretion of the ECoW to identify such roosts, subject to such measures themselves not impacting on the use of the roost;
- In the event that roosts are removed or significantly disturbed (wholly or partially), this will be completed in accordance with the necessary derogation licence to be obtained from NPWS and with reference to the *Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes* (NRA, 2006a), *Guidelines for the Treatment of Bats during the Construction of National Road Schemes* (NRA, 2005a) and *Bat Mitigation Guidelines for Ireland* (Marnell *et al*., 2022). The need for licencing will be determined by the ECoW. The need for additional mitigation for derogation licensing purposes shall be reviewed and determined by the ECoW. Currently, three confirmed roosts are located within the CPO boundary. One of these roosts is not proposed to be disturbed, while the other two will require closure in accordance with a derogation licence;
- In the unlikely event that unknown roosting or stranded bats are encountered on the Proposed Scheme, works shall immediately cease in that area and the local NPWS Conservation Ranger shall be contacted. If present, bats shall only be removed under licence from the NPWS;
- To mitigate to loss of roost features, 4 no. bat boxes will be erected in the vicinity of the identified roosts at suitable locations within the CPO boundary. Suitable locations will be determined by the ECoW based on proximity to artificial lighting and connectivity to foraging and commuting habitats. In the absence of suitable structures to erect the boxes (e.g. retained trees or bridge structures), they will be pole-mounted in suitable locations. The bat boxes will be Schwegler-type (woodcrete) type boxes (or similar) and a range of different type boxes (e.g. 2FN, 3FN, 1FD, 1FF, 3FF, 1FW, 1FE and 1FTH) will be used. These will be provided in addition to any mitigation required with respect to any derogation requirements which may be identified as a result of pre-commencement surveys.

3.5 Felling of Trees with confirmed Bat Roosts

The felling of 2no. trees with confirmed bat roosts (BT17 and BT27) will be completed with reference to the *Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes* (NRA, 2006a), *Guidelines for the Treatment of Bats during the Construction of National Road Schemes* (NRA, 2005a) and *Bat Mitigation Guidelines for Ireland* (Marnell *et al*., 2022).

Prior to felling, the roost features will be assessed using endoscope to determine the presence of bat with the roost features. Where bats are present prior to felling, bats will either be:

- Removed by hand (by a suitably licenced and experienced bat ecologist) and placed in a suitable vegetation location >1.5m above ground level in the surrounding hedgerows (e.g. on the stable trunk branches of a mature tree), or
- The roost feature will be removed by section from the tree and place in a suitable location, as above.

3.6 Other Bat Specific Mitigation Measures

During the Construction Phase the ECoW will be responsible for ensuring the mitigations prescribed in this document are adhered to. The Contractor's ECoW will liaise directly with the Project Ecologist appointed by

Kildare County Council to oversee the ecological aspects of the work. A checklist will be filled in on a weekly basis to show how the measures above have been complied with. Any environmental incidents or non-compliance issues will immediately be reported to the project team.

In the Operational phase, Kildare County Council will be responsible for the commission of a suitably experienced ecologist to monitor the effectiveness of Bat boxes.

4 ECOLOGICAL SURVEY AND SITE ASSESSMENT

4.1 Methodology

4.1.1 Desk Study

Relevant information within the biodiversity study area was collected through a detailed desktop review in July 2024, of existing studies and datasets. Sources of information that were used to inform the desk study assessment included:

- Information on ranges of species populations and habitats in Volume 1, 2 and 3 of NPWS' Status of EU Protected Habitats and Species in Ireland (NPWS, 2019 a, b, c);
- Mapping of designated sites for nature conservation for relevant sites in County Dublin, County Kildare, and beyond, as relevant, available online from the NPWS;
- Distribution records for protected species and habitats (including suitability index for bats) held online by the National Biodiversity Data Centre (NBDC) [1], NPWS[2], Heritage Council[3] and Doogue *et al*. (1998);
- Checklists of protected and threatened species in Ireland (Nelson *et al*., 2019);
- Red lists for rare and threatened Irish species (Curtis and Gough, 1998; Fitzpatrick *et al*., 2006; Marnell *et al*., 2009; Regan *et al*., 2010; King *et al*., 2011; Clarke *et al*., 2016; Wyse Jackson *et al*., 2016; Marnell *et al*., 2019; Gilbert *et al*., 2021);

4.1.2 Field Surveys

To inform the assessment, detailed field surveys were undertaken by qualified professional ecologists between 2020 and 2025, as outlined in **Table 4-1**. Detailed surveys were identified following the completion of preliminary ecological site assessment surveys. All field surveys were undertaken using professional interpretation and application of the guidance, systems, and methods referred to in the text describing each survey. Reference was also made to the NRA's Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Developments (NRA, 2009a) in relation to appropriate survey seasons and methods for relevant protected species.

[1] Assessing records up to 10 years old (from date of search), for an area of 5 km from the proposed Project site. Available online at: https://maps.biodiversityireland.ie/Map. Accessed 27 June 2024.

[2] Available online at: https://dahg.maps.arcgis.com/apps/webappviewer/index.html?id=71f8df33693f48edbb70369d7fb26b7e. Accessed 1 July 2024.

[3] Available online at: https://www.heritagemaps.ie/WebApps/HeritageMaps/index.html. Accessed 1 July 2024.

Table 4-1: Summary of Bat Field Surveys Completed

Field survey focus	Extent of survey	Overview of survey	Surveyors	Survey date(s)
Bats – suitability for roosting, commuting and foraging habitats	Extent of Proposed Scheme and environs	2022 suitability assessments completed with cognisance of the Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition) (Collins, 2016). 2024 suitability assessments completed with cognisance of the 4th edition of these guidelines (Collins, 2023).	RPS Ecology	May 2022, April/May 2024
Bats – aerial inspection survey	Trees assessed as Moderate during ground-level assessment.	Tree climbing was carried out by ecologists with cognisance of the 4th edition of these guidelines (Collins, 2023)	RPS Ecology	August 2024
Bats – internal building inspection	Structure assessed as having moderate suitability for roosting bats	Internal building inspection was carried out by ecologists with cognisance of the 4th edition of these guidelines (Collins, 2023)	RPS Ecology	July 2024
Bats – emergence/ re-entry surveys	2022: trees identified as having moderate or higher roosting suitability. 2024: a building identified as having roosting suitability.	2022 surveys completed with cognisance of the Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition) (Collins, 2016). 2024 surveys completed with cognisance of the 4th edition of these guidelines (Collins, 2023).	RPS Ecology	August 2022, August/September 2024
Bats – activity	Bat activity transects covered the extent of Proposed Scheme and environs. Static bat detector surveys were at a single location on each bank of the Liffey in 2022. Updated static bat detector surveys were carried out in 2025 at a single location on each bank of the Liffey and 2 additional locations were monitored along the Scheme.	Activity assessments completed with cognisance of the Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016) and the Bat Mitigation Guidelines for Ireland (Marnell *et al.*, 2022)	RPS Ecology	May to September 2022 April to August 2025

4.1.3 Limitations

Assessment of trees within privately owned gardens east of the R405 was not possible due to accessibility. To reduce any deficiency in the baseline, assessments were carried out using binoculars from the R405. These trees are not proposed for removal but may be within the zone of influence of the Proposed Scheme. As a result, a precautionary approach has been applied to the impact assessment when considering bats in these trees. This limitation is acknowledged and incorporated into the assessment and is deemed to not affect the certainty or predictability of the assessment.

For the internal building inspection on St. John of Gods land, access to the building was restricted to a one-hour timeframe. As a result, the entirety of the building could not be thoroughly internally surveyed. The most likely potential entrances and roosting features were prioritised in the inspection. Access to the lands surrounding the building in St John of Gods property could not be granted for the August emergence survey,

so vantage points from the neighbouring service station property were used, providing incomplete coverage of the building. Complete coverage of the building was obtained during the September survey. These limitations are accounted for in the preliminary roost assessment. As a result, a precautionary approach has been applied to the impact assessment when considering bats in this structure.

Two bat detectors were deployed and were rotated on a fortnightly basis across 4 survey locations for the static bat detector survey period in 2025 (April to August 2025). During the survey period, one static bat detector was stolen and resulted in a loss of data. Further monitoring of this location was discontinued due to concerns over the security of the equipment. This data loss limitation is acknowledged and incorporated into the assessment and is deemed to not affect the certainty or predictability of the assessment.

4.2 Bat Survey Results

4.2.1.1 Commuting and Foraging

Habitats in the surrounding area were classified as being of high value to commuting and foraging bats. The NBDC maps landscape suitability for bats based on Lundy *et al*. (2011). The map provides a habitat suitability index which ranges from 0 to 100, with 0 being least favourable and 100 most favourable for bats. **Table 4-2** gives the suitability of the study area for each Irish bat species (based on NBDC). The Proposed Scheme is within two areas of assessment and the overall assessment of habitat suitability at the west end was 33 and at the east was 29.78. The riparian and broadleaf woodland habitat around the River Liffey is a particularly favoured habitat. The NBDC records of bat species within 5 km of the Proposed Scheme are detailed in **Table 4-3**.

Table 4-2: Suitability of the Study Area for Bat Species (based on NBDC data)

Common Name	Scientific Name	Suitability Index	
		West	East
All bats	-	33	29.78
Soprano pipistrelle	*Pipistrellus pygmaeus*	41	37
Brown long-eared bat	*Plecotus auritus*	46	44
Common pipistrelle	*Pipistrellus pipistrellus*	51	47
Lesser-horseshoe bat	*Rhinolophus hipposideros*	0	0
Leisler's bat	*Nyctalus leisleri*	47	44
Whiskered bat	*Myotis mystacinus*	23	23
Daubenton's bat	*Myotis daubentonii*	33	29
Nathusius' pipistrelle	*Pipistrellus nathusii*	13	5
Natterer's bat	*Myotis nattereri*	43	39

Table 4-3: NDBC Bat Species Results

Species name	Record count	Date of last record
Brown Long-eared Bat (*Plecotus auritus*)	13	26/05/2021
Daubenton's bat (*Myotis daubentonii*)	355	26/08/2021
Lesser noctule (*Nyctalus leisleri*)	57	02/06/2020
Natterer's bat (*Myotis nattereri*)	8	14/09/2018
Pipistrelle (*Pipistrellus pipistrellus sensu lato*)	10	29/07/2022
Soprano pipistrelle (*Pipistrellus pygmaeus*)	37	02/06/2020
Whiskered bat (*Myotis mystacinus*)	1	22/07/2008

4.2.1.1.1 Bat Activity Transect Surveys

Bat activity transects were walked in May 2022, June 2022 and September 2022 (see **Figure 4-1**). The dates, timing, and weather conditions for the three surveys are detailed in **Table 4-4**. Data from the bat activity transects indicate that the site offers a foraging and commuting resource for soprano pipistrelle

(34.1% of passes), Leisler's bat (31.2% of passes) and common pipistrelles (25.0% of passes), with relatively few records of *Myotis* (three passes) and brown long-eared bat (two passes) (**Table 4-5**).

Table 4-4: Dates, timings and weather conditions for Bat Activity Transect Surveys

Date	Sunset/ Sunrise Time	Start Time of Survey	End Time of Survey	Cloud Cover (100%)	Precipitation	Wind (0-7)	Temperature (°C)
17/05/2022	21:23	21:23	23:23	50	None	1	12
08/06/2022	21:48	21:48	23:48	10	None	2	16
29/09/2022	07:26	05:26	07:26	100	Moderate, consistent	2-4	9-12

Table 4-5: Bat Activity Transect Results including Incidental Records

Species	Number of Passes	% of Passes
Soprano pipistrelle *(Pipistrellus pygmaeus*)	154	34.1
Leisler's bat (*Nyctalus leisleri*)	141	31.2
Common pipistrelle (*Pipistrellus pipistrellus*)	113	25.0
Pipistrelle species (*Pipistrellus* sp.)	39	8.6
Myotis species (*Myotis* sp.)	3	0.7
Brown long-eared bat (*Plecotus auritus*)	2	0.4
Total	**452**	**100**

4.2.1.1.2 Bat Activity Static Detector Surveys 2022

The static detector survey nights per month and per location are detailed in **Table 4-6**. A total of four bat species (Leisler's bat, Nathusius' pipistrelle, common pipistrelle and soprano pipistrelle) were identified foraging and/or commuting in the vicinity of the static detector deployment locations. In addition, unidentified *Myotis* species and *Pipistrellus* species were also recorded (**Table 4-7**).

Table 4-6: Static Detector Deployment 2022 Nights per Month

Location (ITM)	May	June	July	August	September	Total
North bank (696691, 732296)	15	25	30	3	8	81
South bank (696792, 732347)	5	23	28	3	11	70

Table 4-7: Bat Activity Static Detector Results 2022

Species	Number of Passes	% of Passes
Soprano pipistrelle (*Pipistrellus pygmaeus*)	8990	39.1
Leisler's bat (*Nyctalus leisleri*)	5610	24.4
Common pipistrelle (*Pipistrellus pipistrellus*)	4387	19.1
Pipistrelle species (*Pipistrellus* sp.)	3138	13.7
Myotis species (*Myotis* sp.)	833	3.6
Nathusius' pipistrelle (*Pipistrellus nathusii*)	26	0.1
Total	**22984**	**100**

4.2.1.1.3 Bat Activity Static Detector Surveys 2025

The static detector survey nights per month and per location are detailed in **Table 4-8**. Static detector locations are illustrated in **Figure 4-1**. Two bat detectors were deployed and were rotated on a fortnightly basis across 4 survey locations for the static bat detector survey period in 2025 (April to August 2025). Static bat detector surveys were carried out in 2025 at a single location on each bank of the Liffey as per the 2022 surveys. Two additional locations were also monitored along the Scheme.

Table 4-8: Static Detector Deployment 2025 Nights per Month

Location (ITM)	April	May	June	July	August	Total
Location 1 North bank (696822, 732430)	2	12	10	15	-	39
Location 2 South bank (696790, 732335)	2	12	Note 1	Note 1	Note 1	14
Location 3 Simmonstown Stud lands (697658, 731688)	15	16	18	-	17	66
Location 4 near Loughlinstown Road Roundabout (698161, 731368)	15	16	-	15	-	46

" – " indicates no data collection

Note 1: Static Bat detector was stolen and monitoring of this location was discontinued.

A total of five bat species (Leisler's bat, Nathusius' pipistrelle, common pipistrelle, soprano pipistrelle and Brown long-eared bat) were identified foraging and/or commuting in the vicinity of the static detector deployment locations. In addition, unidentified Myotis species and Pipistrellus species were also recorded (**Table 4-9**).

Table 4-9: Bat Activity Static Detector Results 2025

Species	Number of Passes	% of Passes
Soprano pipistrelle (*Pipistrellus pygmaeus*)	1342	8.5
Leisler's bat (*Nyctalus leisleri*)	7211	45.5
Common pipistrelle (*Pipistrellus pipistrellus*)	6897	43.5
Pipistrelle species (*Pipistrellus* sp.)	184	1.2
Myotis species (*Myotis* sp.)	185	1.2
Nathusius' pipistrelle (*Pipistrellus nathusii*)	36	0.2
Total	**15855**	**100**

Figure 4-1: Bat activity surveys and PRFs

Project:
Celbridge Hazelhatch
Mobility Corridor

A TETRA TECH COMPANY
West Pier Business Campus,
Dun Laoghaire,
Co Dublin, Ireland.

Issue Details

File Identifier:	MDT0902-RPS-00-XX-DR-Z-AG-1025		
Status: S0	**Revision:** P05	**Model File Identifier:**	
Drawn By:	NR	**Scale:**	1:4,000 @ A4
Checked By:	MS	**Date:**	31/07/2024
Approved By:	LG	**Projection:**	ITM

Figure 4-1: Bat activity surveys and PRFs

Project:
Celbridge Hazelhatch
Mobility Corridor

West Pier Business Campus,
Dun Laoghaire,
Co Dublin, Ireland.

Issue Details

File Identifier:	MDT0902-RPS-00-XX-DR-Z-AG-1025		
Status: S0	**Revision:** P05	**Model File Identifier:**	
Drawn By:	NR	**Scale:**	1:4,000 @ A4
Checked By:	MS	**Date:**	31/07/2024
Approved By:	LG	**Projection:**	ITM

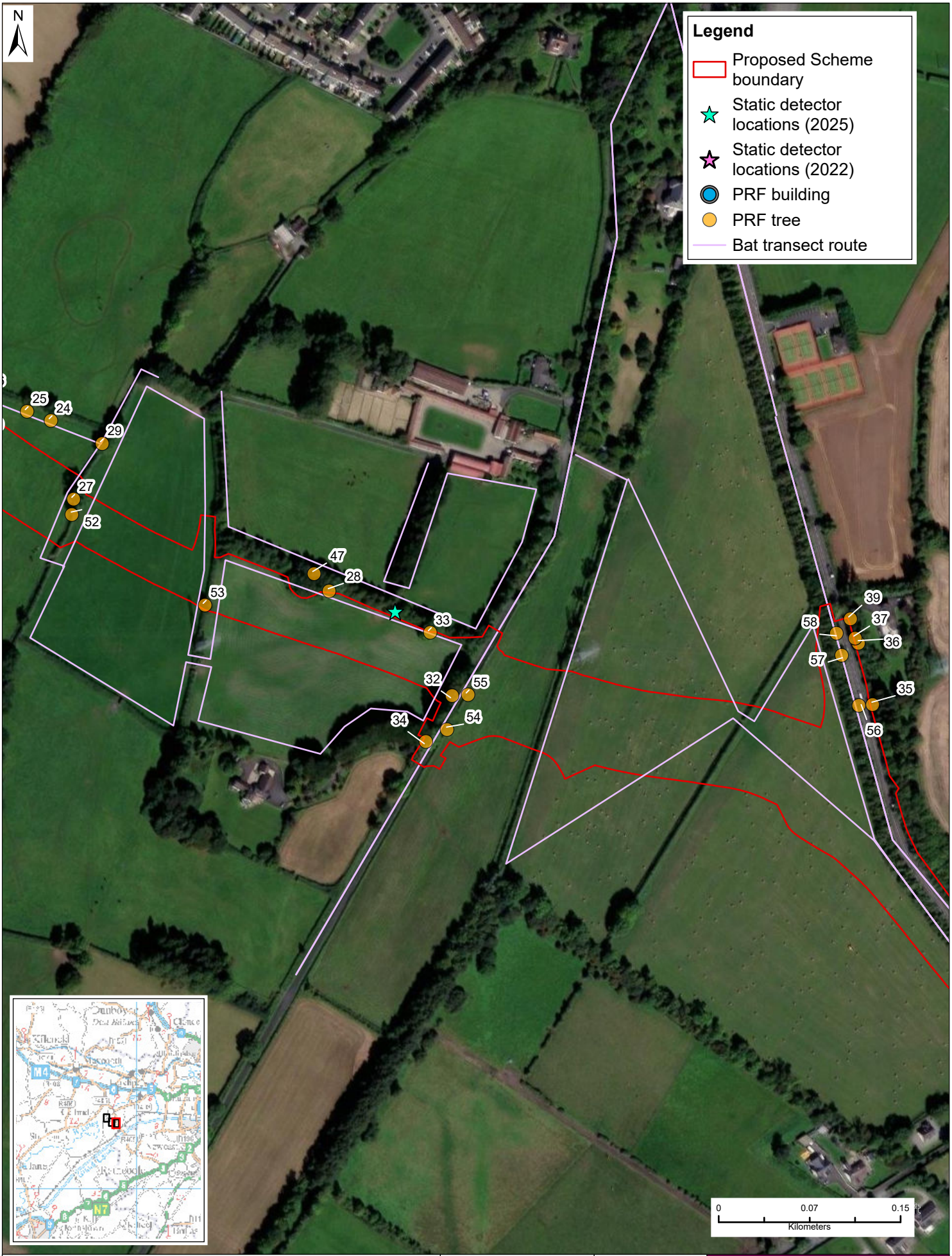

Figure 4-1: Bat activity surveys and PRFs

Project:
Celbridge Hazelhatch
Mobility Corridor

West Pier Business Campus,
Dun Laoghaire,
Co Dublin, Ireland.

[redacted]

Issue Details

File Identifier:	MDT0902-RPS-00-XX-DR-Z-AG-1025		
Status: S0	**Revision:** P05	**Model File Identifier:**	
Drawn By:	NR	**Scale:**	1:4,000 @ A4
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Approved By:	LG	**Projection:**	ITM

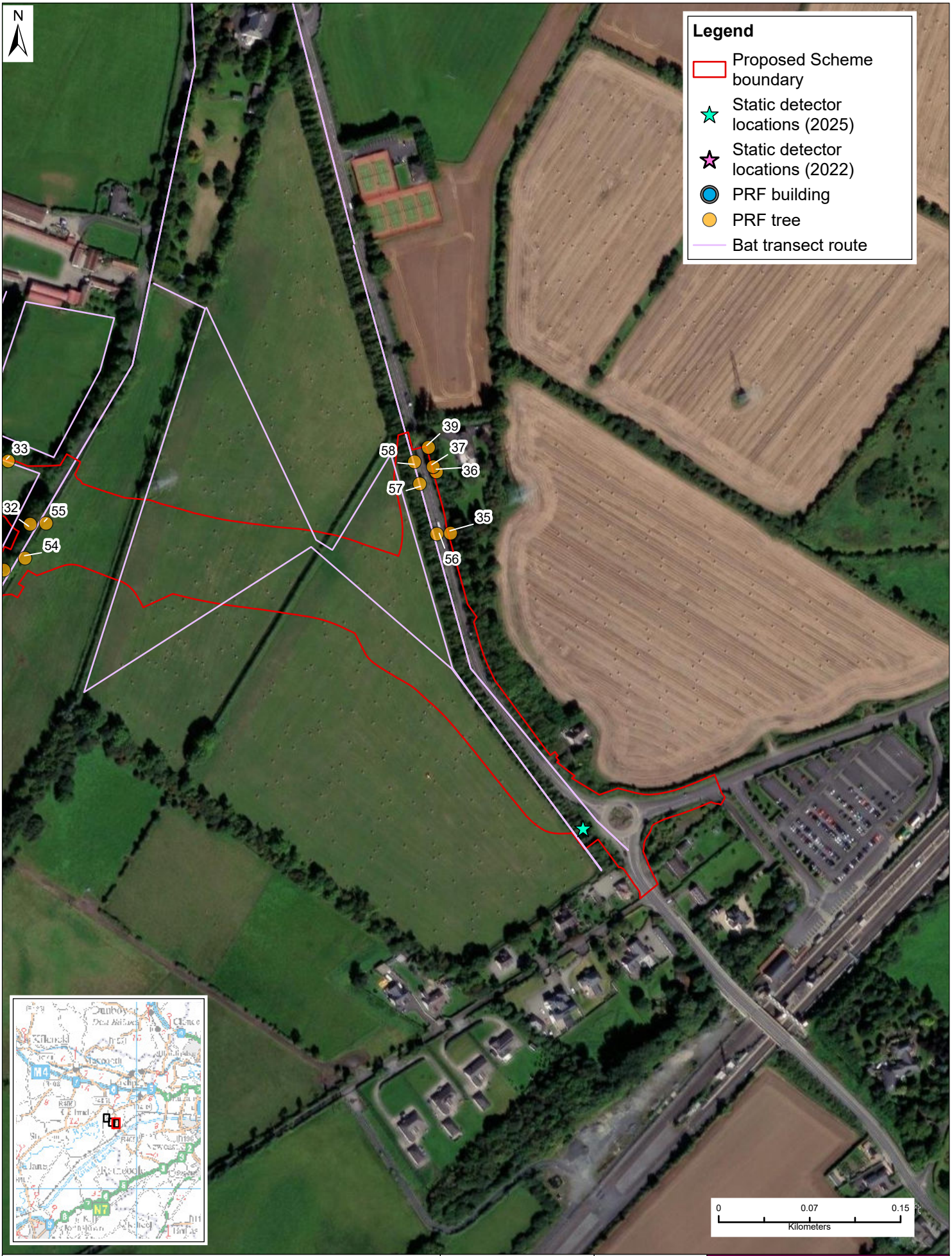

Figure 4-1: Bat activity surveys and PRFs

Project:
Celbridge Hazelhatch
Mobility Corridor

West Pier Business Campus,
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File Identifier:	MDT0902-RPS-00-XX-DR-Z-AG-1025		
Status: S0	Revision: P05	Model File Identifier:	
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Checked By:	MS	Date:	31/07/2024
Approved By:	LG	Projection:	ITM

4.2.1.2 Roosting

4.2.1.2.1 Structures

4.2.1.2.1.1 Preliminary Roost Assessment

Of the structures proposed for removal, one was determined to have moderate suitability for roosting bats (ITM 696730, 732467). The features observed on this building are detailed in **Table 4-10**. All other structures proposed for removal were determined to have no suitability for roosting bats.

Table 4-10: Results of the Building Preliminary Roost Assessment

Feature	Description	Suitability
Feature 1 	Small opening where plaster meets soffit at the north-east corner of the building.	**Low**
Feature 2 	Gap between facia and wall at the north corner of the building.	**Low**
Feature 3	Gap between facia and roof at the north-east of the building.	**Low**
Feature 4 	Gap between facia and roof at the south-west end of the building.	**Low**

4.2.1.2.1.2 Internal Building Inspection

An internal building inspection of the single building which was determined to have roosting potential was carried out on 08 July 2024. Droppings were identified in the attic space of the building, but at least some of these were confirmed to be of mouse origin, so they were likely to all be of mouse origin. Probable rat droppings were also identified.

From within the attic, natural light entered the building through openings at both the northern and southern perimeters. There were cavities between the concrete block end walls and the soffit. The endoscope was used to access these cavities, concentrating on the corners at which potential entrances were identified. The potential entrances were not observed with the endoscope, but time constraints limited the survey effort. No bat evidence was identified in the endoscope footage. Near the centre of the attic space, there was a gap in the lining of the roof that exposed a cavity. The endoscope was used to inspect this, and no bat evidence was identified.

From the outside of the building, the endoscope was used to inspect the northern potential entrances. Due to time restrictions, the potential entrance at the southern section could not be assessed. No evidence of roosting bats was recorded in the features. Feature 1 provided an opening with direct access to the wider attic space. In Features 1 and 3, apparent dead plant material may indicate previous use by nesting birds. The presence of cobwebs at these potential entrance points may also indicate lack of use by roosting bats.

Likely suitable entrances were identified, and the attic space offers suitable areas for roosting bats. It is also likely that suitable roosting features and entrances exist in the areas which could not be surveyed.

There was no definitive evidence observed to indicate use of this building by roosting bats. The likely entrances and roosting areas did not appear to be in use. As a result of the survey, a **moderate** potential roosting suitability was determined due to the low disturbance, suitable access points, and presence of roosting features. In line with guidance and with cognisance of the limitations of this preliminary roost assessment, emergence surveys were recommended.

4.2.1.2.1.3 Emergence Surveys

Emergence surveys of the single building which was determined to have roosting potential were carried out on 28 August and 23 September 2024. As discussed in **Section 4.1.3**, because of access restrictions an incomplete view of the building was achieved during the August survey but a complete view was achieved during the September survey. No emergence was observed during these surveys and an extremely low level of bat activity was observed in the vicinity of the building. The dates, timing, and weather conditions for the emergence surveys are detailed in **Table 4-11**.

Table 4-11: Dates, Timings and Weather Conditions for Building Emergence Surveys

Date	Sunset/ Sunrise Time	Start Time of Survey	End Time of Survey	Cloud Cover (100%)	Precipitation	Wind (0-7)	Temperature (°C)
28/08/2024	20:23	20:08	22:23	10	None	2	16
03/10/2024	18:55	18:40	20:55	65	None	3	-

4.2.1.2.2 Trees

4.2.1.2.2.1 Ground Level Tree Assessment

Of the trees within or immediately adjacent to the Proposed Scheme, six trees were classified as being potential roost features for multiple bats (PRF-M) and 53 trees or tree groups were classified as being potential roost features for individual bats (PRF-I). The results of the ground level tree assessment are detailed in **Appendix B Ground Level Tree Assessment**.

4.2.1.2.2.2 Emergence and re-entry Surveys

Emergence and re-entry surveys were carried out on BT17, BT27 and BT29 in 2022. Two soprano pipistrelles were observed re-entering BT17 on 16 August 2022. One common pipistrelle was observed emerging from BT27 on 18 August 2022. Approximately 20 common pipistrelles were incidentally seen emerging from BT29 during a transect survey on 8 June 2022. These surveys confirmed the presence of

roosting bats in BT17, BT27 and BT29. During the emergence and re-entry surveys, incidental bat activity was recorded (see **Table 4-12**). The dates, timing, and weather conditions for the emergence and re-entry surveys are detailed in **Table 4-13**.

Table 4-12: Incidental Bat Activity Records from Emergence and re-entry Surveys

Species	Number of Passes	% of Passes
Common pipistrelle (*Pipistrellus pipistrellus*)	603	45.6
Soprano pipistrelle (*Pipistrellus pygmaeus*)	397	30.0
Leisler's bat (*Nyctalus leisleri*)	270	20.4
Pipistrelle species (*Pipistrellus* sp.)	36	2.7
Myotis species (*Myotis* sp.)	13	1.0
Brown long-eared bat (*Plecotus auritus*)	3	0.2
Nathusius' pipistrelle (*Pipistrellus nathusii*)	1	0.1
Total	**452**	**100**

Table 4-13: Dates, Timings and Weather Conditions for Tree Emergence and re-entry Surveys

Date	Tree	Sunset/ Sunrise Time	Start Time of Survey	End Time of Survey	Cloud Cover (100%)	Precipitation	Wind (0-7)	Temperature (°C)
02/08/2022	BT17	21:19	21:04	23:19	40	None	1	22
04/08/2022	BT27, BT29	21:16	21:01	23:16	70	None	3	15
16/08/2022	BT17	06:09	04:09	06:26	90	None	2	15
18/08/2022	BT27, BT29	06:12	04:12	06:27	60	None	5	15

4.2.1.2.2.3 Tree Climbing Assessment

With the updated bat guidance advising aerial checks of all trees classified as PRF-M, six trees were identified to be climbed. Of these trees, one was reassessed as 'NONE', four were reassessed as PRF-I, and one remained PRF-M (**Table 4-14**). However, BT17 and BT27, which were assessed as PRF-I during the aerial survey, were confirmed to have roosting bats in 2022. No evidence of bats was recorded during this survey.

Table 4-14: Results of aerial tree survey

Tree	Description	Suitability
BT11	• Transverse snap PRF is suitable for an individual bat in fair weather (PRF-I). • Dense living ivy lacks suitable cavities/structure to support roosting bats, however it may have potential to conceal cavities on the tree. • Pre-fell inspection recommended.	PRF-I
BT17	• Partially detached ivy is present around most aspects of the tree. There is a small cavity between the tree stem and a single clump of partially detached ivy approximately 2.5 m high on the south-eastern aspect. This cavity travels for approximately 15 cm upwards, however it is partially exposed to wind and water ingress. This feature has potential to support an individual bat or small number of bats during fair weather. • All other areas of ivy which appear to have potential cavities form level are superficial dark shadows and do not provide sufficient cavities for roosting bats.	PRF-I
BT24	• Knothole located at the end of a limb has a small cavity which has roosting suitability for an individual bat in fair weather. • Other knotholes were too small or were superficial. • Pre-fell inspection recommended.	PRF-I

Tree	Description	Suitability
BT27	• Lower knothole (4 m high) on the end of a limb on the tree's southern aspect has a cavity which is of suitable size and characteristics to support multiple bats (PRF-M). • Transverse snap PRF (4.5 m high) has a small partially exposed cavity which has potential to support individual bats in fair weather (PRF-I). • Rot hole/decay cavity is of suitable size and has characteristics to support multiple bats (PRF-M).	PRF-M
BT29	• Dense living ivy may have potential to conceal cavities on the tree.	PRF-I
BT58	• All features are superficial and are not suitable to support roosting bats.	NONE

4.2.1.2.3 Combined Assessment

Emergence, re-entry and transect surveys confirmed roosts at BT17, BT27 and BT29. BT29 will be retained, while BT17 and BT27 are proposed for removal as part of the Proposed Scheme. 55 trees or tree groups were assessed as PRF-I in the context of both the ground level and aerial surveys. The building at St. John of Gods was assessed as having moderate roosting suitability in the context of the internal inspection, but in the context of the subsequent emergence surveys, it was not deemed to have roosting bats.

5 EVIDENCE TO SUPPORT THE DEROGATION TESTS

5.1 Test 1 - Reason for Derogation

As per Article 16 of the Habitats Directive which is transposed into Irish law by Regulation 54(2) (b) of the EC (Birds and Natural Habitats) Regulations 2011, this derogation licence is being sought "*In the interests of public health and public safety,"* for the following reasons:

- Improving connectivity to Hazelhatch train station
- Improved safety for pedestrians and cyclists
- Reduced traffic congestion in Celbridge town
- Shorter and safer journeys to Hazelhatch train station

As part of the design development of the Scheme, a Road Safety Impact Assessment was undertaken. The road safety problems on the existing network identified from the RSA are summarised below:

- **High traffic volumes** – The town centre of Celbridge including Main Street, the River Liffey bridge and the associated junctions to the north and south have limited capacity and experience significant traffic congestion, particularly during peak travel periods. This leads to unreliable journey times, driver frustration and possible erratic or unsafe manoeuvres.
- **Poor pedestrian facilities** - There are limited pedestrian facilities within the study area on English Row (R403), River Liffey bridge, Newtown Road and Hazelhatch Road (R405). The bridge footpath is narrow and of insufficient width to allow two pedestrians to pass or safe access for mobility impaired pedestrians. A pedestrian bridge is located south of the main bridge, but this is not within the desire line of pedestrians traveling from Maynooth Road and Main Street to the south of Celbridge and Hazelhatch train station.
- **Poor cycle facilities** - There are limited cycle facilities within the study area, especially along the south of Maynooth Road, Main Street, River Liffey bridge and the Hazelhatch Road. The absence, narrow or discontinuous nature of cycle facilities may lead to cyclists traveling within the carriageway where they are at an increased risk of being struck by a vehicle.
- **Reduced cross section** – The narrow cross section of the River Liffey bridge, English Row and the south of Maynooth Road presents a road safety challenge where goods vehicles, local traffic, pedestrians and cyclists are concentrated onto narrow sections where numerous private accesses and utility poles are also present.
- **Substandard road alignment** – In a number of locations the road alignment is substandard in terms of junction layout alignment and horizontal and vertical geometry. There are a number of hidden accesses to private dwellings which have obscured visibility to emerging traffic. There is also poor forward visibility on the bridge due to the vertical geometry, especially to the pedestrian crossings at either end of the bridge.

Collision data was obtained from the Road Safety Authority (RSA) database for injury collisions over a 9-year period between 2008 – 2016. The available data was reviewed to gain an understanding of inherent safety issues arising from the layout and alignment of the road network. The nine-year assessment of the Road Safety Authority collision data between 2008 and 2016 revealed there were 87 injury collisions within the study area equating to 9.7 injury collisions per year. Of these, 1 collision was fatal, 8 were serious and 78 were minor injury. Of the 8 serious injury collisions in the study area, 3 of these involved a cyclist.

The principal collision problems identified primarily involved vulnerable road users with 18 collisions involving cyclists, 17 collisions involving pedestrians and 4 collisions involving motorcycles. Collisions involving vulnerable road users accounted for 44.8% of the injury collisions. There were also 15 rear end collisions and 13 single vehicle collisions. Six collision clusters were identified on the River Liffey bridge, Main Street, R403 Clane Road and Maynooth Road. These collision clusters are considered consistent with the lack of vulnerable road user facilities, congestion issues, rural-urban transitions or alignment in these locations.

Implementation of a second river crossing and link road to Hazelhatch train station will likely reduce the frequency of collisions. The Scheme will also improve multi-modal transport integration by reducing car journey times between Celbridge town centre and Hazelhatch Train Station. It encourages a transport modal shift by providing a high-quality pedestrian and cycle link to the train station as well as reduce social exclusion by enhancing accessibility to rail services for non-car-owners.

5.2 Test 2 – Absence of Alternative Solutions

5.2.1 Need for the Proposed Scheme

The project addresses the objective of improving the strategic transport network in Celbridge. Provision of a second river crossing will facilitate future reduction in traffic congestion and improve the road safety performance of Celbridge. The existing River Liffey Bridge is substandard in terms of cross-sectional width, vertical geometry and junction layout on both the north and south sides. Celbridge's single river crossing point results in a lack of circulation and permeability within the town centre and throughout the general road network in the study area.

The key link roads that lead to and from the existing River Liffey bridge in Celbridge are the R403, R405 and the L1016. These legacy roads are reflecting their origins, era of construction and the staged nature of road improvements over the years. The horizontal geometry is sub-standard at numerous points throughout the existing road network but particularly along R405 Main Street / Maynooth Rd and L1016 Newtown Road. The existing cross sections vary from narrow carriageway lanes bound by kerbed footpaths to wider lanes with hard strips and advisory cycle lanes in places. Pedestrian facilities are also inconsistent in width and finish, often pinch pointed by the historic boundary walls.

The project addresses the objective to improve multi-modal transport integration by reducing car journey times between Celbridge town centre and Hazelhatch Train Station. It encourages a transport modal shift by providing a high-quality pedestrian and cycle link to the train station as well as reduce social exclusion by enhancing accessibility to rail services for non-car-owners. The project improves options for active travel within the study area by improving journey ambience for pedestrian and cycle journeys.

5.2.2 Alternatives Considered

At Stage 1, a total of ten do-something route options were considered, along with do-nothing, do-minimum and traffic management alternatives. It was determined that a do-something option was required for the project. All options were assessed under the criteria of engineering, economy and environment.

Five out of the total of ten route corridor options were shortlisted at Stage 1 Preliminary Option Assessment and were brought forward to Stage 2 assessment. These were Options A, A1, B, C and E. The route corridors were presented to the public during a Non-Statutory Public Consultation period (PC 1) which ran from the 12th of February to 11th March 2021[4].

Subsequent to this, a feasible combination route corridor was identified by combining part of Option C with part of Option E (Now referred as Option C-E). These six options were assessed in Stage 2 under the criteria of Economy, Safety, Environment, Accessibility & Social Inclusion, Integration, and Physical Activity. Following the Appraisal process of all the shortlisted options, an Emerging Preferred Option was identified (Option C). This was presented to the public during the second non-statutory public consultation period which ran from 28th March until 6th May 2022 (PC 2)[5].

Taking into consideration the feedback received from the members of the public, the presented Route Corridor Option C was subsequently adjusted on the northern end of the route between the service station and the garden centre adjacent to Celbridge Abbey. The adjustment allowed for a greater separation between the proposed road and the existing residential dwellings of the Abbeyfarm housing estate.

[4] https://consult.kildarecoco.ie/en/consultation/celbridge-hazelhatch-link-road-public-consultation-scheme-options

[5] https://consult.kildarecoco.ie/en/consultation/celbridge-hazelhatch-link-road-public-consultation-emerging-preferred-route

Adjusted Option C is the Final Preferred Option and preliminary design has been advanced for this option. The alignment in the application for which planning consent is sought represents this Preferred Option and has been informed by the comprehensive consultation process described above.

5.3 Test 3 – Impact of a derogation on Conservation Status

The Proposed Scheme includes constructing a new road approximately 2 km long, connecting Clane Road to Loughlinstown Road Roundabout near Hazelhatch Train Station. The magnitude of the effect is the loss of l of two ash trees, coded BT17 and BT27, in which bat roost emergence/re-entry surveys confirmed bat roosts of two soprano pipistrelles and one common pipistrelle, respectively.

According to "The Status of EU Protected Habitats and Species in Ireland (NPWS, 2019c) the soprano pipistrelle is estimated to have a favourable reference range of one million individuals. This species is concluded to have a **Favourable (FV)** status in Range; Population; Habitats for the species; Future prospects; and Overall assessment of conservation Status. The overall trend in conservation Status is stated as **improving**. The common pipistrelle is estimated to have a favourable reference range of over one million individuals. This species is concluded to have a **Favourable (FV)** status in Range; Population; Habitats for the species; Future prospects; and Overall assessment of conservation Status. The overall trend in conservation Status is stated as **improving** (NPWS, 2019c).

The effect of the Proposed Scheme is the removal of a roosting feature for two soprano pipistrelles and one common pipistrelle, which represents the loss of roosting sites for ≤0.0002% of the estimated favourable reference rage of either species. Through assessing the roosting site losses in terms of the favourable conservation status of both species, the Proposed Scheme is not deemed to be detrimental to the maintenance of the populations or to have a significant negative effect on the populations.

6 MONITORING THE IMPACTS OF THE DEROGATIONS

Monitoring the impact of the derogation will be demonstrated through:

- The implementation of measures detailed in Section 3 of this document;
- Completion of derogation licence return report, as outlined as a condition of the derogation licence; and
- Distribution the results of the monitoring of the effectiveness of bat boxes (Section 3.6) with the wildlife licencing unit.

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Appendix A Description of the Proposed Scheme

2 DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1 Site Location

The project is situated in the south west of Celbridge, County Kildare. Refer to drawing **MDT0902-RPS-01-XX-DR-Z-IX0001** (Location Plan) and **Figure 2-1** below.

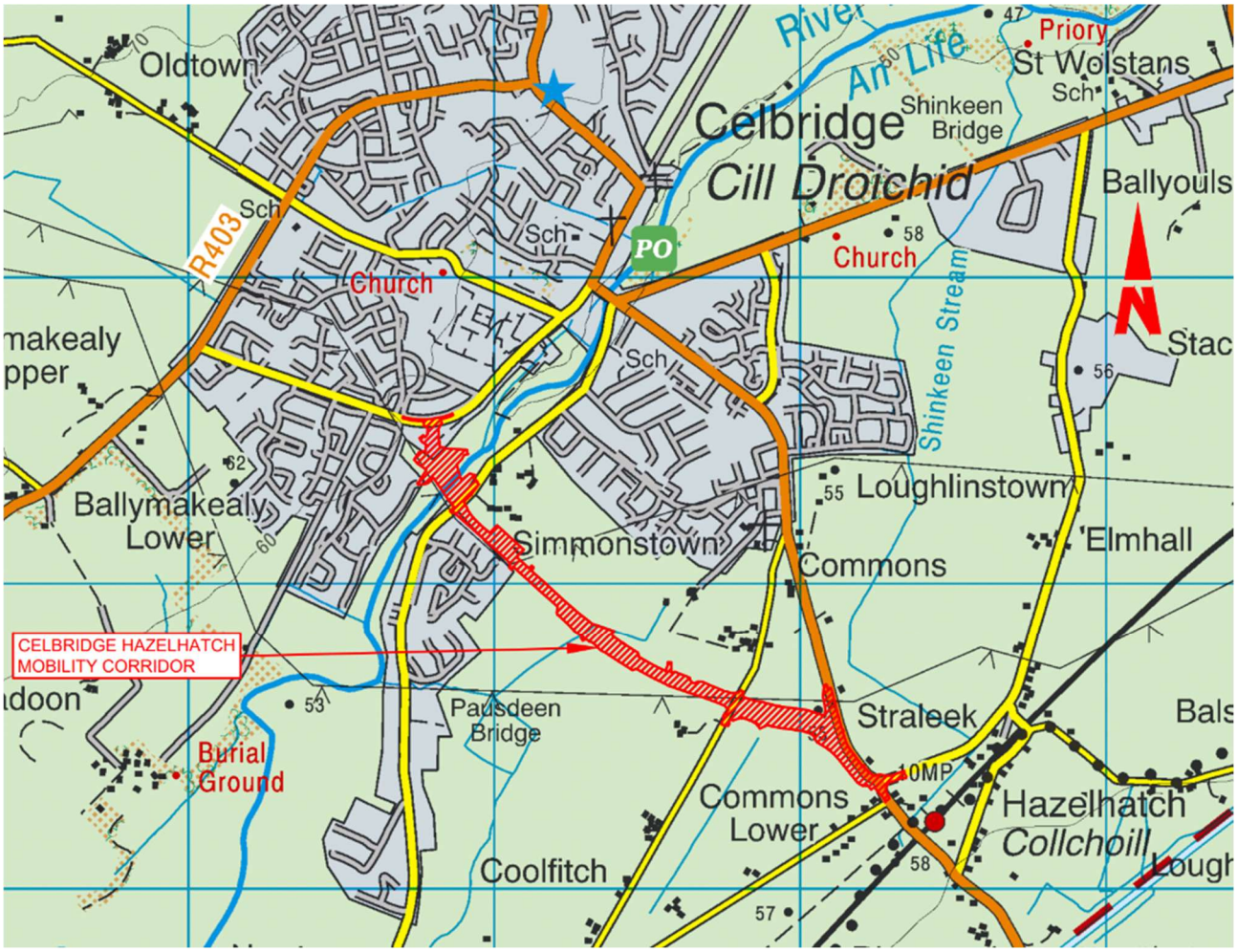


Figure 2-1 Site Location

2.2 Description of Route

The proposed route is approximately 2km long, beginning at a proposed junction with Clane Road and heading in a south easterly direction, predominantly through greenfield lands until it ties into the existing R405 Hazelhatch Road, before terminating at the existing Loughlinstown Road Roundabout near Hazelhatch Train Station. The route also includes proposed junctions with Newtown Road, Simmonstown Manor Road and R405 Hazelhatch Road. A new bridge crossing is required over the River Liffey, located approximately 200m south of the beginning of the route at Clane Road.

2.3 Road Cross-Section

The proposed road cross-section for the project's mainline is a single carriageway with 3.5m wide lanes in each direction for a total pavement width of 7.0m.

The majority of the route includes 2.0m wide one-way cycle tracks and 2.0m wide footpaths on both sides of the road. The portion of the route between Hazelhatch Road Junction and Loughlinstown Road roundabout includes a 2.0m wide footpath and 3.0m wide two-way cycleway on the northbound side of the road only due to space restrictions and desire line requirements.

On both sides of the mainline, it is typically proposed to provide a 2.0m wide grassed verge between the cycle facility and the carriageway, and 1.0m wide grassed verge between the back of the footpath and adjacent earthwork slopes. The exception to this is across the proposed River Liffey Bridge, where no additional verge width is proposed between the cycle tracks and the carriageway or between the footpaths and bridge parapets.

2.4 Design Speed, Speed Limit and Geometry

The design speeds and corresponding posted speed limits proposed for the new road are as follows:

- Ch. 0+000 to Ch. 0+350: 50km/h
- Ch. 0+000 to Ch. 1+1959: 60km/h

The road geometry is designed to the standards contained in the Design Manual for Urban Roads and Streets May 2019.

The proposed geometric design for the new road is illustrated on drawings **MDT0902-RPS-01-XX-DR-Z-GE0000-GE0003**.

2.5 Junctions

Junctions are proposed where the new road interfaces with the following existing roads:

- **Clane Road (R403):** At the start of the route, a 3-arm signalised junction is proposed with the existing regional road.
- **Newtown Road (L1016):** At approximately Ch. 0+285, a 4-arm signalised junction is proposed with the existing local road.
- **Simmonstown Manor Road (L5062):** At approximately Ch. 1+420, a priority junction is proposed with the existing local road on the northbound side of the proposed new road. On the southbound side of the road it is proposed to terminate the existing road with a turning head to be provided at the end of the cul-de-sac.
- **Hazelhatch Road (R405):** At approximately Ch. 1+730, a 3-arm signalised junction is proposed with the existing regional road.
- **Loughlinstown Road (L5061):** At the end of the route, minor improvements are proposed to the existing roundabout junction.

All junctions include facilities for pedestrians and cyclists.

2.6 River Liffey Bridge Crossing

A new bridge crossing over the River Liffey is required between approximately Ch.0+170 to Ch. 0+265.

The location of the proposed bridge is illustrated on drawing **MDT0902-RPS-01-XX-DR-Z-BR0001.** The primary function of the bridge is to carry the Celbridge to Hazelhatch Mobility Corridor over the River Liffey. The design life of the structure shall be 120 years.

The proposed River Liffey Bridge will be an integral Single Span Varying Depth Steel Composite Plate Girder Bridge. Being an integral structure, the superstructure is connected monolithically to the substructure. This design enhances durability and reduces maintenance by eliminating expansion joints and bearings. The substructure consists of cast in-situ reinforced concrete abutments, integral with the steel girders and a bridge deck.

The bridge comprises of a single span arrangement with an overall length of 65.5m. It will span across the CFRAM 0.1% Annual Exceedance Probability (AEP) predicted peak flood level (50.53mOD). The 0.1% AEP flood extents are contained within the river's steep bank slopes in the vicinity of the proposed crossing, and the proposed bridge is designed to span above the top of the riverbanks. Hence the proposed structure will not have any impact on the predicted flooding from the River Liffey.

The superstructure consists of weathering steel plate girders, varying in depth (meaning their height changes across the span of the bridge), that act compositely with an in-situ concrete deck slab. Weathering steel

offers significant advantages in terms of durability and maintenance, as it develops a protective rust layer that prevents further corrosion, reducing the need for repainting and extensive upkeep. Fibre Reinforced Concrete (FRC) permanent formwork will span between the girders to support the deck slab, which will be poured in-situ to form the integral structure. Transverse concrete cantilevers will extend from the deck edges to support the parapet and edge beam.

The clear span between abutments is 63.4m, with an out-to-out width of 16.03m and skew angle of 17.5°. The substructure consists of reinforced concrete abutments on shallow footing foundations, reflecting the underlying geotechnical conditions. The design of the bridge structure includes for sufficient headroom (2.7m) for a future active travel route under the bridge for both pedestrians and cyclists on the northern bank of the river (note – this route is not part of Proposed Scheme).

A 1.4m high bespoke parapet system will be implemented, serving as both a vehicle restraint and pedestrian parapet, with N2 Containment Level and mesh infill. These combined systems will be installed on the precast concrete parapet edge beams at the deck edges.

The River Liffey Bridge has the following cross-sectional dimensions as outlined in **Table 2-1** below.

Table 2-1: Proposed Cross-sectional Dimensions of the River Liffey Bridge Crossing

Location	Width (m)
Parapet Edge beam	0.5
Walkway	2.0
Cycleway	2.0
Carriageway westbound	3.5
Carriageway eastbound	3.5
Cycleway	2.0
Walkway	2.0
Parapet Edge beam	0.5
Total	**16.0**

As this is a single span structure, no works will be required within the river channel.

The proposed bridge design is illustrated on drawings **MDT0902-RPS-01-XX-DR-Z-BR1010-BR1012**.

2.7 Land Take

The approximate land take required for the scheme is as follows:

- Permanent land take (including roadbed): 12.4ha
- Temporary land take: 0.7ha

Approximately 15 no. landowners are impacted by this land take as illustrated on drawings **MDT0902-RPS-01-XX-DR-Z-LH0001-LH0003**.

2.8 Access Arrangements

Where lands are severed or existing access arrangements are impacted by the project, appropriate measures will be provided to maintain vehicle access. These Include:

- Ch. 0+060: Junction provided on mainline for replacement access to service station.
- Ch. 0+090: Direct access provided to maintain access to foul water pumping station.
- Ch. 0+105: Junction provided on mainline for access to severed commercial lands.

- Ch. 0+550: Field access provided on mainline for access to severed agricultural lands.
- Ch. 0+605: Field access provided on mainline for access to severed agricultural lands.
- Ch. 0+890: Field access provided on maintenance access road for access to severed agricultural lands. The portion of this maintenance access road between the mainline and field access shall be subject to shared use with the landowner and KCC.
- Ch. 1+175: Field access provided on mainline for access to severed agricultural lands.
- Ch. 1+415: Field accesses provided on either side of Simmonstown Manor Road to severed agricultural lands.
- Ch. 1+490: Culvert to be extended and access track provided to maintain access across watercourse.

Where the project interfaces with existing roads, existing accesses will be retained wherever possible. Works will be carried out as necessary to tie in these existing accesses with the new road surface.

Vehicle access for maintenance of drainage attenuation and pollution control facilities are proposed at the following locations:

- Ch. 0+090: Access provided on mainline (shared with foul water pumping station access) for maintenance of Attenuation Basin 1 and associated pollution control facilities.
- Ch. 0+270: Access provided on Newtown Road for maintenance of Attenuation Basin 2 and associated pollution control facilities.
- Ch. 0+890: Access provided on mainline for maintenance of Attenuation Basin 3, Attenuation Swale 4A and associated pollution control facilities.
- Ch. 0+935: Access provided on mainline for maintenance of Attenuation Swale 4B and associated pollution control facilities.
- Ch. 1+415: Access provided at end of Simmonstown Manor Road for maintenance of Attenuation Basin 5 and associated pollution control facilities.
- Ch. 1+425: Access provided at end of Simmonstown Manor Road for maintenance of Attenuation Swale 6A and associated pollution control facilities.
- Ch. 1+835: Access provided on mainline for maintenance of Attenuation Swale 6B and associated pollution control facilities.

2.9 Drainage

The proposed surface water drainage layouts are illustrated on the drawings **MDT0902-RPS-01-XX-DR-C-DR0000 to DR0007**.

2.9.1 Edge Drainage Systems

The proposed road cross section limits the ability to utilise soft SuDS features at the road edge (filter strips, grass channels) as the primary surface water collection method. As the carriageway is kerbed, the surface water will be collected from the carriageway using kerb and gully drainage systems which may include traditional gully systems, or by combined kerb & drainage systems (CKDS). However, once the surface water is collected, various SuDS features (bio-retention trenches, swales, attenuation basins, infiltration trenches) will treat and attenuate the surface water run-off before it discharges to the receiving watercourse at greenfield run-off rates.

On large embankments, once the surface water is collected, it will discharge to a carrier pipe system beneath the verge and/or footpath and cycle track, and continue through the system where it will eventually discharge to attenuation and treatment basins.

In other locations of large embankments where the attenuation feature is a swale at the base of the road earthworks, the kerb and gully drainage system will discharge directly to the swales without connecting to a carrier pipe system first.

In areas of shallow embankment or cut, or areas where the proposed road is at grade, the kerb and gully drainage systems will discharge to a bio-retention trench (BRT) as shown on **MDT0902-RPS-01-XX-DR-C-DR2001**. During average rainfall events, the surface water in the trench will primarily discharge via infiltration as the outlet pipe from the BRT is at a higher level than the trench invert. During intense rainfall events, the water in the trench will fill to the outlet level, and discharge through the pipe ensuring the BRT does not become saturated and/or flooded. The water will also be discharged by evapotranspiration where the surface of the trench is planted with vegetation. The BRT will be located beneath the verge behind the kerb. Any water that does not infiltrate, or that is not absorbed by the vegetation, will discharge to the outlet of the BRT and into the carrier pipe system before discharging to an attenuation feature (basin/swale/infiltration trench). Where a carrier pipe in a large embankment continues to an area where the road is at-grade or in cut, the carrier pipe will discharge to a BRT to allow infiltration and evapotranspiration (subject to minimum separation distances being provided).

In areas where rock is at or near the surface and the minimum separation distances to bedrock or groundwater cannot be achieved, the trench shall be lined with an impermeable liner, meaning evapotranspiration will be the only discharge method for the water before the level reaches the outlet pipe invert. Alternatively in such areas, the BRT may be omitted where the environmental or landscaping risks outweigh the benefits.

Where levels prohibit connections to the mainline drainage the kerb and gully drainage systems will discharge to infiltration trenches.

2.9.2 Attenuation Systems

At the discharge locations it is proposed that, where possible and where required as a condition of the drainage design, attenuation ponds/swales are to be constructed to control the discharge of water to the receiving watercourse. As well as controlling the discharge, these allow sediments to settle from the water prior to the road drainage being discharged to the receiving watercourse. Attenuation ponds/swales have an environmental benefit in that they assist in improving the quality of the water being discharged to the watercourse.

Once the surface water enters the attenuation basin or attenuation swale, it will travel though the system to the outlet where the outfall discharge rate will be limited to the pre-development greenfield runoff rate. The attenuation features are designed to attenuate the runoff during the 100-year rainfall event to the equivalent Q_{bar} greenfield runoff rate.

All attenuation ponds (Ponds 1, 2, 3 & 5) will have a permanent depth of water beneath the outlet invert to aid water treatment prior to discharge. The permanent water depths will be 500mm and an aquatic bench, should be provided just below the permanent water depth to deter unintentional entry.

Subsequently, the attenuated surface water will then pass through a hydrocarbon interceptor prior to discharge to the receiving watercourse. A summary of the outfalls where attenuation systems are required is provided in **Table 2-2** below.

Table 2-2: Proposed Drainage Outfalls

Drainage Network Ref. No	Attenuation System Ref. No	Contributing Catchment Area (ha)	Max Discharge Rate (l/s)	Attenuation System - Volume of Storage (m^3)	Outfall
1	Attenuation Basin 1	0.41	1.10	277.00	River Liffey
2	Attenuation Basin 2	0.66	1.70	455.00	River Liffey
3	Attenuation Basin 3	0.59	1.50	411.00	Loughlinstown Watercourse
4A	Attenuation Swale 4A	0.30	0.80	206.00	Loughlinstown Watercourse
4B	Attenuation Swale 4B	0.30	0.80	203.00	Loughlinstown Watercourse
5	Attenuation Basin 5	0.39	1.00	239.00	Hazelhatch River

Drainage Network Ref. No	Attenuation System Ref. No	Contributing Catchment Area (ha)	Max Discharge Rate (l/s)	Attenuation System - Volume of Storage (m^3)	Outfall
6A	Attenuation Swale 6A	0.34	0.90	245.00	Hazelhatch River
6B	Attenuation Swale 6B	0.35	0.90	252.00	Stream Diversion
7	N/A	N/A	N/A	N/A	3 No. Outfalls to Infiltration Trenches
8	N/A	N/A	N/A	N/A	Stream Diversion
9	N/A	N/A	N/A	N/A	5 No. Outfalls to existing drainage network

The details of the proposed watercourse crossing structures are outlined in **Table 2-3**.

Table 2-3: Proposed Watercourse Crossings

Structure Ref.	Chainage	Location	Watercourse	Type	Span/ Length (m)	Size (m)	Embedment (m)
River Liffey Crossing	0+230	Mainline Corridor	River Liffey	Single Span Bridge	65.50	-	-
Cul-01	0+880	Mainline Corridor	Loughlinstown Stream	Pipe	35.11	1.2mØ	0.300
Cul-02	1+490	Mainline Corridor	Hazelhatch River	Box	37.40	4.0m (W) x 2.7m (H)	0.500
Cul-03	1+710	Mainline Corridor	Stream Diversion	Box	31.20	3.5m (W) x 2.6m (H)	0.500

2.10 Project Specific Flood Alleviation Proposals

In accordance with the requirements of "*The Planning System and Flood Risk Management, Guidelines for Planning Authorities*" and associated Technical Appendices (DoEHLG & OPW, 2009), a separate Flood Risk Assessment (FRA) has been carried out.

The Guidelines outline the key principles that should be considered when assessing flood risk to proposed sites. It recommends a staged approach to the assessment of flood risk. The FRA may conclude at any stage if criteria are not met to progress to the next stage. The stages are listed below:

- Stage I Flood Risk Identification – to identify whether there may be any flooding or surface water management issues.
- Stage II Initial Flood Risk Assessment – to confirm sources of flooding that may affect an area or proposed development, to appraise the adequacy of existing information and to scope the extent of the risk of flooding which may involve preparing indicative flood zone maps.
- Stage III Detailed Flood Risk Assessment – to assess flood risk issues in sufficient detail and to provide a quantitative appraisal of potential flood risk to a proposed or existing development or land to be zoned, of its potential impact on flood risk elsewhere and of the effectiveness of any proposed mitigation measures.

The Flooding Risk Assessment is provided under separate cover as part of the planning application and a summary is provided below:

- The desktop study undertaken identified fluvial flooding from the Hazelhatch Rivers as the primary source of flood risk to the proposed CHMC site. Potential fluvial flood risk was also identified for the River Liffey and Loughlinstown River Crossing. Fluvial Flooding caused by insufficient channel and/or hydraulic structures capacity contributing to out-of-bank flooding. Pluvial flooding was identified as a possible risk to the site due to the extent of the hardstanding area proposed for the

development, and also due to GSI Synthetic Aperture Radar (SAR) seasonal flood map showing a low probability of localised pluvial flooding intersecting the proposed CHMC.

- The Stage 2 Initial Flood Risk Assessment concludes the design for the River Liffey and Loughlinstown River Crossings are adequate and does not pose a fluvial flood risk. The proposed CHMC drainage design improves the existing pluvial flood risk and it also caters for the run-off from hardstanding areas and the discharge to receiving watercourses are limited to greenfield runoff rates. The fluvial flood risk from the Hazelhatch Rivers required further assessment and was progressed to Stage 3 Detailed Flood Risk Assessment.
- The Stage 3 Detailed Flood Risk Assessment concluded that mitigation was required to ensure no increase to flood risk adjacent to the Scheme due to flooding from the Hazelhatch Rivers.

  The following measures are proposed between Ch. 1+440 to Ch. 1+710, where the proposed road crosses through an area subject to existing flooding, to mitigate potential increases in flood levels upstream of the project:

  - Proposed 15 no. 0.9m diameter floodplain culverts (60m length each)
  - Proposed 4 no. 1m deep ditches (500m total length)
- The Stage 3 Detailed Flood Risk Assessment concludes that the proposed CHMC with mitigation does not increase flood risk elsewhere. The results of the analysis showed the proposed CHMC provide an improved freeboard for a number of residential dwellings located downstream of the proposed CHMC.

The proposed CHMC is considered an appropriate development of the site in accordance with the requirements of the Justification Test and the Planning Guidelines for Flood Risk Management (DoEHLG & OPW 2009).

2.11 Utilities

Utility providers were contacted and requested to provide all relevant information on any existing utilities located within the study area for the Celbridge to Hazelhatch Mobility Corridor. Responses received indicated that GNI, ESB, Eir, Virgin Media and Uisce Éireann (formerly known as Irish Water) have utilities in the study area. Most of the other utility companies responded confirming that they do not currently own any plant within the study area and have no plans to construct any new plant within the study area in the foreseeable future.

A Utilities Report has been prepared for the scheme (Reference **MDT0902-RPS-00-XX-RP-Z-0032)** which provides a summary of the existing utilities encountered along the scheme and outlines the proposed measures for addressing any conflicts with existing services. A summary of the utility conflicts expected to be encountered and the recommended measures for each conflict are provided in **Table 2-4** below.

The proposed utility works are illustrated on drawings **MDT0902-RPS-01-XX-DR-Z-UT1001-UT1007**.

Table 2-4: Summary of Proposed Measures for Utility Conflicts

Location	Description of Service	Conflict	Proposed Measures
Gas Networks Ireland (GNI)			
Ch. 0	Gas Distribution Pipe	Pipe runs along the R403 Clane Road where the project ties in with the existing road.	Pipeline to be retained and protected in place.
Ch. 50 to Ch. 100	Gas Distribution Pipe	Pipe crosses the proposed road alignment.	Pipeline to be decommissioned.
Ch. 290	Gas Distribution Pipe	Pipe runs along Newtown Road where the project interfaces with the existing road.	Pipeline to be retained and protected in place.
ESB / ESB International (ESBI)			

Location	Description of Service	Conflict	Proposed Measures
Ch. 100	HV 110KV Overhead Line	Overhead powerline crosses over proposed access to severed lands.	Overhead powerline to be retained and protected in place.
Ch. 150	HV 110KV Overhead Line	Overhead powerline crosses over proposed footpath link.	Overhead powerline to be retained and protected in place.
Ch. 290	HV 110KV Overhead Line	Overhead powerline crosses over Newtown Road where the project interfaces with the existing road.	Overhead powerline to be retained and protected in place.
Ch. 540 to Ch. 570	HV 110KV Overhead Line	Overhead powerline crosses over proposed road alignment.	Overhead powerline to be retained and protected in place.
Ch. 1250 to Ch. 1450	HV 220KV Overhead Line	Overhead powerline crosses over proposed road alignment.	Overhead powerline to be retained and protected in place.
Ch. 1700 to Ch. 1750	HV 220KV Overhead Line	Overhead powerline crosses over realignment of R405 Hazelhatch Road.	Overhead powerline to be retained and protected in place.
Ch. 0 to Ch. 75	HV 38KV Underground Cable	Underground power cable crosses the proposed road alignment.	Underground power cable to be retained and protected in place.
Ch 0.	MV/LV Underground Cables	Underground power cables run along the R403 Clane Road where the project ties in with the existing road.	Underground power cables to be retained and protected in place.
Ch. 290	MV/LV Underground Cables	Underground power cables run along Newtown Road where the project interfaces with the existing road.	Underground power cables to be retained and protected in place.
Ch. 360	MV 10KV/20KV Overhead Line	Overhead powerline crosses the proposed road alignment.	Overhead powerline to be retained and protected in place.
Ch. 1960	LV 400V/230V Overhead Line	Overhead powerline located near where the proposed road alignment ties in with the Loughlinstown Road Roundabout at Chainage 1960.	Overhead powerline to be diverted with new overhead line.
Uisce Éireann			
Ch.0	Watermain	Watermain runs along the R403 Clane Road where the project ties in with the existing road.	Watermain to be retained and protected in place.
Ch. 290	Watermain	Watermain runs along Newtown Road where the project interfaces with the existing road.	Watermain to be retained and protected in place.
Ch. 1700 to Ch. 1960	Watermain	Watermain runs along the R405 Hazelhatch Road where the project interfaces with the existing road.	Watermain to be retained and protected in place.

Location	Description of Service	Conflict	Proposed Measures
Ch. 100 to Ch. 150	Foul Sewer	Foul sewer crosses the proposed road alignment between Chainage 100 to 150.	Foul sewer to be retained and protected in place. Manhole covers to be adjusted where required.
Ch. 150 to Ch. 200	Foul Sewer	Foul sewer crosses under the north west side of the proposed River Liffey bridge crossing.	Foul sewer to be retained and protected in place. Manhole covers to be adjusted where required. Additional 300mm diameter pipe to be provided under bridge crossing for potential future use. Manholes to be provided at ends of new pipe to allow future connection.
Ch. 200 to Ch. 250	Foul Sewer	Foul sewer crosses under the south east side of the proposed River Liffey bridge crossing.	Foul sewer to be retained and protected in place. Manhole covers to be adjusted where required. Additional 450mm diameter pipe to be provided under bridge crossing for potential future use. Manholes to be provided at ends of new pipe to allow future connection.
Ch. 0	Eir Underground Cables	Underground cables run along the R403 Clane Road where the project ties in with the existing road.	Underground cables to be retained and protected in place. Chamber covers to be adjusted where required.
Ch. 290	Eir Underground Cable	Underground cable runs along Newtown Road where the project interfaces with the existing road.	Underground cable to be retained and protected in place. Chamber covers to be adjusted where required.
Ch. 1420	Eir Overhead Line and Underground Cable	Overhead line and underground cable run along Simmonstown Manor Road where the project interfaces with the existing road.	Overhead line and underground cable to be diverted underground.
Ch. 1700 to Ch. 1960	Eir Underground Cable	Underground cable runs along the R405 Hazelhatch Road where the project interfaces with the existing road.	Underground cable to be retained and protected in place. Chamber to be relocated so situated in proposed road verge rather than proposed carriageway. Chamber covers to be adjusted where required.
Ch. 1890	Eir Overhead line	Overhead line crosses the proposed road alignment.	Overhead line to be diverted underground.
Ch. 1960	Eir Underground Cable	Underground cable runs along Loughlinstown Road where the project ties in with the existing road.	Underground cable to be retained and protected in place. Chamber covers to be adjusted where required.
Virgin Media			
Ch. 0	Virgin Media Underground Cable	Underground cable runs along the R403 Clane Road where the project ties in with the existing road.	Underground cables to be retained and protected in place. Chamber covers to be adjusted where required.

2.12 Pavement

The following pavement construction is proposed for the new road:

- Surface Course: 40mm SMA 14 surf PMB 65/105-60 DES
- Binder Course: 60mm AC 20 DENSE BIN 40/60 DES
- Base Course: 80mm AC 32 DENSE BASE 40/60 DES
- Subbase: 150mm UGM A

It is generally proposed that 300mm of 6F2 capping is provided beneath the pavement construction.

The pavement design is illustrated on drawings **MDT0902-RPS-01-XX-DR-Z-PV0000-PV0007** and **MDT0902-RPS-01-XX-DR-Z-PV1001**.

2.13 Earthworks

The proposed road is predominantly constructed on embankment. The approximate quantities of earthworks material to be imported are as follows:

- General Fill: 56,000m^3
- Capping (Class 6F2): 6,000m^3

For road embankment construction in area prone to flooding between Ch. 1+400 to Ch. 1+960, starter layers of Class 6B or Class 6C granular material shall be deposited as the first layers of fill above existing ground level.

Any existing topsoil shall be stripped from ground over the entire footprint of the project. This excavated topsoil shall be appropriately stored for reuse in construction of grassed verges, embankment slopes, and vegetated drainage systems.

Given deep excavations are generally not required for the construction of the road, it is expected that interactions with groundwater bodies shall be minimal for the majority of the works. However, excavations will be required adjacent to the River Liffey for construction of the bridge structure foundations. Groundwater will likely be encountered in these excavations requiring dewatering for construction of the foundations.

The following earthworks quantities have been estimated for the construction of the proposed attenuation basins, attenuation swales, drainage ditches and stream diversions:

- Total Excavation: 10,000m^3
- Total Fill: 7,100m^3

2.14 Lighting

New public lighting will be provided for the full extent of the proposed project. The proposed lighting columns are illustrated on drawings **MDT902- RPS-01-XX-DR-Z-GA0001 – GA0015**.

The lighting will be provided by energy efficient light emitting diode (LED) lanterns providing a neutral white output with each mounted on lighting columns that will be designed to the minimum height required. All lanterns will be fully cut-off type to minimise light spill and ensure that light is concentrated on the proposed roads, cycleways and footpaths. The lighting will be designed to the appropriate Lighting Class in compliance with BS 5489-1: Code of Practice for the Design of Road Lighting.

All cables for the lighting installation will be ducted underground.

2.15 Site Clearance

The site shall be cleared of any obstructions to the construction of the project.

Existing buildings and polytunnels currently used for horticulture purposes will be demolished between approximately Ch. 0+050 to Ch. 0+150.

The following lengths of existing walls are to be removed:

- Approximately 23m of stone wall to be removed at R403 Clane Road.
- Approximately 92m of stone and blockwork walls to be removed at Newtown Road.

An Arboricultural Survey was carried out in accordance with BS5837:2012 *Trees in Relation to design, demolition and construction* for a study area covering the full extent of the proposed Project. Following completion of the survey, a Tree Constraints Plan and a Tree Schedule were produced identifying the locations of the trees, their assessment category, their crown spreads and their Root Protection Areas (RPAs). A check was carried out to confirm that no trees within the study area were subject to any statutory designations e.g. Tree Protection Orders.

Subsequently an Arboricultural Impact Assessment (AIA) was carried out to evaluate the impact of the proposed project on the trees in the study area and determine required tree removals, required pruning works and recommended measures to mitigate impacts. A Tree Protection and Removal Plan was produced identifying the trees to be removed, trees to be retained and recommended locations of temporary tree protection fencing. A Tree Removal Schedule was also produced listing the trees to be removed.

The AIA has identified the following quantities of trees and hedgerows that require removal:

- Individual Trees: 126 No.
- Groups of Trees: 4,446 m^2
- Length of Hedgerow: 445 m
- Scrub: 135 m^2

The trees protection and removal plan are illustrated on drawings **MDT0902-RPS-01-XX-DR-Z-LA1000-LA1007**.

No contaminated land was identified during the ground investigation works.

2.16 Fencing

The proposed fencing and environmental barrier design is illustrated on drawings **MDT0902-RPS-01-XX-DR-Z-FE0000-FE0007**.

Mammal-resistant fencing will be required to prevent badgers and otter crossing the new roadway and guide them to the proposed mammal underpasses and mammal ledges in box culverts. The specification for mammal-resistant fencing for badgers and otters is outlined in the NRA “Guidelines for the Treatment of Badgers prior to the construction of National Road Schemes” and “Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes” respectively.

The mammal resistant fencing will be constructed as per TII standard details CC-SCD-00319 or CC-SCD-00324. At some locations it will be necessary to incorporate mammal-resistant measures into the construction of the proposed noise barriers and security fencing.

Where mammal-resistant measures are not required, boundary fencing for the project will generally be timber post and rails fence as per TII standard details CC-SCD-00301.

Paladin style security fencing is proposed where required to prevent unauthorised access such as around proposed attenuation basins.

Steel field gates will be provided where required for landowner accesses and maintenance accesses. These gates will be constructed as per TII standard details CC-SCD-00309 (steel single field gate) and CC-SCD-00310 (steel double field gate). Paladin style security gates are proposed where required to prevent unauthorised access. At some locations it will be necessary to incorporate mammal-resistant measures into the construction of the proposed gates.

2.17 Landscaping

A preliminary landscape design has been prepared for the scheme and is illustrated on drawings **MDT0902-RPS-01-XX-DR-Z-LA0000-LA0008**. A detailed Landscape Design Plan will be prepared at the detailed design stage.

The landscape design for the Celbridge to Hazelhatch Mobility Corridor was developed, having regard for the baseline landscape character and to mitigate adverse landscape and visual effects. The scheme features native species woodland and hedgerow planting along with standard trees and was designed to link in with existing retained vegetation. The proposed Scheme as a whole sought to minimise vegetation losses. The landscape scheme details serve to enhance biodiversity and incorporate sustainable drainage features.

Where the drainage bio-retention trenches are proposed, trees will be planted at circa 25m spacing within the grassed verge between the proposed road and cycleways. It is also proposed to provide tree and vegetation planting in other available green spaces, so long as it does not impact on sightlines and safe operation of the scheme, or maintenance requirements.

The proposed planting is as follows:

Standard Trees: 219 No.

Hedge (linear metres): 2,207m

Woodland (square metres): 7,152m^2

Woodland (damp conditions, square metres): 4,191m^2

Shrub mix near overhead lines (square metres): 1,411m^2

2.18 Construction of the Proposed Development

2.18.1 Site Access

The site will likely be accessible from each existing road that interfaces with the project.

It is expected that HGV site access, e.g. for import of earthworks material, shall generally be limited to the R403 Clane Road for site access north of the River Liffey, and the R405 Hazelhatch Road for site access south of the river.

2.18.2 Compound

It is proposed that main compound will be located on the south east side of Newtown Road between approximately Ch. 0+425 to Ch. 0+545. This compound will include welfare facilities and vehicle parking for site staff and will allow for the storage of materials. Temporary land take has been included to accommodate this compound and the compound will remain in place for the duration of the works. The compound will have appropriate levels of security. The Contractor will be required to manage parking and deliveries at the compound and other areas in such a manner as to ensure that there is no obstruction to general traffic or sightlines during construction.

It is likely that an additional smaller compound will be required for the site to the north of the River Liffey. Also, localised welfare facilities and vehicle parking for site staff may be provided along the scheme.

Following completion of the proposed scheme, the site compounds will be decommissioned and all materials removed from the site. The temporary land take will be returned back to its original use.

The expected locations of the site compounds are indicated on the drawings **MDT0902-RPS-01-XX-DR-Z-LH0001-LH0003**.

2.18.3 Advance Works

Kildare County Council may decide for some works to be carried out under advance works contracts. These works could include:

- Archaeological test trenching
- Site clearance including demolition of structures and vegetation/ tree removal
- Invasive species management
- Boundary fencing
- Utilities diversions
- Site compound set-up
- Natural catchment drainage including watercourse culverts and flood relief measures
- Landowner access arrangements.

2.18.4 Main Construction

It is expected that the bridge construction will begin early in the programme due to the need for construction space in the area of Attenuation Pond 2. This will include construction of working platforms for operation of cranes. The working platforms will likely be constructed of stone fill and will be located outside the extent of the fluvial flooding from the River Liffey.

The earthworks for the remainder of the project will predominately involve stripping topsoil and subsequent import, laying and compaction of embankment fill. As the earthworks does not include significant cuttings, dewatering of excavations will generally not be required. However, suitable sediment and erosion controls will be implemented for the runoff from the earthworks to ensure that the sediment load in water discharging to the receiving watercourses is kept below permissible levels.

2.18.5 Construction Works in Proximity to River Liffey

Proposed construction works in proximity to the River Liffey include:

- Bridge construction including temporary working platform for crane operation
- Construction of earthworks embankments approaching bridge crossing
- Construction of drainage attenuation basins
- Drainage outfalls construction
- Construction of foul sewer pipes and manholes for potential future use.

The northern bridge abutment has been set back a minimum of 12 metres from the top of northern river bank. The minimum distance between the southern bridge abutment and the top of the southern river bank is approximately 9.5 metres. It is considered that these set back distances are sufficient to allow the bridge foundations and abutments to be constructed without impacting the river banks. There is also sufficient space to construct the proposed foul sewer pipes and manholes without impacting the river banks.

The proposed bridge abutments, bridge foundations, temporary working platform, earthworks embankments, drainage attenuation basins, and foul sewers, are all sited outside the River Liffey's predicted 0.1% AEP flood extents. The drainage outfalls will encroach areas which may be prone to fluvial flooding, however, these works can be timed to take place when the river's water levels are low.

Due to potential ingress of groundwater, excavations for construction of bridge foundations, drainage outfalls, and foul sewers, may require dewatering. The water extracted from the excavations would likely be discharged to the river. Sediment control measures would be implemented to reduce the sediment load in this water prior to discharging to the watercourse. This could include fitting silt bags to outlet pipes. When the water flows through these silt bags, the tightly woven fabric traps sediment particles down to a size of 100 microns (µm). Once the bag is filled with sediment it will be removed and replaced. **Figure 2-2** illustrates an example of a silt bag installed on an outlet pipe.

Figure 2-2 Typical Silt Bag

Sediment control measures will also be implemented to prevent laden surface water runoff from earthworks reaching the river. This could include silt fences which comprise a geotextile filter fabric installed in the path of sheet flow run-off to filter out heavy sediments. Posts support the filter fabric and the fabric itself is buried in the ground to ensure sediment is trapped behind it and doesn't breach the fence. The selection of the type of filter fabric depends on the expected volume of run-off and the characteristics of the sediment. It is sized to retain sediment particles but also have openings large enough to permit water to drain though and avoid clogging. When silt fences are used as sediment control measures, they will be subject to regular rigorous inspections to ensure they remain well constructed and functional. Any silt trapped during rainfall events will be promptly removed and any damage to the fences will be repaired to ensure they continue to function as effective silt barriers. **Figure 2-3** illustrates an example of a silt fence.

Figure 2-3 Typical Silt Fence

2.18.6 Construction Timeline

It is estimated that the overall duration of the construction programme will be approximately 24 months. The exact sequencing of the works will be dictated by the Contractor's methodology and programme.

The sequence of works is expected to be as follows, noting that many of these elements will progress in parallel:

- Establish site compounds
- Site clearance and fencing
- Demolition works
- Bridge Construction
- Drainage culverts construction
- Earthworks
- Drainage and utilities works
- Road pavement construction
- Cycle tracks and footpaths construction
- Landscaping works
- Signage, road markings, lighting and traffic signals works

2.18.7 Hours of Works

Construction activities will be undertaken during daylight hours. It is proposed that the normal permitted working times will be 07.00 to 19.00 hours Monday to Friday and 08.00 to 16.30 hours on Saturdays, with no

working on Sundays and Public Holidays, unless otherwise agreed between the Contractor and the local authority (Kildare County Council).

Works other than the pumping out of excavations, security and emergency works will not be undertaken outside these working hours without the written permission of the local authority. This permission, if granted, can be withdrawn at any time should the working regulations be breached.

There are certain works that may benefit from being undertaken outside of normal working hours e.g. delivery and lifting of bridge beams or any other works that require traffic management on existing roads. The bridge beams will be manufactured off-site but will need to be craned into position. This activity will benefit from being undertaken outside of normal working hours. Temporary lighting will be required for any works outside of daylight hours and details on temporary lighting requirements are provided in **Section 2.18.8** below.

2.18.8 Site Lighting

Site lighting will typically be provided by tower mounted temporary portable construction floodlights. The floodlights will be cowled and angled downwards to minimise light spillage outside of works areas and to surrounding properties. Lighting will be provided with the minimum luminosity sufficient for safety and security purposes and will be shut off at night when not in use or when works cease at the end of the day in order to minimise the effects of light pollution and disturbance to nocturnal species.

2.19 Operational Phase

2.19.1 Maintenance of Bridge Structure

The use of weathering steel for the fabrication of the steel plate girders will ensure that maintenance painting will not be required over the lifetime of the structure. The deck surfacing will need maintenance and replacement after 20 years.

As noted in **Section 2.6**, the integral bridge design does not require expansion joint or bridge bearings, significantly reducing the maintenance requirements for the structure.

2.19.2 Maintenance of Drainage

The vegetated attenuation systems (basins and swales) will need regular inspection as the growth of vegetation will need to be inspected and controlled to ensure the system continues to operate as designed.

Inspections will be carried out at regular intervals and after any significant storm events (greater than a 1-in-1 year event) to check for signs of erosion or flooding, which would indicate whether the system has been affected by the storm. The maintenance regime will ensure that the hydraulic and treatment performance of the ponds is operating as designed.

Any sediment which is not collected upstream of the ponds is likely to settle in the base of the retention pond. This sediment, along with any plant waste, will be removed with care to avoid damage to the pond liner (if part of the pond design) and any vegetation. Information will be provided to operatives on the presence and depth of liners and on the existence of any depth markers. Consideration will be given to the impact that disturbance of the sediment will have on the short-term migration of fines and contaminants from the system and maintenance operations planned accordingly.

Sediment removal will take place at least every ten-years, but this will vary by location and shall be determined by inspection during operation. The removal may need to be phased to protect the existing vegetation. As the ponds are designed to collect and treat contaminants associated with run-off, the area in and around the pond will be considered contaminated and the maintenance regime will take account of this during the disposal of any sediment or plant waste from the ponds, as well as the de-contamination of the pond when it has reached the end of its useful life.

The hydrocarbon interceptors' maintenance will be carried out in accordance with the manufacturer's recommendations and BS EN 858-2:2003 Separator systems for light liquids (e.g. oil and petrol) – Part 2.

It is normally recommended that cleaning of the interceptor takes place every three to six months, but this may vary depending on location and catchment area. Additional cleaning and maintenance will be undertaken after any major events that may have caused additional debris to collect in the system.

The regular maintenance schedule will include, but not be limited to:

- Check the integrity of the interceptor and all its mechanical parts;
- Inspect the filters and repair or replace, where required;
- Assess the volume of contaminants collected in the tank;
- Service all electrical systems, interceptor management systems and alarms etc.;
- Have all silt and contaminants removed and disposed in accordance with environmental regulations;
- Keep logs of any inspections, maintenance, incidents, services and contaminant removal activities; and
- Ensure any contaminants are removed and transported in accordance with relevant legislation.

2.19.3 Maintenance of Road Pavement

The new road pavement will require ongoing inspection, testing and maintenance. This will be carried out in accordance with Kildare County Council's pavement management requirements. Temporary traffic management will be provided where required to facilitate inspection, testing and maintenance.

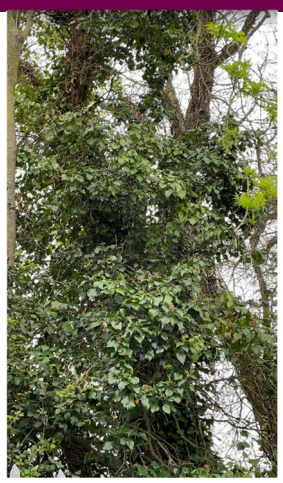
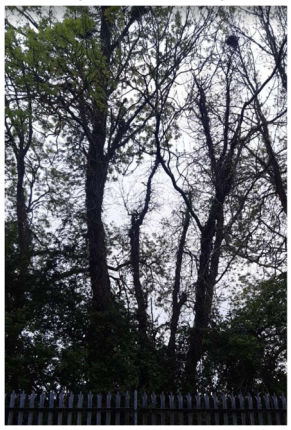
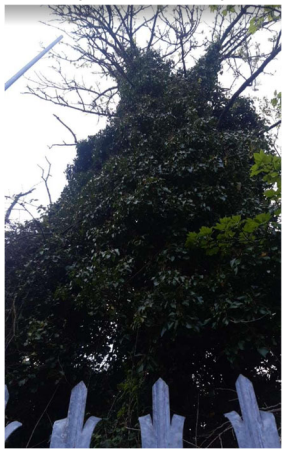
It is expected that the pavement surface course will require to be replaced every 8 to 10 years.

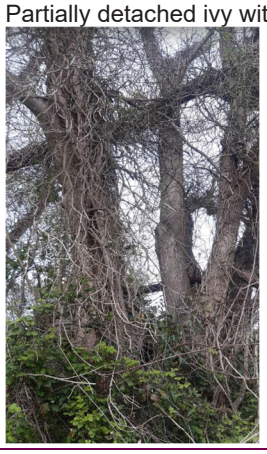
Appendix B Ground Level Tree Assessment

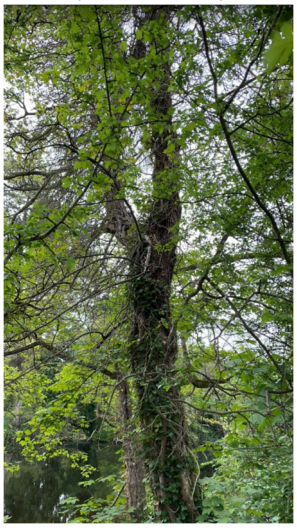
Results of the Ground Level Tree Assessment.

Map Code	Tree Species	Grid Reference (ITM)	Feature Location and Description	Suitability
BT01	Ash	696776 732527	Partially detached ivy with stem diameter in excess of 50 mm. 	**PRF-I**
BT02	Ash	696772 732530	Partially detached ivy with stem diameter in excess of 50 mm. 	**PRF-I**
BT03	Ash	696640 732397	A crack in a branch. Facing north-east, 3 m from the ground. 	**PRF-I**
BT04	Ash	696651 732395	Small knot hole, 5×5 cm. Follow first north-east facing branch which then splits, follow south-facing branch, feature is 30 cm from where branch splits.	**PRF-I**

Map Code	Tree Species	Grid Reference (ITM)	Feature Location and Description	Suitability
				
BT05	Ash	696712 732422	Partially detached ivy with stem diameter in excess of 50 mm. 	**PRF-I**
BT06	Ash	696704 732418	Partially detached ivy with stem diameter in excess of 50 mm. 	**PRF-I**
BT07	Ash	696728 732442	Partially detached ivy with stem diameter in excess of 50 mm.	**PRF-I**

Map Code	Tree Species	Grid Reference (ITM)	Feature Location and Description	Suitability
			 	
BT08	Ash	696732 732452	Partially detached ivy with stem diameter in excess of 50 mm.  	**PRF-I**
BT09	Ash	696743 732470	Partially detached ivy with stem diameter in excess of 50 mm. 	**PRF-I**
BT10	Ash	696693 732359	Multi-stemmed ash with dead ivy. Transverse snap PRF (broken limb) – suitable for an individual bat in fair weather (PRF-I) Pre-fell inspection recommended.	**PRF-I**

Map Code	Tree Species	Grid Reference (ITM)	Feature Location and Description	Suitability
				
BT11	Ash	696697 732363	Partially detached ivy with stem diameter in excess of 50 mm. 	**PRF-M**
BT12	Ash	696699 732381	Partially detached ivy with stem diameter in excess of 50 mm. 	**PRF-I**
BT13	Ash	696705 732282	Partially detached ivy with stem diameter in excess of 50 mm.	**PRF-I**

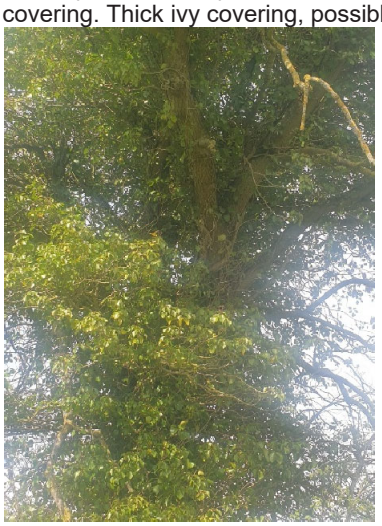
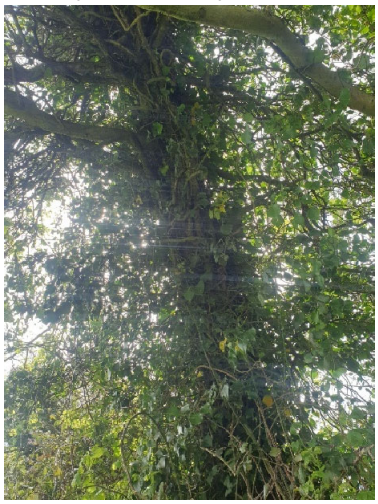
Map Code	Tree Species	Grid Reference (ITM)	Feature Location and Description	Suitability
			 	
BT14	Oak	696723 732316	Partially detached ivy with stem diameter in excess of 50 mm. 	**PRF-I**
BT15	Ash	696774 732358	Partially detached ivy with stem diameter in excess of 50 mm.  	**PRF-I**
BT16	Ash	696777 732376	Ivy growth.	**PRF-I**

Map Code	Tree Species	Grid Reference (ITM)	Feature Location and Description	Suitability
				
BT17	Ash	696778 732320	Partially detached ivy with stem diameter in excess of 50 mm. Mature ivy and very thick.  	**PRF-M**
BT18	Spruce sp. treeline	696831 732289	Treeline collectively classed as PRF-I due ivy coverage and possibility of features below this. 	**PRF-I**
BT19	Pedunculate oak	697216 731866	Partially detached ivy with stem diameter in excess of 50 mm. Thick ivy branches creating crevices. Low potential in some areas but most is quite detached from bark.	**PRF-I**

Map Code	Tree Species	Grid Reference (ITM)	Feature Location and Description	Suitability
			 	
BT20	Pedunculate oak	697270 731927	Partially detached ivy with stem diameter in excess of 50 mm. Ivy thicker in part around main trunk/branches, low potential. 	**PRF-I**
BT21	Ash	697259 731883	Partially detached ivy with stem diameter in excess of 50 mm. Mature ash, thick ivy toward crown of tree. 	**PRF-I**
BT22	Pedunculate oak	697285 731881	Partially detached ivy with stem diameter in excess of 50 mm. Low potential detached Ivy, thicker in parts.	**PRF-I**

Map Code	Tree Species	Grid Reference (ITM)	Feature Location and Description	Suitability
				
BT23	Ash (×2)	697292 731835	Partially detached ivy with stem diameter in excess of 50 mm. Ivy thick in parts on both trees, low potential.  	**PRF-I**
BT24	Ash	697374 731846	Partially detached ivy with stem diameter in excess of 50 mm. Ivy covering trunk up to 6 cm wide with some cavities visible with low roost potential. Possible other cavities not visible.	**PRF-M**

Map Code	Tree Species	Grid Reference (ITM)	Feature Location and Description	Suitability
			 3 cm knothole. Close to base of branch and unlikely to have large cavity. On south branch, facing south, 4-5 m high.  Large 6 cm opening from broken branch. unlikely to be deep and quite exposed. On the same branch as the above feature. 	

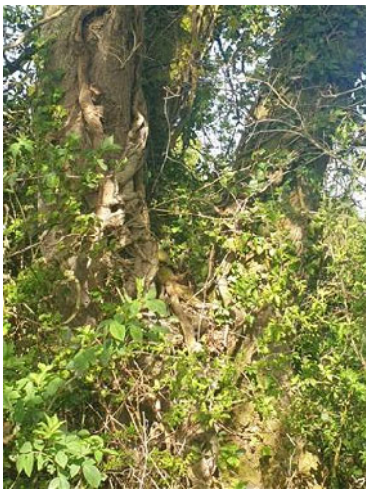
Map Code	Tree Species	Grid Reference (ITM)	Feature Location and Description	Suitability
BT25	Ash	697352 731853	Partially detached ivy with stem diameter in excess of 50 mm. Thick ivy covering. Thick ivy covering, possibly creating crevices. 	**PRF-I**
BT26	Hawthorn	697320 731868	Partially detached ivy with stem diameter in excess of 50 mm. 	**PRF-I**
BT27	Ash	697382 731786	Partially detached ivy with stem diameter in excess of 50 mm.  Feature is facing north, on first north-north-east facing branch, 6 m from ground, crack at the base of this branch.	**PRF-M**

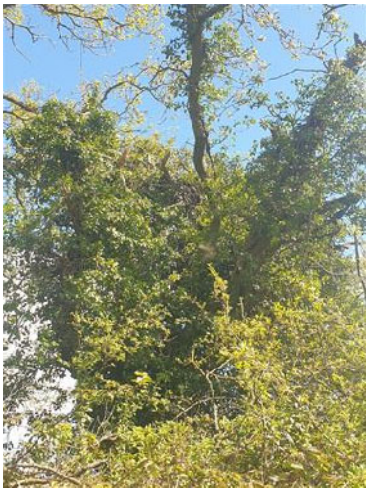
Map Code	Tree Species	Grid Reference (ITM)	Feature Location and Description	Suitability
			 Feature is south-west facing, knot hole 10×10 cm, on first south-west branch, 5 m from ground. More growth could cover this as is close to main trunk.  Same description as above feature, located at the opposite end of the feature, facing east and downward, making good shelter. 	

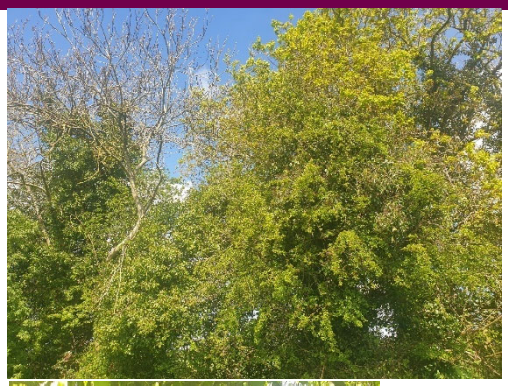
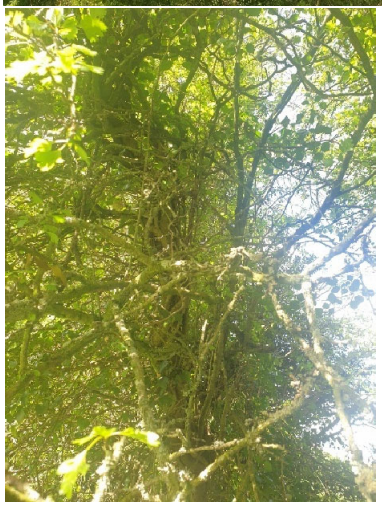
Map Code	Tree Species	Grid Reference (ITM)	Feature Location and Description	Suitability
BT28	Ash	697608 731713	Partially detached ivy with stem diameter in excess of 50 mm. Lots of knot holes but all surface based, they don't go anywhere. 	**PRF-I**
BT29	Ash	697416 731827	Partially detached ivy with stem diameter in excess of 50 mm covering most of trunk. 	**PRF-M**
BT30	Hawthorn	697311 731851	Partially detached ivy with stem diameter in excess of 50 mm.	**PRF-I**
BT31	Ash	697292 731819	2 cm wide knothole, cannot see if it opens up into a cavity, but any cavity is unlikely to be large. North-east side of trunk 5 m high	**PRF-I**

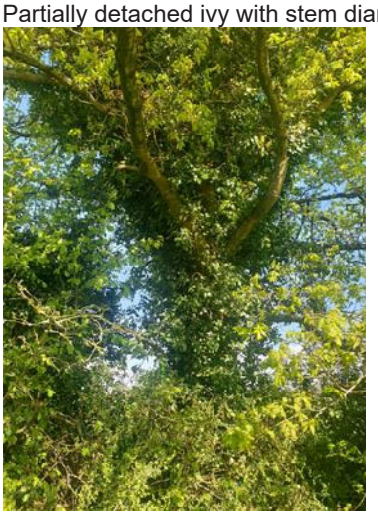
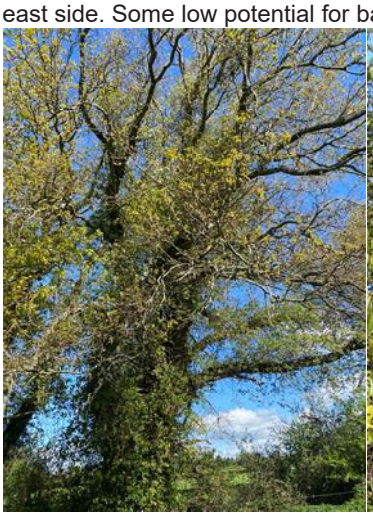
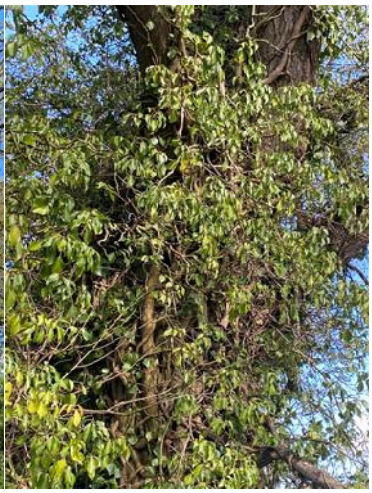
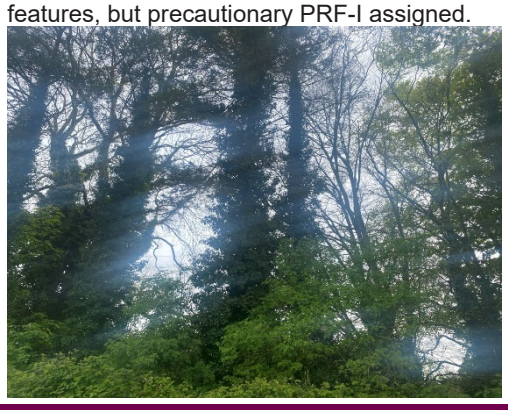
Map Code	Tree Species	Grid Reference (ITM)	Feature Location and Description	Suitability
				
BT32	Poplar (×6) & ash (×2)	697705 731619	Treeline collectively classed as PRF-I due ivy coverage and possibility of features below this. 	**PRF-I**
BT33	Ash	697687 731671	Partially detached ivy with stem diameter in excess of 50 mm.  4 cm wide knothole appears shallow.	**PRF-I**

Map Code	Tree Species	Grid Reference (ITM)	Feature Location and Description	Suitability
				
BT34	Ash	697683 731581	3 cm knothole appears unlikely to open up into cavity, but cannot see for certain. On a south-south-east branch 4 m high over driveway entrance, facing south-south-east.  	**PRF-I**
BT35	Unknown	698052 731611	Limited potential for roosts as tree and branch are narrow and ivy is not very thick, but because of a lack of visibility, precautionary PRF-I assigned. 	**PRF-I**

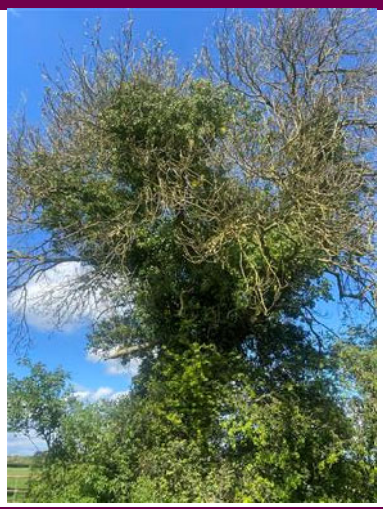
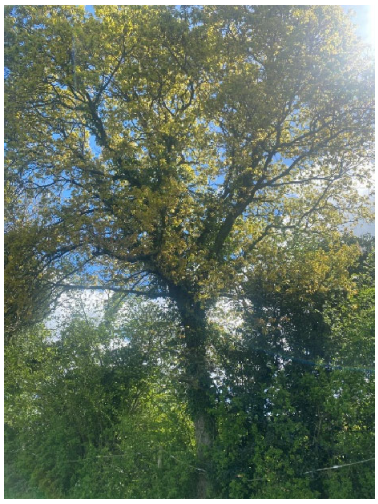
Map Code	Tree Species	Grid Reference (ITM)	Feature Location and Description	Suitability
BT36	Unknown	698040 731662	2-3 cm knothole with potential for small cavity. On a north-north-east-facing branch, 6 m high, facing west and slightly upward. 	**PRF-I**
BT37	Unknown	698037 731666	Tree covered in ivy and far side cannot be viewed, so precautionary PRF-I assigned. 	**PRF-I**
BT38	Pedunculate oak	697141 731812	Partially detached ivy with stem diameter in excess of 50 mm. Thick (~10cm) ivy partially detached at points and also forming crevices with overlapping branches. Particularly suitable on the east side of the trunk. 	**PRF-I**

Map Code	Tree Species	Grid Reference (ITM)	Feature Location and Description	Suitability
BT39	Unknown	698033 731682	Knot hole 6 m high on central branch facing towards road. knot forms an umbrella type cover but cannot see cavity. 	**PRF-I**
BT40	Pedunculate oak	697293 731873	Thick ivy, especially on the south-western branch, but it is generally tight to tree and does not form many suitable crevices. 	**PRF-I**
BT41	Hawthorn (×3)	697247 731875	This set of trees is collectively classed as PRF-I due ivy coverage and possibility of features below this.	**PRF-I**

Map Code	Tree Species	Grid Reference (ITM)	Feature Location and Description	Suitability
			 	
BT42	Ash	697267 731917	Partially detached ivy with stem diameter in excess of 50 mm. 	**PRF-I**

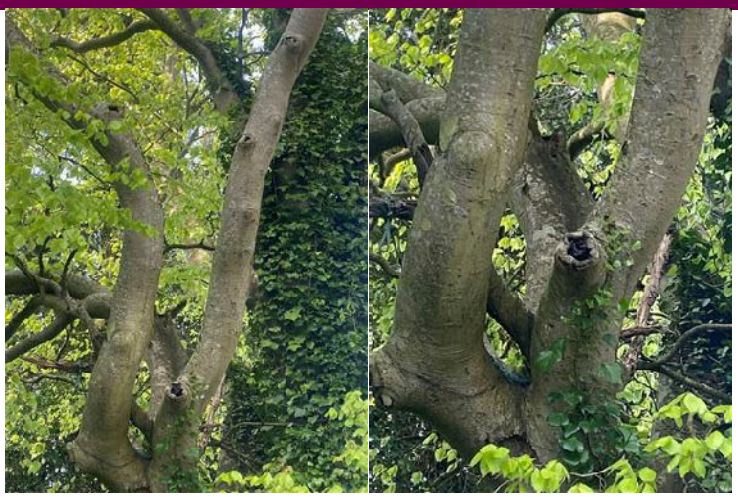
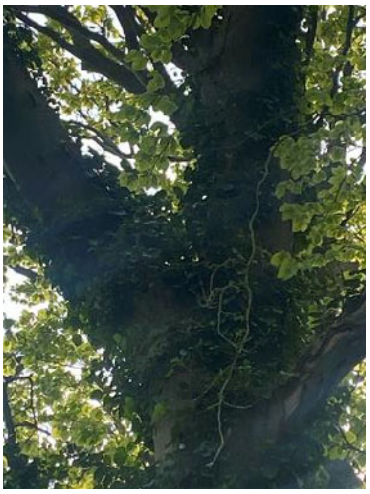
Map Code	Tree Species	Grid Reference (ITM)	Feature Location and Description	Suitability
BT43	Pedunculate oak	697174 731839	Partially detached ivy with stem diameter in excess of 50 mm. 	**PRF-I**
BT44	Ash (×3)	696748 732546	Partially detached ivy with stem diameter in excess of 50 mm. Ivy growth on all trees with some small nooks available for individual roosting bats.	**PRF-I**
BT45	Austrian pine	696808 732340	Partially detached ivy with stem diameter in excess of 50 mm.	**PRF-I**
BT46	Pedunculate oak	697136 731819	Partially detached ivy with stem diameter in excess of 50 mm. Facing south-east. Ivy stems surrounding main trunk and branches on the south-east side. Some low potential for bats to use.  	**PRF-I**
BT47	Treeline (mainly conifers - Scot's pine, with ash & sycamore.	697591 731719	Partially detached ivy with stem diameter in excess of 50 mm. Most trees are ivy is covered. Low potential but thicker in parts. Can't see other features, but precautionary PRF-I assigned. 	**PRF-I**

Map Code	Tree Species	Grid Reference (ITM)	Feature Location and Description	Suitability
BT48	Pedunculate oak & ash	697282 731809	Partially detached ivy with stem diameter in excess of 50 mm. Most in this treeline have detached Ivy on branches/trunks with some crevices, low potential.  	**PRF-I**
BT49	Beech	697279 731880	Multiple small splits in the trunk with low potential. Approx. 3 m high on trunk, facing south-east.  	**PRF-I**
BT50	Ash	697232 731871	Partially detached ivy with stem diameter in excess of 50 mm. Covering most of tree trunk/branches, thicker in parts.	**PRF-I**

Map Code	Tree Species	Grid Reference (ITM)	Feature Location and Description	Suitability
				
BT51	Pedunculate oak	697264 731917	Partially detached ivy with stem diameter in excess of 50 mm. Ivy sparse but some low potential in parts. 	**PRF-I**
BT52	Ash	697391 731768	Partially detached ivy with stem diameter in excess of 50 mm. Tree covered in Ivy, thicker in parts, low potential for bats beneath some areas. 	**PRF-I**
BT53	Ash	697501 731693	Partially detached ivy with stem diameter in excess of 50 mm. Ivy is dense around the main trunk and there could be hidden features	**PRF-I**

Map Code	Tree Species	Grid Reference (ITM)	Feature Location and Description	Suitability
			underneath so precautionary PRF-I assigned. 	
BT54	Ash	697701 731591	Partially detached ivy with stem diameter in excess of 50 mm. Covering most of trunk. Precautionary PRF-I assigned.  	**PRF-I**
BT55	Ash	697718 731620	Partially detached ivy with stem diameter in excess of 50 mm. Covering most of trunk. Precautionary PRF-I assigned. 	**PRF-I**
BT56	Pedunculate oak	698040 731611	Partially detached ivy with stem diameter in excess of 50 mm. Covers most of trunk/main branches, potentially dense enough in parts to support individual bats.	**PRF-I**

Map Code	Tree Species	Grid Reference (ITM)	Feature Location and Description	Suitability
				
BT57	Pedunculate oak	698026 731652	Partially detached ivy with stem diameter in excess of 50 mm. Covers most of trunk/main branches, potentially dense enough in parts to support individual bats. 	**PRF-I**
BT58	Beech	698022 731670	Partially detached ivy with stem diameter in excess of 50 mm. Covers most of trunk. Is denser in parts with potential for crevices beneath for individual bats.  Multiple knotholes on south branches facing south-east. One looks to go deeper, potential for multiple bats.	**PRF-M**

Map Code	Tree Species	Grid Reference (ITM)	Feature Location and Description	Suitability
			 Multiple vertical splits in the bark with potential for small crevices underneath. On northern side of tree, facing north.	
			 Two knot holes look like they could be deep enough for multiple bats. North-east side of tree facing the road.	
				
BT59	Ash (×2)	697270 731885	Partially detached ivy with stem diameter in excess of 50 mm. Covering most of trunk/branches on both trees. Thicker in parts, Low potential.	**PRF-I**

Map Code	Tree Species	Grid Reference (ITM)	Feature Location and Description	Suitability