Killaloe Bypass, Shannon Bridge Crossing and R494 Improvement Scheme

Bat House Improvement Works

Report prepared for Clare County Council

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20th October 2025

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1 Introduction

This report has been prepared by Karen Banks, Greenleaf Ecology, at the request of Clare County Council. It is proposed to undertake improvement works to the bat house constructed for the Killaloe Bypass, Shannon Bridge Crossing and R494 Improvement Scheme. The planning reference for the now substantially constructed scheme is PL03. HA0038.

The bat house is known to support lesser horseshoe bat (*Rhinolophus hipposideros*); therefore a derogation license is required for the proposed improvement works.

The location of the bat house is illustrated in the drawings enclosed in Appendix A.

1.1 Statement of Competency

The pre-construction bat surveys and derogation application for the permitted scheme were undertaken by Karen Banks, MCIEEM. Karen is an ecologist with 19 years' experience in the field of ecological assessment. Karen is an experienced and skilled bat surveyor, first gaining a scientific licence to disturb bats from Natural England, UK in 2008. Karen is trained in bat handling and capture methods and currently holds a bat disturbance licence granted by the NPWS. Karen has undertaken bat survey and assessment for numerous projects, including bridge repair and replacement works, domestic dwelling repair and demolition works, wind farm developments and large-scale infrastructure projects such as flood relief schemes, road developments and pipeline schemes.

Technical advice for the design of the bat house and the proposed improvement works (the subject of this report) was provided by Dr Tina Aughney, Bat Eco Services, licensed bat specialist.

2 Background to the Proposed Works

The bat house was constructed to compensate for the loss of a Leisler's bat maternity roost as a result of the construction of the Shannon Bridge Crossing. The aim of the provision of an artificial roost was to ensure that there is no net loss of roosting opportunities for the bats confirmed to be roosting within the permitted development boundary.

As detailed in the supporting report for the derogation license application for permitted scheme, the compensatory roost was designed in view of the following criteria:

1. Bat species recorded roosting in the building to be demolished are Leisler's bats, soprano pipistrelles, brown long-eared bats and common pipistrelles (in order of number of individuals recorded). Therefore the new replacement roost must cater for these four bat species.
2. The priority species are in the following order:
    a. Leisler's bats – maternity roost. The Irish population of this species of bat is of international importance and therefore this is the priority species to cater for in relation to the design of the alternative bat roost. This species of bat is traditionally a tree dwelling bat species and therefore prefers to roost in tree holes. Leisler's roosts recorded previously by Dr Aughney roosting in buildings are in small confined spaces of hip roofs. The colony individuals huddle together in a confined space between timber beams leading from the facia/soffit to the ridge beams clinging on the felt. This species prefers to roost at height so buildings tend to be 2-storey or higher and the exit/entrance points are along gaps where the roof meets the external walls. Exit/entrances are gaps of no more than 6cm long x 3 cm high and lead directly into the roof space.
    b. Soprano pipistrelle – maternity roost. Soprano pipistrelles are the second most common bat species in Ireland and therefore of local importance. This species has

similar roosting habitats to Leisler's bats and prefers to squeeze into confined spaces, even smaller than the Leisler's bat. They will often roost between the slate roof and the roof felt, as a consequence, modern breathable felt is not suitable as it shreds due to bat movement and can lead to bat entanglement and death. Therefore, the use of the traditional bituminous roof felt is important.

   c. Brown long-eared bat – maternity roost. This bat species requires roosting conditions very different to the two bat species described above. It is an open roof void species in order to facilitate internal flight but will roost along timber beams in the roof void. It requires a certain volume of roof void in order to roost. While this is not the priority bat species, the roost design will aim to cater for this species after the two first priority bat species.
   d. Common pipistrelle – night / satellite roost. The recommendations for both Leisler's bat and soprano pipistrelles will facilitate this bat species.

3. The type of roost to be provided for is maternity roost spaces, with preference for priority bat species.
4. Additional roosts are hibernation, satellite, transition and night roosts. These are bonus roosting facilities. The hibernation roost features will be confined to the Cold Room (Room 3) while transitional and night roost features can be provided in the Transition Ground Floor Room (Room 1) and the first floor rooms.

Post Construction Monitoring

Monitoring of temperatures within the bat house between May 2024 and September 2024 indicates that the cold room maintained high humidity and cool temperatures between 9°C and 15°C (Figure 2-1) while temperatures recorded by the logger placed next to the Leisler's box in the first floor were predominantly between 10°C and 20°C, with brief spikes up to 22°C (Figure 2-2).

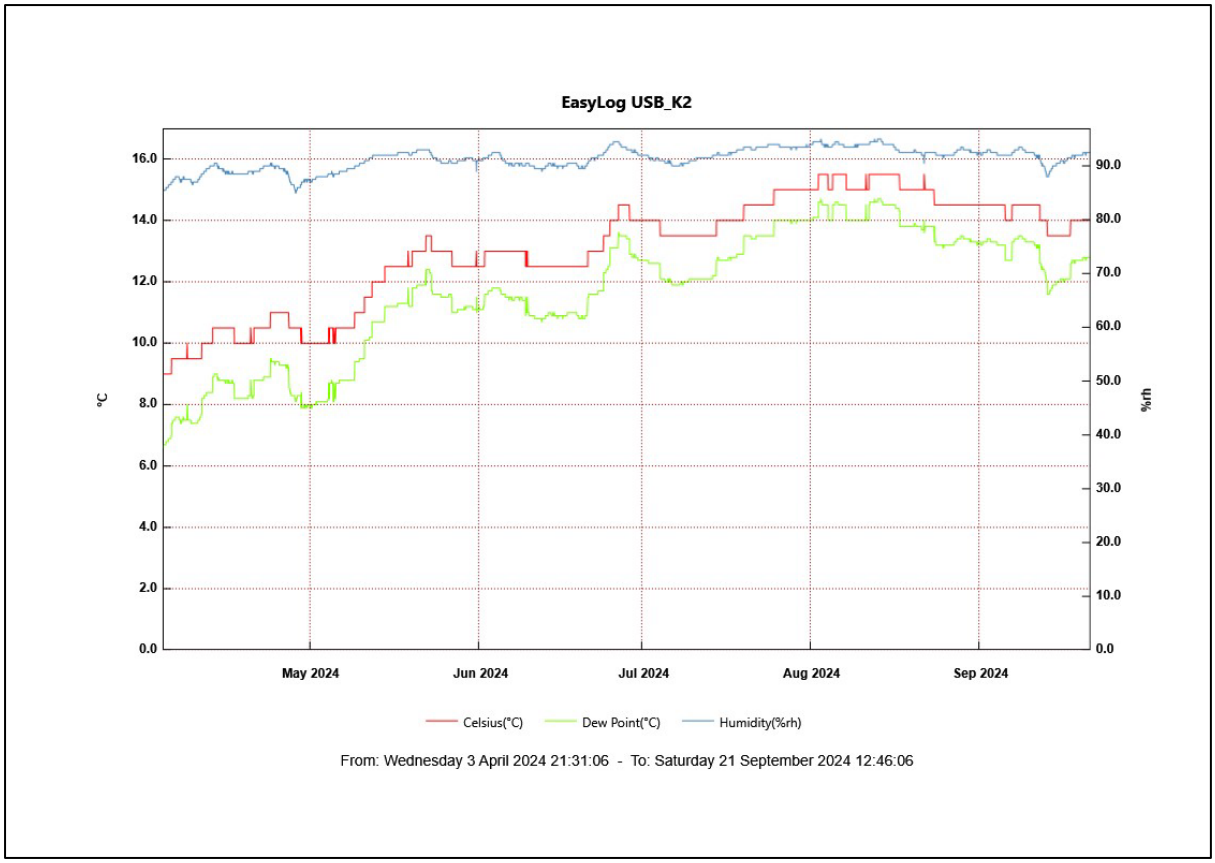

Figure 2-1: Data logger from April 2024 to September 2024 in the cold room

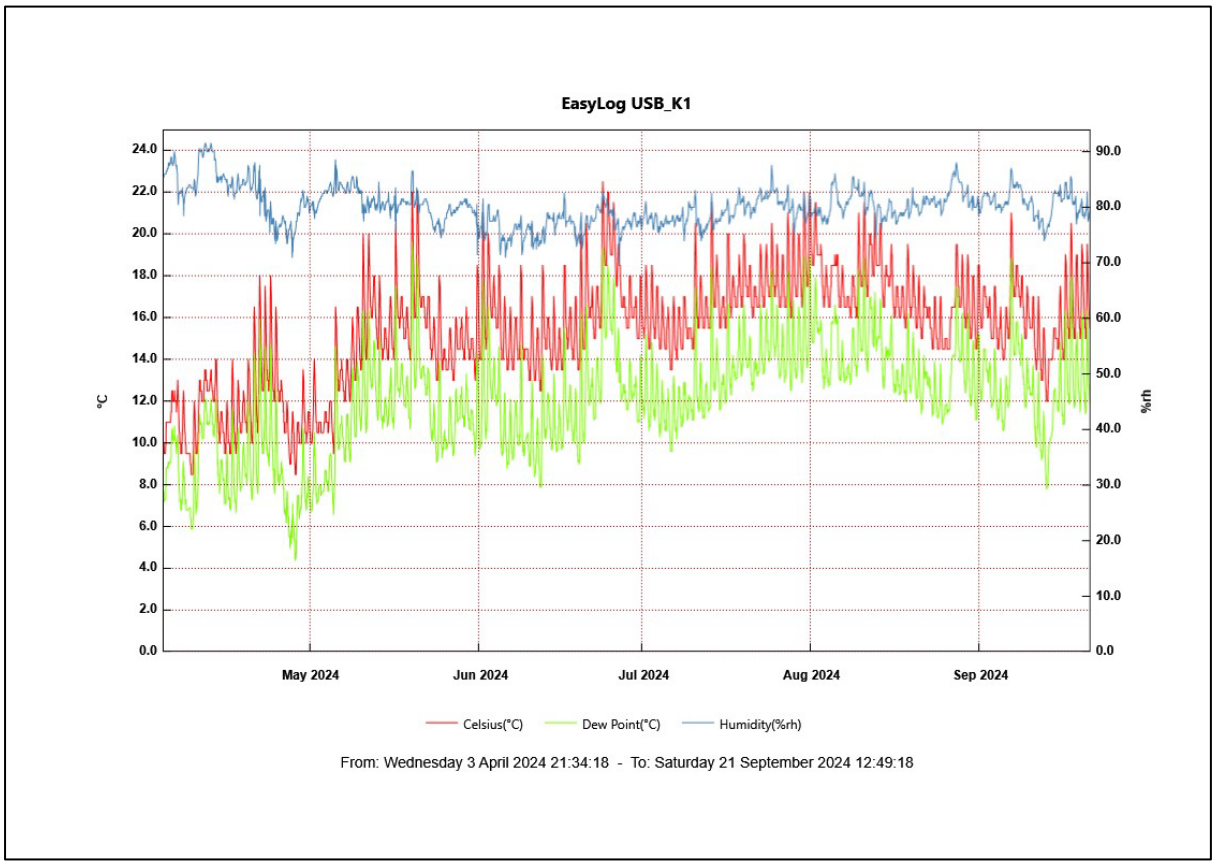

Figure 2-2: Data logger from April 2024 to September 2024 at the first floor

The results of monitoring of the bat house for use by bats indicates that no bats have been recorded roosting within the building during the summer months. A small number of lesser horseshoe bat (c.6 no.) have been recorded during cooler months (between October and April), predominantly within the cold room, but with scattered lesser horseshoe bat droppings also recorded throughout the building.

UK Bat Mitigation Guidelines (Reason, P *et al*, 2025), note that there does seem to be some variation in temperature preferences between species, and ideally a compensatory roost should aim to replicate conditions recorded within the original roost. The *Guidelines* go on to note that it would seem reasonable, certainly for larger/breeding colonies, to provide a range of microclimates (in a compensatory roost) with at least one area reaching at least 25°C that offers some buffering from the variations in external temperature. *Bat Mitigation Guidelines for Ireland* (Marnell) state that for maternity roosts, bats appear to prefer maximum daytime temperatures of between 30°C and 50°C, with 42°C the optimum. Hibernation sites should be sufficiently large to achieve stable winter temperatures of 0-6°C for Vespertilionid bats and 6-10°C for Rhinolophid and need to be sufficiently large for bats to fly and turn comfortably.

In view of the above detailed bat house monitoring results and the preferred conditions for breeding and hibernation colonies, the aims of the proposed works are as follows:

1. To improve conditions within the first floor of the bat house for breeding colonies.
2. To maintain the existing conditions for lesser horseshoe bat to roost within the ground floor of the building in cooler months.

The works proposed to achieve the above aims are described in Section 3 and are illustrated in Appendix A.

3 Proposed Works

The proposed improvement works comprise the following:

1. Construction of a new marine plywood floor with insultation to create a loft space. Chicken wire to be attached to the underside of the insulation board to provide grip for bats in the room below.

2. Ten slate vents closet to the roof apex in the new loft space to be closed with plywood squares (to be screwed in place just in case one or two need to be reopened if ventilation is required). The remaining 8 to be left open. Ensure that they are cobweb free.

3. Bird nest material in Leisler's bat loft boxes to be removed and entrance via the wall blocks to be closed (close with plywood internally). One slate vent entrance to be left open. Ensure that it is free of cobwebs.

4. Sheet of plywood to be placed on the lower half of the entrance point partition wall (i.e. the timber frame internally around the lesser horseshoe bat entrance on the first floor to reduce wind and sunlight entering. Ensure that there is a minimum of 500m opening remaining when the plywood is fitted in the partition to allow bats to fly into the first floor from the grilled entrance.

The drawings of the proposed works are enclosed in Appendix A.

4 Potential Impacts

There are no records of lesser horseshoe bat from within a 5km radius of the bat house on the NBDC or NPWS databases. The closest recorded roost is near Castleconnell, c.11.5km to the south of the bat house. However, given the use of the bat house at Killaloe by relatively small numbers of lesser horseshoe bat during cooler months, it is reasonable to assume that there are other unrecorded roosts in the area.

There is potential for temporary disturbance to a minor lesser horseshoe bat hibernation roost as a result of noise, dust and light incursion into the bat house during construction. However, as noted above, it is likely that there are other lesser horseshoe roosts locally, therefore there would be alternative roosting spaces for bats during the period of works. In view of the small scale and temporary nature of the proposed works, and the likely presence of alternative roosting habitat in the area, impacts would be minor and would not result in a significant adverse effect on the local population of lesser horseshoe bat.

5 Derogation Tests

Test 1: Reason for the Derogation.

Reason d) The derogation application is for the improvement of an existing compensatory bat house constructed for the Killaloe Bypass, Shannon Bridge Crossing and R494 Improvement Scheme, under derogation license DER/BAT 2020-2.

Monitoring indicates that the roof space of the bat house does not reach sustained warm temperatures suitable for summer maternity roosts. The proposed works (as described in the accompanying report and drawings) aim to provide a roof space with increased temperatures while maintaining cooler temperatures within the cold room on the ground floor of the building. The cold room is currently used by lesser horseshoe bat in cooler periods and provides roosting habitat for this species at the eastern edge of its known distribution range in this region of Ireland.

Test 2: Absence of Alternative Solutions

Do-nothing: This option is not feasible as the bat house is currently not providing suitable conditions for summer roosting bats.

Alternative location: The proposal is for improvement of an existing bat house, therefore an alternative location is not a feasible option.

Alternative timing: It is proposed to conduct works outside of the main maternity and hibernation period to avoid the most vulnerable periods for roosting bats.

The proposed improvement works, with mitigation measures in place, is the most satisfactory option to improve conditions within the bat house.

Test 3: Impact of a Derogation on Conservation Status

The national population of lesser horseshoe bat was estimated at 14,975 in summer 2023. The number of lesser horseshoe bat roosting in the bat house is estimated to be c.6 individuals during cooler months (October to April). In the absence of any mitigation, the improvement of the bat house may potentially result in the disturbance of a small number of lesser horseshoe bat. This would result in an minor temporary effect on lesser horseshoe bat locally but would not result in a significant effect on lesser horseshoe bat populations. With the implementation of the mitigation measures outlined in the supporting report, the proposed works and actions outlined within the supporting report will not be detrimental to the maintenance of populations of bat species at favourable conservation status in their natural range (as required under Section 54(2) of the European Communities (Birds and Natural Habitats) Regulations, either locally or nationally. Further, the aim of the works is to improve the conditions for roosting bats within the bat house for the benefit of Irish bat species, including local populations of lesser horseshoe bat.

6 Mitigation

Lesser horseshoe bat utilise the bat house for roosting, therefore, safeguards are recommended to ensure the safety of these animals during works.

Application for a derogation licence

NB: Work on a known bat roost is a notifiable action under current legislation and a derogation licence has to be obtained from the National Parks and Wildlife Service before works on the roost can commence. Such a licence is required for the proposed works to the bat house. No works should be undertaken on the bat house before the licence is granted by the NPWS.

Measure 1: timing of improvement works

It is proposed to improve the existing bat house which currently supports lesser horseshoe bat in cooler months of the year. The proposed works are temporary (c. 2 weeks), it is proposed to complete the works outside of the core hibernation period (December to February).

Measure 2: improvement works

The proposed works are described in Section 3 of this report and are illustrated in the drawings enclosed in Appendix A.

Prior to commencement of works, the bat specialist will brief the contractors on the possible presence of bats within the bat house, the subsequent need to take appropriate care and attention whilst carrying out the works and the steps to take should bats be discovered within the area of the bat house subject to works at any time.

Access to the bat house for bats will be maintained during the works. As noted in *Bat Mitigation Guidelines for Ireland*, active bats will usually keep out of the way of any operations, but torpid bats may need to be gently moved to a safe place, preferably without causing them to fly out in daylight. Any moving or handling of bats requires a licence. Having noted the above requirements, given the nature of the proposed works (i.e., primarily installation of a ceiling outside of the core hibernation period) and the main current roosting location for lesser horseshoe bat in the ground floor cold room, it is not expected that it will be necessary to move lesser horseshoe bat during works.

Access to the cold room by contractors shall be prohibited and the door locked prior to commencement of works.

Cutting of materials (e.g. plywood) shall be completed outside of the bat house to minimise creation of dust and noise disturbance.

Care shall be taken to avoid shining light directly into the cold room on the ground floor.

6.1 Monitoring

A bat specialist shall be consulted to ensure that works are completed correctly as per the design enclosed in Appendix A and the mitigation provided in Section 6 of this report during the construction phase.

A compliance report on works undertaken during the construction phase will be submitted to National Parks and Wildlife Services on completion of construction, to include details of supervisory measures used and the results obtained, including corrective measures used (if required).

The bat house is currently monitored by the project ecologist for Clare County Council and National Parks and Wildlife Service. This monitoring will continue to assess uptake of the bat house by bat species, including lesser horseshoe bat. The monitoring will inform the requirement for any further corrective works to the bat house to optimise conditions for roosting bats.

7 References

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Russ (2012) British Bat Calls: A Guide to Species Identification. Pelagic Publishing.

Schofield, H. W. (2008). The Lesser Horseshoe Bat Conservation Handbook. The Vincent Wildlife Trust.

Appendix A Proposed Works Drawings

Bat Roost Upgrades

PROPOSED TENDER DRAWINGS

February '25

DRAWINGS :-

MCT0741 - EN0005.00	PROPOSED BAT ROOST - INDEX & NOTES SHEET - (Sheet 0 of 5)
MCT0741 - EN0005.01	PROPOSED BAT ROOST UPGRADES - EXISTING LOCATION & SITE PLAN (Sheet 1 of 5)
MCT0741 - EN0005.02	PROPOSED BAT ROOST UPGRADES - GENERAL ARRANGEMENT (Sheet 2 of 5)
MCT0741 - EN0005.03	PROPOSED BAT ROOST UPGRADES - GENERAL ARRANGEMENT (Sheet 3 of 5)
MCT0741 - EN0005.04	PROPOSED BAT ROOST UPGRADES - GENERAL ARRANGEMENT (Sheet 4 of 5)
MCT0741 - EN0005.05	PROPOSED BAT ROOST UPGRADES - SITE EXTENTS AND ACCESS (Sheet 5 of 5)

Project Scope
Minor Upgrades/Maintenance to the Existing Bat House Located within Clarisford Park as described below.

Timber
1. Timber to be Grade C16.
2. Timber to be in accordance with IS EN 1995-1-1 and IS EN 338.

First Floor & Attic/ loft space

1. Add Marine plywood on existing 225mm x 44mm timber joists @ 400mm C/C. 150mm deep insulation to be added between existing joists.
2. Chicken mesh/ wire to be fixed to underside of existing joists with appropriate fixings.
3. Close the Eight Bat Slates as shown in the scope drawing with ply wood squares (screw in place just in case one or two need to be reopened if ventilation is required). Leave the remaining two open - ensure that they are cobweb free.
4. Remove nest material in Leisler's bat loft boxes and close off the entrance via 6no Bat Blocks (close with plywood internally).
5. Place a sheet of ply wood on the lower half of the entrance point partition wall (i.e. the timber frame internally around the LHB entrance on Floor 1) to reduce wind and sunlight entering. Ensure that there is a minimum of 500m opening (remaining when the ply wood is fitted) in the partition to allow bats to fly into 1st Floor from the grilled entrance.

Access and Working Hours

1. Working Hours: 8AM to 6PM Monday to Friday and 8AM to 1PM on Saturday. Working outside these hours is not permitted unless agreed with the Employer and Clarisford Park.
2. Access to the site is through an existing public park. The Contractor shall put in place a Construction Management Plan (CMP) for the execution of the works.
3. Provision of a matted access route & reinstatement of disturbed area after completion of the works
4. The CMP shall include at a minimum details of access proposed access and egress routes through the park to the site, proposed works methodology, proposed programme, measures for ensuring the site is secured, proposed plant and machinery. Access arrangements, temporary fencing and measures to protect/reinstate disturbed areas of Park arising from the works shall be agreed with Clarisford Park prior to the commencement of works.
5. Aluminium/PVC gutters to be cleaned of any debris. Ivy to be removed from around external door.
6. As the bats are hibernating in the house, it would be best to wait until April/May before making a start on the alterations.

General

1. All building work to be completed in compliance with building regulations.
2. Quality of products
   - generally: new (proposals for recycled products may be considered).
   - supply of each product: from the same source or manufacturer.
   - whole quantity of each product required to complete the works: consistent in kind, size, quality and overall appearance.
   - tolerances: where critical, measure a sufficient quantity to determine compliance.
   - deterioration: prevent. Order in suitable quantities to a programme and use an appropriate sequence.
3. Quality of execution
   - generally: fix, apply, install or lay products securely, accurately, plumb, neatly and in alignment.
   - colour batching: do not use different colour batches where they can be seen together.
   - dimensions: check on-site dimensions.
   - finished work: not defective, e.g. not damaged, disfigured, dirty, faulty, or out of tolerance.
   - location and fixing of products: adjust joints open to view so they are even and regular.

N.B. This drawing is to be read in conjunction with Pricing Document and all other relevant drawings.

Client

Project Ireland 2040 Building Ireland's Future

An Roinn Iompair, Turasóireachta agus Spóirt Department of Transport, Tourism and Sport

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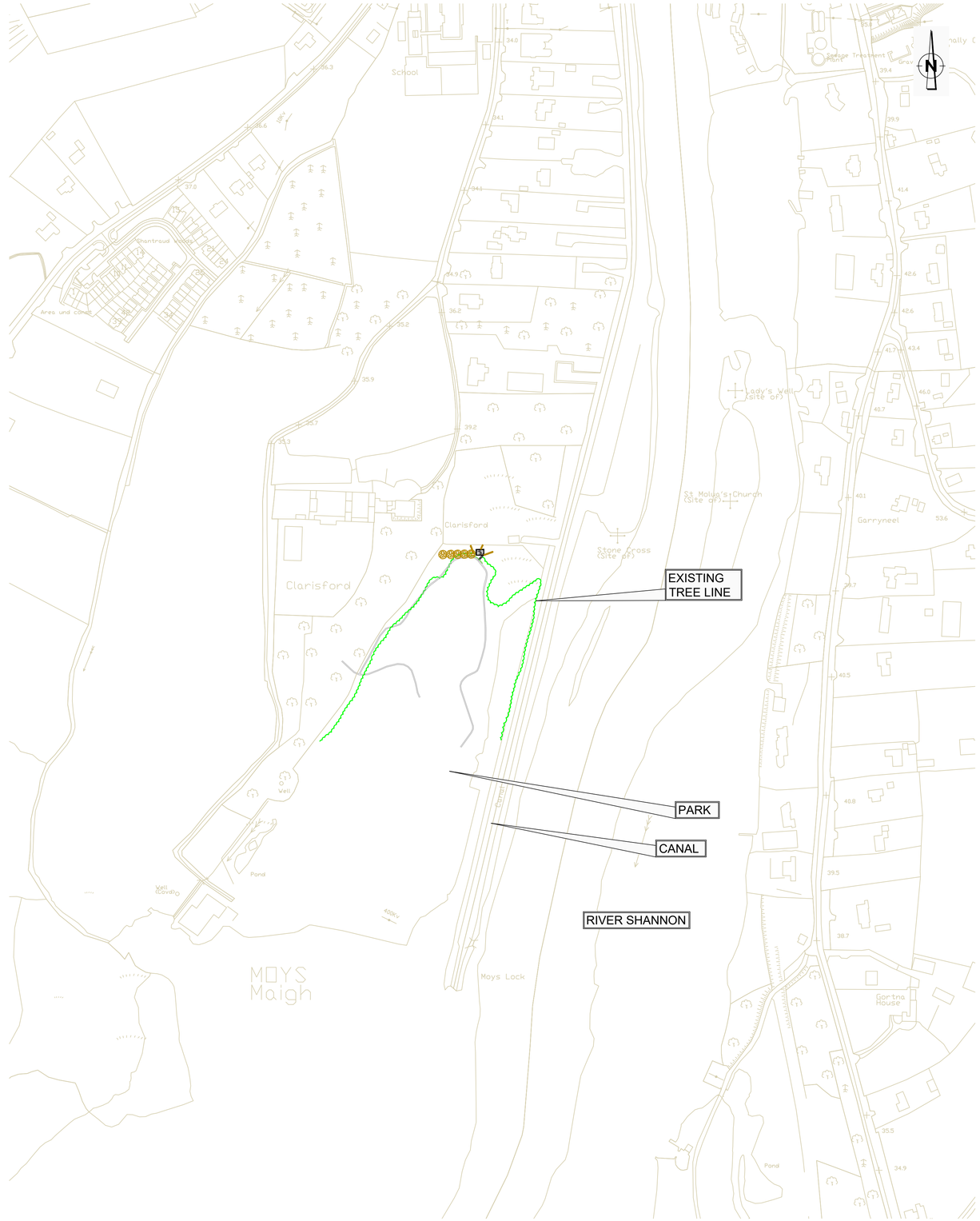
Rev: P01



LOCATION PLAN

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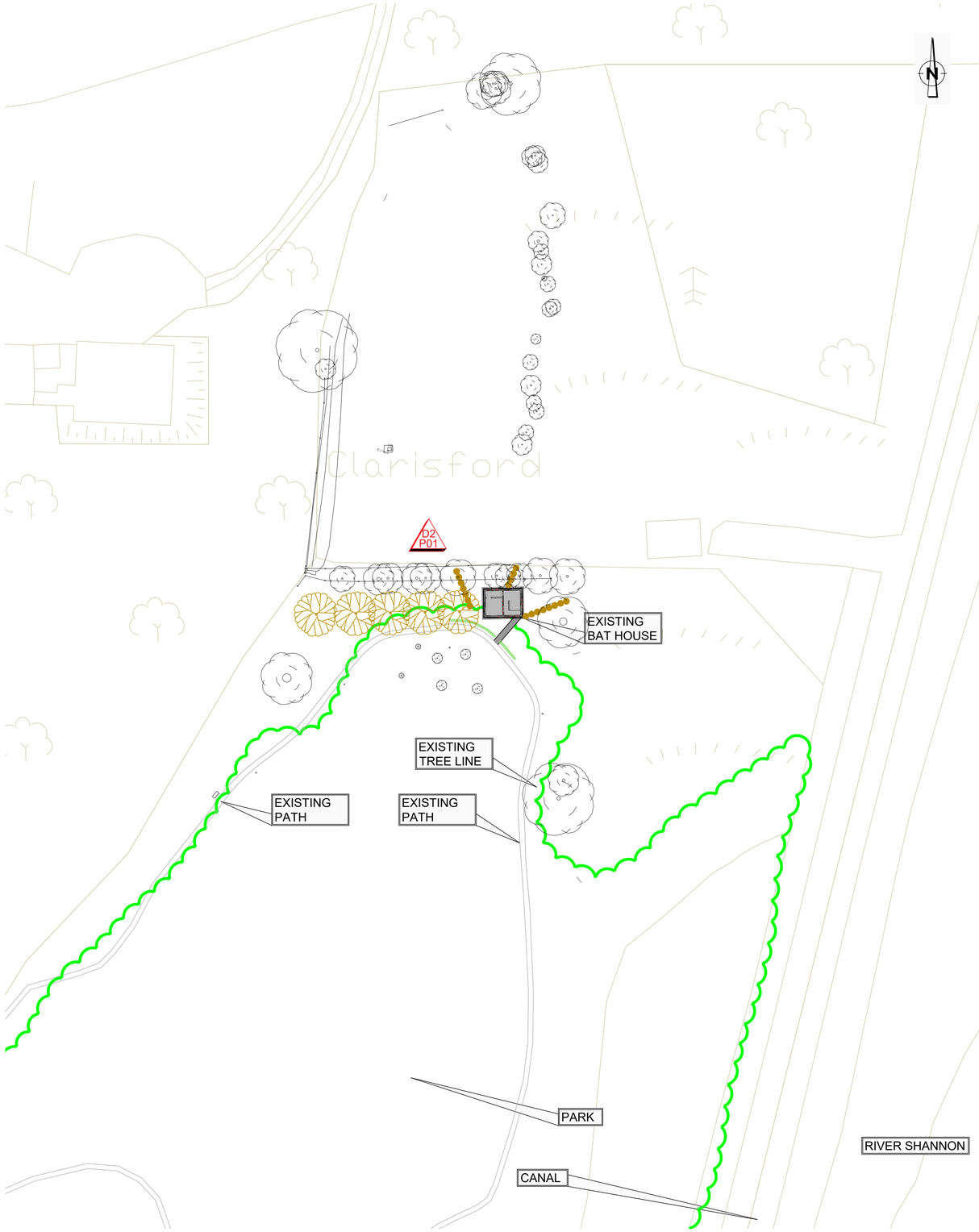

SITE PLAN

(Scale 1 : 500)

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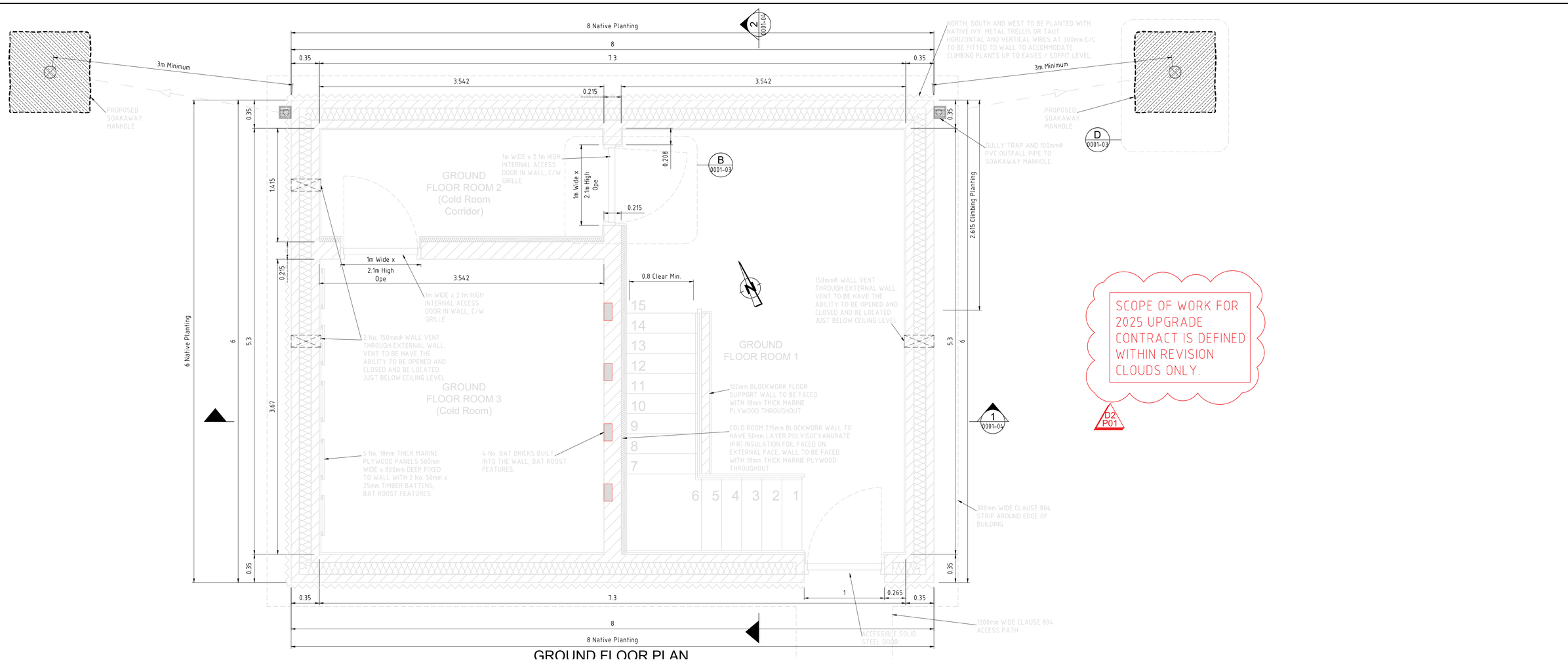
Rev: P01



SCOPE OF WORK FOR 2025 UPGRADE CONTRACT IS DEFINED WITHIN REVISION CLOUDS ONLY.

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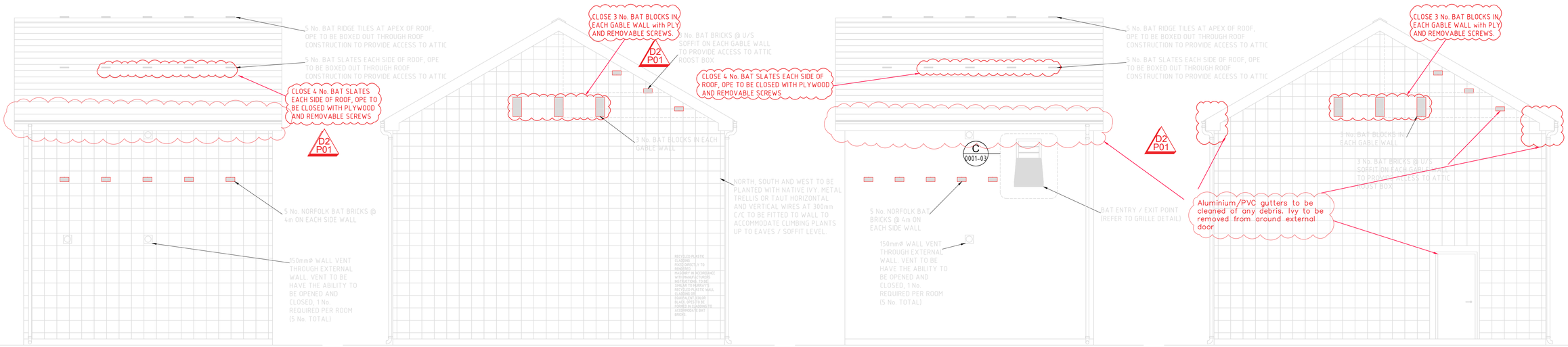

WEST ELEVATION
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NORTH ELEVATION
(Scale 1 : 50)

EAST ELEVATION
(Scale 1 : 50)

SOUTH ELEVATION
(Scale 1 : 50)

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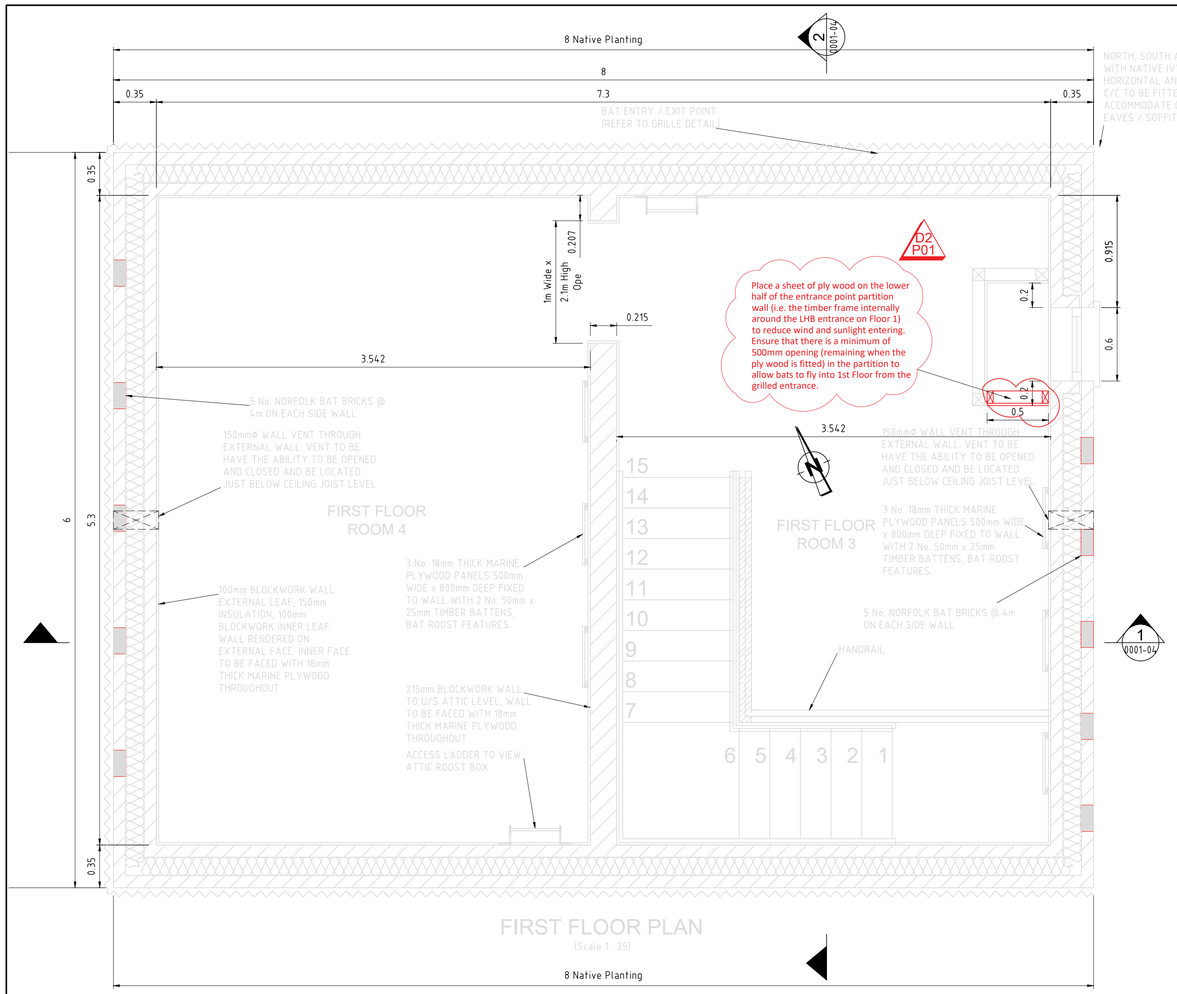

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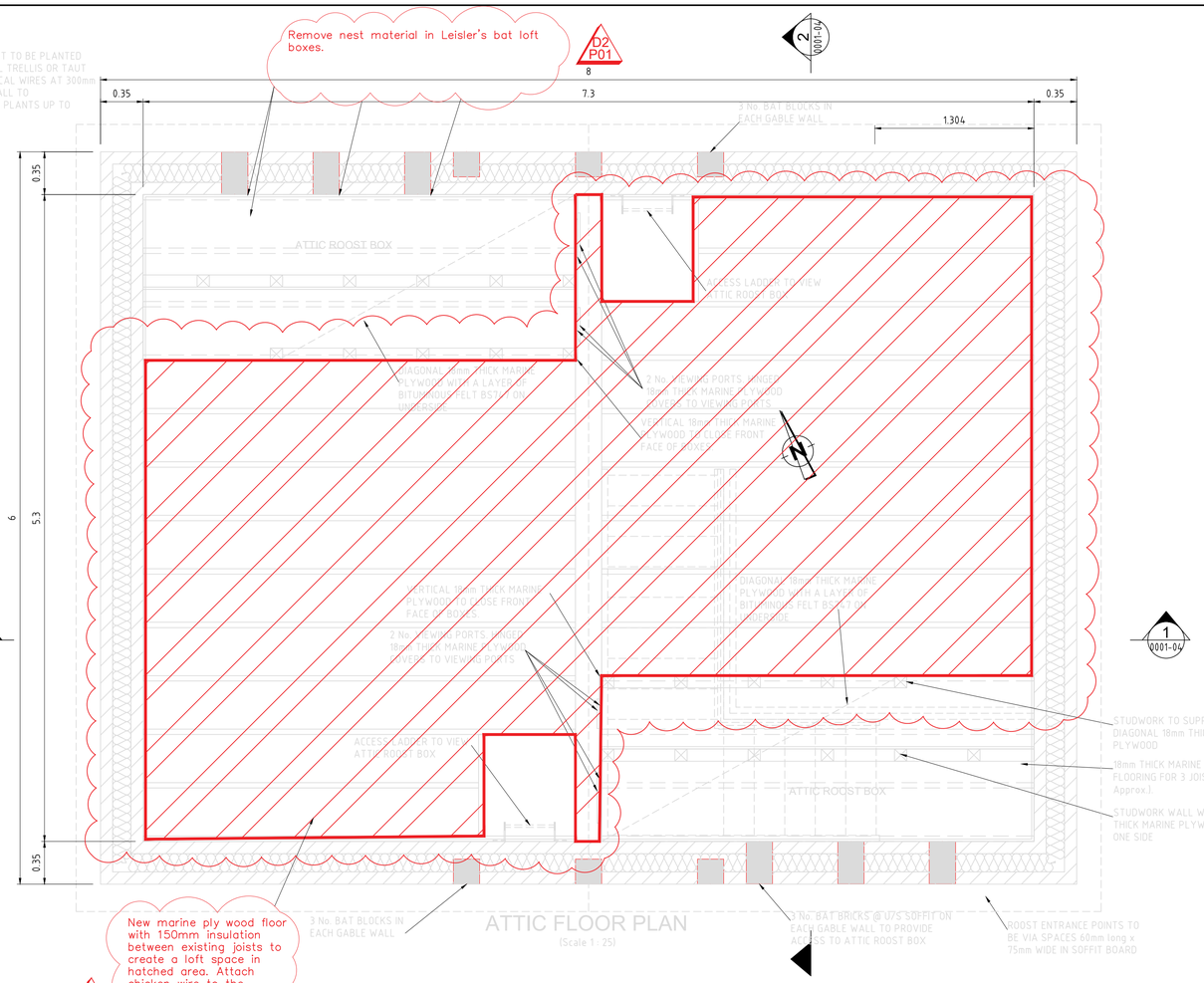

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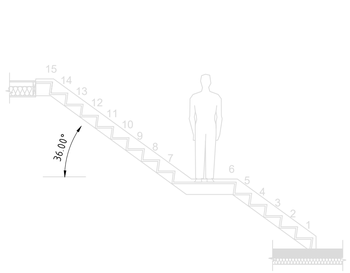

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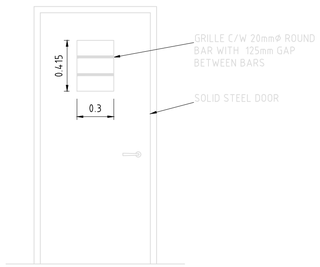

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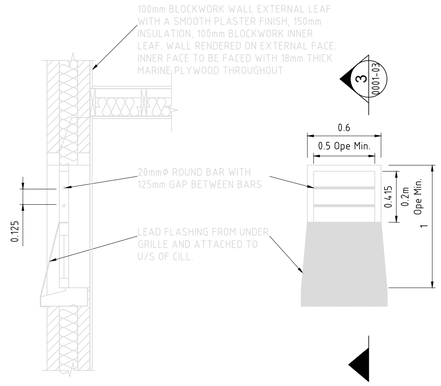
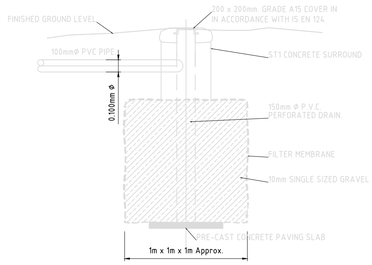


SECTION 3 0001-03
(Scale 1 : 25)

DETAIL C 0001-02
(Scale 1 : 25)

NOTE :-

1). ALL GRILLE TO BE MILD STEEL AND HOT DIPPED GALVANISED PRIOR TO FITTING.
2). 20mmØ ROUND BAR TO BE USED AS INFILL.
3). GAP OF 125mm TO BE MAINTAINED BETWEEN THE BARS.
4). LEAD FLASHING TO BE PLACED UNDER THE GRILLE AND TO THE UNDERSIDE OF THE CILL.



DETAIL D 0001-02
(Scale 1 : 25)
SOAKAWAY MANHOLE

SCOPE OF WORK FOR 2025 UPGRADE CONTRACT IS DEFINED WITHIN REVISION CLOUDS ONLY.

D2 P01

Client

Project Ireland 2040 Building Ireland's Future

An Roinn Iompair, Turasóireachta agus Spóirt Department of Transport, Tourism and Sport

CLARE COUNTY COUNCIL

Comhairle Contae Thiobraid Árann Tipperary County Council

General Notes

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(v) All Levels refer to Ordnance Survey Datum, Malin Head.

Status Rev	Date	Dim Chk	Amendment / Issue	App
D2 P01	Feb.'25	JC GK	Issue For Tender	AO'B

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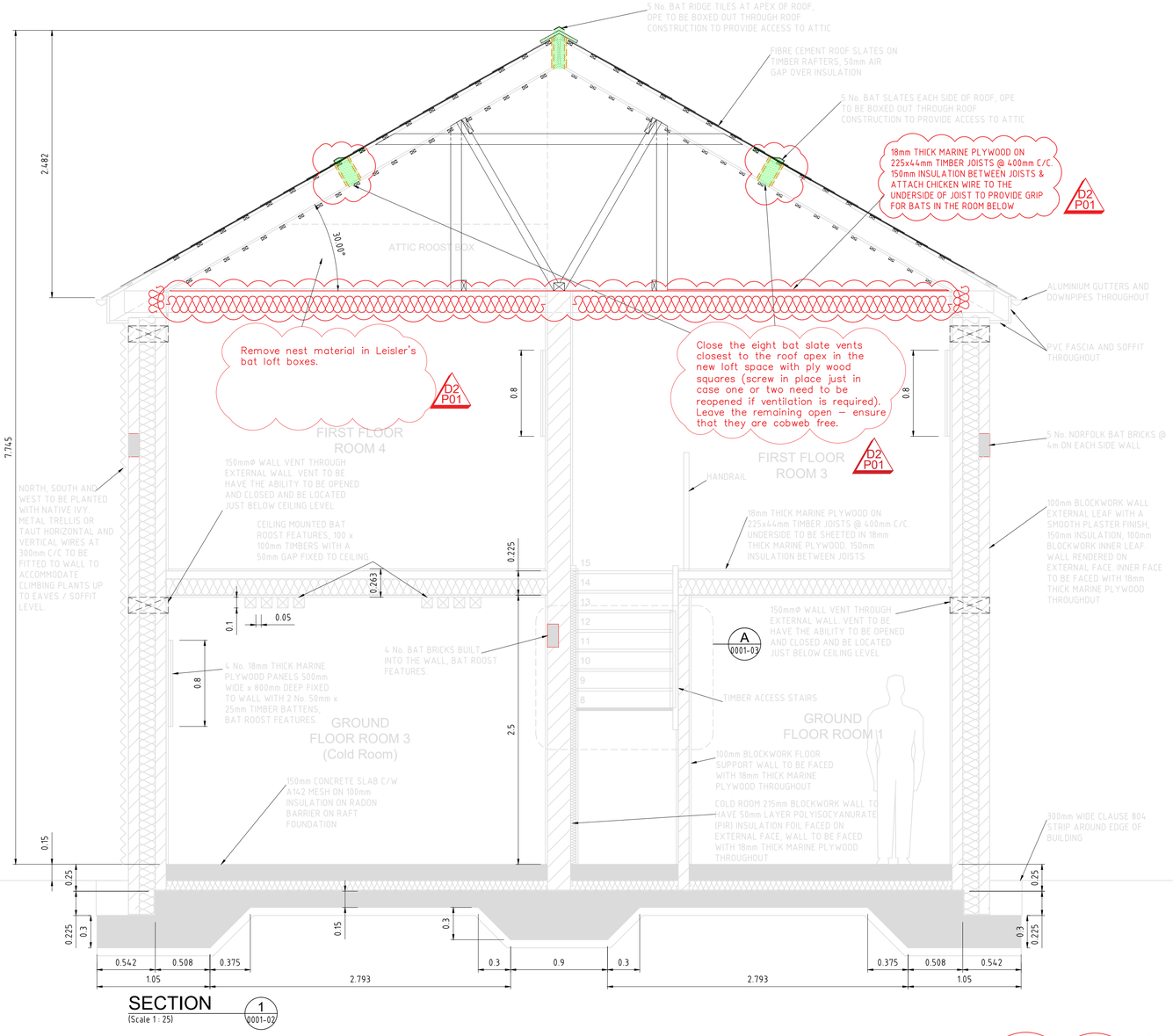
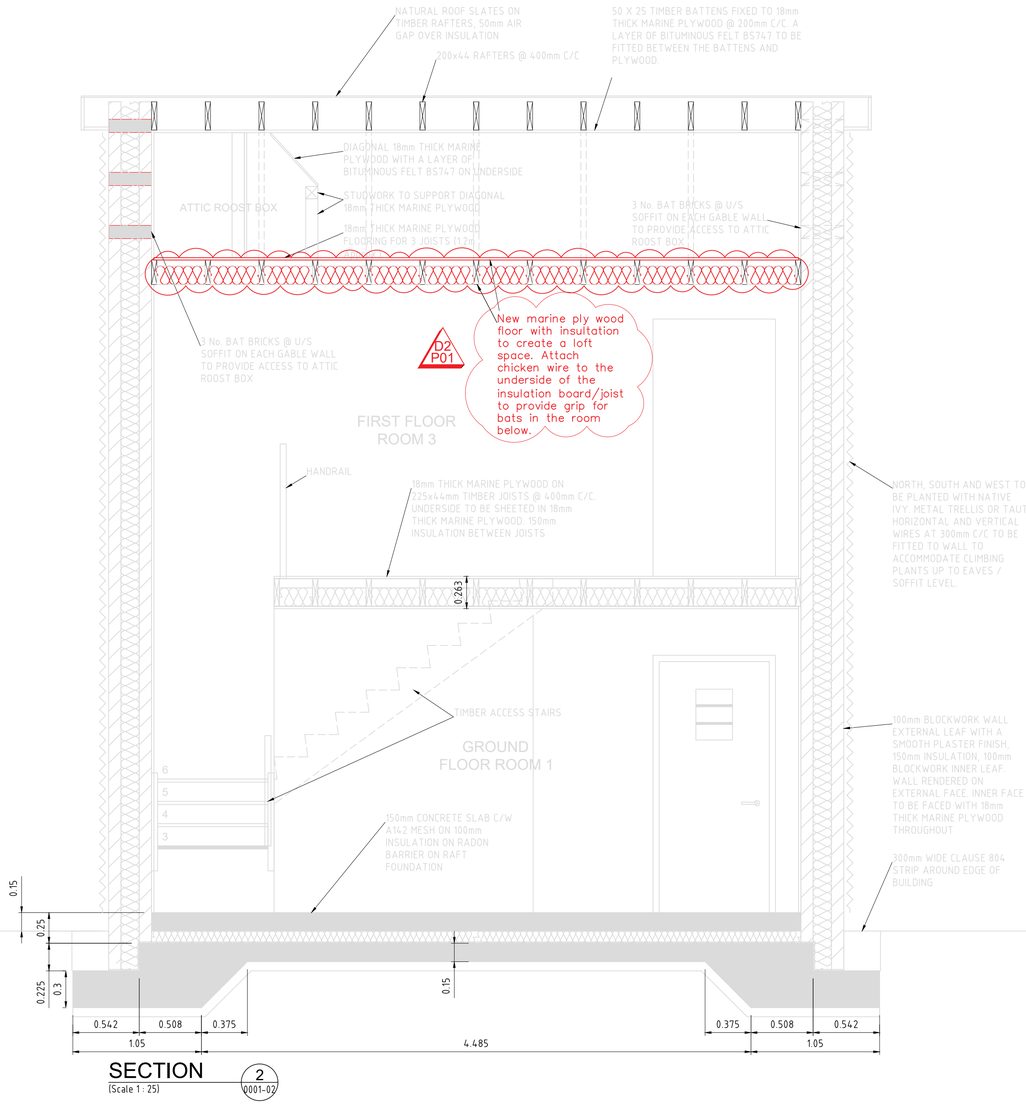
Scale	As shown @ A1 Half @ A3
Created on	Feb '25
Sheets	03 of 05
Project	Killaloe Bypass, Shannon Bridge Crossing & R494 Improvement
Title	Proposed Bat Roost Upgrades General Arrangement (Sheet 3 of 5)
Model File Identifier	MCT0741-RPS-00-XXXX-DR-C-EN0005
File Identifier	MCT0741-RPS-00-XXXX-DR-C-EN0005- 03
Status	D2
Rev	P01



SECTION 1 (Scale 1 : 25) Q001-02



SECTION 2 (Scale 1 : 25) Q001-02

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D2 P01

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Client

Project Ireland 2040 Building Ireland's Future

An Roinn Iompair, Turasóireachta agus Spóirt Department of Transport, Tourism and Sport

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Status Rev	Date	Drn Chk	Amendment / Issue	App
D2 P01	Feb.'25	JC GK	Issue For Tender	AO'B

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Scale: As shown @ A1, Half @ A3

Created on: Feb. '25

Sheets: 04 of 05

Project: Killaloe Bypass, Shannon Bridge Crossing & R494 Improvement

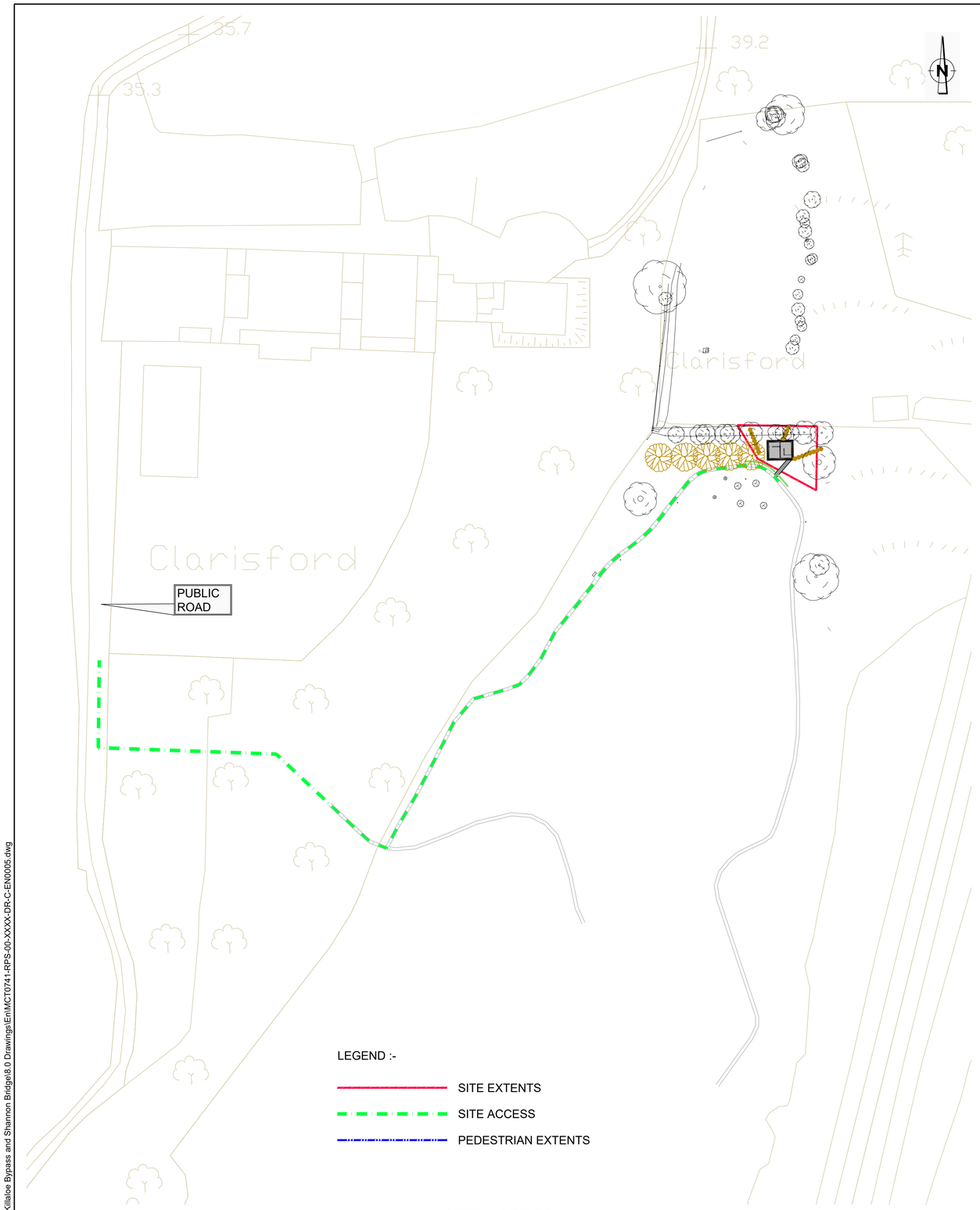
Title: Proposed Bat Roost Upgrades General Arrangement (Sheet 4 of 5)

Model File Identifier: MCT0741-RPS-00-XXXX-DR-C-EN0005

File Identifier: MCT0741-RPS-00-XXXX-DR-C-EN0005- 04

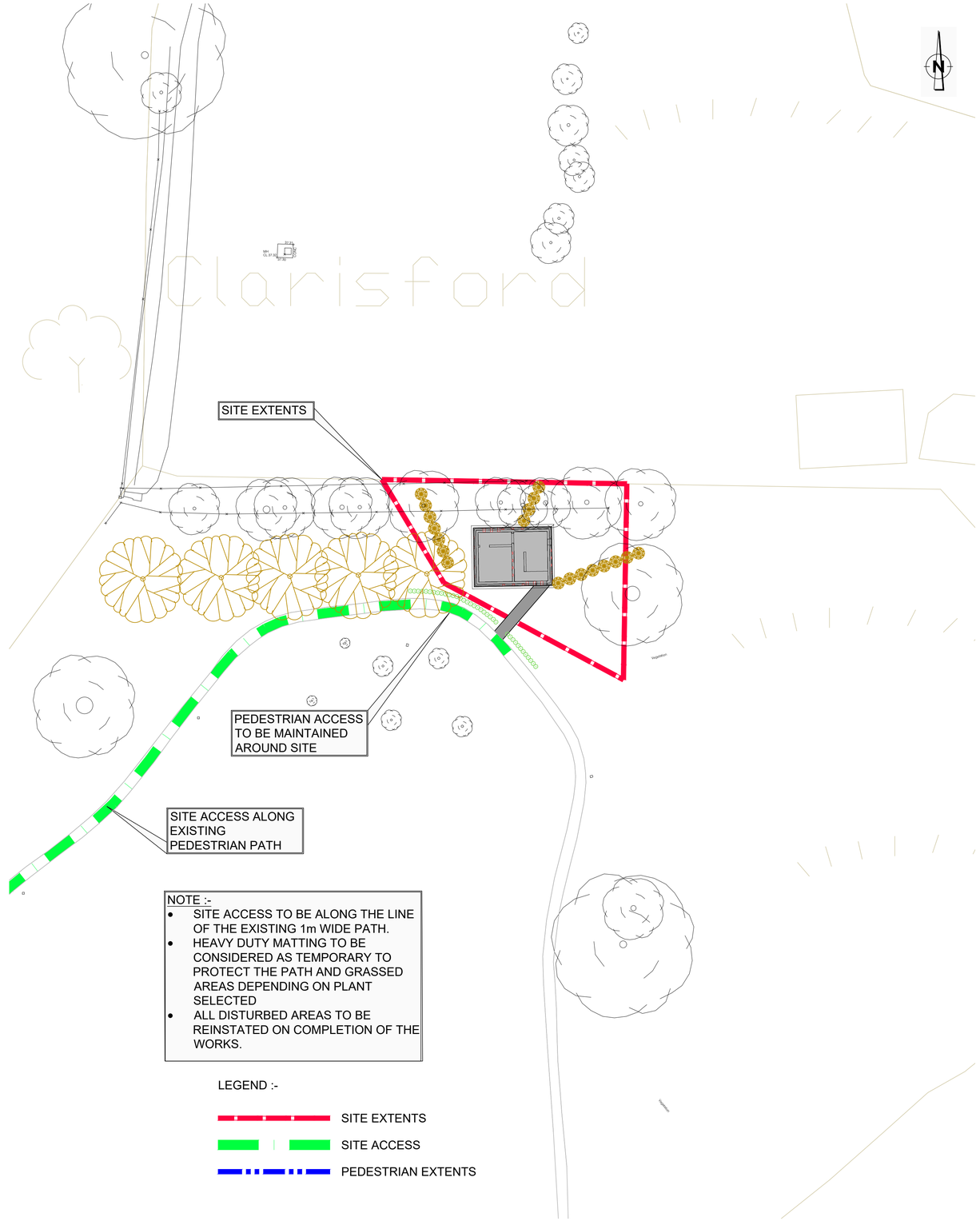
Status: D2

Rev: P01



SITE ACCESS

(Scale 1 : 750)



SITE EXTENTS

(Scale 1 : 250)

Client

Project Ireland 2040 Building Ireland's Future

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Status Rev	Date	Drn Chk	Amendment / Issue	App
D2 P01	Feb.'25	JC GK	Issue For Tender	AO'B

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Model File Identifier: MCT0741-RPS-00-XXXX-DR-C-EN0005

Scale: As shown @ A1, Half @ A3

Created on: Feb '25

Sheets: 05 of 05

Project: Killaloe Bypass, Shannon Bridge Crossing & R494 Improvement

Title: Proposed Bat Roost Upgrades Site Extents and Access (Sheet 5 of 5)

File Identifier: MCT0741-RPS-00-XXXX-DR-C-EN0005- 05

Status: D2

Rev: P01

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