

Quinn's Cross to Raheen Roundabout Cycle Scheme, Raheen, Co. Limerick



Tree Roost Survey Report

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1. INTRODUCTION

Ecofact were commissioned to survey the site of a proposed development in order to ascertain the potential for bat roosting habitat in several trees on a site in Raheen, Co. Limerick. The proposed development is for a cycle scheme on the R510 between Quinn's Cross and Raheen Roundabout in Co. Limerick.

1.1 Legislation Relating to Bats

Bats are strictly protected under both national and international law. The purpose of this legislation is to maintain and restore bat populations within their natural range. This implies that the habitats on which they rely and the ecology of their life cycles should not be compromised by human activities. Where activities have the potential to compromise bat populations, measures are required to be put in place to avoid impacts or compensate and mitigate for those impacts. The key legislation which provides protection to bats is outlined below.

1.1.1 *Wildlife Act 1976*

In the Republic of Ireland, all bats and their roosts are protected under Schedule 5 of the *Wildlife Act 1976* (amended 2000). It is unlawful to disturb either without the appropriate Licence.

1.1.2 *EU Habitats Directive*

In addition to domestic legislation bats are also protected under the *EC Directive on the Conservation of Natural habitats and of Wild Fauna and Flora* (Habitats Directive 1992). This Directive seeks to protect rare species, including bats, and their habitats and requires that appropriate monitoring of populations be undertaken. All bat species are protected under Annex IV of the EU Habitats Directive, while the lesser horseshoe bat (*Rhinolophus hipposideros*) is listed under Annex II. Member states are required to designate Special Areas of Conservation for all species listed under Annex II in order to protect them. The EU Habitats Directive has been transposed into Irish law with the European Communities (Birds and Natural Habitats) Regulations 2011.

1.1.3 *Bern and Bonn Conventions*

Ireland has also ratified two international conventions which afford protection to bats amongst other fauna. These are known as the 'Bern' and 'Bonn' Conventions. *The Convention on the Conservation of European Wildlife and Natural Habitats* (Bern Convention 1982), in relation to bats, exists to conserve all species and their habitats. *The Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention 1979, enacted 1983) was instigated to protect migrant species across all European boundaries, which covers certain species of bat.





 Raheen Cycle Tracks Site Boundary	Date: 2.2.2021	Drawn by: Amy Butler Checked by: William O'Connor
	Location of Proposed Raheen Cycle Tracks Project in Limerick, Co. Limerick	 Environmental Consultants

Figure 1 Location of Proposed Raheen Cycle Tracks Project in Limerick, Co. Limerick



2. METHODOLOGY

2.1 Desk Study

The bat suitability of habitat in the study area for bats was obtained from the National Biodiversity Data Centre database. This map provides a picture of the broad scale geographic patterns of occurrence and local roosting habitat requirements for Irish bat species. The maps are a visualization of the results of the analyses based on a 'habitat suitability' index. The index ranges from 0 to 100, with 0 being least favourable and 100 most favourable for bats (Lundy *et al* 2011).

2.2 Field Survey

A survey of the proposed development survey site took place on 8th February 2021 during the early spring months – outside of the active bat season. The survey involved a daytime inspection of the subject site at Raheen, Limerick by an ecologist from Ecofact Environmental Consultants. The site survey assessed the suitability of the site for bats and included a search for any indications of bat presence on the site. Each of the trees to be removed on the site was inspected for evidence of bats and any Potential Roost Features (PRFs).

The survey had regard to the methodology outlined in *Bat Mitigation Guidelines for Ireland* by Kelleher & Marnell (2006) and *Bat Surveys for Professional Ecologists: Good Practice Guidelines* by Collins (2016). The site was visited during daylight hours to assess the habitats present on the site and their potential importance for bats. Mature trees were inspected for their potential to have bats, using visual observations with the aid of binoculars if necessary to examine the tree for knotholes, dense ivy coverage, woodpecker holes, damaged limbs, lifting bark or impact shatters. The rest of the site was inspected for suitable bat foraging habitat and potential commuting routes.

3. RESULTS

3.1 Desk Study

The proposed cycle scheme is located in the Raheen/Dooradoyle area. The Raheen/Dooradoyle area is a large residential area in the southwest suburbs of Limerick City. There are also a number of commercial facilities in the area including Raheen Business Park and Courtfield and Racefield Shopping Centres. There are educational facilities at St. Nessian's National School on the R510 and St. Paul's National School on St. Nessian's Road.

The proposed development site comprises the road corridor along the existing R510 regional road between Quinn's Cross and Raheen Roundabout, approximately 1.1km in length. The proposed section of the R510 is currently considered to be unsafe for cyclists and has a lack of cycle facilities. Traffic volumes at this site are high and there are multiple vehicular accesses which are designed to prioritise motorised vehicles along the proposed stretch of the road. Wide carriageway approach widths, large junction radii and wide circulating carriageway are resulting high vehicular speeds and vulnerable road user movements.

The National Biodiversity Data Centre (NBDC) maps landscape suitability for bats based on Lundy *et al.*, (2011). The maps are a visualisation of the results of the analyses based on a 'habitat suitability' index. The index ranges from 0 to 100, with 0 being least favourable and 100 most favourable for bats. Table 1 below gives the suitability of the study area for the bat species found in Ireland (based on



NBDC) along with their Irish Red List Status (from Marnell *et al.*, 2009). The overall assessment of bat habitats for the current study area is given as 41.78. This is considered moderate-high.

Table 1 Suitability of the study area for the bat species previously recorded in the Bunratty West, Bunratty, Co. Clare area (based on the NBDC data). Irish Red list status is also indicated (based on Marnell *et al.*, 2009)

Common name	Scientific name	Suitability index	Irish red list status
All bats	-	37.11	
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	50	Least Concern
Brown long-eared bat	<i>Plecotus auritus</i>	58	Least Concern
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	52	Least Concern
Lesser horseshoe bat	<i>Rhinolophus hipposideros</i>	21	Least Concern
Leisler's bat	<i>Nyctalus leisleri</i>	53	Near Threatened
Whiskered bat	<i>Myotis mystacinus</i>	16	Least Concern
Daubenton's bat	<i>Myotis daubentonii</i>	37	Least Concern
Nathusius's pipistrelle	<i>Pipistrellus nathusii</i>	10	Least Concern
Natterer's bat	<i>Myotis nattererii</i>	37	Least Concern

3.1.1 Previous Records

The National Bat Database of Ireland was accessed in order to obtain records of bats in the general study area. A review of bat records within 3km of the propose development site was completed. According to the National Bat Database of Ireland the nearest bat record to the proposed development site at Raheen was a Common Pipistrelle *Pipistrellus pipistrellus* and a Soprano Pipistrelle *Pipistrellus pygmaeus* from 2014 c. 870m southeast of the proposed cycle scheme. There is also a recorded of Common pipistrelle, Soprano Pipistrelle and Leisler's Bat *Nyctalus leisleri* from 2005 c. 1.3 km northeast from the cycleway. There is also a record of Common pipistrelle, Soprano Pipistrelle, Leisler's Bat and Daubenton's Bat *Myotis daubentonii* c. 1.2 km northwest of the cycleway scheme. There are a number of records of these same species to the north of the site.

3.2 Field Survey

The subject site was visited in February during the winter months and outside of the growing season, and the active bat survey season. Therefore, the habitats and trees on the site were assessed for their potential to be used by bats. The proposed development is of a small sized development consisting of a 1.1km cycle

The proposed project comprises the provision of cycling facilities on the R510 road between Raheen Roundabout and Quinn's Cross in the Raheen/Dooradoyle area in the south-east of Limerick City. The proposed section of road currently has high level of traffic and is unsuitable for cycling. Due to the high traffic volume on the road off-road cycle tracks will be constructed. The proposed project comprises three main parts: Raheen Roundabout, the mainline R510 and Quinn's Cross (MHL, 2019).

Raheen Roundabout is a busy junction with 4 arms, each with a single lane exit and 2 lane (flared or full) approaching the roundabout. There are uncontrolled, sub-standard pedestrian crossings on each arm. The proposed development involves improved pedestrian crossings at the roundabout arms. A 4m wide zebra crossing will be located between the roundabout and Courtfield Shopping Center on the R510. The proposed off-road cycle tracks on the R510 will be tied into the roundabout pedestrian crossings.



Trees are located throughout the entire survey stretch. All 24 trees onsite which are to be removed were surveyed. Details of these trees and their rating according to the Arboricultural Impact Assessment (Arbor-Care, 2021) are shown in Table 2.

Table 2. Details of trees to be removed as part of the proposed Raheen Cycleway Scheme (Arbor-Care, 2021).

Tree id	Species	Physiological/ Structural Condition	Life stage
2089	Whitebeam	Good	Mature
2090	Weeping ash	Fair	Mature
2094	Oak	Fair	Mature
2097	Horse chestnut	Good	Mature
9114-2115	Norway maple x3	Good	Mature
2118	Poplar x2	Good	Mature
2119	Horn beam x4	Good	Mature
2120	Sycamore	Fair	Early mature
2121-22 x8	Norway maple x8	Good	Mature

All trees to be removed were assessed. These trees are shown in Figures 2 and 3. Starting at the southeast section of the site there are 8 Norway maple trees to be removed. These trees showed low potential for bat roosting. While there are some knotholes present, the trees are generally well seeded and the dense branches makes them unfavourable to bats. There are two streetlights either side of this treeline. Just northwest of these trees there are four hornbeams to be removed. Again, these were considered to be in good condition and were unsuitable for roosting bats. There is a sycamore adjacent to these trees that will also be removed with no bat potential. The next two trees to be removed are poplars. These again were both in good condition and unsuitable for bats. The next trees to be removed are located in the vicinity of St. Nessian's National School. There is a relatively small, but mature Whitebeam to be removed directly on-front of the school carpark. This tree has no potential for bat roosting. There are three Norway maple trees to be removed on the opposite side of the road here. These trees again were relatively small and in good condition making them unsuitable for roosting bats. The next tree is located adjacent to the St. Nessian's School. This is a small Ash tree again which is very unlikely to be used by roosting bats. Approximately 50m north of here on the same side of the road is an Oak tree to be removed. This is an early mature tree with no potential for roosting bats.

The next tree to be removed is a large Horse-chestnut tree located on private property near Mungret Gate. This tree was not in good condition with flaking bark and several cracks which provide potential resting places and roosting opportunities for bats. This tree does have potential for roosting bats. During surveys for the Screening for Environmental Impact Assessment in Spring 2021 this tree was highlighted as having the potential for roosting bats. It is noted that due to current disturbance levels in the general area, as well as in the immediate vicinity of the identified tree the potential for this tree to be used for bats is somewhat decreased.

The next tree proposed to be removed is located on the north side of the road. It is located c. 325m from the Horse-chestnut tree described above according to the Project Drawings (Drawing No. QC-RR-LS-8). However, the tree at this location does not match the description give of the tree in the Arboricultural Impact Assessment (AIA) (Arbro-Care, 2021) so therefore this tree was not assessed. The tree is described in the AIA as "*suffering significant stem damage*" and this may provide some bat potential. Lastly, a dead Swedish Whitebeam near Quinn's roundabout will be removed. This tree is small and has no bat roosting potential.



Figure 2 Location of Trees to be Removed to Facilitate the Proposed Cycle Scheme at Raheen, Limerick (Map 1 of 2).

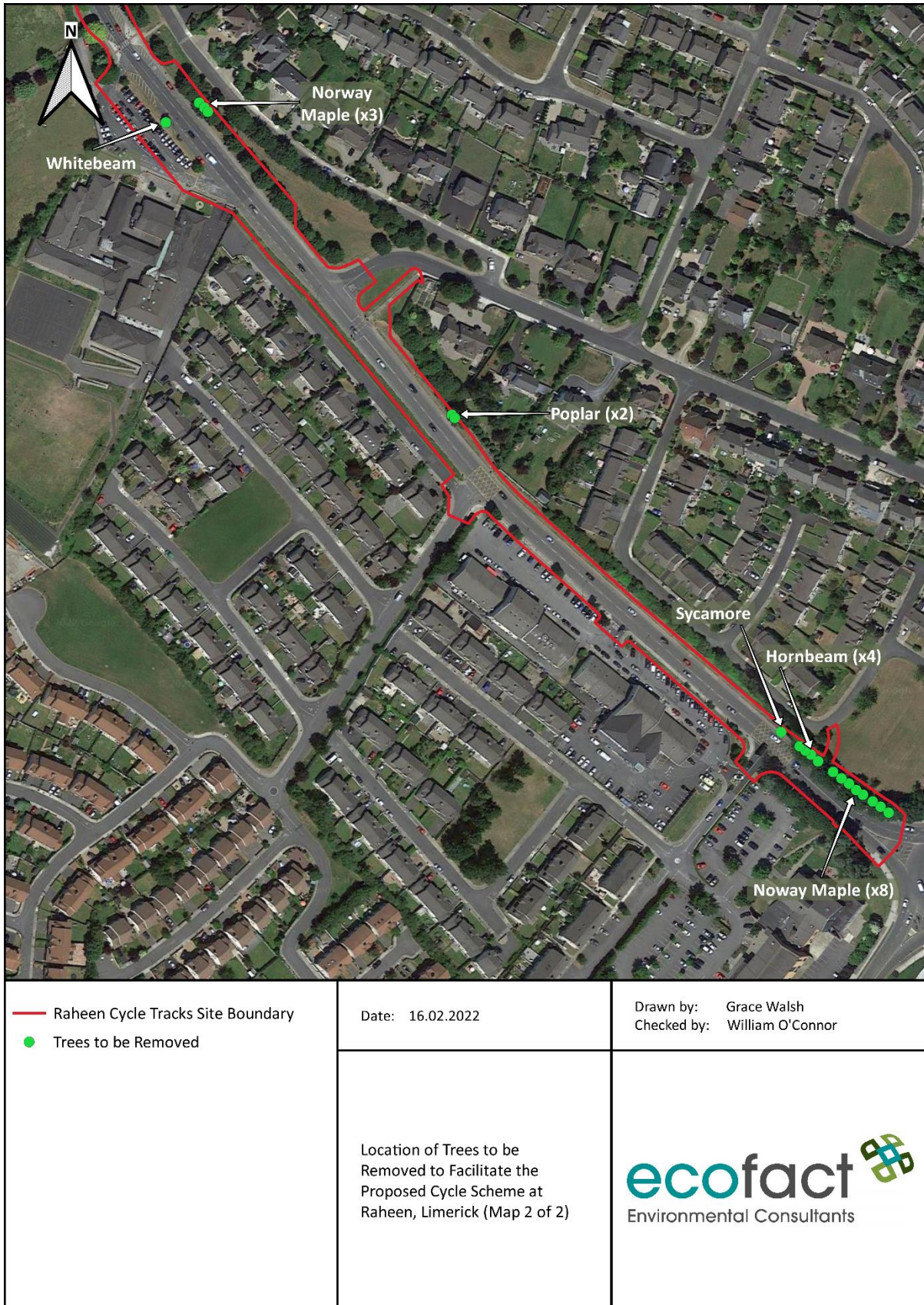


Figure 3 Location of Trees to be Removed to Facilitate the Proposed Cycle Scheme at Raheen, Limerick (Map 2 of 2).



4. IMPACTS

4.1 Roost Habitat Loss

There is at least one tree on the proposed development site which has the potential for roosting bats. The tree had several Potential Roost Features (PRFs) including flaking barks and large cracks that could be favourable for bats. On the majority of trees there were no Potential Roost Features (PRFs) noted. The trees were found to be mostly in good condition. There were no signs of decay on most of the trees that would lead to potential roosting habitat for bats. However, there is one large Horse-chestnut tree that has the potential for roosting bats. The felling of this tree therefore has the potential to lead to the permanent loss of bat roosting habitat. To fully assess the impacts a further survey during the active bat season is required

In addition, there were trees in the area that will not be felled but did have bat roost potential. There is the potential these trees to be damaged during the proposed works which could lead to disturbance to bats and further roost loss in the absence of mitigation.

4.2 Foraging / Commuting Habitat Loss

The site is located along a busy road on the suburbs of Limerick city. There are several streetlights along the road, and it is likely well lit at night. Streetlights can attract insects late at night, so some common bat species have adapted to foraging under these lights and catching insects where they are available. There is fragmentation also in the wider habitat from recent housing development such as Mungret Gate. This development has removed some woodland / scrub habitat and caused increased fragmentation from foraging and commuting habitat in the wider area. There are no hedgerows on the site but there are areas of scrub. Mostly trees on the site are spaced out. The commuting and foraging habitat on the site is suboptimal.

As the new development consists of adding a cycle path to an existing road the foraging and commuting habitat would not greatly change. Where large accumulations of trees are to be removed such as the 8 trees at Raheen roundabout there is some potential for the loss of commuting habitat. Again, however this is considered suboptimal. Overall, the loss of foraging and commuting habitat is likely minor but some planting along the road is recommended as well as lighting mitigation. These findings may change pending the updated survey and mitigation will be dependent on this.

4.3 Lighting

There is street lighting located along the entire site. There will also likely be some addition lighting as part of the proposed development. In the absence of mitigation this could cause light spill to the surrounding habitats some of which may be used by bats. However, light spill can be minimised and mitigation is provided for this. This mitigation will be dependent on the activity survey and more may be required.



5. MITIGATION

5.1 License Requirements

The potential for bat roosting habitat has been confirmed on the site, in a tree that is to be removed. As it cannot be ruled out whether or not bats use these trees an activity survey in the appropriate season is required. This survey can also identify the level of usage of the site regarding foraging and commuting habitat. This survey should be undertaken during the active bat period from May – September for tree roosts. It is stated in the Bat Conservation Ireland guidelines that dawn surveys work best for tree roosts (Kelleher & Marnell, 2006). Full mitigation will be provided once this survey is complete.

The information from this survey is required in order to determine whether or not a derogation license application is to be sent to NPWS. This would include details of the results of surveys, as well as appropriate mitigation measures required to offset potential impacts to bats. Final mitigation will be dependent on an updated summer survey in the active bat season from

5.2 Avoidance Mitigation

Any site clearance works will be undertaken outside of the bird nesting season (1st of March to the 31st of August) as there is the potential for bird species to use the site for nesting. Works will be undertaken during daylight hours to avoid disturbance to any bats in the local area. Tree-felling works will be undertaken in the period late August to late October / early November when bats (young and old) are capable of flight but not yet in hibernation. Additional mitigation may be provided pending further surveys.

5.3 Landscaping

Landscaping where possible should be undertaken after the proposed development to mitigate for vegetation clearance. This should utilise native species only. Night-scented plants in dark areas of the development would provide insect production for foraging bats in the area. NRA (2006) *Guidelines for the Treatment of Bats during Construction of National Road Schemes* should be adhered to for trees with bat potential. Final mitigation will be dependent on an updated summer survey in the active bat season from

5.4 Lighting

Lighting mitigation may include any additional lighting being minimised insofar as possible. Where lighting is necessary, following Bat Conservation Ireland's *Bats & Lighting: Guidance Notes for Planners, Engineers, Architects and Developers* (2010). Light spill beings minimised by using shields, masking or louvres. Light columns being kept as low as possible. Mercury or metal halide lamps being avoided as these have a greater impact on bats, as they attract high levels of insects. Low pressure sodium lights have a minimal effect on bats and therefore would be preferred. Final mitigation will be dependent on an updated summer survey in the active bat season from



6. CONCLUSIONS

The site was originally visited in early 2021 in order to inform a Screening for Appropriate Assessment report and a Screening for Environmental Impact Assessment. During this site visit one tree was highlighted which has the potential for roosting bats. Due to this a dedicated tree survey is now being reported. The bat activity season runs from May – September. The current survey is therefore out of season as it was carried out in February. Limitations of out of season surveys is that it is limited to evidence of usage only and PRFs, trees checked from the ground and often bat droppings cannot be found due to weather and uncertainty remains.

There is at least one tree on the site which has the potential for roosting bats. Another tree, the location of which was ambiguous could not be located. This will need to be addressed prior to the summer survey. Flaking bark and cracks were the main Potential Roost Features identified. As it cannot be ruled out whether or not bats use these trees an activity survey in the appropriate season is required. This survey can also identify the level of usage of the site regarding foraging and commuting habitat. It is acknowledged that the site is located in an area of high disturbance and with high levels of street lighting and that the majority of trees on the site showed no potential. Nonetheless, the potential for roosting bats was identified an activity survey needs to be undertaken. This survey should be undertaken during the active bat period from May – September for tree roosts. It is stated in the Bat Conservation Ireland guidelines that dawn surveys work best for tree roosts (Kelleher & Marnell, 2006). Full mitigation will be provided once this survey is complete.

It is acknowledged that no Ecological / Biodiversity Assessment has been carried out for the proposed scheme. There is the potential for areas on the site to be used by nesting birds and there may be other features of ecological interest present also. Vegetation clearance should not take place within the bird nesting season which runs from 1st March to the 31st of August. It is illegal to remove or cause disturbance to an active bird nest during the bird nesting season under the Wildlife Act 1976 (2000).

Mitigation cannot be fully provided at this stage. However, there is the potential that a derogation licence will be required, avoidance mitigation will be undertaken regarding works in the bird nesting season and tree felling works being carried out when bats are still active. Some lighting mitigation may be required, landscaping and the provision of alternative roosts. Full mitigation will be provided once the activity survey is complete.



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PLATES



Plate 1 Some of the 8 Norway Maple trees to be removed at Raheen Roundabout. These trees showed low potential for bat roosting. While there are some knotholes present, the trees are generally well sealed and the dense branches makes them unfavourable to bats.



Plate 2 The two Poplar trees to be removed – the trees are positioned immediately beside a street lamp and has a thin trunk with no significant crevices – unsuitable for bats.



Plate 3 Three Norway Maple trees in the background to be removed. Again like most trees onsite these were in good condition and had no bat potential.



Plate 4 Trees adjacent to the site that will not be removed but that do have some potential for bats.



Plate 5 Mature Horse-chestnut tree just south of Mungret Gate entrance to be removed.



Plate 6 Significant crevices were noted in the mature Horse-chestnut tree that is to be removed near the Mungret Gate entrance.