

Appendix 11C:
Badger Survey Report

Badger Survey Report

Castletroy Wastewater
Treatment Facility, Co.
Limerick





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1. INTRODUCTION

1.1 General Introduction

MKO were commissioned on behalf of JB Barry Consulting Engineers to carry out a badger survey of a sett close to the Castletroy Wastewater Treatment Facility, Co. Limerick (grid ref: R 60832 58369). The badger survey served to inform of the locations and status of badger sett entrances in relation to the proposed wastewater treatment plant upgrade works. The survey area encompassed the wastewater treatment plant site and perimeters.

1.2 Badger in Ireland (NRA 2006)

The below paragraph describes badgers in Ireland and is taken from the NRA Guidelines (2006):

The Badger is one of the larger wild mammals in Ireland and is relatively common and widespread throughout most of the country. Badgers are omnivorous, feeding on insects, small mammals, grains and wild fruits - but the main component of their diet is earthworms. Consequently, their density is often higher in landscapes of agricultural pasturelands and lower in areas where habitats provide poorer food supply, such as bogs, moors and upland areas. Badgers live in social groups, usually comprised of between two and six adults and their young. Each group defends territory, which varies in size between 25 and 200ha (with mean territory size of c.80ha). The average density of Badgers in the country is one social group per 2km but in many lowland areas is often as much as one or more social groups per square kilometer.

Badgers create burrows (known as setts); larger setts may possess very extensive tunnel systems with many entrances and underground chambers. There may be a number of setts within a group's territory, varying in size, complexity and use. Usually, there is just one principal sett (the 'main' sett), which is generally used for breeding and is inhabited by Badgers throughout the year. It is usually located centrally within the Badger group territory. Setts closer to the boundary of a territory are usually referred to as 'outlier' setts. Other types of sett include annex, subsidiary and minor setts, depending on their use and importance to the Badger group. Setts vary in size from those with one entrance to complexes stretching over 100m and with 40 or more entrances.

The most frequent location of Badger setts in the Irish countryside is within or close to hedgerows and treelines, as these provide cover and safety from disturbance from agricultural and other activities. Setts are also frequently located in deciduous woodlands and areas of scrub, and they do occur in urban areas as well as in the open countryside.

Setts are used by generations of Badgers and some setts may be of considerable antiquity. Cubs are born (litters consist of two to four cubs) towards the end of January and through February, emerging above ground in April or May.

Badger territorial activity is high from mid-January to March, and surveys during this time are suitable for identifying latrines, feeding signs and tracks. Additionally, vegetation cover is relatively low during this period.

1.3 Legislative Context

The Badger is protected under the Wildlife Acts, 1976-2017. The Wildlife Act is Ireland's primary national legislation for the protection of wildlife. It covers a broad range of issues, from the designation of nature reserves, the protection of species, regulation of hunting and controls in wildlife trading.

Should active Badger setts be identified within the footprint of any proposed development, the Badgers may need to be evacuated prior to the commencement of works. It is normal practice to impose seasonal constraints e.g. that breeding setts are not interfered with or disturbed during the Badger breeding season (December to June inclusive) (NRA 2006). No active sett should be interfered with or disturbed during the breeding season as any sett category may contain cubs. Closure of setts during the breeding season would require monitoring to demonstrate no sett activity.

Presently, the National Parks and Wildlife Service do not issue disturbance licences for badger, as the legal process is under review. It is understood, however, that the Department wishes to be consulted with regard to construction works in the vicinity of badger setts in order to advise and provide recommendations on avoidance of disturbance of setts, or mitigations for same.

2.

SURVEY METHODOLOGY

The surveys adhered to the guidance as set out in *Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Roads Schemes* (NRA 2009) and *Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes* (NRA 2006).

A badger survey was carried out on the 21st of January 2022 by Aran von der Geest Moroney (B.Sc., QCIEEM) of MKO, and the 3rd of February 2021 by Neansaí O' Donovan (B.Sc., QCIEEM) of MKO.

The survey included a search of the wastewater treatment plant site and the perimeter of the University of Limerick carpark on the opposite side of the WwTP boundary, and focused on signs of Badger activity, including identification of potential habitat areas likely to be of significance to badger.

Badgers occur within a wide variety of habitat types in both lowland and upland regions. Setts are often located within woodland and woodland edge, hedgerow and scrub habitats, especially where these occur adjacent to good foraging habitat such as grazed grasslands. Over half of badger setts in Ireland are found along hedgerows. (NRA 2009).

The Badger survey involved a search for all potential Badger signs as per NRA 2009 (latrines, badger paths and setts) and Scottish Natural Heritage (SNH) (2003):

- › Faeces: Badgers usually deposit faeces in characteristic excavated pits, concentrations of which (latrine sites) are typically found at home range boundaries.
- › Setts, comprising either single isolated holes or a series of holes, likely to be interconnected underground.
- › Paths between setts or leading to feeding areas.
- › Scratching posts at the base of tree trunks.
- › Snuffle holes (small scrapes where Badgers have searched for insects, earthworms and plant tubers).
- › Day nests (bundles of grass and other vegetation where Badgers may sleep above ground).
- › Hair traces.
- › Prints

Setts were classified using the conventions set out in NRA (2009). Classification of setts as per the *Best Practice Badger Survey Guidance Note* provided by SNH (2003) is provided in Table 2-1 below.

Table 2-1 Classification of Badger Setts (Definition as per SNH 2003)

Sett Type	Description
Main	Several holes with large spoil heaps and obvious paths emanating from and between sett entrances.
Annexe	Normally less than 150m from main sett, comprising several holes. May not be in use all the time, even if main sett is very active.
Subsidiary	Usually at least 50m from main sett with no obvious paths connecting to other setts. May only be used intermittently.
Outlier	Little spoil outside holes. No obvious paths connecting to other setts and only used sporadically. May be used by Foxes and rabbits.

Main setts normally have a large number of entrances (both used and disused), with obvious heaps of spoil. These setts look well used with obvious tracks between entrances. Annexe setts are close to the Main Sett and are usually between 50 and 150m in distance and are usually connected to the main sett by tracks. They usually have several holes but may not be in use all the time. Subsidiary setts are not connected to another sett by obvious paths and are not continuously active. Outlier setts have usually just one or two holes, without obvious spoil heaps or paths. They are used by badgers sporadically and are often taken over by foxes and rabbits (Smal 1995).

3. SURVEY RESULTS

3.1 Site survey

The sett has been categorised as a main sett and may potentially be used as a breeding sett.

Four sett entrances were found at the fence boundary (two on either side of the WwTP boundary) along the southeast boundary of the wastewater treatment plant. The locations of these sett entrances are shown in Figure 3-1. The entrances are within a treeline between the WwTP and University of Limerick car park. Three of the entrances showed signs of recent activity (Entrances A, B and C), the entrances being well worn with freshly dug earth. Entrance D was partially filled with leaf litter.

A passage near entrance A has been dug under the WwTP boundary fence but is infilled with leaf litter. A well-worn mammal trail follows along the fence line outside of the WwTP boundary, and tapers off to the southeast of the site, where it also enters under the fence and into the WwTP boundary, as depicted in Figure 3-1 (Plate 3-7, Plate 3-8). Mammal trails were also visible between entrances. All four of the entrances are at a slight elevation to the wastewater treatment plant. No latrines/faeces were found in the area. However, signs of foraging, such as snuffle holes, were found in the area.

3.2 Trail cameras

Three trail cameras were deployed at the sett entrances between 21st January and 3rd of February 2022. Extensive footage of badger activity was recorded at the sett throughout the 2-week period. A minimum of two adult badgers were recorded. Some evidence of aggressive behaviour was recorded, which may indicate breeding behaviour/presence of cubs, particularly due to the time of year, as cubs are born towards the end of January (NRA 2006).

Table 3-1 provides the coordinates of sett entrances found. These are depicted in Figure 3-1.

Table 3-1 Badger Signs Recorded

Entrance	Note	Grid Reference (ITM X Y)	
A	Freshly worn soil in front of sett entrance (Plate 3-1). Mammal trail leading from entrance A to entrance B (Plate 3-3). A passageway has been dug underneath the fence at this point but is infilled with leaf litter.	560790	658409
B	Freshly dug soil in front of sett entrance (Plate 3-2).	560798	658417
C	Freshly dug soil in front of entrance (Plate 3-4).	560799	658415
D	Leaf litter inside sett entrance and leading out of sett entrance (Plate 3-5).	560794	658412



Plate 3-1 Entrance A with freshly dug soil. A passageway has been dug underneath the fence (to left of image) but is filled in with leaf litter. A mammal trail leads off to the left connecting entrance A and entrance B.



Plate 3-2 Freshly dug soil in front of entrance B.



Plate 3-3 Mammal trail leading between entrance A and entrance B.



Plate 3-4 Entrance C with freshly dug dirt located in front of sett entrance.



Plate 3-5 Entrance D with considerable amount of leaf litter leading into and within sett entrance.



Plate 3-6 Foraging signs (Snuffle holes).



Plate 3-7 Mammal trail located in the south-eastern corner of the site boundary. The mammal trail continues along the south-eastern boundary within the WwTP.



Plate 3-8 Mammal trail leading along the south-eastern boundary of the WwTP, outside of the boundary.



Map Legend

- Badger Sett 50m Buffer
- Badger Sett 30m Buffer
- Set Entrance
- Mammal Path
- Site Boundary

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Sett Entrances

Client: **AvdGM** Contact: **RW**

Project No: **210711** Drawing No: **Figure 3.1**

Scale: **1:600** Date: **11.02.22**


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4.

RECOMMENDATIONS

The proposed works involve upgrades to Castletroy Wastewater Treatment Facility, County Limerick, to include the following:

- › Retain existing inlet pump station incl. foul and storm pumps
- › Retain the existing inlet screens and grit removal system
- › Installation of 1 no. new c. 3,500 m³ Stormwater Storage Tank and Return Pump Station required for 77,500 PE with capacity for Phase 2 expansion to 81,100 PE
- › Relocation of the existing Salsnes filter unit and installation of additional Salsnes filter units to cater for 77,500 PE with capacity for Phase 2 expansion to 81,100 PE
- › Installation of a new Salsnes filter Primary Sludge Holding/Mixing Tank
- › New Salsnes filter Lift Pump Station directly after the Inlet Works
- › Upgrade the existing 500mm inlet pipe work to oxidation tanks to allow design flows to be delivered to the tanks
- › Retain the 2 no. existing Oxidation Tanks and raise the Top Water Level in the tanks by 300mm
- › Installation of a system of textile curtains housed in a removable IFAS frame in the oxidation tanks
- › Retain the existing air blowers and install additional units including a new control panel
- › Provision of IFAS frame lifting cranes
- › Retain the existing 3 no. existing FSTs as this will be sufficient for IFAS system
- › Retain the existing Return Activated Sludge (RAS) Pump Station however replace the existing RAS pumps and upgrade the existing 250mm RAS pipework.
- › Replace existing chemical dosing system
- › Retain existing PFTs and repair
- › Replace existing sludge dewatering equipment to provide for additional capacity required for 10-year design loads with capacity for Phase 2 expansion to 81,100 PE.

All construction works should be carried out in line with NRA (2006) *Guidelines for the Treatment of Badger Prior to the Construction of National Road Schemes*. National Roads Authority, Dublin, Ireland. The following measures should be in place to prevent disturbance or infringement on the sett:

- › A pre-construction badger survey should be carried out no more than 10-12 months in advance of construction in order to ascertain if there are any additional sett entrances.
- › No construction works should take place within 30 meters of the badger sett, as per the 30-meter buffer zone depicted in Figure 3-1, unless in consultation with the NPWS.
- › No heavy machinery should be used within 30m of badger setts (unless carried out in consultation with NPWS); lighter machinery (generally wheeled vehicles) should not be used within 20m of a sett entrance; light work, such as digging by hand or scrub clearance should not take place within 10m of sett entrances.
- › Any works within the badger breeding season (December to June inclusive) will require an exclusion zone of 50m around the setts.
- › During the breeding season, no blasting or pile driving should be within 150m of active setts.

The sett is located on a slightly elevated bank at the perimeter of the site. Given the topography of site and the barrier of the existing paved road between the sett and the proposed excavations associated with the proposed works, it is highly unlikely that the sett will be affected by these works. No works are proposed to the south of the existing tarmac road. The layout of the proposed upgrade works is shown in Figure 4-1, with the layout in relation to the badger sett buffer zones shown in Figure 4-2.

As the proposed works are located in proximity to the badger sett, they will be carried out in consultation with the NPWS. It is proposed to erect fencing along the south of the paved area in order screen off the works from the badger sett and prevent any entry of machinery to the south of the paved area, as depicted in yellow in Plate 4-1.

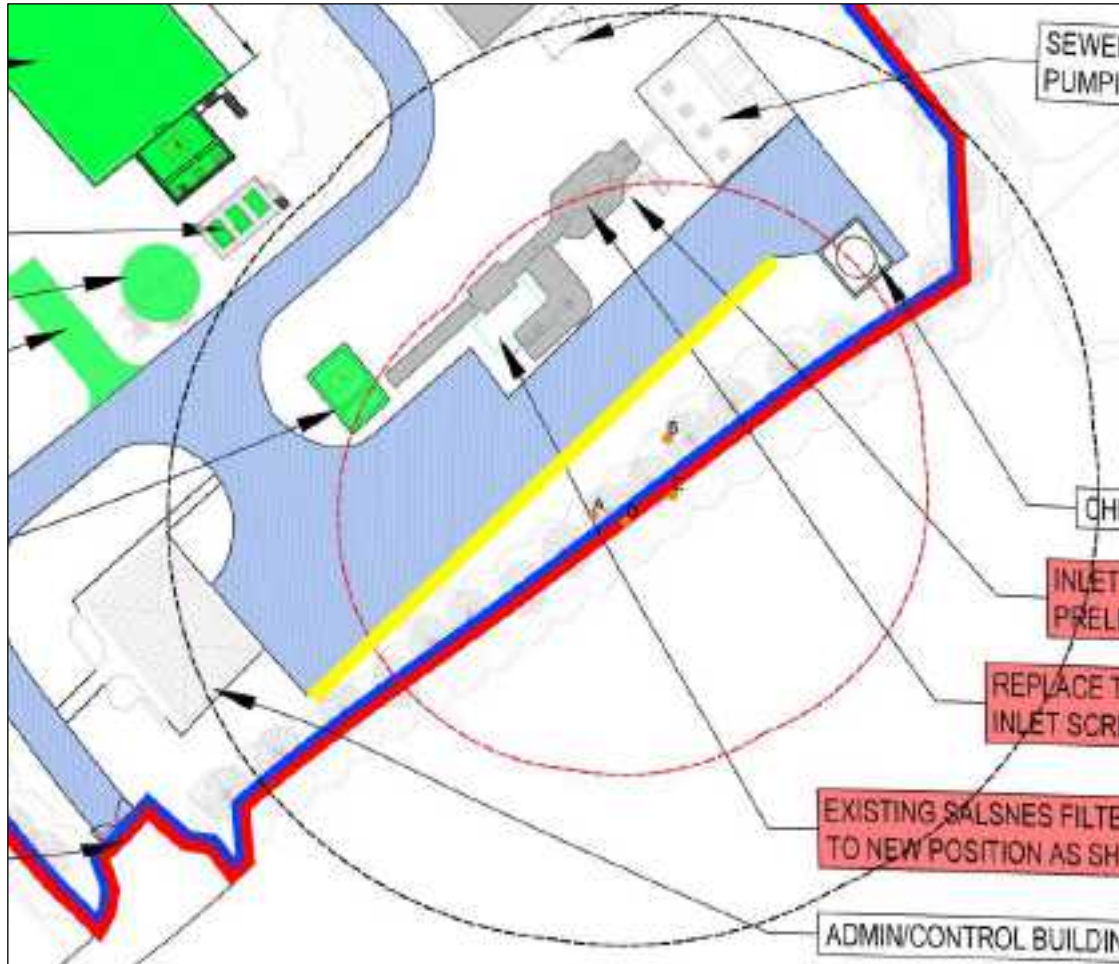
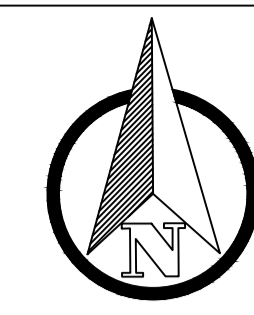


Plate 4-1 Proposed fencing screening off the badger sett shown in yellow.



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NOTE:
 MAXIMUM FLOOD LEVEL IS +6.93MOD

LEGEND
 MAPPING
 OS SHEETS: 4683-A,4683-C,
 DISCOVERY SERIES; OS1614_D

SITE BOUNDARY
 OUTLINED IN RED

LANDS IN CONTROL OF
 THE APPLICANT
 OUTLINED IN BLUE

SITE AREA = 3.166Ha

PROPOSED UPGRADE WORKS
 PROPOSED NEW WORKS

Figure 4-1

Rev.	Suit.	Description	Drawn	Chkd	Date
P01	S2	ISSUED FOR INFORMATION	JMG	PJ	18.05.21

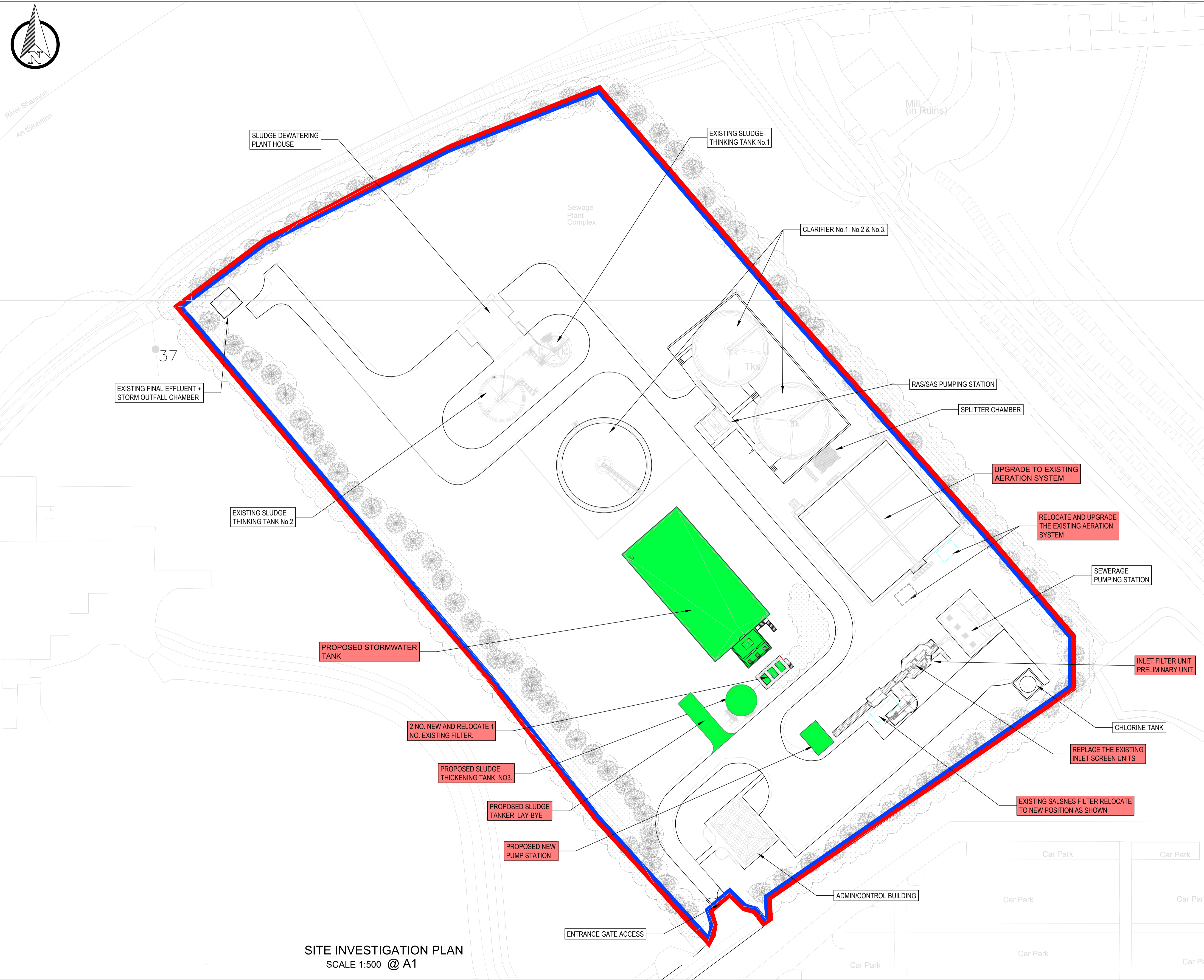
Client:
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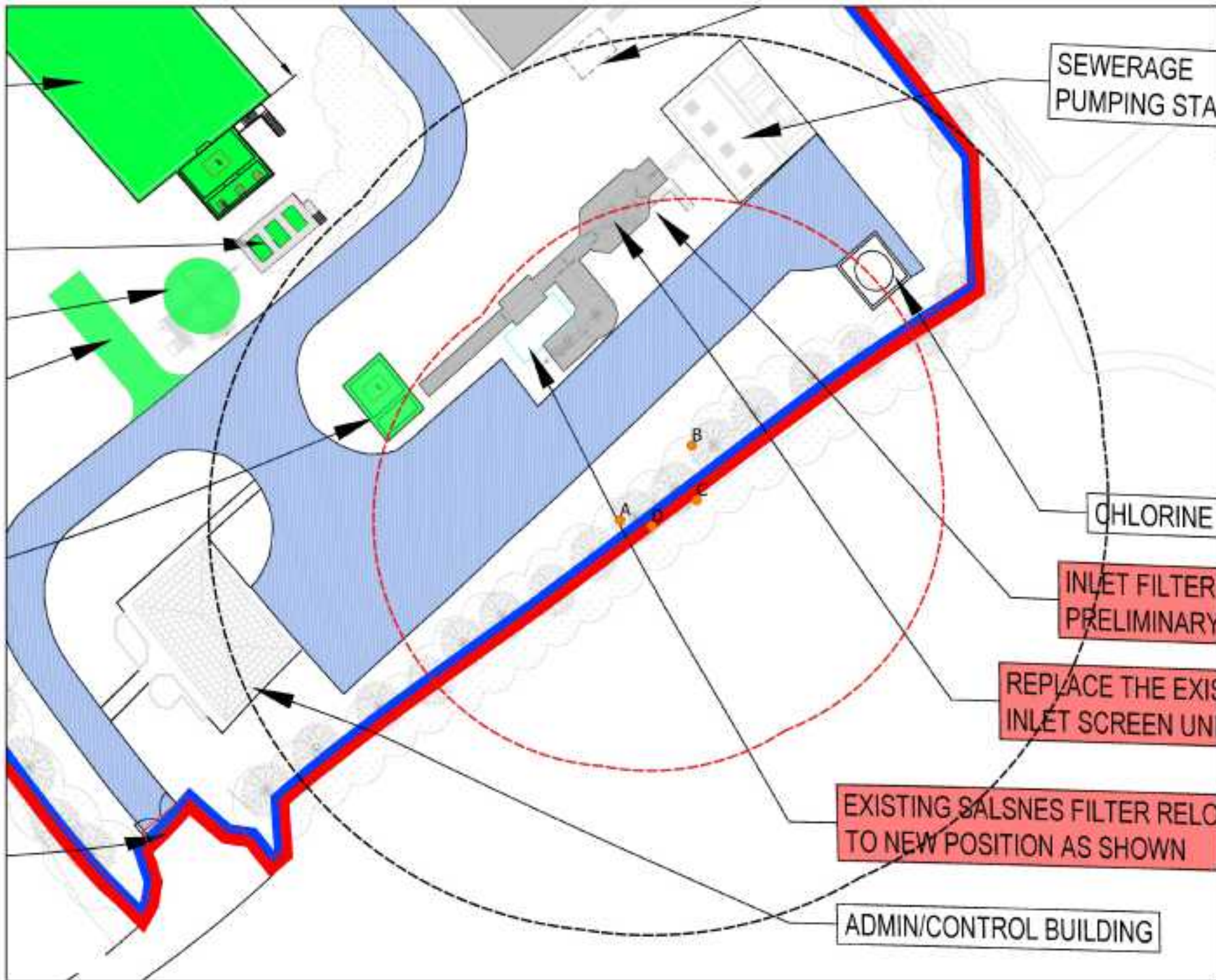
Project:
 CASTLETROY WASTEWATER
 TREATMENT PLANT

Drawing Title
 PROPOSED SITE LAYOUT PLAN

Drawn by:	LHA	Date:	FEB 2021
Checked by:	JR	Date:	FEB 2021
Approved by:	PJ	Date:	FEB 2021
Internal Project REF:	20701		
Scales:	1:500 @ A1		
Stage:	INFORMATION		
Drawing No.:	20701-JBB-00-XX-DR-Z-1230	Revision	Suitability Code
		P01	S2



SITE INVESTIGATION PLAN
 SCALE 1:500 @ A1



Map Legend

	Badger Sett 30m Buffer
	50m Buffer
	Sett Entrance

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Proposed Layout and Badger Disturbance Buffers	
Badger Survey of Castlebrody WWTF, Limerick	
Project No:	-
Client:	RW
Project No:	210711
Scale:	1:600
Figure No:	Figure 4.2
Date:	15.02.22

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5. CONCLUSIONS

Four sett entrances were found during the survey, with extensive signs of recent activity. Trail cameras recorded extensive activity at the setts by a minimum of two adult badgers between the period of 22nd of January 2022 and 3rd of February 2022. The sett is likely to be a main breeding sett. The sett is located along the south-eastern boundary of the site.

The sett is located on a slightly elevated bank at the perimeter of the site. Given the topography of site it is highly unlikely that the sett will be affected by these works. No works are proposed within 20m of the sett and all works are separated from it by an existing tarmacadam road in an operational wastewater treatment plant.

As a precautionary measure and to minimise the potential for disturbance, a solid fence will be erected alongside the tarmac road at the south-eastern section of the site and no works will be undertaken outside this fence. In addition, no works will be undertaken within a radius of 50 m of the sett during the period December to June (NRA Guidelines).

The proposed WwTP upgrade works will be carried out in line with NRA (2006) *Guidelines for the Treatment of Badger Prior to the Construction of National Road Schemes* insofar as possible, and in consultation with the NPWS.

BIBLIOGRAPHY

Bang, P and Dahlstrom, P. (2004). *Animal tracks and signs*. Oxford University press.

Harris, S., Cresswell, P, & Jefferies, D. (1989) *Surveying Badgers*, The Mammal Society, London.

NRA (2009) *Ecological Surveying Techniques for Protection Flora and Fauna during the Planning of National Road Schemes*. National Roads Authority, Dublin, Ireland.

NRA (2009) *Guidelines for Assessment of Ecological Impacts of National Roads Schemes*. National Roads Authority, Dublin, Ireland.

NRA (2006) *Guidelines for the Treatment of Badger Prior to the Construction of National Road Schemes*. National Roads Authority, Dublin, Ireland.

Smal, C., 1995. *The badger and habitat survey of Ireland*. Dublin: The Stationery Office.

SNH (2003) Best Practice Badger Survey Guidance Note.

Wildlife Act (1976) Wildlife Act, Ireland, 22 December 1976, No. 39 of 1976.

Wildlife Amendment Act (2000) Wildlife Amendment Act, Ireland, 18 December 2000, No. 38 of 2000.

