



OTTER (*LUTRA LUTRA*) SURVEY FINDINGS, AT HOSPITAL WASTEWATER TREATMENT PLANT, CO. LIMERICK

Project Reference	Hospital WwTP (230511)
Date & Time	23/01/2025
Subject	Otter (<i>Lutra lutra</i>) Survey Findings Report
Author(s)	Rachel Minogue (B.Sc. (Env))

Introduction

MKO Ireland has been contracted to conduct ecological surveys as part of the planning requirements for upgrade works and development of the existing Hospital Wastewater Treatment Plan (WwTP), Hospital, Co. Limerick. This Otter (*Lutra lutra*) Survey Findings Report details the Otter (*Lutra lutra*) surveys carried out to date, along with a summary of the findings of each Otter survey.

As part of the initial Multidisciplinary Ecological Walkover Survey and Aquatic Instream Survey of the River Mahore conducted by Rachel Minogue (B.Sc) and Colin Murphy (BSc., MSc) on the 24/05/2023, a potential Otter holt was identified along the western bank of the River Mahore, in close proximity to the existing outfall pipe for the Hospital WwTP. Subsequently, dedicated Otter Surveys were carried out over four months along the River Mahore, from May to September 2023, with trail cameras deployed along with instream aquatic surveys. As part of the proposed project, upgrade works are proposed at the existing Hospital WwTP site, and in adjacent lands, within close proximity to the potential otter holt.

As such, due to the proximity of works to the potential holt, and in line with the relevant guidance detailed below, a derogation licence is sought for the current project to minimise the potential for ex-situ disturbance and displacement impacts to Otters in the River Mahore during the construction and operation of the proposed project.

Precondition Tests

Article 16 of the Habitats Directive sets out three pre-conditions, all of which must be met before a derogation from the requirements of Article 12 or Article 13 of the Directive can be granted. These preconditions are also set out in Regulation 54 of the Regulations. The preconditions are as follows:

1. **A reason (s) listed in Regulation 54 (a)-(e) applies**
2. **No satisfactory alternatives exist**
3. **Derogation would not be detrimental to the maintenance of population (s) at a favourable conservation status.**



It is believed that the pre-conditions for granting a derogation licence have been met, as follows.

1. Test 1 Reasons for Seeking Derogation

Regulation 54(2) (a)–(e) states that a derogation licence may be granted for any of the reasons listed (a) to (e). We are of the opinion that the following reason applies:

(c) In the interests of public health and public safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment.

In October 2023, the Environmental Protection Agency (EPA) published a report summarising the treatment of wastewater in Ireland during 2022 titled “Urban Wastewater Treatment in 2022”. Hospital WWTP was identified as 1 of 39 areas that are the main significant source of pollution impacting local waters. As such, if the issues within the Hospital WWTP are resolved the health of River Mahone will be significantly improved.

The existing Hospital WwTP is significantly overloaded and not fit-for purpose, resulting in failure to meet the Wastewater Discharge Licence (WWDL) requirements and the Good and High Environmental Quality Standards (EQS) as set out in the Surface Water Regulations 2009. The results of the ambient monitoring showed that there were increased concentrations of Ammonia, Biological Oxygen Demand and Orthophosphate downstream of the WWTP, resulting in a deterioration of water quality in the River Mahore downstream of the WwTP.

New infrastructure constructed under the IWSS Programme provided storm water and sludge storage facilities and did not increase the treatment capacity of the WWTP. As such, the WWTP continues to experience overflows and non-compliant final effluent. As such, an upgrade of the treatment process is required in the interest of public health and water quality.

2. Test 2: There is no Satisfactory Alternative

If the proposed upgrade works at Hospital WwTP were not to go ahead, the treatment plant will continue to fail to meet the Wastewater Discharge Licence (WWDL) requirements, and the Good and High Environmental Quality Standards (EQS) as set out in the Surface Water Regulations 2009. As a result, water quality in the River Mahore would continue to deteriorate, and the current treatment plant would remain overloaded and not fit-for purpose.

The purpose of the upgrades to the existing WwTP is to cater for the future agglomeration load and to ensure compliance with the future WWDL Emission Limit Values (ELVs) through the following:

The provision of new secondary aeration and settlement tanks will greatly improve the treatment process of the WwTP, this additional tank will allow greater settlement of the treated effluent greatly reducing the suspended solids carry over in the final effluent. This will also add to the condition of the final effluent quality discharging to the River Mahore.

The provision of new sludge drying reed beds will allow for sludge to be wasted from the secondary treatment process. This will provide for a more efficient secondary treatment and enhance the quality of the final effluent. This will also add to the condition of the final effluent quality discharging to the River Mahore.



The proposed upgrade works shall significantly reduce the number of sludge removal tankers to and from Hospital WWTP. The current sludge holding capacity is approximately 7 to 14 days, requiring regular tankers visit the site.

The proposed upgrade works will increase the plants' ability to meet the emission conditions set out in the Wastewater Discharge Licence.

As part of the upgrade works at Hospital WwTP, a 1M diameter outfall pipe and headwall arrangement will be constructed to the north of the site, along a drainage ditch that outfalls to the River Mahore. This location has been chosen to avoid impacts to the local otter population.

Following the implementation of the upgrade works, the operational phase of the WwTP will result in significant improvements in the treatment of effluent entering the River Mahore, which provides higher assimilative capacity within the River Mahore, and overall resulting in better water quality within the River Mahore.

3. Test 3: Favourable Conservation Status

Annex IV species must be maintained at Favourable Conservation Status or restored to favourable status if this is not the case at present. The net result of granting a derogation licence must be neutral or positive for the species in question.

From the camera trap footage captured, and 5x dedicated Otter surveys carried out from May to September 2023, it was concluded that the Otter hold identified along the western bank of the River Mahore, in close proximity to the existing outfall pipe is an active non-breeding holt. The below listed mitigation measures will be in place to minimise the potential disturbance to otters. Provided that the works are carried out in accordance with the design, best practice and mitigation that is described within this report, significant effects on otters are not anticipated at any geographic scale.

Otter Status in Ireland

Otters are awarded the conservation status of 'Near Threatened' in Ireland (Marnell, F. et al 2009), Europe and Globally. Otters, along with their breeding and resting sites are afforded legal protection under the Wildlife Act 1976 and Wildlife (Amendment) Act, 2000. Otters are afforded additional protection under the Habitats Directive due to their inclusion as Annex II and Annex IV species, which is transposed into Irish in the European Communities (Natural Habitats) Regulations (S.I. 94 of 1997), as amended.

The system of Strict Protection for animals is set out in Regulation 51 of the Regulations, with two of the following offences (b) and (d) being relevant to the current project. It is an offence to do any of the following without first obtaining a derogation licence from the Minister in accordance with Regulation 54:

- (a) Deliberately capture or kill any specimen of these species in the wild
- (b) **Deliberately disturb these species particularly during the period of breeding, rearing, hibernation, and migration**
- (c) Deliberately take or destroy eggs of these species in the wild (
- d) **Damage or destroy a breeding or resting place of such an animal, or**
- (e) Keep, transport, sell, exchange, offer for sale or offer for exchange any specimen of these species taken in the wild, other than those taken legally as referred to in Article 12(2) of the Habitats Directive.



In relation to this project at Hospital WwTP, Hospital, Co. Limerick, that in the case of Regulation 51(d) any action resulting in damage to, or destruction of, a breeding or resting place of an animal may constitute an offence unless a derogation licence has been granted. This action does not need to be deliberate. Breeding and resting places are protected even when the animals are not using them, once there is a high probability that they will return. This places an onus of due diligence on anyone proposing to carry out an action or project that might result in such damage or destruction.

Otters do not tolerate disturbance at or near holts (NRA 2009), and as such Glan Agua wish to apply for a derogation licence under Section 52 of the Section 54 S.I. No477 of 2011 (Birds and Natural Habitats Regulations) and in line with the relevant guidance detailed above, given that a pathway for potential impact to this Annex II and IV species was identified in the form of ex-situ disturbance and displacement during the construction and operational phases of the proposed project.

Statement of Authority

An initial multidisciplinary ecological walkover survey was conducted by Rachel Minogue (B.Sc) and Colin Murphy (B.Sc., MSc) on the 24/05/2023, by Rachel Minogue (BSc) and Katy Beckett (BA.,MSc) on the 23/06/2023, by Rachel Minogue (BSc) and Deirdre McCarthy (BSc) on the 10/07/2023, by Rachel Minogue (BSc) and Tom Peters (BSc., MSc) on the 16/08/2023, by Rachel Minogue (BSc), Ciara Lynn Sheehan (BSc), and Deepali Mooloo (BSc., MSc) on the 14/09/2023, and by Rachel Minogue (BSc) and Tom Peters (BSc., MSc) on the 04/10/2023. Rachel has also prepared this report. Rachel is an ecologist with MKO, with the relevant qualifications in Environmental Science. This report has been reviewed by Colin Murphy (B.Sc., MSc). Colin is an experienced project ecologist and has over 3 years' professional consultancy experience.

Site Location

The site of the proposed works is located 500m northwest of Hospital Town, Co. Limerick (Grid Reference: R 70427 36279). The site is 24km southeast from Limerick City. To the north of the site is the Mahore River, which flows in a north-westerly direction. The site is surrounded by agricultural lands to the north, west, and south. To the east of the site is the Hospital/ Herberstown GAA club, and Hospital Church and Graveyard. The closest Mapped European Designated Site is Glen Bog SAC [001430], which is located approx 4.7km northwest of the proposed development site. The site can be accessed via the R513 to the east of the site.

The site location is shown on **Figure 1** below.





Map Legend

— Site Location

Drawing Title

Site Location

Project Title
Hospital WwTP

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Project No. 230511	Drawing No. Figure 1
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Scale 1:32,792	Date 06/02/2024
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Description of the Project

The proposed development involves the upgrading of the existing Hospital WwTP to cater for the future agglomeration load and to ensure compliance with future WWDL Emission Limit Values (ELVs). The proposed development will be divided into 2 major elements including a new WWTP on a greenfield site to the west of the site, and a refurbishment to the existing plant, encompassed by 5 specific zones, detailed below:

The proposed Site Layout is shown on **Figure 2 below**.

Zone 1- Sludge Drying Reed Beds

Subsequent to the stripping of topsoil from the reed bed areas the 6 holding ponds will be excavated to a maximum depth of 2m below the existing ground level. A large percentage of the excavated spoil will be used to form the reed bed embankment sides, and the remainder will be removed from site by an appropriately licensed contractor and taken to a licenced recovery or waste disposal facility. Stockpiling of excavated material will take place in a designated area in the southern section of the site, adjacent to the site boundary. The stockpiles will be surrounded with double provision of silt fencing in parallel.

During excavation, any groundwater encountered will be pumped-out of the area and into a series of mobile filtering settlement tanks before being discharged through a pipe with a silt bag attached on to an area of overland vegetation within the site boundary.

Each reed bed will have a crushed stone base, placed to the excavated area before the sludge supply pipework is introduced. Installation of a proprietary impermeable liner is positioned with 100-150mm layer of growth media placed in the base of each of the 6 beds and planting of reed plants in completed.

Zone 2- Access Road

The access road will be extended from the existing plant through the current boundary and into the new greenfield site. The topsoil will be stripped and stockpiled in a sealed mound within the site boundary. All the topsoil stripped across the site will be stockpiled, sealed and seeded with a double silt fence installed around the stockpile.

The proposed access road will be excavated down to a suitable depth to present a load bearing layer, and this spoil will be removed from site by an appropriately licensed contractor and taken to a licenced recovery or waste disposal facility.-A layer of permeable aggregate in the form of clause 804 gravel or similar will then be installed. This layer will be compacted and checked for correct levels. The access road will be used as a haul road during construction and will be maintained throughout to prevent breakdown of bearing conditions. As construction progresses, the access road will be upgraded from a haul road to a finished product with drainage and kerbs work being installed. The finished tarmacadam surfacing will be placed in 2 layers with a coarse binder layer placed on the aggregate base and final wearing course placed at a later stage to minimise damage from construction traffic.

The section of access road crossing the existing plant will remain unfinished until the refurbishment of Zone 5.



Zone 3- Inlet Screens

Works will include tandem inlet screens and grit trap chambers designed to allow both maintenance within the system and increased influent loads. These units are above ground which will sit on a structural slab with integral pipework excavated and placed as per EU Standards. The structural slab will be excavated down to a layer of load bearing sub-soil and built back up to formation using an appropriately sized aggregate material. The slab will be formed and poured with structural concrete and reinforcing steel with drainage and electrical pipe/ duct work included.

The screen and grit trap units will arrive on site with prefabricated elements being given final assembly in place. The connection of power and water supply will be made from the earlier completed service ducting.

Zone 4- Process Tanks

The main process area within the project is Zone 4 where both Final Settlement Tanks and Aeration Tanks are located.

Final Settlement Tanks (FST)

There will be the two circular final settlement tanks (FST) constructed in Zone 4. The topsoil and subsoil will be excavated to a maximum depth of 3m below the existing ground level. During excavation any groundwater encountered will be pumped out of the area and into a series of mobile filtering settlement tanks before being discharged through a pipe with a silt bag attached on to an area of overland vegetation within the site boundary. The excavation will be accomplished with a stepped dig including a sloped access ramp to account for safety and ease of construction.

The lowest point of this structure will include a structural support slab for the FST and will form the base of a prefabricated tank. This tank will be constructed on site from sectional fibreglass panels bolted together and encased in a concrete fill from base to top of structure. Placement of assembled tanks into final position will be accomplished with use of an appropriate crane working from a suitable hard stand base on the proposed access road.

Aeration Tanks

The Aeration tank will be a rectangular concrete tank featuring 2 cells excavated to a maximum of 2m below existing ground level. This excavation will require the removal of spoil which will be removed from site by an appropriately licensed contractor and taken to a licenced recovery or waste disposal facility. During excavation any groundwater encountered will be pumped out of the area and into a series of mobile filtering settlement tanks before being discharged through a pipe with a silt bag attached on to an area of overland vegetation within the site boundary:-

The aeration tanks will require a concrete screed poured over a layer of crushed aggregate at the loadbearing subsoil formation level. This screed is needed to act as a base for the precast concrete wall elements which will be transported to site and assembled in place. Placement of precast wall sections into final position will be accomplished with use of an appropriate crane working from a suitable hard stand base on the proposed access road. The system will use a precast wall/in-situ alternative fill method where an infill of on-site poured concrete formed to complete. Pipework will be installed from shallow excavations into and around aeration tanks as the backfilling is progressed.



The backfilling of tank surrounds will be accomplished with imported clean aggregate to UE standards and once complete there will be an access slab, ramp and platform installed around the area.

Control Room

The control room will be built in this zone and will be a prefabricated building placed on an in-situ structural slab. The structural slab will be excavated down to a layer of load bearing sub-soil and built back up to formation with a crushed aggregate. The slab will be formed and poured with structural concrete and reinforcing steel with drainage and electrical pipe/duct work included.

Zone 5- Refurbishment/ Storm Tank Area

The existing Wastewater Treatment Plant will stay operational throughout the construction phase-and, as such, the refurbishment will be scheduled towards the end of the construction phase. Access and transport will be facilitated through the existing plant as the new plant is constructed.

The newer storm tank which was constructed within the last 3 years as part of ongoing plant upgrades, will be adapted and used in conjunction with a new storm tank constructed in zone 5 to meet UE storm water holding parameters. Adaptation will be in the form of a precast dividing wall and new pipework and pump installation. The removal of a temporary sludge tank to re-purposed elsewhere will also be completed as part of the refurbishment works. This 36m³ temporary sludge holding tank will be decommissioned as part of the project upgrade and will be removed of site to another UE project.

Decommissioning of Existing Wastewater Treatment Plant

As the new system comes online, the older defunct sections of the existing plant within Zone 5 will be decommissioned and demolished to make way for new elements such as a solar photovoltaic (PV) array. The existing inlet works, Imhoff Tank, temporary sludge holding tank, existing percolation filters (2 no.), existing dosing siphon chamber, and humus tank will be decommissioned/demolished.

The trickling filters and older storm tanks will be removed to make way for a solar array PV installation with ducting laid in to the proposed control room facilities.

This methodology will involve:

- Flows will be diverted to new infrastructure constructed following successful dry / offline commissioning.
- Once new infrastructure / processes are successfully wet commissioned, pipework to tanks to be decommissioned / demolished will be terminated.
- Tanks to be decommissioned / demolished will be drained, desludged, and cleaned by a licensed Contractor.
- Concrete tanks will be demolished using an excavator. Construction and demolition waste will be removed off site by a licensed haulier to a licensed disposal facility.
- Areas will be reinstated with suitable material to ground level.



Erection of Ground-Mounted Solar Panels

Solar panels will be erected on a galvanised steel support structure/ frame. Mounting structures will be designed to the appropriate size and will be installed to withstand adverse or extreme weather conditions. Civil works associated with the installation of the steel mounting frames will be minor with minimal ground disturbance. Depending on soil conditions, they will be anchored using earth screws or rammed profiles to a depth of up to 1.5m.

Other ancillary works such as the installation of cabling and ducting will also be required. The ground will be trenched using a mechanical excavator. The top layer of soil will be removed and saved so that it can be replaced on completion. The depth of the cables will meet all safety requirements with suitable marking tape laid between the cables and the finished surface.

Culvert Works

To provide connectivity between the existing treatment plant site and the proposed upgrade on the adjacent site, a road crossing of the drainage ditch which crosses the centre of the site and flows into the River Mahore is required. Culverting of a section of approx 20m of the drainage ditch is required to facilitate road and services crossing. To facilitate the works, a 1m by 1.5m box culvert is proposed for the section of the road crossing with headwalls constructed on the inlet and outlet of the structure.

Construction of Outfall and Headwall

As part of the upgrade works at Hospital WwTP, a 1M diameter outfall pipe and headwall arrangement will be constructed to the north of the site, along a drainage ditch that outfalls to the River Mahore, following the guidelines as summarised below.

1. A line of sheet piles will be driven along the riverbank forward of the headwall position. A second line running perpendicular to the first line along the side of the existing drainage ditch is required to avoid contamination into that water course. The 1M pipeline moves back from both drainage ditch and river to the storm tank with increasing distance to both allowing for less risk to the watercourses.
2. Once sheet piles are in place, excavation will commence.
3. The base of the headwall will be excavated to approx 300mm below the required depth and built up with a clean washed stone to within 75mm of the required depth.
4. A suitable geotextile will be placed on the clean washed stone and a 75mm layer of 25N/mm² concrete will be placed to support the Headwall units.
5. A pipeline will be excavated back along the Wayleave from the headwall position.
6. Once the 'leanmix' concrete is set and capable of holding the precast units then they can be placed into the excavation using the appropriate machinery to the required position.
7. Once emplaced the pipework will be laid back from the headwall with a base shingle layer to bed pipes and an appropriate aggregate over the crown to Uisce Eireann standards for backfilling.
8. The surround of the precast headwall unit will be backfilled with aggregate up to within 400mm of the existing ground level and a layer of subsoil and topsoil can finish to surface.
9. If the low flow period persists then the sheetpiles can be removed, if the river has risen then the recommendation is to wait until the next low flow period to remove.



Multi-disciplinary ecological walkover survey and Otter Surveys

Methodology

All ecological surveys undertaken by MKO in 2023 were conducted in accordance with NRA Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna on National Road Schemes (NRA, 2009). The surveys provided baseline data on the ecology of the study area and assessed whether further detailed habitat or species-specific ecological surveys were required. The multi-disciplinary ecological walkover survey comprehensively covered the entire study area.

A walkover survey and initial aquatic instream survey of the River Mahore was conducted by Rachel Minogue (B.Sc) and Colin Murphy (BSc., MSc) on the 24/05/2023 at the existing Hospital WwTP. The instream survey was conducted in areas with high probability of otter activity including embankments, gravel/ sand bars along the River Mahore, and in the areas in close proximity to the existing WwTP. Dedicated searches for signs of otter including (holts, prints, spraints, slides and couch sites) were undertaken along the River Mahore during the initial aquatic instream survey carried out on the 24/05/2023. The surveys were undertaken in line with NRA (2009) guidelines (Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes).

A potential Otter Holt was identified along the western bank of the River Mahore, as well as couching sites, fresh paw prints, and Otter spraint on the 24/05/2023. Following on from this, dedicated otter surveys were carried out on the 23/06/2023, 10/07/2023, 16/08/2023, and 14/09/2023. These surveys included deploying and collecting trail cameras over a period of four months in from June to September 2023 to identify whether it was a breeding or natal holt, and to collect information regarding otter activity within the River Mahore. Further, various instream surveys were carried out, including wading 200m upstream and downstream of the Otter Holt to identify any further otter signs upstream or downstream of the holt, and to identify any further suitable otter habitat within the vicinity of the proposed development, including surrounding drainage ditches.

The full survey methodologies and survey findings are detailed in **Table 1** below.



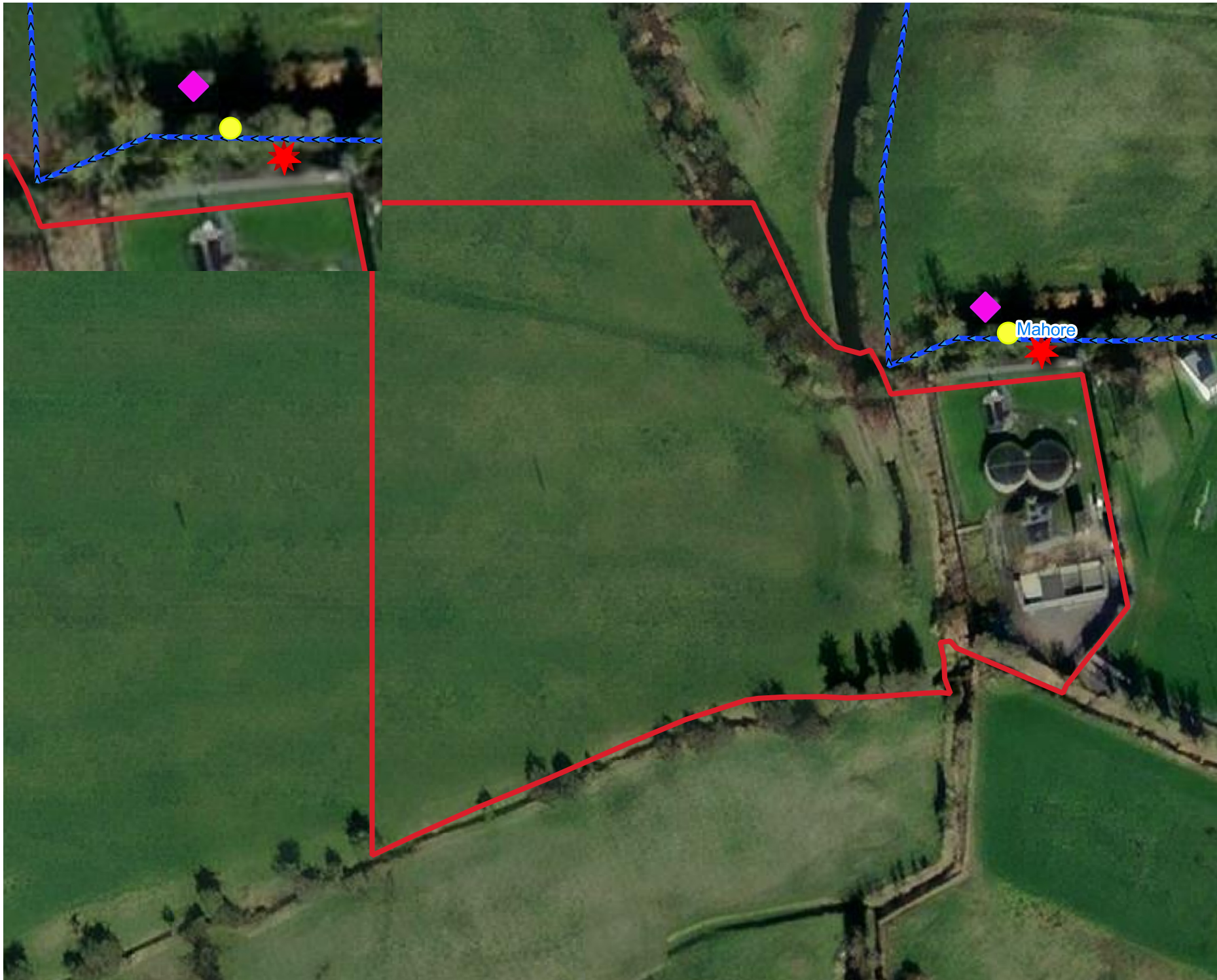


Summary of Findings of Otter Surveys Carried out.

Table 1 Summary of Findings of Otter Surveys.

Survey Date	Survey Methodology	Summary of findings
24/05/2023.	<ul style="list-style-type: none"> Initial walkover survey of the existing Hospital WwTP, and aquatic instream survey of the River Mahore to assess the river's suitability to support Otter populations and to record any potential Otter signs. 	<ul style="list-style-type: none"> The River Mahore was assessed as providing suitable supporting habitat for Otters, including vegetated gravel/sand banks, fast flowing freshwater, vegetated riverbanks, and availability of aquatic prey (Plate 1). Recorded various Otter (<i>Lutra lutra</i>) signs along the River Mahore, including a potential Otter holt along the western bank, couch, prints, and spraints (Plates 2 to 6) in close proximity to the existing outflow pipe of the existing Hospital WwTP. The location of the otter signs recorded along the River Mahore are detailed on Figure 3 and Figure 4 below.
23/06/2023	<ul style="list-style-type: none"> 3x Trail cameras deployed along the River Mahore (<i>1x facing the potential holt, 1x where prints were recorded, and 1x further downstream from the holt identified</i>) Further aquatic survey of the River Mahore, including wading 200m upstream and downstream of the Otter Holt identified. Drains that run to the south and west of the WwTP were inspected from the banks/ wall for any further Otter Signs/ suitability to support Otters 	<ul style="list-style-type: none"> No further signs of otters were recorded 200m upstream or downstream from the Holt identified. Neither drain to the south or west of the WwTP were assessed as being unsuitable for Otters due to the small size, absence of fast flowing water and suitable unvegetated bank habitat (Plate 7).
10/07/2023	<ul style="list-style-type: none"> 3x trail cameras collected after 3 weeks, and footage analysed 	<ul style="list-style-type: none"> Recorded a range of Otter footage (swimming, feeding, foraging, and entering the holt) (Plates 8 to 11). Concluded from the camera footage that the Otters are actively using the holt, and the river to feed and forage.
16/08/2023	<ul style="list-style-type: none"> 2x more trail camera deployed for extended period of 4 weeks directly facing the Otter holt to identify for definite whether it is an active breeding/ maternal holt. 	<ul style="list-style-type: none"> N/A
14/09/2023	<ul style="list-style-type: none"> 2x trail cameras deployed for 4 weeks were collected, and footage analysed to identify whether the Otter Holt identified was an active breeding/ natal holt. 	<ul style="list-style-type: none"> Recorded a range of Otter footage from the two cameras deployed- one directly facing the Otter holt and one further downstream including swimming, feeding, foraging, and entering and leaving the holt. From this footage, it was concluded that the Otters are actively using the identified holt, as well as the river to feed and forage. (Plates 8 to 11). No footage evidence to suggest that the Otter holt was a natal holt (no evidence of cubs entering/ exiting the holt was recorded) was recorded.

		<ul style="list-style-type: none"> • Further, the Otter Holt was subject to flooding (Plate 12). It is unlikely that this holt is a natal breeding holt based on its relatively exposed position on the waterfront and the flooding of the holt entrance during periods of high-water levels. Natal holts are typically located in secluded areas with security from disturbance and are always above flood levels (Liles, 2003; NIEA, 2011). While the entrance was not under water during the initial site survey, the holt was infiltrated by water during the final survey to collect the cameras on the 14/09/2023, indicating the regular flooding of the holt.
Conclusion		<ul style="list-style-type: none"> • From the footage captured, and 5x dedicated Otter surveys carried out, it is concluded that this is an active non-breeding holt.



Map Legend

- Site Location
- Otter Signs**
- Prints
- ◆ Couch
- ★ Otter Holt
- River Flow Direction**
- EPA River Waterbody

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Drawing Title
Otter Signs Recorded along
the River Mahore, Co. Limerick.

Project Title
Hospital WwTP

Drawn By RM	Checked By CM
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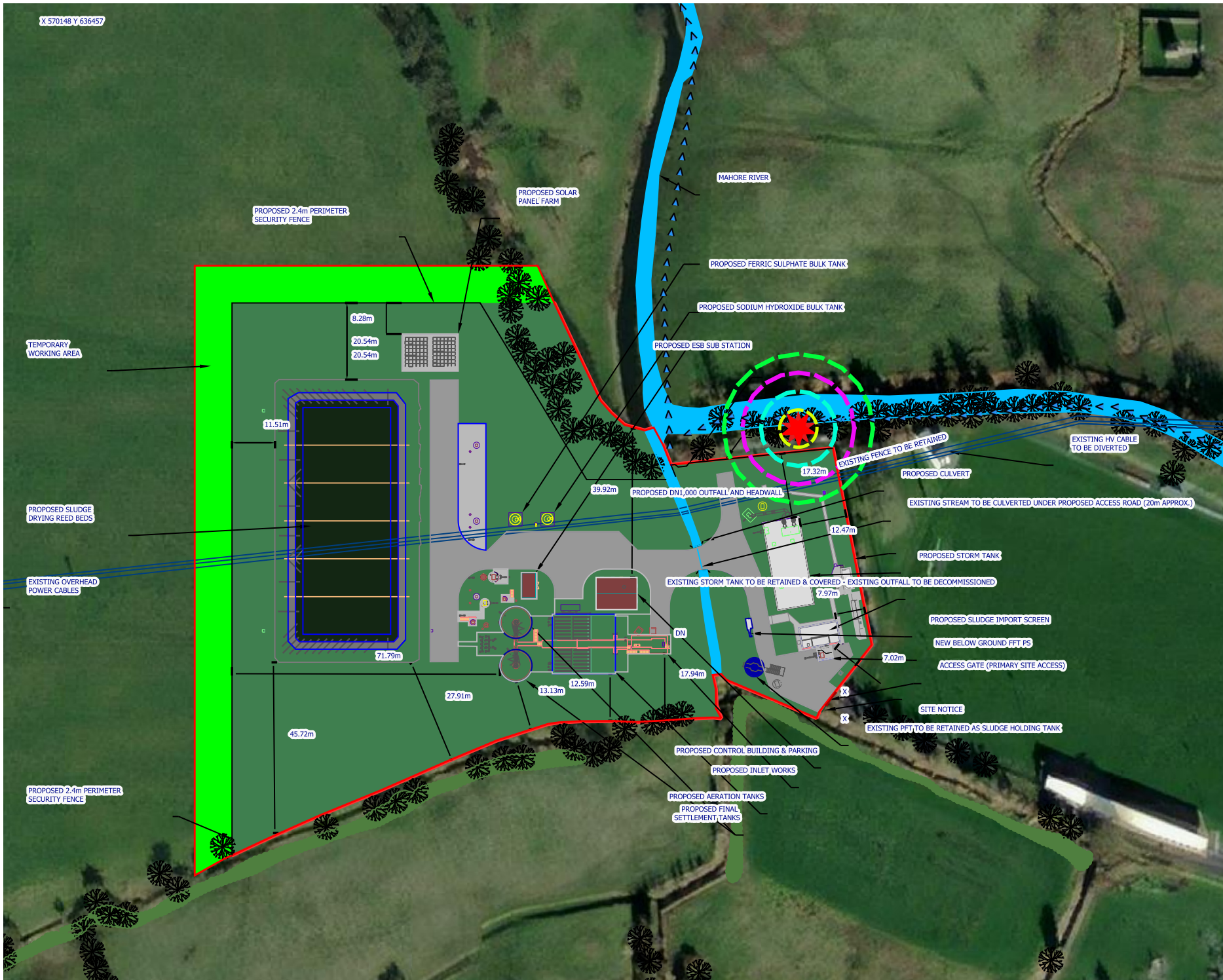
Project No. 230511	Drawing No. Figure 3
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Scale 1:1,121,593	Date 06/02/2024
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- Map Legend**
- Site Location
 - ★ Otter Holt Location
 - 5m construction exclusion buffer around Otter Holt
 - 10m construction exclusion buffer around Otter Holt
 - 15m construction exclusion buffer around Otter Holt
 - 20m construction exclusion buffer around Otter Holt
 - River Mahore

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Drawing Title
Location of Otter Holt in Relation to the Proposed Works at Hospital WwTP.

Project Title
Hospital WwTP

Drawn By RM	Checked By CM
Project No. 230511	Drawing No. Figure 4
Scale 1:1,326.479	Date 27/11/2024

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Plate 1 The Mahore River located to the northern parcel of the site, flowing in a north-westerly direction, classified as Depositing/ Lowland Rivers (FW2)- assessed as providing suitable supporting habitat for Otters.



Plate 2 Otter holt identified on the 24/05/2023 along the River Mahore.





Plate 3 Trampling on the grassy verge outside the otter holt recorded on the 24/05/2023.



Plate 4 Couch site recorded along the River Mahore on the 24/05/2023.





Plate 5 Otter Spraint Recorded on the 24/05/2023 on a rock upstream of the identified holt in the River Mahore



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Plate 6 Fresh Otter Prints recorded in the vicinity of the identified holt on the 24/05/2023.



Plate 7 The Drainage Ditch to the west of the WwTP was assessed as being unsuitable for Otters due to the small size, absence of fast flowing water and suitable unvegetated bank habitat.





Plate 8 Otter exiting the Holt on the 16/08/2023.



Plate 9 Otter utilizing the holt on the 16/08/2023.





Plate 10 Otter with Prey entering the holt slipway on the 29/06/2023.

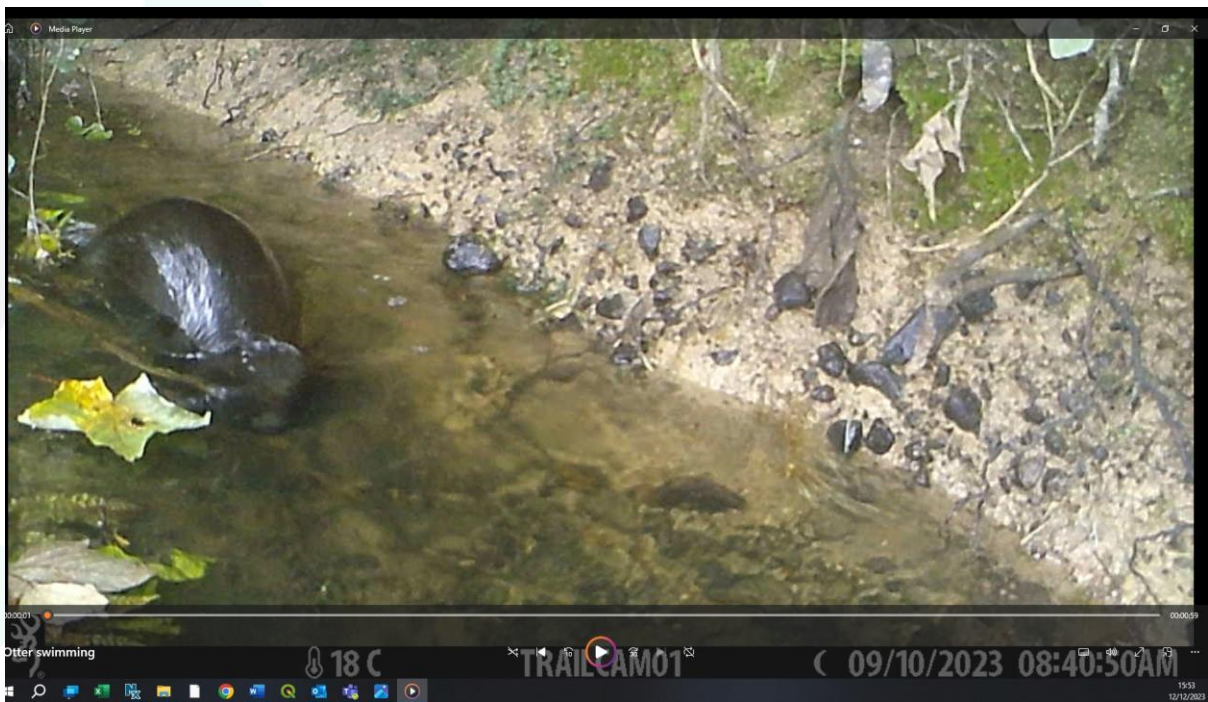


Plate 11 Otter foraging downstream from the holt in the Mahore River on the 10/09/2023.





Plate 12 Otter Holt Flooded on the 25/08/2023.



Discussion

Otters (*Lutra lutra*), along with their breeding and resting sites are afforded legal protection in Ireland under the Wildlife Act 1976 and Wildlife (Amendment) Act, 2000. Otters are afforded additional protection under the Habitats Directive due to their inclusion as Annex II and Annex IV species, which is transposed into Irish in the European Communities (Natural Habitats) Regulations (S.I. 94 of 1997), as amended, and the system of Strict Protection for animals as set out in Regulation 51 of the Regulations.

A potential Otter Holt was identified along the western bank of the River Mahore, as well as couching sites, fresh paw prints, and Otter spraint on the 24/05/2023. Following on from this, dedicated otter surveys were carried out on the 23/06/2023, 10/07/2023, 16/08/2023, 14/09/2023. From the findings of the surveys, it can be concluded from the camera footage collected over four months from June to September 2023, that the Otters are actively using the holt, and the river to feed and forage. However, no footage evidence to suggest that the Otter holt was a natal holt (no evidence of cubs entering/exiting the holt was recorded) was recorded throughout the four-month surveying period.

The proposed upgrade works to the existing Hospital WwTP will occur in close proximity to the Otter Holt. However, the otter holt and couch identified will not be physically removed during the proposed works, and as such will remain intact. Given that the proposed works will occur in close proximity to the otter holt there are reasonable grounds to support that there is potential for disturbance related impacts to occur to the local otter population in the River Mahore, Hospital. Co. Limerick during the construction and operational phase of the proposed development and upgrade works.

As such, in line with the relevant guidance, mitigation measures are required, as described below to reduce the potential for disturbance to this Annex II Species to ensure that the population of Otters in the River Mahore is maintained at a favourable conservation status.



Mitigation Measures

The following mitigation measures are in line with the guidance set out in ‘*The guidelines for the treatment of otters prior to the construction of national road schemes*’ (NRA 2009):

- A preconstruction Otter survey will be carried out in advance of the commencement of any works, no more than 10-12 months prior to construction (NRA 2009). The monitoring period should include before and also during construction works, and extended, if necessary, based on the findings of the pre commencement survey.
- If the otter holt is determined to be a maternity holt prior to construction works commencing, all works will be halted and further consultation with the NPWS will be undertaken.
- No works will be undertaken within 5m or 10m of the otter holt.
- Prior to any invasive construction works commencing on the site, a 10m buffer/ exclusion zone composed of timber/ plywood hoarding fencing, lined with a sound dampener will be temporarily erected along the existing fencing to the north of the existing WwTP, adjacent to the embankment.
- This 10m exclusion zone marked by timber hoarding (along the base of the embankment) will facilitate the minimum area for construction works to be undertaken while preserving the vegetation where the holt is situated. This will prevent machinery access or damage to the existing bank and to minimise noise disturbance and to avoid disturbance related impacts to the local otter population.
- Fencing will be erected in accordance with Clause 303 of the NRA’s Specification for Roadworks (National Roads Authority). Appropriate awareness of the purpose of the enclosure should be conveyed through notification to site staff and sufficient signage should be placed on each exclusion fence. All contractors or operators on site should be made fully aware of the procedures pertaining to each affected holt.
- No wheeled or tracked machinery will work within the 20m buffer surrounding the Otter holt.
- No artificial lighting should emanate onto the existing embankment and treeline to prevent light disturbance to otters. Construction staff should be made aware of the restrictions of working close to the riverbank and the hoarding should be made high enough to prevent unauthorised storage of construction spoil over and behind the hoarding.
- No water containing sediment or pollutants should be discharged directly from the construction areas onsite to the River Mahore, as this may impact local aquatic fauna on which the otter relies on for food.



To prevent further water pollution and habitat deterioration, the mitigation measures outlined to protect water quality during construction described below and, in the Construction, and Environmental Management Plan (CEMP) have been implemented to protect local water receptors i.e., the River Mahore.

Protecting Water Quality

- Prior to the commencement of any subsequent construction activities, the necessary mitigation measures will be put in place to ensure that no silt laden water runoff generated at the site will flow to nearby watercourses or drains; thus, ensuring the protection of surface water during the works. The design, construction and maintenance of an on-site drainage system will prevent sediment related pollution of nearby surface waters. Ground disturbance will be kept to a minimum and water from excavations should be filtered or pass through settlement process prior to discharge. Surface waters will be managed to ensure the prevention of runoff from the site work areas.
- Particular emphasis will also be placed on hazardous materials entering the surface water management system as well as spill or leaks of fuel oils. Section 4 provides an Emergency Response Plan for dealing with spillages which may result in adverse environmental effects.
- Excavation works may have the potential to encounter sub-surface and ground water. In the event of encountering groundwaters during excavation, waters will be pumped out of the area and into a series of mobile filtering settlement tanks before being discharged through a series of silt fences within the site boundary.
- Works to install the headwall and associated culvert will be undertaken in dry weather, with works planned to ensure they are completed during a continuous period of dry weather. A series of silt fences will also be utilised around the area where the water will be discharged. All construction methods will adhere to Inland Fisheries (2016) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters.

Prevention Pollution Control

- General mitigation measures will be adopted to prevent runoff occurring as a result of the proposed works, including:
- The majority of excavated spoil will be transported off site for appropriate treatment or disposal. Some spoil may be retained on site for infilling for the reed bed embankment sides and other areas of the site.
- Stockpiles will be located near the southern boundary of the Proposed Development site within the Proposed Development site boundary. A tracked machine will compact and re-grade the sides and top of the stockpile to help shed rainwater and prevent ponding and infiltration. All stockpiles will be covered by polyethylene sheeting and surrounded with a double silt barrier placed to avoid potential run off.
- Excavations will be carried out using an appropriately sized excavator and, in all circumstances, excavation depths and volumes will be kept to a minimum where possible.
- The proposed site construction includes several excavations which may require pumping of groundwater. Any groundwater encountered during excavations will be pumped to a series of settlement boxes designed to decant the suspended fines and drain clarified water to the local water course.
- A series of silt fence emplacements will be installed along the drainage ditch which bisects the site to prevent any runoff carrying suspended solids to the River Mahore. Silt fencing will also be installed along the northern boundary of the site, along the bank of the stream the River



Mahore and where culvert works are being undertaken to prevent potential run off from the site entering nearby watercourses.

- The silt fences installed will be triple layers of woven specified silt fence backed by a wire former on fence posts driven into solid footing in the stream. A lap of 200mm will run forward (Upstream) of the fence line and be held in place with clean angular stone acting as a ballast and anchor for the fence. The first fence will be a double construction unit with a separation of 300mm between faces and an infill of bundled geotextile to act as an immediate filter.
- The condition of the silt fences will be checked regularly and if found to be occluded it will be replaced with a fresh layer. During excavation any groundwater encountered will be pumped out of the area and into a series of mobile filtering settlement tanks before being discharged through a pipe with a silt bag attached on to an area of overland vegetation within the site boundary.
- Silt fencing will also be installed along the northern boundary of the site, along the bank of the stream the River Mahore and where culvert works are being undertaken to prevent potential run off from the site entering nearby watercourses.
- The design, construction and maintenance of an on-site drainage system will prevent sediment related pollution of nearby surface waters. Ground disturbance will be kept to a minimum and water from excavations should be filtered.
- The proposed surface water network will include a storm drainage pipe network, attenuation storage and SuDS features, (nature-based) features, which will aid the reduction of runoff volumes by slowing surface water flows, providing the opportunity for evapotranspiration and providing the opportunity for infiltration to ground. Both the interception and attenuation storage requirements of the Greater Dublin Strategic Drainage Study (GSDS) will be sufficiently met.
- All excavated material which is not required for future landscaping works or for backfill of excavations will be removed to an authorised waste recovery or disposal facility. This will also apply to material which is not suitable for reuse on site.
- Earthworks will not take place during periods of high rainfall to reduce run-off and potential siltation of watercourses. 'High rainfall' is defined as follows:
 - >10 mm/hr (i.e. high intensity local rainfall events); or
 - >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or,
 - Rainfall total greater than monthly average recorded in 7 consecutive days (prolonged heavy rainfall over a week).
- Works to install the headwall and associated culvert will be undertaken in dry weather, with works planned to ensure they are completed during a continuous period of dry weather.
- For the headwall construction any groundwater infiltration will be over pumped back from the river area to the settlement boxes; any effluent water will be directed to the ditch with the silt fence construction.
- There will be no release of suspended solids or pollutants to any watercourse as a direct or indirect result of the proposed works.
- Daily inspections of site drainage during construction will be completed by the appointed environmental manager/site manager;
- Good construction practices will be implemented at the site. This will ensure minimal risk. The Construction Industry Research and Information Association (CIRIA) provide guidance on the control and management of water pollution from construction sites ('Control of Water Pollution from Construction Sites, guidance for consultants and contractors', CIRIA, 2001), which provides information on these issues. This will ensure that surface water arising during the course of construction activities will contain minimum sediment.



- To minimise potential adverse effects on the fisheries resource in the nearby watercourse, works to the culvert headwall will be carried out during the period July to September.

Cement Based Product Control Measures

The complete washing out of any plant used in concrete transport or concreting operations will not be permitted at the site. Suppliers will be directed back to their own facility to complete the washout process. However, a washout area for chute cleaning will be provided at least 50m away from any watercourse into a mobile bunded container. The following mitigation measures are proposed to avoid release of cement leachate from the site:

- No batching of wet-cement products will occur on site.
- Ready-mixed supply of wet concrete products and where possible, emplacement of pre-cast elements, will take place. Where possible, pre-cast elements for concrete works will be used.
- No washing out of any plant used in concrete transport or concreting operations will be allowed on-site.
- Where concrete is delivered on site, only chute cleaning will be permitted, using the smallest volume of water possible. No discharge of cement contaminated waters to the construction phase drainage system or directly to any artificial drain or watercourse will be allowed. Water used for the chute cleaning process will be captured within a mobile bunded container which will be removed from the site once the construction phase has been completed.
- Use weather forecasting to plan dry days for pouring concrete.
- Ensure pour site is free of standing water and plastic covers will be ready in case of sudden rainfall event.

Refuelling, Fuel and Hazardous Materials Storage

Refuelling will take place in the site compound which will be located a minimum of 50m from nearby watercourses. The following mitigation measures are proposed for the management and control of fuel and hydrocarbons at the site:

- All plant will be inspected prior to use. Defective plant shall not be used until the defect is satisfactorily fixed. All major repair and maintenance operations will take place off site.
- The use of an electric dewatering pump will be reviewed to assess its viability to avoid refuelling operations adjacent the water courses.
- Vehicles will never be left unattended during refuelling. Only dedicated, trained, and competent personnel will carry out refuelling operations.
- Refuelling will be completed in a controlled manner always using drip trays. Mobile storage tanks such as fuel bowsers will be bunded to 110% capacity to prevent spills. Tanks for bowsers and generators shall be double skinned. When not in use, all valves and fuel trigger guns from fuel storage containers will be locked.
- All pipework from containers to pump nozzles will have anti siphon valves fitted.
- Spill kits, oil soakage pads and oil booms will be available to deal with and accidental spillage in and outside the refuelling area and will be kept within the site compound.

Dust Control



Dust can be generated from many on-site activities such as excavation and backfilling. The extent of dust generation will depend on the type of activity undertaken, the location, the nature of the dust, i.e., soil, sand, etc and the weather. In addition, dust dispersion is influenced by external factors such as wind speed and direction and/or, periods of dry weather. Construction traffic movements also have the potential to generate dust as they travel along the public road. The measures below will also prevent construction debris arising on the public road network.

Proposed measures to control dust include:

- Any site entrances with the potential to give rise to dust will be regularly watered, if required, during dry and/or windy conditions.
- The designated public roads outside the site and along the main transport routes to the site will be regularly inspected by Site Management for cleanliness and cleaned as necessary.
- Water misting will be utilised on-site as required to mitigate dust in dry weather conditions.
- The transport of soils, aggregates, or other material, which has significant potential to generate dust, will be undertaken in tarpaulin-covered vehicles where necessary.
- Daily inspection of construction sites to examine dust measures and their effectiveness.
- All vehicles leaving the construction areas of the site will rinse their wheels at a designated wheel wash area prior to entering the local road network.
- All construction related traffic will have speed restrictions on un-surfaced areas within the site to 15 kph.

Construction of outfall/ headwall

- The proposed site construction includes several excavations which require pumping of soiled groundwater. This pumping will be to a series of settlement boxes designed to decant the suspended fines and drain clarified water to the local water course. The stream that bisects the site is a local drainage ditch that flows to the River Mahore, for mitigating any runoff carrying suspended solids to the river, a series of silt fence emplacements along the ditch are proposed.
- These silt fences will be triple layers of woven specified silt fence backed by a wire former on fence posts driven into solid footing in the drainage ditch A lap of 200mm will run forward (Upstream) of the fence line and be held in place with clean angular stone acting as a ballast and anchor for the fence.
- The first fence will be a double construction unit with a separation of 300mm between faces and an infill of bundled geotextile to act as an immediate filter. This filter material will be checked regularly and if found to be occluded it will be replaced with a fresh layer.
- Spoil heaps will be limited on site with the preference to offsite removal. Where spoil heaps are unavoidable a tracked machine compacts and re-grades the sides and top of the stockpile to help shed rainwater and prevent ponding and infiltration, a double silt fence will be placed around their base.
- For the headwall construction any groundwater infiltration will be over pumped back from the river area to the settlement boxes and any effluent water directed to the ditch with the silt fence construction. When excavating the spoil will be directed straight to trucks with no spoil dropped withing 40M of the river/stream. The use of an electric



dewatering pump will be reviewed to assess its viability to avoid refuelling operations adjacent the water courses.

- All machinery will be refuelled away from the water courses and if maintenance is required a designated area within the site will be set up with adequate spill control in place, alternatively maintain offsite.

Conclusion

Given the findings of the otter surveys carried out from May to September 2023, and that as part of the proposed project, upgrade works are proposed at the existing Hospital WwTP site, and in adjacent lands, within close proximity to the otter holt, a derogation licence is sought for the current project to minimise the potential for ex-situ disturbance and displacement impacts to Otters in the River Mahore during the construction and operation of the proposed project.

