

PART E: 2026 otter survey for the proposed Midleton Flood Relief Scheme, Co. Cork to inform a section 54 derogation application



Prepared by Triturus Environmental Ltd. for Cork County Council

August 2026

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Table of contents

1. Introduction	3
1.1 Background	3
1.2 Otter legislative protection	4
1.3 Statement of authority	5
2. Methodology	6
2.1 Otter sign surveys	6
2.2 Total corridor otter survey (TCOS) methodology	6
3. Results	9
3.1 Study area	9
3.2 Otter records	9
4. Discussion	20
5. Derogation licence application	25
5.1 Test 1 - Justification for Derogation	26
5.2 Test 2 - Assessment of Alternatives	27
5.3 Test 3 – Impact of a Derogation on Conservation Status	30
6. References	33
7. Appendix A – otter signs database	35
8. Appendix B – Arup design drawings	38

1. Introduction

1.1 Background

Triturus Environmental Ltd. were commissioned by Arup, on behalf of Cork County Council, to undertake a European otter (*Lutra lutra*) survey in the vicinity of the proposed Midleton Flood Relief Scheme (FRS), Co. Cork (**Figure 2.1**). The survey would inform otters spatial use of the study area. This would include the identification of potential breeding (holt) and resting (couch) areas given these habitations are protected under the Wildlife Acts 1976-2023 and pursuant to the requirements of Articles 12, 13 and 16 of the Habitats Directive (92/43/EEC) (NPWS, 2021).

The findings of the survey would inform impact assessment any subsequent mitigation to protect otter populations in the study area. Furthermore, considering the recent European Court of Justice case law ruling in the Hellfire Massey Judgement (case number 162/22), the decision determined that where a derogation licence is necessary, it should be obtained before granting planning permission. Accordingly, the current derogation licence application is required to support the planning consent process with regards to otters.

A previous otter survey for the Midleton FRS was completed in February-March 2018 (Moore Group & Triturus, 2018) with a survey area footprint similar to the current survey (**Figure 2.1**). As otter presence and activity can change significantly over time, a follow-up pre-construction otter survey was conducted by Triturus Environmental Ltd. on the 28th & 29th October 2025 to ascertain if any changes in otter usage occurred in the vicinity of the study area. The identified 2 no. couch sites (C1 & C2), 1 no. communal latrine (CL1) and 3 no. holt sites (H1-H3) (**Appendix A**). Holts H2 & H3 were considered likely active given regular and fresh spraint depositions at the respective entrances (section 3 results; **Figures 3.1-3.4**). Trail camera footage also supported recent activity at couch no. C1.

Given the location of the identified protected otter habitats in the vicinity of the proposed development (i.e. <150m) and given the potential for indirect effects only on otter via disturbance, a derogation licence is required under the European Communities (Birds and Natural Habitats) Regulations 2011-2021. This application is outlined in **section 5** of the report.

1.2 Otter legislative protection

The Eurasian otter is a species of conservation concern and high priority, having suffered major declines in its range and population throughout Europe since the 1950s. It is classified as ‘near threatened’ by the IUCN Red List with a decreasing population trend and, as such, is listed in Appendix I of CITES, Appendix II of the Bern Convention (Council of Europe, 1979) and Annexes II and IV of the EU Habitats Directive (92/43/EEC).

Otters, along with their breeding and resting places, are also protected under provisions of the Irish Wildlife Acts 1976-2021. Otters have additional protection because of their inclusion in Annex II and Annex IV of the Habitats Directive 92/43/EEC, which is transposed into Irish law by the European Union (Birds and Natural Habitats) Regulations 2011-2021.

The protection of otters is outlined in Article 51(1) and (2):

Protection of fauna referred to in the First Schedule;

51.(1) *The Minister shall take the requisite measures to establish a system of strict protection for the fauna consisting of the species referred to in Part 1 of the First Schedule.*

51.(2) *Notwithstanding any consent, statutory or otherwise, given to a person by a public authority or held by a person, except in accordance with a license granted by the Minister under Regulation 54, a person who in respect of the species referred to in Part 1 of the First Schedule (listed below). Items (b) and (d) may be considered most relevant to developments.*

- (a)** *deliberately captures or kills any specimen of these species in the wild,*
- (b)** *deliberately disturbs these species particularly during the period of breeding, rearing, hibernation and migration,*
- (c)** *deliberately takes or destroys eggs of those species from the wild,*
- (d)** *damages or destroys a breeding site or resting place of such an animal, or*
- (e)** *keeps, transports, sells, exchanges, offers for sale or offers 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, shall be guilty of an offence.*

In an Irish context, according to the most recent Article 17 reporting (NPWS, 2025), otters remain at ‘Favourable’ conservation status with a stable trend. Otters were considered to be previously ‘Near Threatened’ (Marnell, 2009) based on a 20-25% decline between 1980 and 2005 (Bailey & Rochford, 2006). However, the current conservation status in Ireland is now of ‘Least Concern’ (Marnell et al., 2019). This data was supported by the most recent Otter Survey of Ireland 2023-2024 covering 1,063 sites with otters present at 65% [95%CI 62 - 68%] of sites in ROI and 66% [58 - 74%] of sites in NI (Reid et al., 2025). The results were supportive of a ubiquitous otter distribution nationally, despite the report concluding that the occupancy had likely declined since the 1980s. Regardless of the positive national outlook, otters remain ‘Near Threatened’ at a global level according to the IUCN Red List (Loy et al., 2022).

1.3 Statement of authority

The author of this report, Ross Macklin PhD (candidate), B.Sc. (Hons) MCIEEM., MIFM, HDip GIS, PDip IPM is an aquatic, fisheries and mammalian ecologist with 21 years' professional experience in Ireland. He is director of Triturus Environmental Ltd. Ross has a B.Sc. in Applied Ecology and diplomas in integrated Pest Management and GIS. He is currently completing his Ph.D. in fisheries ecology. He has considerable experience in a wide range of ecological and environmental projects, including EIAR, EclA, CEMP and AA/NIS reporting, as well as biodiversity, water quality monitoring, invasive species, mammalian surveys and fisheries management. He also has expert identification skills in fisheries, macrophytes, freshwater invertebrates, protected species and habitats. His diverse project experience includes work on renewable energy developments, flood relief schemes, road schemes, waste management, blueways/greenways, biodiversity projects, non-volant mammal monitoring, fisheries management projects and catchment wide water quality management. He has worked extensively in Cork and Dublin on mammal monitoring projects and is considered an expert in his field. He recently completed and was lead or co-author author of numerous catchment wide otter surveys including the Lower Lee FRS Otter Survey, Dublin City Otter Survey, Dún Laoghaire Rathdown Otter Survey, Tullamore Otter Survey, Fingal Otter Survey, River Boyne Otter Survey, Carlow Otter Survey and Monaghan Otter (in prep.) which are among the largest urban otter surveys conducted in Ireland. He has also worked on several otter derogation projects including holt closure, artificial holt construction and otter habitat restoration including management plans. Furthermore, he has worked on the first PFAS contamination studies of Irish riverine food chains including otter, fish and invertebrates using eDNA metabarcoding. He has also worked on otter population genetic studies in Cork and Dublin, among a few urban otter population genetics studies carried out nationally.

2. Methodology

2.1 Otter sign surveys

A walkover otter survey was undertaken on watercourses within the vicinity of the proposed scheme on the 28th and the 29th of October 2025. The survey area comprised 11.9 km of linear riverine habitat (inclusive of both banks) on the Owennacurra River (and estuary) and several tributaries, namely the Glenathonacash River, Dungourney River, Oatencake Stream and West Ballynacora Stream (**Table 2.1; Figure 2.1**). The survey area also encompassed adjoining estuarine habitats such as the intertidal lagoon at Bailick Park. The survey was completed by Bill Brazier and Ross Macklin of Triturus Environmental Ltd.

The survey was completed during optimal conditions (dry, mild, bright & settled) which ensured that a good representation of habitat marked by otter could be recorded in the field, including territorial marking or marking of feeding areas. The survey also deliberately coincided with a prolonged dry period to minimise rain washout of otter signs (spraint, smears etc.). Water levels were low (at base flows) during the survey period. The late October 2025 survey fell within the optimal survey period for otter sign surveys, i.e. October to April (Triturus, pers. obs.).

Each otter sign was logged by type, location (handheld GPS), condition and approximate age for later interpretation to distinguish differences in habitat use and activity. Spraints were subjectively assessed as either fresh (very recent), mixed-age (recent & older spraints, typically indicative of a regular marking site) or old (spraint degrading and not recently deposited). Furthermore, indicative counts of spraint (i.e. number of individual spraints) and the number of sprainting sites (often separate clusters in one area) were noted. This helped indicate the frequency of otter marking that can clarify preferential use of habitat over time. High marking frequency often demarcates important territory. This technique was first utilised in the Dublin City Otter Survey (Macklin et al. 2019) and has been applied in other large-scale otter surveys (Brazier & Macklin, 2020).

2.2 Total corridor otter survey (TCOS) methodology

The survey broadly followed the best practice 'standard survey' methodology for otter as recommended by Bailey & Rochford (2006), Chanin (2003) and Lenton et al. (1980) (all based on observations by Erlinge, 1967). However, methodology differed in that the entire waterline was surveyed rather than the standard 500-600m sections selected at regular (5-8km) intervals from accessible points (e.g. bridges). The novel survey technique, known as a total corridor otter survey (TCOS) (Macklin et al., 2019), involved a continuous, unbiased survey effort along both banks of each survey watercourse, encompassing the entire channel and riparian zones in addition to any adjoining intertidal areas or other waterbodies. Triturus have employed this comprehensive otter survey methodology in many other large-scale projects across Ireland, including the Dublin Otter Survey (2018-2019), DLR Otter Survey (2019-2020), Fingal Otter Survey (2024-2025) and Carlow Otter Survey (2025).

Total corridor survey methodology typically involves the use of two (or more) surveyors working independently (in tandem) along each bank of an individual watercourse (where practical). This also facilitates one to work from a more elevated position (e.g. bank top) with one surveying (with

appropriate PPE such as a dry suit or chest waders) from within the channel or watercourse. This holistic approach, whilst labour intensive, greatly increases the likelihood of otter sign detection and facilitates a more accurate estimation of otter usage and activity at the river or catchment scale. This is especially true of more cryptic signs such as holts and couches that are often located in poorly accessible areas often not covered by a standard survey approach.

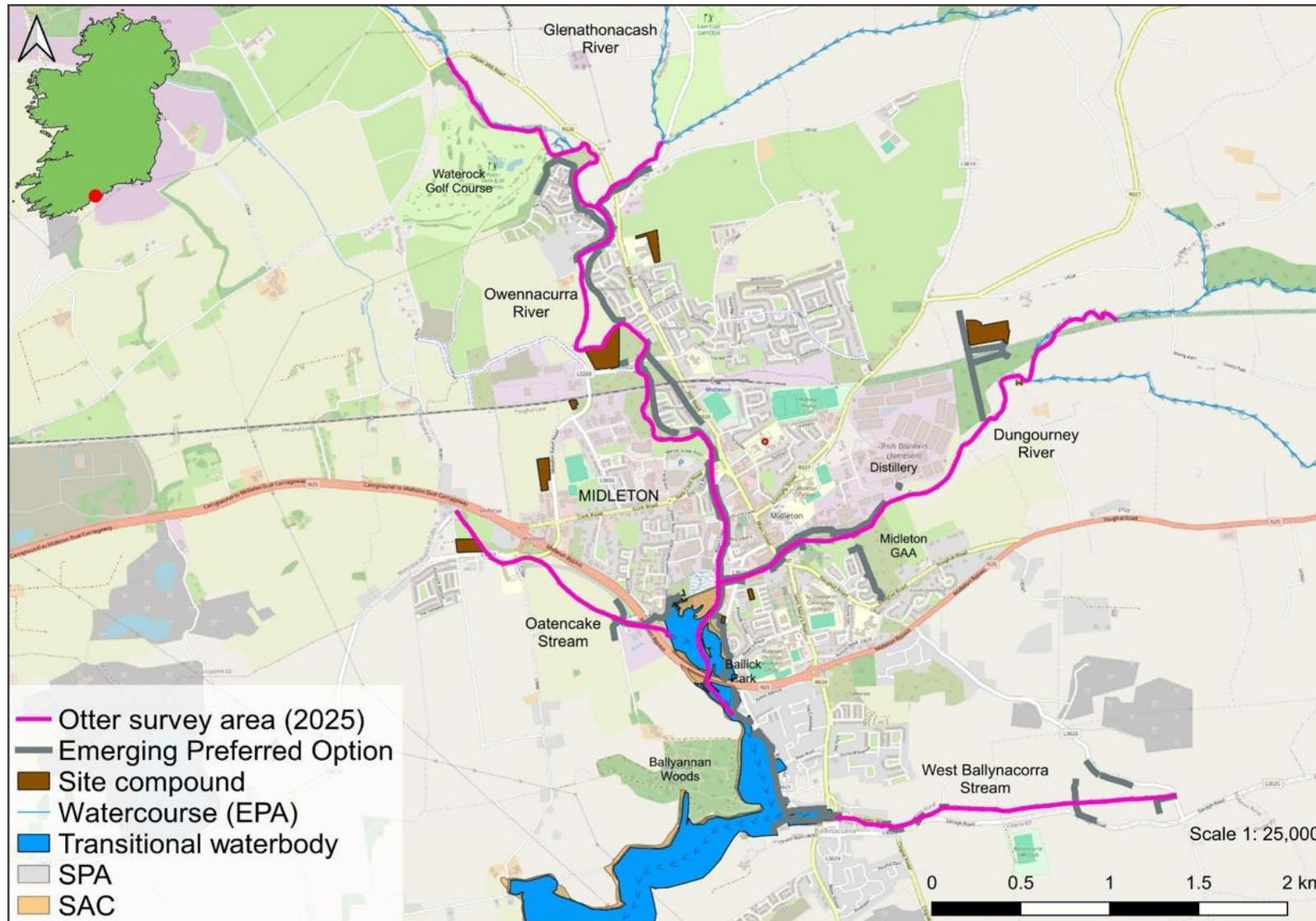


Figure 2.1 Otter survey area extent in the proposed Midleton FRS study area, Co. Cork

3. Results

3.1 Study area

The study area, comprising the Owennacurra River, Owennacurra (Ballynacora) Estuary, Dungourney River, Glenathonacash River, West Ballynacora Stream and Oatencake Stream, forms an interconnected freshwater and estuarine habitat network extending through rural, agricultural, urban and industrial landscapes. Collectively, these watercourses form a continuous ecological corridor facilitating otter movement between the wider catchment, Midleton and the Great Island Channel.

The system was characterised by considerable variation in bank structure, riparian vegetation and anthropogenic disturbance, resulting in spatial differences in habitat suitability for otter. Rural sections, including the Owennacurra River north of Midleton, were predominantly bordered by agricultural grassland, hedgerows, mature treelines, riparian scrub and localised woodland. Through Midleton, sections of the watercourse network were highly modified and bordered by buildings, residential development, roads, bridges, masonry walls, revetments, flood defences and industrial premises. Consequently, these sections were subject to high levels of anthropogenic disturbance. The tidal reaches comprised the sheltered Owennacurra Estuary, which was characterised by shallow tidal channels, extensive intertidal mudflats, reedbeds and areas of saltmarsh, grassland, scrub and woodland. The estuary supported abundant prey resources and provided high-quality foraging habitat for otter, while the more densely vegetated and secluded margins provided suitable breeding and resting habitat.

3.2 Otter records

A total of $n=51$ otter signs were recorded within the survey area in October 2025. In keeping with previous survey findings, signs were widespread on the Owennacurra River and throughout the Owennacurra (Ballynacora) Estuary, inclusive of all identified breeding (holt) and resting (couch) areas (**Figures 3.1-3.5**). A low number of otter signs were recorded along the Glenathonacash River and the Dungourney River. Only a single sign was recorded on the heavily modified Oatencake Stream (as per 2018). Whilst no otter signs were identified on the West Ballynacora Stream, a regular spraint site was recorded on a storm drainpipe near the confluence of the stream with the Owennacurra Estuary.

Spraint sites ($n=31$) accounted for the majority (61%) of all signs recorded, followed by latrines ($n=7$) and anal jellies ($n=4$) (Table 3.1). A low number of legally protected holt ($n=3$) and couches ($n=2$) were identified along the Owennacurra River and Estuary (**Figure 3.4**). A communal latrine site, a highly important area with communicative function in otter populations, was identified on a poorly accessible grassy promontory near Noel Collins Bridge in the Owennacurra Estuary (communal latrine CL1, **Plate 3.1**).

One holt (inactive) was identified under a mature sycamore in a more natural section of river near Willowbank (holt H1, Figure 3.4 & Plate 3.2), one was located in an old pipe in the tidal embankment near Chadwick's Hardware (holt H2, Figure 3.5) and the other was identified under a mature sycamore in a steep bank at the top of the top of the intertidal zone opposite The Moorings residential area (holt H3, **Figure 3.5 & Plate 3.3**). Holts H2 and H3 appeared active at the time of survey with regular and fresh spraint depositions at the respective entrances. Holt H3 was previously identified as an otter couch in the 2018 survey (Moore Group & Triturus, 2018) but had since been excavated as a holt (**Plate**

3.7). The two couch sites were located in a bank undercut under sycamore (couch C1) and in a collapsed retaining wall near the railway (couch C2) (**Figure 3.4**).

A photographic audit of the survey area, inclusive of the identified holt and couch areas, is presented in **Plates 3.1-3.7** below.

Table 3.1 Summary of the otter signs recorded in the study area, October 2025

Otter sign	Total no.
Spraint site	31
Latrine	7
Jelly	4
Holt	3
Couch	2
Slide	2
Communal latrine	1
Prints	1
Total	51



Plate 3.1 Part of a large otter communal latrine area with extensive digging/rolling areas on the Owennacurra Estuary at Noel Collins Bridge, October 2025



Plate 3.2 Currently inactive holt H1 located on the Owennacurra River at Willowbank, October 2025 (long tunnel into bank not visible in photo)



Plate 3.3 A previously identified couch location (top) now excavated as a holt (holt H3) (bottom) in the Owennacurra Estuary opposite The Moorings residential area, October 2025



Plate 3.4 A regular (interannual) otter sprainting site on a boulder underneath Carrigogna Bridge, October 2025



Plate 3.5 Otter spraint site on a characteristic prominent feature along the Dungourney River in October 2025, in this case a culvert headwall



Plate 3.6 A regular otter sprainting site, with fresh anal jelly, on an alder tree root system on the Glenathonacash River at the R626 road crossing, October 2025



Plate 3.7 Otter latrine on the banks of the Owennacurra River with clear claw marks and slide to the water, October 2025

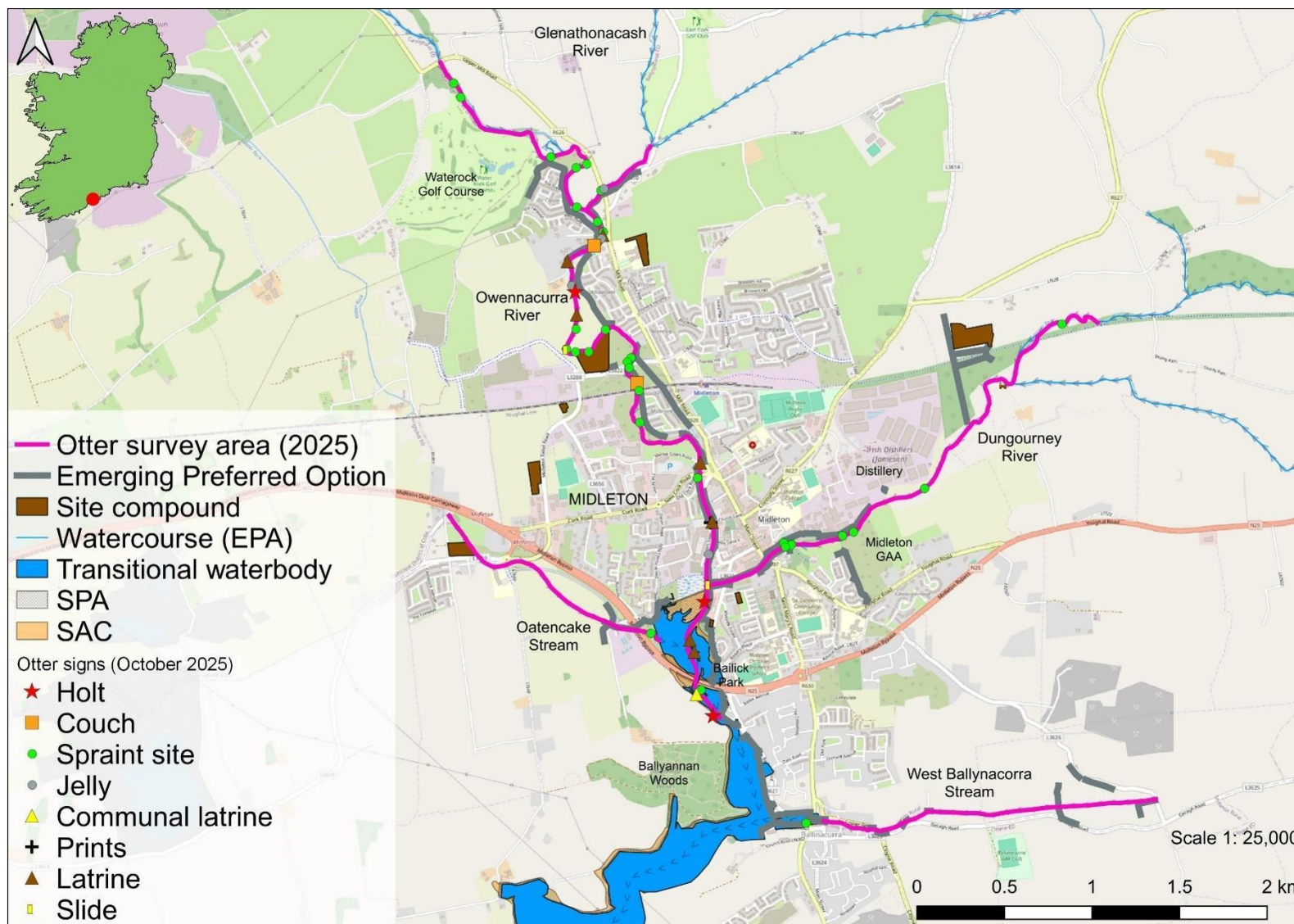


Figure 3.1 Otter sign distribution map showing otter signs inclusive of couch and holt sites in the study area, October 2025

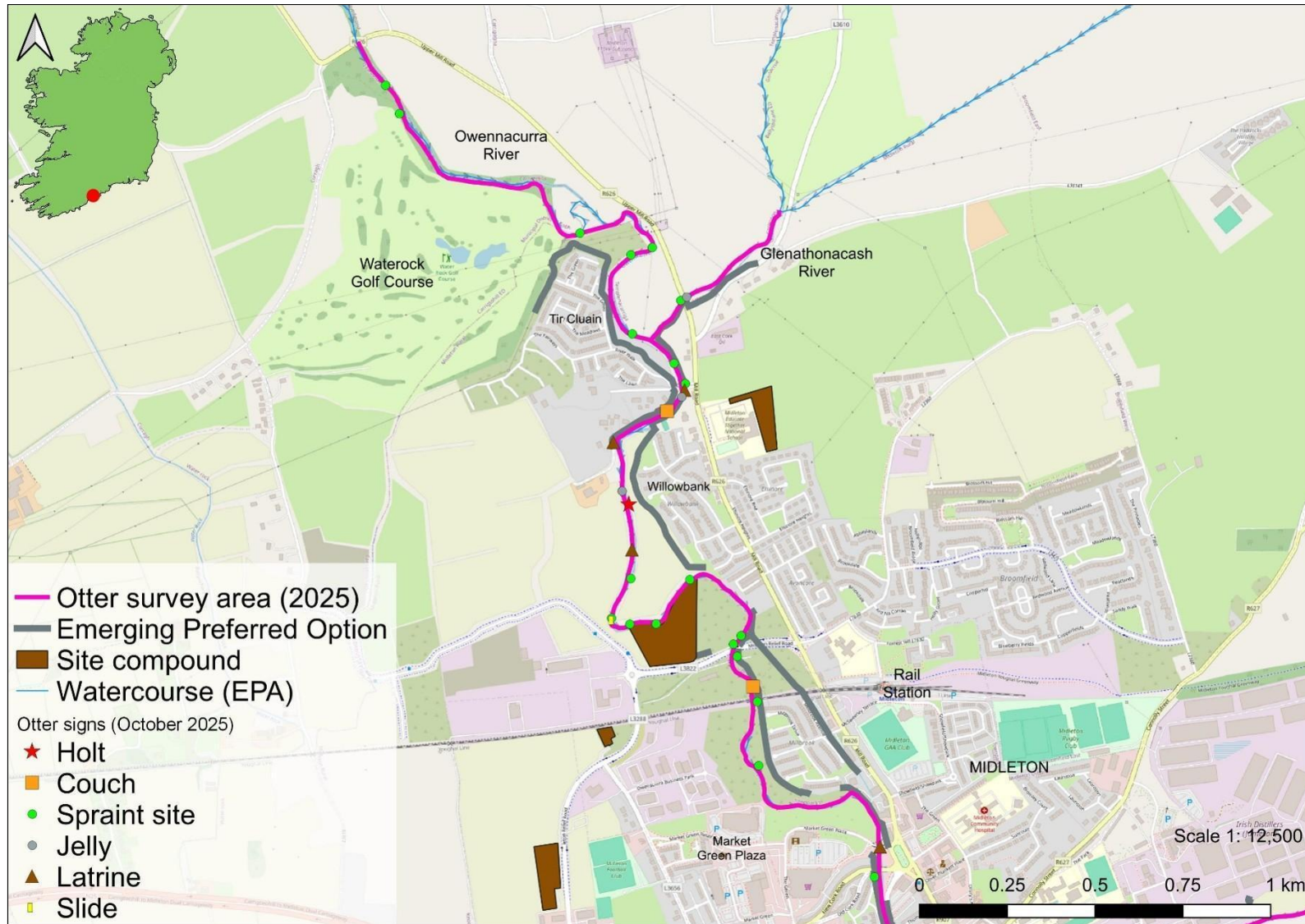


Figure 3.2 Otter sign distribution in the northern extent of the study area, October 2025

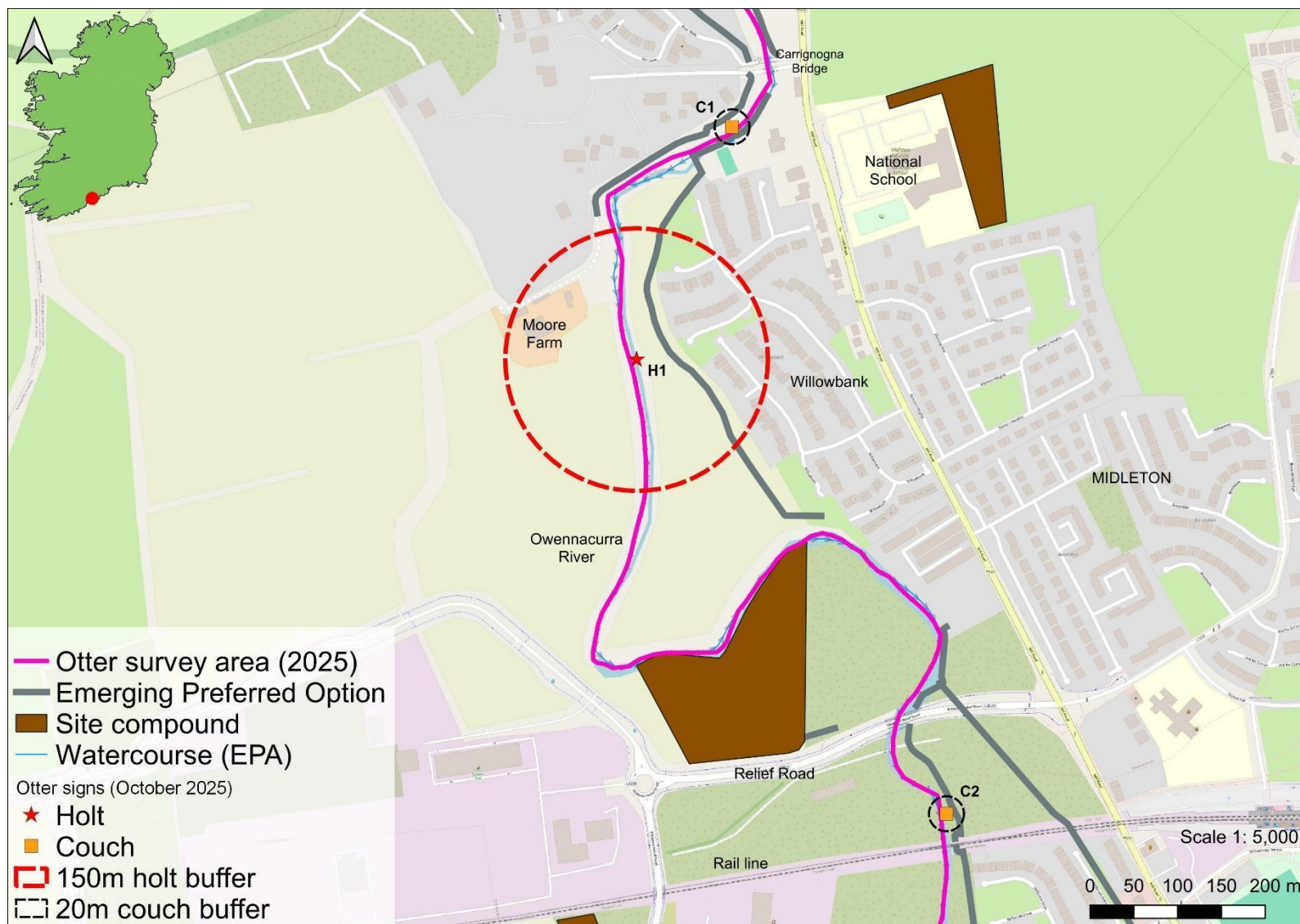


Figure 3.4 Overview of otter breeding & resting areas in the northern survey extent, October 2025

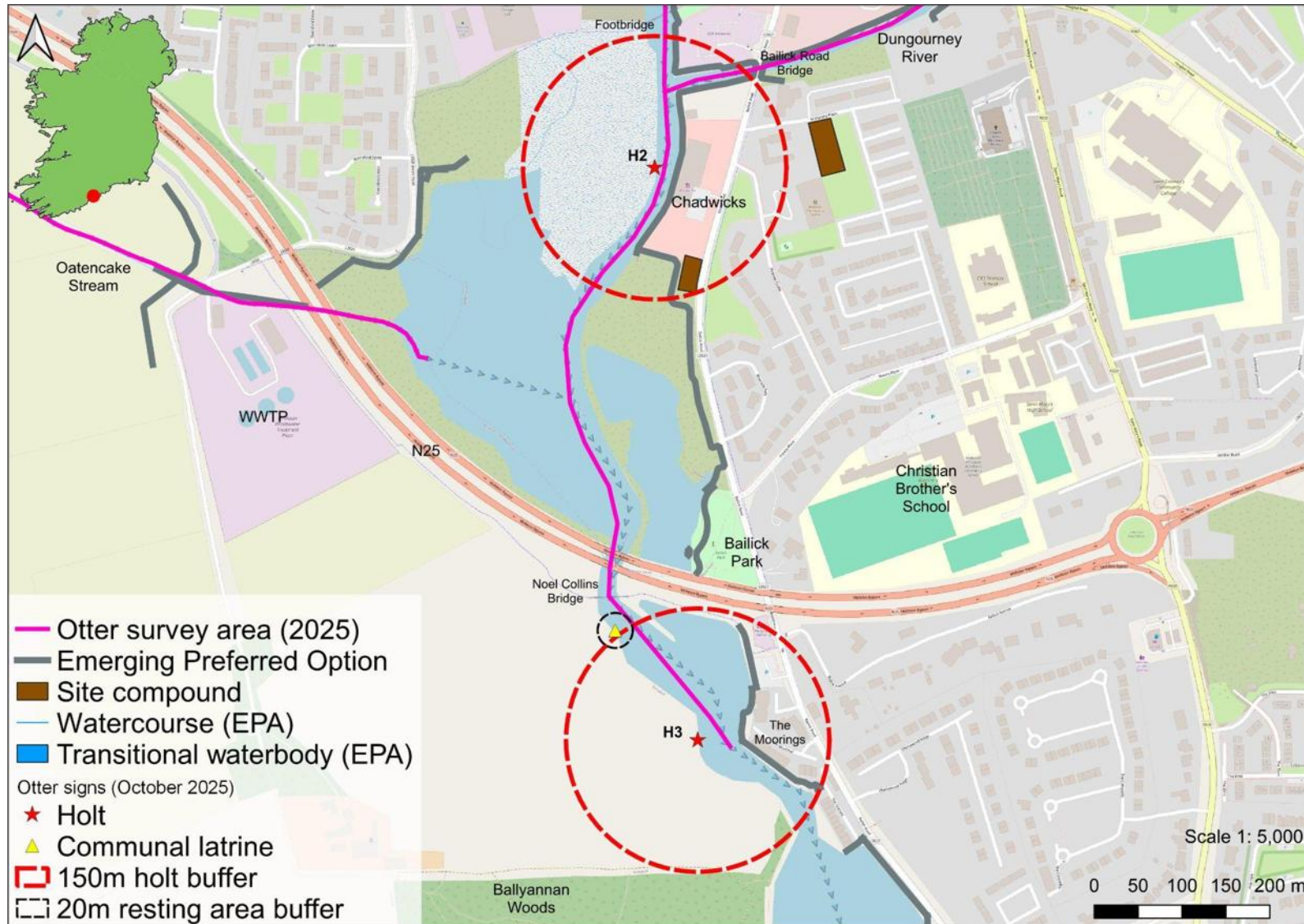


Figure 3.5 Overview of otter breeding & resting areas in the southern survey extent, October 2025

4. Discussion

The current survey recorded a total of $n=51$ otter signs along approximately 11.9km linear length of riverine and estuarine channel. The number of signs identified was slightly higher than the previous February-March 2018 survey (38 signs; Moore Group & Triturus, 2018). The adoption of a total corridor survey approach (TCOS; Macklin et al., 2019) under optimal survey conditions in October 2025 ensured a more accurate assessment of otter habitat suitability, utilisation and marking.

In keeping with previous data, the majority of signs were recorded along the Owennacurra River and associated estuarine habitats, with a low number identified on the Dungourney and Glenathonacash tributaries (**Figures 3.1-3.3**). Spraint sites and latrines accounted for the majority (74%) of all signs recorded (**Table 3.1**). These were typically associated with characteristic prominent features including instream/marginal boulders, grassy promontories, bridges, watercourse confluences and tree root systems. Scent marking, inclusive of spraint sites, urination, anal jellies and latrines, is routinely associated with such areas and serves a variety of territorial and communicative functions in otter populations (Sittenthaler et al., 2020; Mumm & Knörnschild, 2018; Almeida et al., 2012; Remonti et al., 2011; Kean et al., 2011; Hutchings & White, 2000; Kruuk, 1992). No evidence of otter activity was identified on the West Ballynacora Stream with only a single sign (spraint site) recorded on the Oatencake Stream near the estuary outflow; this reflected extensive historical modifications of these channels in addition to often poor flows, poor fluvial connectivity, siltation pressures, narrow widths/depths and poor-quality fisheries habitats, i.e. low suitability for otter.

The Owennacurra River and, to a lesser extent, the Dungourney River, are regionally important salmonid watercourses supporting anadromous Atlantic salmon and sea trout in addition to brown trout and a range of other fish species, including Red-listed European eel (Triturus, 2024). As such, these channels present typically high foraging opportunities. The capacity of the Midleton survey area to support healthy otter populations is further bolstered given the extensive transitional and intertidal habitats of the Owennacurra Estuary which support abundant prey resources such as transitional fish species (e.g. thick-lipped mullet, flounder, eel) and crustaceans (e.g. crabs). Otters are an adaptable generalist species with high trophic flexibility and are able to utilise a wide range of prey resources though fish remain their primary dietary component (Triturus data; Drake et al., 2023; Krawczyk et al., 2016; Reid et al., 2013).

4.1 Otter communal latrine site

A high intensity otter marking area, with multiple adjacent latrines, digging behaviour and abundant spraints, was identified on a grassy promontory downstream of Noel Collins Bridge in the Owennacurra Estuary (communal latrine CL1, **Figures 3.3 & 3.4; Plate 3.1 & 4.3**). This site was considered a prime example of a 'communal latrine' and was likely used by numerous otters given a very high number of signs including latrines, spraint sites, prints, slides and other evidence. Communal latrines have long been identified in other otter species such as the North American otter (*Lontra canadensis*) (Barocas et al., 2016), African clawless otter (*Aonyx capensis*) (Nicolaidis et al., 2024), solitary neotropical otter (*Lontra longicaudis*) (Laurentino et al., 2023), smooth-coated otter (*Lutrogale perspicillata*) (Dias, 2023), small-clawed otter (*Aonyx cinereus*) (Aandreaan, 2020) and giant otter (*Pteronura brasiliensis*) (Carter & Rosas, 1997) but have not been documented to date in Irish European otter populations except by the authors of this report (Triturus data).

From extensive national survey coverage over many years, it is apparent that these communal latrine sites are very rare in Ireland, typically occur in estuarine habitats and are of high ecological significance given they serve as vital communication and social interaction hubs for otter populations, especially pre-breeding (pers. obs.). Consequently, they warrant the associated demarcation and protection.

4.2 Otter breeding & resting areas

Legally protected potential breeding (three holts H1-H3) and resting areas (two couch sites C1 & C2) were recorded in the study area (**Figures 3.4 & 3.5**). One holt (inactive) was identified under a mature sycamore in a more natural section of river near Willowbank (**holt H1, Figure 3.4**), one was located in an old pipe in the tidal embankment near Chadwick's Hardware (**holt H2, Figure 3.5**) and the other was identified under a mature sycamore in a steep bank at the top of the top of the intertidal zone opposite The Moorings residential area (**holt H3, Figure 3.5**). Holts H2 and H3 appeared active at the time of survey with regular and fresh spraint depositions at the respective entrances. Holt H3 was previously identified as an otter couch in the 2018 survey (Moore Group & Triturus, 2018) but had since been excavated as a holt (**Plate 3.3**). The two couch sites were located in a bank undercut under sycamore (couch C1) and in a collapsed retaining wall near the railway (couch C2) (**Figure 3.4**). The potential breeding (holt) and resting (couch) areas were all situated in lower disturbance areas of the channel with good otter seclusion. Preliminary trail camera surveys (27th July to present) have not yet been detected otter activity at the three number holts (H1-H3), though these are highly likely to become active as the season progresses (**Plates 4.1-4.3**). However, otter activity was recorded at couch C2 on the 11th of August 2026 (**Plate 4.4**).



Plate 4.1 Otter couch (C2) located in a collapsed retaining wall near the railway, July 2026



Plate 4.2 Inactive otter holt (H1) identified under a mature sycamore in a more natural section of river near Willowbank, July 2026



Plate 4.3 Otter communal latrine (CL1) area in the Owennacurra Estuary, July 2026



Plate 4.4 Otter holt (H2) located in an old pipe in the tidal embankment near Chadwicks Hardware in the Owennacurra Estuary



Plate 4.5 Otter recorded at Couch C2 located in a collapsed retaining wall near the Midleton railway line crossing, August 2026

5. Derogation licence application

As outlined above, the October 2025 otter survey undertaken by Triturus Environmental Ltd. identified three potential otter holts (H1–H3) (potential breeding areas), two couch sites (C1–C2) (resting area) and a communal latrine (CL1) within the Owennacurra river and estuary corridor (Figure 3.4–3.5).

In accordance with Transport Infrastructure Ireland (TII, 2008) guidance, 20m buffers around couch and latrine sites and 150m buffers around holt sites have been mapped relative to the proposed Midleton FRS works (Figure 3.4–3.5). These buffers demonstrate that several elements of the scheme intersect with zones where indirect disturbance to otter breeding and resting places may occur during construction. Therefore, the current derogation licence application relates to the potential indirect disturbance of holt sites H1–H3, couch site C1 & C2 & a communal latrine site (CL1).

Otters, along with their breeding and resting places, are protected under provisions of the Irish Wildlife Acts 1976–2021 and also pursuant to the requirements of Articles 12, 13 and 16 of the Habitats Directive (92/43/EEC) as an Annex IV species. Indirect disturbance is therefore possible.

Potential impacts are limited to temporary and indirect disturbance of the identified holt and couch sites, should they be active at the time of construction works, due to their proximity to the proposed development. As such, a derogation licence will be required in advance of any works in these areas as per Article 16 of the Habitats Directive and Regulation 54 of the European Communities (Birds and Natural Habitats) Regulations, 2011–2021.

A mitigation-by-design approach has been integrated into the development's plan to minimise the footprint to minimise encroachment on riparian habitat and reduce potential disturbance. In addition to a pre-construction survey (as outlined above) and construction best practice (e.g. water quality protection), numerous mitigation measures will be applied to reduce disturbance and impacts to otter. These are outlined in section 5.1 below.

Given likely unavoidable disturbance to the breeding and or resting places of otter in areas adjoining the proposed development, a derogation licence is requested for the proposed works, with the following details:

Applicant: Cork County Council, Midleton Flood Relief Scheme

Supervised by: Ross Macklin of Triturus Environmental Ltd, Unit 5 Anchor Business Park, Little Island, Co. Cork, T45 XN59.

Species: European otter (*Lutra lutra*)

Activity: Midleton Flood Relief Scheme – channel works, embankment modifications, riparian interventions and associated construction activities

Timeline: 1st September 2026 to 31st December 2026 (covering the annual period of a permitted derogation consent, application in support of planning consent based on permitted timeline currently available (i.e. calendar year)

5.1 Test 1 - Justification for Derogation

5.1.1 *Explanation as to why the derogation licence sought is the only available option for works and no suitable alternative exists as per Regulation 54 of the European Communities (Birds and Natural Habitats) Regulations.*

The derogation is sought under **Article 16(1)(c)** of Regulation 54(2) given that the proposed works are;

- ***(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.***

The derogation is required given the proximity of the identified otter breeding and resting places (i.e. three holts, H1-H3 & two couches, C1 & C2 and communal latrine CL1) to the proposed Midleton Flood Relief Scheme works. There is no alternative option but to proceed with the development in the vicinity of the identified potential breeding and resting areas. Although holt closures have been avoided through the design process, indirect disturbance during the works will be unavoidable. As outlined in **section 5.2** below, no suitable alternative designs or locations for the development exist.

Avoidance and mitigation measures are summarised below in **section 5.3**. The disturbance impacts of the works on the identified otter breeding and resting areas cannot be fully avoided or mitigated, considering the proximity to and nature of the proposed works. Justification for the project in the interests of public health, public safety, including social, economic and beneficial consequences of primary importance for the environment, is summarised below.

Social & Economic Public Interest

National Development Plan

The Proposed Scheme is required for public safety and the protection of people, property and infrastructure from flood risk. Midleton has a long history of flooding, with numerous significant flood events recorded in recent decades, including more recently the severe flooding associated with Storm Babet. Residential, commercial and industrial properties, wastewater infrastructure, roads and utility assets remain vulnerable to fluvial, tidal and groundwater flooding. Without intervention, flood risk is expected to increase due to climate change, including higher rainfall, increased river flows and higher tide levels.

The consequences of flooding in Midleton include damage to homes, businesses, infrastructure and utility assets, substantial financial costs and community disruption. Flooding also presents risks to public health and safety, including increased risk of drowning, flood-related injuries, contamination of water supplies, and increased anxiety and stress among affected communities.

The primary objective of the Proposed Scheme is to provide flood relief measures along the Owennacurra River, Glenathonacash River, Dungourney River, Oatencake Stream and Owennacurra Estuary to alleviate flooding up to the 1% Annual Exceedance Probability fluvial flood event and the

0.5% Annual Exceedance Probability coastal flood event. By protecting vulnerable communities and infrastructure from recurring and potentially worsening flood events, the Proposed Scheme will deliver significant public safety, social and economic benefits and support the long-term resilience of Midleton.

5.2 Test 2 - Assessment of Alternatives

The European Commission guidance requires demonstration that no satisfactory alternatives exist that meet the project's objectives with less impact on the species concerned. Alternatives were assessed as follows:

The requirement for an otter derogation licence arises from the need to construct the Midleton Flood Relief Scheme in locations where otter habitat and potential resting places occur and where temporary disturbance cannot be fully avoided. The primary objective of the Scheme is to provide a viable and effective standard of flood protection to Midleton.

A comprehensive options assessment was undertaken as part of the Midleton Flood Relief Scheme development process. This assessment considered a wide range of structural and non-structural flood risk management measures, including alternative alignments, defence types, conveyance improvements, storage measures and combinations of interventions. Through successive stages of appraisal, options were assessed against technical feasibility, hydraulic performance, constructability, environmental constraints, cost, operational requirements, land-take implications, impacts on property and infrastructure, and overall ability to achieve the Scheme objectives. Among the options considered and determined to be technically feasible, none would result in a reduced impact on otters relative to the preferred scheme. The preferred option therefore represents the most effective means of achieving the project objectives while avoiding, minimising and mitigating effects on otters to the greatest extent practicable.

The preferred Midleton Flood Relief Scheme option has been developed through an iterative design process that sought to avoid and minimise impacts on otters wherever technically feasible. Ecological constraints, including the presence of suitable otter habitat along the Owennacurra River and Dungourney River were considered throughout the options appraisal and planning design stages. The location, alignment and form of flood defence measures were refined, where practicable, to reduce encroachment into riverbank habitats and minimise disturbance to areas that may be used by otters for commuting, foraging and sheltering.

At the detailed design stage, further mitigation will be incorporated to minimise effects on otters. Construction working areas have been limited to the minimum extent necessary, vegetation clearance will be restricted to areas required for the works, and habitat reinstatement will be undertaken following construction. Works will be planned and managed to maintain habitat connectivity along watercourses wherever possible, ensuring that otter movement through the river corridor is not unnecessarily restricted. Any temporary disturbance will be spatially confined and of limited duration relative to the operational life of the Scheme.

Pre-construction surveys will be undertaken by suitably qualified ecologists to identify any active holts, couches or resting places within the zone of influence of the works. Where such features are identified, avoidance measures will be implemented in the first instance. A derogation licence is

sought only for those specific circumstances where impacts cannot be avoided through design modifications or construction management measures. The extent of any licensed activities will be restricted to the minimum area and duration required to facilitate construction, consistent with the requirements of Article 16 of the Habitats Directive and NPWS guidance.

Accordingly, the preferred option not only provides the required level of flood protection but also represents the option through which impacts on otters have been minimised to the greatest extent practicable. All reasonable alternatives, design modifications and mitigation measures have been considered and incorporated where feasible. The requirement for a derogation therefore relates solely to the residual impacts that remain after all reasonable design and mitigation measures have been exhausted.

Table 5.1 Absence of satisfactory alternative summary

Alternative Considered	Description	Reason Discounted / Why Not Satisfactory
Do-Nothing Option	No flood relief measures implemented.	Does not address the existing significant flood risk to residential, commercial and critical infrastructure within Midleton. Fails to meet the fundamental objective of the Scheme and would leave the community exposed to future flood events
Property-Level Protection Only	Protect individual properties rather than implementing catchment wide defences. Property-level measures would not address flooding of roads, public infrastructure, businesses, utilities and public spaces, nor would they provide a strategic solution to flood risk within Midleton.	Property-level measures would not address flooding of roads, public infrastructure, businesses, utilities and public spaces, nor would they provide a strategic solution to flood risk within Midleton.
Flood Storage Upstream	Reliance on upstream storage areas to reduce flows through Midleton.	Insufficient storage capacity is available within the catchment to achieve the level of attenuation required to manage the design flood events. The provision of an upstream storage area in combination with direct defences on the Owennacurra was investigated in detail. However, it was found that the provision of the flood storage area would only slightly reduce the defence heights required though Midleton. Therefore, it would not reduce the extent and footprint of the defences (and thus further impact on otters). The construction of the flood storage area would have added additional construction

Alternative Considered	Description	Reason Discounted / Why Not Satisfactory
		footprint of the scheme with associated increased environmental impacts.
Natural Flood Management (NFM))	Utilise NFM measures to reduce and attenuate peak flows in the Owennacurra and Dungourney catchments and provide flood risk mitigation in Midleton.	Natural Flood Management measures were assessed as part of the Midleton Flood Relief Scheme options appraisal; however, due to the scale of flood risk, the combination of fluvial, tidal, pluvial and groundwater flooding mechanisms, and the need to provide the design standard of protection to the urban area, NFM measures alone cannot achieve the Scheme objectives and can only be considered as complementary measures alongside the preferred flood defence scheme. Reduction of peak flow by 6-10% through NFM could lead to a minor reduction in the extent of structural flood defences within the Owennacurra fluvially dominated area of Scheme Area however this does not reduce the extent and footprint of the defences (and thus reduce impact on otters).
Defence Realignment Away from Watercourses	Relocate flood defences further from the river corridor to avoid areas of otter activity.	In many locations the urban environment, existing development, roads, utilities and property boundaries constrain available space. Where possible the defences have been aligned away from otter activity.
Reduced Scheme Extent	Extent Omit specific flood defence elements in locations where otter habitat is present.	The flood defence system must operate as a continuous and integrated network. Removal of individual sections would create low points or undefended pathways through which floodwaters would enter protected areas, compromising the performance of the entire scheme.
Avoidance of All Areas Used by Otters	Redesign the scheme to completely avoid all potential otter habitat, commuting routes and resting places.	Given the close association of otters with the river corridor and the requirement for flood defence works to interface directly with the watercourses, complete avoidance is not technically achievable while still delivering the required flood protection standard. The preferred option therefore incorporates avoidance and minimisation measures wherever practicable, with a derogation required only for residual unavoidable impacts.

5.3 Test 3 – Impact of a Derogation on Conservation Status

The following summary information provides responses to four key issues which will be considered during the derogation licence decision making process;

5.3.1 *Evidence that actions permitted by a derogation will not be detrimental to the maintenance of the populations of the species to which the Habitats Directive relates at a favourable conservation status in their natural range as is required under Section 54(2) of the European Communities (Birds and Natural Habitats) Regulations.*

No otter breeding (holt) or resting (couch & latrine) places will be directly impacted by the proposed works related to the Midleton FRS as they do not overlap the Scheme footprint. The three holts (H1–H3) and communal latrine (CL1) identified along the Owennacurra River and Estuary are situated outside the direct construction footprint, and no physical damage or direct encroachment on these structures will occur. Similarly, the two resting sites (C1-C2) located within areas of high seclusion along the riverbank will remain intact throughout the works. However, short-term, indirect disturbance to otter breeding and resting areas during the construction phase cannot likely be avoided. Mitigation measures, including mitigation by design, focusing on the minimisation of disturbance to otter (see below), will be implemented.

These measures are designed to ensure that the permitted actions will not be detrimental to the maintenance of otter populations, thereby supporting the species' favourable conservation status within their natural range in compliance with Section 54(2) of the European Communities (Birds and Natural Habitats) Regulations.

5.3.2 *Details of any mitigation measures planned for the species affected by the derogation at the location, along with evidence that such mitigation has been successful elsewhere.*

No otter breeding (holt) or resting (couch & latrine) areas will be directly disturbed as a result of the proposed works at Midleton FRS. The three identified potential holts (H1–H3), couches (C1 & C2) and the communal latrine (CL1) are located outside the direct construction footprint and will be fully retained. Holts H2 and H3 and latrine CL1 exhibited evidence of recent activity during the October 2025 survey and are therefore considered potentially active, while Holt H1 showed no recent signs of occupation but remains structurally suitable for future use by otter. Preliminary trail camera footage of the breeding and resting areas showed evidence of usage of couch site C1 also.

The two resting sites (C1-C2) are situated within secluded sections of the riverbank habitat and although located in proximity (i.e. ≤20m) to certain scheme elements, both sites lie outside the direct footprint of the proposed works. Therefore these habitations of otter will not be damaged or removed as part of the proposed Scheme.

While direct impacts are not anticipated, short-term indirect disturbances to otter breeding and resting areas during the construction phase cannot be entirely ruled out. Measures will be implemented to minimise disturbance to otter, their habitat and prey resources during both the construction and operational phases of the scheme. These measures align with best-practice guidance for otter (e.g. NPWS, 2021; TII, 2009) and reflect approaches successfully implemented in previous flood-relief and infrastructure projects across Ireland.

The main viable mitigation measures are as follows to protect otter from indirect disturbance related

impacts:

- A repeat pre-construction otter survey in advance of construction commencement as there will be a significant time period between the planning decision and prospective appointment of a contractor.
- In relation to potential otter breeding and resting areas (exact status requires trail camera monitoring), it is recommended that works are completed in these areas after the January to April in particular covering the core breeding period given that otter breeding is generally concentrated at this time (pers. obs.), i.e. **avoidance of main otter breeding season**.
- Restrict construction activity to **daylight hours** to minimise disturbance impacts to commuting and foraging otter. Likewise, thoroughly consider construction/security **lighting schedules** and operational phase lighting to prevent impacts to otters (and other riparian wildlife)
- Timber hoarding or **acoustic barriers** should be used to screen noise disturbance from site access and egress routes and piling where infrastructure falls within 20m of a resting and or breeding area. Temporary timber hoarding or acoustic barriers should be used to screen noise disturbance from site access/egress and construction activities required near holt sites H1-H3, as well as couches C1 & C2 as they are situated within the recommended respective buffer distances for breeding and resting areas (**Appendix A & B**).
- The retention and enhancement of existing **riparian vegetation** along riverbanks, combined with restricted public access at least locally (e.g. through fencing), will maintain essential shelter and cover for otters and other riparian wildlife
- Ecological Clerk of Works (ECoW) supervision during the construction phase to ensure buffers are maintained minimising any encroachment by plant inclusive of a pre-construction meeting to establish key mitigation measures to implement an otter mitigation plan.
- Ecologically sensitive areas associated with otter activity will be clearly demarcated using ecological sensitivity signage prior to the commencement of works.
- A trail camera monitoring program¹ will be implemented by the Project Ecologist/ ECoW to observe otter activity and detect any disturbance-related impacts. Monitoring will continue throughout the construction period to ensure mitigation measures are effective and to allow for real-time adjustments as needed.
- All construction personnel will receive a site-specific briefing from the Project Ecologist/ECoW prior to works commencing. This briefing will identify the locations of nearby otter breeding and resting places and outline all required mitigation measures.
- Monitoring results and ecological updates will be provided regularly to the client and construction team by the ECoW throughout the construction period, ensuring that mitigation measures remain effective and responsive to site conditions.

¹ Please note that pre-construction trail camera monitoring of the holt sites will be completed under a Section 9 & 23 licence, once received from the NPWS.

5.3.3 As much information as possible to allow a decision to be made on this application.

Robust information pertaining to otters, inclusive of detailed mitigation proposals, has been provided in the current report to best inform the decision process

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7. Appendix A – otter signs database

Table 7.1 Summary of the $n=6$ otter breeding & resting areas recorded within the Midleton FRS Scheme area, sites within 20m of proposed infrastructure for couches / communal latrine and 150m for holts are highlighted in **bold**.

Watercourse	Sign	Spraint no.	Sign age	Notes	Bank	Near flood defence Infrastructure inside 20m buffers (couches) & 150m buffers (holts) including direction	Near flood defence Infrastructure inside 20m buffers (couches) & 150m buffers (holts) including direction - Right Bank	ITM x	ITM y
Owennacurra River (Willowbank)	Holt H1	None	N/A	Excavated holt under sycamore roots 1m above base flow levels, 0.3m x 0.25m with tunnel under bank	East	Left Bank - Construction of 280m of proposed flood defence embankment and associated 280m filter drain on the dry side of the defence within the 150m buffer from the holt location.	Right Bank - Construction of 190m surface water carrier drain and associated headwall within the 150m buffer from the holt location	587162	574879
Owennacurra River (Knockgriffin)	Couch C1	3(5)	Mixed age	Otter couch in undercut bank under sycamore roots with slide to rivers and mixed age latrines	East	Left Bank - Construction of 17m of proposed sheet piled flood defence wall and 21m reinforced concrete L-Wall and associated 31m filter drain on the dry side of the defence within the 20m buffer zone.	Right Bank - Construction of 35m reinforced concrete L-Wall and associated 35m surface water carrier on the dry side of the defence within the 20m buffer zone	587271	575145
Owennacurra River (Broomfield West)	Couch C2	5(16)	Recent	Couch with numerous latrines in old tunnel near railway line	East	Left Bank - Construction of 36m proposed flood defence embankment and associated 21m of swale on the dry side of the defence within the 20m buffer from the couch location.	Right Bank - None within 20m buffer zone	587516	574360

Watercourse	Sign	Spraint no.	Sign age	Notes	Bank	Near flood defence Infrastructure inside 20m buffers (couches) & 150m buffers (holts) including direction	Near flood defence Infrastructure inside 20m buffers (couches) & 150m buffers (holts) including direction - Right Bank	ITM x	ITM y
Owennacurra Estuary (opposite Chadwicks)	Holt H2	2(8)	Mixed age	Holt in old pipe in tidal embankment with numerous latrines	West	Left Bank - Construction of 260m reinforced concrete L-Wall with piled foundations & construction of 120m of flood defence embankment and associated 365m of filter drain and surface water carrier on the dry side of the defences within 150m buffer zone .	Right Bank - None within 150m buffer zone	587901	573109
Owennacurra Estuary (Noel Collins Bridge)	Communal Latrine (CL1)	5 (40+)	Mixed age	Highly regular crossover latrine & sprainting area on fescue grass with extensive digging areas & prints	West	Left Bank - None within the 20m buffer zone.	Right Bank - None within 20m buffer zone	587856	572582
Owennacurra Estuary (opposite the Moorings)	Holt H3	1 (2)	Fresh	Large holt under mature sycamore in steep bank, 0.5m diameter entrance at top of tidal limit, very secluded site	West	Left Bank - Construction of 285m reinforced concrete L-Wall with piled foundations & construction of associated 295m of surface water carrier and filter drain, construction of pump station on the dry side of the defences within 150m buffer zone .	Right Bank - None within 150m buffer zone	587950	572457

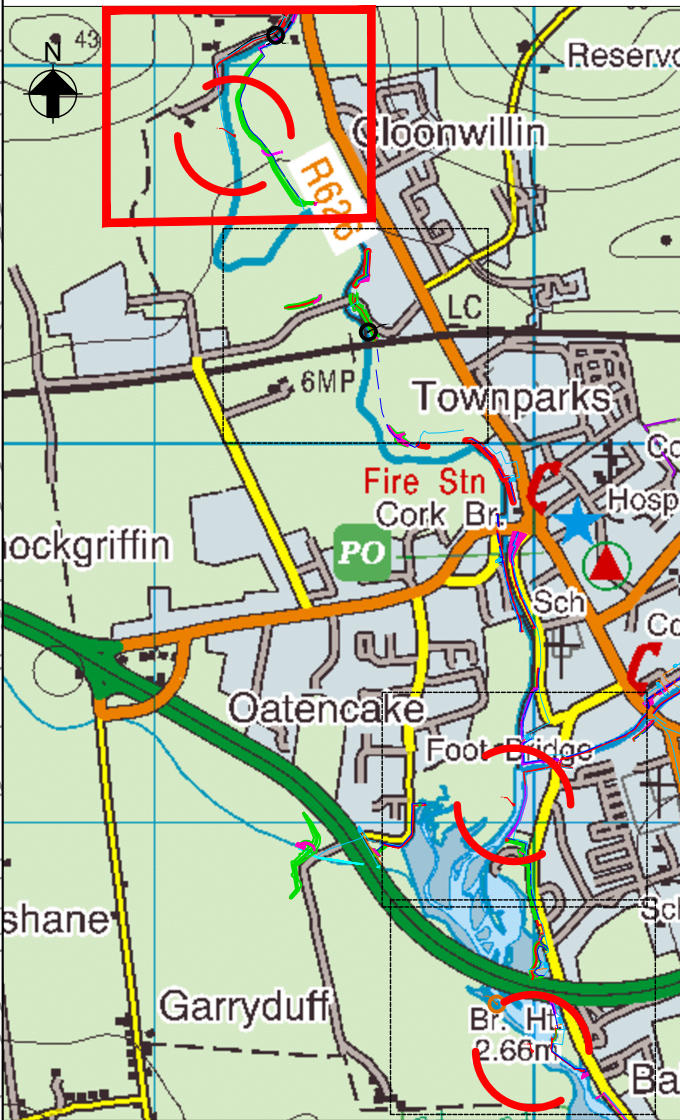
8. Appendix B – Arup design drawings



- Notes
1. Do not scale from drawing.
 2. All levels in mOD.
 3. All measurements in meters unless specified otherwise.
 4. This drawing should be read in conjunction with all other Midleton Flood Relief Scheme Drawings and Schedules.

- Legend
- Site Boundary
 - Watercourse
 - Proposed flood defence embankment
 - Proposed flood defence wall
 - Proposed sheet pile defence wall
 - Proposed glass panel flood wall
 - Proposed flood defence wall with rotary bored pile foundation
 - Proposed scour protection
 - Proposed regrading of ground levels
 - Proposed surface water drainage
 - Proposed swale
 - Proposed filter drain
 - Proposed pumping station

- Legend
- Holt
 - Couch
 - Latrine
 - 150m holt buffer
 - 20m couch buffer
 - 20m latrine buffer



Key Plan

D01	17.08.26	AZ	SOF	BOB
Rev	Date	By	Chkd	Appd

ARUP

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Client
Cork County Council
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Cork, Ireland

Project Title
Midleton Flood Relief Scheme

Tionscadal Éireann
Project Ireland
2040

Drawing Title
Otter Derogation Information:
Hold, couch, and latrine locations
Sheet 01

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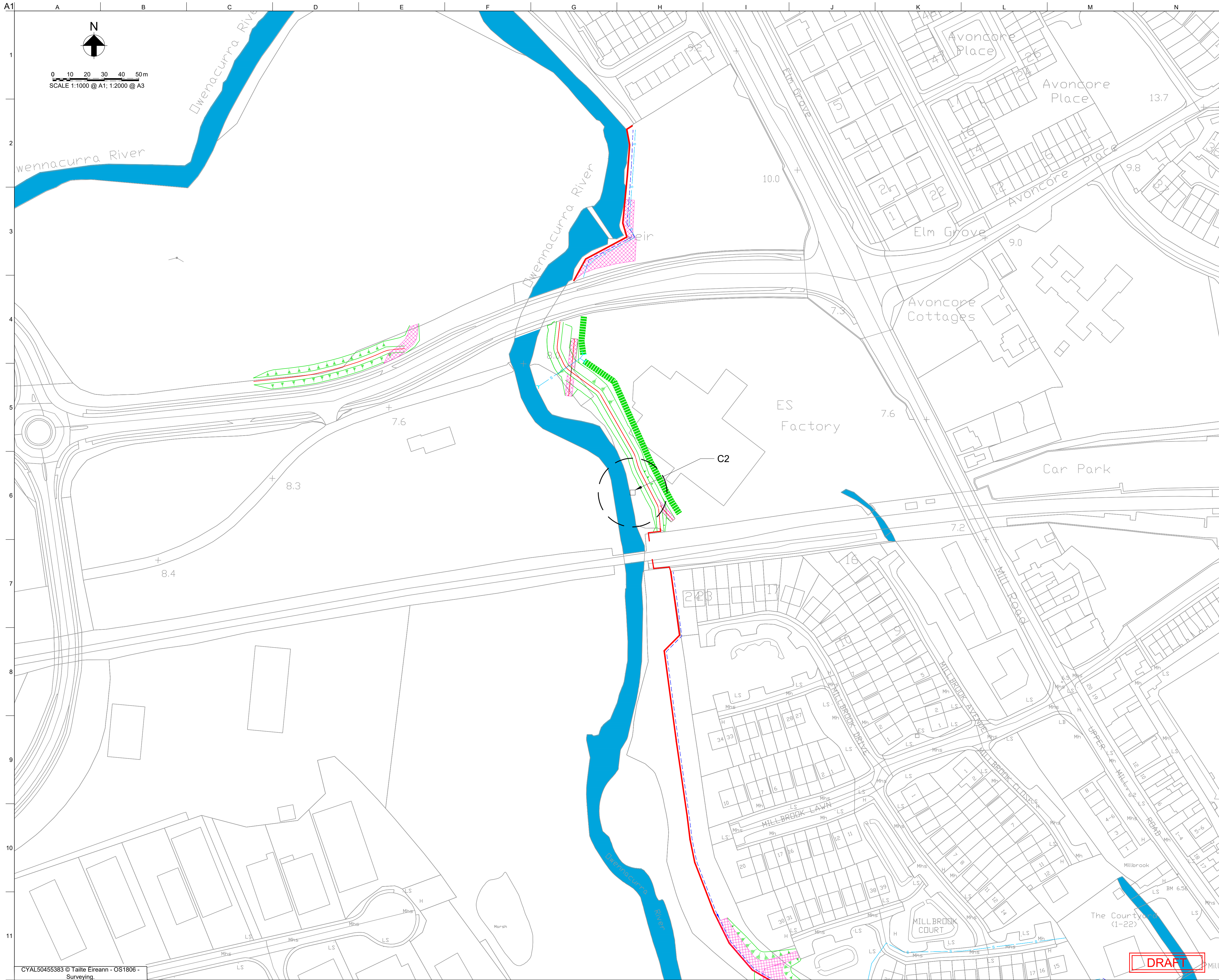
Role
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Suitability
S3

Arup Job No
252803-00

Rev
D01

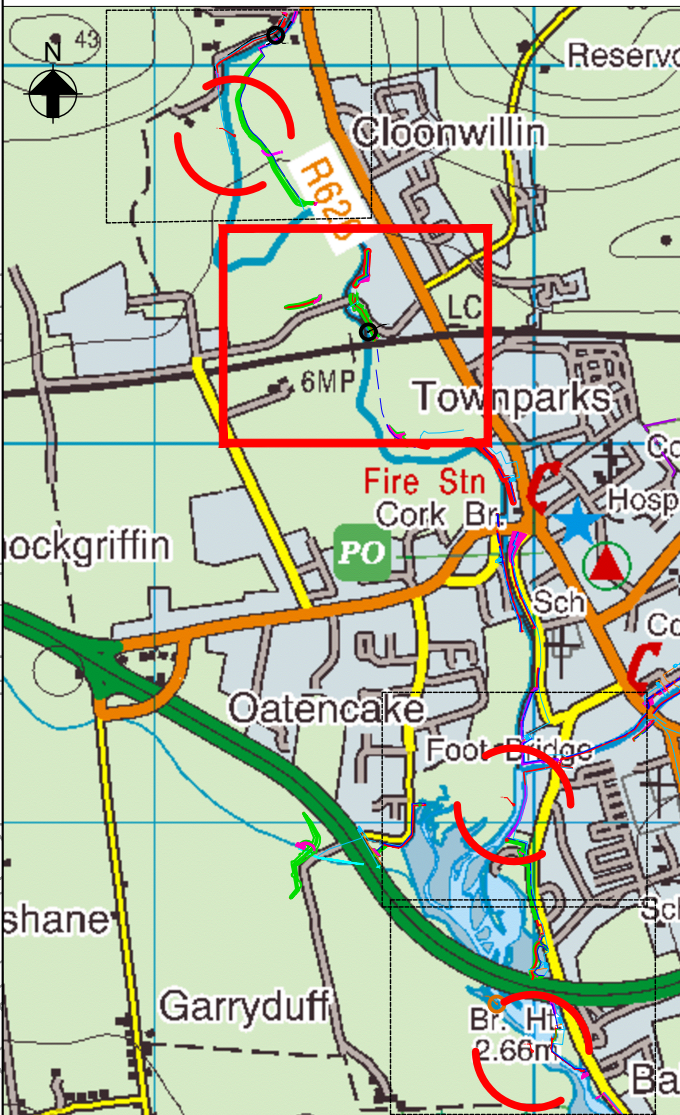
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- Notes
1. Do not scale from drawing.
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- Legend
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Middleton Flood Relief Scheme

Drawing Title
**Otter Derogation Information:
Hold, couch, and latrine locations
Sheet 02**

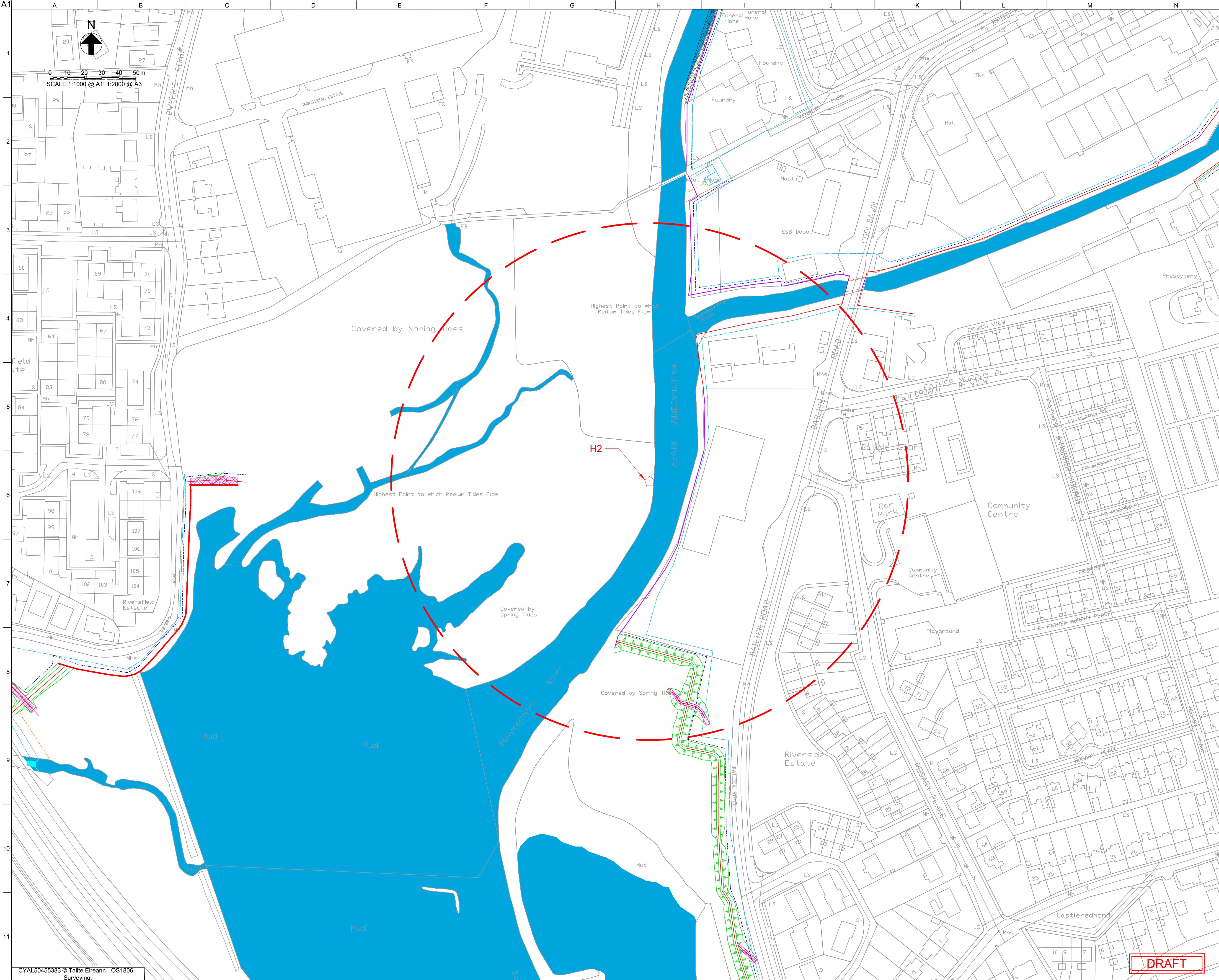
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Role Civil

Suitability S3

Arup Job No **252803-00** Rev **D01**

Name
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Notes

1. Do not scale from drawing.
2. All levels in mOD.
3. All measurements in meters unless specified otherwise.
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Legend

- Site Boundary
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Legend

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Key Plan

D01	17.08.26	AZ	SOF	BOB
Rev	Date	By	Chkd	Appld

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Drawing Title
**Otter Derogation Information:
Holt, couch, and latrine locations
Sheet 03**

Scale at A1 1:1000 (1:2000 @ A3)

Role Civil

Suitability S3

Arup Job No **252803-00** Rev **D01**

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Project Title
Midleton Flood Relief Scheme

Drawing Title
**Otter Derogation Information:
Holt, couch, and latrine locations
Sheet 03**

Scale at A1 1:1000 (1:2000 @ A3)

Role Civil

Suitability S3

Arup Job No **252803-00** Rev **D01**

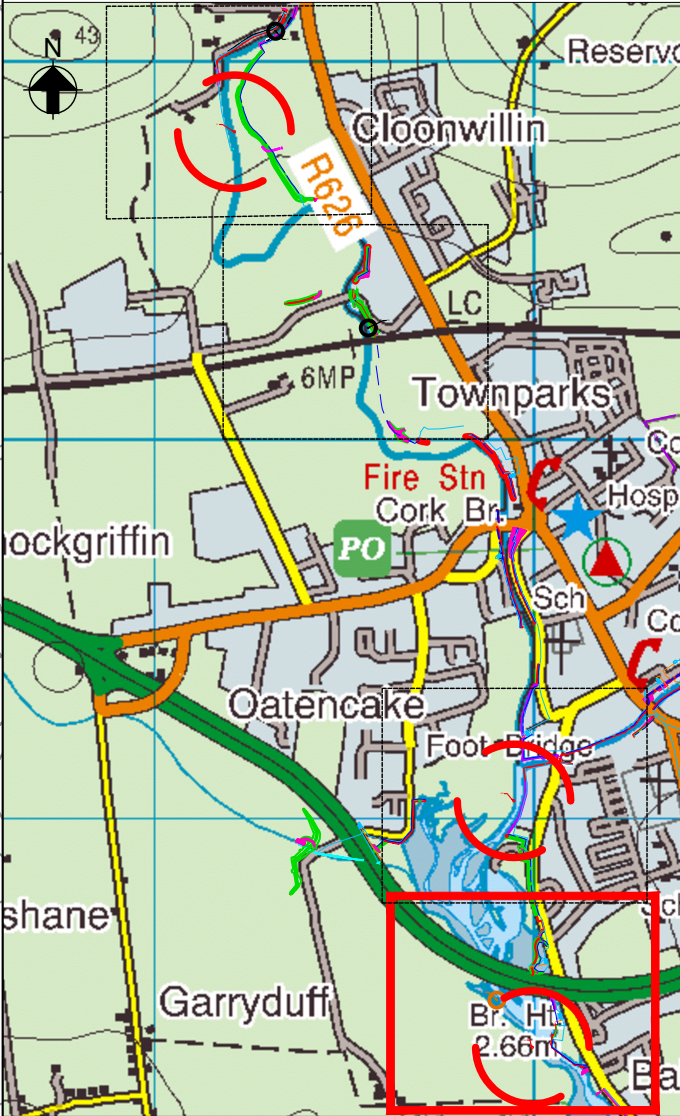
Name
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2040

Drawing Title
Otter Derogation Information:
Holt, couch and latrine locations
Sheet 04

Scale at A1 1:1000 (1:2000 @ A3)

Role Civil

Suitability S3

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