

KERDIFFSTOWN LANDFILL REMEDIATION PROJECT



Site Biodiversity Management Plan

¹This Site Biodiversity Management Plan is subject to update. Any amendments / additional information will be included in this document as project progresses in agreement with the Ecologist.



Revision and Amendment Status Sheet

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Tender Submission	

Further revisions since original issue date.

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APPENDIX A – SITE BIODIVERSITY INDUCTION

APPENDIX B – LANDSCAPE GENERAL ARRANGEMENTS AND PLANTING DRAWINGS

APPENDIX C – ENVIRONMENTAL/SUSTAINABILITY INSPECTION REPORT

1.0 INTRODUCTION

1.1 Objectives

This Site Biodiversity Management Plan has been prepared by Wills Bros Limited to ensure measures be taken to ensure that the activities will be carried out in a manner such that biodiversity do not result in significant impairment of, or significant interference with amenities or the environment beyond the facility boundary.

Accordingly, Wills Bros Ltd will carefully plan works so as to minimise and mitigate any biodiversity problem. The Site Biodiversity Management Plan will be revised as required to confirm/update the details of construction provided within the document (e.g. actions and control measures).

The overall objective is to secure and sustain the biodiversity value of Kerdiffstown Park into the future. This will be achieved by protecting key habitat and species, enhancing their status and recreating valuable wildlife habitats.

The main objectives of this Site Biodiversity Management Plan for the project will be to:

- Highlight any potential ecological constraints on the site
- Adopt mitigation measures which can be taken to enhance the biodiversity value of the site.
- To raise awareness of biodiversity and produce guidelines on biodiversity management in co-operations with all stakeholders, institutions and residents.
- To continue research and development and monitoring on all aspects of biodiversity, in order to support the decision-making process in management practices for the overall enhancement of biodiversity.

1.2 Project Overview

The Project involves the remediation of the Kerdiffstown Landfill site and development of the site as a multi-use public park. This is to be achieved by clearing and reprofiling the existing site, installing an engineered capping system, improving the management of landfill gas, leachate and surface water and the provision of landscaped and recreational areas. The site is approximately 30 hectares in size and is located at Kerdiffstown, Naas, Co. Kildare.

1.3 Contract Overview

The Contract Overview (Scope of Work) for the Kerdiffstown Landfill Remediation Project includes the

following:

- Reprofiling of waste mounds to ensure the capping system works effectively and to facilitate the use of the site as a public park;
- Preparation and placing of a regulation layer in areas to be capped
- Installation of a permanent capping system across all existing waste areas to prevent rainfall infiltration, to manage surface water runoff, to reduce the production of leachate and to capture landfill gas;
- Installation of new systems to manage and control leachate and landfill gas which will include the construction of a dedicated landfill infrastructure compound and landfill gas flares (where extracted landfill gas is burned off);
- Construction of a leachate pipeline from the site, which will cross under the Morell river and N7 into Johnstown Pumping Station;
- Construction of a foul/wastewater pipeline connecting the site with Johnstown Pumping Station. This pipeline will run parallel to the leachate pipeline and will carry foul/wastewater from the site office and changing room building;
- Installation of surface water drainage to manage water on, and draining from, the site including surface water ponds and a surface water outfall point to the Morell River;
- Decommissioning of existing services, in particular an underground storage tank approximately 20m³ in capacity. There are also a large number of concrete structures (walls of former buildings) to be demolished;
- Processing of demolished concrete and other waste materials on site to produce engineering grade materials for re use on site;
- Development of a public park with multi-use sports pitches, car parking, a changing room building, children's playground and a network of paths across the site;
- Landscaping works across the site including grass seeding, planting of trees and shrubs, and ongoing maintenance period of the works.

2.0 CONTACT DETAILS

Wills Bros Limited site management team will be responsible for ensuring that this Site Biodiversity Management Plan is correctly implemented on site.

Contact details for Wills Bros Limited and Kildare County Council are provided below.

Contractor: Wills Bros Limited			
Address	Wills Bros Limited Ballylahan Bridge Foxford Co. Mayo		
Telephone	094-9256221		
Contact	██████████ Project Manager	Mobile e-mail	██████████ ████████████████████
	██████████ EHS Manager	Mobile e-mail	██████████ ████████████████████
	██████████ EHS Officer	Mobile e-mail	██████████ ████████████████████

Client: Kildare County Council			
Address	Áras Chill Dara, Devoy Park, Naas, Co. Kildare, W9 X77F		
Contact	Ultan Downes KCC Senior Executive Scientist	Mobile e-mail	0879559494 udownes@kildarecoco.ie
	James Mulligan KCC Senior Executive Engineer	Mobile e-mail	0863841655 jmulligan@kildarecoco.ie

3.0 LIMITING CRITERIA

3.1 Working Hours

Wills Bros Limited will comply with the working hours as set out in Appendix 1/13 programme of paragraph 3.b of Volume A1 – Works Requirements. WBL hours are from 08.00 to 18.00 Monday to Friday. Depending on the works during the project, WBL will work to the hours outlined in the contract as shown below on Monday to Friday.

Day	Time
Monday to Friday	07.00 to 19.00
Saturdays	08:00 to 14:00
Sundays and Bank Holidays	No Work Permitted

Wills Bros shall gain prior written approval for any intended out of hours works in accordance with the Contract requirements.

Saturday work is not routine and will be;

- Co-ordinated with KCC and RPS
- Is on a “needs-must” basis

3.2 Site Biodiversity Minimisation Requirements

The following requirements (in accordance with Appendix 1/72AR of Volume A1 – Works Requirements relating to site biodiversity impacts during the works:

Excerpt of Appendix 1/72AR of Volume A1 – Works Requirements

The CEMP shall set out all the intended methods to manage potential environmental impacts from remediation of the proposed project and shall include the following:

- *Site Biodiversity Management Plan*

The most important legislation underpinning biodiversity and nature conservation in Ireland is the:

- Wildlife Acts 1976 to 2018
- European Communities (Birds and Natural Habitats) Regulations 2011-2015

The aim of the Wildlife Act, 1976 is to provide for the protection and conservation of wild fauna and flora, to conserve a representative sample of important ecosystems.

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Annex IV (Habitats Directive) species of flora and fauna, and their key habitats (i.e., breeding sites and resting places), which are strictly protected wherever they occur, whether inside or outside the above sites.

The Habitats Directive ensures the conservation of a wide range, threatened or endemic animal and plant species. Some 200 rare and characteristic habitat types are also targeted for conservation in their own right. The Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora was established in 1992.

Excerpt of Council Directive 92/43/EEC

The main aim of this Directive being to promote the maintenance of biodiversity, taking account of economic, social, cultural and regional requirements, this Directive makes a contribution to the general objective of sustainable development; whereas the maintenance of such biodiversity may in certain cases require the maintenance, or indeed the encouragement, of human activities

The implementation of the management measures set out in this plan have been informed by the above legislation.

3.3 Local Emergency Procedures

The following requirements in accordance with EPA Industrial Emissions License relating to Emergency Response Procedures during the works:

Excerpt of Condition 9 of EPA Industrial Emissions License

Condition 9 of the license requires the licensee, to ensure that a documented Accident Prevention Procedure is in place that addresses that hazards on-site, particularly in relation to the prevention of accidents with a possible impact on the environment. Condition 9 of the license also requires the licensee to have a documented Emergency Response Procedure in place that addresses any emergency situation on-site which should include provision for minimizing the effects of any emergency on the environment.

Wills Bros Ltd will adhere to emergency procedures and these are detailed in our Health and Safety Plan. The plan includes all contact details of our personnel responsible for construction traffic management. Emergency procedures and drills are found in our health and safety plan (Appendix 1 – Emergency Drills (IP30))

4.0 MANAGEMENT MEASURES

4.1 Introduction

Wills Bros Ltd will have the following procedures in place in order to reduce the impact of biodiversity during the Contract of works.

Table 4.1 summarises the management measures, responsibility and timing of the procedures.

Activity	Management Measure	Responsibility
Induction/ Daily Site Briefings/ Toolbox Talks	Induction, daily site briefings and toolbox talks will inform site personnel about biodiversity management measures.	Wills Bros Limited
Working Hours	Construction site working hours (refer to section 3.1)	Wills Bros Limited
Site Works	All reasonable and feasible biodiversity source controls will be investigated	Wills Bros Limited
Monitoring	Carry out site biodiversity monitoring and keep records	Wills Bros Limited & Employer
Complaints	Should complaints be made regarding the effect of biodiversity from the work, they will be treated by Wills Bros Ltd in a constructive manner.	Wills Bros Limited & Employer

4.1.1 Induction – Training and Awareness

The site induction, health and safety and environment training programmes will reinforce Wills Bros Limited employees and subcontractors the need for controlling environmental performance at each works location. Site biodiversity and management will be specifically addressed during the site induction, daily site briefings and toolbox talks. Protecting site biodiversity will be critical and WBL will adhere to all necessary measures implemented in this plan. Appendix A shows the induction measures that will take place prior to commencement of works.

All site personnel working on the site will be required to sign the environmental induction document. This will be made available online through an online portal. In the event, that the online service is not accessible, a copy of the inductions will be made available on site and all site personnel will be required to sign this induction sheet. WBL will ensure that this environmental induction document is to be read and signed by all site personnel.

4.1.2 Working Hours

Wills Bros Ltd will comply with the specified working hours as defined in Appendix 1/13 3.b of Volume A1 – Works Requirements. Should works outside of these specified hours be required, prior agreement will be sought from the Client and other relevant authority. (refer to section 3.1)

4.1.3 Internal Reviews

Review of work practices and on-site equipment to identify where practices can be improved. This process will involve:

- Identifying the biodiversity issue particular to the site.
- Random audits will be used to proactively anticipate any biodiversity issues and instigate a resolution process and to ensure that previously identified control measures continue to be implemented.

4.1.4 Communication

Damien Ryan is our Public Liaison Officer (PLO) to our site team who will work with Kildare County Council (KCC) representatives to proactively engage with the Local Community Liaison Group and Residents. It is our understanding that KCC has already fostered good relationships with local community representatives and resident's groups which will be continued throughout the remediation works by our Public Liaison Officer.

The nearby sensitive receptors including local residents, local community liaison groups and other stakeholders will be kept informed of the works phasing plan, locations of works planned and duration by KCC in consultation with our PLO. There will be public meetings held with KCC representatives, project information days held with KCC representatives, KCC project website updates, project group emails to local community, project telephone number advertised for local community to contact our Public Liaison Officer.

We see the appointment of a site based Public Liaison Officer and effective advance communications as critical in assisting in enabling as understanding and tolerance by the local community, nearby residents and key stakeholders such as Clean Air Naas group for the short-term impacts such as odour emissions that will arise during the site remediation works.

5.0 SITE BIODIVERSITY SOURCES

5.1 Current Site Conditions

This Site Biodiversity Management Plan has been prepared based on previous ecological information collected between September 2015 and September 2016 and found in the EIAR 2017 report. Updated ecological and invasive species surveys were carried out between 2018 and 2020 by RPS. A number of inspections and accompanying reports were carried out by WBL appointed ecologist and they have been included in this document. The updated surveys from 2018 to 2020 have also being incorporated into this Site Biodiversity Plan. This plan will be updated as ongoing monitoring and the exclusion of badger setts on site will be incorporated. The Works Requirements gives in greater detail the proposed mitigation measures to protect biodiversity on the site.

Several ecological surveys were undertaken between September 2015 and September 2016. Surveys spanned all four seasons and covered the optimal survey periods for all flora and fauna. Detailed habitat and faunal surveys were undertaken to include a range of buffers from the study area based on best practice guidance. The study area for the assessment ranges from the site boundary only (habitats) to buffers of 150m for species groups. Species and their specific sensitivities, the zone of influence (Zol) of the likely sources of impact and the nature of the project. The following is a brief summary of the finding for each of the flora and fauna.

5.1.1 Habitats and Flora Survey (EIAR, 2017)

The field survey for habitats was within the site boundary. The field south of the site (outside the boundary) was also surveyed to account for the potential increase in the footprint of the project. Within each habitat, dominant and abundant plant species and indicator species were recorded.

5.1.2 Protected Fauna (other than bats) (EIAR, 2017)

This survey extended up to a maximum of 150m from the site boundary for mammals. Habitats on site were assessed for signs of usage by protected fauna and/or those of conservation concern or on national red lists. Fauna were recorded by direct observation and indirectly using field signs including tracks, feeding signs, droppings and breeding and resting sites.

5.1.3 Pygmy Shrew, Hedgehog and Stoat (EIAR, 2017)

No formal surveys were undertaken for other protected mammal species for which field signs are less frequent and/or reliable than other larger mammal.

5.1.4 Breeding Birds (EIAR, 2017)

This survey for breeding birds was 50m beyond the site boundary (with the exception of Kingfisher) to record all birds within the potential Zol during Remediation and Operational Phases. It was concluded that there was no potential for highly sensitive breeding bird species. No suitable Kingfisher habitat was noted within the Zol.

5.1.5 Protected Fauna (Bats) (EIAR, 2017)

The field survey area for foraging and roosting bats was determined to be approximately 50m beyond the footprint of the site boundary. Several surveys were undertaken to address the potential impacts from light spill and potential for increases in the footprint of the site.

- **Assessment of Bat Roost Potential (Initial Daytime Assessment);**
Daytime assessments and potential further roost surveys of the 3 properties to be demolished will be required. If a bat roost is identified in any of these buildings, they will have to be demolished under license from the NPWS and appropriate mitigation put in place.
- **Dusk Emergence and Dawn Re-Entry Surveys;**
These surveys were undertaken to determine the presence/probable absence of bat roosts. Various locations of trees and buildings were used in the survey. Dusk emergence surveys commenced approximately 15 minutes before and continued for at least 90 minutes after. Dawn re-entry surveys commenced at least 90 minutes prior to, and continued until, sunrise.
- **Static Monitoring (Activity Surveys);**
Static monitoring locations were chosen to incorporate the different habitat features of the study area which may be used by bats for commuting and foraging.
- **Bat Call Analysis;**
This analysis was undertaken using Analook software. Analook software was used to analyse bat calls recorded on the Anabat during static monitoring and dusk emergence and dawn re-entry surveys.

5.1.6 Badger (2020 Badger Report)

Pre-Construction Information

Badger activity was identified in the surveys carried out over the past few years. The latest 2020 report in relation to badger activity is noted and indicative locations are shown in figure 5-1 below. The evidence appears to correspond with the findings of the EIAR study. Badgers are using the site, particularly in terms of forage and commute. [REDACTED]

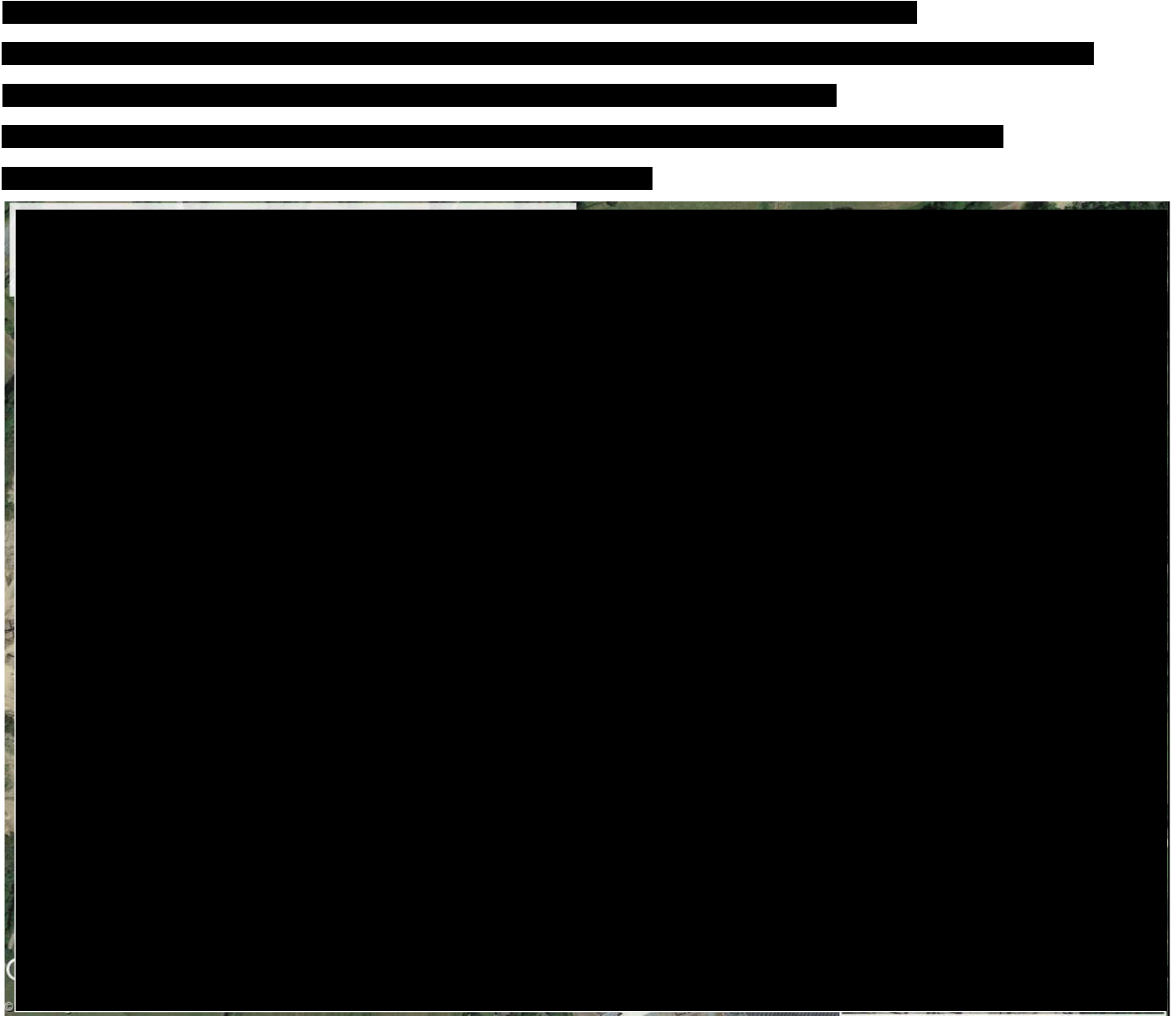


Figure 5-1 location of badger evidence (RPS, 2020)

5.1.7 Otter (2018 Otter Survey Findings)

An otter survey was carried out in November 2018. It was concluded from the survey that it was apparent that otter is using the watercourse with fish stock. However, there was no evidence of holts or suitable gaps under trees were recorded. The survey also reported that the nature of the proposed works should have no likely adverse impediment to otter movement nor change in the environmental conditions of its territory.

5.1.8 Aquatic Ecology Survey (April 2019)

The latest survey regarding aquatic ecology was carried out on the 12th of April 2019 by RPS ecologists at three sites within the Morell River. Figure 5-2 shows the site locations used in the survey. The suitability of habitat was assessed for the following protected species:

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- White-clawed crayfish
- Salmon
- Lamprey
- Salmonid habitat

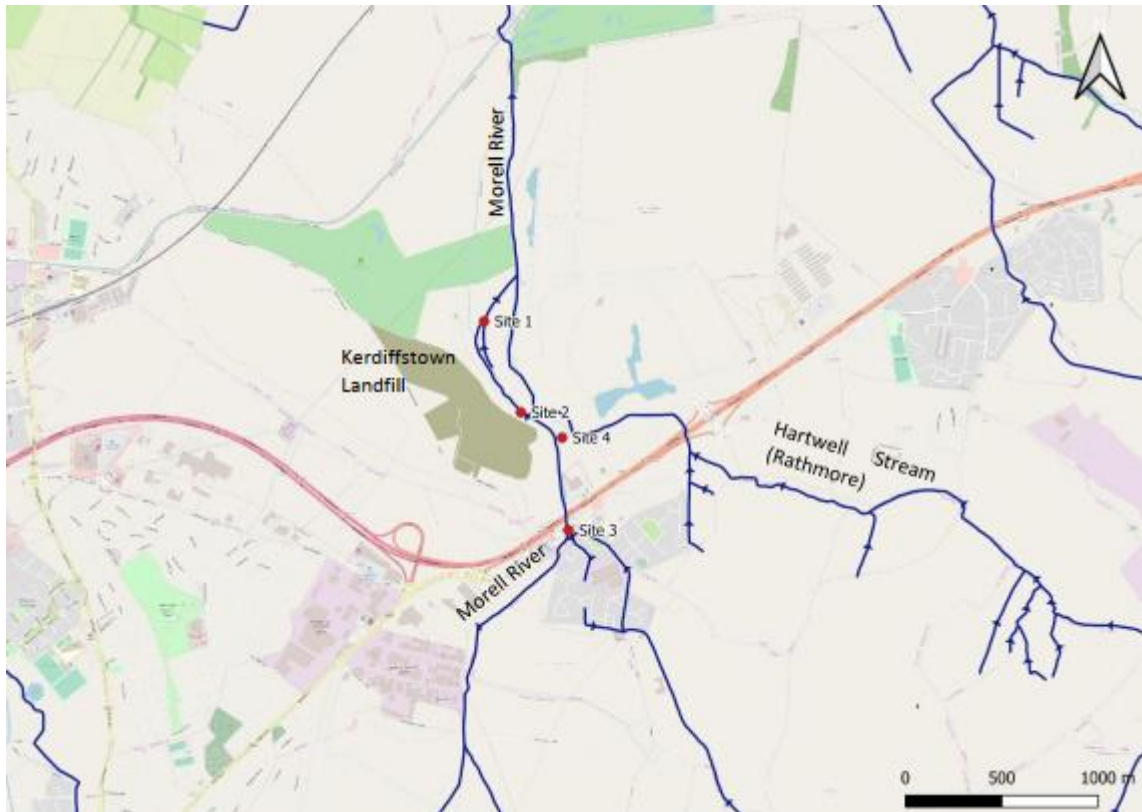


Figure 5-2 Aquatic Survey site locations (RPS, 2019)

Site 1 findings

- Salmonid and lamprey spawning habitat were found to be not ideal at this location. A Q-value indicating Moderate ecological conditions which degraded the habitat to Poor to None for salmon and lamprey.
- For juvenile salmonids this location was rated fair.
- Lamprey nursery habitats was rated as good.
- No crayfish were found during the survey although the conditions were rated fair.

Site 2 findings

- This location was rated Poor-None for salmon and lamprey.
- For juvenile salmonids this location was rated fair.
- Lamprey nursery habitat was rated as good.
- No crayfish were found during the survey although the conditions were rated fair.

Site 3 findings

- This location was rated Poor-None for salmon and lamprey.

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- For juvenile salmonids this location was rated fair.
- Lamprey nursery habitat was rated as good.
- No crayfish were found during the survey although the conditions were rated fair.

Site 4 Hartwell Stream

- A crayfish survey was conducted in the Hartwell stream. No suitable crayfish habitat was present where the Hartwell confluences with the Morell River.

It was concluded from the survey findings that water quality results downstream of Kerdiffstown site indicated Moderate water quality (Q3-Q4). Upstream and near the new outfall was rated Q4 (Good) although bordering on Moderate. Upstream at Johnstown conditions degraded to Q3 (Good). Lamprey are using the Morell for spawning habitats although they are limited within the reaches accessed. Juvenile salmonid habitat is considered more suitable for brown trout than salmon. No crayfish were observed in the Morell or Hartwell stream.

6.0 BIODIVERSITY MANAGEMENT

6.1 Management Actions

This section describes several general mitigation measures which will be implemented by Wills Bros Ltd to minimise the effects of biodiversity during construction activities which will be approved by the ER.

Some of the general recommendations are also included in more detail within the Works Requirement Specification – Volume A1 and are summarised in 6.2 to 6.10 in this section. With reference to biodiversity sources listed in Section 5.1 above, the following mitigation measures will be addressed in this section with respect to the protection and management of biodiversity.

Appendix B attached to this report shows the contract drawings for the landscape general arrangements. The drawings also show the indicative locations of each of the mitigation measures proposed.

6.2 Habitats

6.2.1 Mitigating Habitat Loss

Wills Bros Ltd will ensure adherence to *Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post Construction of National Road Schemes (National Roads Authority, 2006b)*. This will be in relation to any tree, scrub or hedgerow adjacent to, or within, the site boundary which are intended to be retained.

- All trees that are intended to be retained will be fenced off for the duration of the remediation works. This will help to avoid structural damage to the trunk, branches or root systems of the trees. The Root Protection Area (RPA) will be temporarily fenced at a required distance from the tree. RPA generally covers an area equivalent to a circle with a radius 12 times the stem diameter.
- In fencing is not feasible in terms of space, we will protect the trees by wrapping hessian sacking around the trunk and strapping buffer timber around it.
- We will ensure that the area within the RPA will not be used for vehicle parking or storage of materials. The storage of hazardous material will not be undertaken within 10m of any retained tree, hedgerows and tree-lines.
- If construction activities are required within the RPA, then a qualified arborist will be appointed to ensure on the best methods for protecting the tree.
- An ecologist will be required if tree removal is in areas that has been not previously identified.

The landscaping design of the site, the main mitigation measures relate to tree and plant shrub within and around the site. As there are limitations on site to tree and shrub planting so as not to compromise the integrity of the engineered capping system. The peripheral areas and site boundaries will be available for such planting.

The following landscape planting and measures will be implemented.

- Perimeter tree planting and hedgerow planting to include amenity planting around the site entrance. Also, native hedgerow screen planting along the boundary;
- Wetland ponds proposed for the north and south-central portion of the site as well with gradual sloping edges. Planted with a variety of wetland plants and variety of niche habitats to benefit biodiversity.
- Species-rich native seed mixes will be incorporated into the site with localized areas of wildflower planting.
- Wetland herbs and grasses will be planted in appropriate locations in drainage ditches and wetland swales.

6.3 Management for Sand martin

6.3.1 Artificial Sand martin Nest

As per the mitigation outlined in the Works Requirements – Volume A1 Specification. The following recommendations are made in relation to artificial Sand martin nesting structure:

- The location of an artificial nesting structure will be agreed with the Employer's Representative and will be dependent on the final contours, orientation and screening. The structure will be near the south-eastern corner of the site.
- The structure can be built at any time of year but will be carried out in advance of the summer breeding season in early May.
- The design specification is based on the RSPB Langford Lowfields artificial Sand martin bank.
- A wooden formwork will be constructed to hold sand in place and compaction. The process is then repeated.
- Sand and cement are mixed at 100 to 1 ratio in 300mm layers which are then rotavated with large quantities of water followed by hydraulic compaction. A sturdy frame of wooden formwork shall be constructed to hold the sand in-place and facilitate the compaction.
- After casting form is removed the front face of the bank is shaped to have a concave surface.
- We will install a layer of chicken wire across the top. Then top soiled and seeded to encourage vegetation growth. In turn this will reduce the impact of surface run-off and reduce surface borrowing animals
- In order to prevent access to the front face of the bank and edge protection, fencing will be erected along the sides and over the top of the Sand martin bank.

6.4 Management for Amphibian Hibernacula

6.4.1 Amphibian Hibernacula

As per the mitigation outlined in the Works Requirements – Volume A1 Specification. The following

recommendations are made in relation to the management of amphibian hibernacula:

- 3 no. hibernacula locations are to be agreed onsite with the Employer's Representative.
- The structure will be built when bulk landscaping works are underway and established.
- Hibernacula are underground chambers that amphibians and reptiles use through the winter to protect them from the cold.
- We will ensure that the constructed hibernacula will be free draining. If in the case the ground is wet, a drainage layer will be incorporated into the makeup of the structure.
- Suitable excavated material will be reused in the construction of the structure
- The constructed hibernacula will not be overly covered/manicured with grass sods/turfs.
- When construction of the hibernacula is completed, we will fence off an exclusion area around the hibernacula to prevent accidental damage and other activities that may discourage use of the area by amphibians.

6.5 Management for Hedgehog

6.5.1 Hedgehog Boxes

As per the mitigation outlined in the Works Requirements – Volume A1 Specification. The following recommendations are made in relation to hedgehog:

- 4 no. hedgehog boxes either hibernation or nest box, will be installed, in suitable locations by the Employer's Representative. This is to compensate for the removal of nesting habitat of the proposed development.
- The installation of the boxes may be installed at any time of year. Although preferably outside of hibernation period (November to Mid-March).
- The premade hedgehog boxes are readily available from wildlife suppliers.

6.6 Management for Birds

6.6.1 Bird Nesting Season

Bird nesting season takes from 1st March until 31st August (inclusive). Monitoring of birds during the breeding season was undertaken. The areas which affected the construction works were within the exclusion zone in Zone 1/1A and along the boundary of Zone 2A where an acoustic fence is to be installed. WBL appointed ecologist monitored these areas for bird activity. However, during the second week in August, the ecologist carried out several extensive bird surveys and has advised that the areas are now approved to be cleared from a nesting birds' perspective. Site clearance works did commence within 48 hours of this approval notice.

6.6.2 Erection of Bird Boxes

As per the mitigation outlined in the Works Requirements – Volume A1 Specification. The following

recommendations are made in relation to breeding birds:

- 8 no. bird boxes, of different shapes, will be erected on retained trees, in suitable locations by the Employer's Representative, to compensate for the removal of nesting habitat of the proposed development.
- The eight (8) bird boxes shall be 1B Schwegler (or similar) as approved by the British Trust for Ornithology:
 - Four (4) boxes with 32mm openings (for installation in taller trees, at a height above 2.5 meters or higher).
 - Four (4) boxes with 29mm openings to be placed in at a height of 1.5 meters in suitable vegetation in established hedgelines with suitable tree cover.
- Monitoring of use of the bird boxes will take place in Autumn, to check for nesting activity, for 3 years post completion of the development, to determine if they need to be relocated within the site.
- The installation of the bird boxes may be undertaken at any time of year, preferably outside the statutory bird nesting season e.g., 1st March to 31st August.
- WBL will consult with their appointed ecologist on the locations on the bird boxes with the approval of the Employer's Representative.

6.7 Management for Bats

6.7.1 Erection of Bat Boxes

As per the mitigation outlined in the Works Requirements – Volume A1 Specification. The following recommendations are made in relation to the management of bats:

- 12 no. Schwegler 1FF bat boxes will be installed to provide roosting opportunities in 4 locations as determined by the Employer's Representative.
- 3 bat boxes will be installed together at each of the 4 locations.
- Bat boxes will be installed in summer months in suitable vegetation in sunny and sheltered areas.
- No bat boxes should be able to swing.
- Bat boxes should be securely fixed to large diameter trees,
- At each location, one bat box shall have a southern aspect, with the second and third boxes hung in a south-easterly and south-westerly direction respectively.

Figure 6.1 below shows the confirmed tree roost which is located in the north-east of the site. A single tree roost of high conservation value (Leisler maternity roost) was recorded in a mature ash tree. WBL will ensure no loss of any bat roosts during remediation of the site.

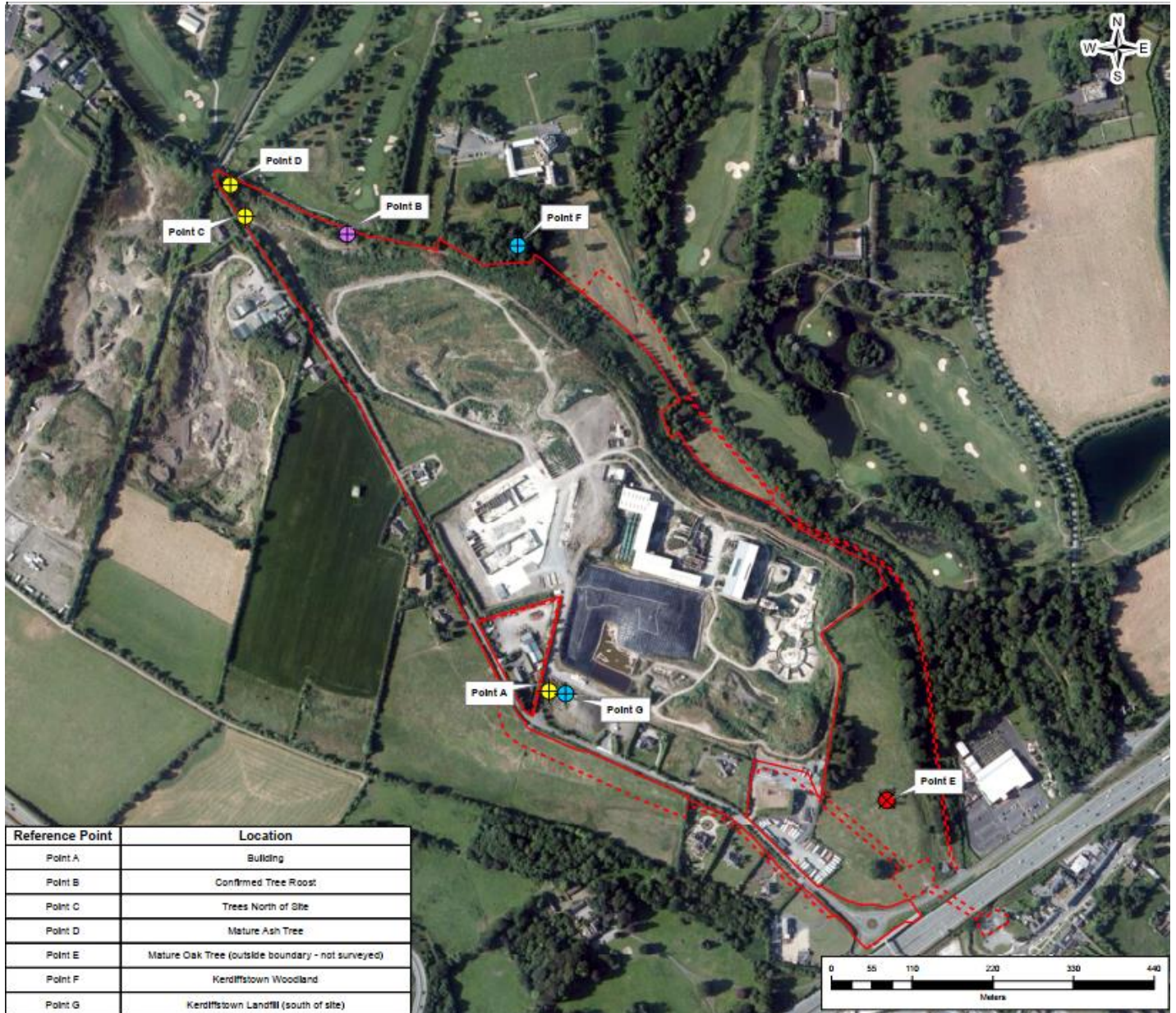


Figure 6-1 Location of confirmed tree roost (point B)

6.7.2 Lighting

The following mitigation measures will be implemented to reduce the impact of lighting disturbance to bats:

- Reduced light spill through the use of baffles / hoods to ensure that light is directed to the sports pitches as required and not wider;
- White LED or amber coloured LED lighting will be used as this is considered to be relatively low impact in comparison to other lighting types as it is less attractive to insects and as such insects will not be diverted away from darker areas where more sensitive bat species will be foraging; and
- Where lighting is required within sensitive areas (i.e. in the vicinity of retained woodland habitats / tree lines) light levels will be that of full moon light levels, typically between 0.1-0.3 lux.

6.8 Frogs

- Wills Bros Ltd will liaise with the Employer's Representative with regards to the mitigation impacts on frogs on the site.
- The translocation of frog spawn will be subject to a license from the NPWS.

6.9 Instream Works

- Wills Bros Ltd will carry out works in accordance with the requirements of IFI as set out in *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI 2016)*.
- In addition to the landscape design and specification, we will ensure that the requirement to avoid the unnecessary removal of perimeter vegetation, particularly mature vegetation is upheld. Protective measures will follow standard guidance as recommended in BS 5837:2012.
- No instream works in the Morell river or any tributaries is ordinarily permitted.
- If in-stream works in salmonid systems are to be undertaken. This will occur during the period July to September of each year (subject to written approval of design and Method statement by Inland Fisheries Ireland IFI).
- We will ensure that best management practice be implemented in relation to any activities that may impact on riverine or riparian habitats. Any discharges to surface streams present on the site must not impact negatively on the salmonid status of the system. Our comprehensive surface water management plan ensures the implementation at construction stage to prevent any pollution of the river habitat.

6.10 Badger Management





The badger setts were deemed active in November 2020, this required an exclusion zone to be set up. 
 Figure 6-2 below shows the exclusion zones with signage, posts and ropes that were erected. 




Figure 6-2 50m exclusion zone around badger setts in Zone 1A. Signage, fence posts and rope installed

WBL appointed ecologist began monitoring the badger setts [REDACTED] in March 2021. The camera footage was used to collated and to determine if there was activity present within the setts. In May 2021, an extensive monitoring program was adopted. Figure 6-3 below shows the badger sett entrance locations and the reference numbers attached to them. Sett entrance 1 & 2 had camera placed in front of each sett. Sett entrance 3 was previously excluded.

No

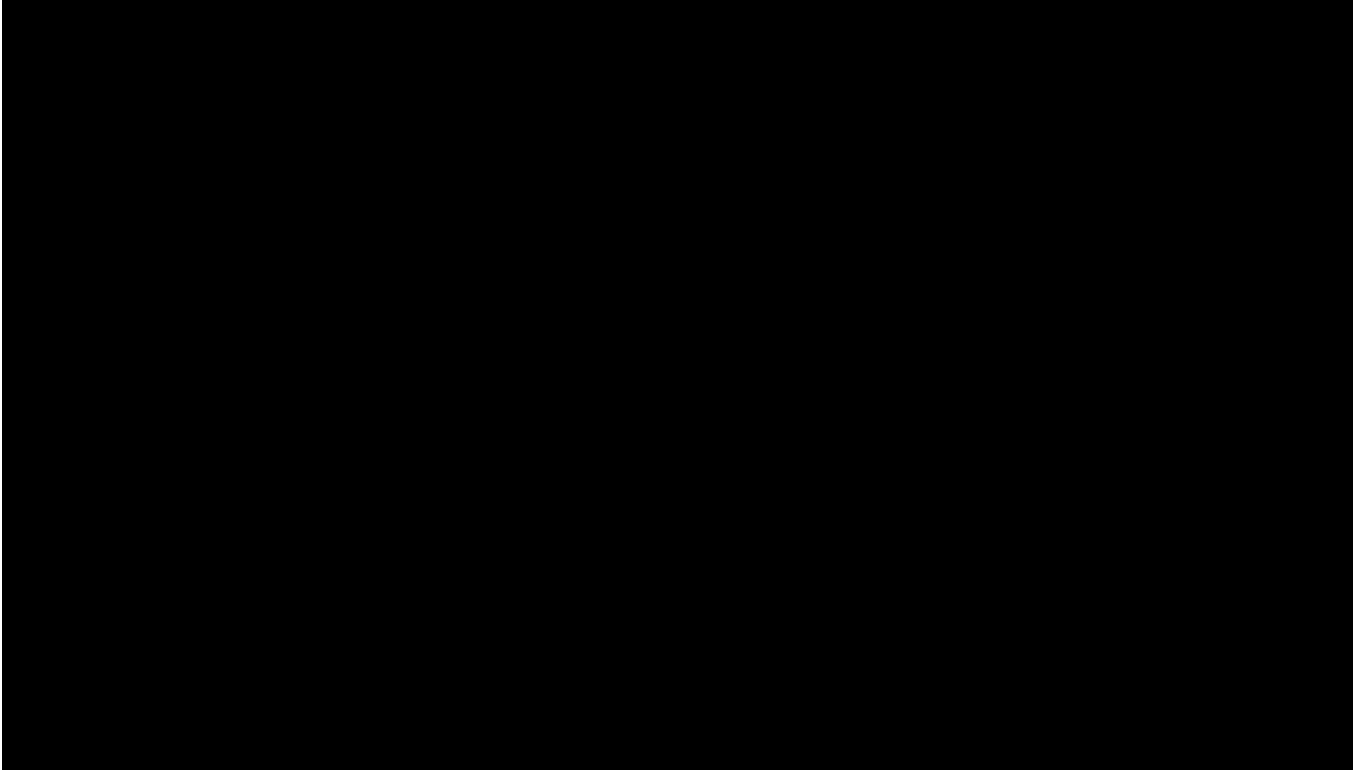


Figure 6-3 Sett Entrance Locations - [Redacted]

6.10.1 Monitoring Timeline

Figure 6-4 below shows the monitoring timeline associated with sett entrance 1.

Sett Entrance 1		
Date	Action	Result
May 2021	Sett Camera trapped	No evidence of badger activity
11 th June 2021	Stick blocked	Sticks remained in situ
18 th June 2021	Soft blocked with sticks and sand	No evidence of badger activity

1: Camera Trap at Sett Entrance 1, May 2021



Figure 6-4 Sett Entrance 1 – Monitoring

Figure 6-5 below shows the monitoring timeline associated with sett entrance 1.

Sett Entrance 2		
Date	Action	Result
May 2021	Stick blocked	Sticks remained in situ
14 th June 2021	Sett Camera trapped	No evidence of badger activity
18 th June 2021	Soft blocked with sticks and sand	No evidence of badger activity

Sett Entrance 2. Soft blocked with sticks (May 2021) and camera trapped 14th June 2021



Figure 6-5 Sett Entrance 2 – Monitoring

6.10.2 Monitoring Results

No evidence of Badger activity has been recorded at either sett entrance since before May 2021. The camera traps have not recorded any Badger activity, soft blocked sticks have remained in situ since 21st May 2021, no badger footprints (sett is in soft sand), latrines or other signs of activity have been recorded. On the 18th of June entrances were soft blocked with sand.

6.10.3 Artificial badger sett

The artificial badger sett [REDACTED] is shown in Figure 6-6 below. This Sett has been monitored on an ongoing basis since March 2021 by WBL appointed ecologist. The sett consists of two entrances in an above ground mound shaped chamber complex. Camera traps placed on both entrances since early 2021 have yet to record any badger activity within or around the Sett. No badger (or mammal) trails have been recorded. Nor has any mammals including foxes been seen entering or exiting the Sett.

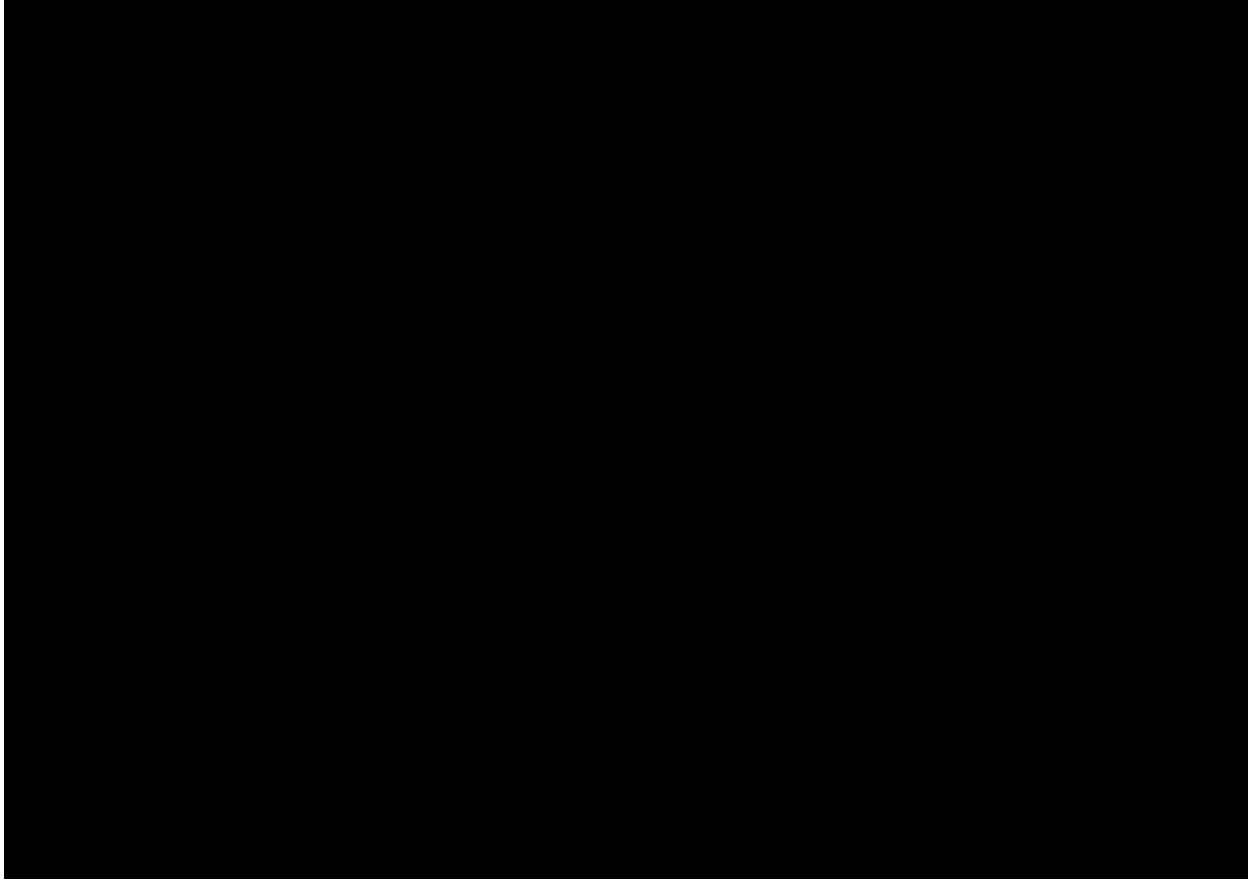


Figure 6-6 Artificial badger sett - [REDACTED]

6.10.4 NPWS Ranger Site Visit

Following the NPWS Ranger site visit on 29th June 2021, the monitoring and proposed works from WBL appointed ecologist were outlined. The following observations were noted, and no objections were made from the NPWS Ranger:

1. The artificial badger sett is to be retained with fencing place surrounding the edge of the sett. However, if the sett gets in the way of the works, this artificial badger sett can be removed under the supervision of the WBL appointed ecologist.
 - a. The NPWS Ranger confirmed that no licence is required to remove an artificial badger sett.
2. A one-way gate can be installed at the two badger sett entrances [REDACTED]. The NPWS Ranger was satisfied that there was no badger activity following the monitoring and measures put in place.

6.10.5 Badger Setts One-Way Gates

On the 29th of June 2021, the badger sett entrances were gated by WBL appointed ecologist. Figure 6-7 below show the sett entrance 1 with the one-way gate installed.



Figure 6-7 Sett entrance 1 – One-way gate installed

Figure 6-8 below show the sett entrance 2 with the one-way gate installed.



Figure 6-8 Sett entrance 2 – One-Way Gate installed

6.10.6 Badger Setts Exclusions

There was no attempt at reentry to both setts and the ecologist deemed both setts to be inactive. This allowed the reprofiling works to continue in this area. From the week of the 16th of August 2021, the area in [REDACTED] where both badger setts were excluded was infilled with material and there has been no sign of any badger activity since.

7.0 MONITORING, REPORTING AND RECORDING

7.1 Biodiversity Monitoring

Wills Bros Ltd will ensure that extensive monitoring of the biodiversity on site during all works. The Employer's Representative will help devise an appropriate monitoring scheme for the project. We will ensure that all works carried out will be monitored and reported in accordance with the works requirements in Appendix 1/40AR. This is also undertaken to assess the effectiveness of control measures undertaken mentioned in section 6.0. A copy of records will be maintained on site and made available for inspection at all times.

7.2 Monitoring – Birds

Bird nesting season takes from 1st March until 31st August (inclusive). Monitoring of birds during the breeding season was undertaken. The areas which affected the construction works were within the exclusion zone in Zone 1/1A and along the boundary of Zone 2A where an acoustic fence is to be installed. WBL appointed ecologist monitored these areas for bird activity. However, during the second week in August, the ecologist carried out several extensive bird surveys and has advised that the areas are now approved to be cleared from a nesting birds' perspective. Site clearance works did commence within 48 hours of this approval notice.

7.3 Monitoring – Badgers

7.3.1 Remediation Phase

The installation of one-way gates allows badgers to exit but not return. Gates were left installed with regular inspection over a minimum of 21 days before the sett was deemed inactive. Sett destruction commenced immediately following the 21-day exclusion period, provided that all badgers been excluded. These works can only be carried by a suitably qualified person with written permission from the Wildlife Licensing unit.

7.4 Bats - Lighting

The lighting principle will be avoidance of lighting within particularly sensitive areas. The woodland in the lands of Kerdiffstown House and existing unlit areas in the north of the site where the confirmed roost is located. The new access route to the north of the area of the site will be for pedestrians only and will not be lit at night. A visual assessment of the landscaping within the dark zone/corridor will be undertaken by the ecologist during the surveys prescribed in the monitoring plan. This assessment will evaluate the suitability of the vegetation for bats and recommendations to changes in management regimes may be made.

7.5 Reporting

Attached to this report in Appendix C is an Environmental/Sustainability inspection report. This section of the report applies to Flora/Fauna. Wills Bros Ltd will ensure this report is carried out in relation to biodiversity.

8.0 COMPLAINTS

Should complaints be made regarding the effect of the mitigation measures for biodiversity from the work, will be treated by Wills Bros Ltd in a constructive manner. The specific procedures shall include (but not be limited to):

- Notification of complaints to KCC Site Manager and complaints protocol followed.
- Inspection of the location from which the complaint originated.
- Comparison of the measured levels with limiting criteria.
- Identification of engineering control or management procedure (if appropriate) to be adopted to reduce the levels at the complainant location
- Each complaint will be thoroughly investigated, and appropriate remedial action carried out promptly.

Where corrective measures have been taken, the complainant will be updated by Wills Bros Ltd of the corrective action implemented.

9.0 RECORDS

All records and documents associated with monitoring of the Works will be retained by Wills Bros Limited. On completion of the Works, Wills Bros Ltd will issue all this information to the Employer and Employer's Representative in electronic format.

Information retained will include:

- All monitoring data collected, including data files, and calculations used in processing the data
- Maintenance schedules and records for the maintenance of the instrumentation and the monitoring system including calibration certificates.
- Records of systems checks and testing and commissioning carried out.
- WBL appointed ecologist to advise on the location of bird boxes and will be approved by the ER.

10.0 REFERENCES

- Volume A Works Requirements, Book A1 Part 1 Specification
- Contract Drawings: LA5001, LA5002
- P1063-01 Industrial Emissions License
- National Biodiversity Action Plan 2017-2021, NPWS
- EPA – Practitioners Manual on Integrated Biodiversity Impact Assessment 2013
- EIAR 2017 Volume 2 of 4: Main Report

APPENDIX A

SITE BIODIVERSITY INDUCTION

Wills Bros Ltd – Kerdiffstown Landfill Remediation Project
Site Biodiversity Management Plan
November - 2021

Will Bros Ltd Induction and Training Register will be maintained at all times including the details of all personnel who have completed the Wills Bros Ltd induction and any other pertinent environmental training. Site biodiversity will form part of the induction and some of the elements included are:

- Summary of the significance of surrounding vegetation and fauna habitat on the site;
- Location of mapping of environmentally sensitive areas;
- Threatened species that be may encountered on site (where applicable);
- Points of contact for personnel if threatened species are encountered;
- Description of works where ecologists may be required to supervise or support personnel.

We will also ensure that all site personnel attend Toolbox talk where they will be briefed on the presence of the badger sett and the legal protection that badgers, and their setts, are afforded.

Wills bros Ltd will be responsible for providing the environmental component of the Project inductions, ensuring that the environmental management requirements of this plan are incorporated.

APPENDIX B

LANDSCAPE GENERAL ARRANGEMENTS AND PLANTING DRAWINGS

Wills Bros Ltd – Kerdiffstown Landfill Remediation Project
 Site Biodiversity Management Plan
 November - 2021



Client

Kildare County Council
 Anas Ché Dara,
 Devisy Park,
 Newbridge Road,
 Naas, Co. Kildare

General Notes

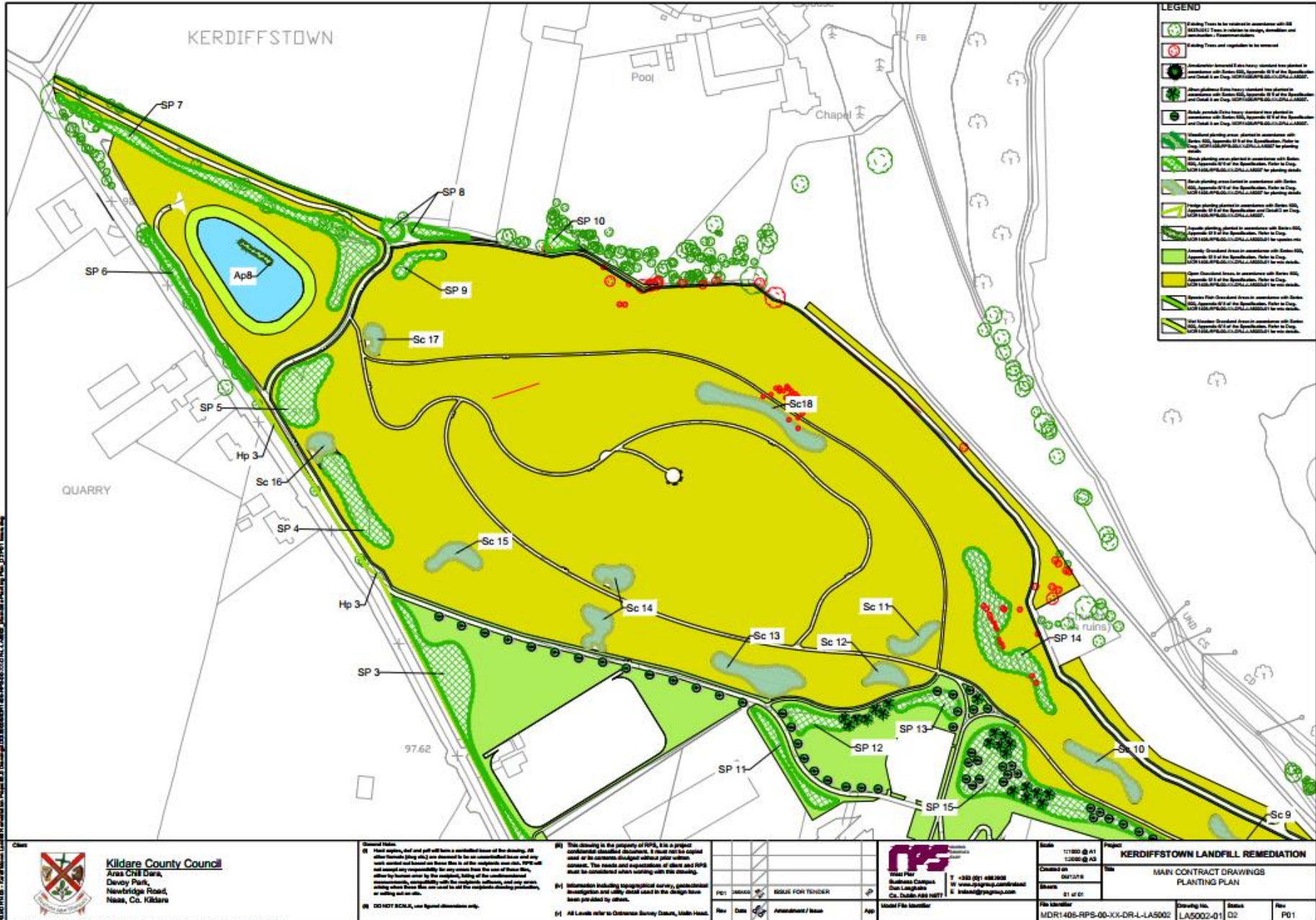
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- 4) All Levels refer to Ordnance Survey Datum, Mean Sea.

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PROJECT	ISSUE FOR TENDER	APP
DATE	AMENDMENT / ISSUE	APP
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Scale	1:2500 @ A1 1:2500 @ A3	Project	KERDIFFSTOWN LANDFILL REMEDIATION
Checked by	13/11/21	Site	MAPS CONTRACT DRAWINGS LANDSCAPE GENERAL ARRANGEMENTS
Issue	01 of 03	File Identifier	MDR1406-RPS-00-XX-DR-L-LAS001
Drawing No.	LA5001-01	Status	D2
Rev	P01		

Wills Bros Ltd – Kerdiffstown Landfill Remediation Project
Site Biodiversity Management Plan
November - 2021



D:\Projects\Kerdiffstown Landfill Remediation\01 Biodiversity Management Plan\01 Biodiversity Management Plan_211121.dwg

Kildare County Council
Area Civil Area,
Devoey Park,
Newbridge Road,
Nears, Co. Kildare

General Notes:

- (1) Hand-drawn, not for use as a standard base for the drawing, all other details (including any) are shown to be an unauthorised base and any work carried out thereon shall be the responsibility of the client. WBS will not accept any responsibility for any errors or omissions on this drawing, either by human error by the drafter, or by the unauthorised amendments, or compatibility with the software, and any work carried out thereon shall be the responsibility of the client, and any work carried out thereon shall be the responsibility of the client, and any work carried out thereon shall be the responsibility of the client.
- (2) DO NOT SCALE, use figures and dimensions only.

(3) This drawing is the property of WBS, it is a project confidential, classified document. It must not be copied, used, or its contents, disclosed without prior written consent. The needs and expectations of client and WBS must be considered when working on this drawing.

(4) Information including topographical survey, geotechnical investigation and utility data used in the design have been provided by others.

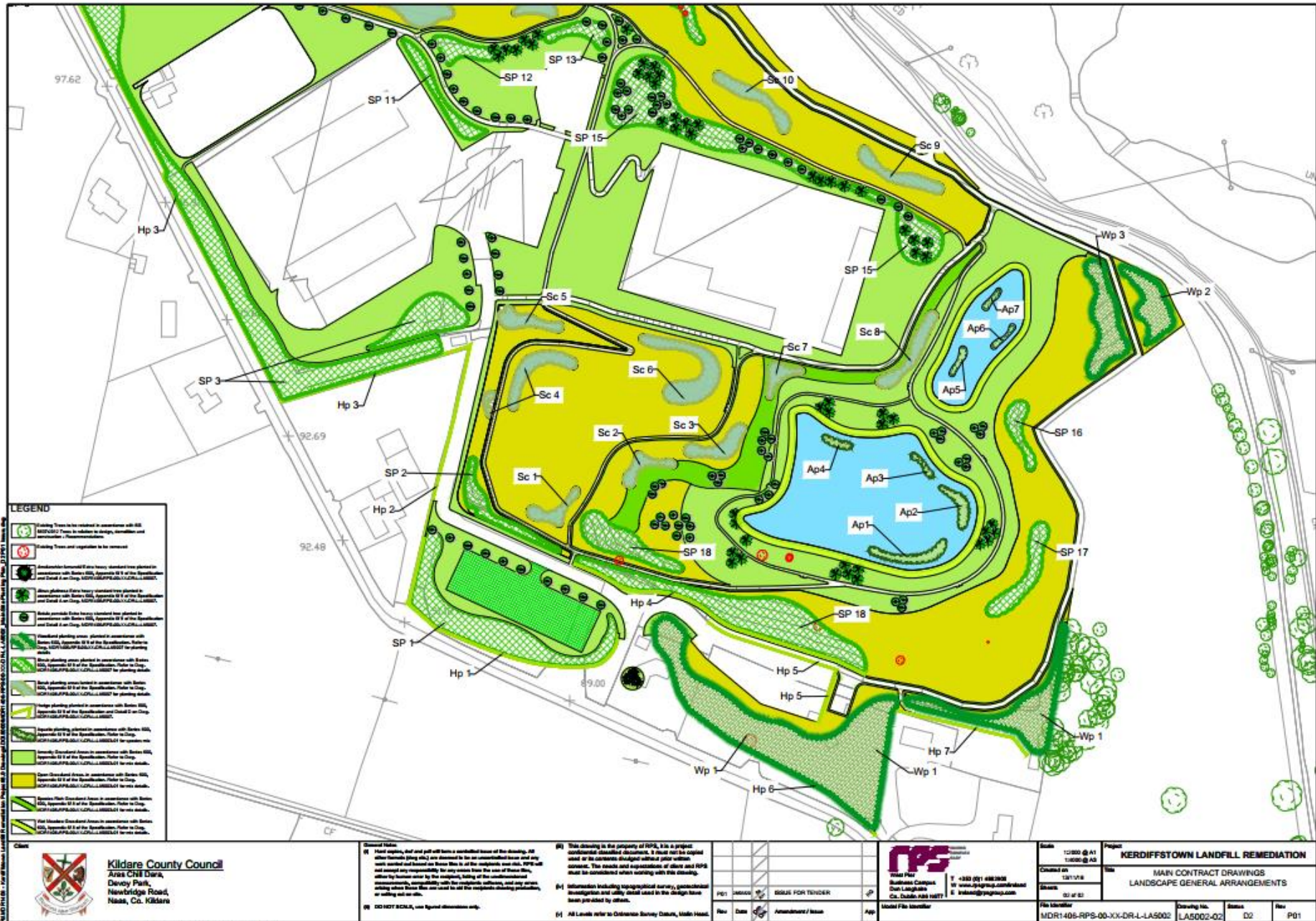
(5) All Levels refer to Ordnance Survey Datum, Mean Head.

Rev	Date	Amendment / Issue	App

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Scale: 1:500 @ A1 1:2500 @ A3	Project: KERRIFFSTOWN LANDFILL REMEDIATION
Created on: 09/11/21	Title: MAIN CONTRACT DRAWINGS PLANTING PLAN
Sheet: 01 of 01	
File Identifier: MDR1405-RPS-00-XX-DR-L-LA5002	Drawing No.: LA5002-01
	Sheet: 02
	Rev: P01

Wills Bros Ltd – Kerdiffstown Landfill Remediation Project
 Site Biodiversity Management Plan
 November - 2021



APPENDIX C

ENVIRONMENTAL/SUSTAINABILITY INSPECTION REPORT

Environmental / Sustainability Inspection Report

WB.IMS.IP041.FM006



SECTION 7 – FLORA & FAUNA							
Inspection Item - Questions	Relevance			Comments/Recommendations	Target Close-Out Date	Close Out Confirmation	
	Y	N	N/A			ACTION OWNER (Initials)	DATE OF CLOSE - OUT
Have update / pre-construction surveys been completed prior to works commencing?							
Have any protected and/or notable plant or animal species been recorded within or adjacent to the site / the current works area? Have suitable mitigation been installed?							
Have all consents, licences, permissions, method statements, protection plans been obtained and approved prior to works commencing?							
Have Ecological Permits to Work been issued by the ECoW for works being undertaken on site?							
Have exclusion zones been established? If so, are they clearly fenced off/ signed/labelled. Any maintenance needed to exclusion zone?							
Have any invasive, non-native species been identified? Is their control being suitably managed?							
Are works taking place close to trees? Have tree root protection zones been established? Are there any overhanging branches which could be damaged?							
Is ground vegetation being cleared e.g. grass, scrub, trees? Have the appropriate checks been undertaken e.g. breeding birds, amphibians, bats, red squirrel?							

Wills Bros Ltd – Kerdiffstown Landfill Remediation Project
Site Biodiversity Management Plan
November - 2021

Are trenches/ excavations/ pipes being covered at the end of the working day to prevent animals falling in? If not, has a suitable means of escape e.g. ramp, been provided?							
Are plant and personnel constrained to a prescribed working corridor? Is this being maintained?							
Are any works being undertaken on site which could disturb any ecological receptors?							
Any requirements for specific toolbox talks or training on the topic of ecological conservation?							
ACCOMPANYING EVIDENCE / PHOTOGRAPHS							