



PROJECT REF: P2970

APPENDIX 8.2

BADGER SURVEY

CAVAN REGIONAL SPORTS CAMPUS

CLIENT: MCADAM

DATE: FEBRUARY 2024

MCL Consulting Ltd
Unit 5, Forty Eight North
Duncrue Street
Belfast
BT3 9BJ
02890 747766

www.mclni.com

CONTENTS

1.0	INTRODUCTION	4
1.1	Site Description	4
1.2	Proposed Development	6
1.3	Consultation	6
1.4	Aims and Objectives	6
2.0	SURVEYORS/AUTHORS	8
3.0	LEGISLATION, POLCY AND GUIDELINES	11
4.0	METHODOLOGY	12
4.1	Desk Study	12
4.2	Field Study	12
5.0	SURVEY RESULTS	14
5.1	Desk study	14
5.1.1	NBN Atlas	14
5.1.2	NPWS Records.....	14
5.2	Field Survey	14
6.0	ASSESSMENT AND RECOMMENDATIONS	21
6.1	Sett Closure and Artificial Sett Provision	21
6.1.1	Artificial Sett Creation	21
6.1.2	Sett Closure	23
6.1.3	Timing.....	24
6.1.4	Ecological Clerk of Works (ECOW)	24
6.1.5	Monitoring.....	25
6.2	Habitat Compensation	25
6.3	Lighting and Acoustic Mitigation	26
6.4	Construction Mitigation	27
7.0	CONCLUSION	29
8.0	REFERENCES	30
FIGURES		
Figure 1:	Site Location	5
Figure 2:	Red line boundary of site.....	5
Figure 3:	Offsite sett entrance.....	20
TABLES		
Table. 1	Survey timing and weather conditions.....	12
Table. 2	Method criteria for categorizing badger sett structures	13
Table. 3	Method criteria for categorizing badger activity and sett status.....	13
Table. 4	Field signs of badger.....	13

Table 5: NPWS Badger Records.....	14
Table 6: Badger Survey Results.....	15
Table 7: Camera Monitoring Results.....	16

APPENDICES

- Badger survey plan
- Biodiversity Strategy

1.0 INTRODUCTION

MCL Consulting Ltd (MCL) was appointed by McAdam on behalf of Cavan County Council to undertake a Badger Survey for a proposed development of a sports campus to be located on lands north, south and west of Royal School Cavan and west of Breffni Park GAA grounds, County Cavan.

Due to the identification of the badger sett on site and its location being at high direct risk of impact from the proposed development an extended badger survey was undertaken in order to determine the extent of onsite badger presence, activity and to locate other badger setts in the area.

1.1 Site Description

The proposed project relates to circa 28ha situated to the Southwest of Cavan Town, located between Kingspan Breffni Park and the Royal School, Cavan. The site incorporates existing sporting facilities used by the Royal School for physical education; including one shale gravel hockey pitch and adjoining soccer field. The remainder of the school lands are undeveloped. The site also includes lands to the southwest of Breffni Park. A site location map is presented in Figure 1.



Figure 1: Site Location



Figure 2: Red line boundary of site

1.2 Proposed Development

- Indoor sports complex to include sports halls with spectator seating, fitness studios, changing facilities, reception, café and ancillary accommodation.
- 7 no. outdoor sports pitches.
- Covered sports arena with playing pitch, spectator seating and other ancillary accommodation.
- Ancillary sporting facilities include 8 lane athletics track and cricket practice nets.
- New vehicular access / junction and closure of Park Lane/Dublin vehicular junction, relocation of existing Breffni Park turnstiles to facilitate reconfiguration of Park Lane, bridge structure, internal roads, cycle/pedestrian paths, associated car/bus/cycle parking, electric charge points and streetlighting.
- Pedestrian access points of Kilnavara Lane and Dublin Road.
- Hard and soft landscaping including acoustic fencing, wildlife habitat area/corridors, artificial badger-sett, walking trails and other ancillary works such as spectator stands, retaining walls, fencing and ball stop fencing, team shelters, toilet block, floodlighting, signage, drainage infrastructure including attenuation tanks, SuDs and culverting of a minor watercourse, storage space, ESB Substation, ancillary accommodation and all associated site works to accommodate the development.
- The proposed bridge is a single span integral reinforced concrete bridge, supported on piled foundations.

1.3 Consultation

Consultation was carried out with Paul O’Doherty (Conservation Ranger), Chris Liu (Conservation Ranger) and Dr. Maurice Evans (Divisional Manager) of the National Parks and Wildlife Service (NPWS). A site meeting was attended by MCL Consulting, representatives from NPWS, McAdam and Cavan County Council on 15th February 2024. All relevant information has been integrated into this report and appendices.

1.4 Aims and Objectives

- Desk study to assess previous records of badgers, suitable habitat on site and surrounding area;
- Site walkover and mapping of any target notes using a high accuracy Trimble GNSS R8 VRS unit which would indicate tunnels, excavations and local Sett structures;
- Identification of main, annex, subsidiary and outlier Setts;
- Mapping and collation of photographs for any identified features which might include individual entrances/structures and orientation of entrance direction;
- Identification of any badger activity to include latrines, foraging, snuffle holes, feeding or play areas, footprints, trails and breach points etc;

-
- Recommendations for mitigation, and compensation measures;
 - Protection of badgers throughout the construction and operational phases;
 - Details of all proposed hedgerow/scrub clearance activities and timing.

2.0 SURVEYORS/AUTHORS

MCL Consulting is a Northern Ireland based multidisciplinary environmental consultancy which provides expert advice for a wide range of ecological services in support of Environmental Impact Assessments (EIA).

Ryan Boyle BSc MSc – Principal Ecologist

Field work was carried out by Ryan Boyle who was principal ecologist at MCL Consulting. Ryan has a MSc in Ecological Management and Conservation Biology from Queens University Belfast and a BSc (Hons) in Bioveterinary Sciences from Harper Adams University. He has 8 years of professional and voluntary experience in the ecological, environmental and conservation sector having worked as a herpetological keeper at Chester Zoo working on conservation breeding programmes with the aim of wild reintroductions, a zookeeper at Belfast Zoo, environmental assistant at GRAHAM, volunteered with the Belfast Hills Partnership partaking in a number of surveys such as bats, phase 1 habitat surveys, preliminary ecological appraisals, environmental farming schemes, soil carbon surveys, river fly surveys and is the chair for the Northern Ireland Amphibian and Reptile Group. He is experienced in species identification, management and mitigation, badger surveys, otter surveys bat activity surveys, preliminary ecological appraisals, biodiversity checklists, bat roost potential surveys, newt surveys, breeding bird surveys, vantage point surveys as well as in-depth research desk studies to generate informative conclusions based upon historical data with experience in applying these skills to development industries.

Emily Taylor BSc MSc – Senior Ecologist

Field work was assisted by Emily Taylor, a consultant ecologist at MCL Consulting. She has an MSc in Ecological Management and Conservation Biology from Queen's University Belfast and has a BSc (Hons) in Biological Sciences from Durham University. She has a range of experience in ecological field skills, having undertaken placements with both the RSPB and the Armagh, Banbridge and Craigavon Borough Council's biodiversity department. She is a current regional surveyor for the Northern Ireland Amphibian and Reptile Group, a seasonal volunteer for the Bat Conservation Trust and a member of the Botanical Society of Britain and Ireland. She has regular experience in conducting biodiversity checklists, extended phase 1 habitat surveys, bat roost potential surveys, bat activity surveys and breeding bird surveys. She also has experience in surveying for otters, badgers, lizards, and newts. She is a qualified

tree climber, with a LANTRA qualification in tree access using a rope and harness and aerial rescue.

Peter McKnight BSc MSc – Consultant Ecologist

Field work was carried out by Peter McKnight, a Consultant Ecologist at MCL Consulting. He graduated from Queen’s University Belfast with a bachelor's degree (BSc) in Planning, Environment and Development as well as a master's degree (MSc) in Ecological Management and Conservation Biology. He has previous employment experience with EcoSeeds where he assisted in the growing, cleaning and distribution of wildflower seeds including hydroseeding. He also worked for Ulster Wildlife as a Nature Reserve Assistant, treating invasive species and managing the bespoke needs of nature reserves across Northern Ireland including scrub removal, path/fence maintenance and botanical surveys. During this job he obtained LANTRA certification in the Safe Use of Pesticides, Brushcutters and Woodchippers as well as a Rescue Emergency Care certificate in Essential First Aid for the Outdoors including Emergency First Aid at Work. During his BSc, he went to Peru with Operation Wallacea to the Amazon Rainforest for 4 weeks, surveying varying tropical species including fishing bats, caiman and tropical birds. He also holds a Construction Skills Register (CSR) card.

Zachary Rose BSc MSc – Consultant Ecologist

Fieldwork was undertaken by Zachary Rose, a consultant ecologist at MCL Consulting. He has an MSc in Ecological Management and Conservation Biology as well as a BSc (Hons) in Zoology both from Queen’s University Belfast. He has 3 years of experience volunteering with Ulster Wildlife, treating invasives, maintaining nature reserves and helping with the native oyster project at Bangor marina. During his time at Ulster Wildlife, he completed weeklong hedgehog surveys in the summer of 2021 and 2022 as well as gaining a LANTRA certification in the safe use of pesticides. He has 2 years of experience working for the consultancy company Tetra Tech as a seasonal field ecologist. During this time, he led several emergence and re-entry bat surveys alongside completing otter, badger, hare and smooth newt surveys. He also gained experience doing video analysis and writing PEA reports during this time. He has also led several guided bat walk and talk evenings for Newtownards Community group in the summer of 2022 and summer 2023. He also holds a Construction Skills Register (CSR) card.

Amy Skuce BSc (Hons) MCIEEM – Principal Ecologist

Reporting was carried out by Amy Skuce, a Principal Ecologist at MCL Consulting. She has a BSc (Hons) in Countryside and Environmental Management from Harper Adams University and is a Full Member of the Chartered Institute of Ecology and Environmental Management (CIEEM). She has nine years of experience as a professional ecologist undertaking extensive survey work as well as designing appropriate mitigation for a range of schemes. Amy holds a Level 4 Field Identification Skills Certificate (FISC) and is an experienced botanical surveyor and is proficient in extended phase one habitat surveys, UKHABs and Biodiversity Net Gain assessments as well as National Vegetation Classification (NVC) surveys. She also has experience in undertaking bat roost potential surveys, bat activity surveys, badger surveys as well as a range of riparian mammal and herptile surveys.

3.0 LEGISLATION, POLCY AND GUIDELINES

Badgers

Badgers are protected under the Wildlife Acts (1976-2017) and Wildlife Amendment Act (2000). Under the Act it is an offence to:

- intentionally or recklessly kill, injure, or take a badger; or
- intentionally or recklessly damage or destroy, or obstruct access to, any structure or place (normally a Sett) that badgers use for shelter or protection; or
- intentionally or recklessly damages or destroys anything which conceals or protects any such structure; or
- intentionally or recklessly disturbs a badger while it is occupying a structure or place which it uses for shelter or protection.
- In addition, any person who knowingly causes or permits to be done an act which is made unlawful by any of these provisions shall also be guilty of an offence.

In addition, any person who knowingly causes or permits to be done an act which is made unlawful by any of these provisions shall also be guilty of an offence. There is no provision within the legislation to issue licenses to kill badgers for the purpose of development.

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

At present the National Parks and Wildlife Service do not issue disturbance licenses as the legal process for this is under review. As there is a badger sett present onsite, NPWS have been consulted in order to provide recommendation on mitigation and compensation measures proposed.

4.0 METHODOLOGY

4.1 Desk Study

A desk study was undertaken to determine if any priority species were recorded within proximity to the site. This involved using digital GIS datasets as well as contacting local recording groups for relevant information.

The data sources for the desk study were:

- NPWS Natural Environment Map Viewer.
- Relevant NGO Websites.
- National Parks & Wildlife Service (NPWS) records requested 29th April 2023.
- NBN Atlas.

4.2 Field Study

A site walkover was undertaken by MCL ecologists on four occasions to identify evidence of recent and historic badger activity onsite and in the surrounding locality. Table 1 below summarizes the survey timings and the weather conditions at the time of survey.

Table. 1 Survey timing and weather conditions

Surveyors	Date	Start time	Finish time	Temp. (°C)	Wind speed (Beaufort)	Cloud cover (oktas)	Pp. (%)
Ryan Boyle	20/04/2023	11:00	14:30	11	3	4/8	0
Ryan Boyle	06/06/2023	11:30	14:00	20	2	0/8	0
Emily Taylor, Peter McKnight	19/12/2023	11:00	15:00	9	2	4/8	0
Emily Taylor, Zachary Rose, Peter McKnight, Amy Skuce	15/01/2024	11:00	14:30	3	2	4/8	0

Any identified entrance structures were photographed, and the location of the entrances recorded using Garmin Etrex 22X handheld GPS equipment. In any given active site, a social group of badgers may have a main sett structure along with other smaller subsidiary or annex structures within their territory. Table. 2 denotes the various Sett structures that could be expected within an active site. Table. 3 provides a simple method for categorizing badger activity and the Sett structures.

Table. 2 Method criteria for categorizing badger sett structures

Sett Category	Criteria
Main	This category represents the largest and most used Sett structure, typically exhibiting several holes with large spoil heaps and established paths between Sett entrances usually marked with latrines. In continuous use for breeding.
Annex	Normally less than 150m from main Sett structures and are typically connected to it by one or more well established paths. Can have several entrances but not always in use.
Subsidiary	Typically consists of one or two holes with no obvious paths connecting to other local Sett structures. There is no obvious path connecting with another Sett and they are not always in use.
Outlying	Typically consists of one or two holes with no obvious paths connecting to other local Sett structures. Often with only small spoil heaps outside the holes indicating that they are not extensive underground. Sporadic use often inhabited by foxes or rabbits when not used by badgers.

Table. 3 Method criteria for categorizing badger activity and sett status

Level of Usage	Criteria
Active	Signs of high activity levels, entrances clear of debris or vegetation, recent bedding material excavated, fresh spoil outside, evident signs of consistent passage and use.
Inactive	Entrance holes are not in regular use. Some accumulation of debris or material and no field signs of recent badger activity. Sett use is often seasonal but could be re-established using minimal amount of clearance.
Disused	Entrance holes show no signs of recent usage. Often partially or completely blocked and would require considerable excavation to reopen the entrance. Setts may become disused through collapse, flooding, interference, or other reasons.

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

Field signs of badgers can be of importance when determining if badgers are currently active within an area or occupying a Sett. Table. 4 summarises the various field signs that can give an indication of the presence of badgers.

Table. 4 Field signs of badger

Field signs	Criteria
Setts	Holes shaped like a D on its side which are between 200mm and 300mm wide and 100mm and 200mm high.
Bedding at Sett entrance	Bedding can be found at the entrance to Setts.
Footprints	Footprints can be found near the Sett entrance or along trails
Latrines	Can be found near a Sett entrance or mark a badger's territory
Hairs on barbed wire fences	When badger's crawl under barbed wire fences, their coarse hairs can get caught on the barbs.
Scratch marks	Badgers tend to scratch the lower trunks of trees or roots.
Snuffle holes	Snuffle holes are small scrapes in the ground created by badgers searching for tubers or worms.
Paths	Well-worn paths created by badgers on route to other Setts or foraging areas.

Following identification of the onsite badger sett, remote cameras were deployed to ascertain activity levels and establish likely presence of a badger clan. Cameras were deployed between 23rd May 2023- 16th June 2023.

5.0 SURVEY RESULTS

5.1 Desk study

5.1.1 NBN Atlas

A search of the NBN Atlas returned 0 species within the site boundary but 6 species within 2km of the site area. The most recent record is from 2017 with one record produced within that year.

5.1.2 NPWS Records

Table 5: NPWS Badger Records

Grid Ref	Scientific name	Common name	Date
H4202	<i>Meles meles</i>	Eurasian Badger	1981
H40	<i>Meles meles</i>	Eurasian Badger	1990
H30	<i>Meles meles</i>	Eurasian Badger	1990

5.2 Field Survey

During the walkover, a systematic search of the entire site area was undertaken, in addition to a search of 25m beyond the site boundary where access was permitted. This was to investigate badger activity and determine if badgers are currently occupying or present within the site.

The site visit confirmed that there a badger sett was located within the site boundary, adjacent a small stream/drainage ditch which runs through the centre of the site. This comprised of 3x entrance holes, which were clear of debris/leaf litter and had worn mammal paths leading to/from the entrances into the wider site.

In order to ascertain whether the sett was active and to confirm its likely characterisation, a period of remote camera monitoring was undertaken between 23rd May and 16th June 2023. During this an adult badger was recorded with 2 cubs on a number of occasions indicating use as a breeding sett.

During the January 2024 survey the holes were still considered to show signs of activity, and some discarded bedding was observed outside of the sett entrances.

Table 6: Badger Survey Results

Sett no.	Irish Grid Ref.	Description	Image
1	H 41823 03905	3x entrance holes, clear entrances, mammal paths nearby	 <p>The image column contains three photographs documenting badger entrance holes. The top photo shows a hole in a dirt bank with a yellow measuring tape placed horizontally across the entrance. The middle photo shows a hole with a measuring tape placed vertically next to it, and a blue mobile phone is placed on the ground in front of the hole for scale. The bottom photo shows a hole with a measuring tape placed horizontally across the entrance, and a blue mobile phone is placed on the ground in front of it. All photos show natural, somewhat cluttered ground conditions with some vegetation and fallen leaves.</p>

2	H 41138 03734 (Offsite)	2x sett entrances, leaf litter, mammal paths nearby	
---	----------------------------	---	--

Table 7: Camera Monitoring Results

Camera trap 1 (facing northeast)	
Date	Footage
23/05/23	Single badger 

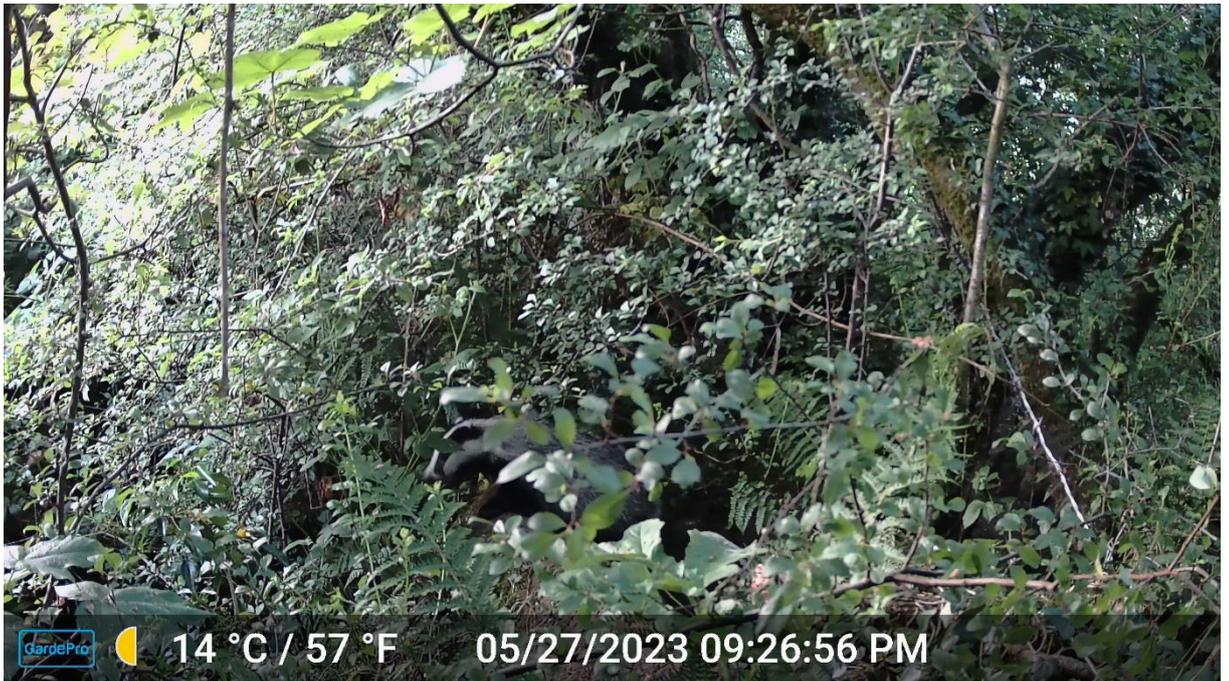
23/05/23

Badger and two cubs



27/05/23

Single badger leaving sett



08/06/23

Single badger



10/06/23

Young badger



13/06/23



Trail camera monitoring recorded an adult female and maximum of two young badgers, indicating the sett is in active use as a breeding sett.

An extended badger survey of the local area was undertaken by MCL Ecologists on 19th December 2023 and 15th January 2024 to identify any further badger setts within the local area. A possible outlier sett was identified (approximate location H 41138 03734), with two entrances holes of suitable size and shape for badger.



Figure 3: Offsite sett entrance

6.0 ASSESSMENT AND RECOMMENDATIONS

The badger survey determined that badgers are active within the site, with a breeding sett onsite. Despite the relatively small size of the onsite sett, in absence of a larger main sett being identified locally, it is considered that the onsite sett should be assumed to be a main sett and mitigated accordingly. This precautionary approach will ensure that appropriate levels of mitigation and compensation are put in place. As the sett is located within the central development zone, without appropriate mitigation and compensation there is a risk of impacts to the local badger population.

6.1 Sett Closure and Artificial Sett Provision

Due to the location of the sett within the centre of the proposed development it is not considered feasible to retain the sett and appropriate exclusion zone. As such it is proposed that the sett is to be closed, under guidance from NPWS, and a replacement, artificial sett to be built within a habitat compensation zone in the west of the site. This habitat compensation zone has been carefully designed to ensure ongoing site connectivity for foraging and commuting badgers, as well as providing a replacement sett. This relocation is also considered to “future proof” the sett location. Its existing location is immediately adjacent to a small stream which could be subject to flooding in high flow instances. By relocating the sett, it is considered to be within a more suitable location long term.

Sett closure will be undertaken following guidance from NPWS and in accordance with all appropriate best practice guidance (NRA, 2006). Artificial sett creation will also be conducted following guidance from NPWS and best practice guidance such as “Guidance for the creation of artificial setts” (NatureScot, 2018), NRA Guidelines (2006) and those published by Badger Trust, 2023.

6.1.1 Artificial Sett Creation

The new sett location has been proposed due to its relative proximity to the existing sett and maintenance of the social group territory. Due to the close proximity of the proposed location, it is not considered necessary to undertake territorial bait marking surveys. Size of the artificial sett is proposed to be similar to the existing, with three entrance holes leading to three artificial chambers. A 30m exclusion buffer from the new sett is also designed within the habitat compensation area.

Artificial sett creation must take place under the supervision and guidance of an appropriately qualified and experienced ecologist and regular communication with NPWS. This must be well-constructed and placed in a suitable area, as outlined below. Artificial sett design will be broadly similar to that indicated in the figure below, with three entrance holes, and three artificial chambers, with further open ended tunnels for further digging on by badgers.

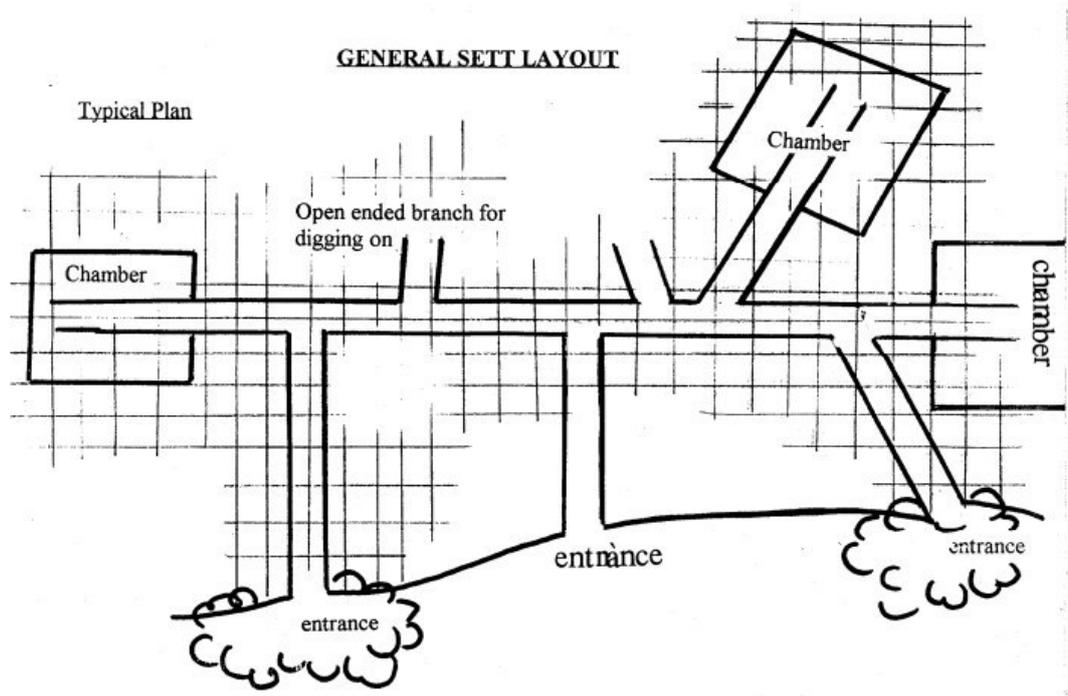


Figure 4: Artificial Sett Design (NatureScotland, 2018)

Construction

Artificial setts must adhere to very specific guidelines to increase the chances of occupation by badgers:

- Build the sett at the top of a slope for good drainage. The base of the sett in clay or non-porous soil should slope slightly downhill. Tunnels should slope away from chambers.
- Include at least 3 exit holes, one of which is higher for ventilation. This higher pipe should have a bend in it at the exit to prevent rain from entering.
- Build the sett as close as possible to the original one in a quiet location, but at least 100m from the proposed earth works.

-
- The new sett should have an adequate number of chambers and tunnels to replicate the bulk of the natural sett it is replacing.
 - Use pipes of 30 cm in diameter. Where joins leave gaps, exterior grade ply should be placed over to prevent infill. Plastic pipes are best cut lengthways to form an arch over an earth floor. If this method is selected, 60cm pipes should be used to maintain the required 30cm height of created tunnels.
 - Leave open ends of pipes facing an earth bank (as well as leading to chambers) so that the badgers can extend the sett for themselves.
 - The chambers should be at least 35 cm high and about 90cm by 60cm in size.
 - Cover the sett with steel mesh (to deter illegal badger diggers) and then with about a metre depth of soil covering the sett.
 - Include a 30m exclusion zone around the sett in all cases, 100m in the case of significant earth works.
 - Plant scrub cover plants around the sett.
 - Any licence application should include a simple and clear plan of the sett including dimensions and a site plan with dimensions including elevation to show slope.

6.1.2 Sett Closure

Sett closure is to be undertaken following best practice guidelines from National Roads Agency and DAERA guidelines, under guidance from NPWS. Once the new sett has been created and it is confirmed that badgers have adapted and utilised the new structure, exclusion and removal of the old sett can be undertaken.

The badger exclusion will be achieved using one-way badger gates installed at the sett entrances. A strong wire mesh is to be installed over the substrate surface of the sett entrances to prevent badgers from creating new tunnel entrances or re-entering the sett. The gates only open outwards allowing badgers to exit but not re-enter the sett.

- The sett exclusion process can only take place between July 1st and November 31st as this is outside of the badger breeding season.
- The exclusion mesh and one way badger gates will be installed by hand to minimise disturbance around the setts.
- The exclusion process will be initiated by first installing the gates which are fitted in a two-way position to allow badgers to move in and out of the sett freely, thus becoming used to this new feature.

-
- After three days the gate will be set to a one-way operation so that badgers can only leave the sett and not re-enter.
 - Wire fencing will also be fitted to cover the extent of the sett, preventing the creation of new tunnels or re-entry of the badger once they have been excluded.
 - The movement of the badgers can then be monitored by placing sticks immediately inside the gate and by erecting camera traps within the area as well as placing sand at the gates and excluded sett entrances to check for tracks. Once no movement has been recorded over a three-week period work can commence.

An ecologist will be employed to supervise the installation and exclusion with regular monitoring. Once the proposed sett exclusion is complete works can commence.

6.1.3 Timing

To ensure ongoing provision for the badger clan, the artificial sett must be completed at least 6 months prior to the exclusion and destruction of the existing sett. Due to the sett classification as breeding/main sett, this exclusion should be undertaken between June and the end of November. Badgers can be encouraged to colonise the new sett with baiting with sweetened peanuts and transfer of bedding and spoil from the existing sett. Under best practice guidelines the new sett should be occupied for 6 months prior to exclusion and destruction of the existing sett.

6.1.4 Ecological Clerk of Works (ECOW)

An Ecological Clerk of Works shall be appointed prior to development. This will ensure any works required to prepare the site can be appropriately timed and can obtain the required licences in due course. The clerk will work closely with the site foreperson and will report to the construction manager.

The ECoW's responsibilities will include, but not be limited to, the following:

- Provide toolbox talks to staff site to ensure they are aware of the ecological constraints to the works at the site.
- Provide a main point of contact for any ecological issues occurring on site.
- Monitor the mitigation measures and update the mitigation plan as required.
- Conduct monitoring at the site to ensure that the ecological baseline information for the site is up to date throughout the construction phase.
- Approval of closure methodology by relevant authorities

-
- Supervision of sett destruction.

The ECoW should also maintain a record of all site visits undertaken to include the following:

- Purpose of the site visit.
- Date and weather conditions.
- Summary of works undertaken.
- A photographic record.

6.1.5 Monitoring

The ECoW will need to conduct a site walk over prior to the application to monitor any change in ecological conditions i.e. badger activity. The setts should be monitored closely prior to closure using camera traps and site visits.

Any hedgerows or scrub to be cleared during bird breeding season will need to be monitored for nesting birds.

6.2 Habitat Compensation

A detailed drawing of the proposed habitat enhancements is shown in Appendix 2. A minimum of 30m buffer is to be provided around the newly created sett, to avoid disturbance impacts during construction of the proposals. In addition to this an area of high quality foraging habitat is to be created along the western boundary of the site, with other areas of grassland also present within the site.

A species rich grassland mix comprising 80% grass and 20% wildflower will be sown in the main habitat compensation area. A detailed habitat management plan should be prepared giving full management details; however in summary, this grassland should be subject to a reduced mowing regime, with any arisings being removed from the habitat.

Scrub and tree planting will also be carried out in this area to provide visual and physical protection for the badger sett. Use of fruit and nut bearing species is proposed to provide a further foraging resource for badgers within the site. Species such as rowan, elder, hawthorn,

blackthorn, hazel and oak are recommended.

Vermicides (chemical treatment for earthworms) should not be used anywhere within the development, as earthworms are a valuable foraging resource for badger.

A commuting corridor to maintain connectivity east-west within the site is also proposed, which will allow for continued linkage between the new sett and the riparian woodland corridor at the Cavan River. This corridor will be sympathetically planted with a mosaic of meadow grassland native shrubs including gorse, hawthorn and blackthorn.

A badger underpass is proposed to allow for connectivity under the proposed roads. This should be designed in accordance with NRA Guidance (2006), comprising a 600mm concrete pipe, with guidance mesh fencing installed to prevent direct access onto the road. Further native planting should be undertaken at the entrances and exits to encourage use by badger.

6.3 Lighting and Acoustic Mitigation

At this time no full site lighting plan showing predicted lux levels has been produced, although general advice has been provided by the consultant ecologist. In accordance with this, it is recommended that the lighting scheme is sympathetic to nocturnal fauna such as badger. Screening tree and shrub planting should be undertaken between the habitat compensation area/replacement sett and any pitches to reduce light spill on this area.

In the absence of specific badger lighting guidance, sensitive lighting on site should follow the guidance set out in Bats and Lighting in the UK (BCT and ILP, 2018). Therefore, associated site lighting proposals must consider the following:

- Avoid lighting where possible in woodland areas and adjacent to habitat compensation areas.
- Install lamps and the lowest permissible density; (waist high bollards).
- Lamps should be positioned to direct light to avoid upward spill onto the replacement sett area and any green corridors that could be used by commuting and foraging badgers.
- LED lighting – with no/low UV component is recommended.
- Lights with a warm colour temperature – 3000K or 2700K have significantly less impact on fauna.

-
- Light sources that peak higher than 550nm also reduce impacts to fauna.
 - The use of timers and dimmers to avoid lighting areas of the site all night is recommended.

As part of the general acoustic mitigation for the development, it is envisaged that acoustic fencing will be required on the western side of the proposed pitches. This will be a minimum of 3m in height and is required to be full, closed board fencing. Where this fencing is proposed and considered to form a barrier to dispersal for badger and other mammals there will be a requirement for mammal passes to be installed at the base of the fence and should have a width of approximately 300m. This will allow ongoing commuting links for onsite badgers, whilst still providing required acoustic mitigation.

6.4 Construction Mitigation

In addition to the above detailed mitigation for sett relocation, a number of best practices should be followed throughout the construction period, to avoid impacts to transient badgers, these include:

- A check of the working area prior to commencement each day. If any fresh digging or evidence of badger presence is identified all works should cease immediately and the consulting ecologist be notified.
- The use of noisy machinery should cease at least 2 hours before sunset.
- Security lighting should be directed away from identified mature vegetation and the river.
- An adequate supply of water should be made available on site for effective dust suppression.
- Any exposed open pipe systems must be capped to prevent badger access.
- No excavations are to be left uncovered or without a means of egress (a sloped plank for example) overnight, as badgers may fall in or enter in search of food and become trapped.
- No buildings or storage units are to be left open overnight, as badgers may enter and become trapped.
- No poisonous or potentially harmful substances or materials are to be left unsecured overnight.
- Chemicals should be stored as far from trails, mature vegetation, and the river as possible.

-
- Special care should be given to protect water sources, as these are likely to be utilized by badgers.

7.0 CONCLUSION

The site contains an active badger sett, which has been classified as a main/breeding sett. This comprised three entrance holes, with remote camera footage recording a sow and two young badgers. An extended survey of the local area was undertaken to ascertain the presence of a main badger sett locally however, only one smaller, outlier sett was identified. As such, due to the sett's presence within the development zone and risk of offences under protective legislation for this species, it is considered necessary to undertake a sett closure and relocation under guidance from NPWS and approval from the Council.

A replacement artificial sett of comparable size is to be provided in advance of existing sett closure and any commencement of development works to ensure ongoing provision for the local badger clan.

A suitable location has been identified to the west of the existing sett location, and site design incorporates suitable replacement foraging habitat with consideration given to maintaining commuting links within the site through provision of badger underpasses. Site lighting design should be considerate to the presence of badger and other foraging nocturnal mammals.

In addition to this standard mitigation on the protection of badgers and other mammals during construction has been recommended and should be adhered to.

Report Prepared By: -



Amy Skuce BSc (Hons), MCIEM
Principal Ecologist

Reviewed By: -



Emily Taylor (Hons), MSc
Senior Ecologist

8.0 REFERENCES

Badger Trust, 2023. Badger Protection: Best Practice Guidance for Developers, Ecologists and Planners (England). Available at: <https://ebpg.co.uk/sites/ebpg.co.uk/files/Badger%20Trust%20Badger%20Protection%20Best%20Practice%20Guidance%20for%20Developers%20Ecolo...IGITAL.pdf>

Harris S, Cresswell P and Jefferies D (1989) Surveying Badgers, Mammal Society

Harris, S. et al. (1989) Projects on Badgers. The Mammal Society Publication No.12

NatureScot, 2018. Guidance for the creation of artificial setts. Available at: <https://www.nature.scot/sites/default/files/2018-04/Guidance-Badgers-artificial-sett-construction.pdf>

NIEA Badger Survey Specifications available at: <https://www.daera-ni.gov.uk/sites/default/files/publications/daera/badger-survey-specifications.pdf>

NIEA Badgers & Development available <https://www.daera-ni.gov.uk/sites/default/files/publications/doe/natural-information-badgers-and-development-2011.pdf>

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

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

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

Appendix I: Camera Locations



- ### Legend
- Red Line Boundary
 - Summer 2023 Camera Locations
 - ◆ Winter 2023/34 Camera Locations

Appendix I: Camera Locations

Created by: Zachary Rose

Reviewed by: Amy Skuce

Client: McAdam Design

Date: 19/02/2024

Scale: 1:4000 @ A3



Unit 5, Forty Eight North, Duncrue Street

Belfast

BT3 9BJ

Tel: 028 9074 7766

Appendix II Badger Setts and Buffer Zones



Legend

- Red Line Boundary 
- New Sett 30m Buffer 
- New Badger Sett 
- Old Badger Setts 
- Old Badger Sett 25m Buffer 

Appendix II: Badger Setts and Buffer Locations

Created by: Zachary Rose

Reviewed by: Amy Skuce

Client: McAdam Design

Date: 19/02/2024

Scale: 1:4000 @ A3



Unit 5, Forty Eight North, Duncrue Street

Belfast

BT3 9BJ

Tel: 028 9074 7766

APPENDIX III Offsite Badger Location



Legend

- Red Line Boundary
- Off Site Sett Location

Appendix III: Off Site Badger Sett Location

Created by: Zachary Rose

Reviewed by: Amy Skuce

Client: McAdam Design

Date: 19/02/2024

Scale: 1:4000 @ A3



Unit 5, Forty Eight North, Duncrue Street

Belfast

BT3 9BJ

Tel: 028 9074 7766

APPENDIX IV Biodiversity Strategy

LEGEND:

- Existing trees / hedges to be retained in accordance with BS 5837:2012 and best arboricultural practice at the time of execution of the works. Blue line denotes Root Protection Area (RPA). Remedial surgery as Arboriculturalist's recommendations.
- Existing trees to be removed for Health & Safety reasons or to facilitate development.
- Existing hedges/scrub vegetation to be removed to facilitate development. Note: See below where this vegetation to be translocated into wildlife area.
- Proposed extra heavy standard / semi mature specimen tree planting. Note: See below for suggested species / location & specification.
- Proposed hedge planting of mixed evergreen and deciduous species for biodiversity & seasonal effect with bark mulch. Note: See below for suggested species / location & specification.
- Proposed woodland planted areas of mixed evergreen and deciduous species for biodiversity & seasonal effect. Note: See below for suggested species / location & specification.
- Proposed wildlife compensation area of mixed evergreen and deciduous species for biodiversity & seasonal effect. Note: See below for suggested species / location & specification.
- Proposed amenity planting to Main Entrance / Plaza, Car Park Areas of mixed evergreen and deciduous species for biodiversity & seasonal effect. Note: See below for suggested species / location & specification.
- Proposed grass seeded areas. Species as recommended by Sports Turf Specialist.
- Proposed species rich grass seeded areas. Species of local provenance & as recommended by Ecologist.
- Proposed damp meadow / riparian grass seeded areas. Species of local provenance & as recommended by Ecologist.
- Proposed translocated hedge / scrub material, along margins of wildlife compensation area as recommended by the Ecologist. Areas to be kept irrigated until established as directed by the Ecologist.

Suggested Species, Specification & Planting Requirements:

Proposed Extra Heavy Standard / Semi Mature Specimen Tree Planting:

- Suggested Species: Wetter areas.
 - Alnus glutinosa (Alder)
 - Salix species (Willow)
- Suggested Species: Drier areas.
 - Malus sylvestris (Crab apple)
 - Quercus robur (Oak)
 - Betula pendula (Silver birch)

- Specification: Extra Heavy Standard size 16-18 cms girth; 450cms minimum height; 200cms minimum clear stem; 3 x transplanted; container grown, & Semi Mature size 20-25 cms girth; 500 - 550cms minimum height; 250cms minimum clear stem; 3 x transplanted; container grown.
- Planting: Extra Heavy Standard & Semi Mature trees to be planted in free draining topsoil plus 1500mm dia x 750mm deep with 75mm deep medium grade ornamental composted surface bark mulch, laid in accordance with specification.

Proposed Hedge Planting:

- Mixed evergreen and deciduous species for biodiversity & seasonal effect with 75mm deep medium grade ornamental composted surface bark mulch, laid in accordance with specification.
- Suggested Species:
 - Crataegus monogyna (Hawthorn)
 - Rosa canina (Dog rose)
 - Rubus fruticosus (Bramble)
 - Prunus spinosa (Blackthorn)
 - Viburnum opulus (Guelder rose)
 - Ilex aquifolium (Holly)
 - Euonymus europaeus (Spindle)

Proposed Woodland Planting:

- Areas of mixed evergreen and deciduous species for biodiversity & seasonal effect.
- Suggested species:
 - Betula pubescens (Downy Birch)
 - Crataegus monogyna (Hawthorn)
 - Corylus avellana (Hazel)
 - Ilex aquifolium (Holly)
 - Viburnum opulus (Guelder Rose)
 - Prunus padus (Bird Cherry)
 - Prunus avium (Wild Cherry)
 - Quercus robur (Oak)
 - Sorbus aucuparia (Mountain Ash)

Wildlife Compensation Area:

- Suggested species:
 - Sambucus nigra (Elder)
 - Sorbus aucuparia (Rowan)
 - Corylus avellana (Hazel)
 - Prunus avium (Wild Cherry)
 - Prunus padus (Bird Cherry)
 - Salix caprea (Pussy willow)
 - Salix cinerea (Grey willow)

Proposed Amenity Planting to Main Entrance / Plaza, Car Park Areas:

- Specification: Plants to be between 20cm & 120cm in height, container grown in pot sizes ranging from 110 to 1020.
- Planting: Amenity planted areas to have 300mm min depth good quality free draining topsoil with soil ameliorants and slow release fertiliser. Plants to be planted at between 250mm & 1000mm centres depending on species.

Grass Seeded Areas:

- Suggested species:
 - Hard wearing, as recommended by Sports Turf Specialist.
- Specification: All grass seeded areas to be seeded over, 50mm - 150mm depth topsoil, or as recommended by Sports Turf Specialist.

Species Rich Grass Seeded Areas:

- Suggested species:
 - Species of local provenance & as recommended by Ecologist.
- Specification: All species rich grass areas to be seeded over, 50mm - 150mm depth topsoil.

Damp Meadow / Riparian Grass Seeded Areas:

- 10m wide margin to Cavan River and wetland scrapes in wildlife compensation area.
- Suggested species:
 - Species of local provenance & as recommended by Ecologist.
- Specification: All species rich grass areas to be seeded over, 50mm - 150mm depth topsoil.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.

Existing boundary hedge retained & allowed to grow on.



NOTES:

- Do not scale off this drawing.
- Drawings to be read in conjunction with the specification and all relevant drawing information.
- Contractor to check all dimensions on site. Milwaine Landscape Architects to be advised of any discrepancies between this drawing and site conditions immediately.
- Dimensions are in millimetres unless otherwise stated.

This drawing has been produced for the client for the project on the site shown. It was prepared for a particular project with the client and will have a commensurate degree of accuracy. It is not a "total drawing". This drawing is not intended for use by any other person for any other purpose than that specified here. Milwaine Landscape Architects accept no liability whatsoever if this drawing is used by any other person or for any other purpose.

© Milwaine Landscape Architects. All rights reserved.

SITE LAYOUT & LANDSCAPE PLAN, SCALE 1:1000 @ A0

MAIN ENTRANCE / PLAZA, SCALE 1:250 @ A0



Rev: _____ Date: _____

MILWAINE LANDSCAPE ARCHITECTS

PROJECT:
Cavan County Council
Cavan Regional Sports Campus
DRAWING TITLE:
Site Layout & Landscape Plan

Status	Stage 1
Scale	As shown
Drawn	JAM
Checked	BMd
Date	07.03.24
Project No.	2320
Drawing No.	CSC-MLA-XX-00-DR-L-2001

2 Elnora Road, Killybeggs, Co. Wick
 T: 038 9754 2277 E: info@mla.ie W: www.mla.ie
 © Milwaine Landscape Architects