APPENDIX B

July 2021

Bat Survey Report

INXN DUB15/16

On behalf of
Digital Netherlands VII B. V.

Profile Park, Nangor Road, Clondalkin, Dublin 22

MALONE O'REGAN ENVIRONMENTAL

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1 INTRODUCTION

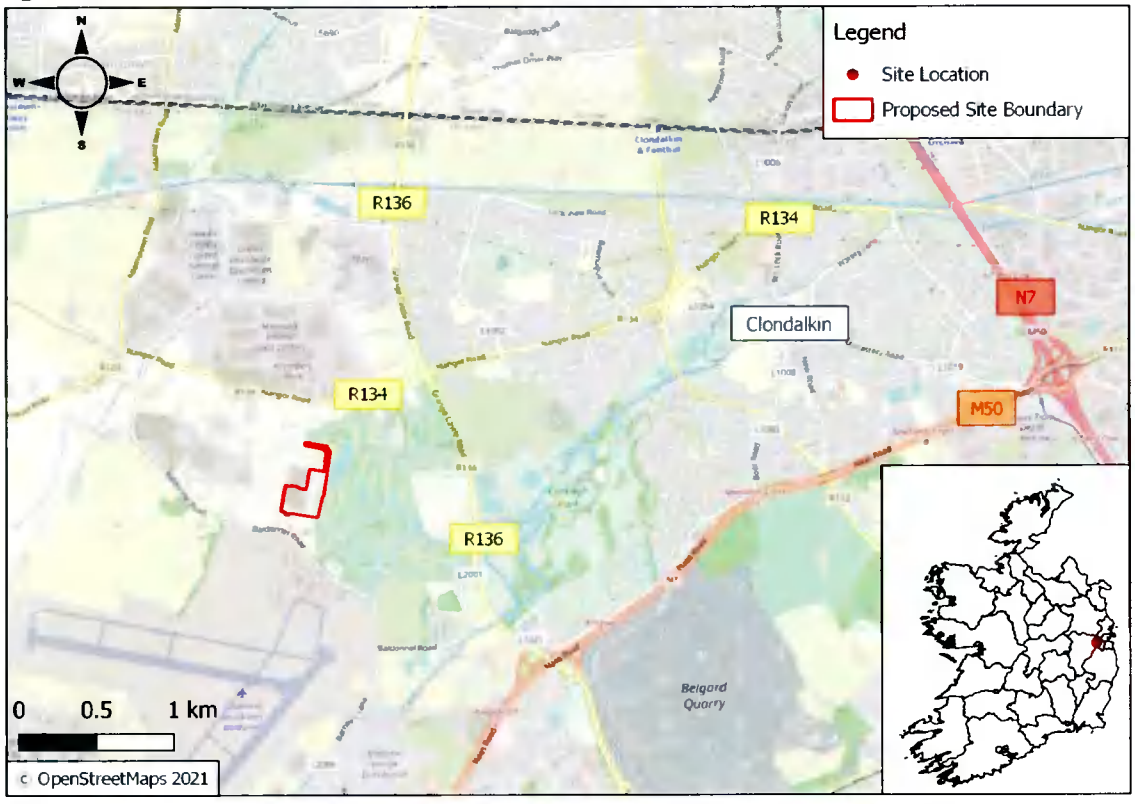
1.1 Background

This Bat Survey Report has been prepared by Malone O'Regan Environmental (MOR) was commissioned by RKD Architects Ltd. on behalf of Digital Netherlands VIII B.V. ('the Applicant'), to present the findings of bat surveys undertaken at the Site for a proposed data centre and all ancillary works (Proposed Development), at Profile Park, Kilcarbery, Dublin, Co. Dublin (OS Reference O 03785 30338).

The baseline ecological survey of the Site highlighted the potential for bat roosts to occur within some of the mature trees bordering the Site. It was therefore deemed necessary for further survey work to be carried out to determine whether or not any bat roosts occur within the Site or within close vicinity to the Site that may be impacted due to the proposed development works.

The location of the proposed development ('the Site') is shown in Figure 1-1.

Figure 1-1: Site Location



1.2 Relevant Legislation

All Irish bat species are protected by law under the Wildlife Act 1976 and its subsequent amendments. They are afforded full protection under this act, which makes it a criminal offence for anyone without a licence to:

- Kill, injure or handle a bat;
- Possess a bat (whether alive or dead);
- Disturb a roosting bat; and,

- Damage, destroy or obstruct access to any place used by bats for shelter, whether they are present or not.

In addition to domestic legislation, bats are also protected under the EU Habitats Directive (92/43/EEC). All Irish bats are listed in Annex IV of the Habitats Directive and the lesser horseshoe bat is further listed under Annex II, which make it an offence to:

- Deliberately capture, injure or kill any bat; or,
- Deliberately disturb a bat, in particular any disturbance which is likely;
    (a) To impair their ability:
        (i) To survive, to breed or reproduce, or to rear or nurture their young; or,
        (ii) To hibernate or migrate.
    (b) To affect significantly the local distribution or abundance of the bat species; or,
- Damage or destroy a breeding site or resting place of a bat.

Therefore, the destruction, alteration or evacuation of a known bat roost is a notifiable action under current legislation and a derogation license must be obtained from the National Parks and Wildlife Service (NPWS) before works can commence.

Furthermore, it should also be noted that any works interfering with bats and especially their roosts, including for instance, the installation of lighting in the vicinity of the latter, may only be carried out under a license to derogate from Regulation 23 of the Habitats Regulations 1997, (which transposed the EU Habitats Directive into Irish law) issued by NPWS.

1.3 Statement of Authority

The bat surveys and subsequent survey report were undertaken and prepared by the following MOR personnel, Mr. Dyfrig Hubble and Ms. Allison Flaherty.

Dyfrig Hubble, Principal Ecologist, has a B.Sc. (Hons) in Tropical Environmental Science and an M.Sc. Environmental Forestry. Dyfrig is a full member of the Chartered Institute of Ecology and Environmental Management. Dyfrig has over 15 years' experience working in the ecological consultancy sector including habitat appraisals and specialist species specific surveys. Dyfrig has extensive experience in undertaking surveys for bats and in the preparation of survey reports for various projects within both the UK and Ireland.

Allison Flaherty, Environmental Consultant, has a B.A. Biology, a M.Sc. Biodiversity and Conservation and over 2.5 years' working experience in the ecological consultancy sector. Allison is a qualifying member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and has a specialist interest in bats. Allison has gained extensive experience in undertaking bat surveys and assessments within her role at MOR. Allison has also taken part in specialist bat trainings including; *Introduction to Bat Ecology and Bat Surveys; Bats: Impact Assessment of Development, Mitigation and Enhancements; Bats for Building Professionals; Patterns of Bat Activity at Upland Windfarms: Implications for Sampling and Mitigation;* and *Designing Biodiversity Net Gain for Bats*, all provided by CIEEM course instructors.

1.4 Purpose of Survey Work

The implication of these legislative policies is that the proposed development needs to take account of the potential effects on bats. Survey work is necessary to establish whether the species are currently present in areas where suitable habitat exists and in areas where bats have previously been recorded. Survey work also enables appropriate mitigation measures to

be incorporated into the design of the project and ensures that there are no adverse effects on the conservation status of the species.

Survey work was deemed necessary based on desktop surveys and suitable habitat being identified during the initial walkover of the site.

2 METHODOLOGY

The methodologies used to establish the presence / potential presence of bats are summarised below.

2.1 Desk-Based Studies

A desk-based study was undertaken to identify records of bats within the survey area. The following sources of information were reviewed:

- The National Parks and Wildlife Service (NPWS) website was consulted to obtain the most up to date detail on conservation objectives for the Natura 2000 sites relevant to this assessment (National Parks and Wildlife Service, 2021); and,
- The National Biodiversity Data Centre (NBDC) website was consulted with regard to bat species distributions and bat habitat suitability index (National Biodiveristy Data Centre, 2021).

2.2 Field Based Studies

All surveys conducted followed methodology outlined in the Bat Mitigation Guidelines for Ireland (DoEHLG, 2006), Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes (National Roads Authority, 2006) and Bat Surveys for Professional Ecologists Good Practice Guidelines (Collins, 2016).

2.2.1 Dusk Emergence / Activity Survey

Two dusk emergence / activity surveys were undertaken on May 24th and June 8th, 2021 by one (1no.) qualified MOR Ecologist. The surveys commenced 15 minutes before sunset and ended 2 hours after sunset, therefore encompassing the typical emergence times of Irish bat species.

The surveys were designed to cover all accessible vegetated areas within the Site and to determine if any bats were emerging from the mature treeline along the eastern border of the Site and to identify the levels of commuting and foraging within the Site and in particular near the drainage ditch / treeline along the eastern boundary.

An MOR Ecologist surveyed the mature trees along the eastern border that had features suitable for roosting bats. The vantage point survey started 15 minutes before sunset and 1 hour after sunset for each survey. The mature trees were surveyed at a pre-determined vantage point so that they could be monitored for bat emergence (See Figure 2-1).

For the last hour of the survey, the surveyor walked the survey area in a pre-determined transect route (Figure 2-1), noting the time, behaviour (foraging or commuting), location and bat species encountered.

A combination of visual observation and listening to ultrasonic bat calls using an Echo Meter Touch2 Pro (Apple IOS) were used throughout the emergence surveys. Bat calls were recorded digitally using the Echo Meter Tough2 Pro and analysed using appropriate software (KaleidoscopePro) to aid the identification of bat species present. The GPS mapping function was used on the Echo Meter Touch2 Pro (Apple IOS) connected to Apple iPhone-7; this is mapped using Google Earth with a KLM file produced for mapping purposes.

Figure 2-1: Survey Area and Surveyor Locations

2.3 Survey Limitations

All survey work was conducted in accordance with current best practice guidelines. All of the surveys were undertaken when there was no rain or wind, and the temperature was above 10°C. In these weather conditions, bats will not have been deterred from flying and no survey limitations were encountered.

3 RESULTS

3.1 Desk-Based Results

Prior to conducting the field surveys, a desk-based review of information sources was completed.

Pipistrelle species and Daubenton's Bat (*Myotis daubentonii*) have been recorded within a 2km radius of the proposed development area within the past 10 years (National Biodiveristy Data Centre, 2021)

Table 3-1 provides details of the habitat suitability index for the study area (National Biodiveristy Data Centre, 2021). The habitat suitability index identifies the geographical areas that are suitable for individual species. The index ranges from 0 to 100, with 100 being the most favourable to bats. The index presented is for all species combined, in addition to the individual species indices within the study area.

From the indices, it can be established that the study area has an overall moderate habitat suitability index range of 21– 28. The Irish bat species with moderate or moderate-high habitat suitability index for the area include common pipistrelle, brown long-eared bat, soprano pipistrelle and lesser noctule.

However, ca.150m south of the Site is an area of high suitability for bats, ranging from 36.4-58.5 (NBDC, 2021).

Table 3-1: Habitat Suitability Index

Bat Species	Suitability Index Range	Suitability Index Level
All Bat Species	21– 28	Moderate
Soprano Pipistrelle *(Pipistrellus pygmaeus)*	31 - 38	Moderate
Brown Long-eared Bat (*Plecotus auritus)*	39 - 49	Moderate - High
Common Pipistrelle (*Pipistrellus pipistrellus)*	39 - 47	Moderate - High
Lesser Horseshoe Bat (*Rhinolophus hipposideros)*	0 - 4	Very Low
Whiskered Bat *(Myotis mystacinus)*	10 - 20	Low
Daubenton's Bat *(Myotis daubentonii)*	13 - 21	Low
Lesser Noctule *(Nyctalus leisleri)*	38 - 46	Moderate - High
Nathusius' Pipistrelle *(Pipistrellus nathusii)*	16 - 29	Low - Moderate
Natterer's Bat *(Myotis nattereri)*	14 - 26	Low - Moderate

Table 3-2 provides a summary of records of bat species that occur within a 2km grid square of the Site boundary (NBDC, 2021).

Table 3-2: NBDC Bat Species within 2km of the Site

Bat Species			
Daubenton's Bat	*Myotis daubentonii*	19/08/2013	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex IV
Pipistrelle	*Pipistrellus pipistrellus sensu lato*	17/07/2011	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex IV
Soprano Pipistrelle	*Pipistrellus pygmaeus*	19/08/2013	Wildlife Acts 1976 / 2000 EU Habitats Directive Annex IV

3.2 Field Based Results

3.2.1 Dusk Emergence / Activity Survey Results

No bats were observed emerging from or re-entering any of the trees surveyed during the vantage point portion of the surveys. The surveys did identify bats commuting along treeline / scrub area to the east and north of the survey area that border the Grange Castle golf course to the east (See Figure 3-1).

The following bats were recorded as a result of the dusk emergence surveys:

- Common pipistrelle, soprano pipistrelle and lesser noctule bats were recorded commuting along the treelines to south and east survey area and the east which border the adjacent Grange Castle golf course. The most frequently encountered species of these were common pipistrelle and lesser noctules. These species are relatively wide-spread and the most commonly encountered species within Ireland;
- Low levels of bat activity were recorded within the Site during both surveys.

- No bats were identified to be roosting within the trees in the survey area; and,
- As very few bats were recorded soon after dusk during the emergence surveys, this indicates that bat roosts are not likely to be present within the immediate local area.

Based on the levels of activity and movement of the bats recorded during the surveys, it is considered that the Site is of little value to bats. During the surveys it was noted that the Site is partially illuminated by street lighting posts from private road, as well as flood lights from the existing buildings and the car park directly northwest. As bats are typically averse to lighting and no commuting or foraging activity was noted within the illuminated areas.

Figure 3-1: Bat Activity Map within the Survey Area

4 IMPACT ASSESSMENT AND MITIGATION

The following bat species have been recorded during the bat surveys: common pipistrelle, soprano pipistrelle and lesser noctule. This represents three of the nine residence bat species known to Ireland, all of which are commonly occurring Irish bat species. All bat species recorded during the bat surveys are Annex IV species under the EU Habitats Directive and all have a favourable status in Ireland.

Bat species within the survey area will potentially be affected by both the construction phase and operational phase of the proposed development. The impact assessment and mitigation will be undertaken in relation to the three bat species recorded within the survey area and the surrounding area: common pipistrelle, soprano pipistrelle and lesser noctules.

4.1 Potential Impacts on Bats

No mature trees will be removed due to the proposed development. The disused wastewater treatment plant located along the eastern boundary will be fully removed as part of the proposed development. There are no structures or vegetation within this area suitable for roosting bats.

Principal impacts of the proposed development, in general, on bats may be summarised as follows:

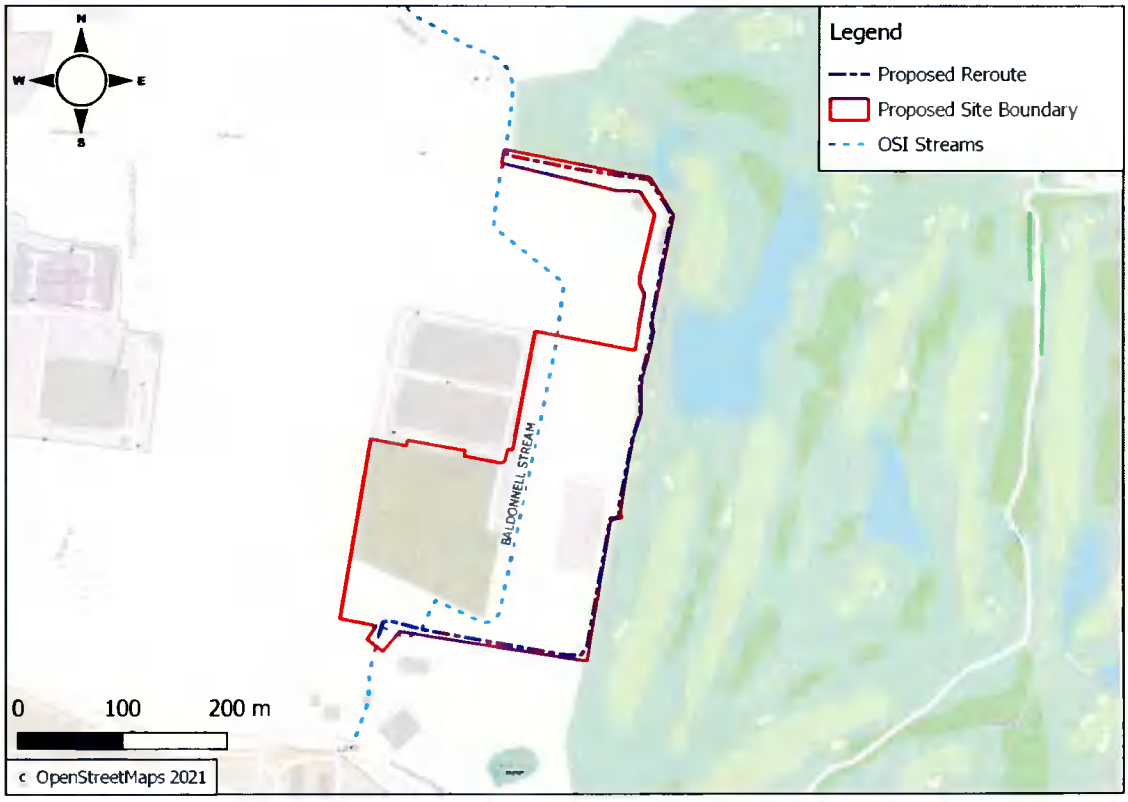
4.1.1 Loss of Habitat

The surveys did not identify any bat roosts within the Site or in the immediate vicinity. However, there is potential commuting and foraging habitats to the east of the Site and within the wider area. Therefore, it is considered that without the appropriate consideration of foraging and commuting bats in close vicinity to the Site, that the proposed development could have a Negative Impact on bat species.

4.1.2 Stream Diversion

The Baldonnell Stream has been previously diverted due to construction of the existing buildings within the Site. The stream currently lies ca.55m west of its mapped position (EPA, 2021), refer to the altered route in Figure 4-1 for the streams approximate position.

Figure 4-1: Proposed Rerouting of the Baldonnell Stream



It is proposed to divert the Baldonnell Stream to the east of the Site, along the existing hedgerow / treeline and drainage ditch near the Grange Castle golf course. This would be the preferred route from a biodiversity perspective as it would enhance the existing ecological corridor and connect into the network of tree lines / hedgerows and waterbodies on the golf course.

This would have a benefit to bats, as parts of the currently positioned Baldonnell Stream are illuminated by artificial lighting and sections of the stream have been culverted. The diversion of the stream further east could allow for a completely dark corridor for bats to utilise the stream to commute and forage over an open watercourse.

4.1.3 Lighting of the General Area (street lighting, security lighting etc.)

Lighting for the proposed development will potentially impact on bat species in relation to commuting and foraging potential within the wider area which is used by lesser noctules and pipistrelles. Common pipistrelles and soprano pipistrelles will tolerate low levels of lighting, however excess lighting is likely to have an impact on bats.

In the absence of an appropriate lighting scheme, it is considered that the proposed development could have a Negative Impact on foraging and commuting bats.

4.2 Mitigation Measures

The following mitigation measures are recommended to reduce the potential impact of the proposed development on local bat populations:

4.2.1 Landscaping Plan

A Landscaping Plan has been developed for the proposed development, which includes for the buffers along the steam diversion, which will provide suitable habitats for bats (Please see Landscape Plan Appendix D of the EclA).

It is also recommended that the use of chemicals is avoided (weed killers, etc.) within the development zone.

4.2.2 Lighting Plan

Bats are adverse to excessive lighting, subsequently, impacts could occur as a result of an inappropriate lighting strategy. Therefore, it is important that lighting installed for the proposed development will be completed with sensitivity for local wildlife while still providing the necessary lighting for human usage.

The lighting to be installed as part of the proposed development will be for safety and security. Nevertheless, the lighting strategy has also been designed to mitigate against any potential impacts on nocturnal species in line with the Bat Conservation Trust (BCT) Guidelines on '*Bats and Artificial Lighting in the UK'* (BCT, 2018). The lighting strategy avoids excessive lighting. The following measures have been taken into consideration during the lighting layout design:

- Construction will be limited to daylight hours in order to minimise adverse effects on nocturnal fauna;
- Avoidance of excessive lighting;
- Light Emitting Diodes (LED's) will be used, and the brightness will be set as low as possible;
- Lighting will be aimed only where it is needed, with no upward lighting;
- Lighting will be directed away from landscaped areas;
- Lighting lux levels will not exceed 1.0 Lux along most of the diverted Baldonell stream; and,
- Lighting will be turned down / off when not required.

4.2.3 Monitoring

In order to ensure that the works in relation to the proposed development do not have significant impacts on bats, the following construction procedures and mitigation measures should be implemented. These measures are in line with the BCT Guidelines '*Bats and Artificial Lighting in the UK'* (BCT, 2018):

- Following the installation of the lighting for the proposed development, a suitably qualified Ecologist should undertake a further site inspection in order to check the lighting patterns and lux levels along the site boundaries to ensure there are no impacts to bats or other nocturnal species.

5 CONCLUSIONS

The bat surveys undertaken for the proposed development included a walkover of the lands within the survey area and dusk emergence / activity surveys. The walkover identified mature trees along the eastern boundary that could be suitable for roosting bats. These trees will not be removed due to the proposed development. These trees were subject to dusk emergence surveys; however, no bats were observed emerging from these trees and very low levels of bat activity were recorded during the first hour of the surveys.

Based on the low levels of bat activity within the survey area shortly after sunset and right before sunrise, it is considered unlikely that there are bats roosting within the immediate locality of the proposed development. The surveys did identify bats commuting and foraging along sections of the treelines / scrub areas, to the east and north of the Site, which follows the golf course area to the east.

Overall, the Site is considered to be of Low importance for roosting, commuting and foraging bats within the local area as the Site is partially illuminated at night and the Site is located within a built-up environment. However, it is considered that if the mitigation measures presented within this report are followed, the potential impacts on bats will be reduced and the overall impact from the proposed development on bats will be Negligible.

6 REFERENCES

BCT. (2018). *Bats and artificial lighting in the UK Bats and the Built Environment Series.* Bat Conservation Truct & Institute of Lighting Professionals.

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APPENDIX C

Biological Assessment of Baldonnell Stream at Profile Park

May 2021

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1. INTRODUCTION

It has been proposed that the existing channel of a section of the Baldonnell Stream be moved to the east of its current course. Sweeney Consultancy was contracted to assess the ecological condition and biological water quality of the section of channel in question and to comment on the proposed re-routing.

2. METHODOLOGY

Historical mapping was consulted to check the earlier course of the stream. Field surveys were undertaken on 04 May, 2021. The stream habitat quality was assessed, based on its physical nature and ecology. Grid reference of photographs were recorded using a hand-held GPS device and photographs were taken with a digital camera. A pond-net sample was taken at ITM 703847 730198, as indicated in Figure 1 and invertebrates were identified on the bankside to the lowest taxonomic level possible with the naked eye. The biological water quality was assessed following the most recent EPA Standard Operational Procedure for the Q-scheme methodology, which is based primarily on analysis of the aquatic invertebrate fauna.

The habitat quality of a drain along a field boundary to the east, to which it is proposed that the stream be re-routed, was assessed visually.

Fig. 1. Baldonnell Stream

3. RESULTS

The section of the Baldonnell Stream that is proposed to be moved has already been move c. 60m to the east of its original course indicated on the 1847-1842 6" Map, (see Figure 1). The current excavated channel is v-shaped in cross-section and steep-sided (Photo 1, Appendix 1), with shallow flow over gravel, cobble and silt, c. 3m below adjacent ground level. At crossing points, the stream passes through round culverts (Photo 2). Instream vegetation is

typical of small lowland streams of moderate flow, with *Apium nodiflorum* and *Berula erecta* widespread and some *Veronica anagalis-aquatica* and *Veronica beccabunga* also present.

The list of macroinvertebrate taxa identified to the level required for the Q-scheme and relative abundance of each taxon is presented in Appendix 3.

The Q-scheme values range from Q1 (grossly polluted) to Q5 (pristine). Suffixes of /0, indicating a suspected toxic effect, and *, indicating a siltation effect may be added.

At the Baldonnell Stream sampling site, EPA Indicator Group A (Very Pollution Sensitive) is absent, Group B (Relatively Pollution Sensitive) is represented by low numbers of the caddis families Limnephilidae, Lepidostomatidae and Sericostomatidae and the mayfly nymph *Alainites muticus*. Group C (Relatively Pollution Tolerant) dominates the fauna and Group D (Very Pollution Tolerant) is represented by *Asellus aquaticus,* which is common in abundance. Group E (Most Pollution Tolerant) is absent. This faunal community composition indicates a Q-value of **Q3**, which corresponds to Poor Ecological Water Quality, as defined by EPA.

No rare or protected species of flora or fauna was found.

The drainage channel farther to the east (Figure 1), to which the former wastewater treatment plant discharged, was not holding any water at the time of the fieldwork and was overgrown with herbaceous vegetation, mainly nettles, *Urtica dioica,* (Photo 3).

3. CONCLUSIONS AND RECOMMENDATIONS

The section of the Baldonnell Stream in question is currently in an artificially created channel, which was poorly created from an ecological perspective. The habitat quality could be improved by diverting the flow to the drainage channel to the east, where the adjacent hedgerow/treeline would provide mixed shade and allochthonous inputs.

The instream and riparian quality could be further improved by placement of occasional boulders within the channel to create variations in flow type and by stepping the slope between the stream and adjacent land. It any new culverts are to be included, there should be square in cross-section, rather than round.

Overall, re-routing the Baldonnell Stream to the proposed new course will not negatively impact on the aquatic and riparian habitat and could have some significant positive impacts.

APPENDIX 1

PHOTOGRAPHS

Photo 1

Photo 2

Photo 3

APPENDIX 2
INVERTEBRATES RESULTS

Relative abundance expressed as D: Dominant; N: Numerous; C: Common; F: Few; SS: Single Specimen

INDICATOR GROUP	POLLUTION SENSITIVITY/TOLERANCE	TAXON	ABUNDANCE
A	Very Pollution Sensitive	None Recorded	
B	Moderately Pollution Sensitive	Limnephilidae	F
		Lepidostomatidae	SS
		Sericostomatidae	F
		Alainites muticus	SS
C	Moderately Pollution Tolerant	*Polycelis sp.*	F
		Gammarus duebeni	D
		Baetis rhodani	N
		Philopotamidae	F
		Rhyacophila sp.	SS
		Polycentropodidae	F
		Elmis sp.	F
		Chironomidae (ex. *Chironomus*)	C
D	Very Pollution Tolerant	*Asellus sp.*	C
E	Most Pollution Tolerant	None recorded	

APPENDIX D

LEGEND

Site Boundary

Security Fence

HARD LANDSCAPE

PAVING

PAV1

PAV1.1

PAV2

PAV3

PAV4

FURNITURE AND STRUCTURES

Timber Bench

Spot Height

Berm

Stream

SOFT LANDSCAPE

Native Woodland Trees

Feature Trees

Wetland Trees

murray & associates

A	15/03/22	Request Further Information	HM	JW
0	27/07/21	Issue for Planning	HM	JW

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INXN DUB 15 16 Data Centre Development

Landscape Masterplan

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