Lucan Public Realm

Village Green & Main Street

Ecological Impact Assessment

Doherty Environmental Consultants Ltd

January 2022

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Document Stage	Document Version	Prepared by
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This report has been prepared by Doherty Environmental Consultants Ltd. with all reasonable skill, care and diligence. Information report herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

This report is prepared for South Dublin County Council and we accept no responsibility to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.

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1.0 INTRODUCTION

Doherty Environmental Consultants (DEC) Ltd. has been commissioned by South Dublin County Council to undertake an ecological impact assessment for proposed public realm enhancement works to the village green and Main Street at Lucan, Co. Dublin. The location of the village green and Main Street are shown on Figure 1.1 below while an aerial image of the area is shown on Figure 1.2.

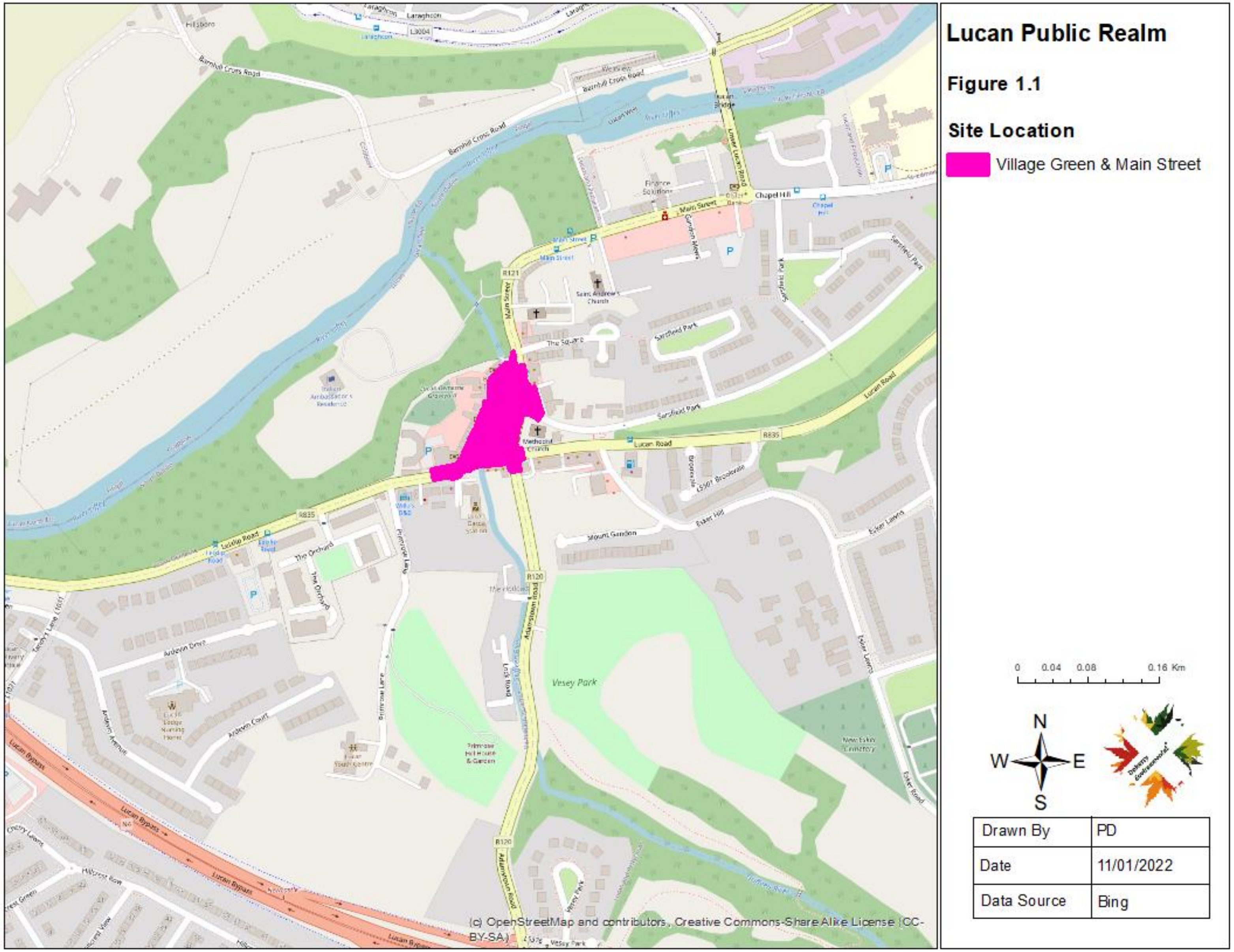
1.1 LEGISLATION

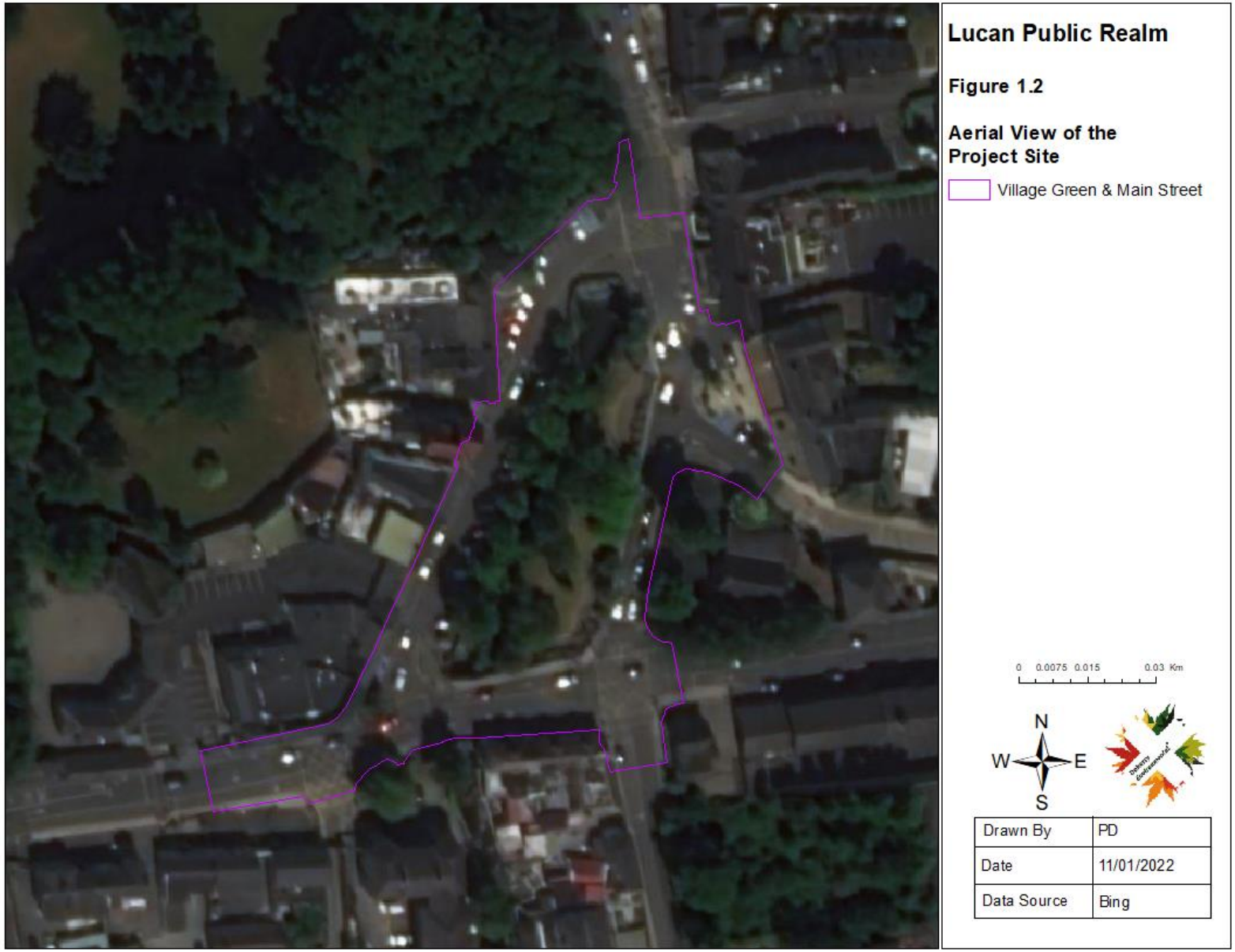
Flora and fauna in Ireland are protected at a national level by the Wildlife Act, 1976 and the Wildlife (Amendment) Act, 2000 and the Flora (Protection) Order, 1999 (SI 94/1999). They are also protected at a European level by the EU Habitats Directive (92/43/EEC) and the EU Birds Directive (79/409/EEC).

The transposition of the EU Habitats Directive by the European Communities (Birds and Natural Habitats) Regulations 2011 – 2021 (referred to as the Habitat Regulations) provides the legal basis for the protection of habitats and species of European importance in Ireland.

The legislative protection of habitats and species provided by the Habitats Directive has been implemented in Ireland and throughout Europe through the establishment of a network of designated conservation areas known as the Natura 2000 (N2K) network (with individual sites being referred to as Natura 2000 Sites). The N2K network includes sites designated as Special Areas of Conservation (SACs), under the EU Habitats Directive and Special Protection Areas (SPAs) designated under the EU Birds Directive. SACs are designated in areas that support habitats listed on Annex I and/or species listed on Annex II of the Habitats Directive. SPAs are designated in areas that support: 1% or more of the all-Ireland population of bird species listed on Annex I of the EU Birds Directive; 1% or more of the population of a migratory species; and more than 20,000 waterfowl. Under the National Habitat Regulations all designated Natura 2000 Sites are referred to as European Sites.

The Wildlife Act 1976 (as amended) also provides for the statutory designation of nature conservation areas. These areas are referred to under the Wildlife Acts as Natural Heritage Areas and are designated in areas that support habitats and/or species of national importance.


Lucan Public Realm
Figure 1.1
Site Location
Village Green & Main Street
0 0.04 0.08 0.16 Km
N
W
E
S
Drawn By PD
Date 11/01/2022
Data Source Bing
(c) OpenStreetMap and contributors, Creative Commons-Share Alike License (CC-BY-SA)


Lucan Public Realm
Figure 1.2
Aerial View of the Project Site
Village Green & Main Street
0 0.0075 0.015 0.03 Km
N
W
E
S
Drawn By PD
Date 11/01/2022
Data Source Bing

Other relevant national legislation concerning the protection of flora, fauna and fisheries include the:

- Planning Act 2010;
- European Communities (Quality of Salmonid Waters) Regulations, 1988;
- The Freshwater Fish Directive 1978 (78/659/EEC); and
- The Surface Water Regulations, 2009.

2.0 PROJECT DESCRIPTION

2.1 OVERVIEW

2.2 EXTENT OF THE WORKS, MAIN STREET:

All the area from its southern junction at Lucan Road/Griffeen bridge as far as its northern junction at Dispensary Lane/Vesey bridge and from the building line on its western side to the flood wall along the Griffeen river on its eastern side.

2.3 NATURE OF THE WORKS:

1. The demolition and removal of the current street finishes consisting of Tarmacadam, concrete and pre-cast paviours, along with the concrete kerbing and sundry street furniture are to be removed. This will be done with great care where the finishes meet the buildings and walls etc., and around the existing trees along the Griffeen river wall.
2. The removal of two trees on the western side, one outside the Bank of Ireland at the northern and the other outside AIB at the southern end.
3. The overhead power lines are to be removed and rerouted through underground ducting and a new street drainage system is to be installed. New ducting will be provided for public lighting and utilities. Existing manhole covers and services chambers will be reset and levelled. Natural drainage will be installed along the existing tree line beside the Griffeen river where feasible, depending on root conditions and direction.

4. Ducting will be provided to the new carparking spaces for their potential conversion to EV charging spaces if required.
5. A concrete slab will be placed over the utilities layer and new finishes provided to the finished levels. These finishes will include asphalted areas, stone and paving and will be to 'shared surface' standards, i.e. generally without kerbs or changes in level.
6. The reduction of parking spaces from 37 to 26 bays in the Main Street area, the addition of a bus stop.
7. The addition of new lighting poles, of benches, bins, and fixed and removable bollards and bicycle parking stands at various locations as shown on the drawings.
8. The removal of the stone infill between the piers of the former horses' watering point beside the weir and its replacement with a toughened glass screen.

2.4 DESIGN RATIONALE:

At present this street is predominantly weighted towards car use. It serves primarily as a public carpark and the double line of parking (arguably two-and-a half lines because of the 45˚parking on the eastern side) is a deterrent to pedestrian movement across the thoroughfare towards the Griffeen river side. As a result the Green park generally goes unnoticed and there is no amenity incentive to the street.

The design intent is to make this end of Main Street a better place for all of its users. This means reducing the number of car journeys and reducing the number of carparking spaces so that more space can be provided for pedestrians and cyclists. The reduced number of car spaces can have a higher turnover by reducing the staying time so that the nett loss in space numbers will be compensated. Additional spaces are being proposed within a minute's walk of the area, as per the wider parking map provided with this submission.

By eliminating overparking and through rationalizing street furniture, lighting and services, the street can be largely decluttered. This will encourage more pedestrian interaction with the wider urban environment and will make the street feel safer, particularly for the elderly, small children etc.

By proposing a shared surface to eliminate kerbs and abrupt changes to levels and surfaces we can make the street more universally accessible, for wheelchair users, for the seeing-impaired and for those of reduced mobility. By providing the same surface for all users, drivers,

pedestrians, cyclists and so on, there is a shared sense of responsibility towards safely inhabiting a shared space, where no user group has the upper hand and all have equal status.

2.5 EXTENT OF THE WORKS, VILLAGE GREEN:

All of the current area of the Green between the Griffeen river, Lucan Road and Dispensary Lane including the footpath to the Lucan Road on its southern end and the footpath at the Vesey bridge/Dispensary Lane junction at its northern end.

2.6 NATURE OF THE WORKS:

The removal of 7 no. existing trees, the retention of 2 no. existing trees (one of which - the Christmas tree - is to be replanted) and the addition of 5 no. new trees along with approx. 45m of new flowering hedge along Dispensary Lane, and new planting throughout, including an area of wildflower meadow and an area of reinforced grass.

The excavation to a maximum depth of approx. 1.8m of new amphitheater steps and seating providing access to the Griffeen river. The retention of the existing bankside on the river side of the amphitheatre footprint or other such barrier until all substantive excavation works and amphitheatre installation works are implemented. The retention of such a barrier between the footprint of the amphitheatre excavations and installation works will eliminate the potential for interactions between these works and the Griffeen River.

The excavation to approx. 1.2m of a new seating area beside the Griffeen river facing Vesey weir and bridge.

The widening of the footpath at the southern end of the Green with new steps into the Park.

The construction of a metal frame bandstand structure capable of taking a temporary roof covering.

The rerouting of the footpath on Dispensary Lane through the Green by means of a ramped path running inside the planted boundary and connecting to the extended footpath on the southern end.

The replacement of the metal guarding and handrail along the Griffeen River edge with a glass and metal guarding, including the protection of the amphitheater seating ends.

The removal of the rubble stone wall and capping forming the boundary to the southern end of the Green and its reconstruction in a changed configuration to form a new western boundary to the widened footpath under these proposals, as well as stone retaining walls to the new amphitheatre seating within the park.

2.7 DESIGN RATIONALE

This pocket park known as Lucan's Village Green is currently isolated in the middle of some very trafficked thoroughfares with little sense of connection to its surroundings. Its most immediate urban counterpoint on the far side of the Griffeen river, Main Street, is cut off from it visually through two lines of trees, and two rows of parking. On the Dispensary Lane side and towards Lucan road on the southern end the park level is lower and a boundary wall and planted borders serve to further isolate it physically and visually from these surroundings. The footpath on the Dispensary Lane side is narrow and feels unsafe in heavy traffic. On the southern end the footpath is a bit wider and the park is visible but no direct access is possible. From the Main Street side, even when standing along the flood wall between the trees, the Green is obscured by a mix of planting and trees, mostly unplanned which further removes it from any connection to the environment of Main Street. Within the park itself, the pergola with its Wisteria overgrowth tends to create a further barrier both visual and physical. The Green's strengths are those qualities that have become obscured in recent times: its continuous frontage to the river Griffeen and Main Street; its sense of openness towards Vesey bridge and its sunken sense of intimacy with its back turned to the traffic.

The design proposals seek to restore the Green's more direct relationship to Main Street. This separation started with the need for parking followed more recently by the requirement for flood defences. To overcome these barriers to connection the design proposes first to encourage people to cross Main Street to be closer to the Green and the river and then to provide opportunities for those on the park side to engage with the river. The activities of one group can be observed by the other, and the Green's rediscovered presence and proximity will encourage those using the Centra to bring their sandwich to the river's edge or those on Main Street to lean on the flood wall while watching the ducks in the park.

In the interests of increasing the visual connections between both elements it is proposed to remove a number of trees which currently screen the park from Main Street. These trees are a mature weeping willow and a semi-mature Chestnut at the southern end, and along the river bank, a young Sycamore and a number of relatively young birches. A mature Birch is being retained and the Coniferous 'Christmas tree' is being moved to a new location a few metres away. In lieu of these it is proposed to plant a Sweetgum, a Hawthorn and a number of Wild Plum trees. These are trees that change appearance and colours throughout the year, adding a strong seasonal flavour to the Green.

The Green will become a necessary route for pedestrians from Sarsfield Park or the upper end of Main Street because of the displacing of the footpath on the western side of Dispensary Lane. The widening of the footpath on the southern end just beside Griffeen bridge will provide a welcoming platform for entry to the park as well as a gateway arrival point to Lucan village for cyclists and for public transport. Figure 2.1 provide an illustration of the extent of the works at Main St. while Figure 2.2 provides a section of the amphitheatre seating.

Figure 2.1: View of village green and Main Street public realm enhancements

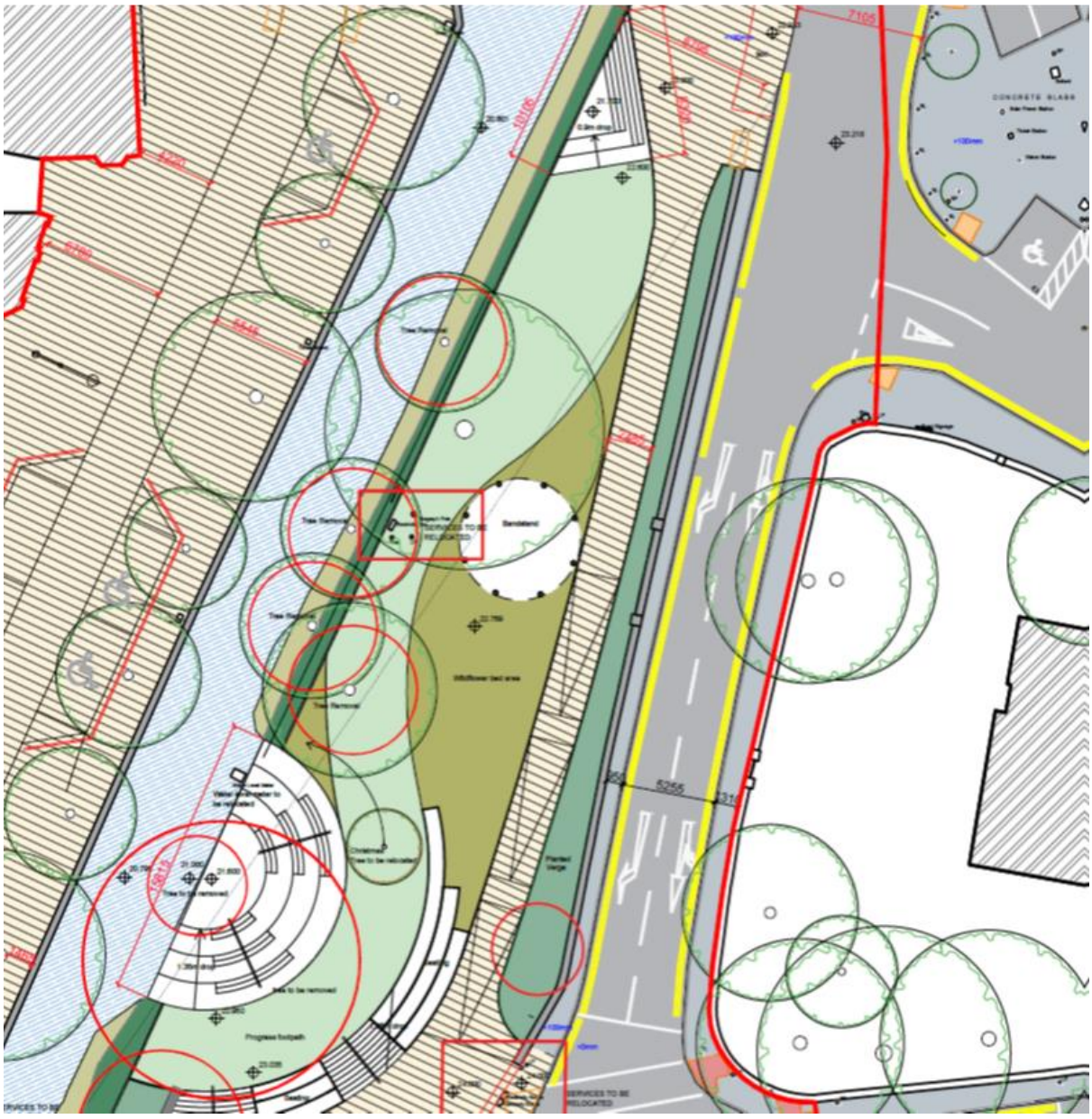
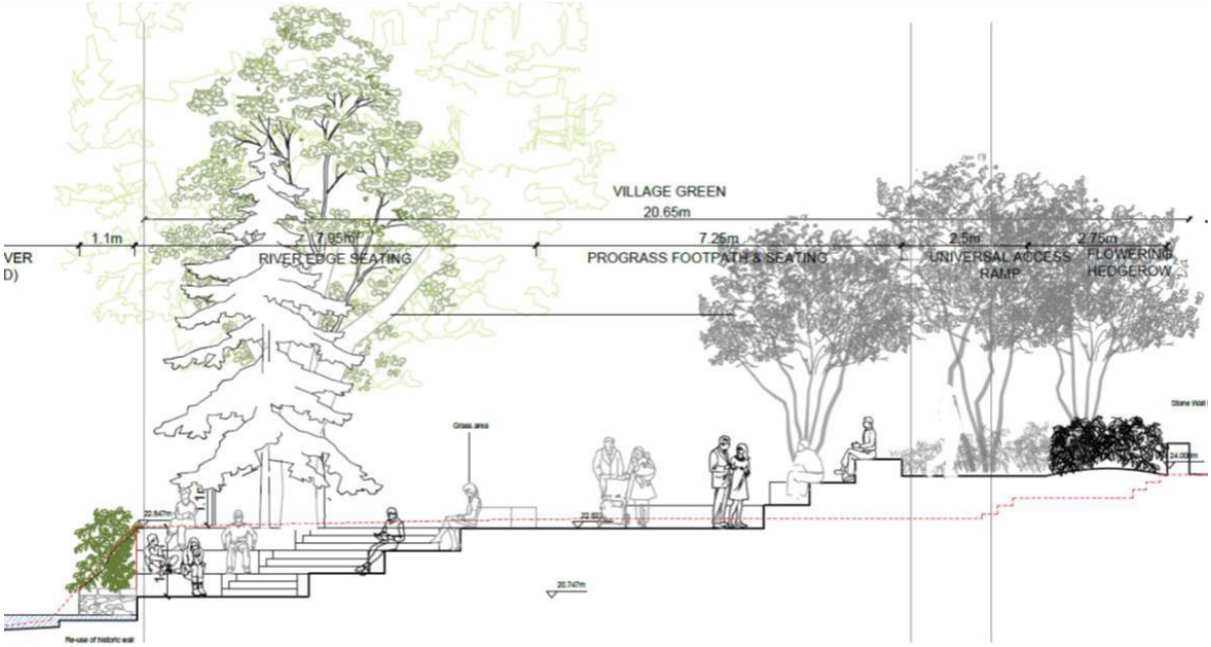


Figure 2.2: Section of the proposed amphitheatre at the village green



3.0 METHODS

3.1 DESKTOP ASSESSMENT

A desktop assessment of the village green and Main Street has been completed for the project. Historical maps and current satellite imagery for the project area was reviewed to identify previous and existing land cover in the area. Baseline published information for designated conservation areas, geology and hydrology was also reviewed. The National Biodiversity Data Centre (NBDC) records for rare, threatened and protected species was consulted and all records for such species within or adjacent to the project location was collated.

3.2 EXTENDED PHASE 1 HABITAT SURVEY

Site surveys were completed at the project sites on the 13th April, 30th May, 13th July, and 17th November 2021. The methodology used during this survey was based on the Heritage Councils *Best Practice Guidance for Habitat Survey and Mapping* (2010). The classification of habitats

recorded during the field survey is based on the Heritage Council's *A Guide to Habitats in Ireland*.

The *Guide to Habitats in Ireland* classifies habitats according to a hierarchical framework with Level 1 habitats representing broad habitat groups, Level 2 representing habitat sub-groups and Level 3 representing individual habitat types. The Phase I Field Survey focused on identifying habitats to Level 3 of the *Guide to Habitats in Ireland*.

The annotation of vegetation occurring within sites was undertaken using the DAFOR scale. This scale refers to plant species in terms of dominance, abundance, frequency, occasional and rare (DAFOR). Plant nomenclature in this report follows Webb (1996) for vascular plants and Smith (2004) for mosses.

A survey for field signs indicating the presence of otters or other protected non-volant mammal species such as Irish stoat and badgers was undertaken during the field surveys. This survey was undertaken during the daytime and particular attention was given to habitat features normally associated with otters. These included the bankside of the Griffeen River that flows through the project site. Any mammal field signs typical of otter activity were recorded during the surveys. These field signs, as described in Neal & Cheeseman (1) and Bang & Dahlstrom (2), include:

- mammal breeding and resting places, such as setts, holts, couches, lairs;
- pathways;
- prints;

(1) Neal, E., & Cheeseman, C., (1996). 'Badgers'. Poyser Natural History, London.

(2) Bang, P., & Dahlstrom, P., 'Animal Tracks and Signs'. Oxford University Press, Oxford.

- spraints and faecal deposits;
- latrines (and dung pits used as territorial markers);
- prey remains and feeding signs (snuffle holes);
- hair; and
- scratch marks.

All bird species seen using the site (as opposed to simply flying over it) were recorded.

An appraisal of habitats occurring within the project site for their potential to support bat species was completed during the initial field survey in April 2021. A manual bat survey was completed on site on the 30th May and 13th July during the 2021 bat activity seasons. The surveys were completed to sample the bat species occurring at or in the vicinity of the village green and Main Street. The surveys involved walking a continuous transect through the village green, around the boundary of the village green and along Main Street and adjacent road corridors surrounding the village green. The bat surveys were completed using an Echo-Meter Touch Pro bat detector. The bat surveys were completed during nights of optimal foraging conditions for bats.

Trees within the village green and Main Street were appraised for the potential to support roosting opportunities for bats and particular focus was given to the bat roost potential of the 7 no. trees that are to be removed as part of the project.

3.3 ECOLOGICAL EVALUATION

Commentary on the ecological value of habitats is provided in Section 4 of this report.

The nature conservation value of habitats and ecological sites occurring within the proposed site are based upon an established geographic hierarchy of importance as outlined by the National Roads Authorities (NRA, 2009). The outline of this geographic hierarchy is provided below and this has been used to determine ecological value in line with the ecological valuation examples provided by the NRA (see NRA, 2009). The geographic evaluation hierarchy is as follows:

- International Sites (Rating A);

- National Importance (Rating B);
- County Importance (Rating C);
- Local Importance (higher value) (Rating D); and
- Local Importance (lower value) (Rating E)

The evaluation of birds within the project site is based on the methods outlined by Percival (2003).

3.4 IMPACT ASSESSMENT

3.4.1 Impact Magnitude

Impact magnitude refers to changes in the extent and integrity of an ecological receptor. The IEEM (2006) defines integrity of designated conservation areas as "the coherence of the ecological structure and function across the area that enables it to sustain the complex of habitat and/or the levels of populations of the species for which it was classified". For non-designated sites this can be amended to: "the coherence of ecological structure and function, that enables it (the site or populations supported by the site) to be maintained in its present condition'. For the purposes of this assessment the impact magnitude is influenced by the intensity, duration, frequency and reversibility of a potential impact and is categorised as follows:

High magnitude impact: that which results in harmful effects to the conservation status of a site, habitat or species and is likely to threaten the long-term integrity of the system.

Moderate magnitude impact: that which results in harmful effects to the conservation status of a site, habitat or species, but does not have an adverse impact on the integrity of the system.

Low magnitude impact: that which has a noticeable effect but is either sufficiently small or of short duration to cause no harm to the conservation status of the site, habitat or species.

Imperceptible: that which has no perceptible impact.

Positive: that which has a net positive impact for the conservation status of a site, habitat or species.

3.4.2 Impact Significance

The significance of impacts is determined by evaluating the nature conservation value of the site, habitat or species concerned together with the magnitude of the impacts affecting the system. The more ecologically valuable a receptor and the greater the magnitude of the impact, the higher the significance of that impact is likely to be. Table 3.1 outlines the levels of impact significance to be used during the assessment of impacts. The probability of an impact occurring will also be outlined when defining the significance of impacts.

Table 3.1: Impact Assessment Matrix

Nature Conservation Value	Magnitude of Potential Impact			
	High	Moderate	Low	Imperceptible
International	Severe	Major	Moderate	Minor
National	Severe	Major	Moderate	Minor
County	Major	Moderate	Minor	Minor
Local	Moderate	Minor	Minor	Negligible
Low	Minor	Negligible	Negligible	Negligible

Impacts to bird species recorded breeding within the project site is based on the methods outlined in Percival (2003).

4.0 RESULTS

4.1 REVIEW OF HISTORICAL MAPS

The Taylor South historical map of 1816 depicts the presence of the Village Green, with an area of land along the right-hand bankside o the Grifeen River, bounded to the east and south by roads (which are now the R120 and the R835 respectively. Rocque's historical map from 1760 does not depict the presence of the village green.

4.2 GEOLOGY OVERVIEW

The bedrock underlying the site is a mix of limestone and shale. The subsoils are dominated by alluvium derived from the River Liffey while the existing land cover is dominated by artificial made ground. The Village Green is situated in an area of extreme groundwater vulnerability.

4.3 HYDROLOGY

The Griffeen River forms the western boundary of the Village Green and flows through the project area. The Griffeen River has been recently classified at poor water quality by the EPA and has previously been classified by Inland Fisheries Ireland (IFI) at moderate ecological status (Kelly et al., 2011). The water quality of the River Liffey downstream of the project site has been classified by the EPA at Q3-4 which is representative of moderate water quality.

4.4 DESIGNATED CONSERVATION AREAS

There are no European Sites (SACs or SPAs) or Natural Heritage Areas (NHAs) occurring in the vicinity of the Village Green and the Liffey Valley pNHA is located approximately 130m to the north. The Griffeen River forms a pathway connecting the Village Green to the pNHA and the River Liffey. Figure 4.1 shows the location of the Liffey Valley pNHA and the hydrological pathway established by the Griffeen River with respect to the project site.


Lucan Public Realm
Figure 4.1
Aerial View of the Project Site
Village Green & Main Street
River Liffey
Griffeen River
Liffey Valley pNHA
0 0.02 0.04 0.08 Km
N
W
E
S
Drawn By PD
Date 11/01/2022
Data Source Bing

4.5 RECORDS FOR FAUNA & FLORA

The records of rare, threatened and protected fauna held by the NBDC were collated in December 2021. The area shown on Figure 4.2 below was searched for such records and all such species occurring within this area are listed in Table 4.1 below. The area shown on Figure 4.2 below encompasses the village green and Main Street site as well as the surrounding area and the Liffey Valley park.

Figure 4.2: Area of Search for Fauna and Flora Records

Table 4.1: List of Rare, threatened and or protected species occurring within the area of search

Species Type	Species	Record Date
bird	Little Egret (Egretta garzetta)	12/10/2017
flowering plant	Green Figwort (Scrophularia umbrosa)	10/07/2020
terrestrial mammal	Daubenton's Bat (Myotis daubentonii)	16/05/2008
terrestrial mammal	Lesser Noctule (Nyctalus leisleri)	02/08/2007

terrestrial mammal	Soprano Pipistrelle (Pipistrellus pygmaeus)	16/05/2008

Records of non-native invasive species were also collated and are presented in Table 4.2 below.

Table 4.2: Records for Non-native invasive species

Species Type	Species	Record Date
flowering plant	Indian Balsam (Impatiens glandulifera)	20/07/2019
flowering plant	Sycamore (Acer pseudoplatanus)	12/05/2018
terrestrial mammal	Eastern Grey Squirrel (Sciurus carolinensis)	05/09/2018

4.6 FIELD SURVEY RESULTS

4.6.1 Habitats

The habitats occurring at the village green and Main Street are described below and the extent and distribution of each of these habitats is illustrated on the habitat map, presented as Figure 4.3 below. The following habitats occurring within the village green and Main Street area:

Griffeen River (FW2): the section of the Griffeen River flowing through the village green and Main Street project area is representative of a lowland depositing river. This section of the river is artificial in nature with no example of natural bankside morphology remaining. The left-hand bankside is comprised of a concrete and masonry formal flood wall while the left-hand bankside is comprised of a lower masonry wall at ebb flow levels that is colonised by low herbaceous vegetation as well as a number of birch trees. The section of the Griffeen supports a resident population of mallards. Other bird species frequenting the river adjacent to the village green and Main Street include Black-headed Gull and Herring Gulls. The Griffeen River is the River Liffey's largest tributary and functions as an important corridor within South Dublin. The river is known to support brown trout as well as three-spined stickleback, ell and roach. The Griffeen River is also known to support otters and white-clawed crayfish along its course upstream of Lucan. The water quality of the Griffeen River is monitored by the EPA at Main Street bridge at the downstream end of the village green and Main Street area. The most recent water quality

for the river is from 2019 when a Q-value of 3, indicating poor water quality status was recorded. Inland Fisheries Ireland have previously classified the Griffeen River to be of moderate ecological status (Kelly et al., 2011). Given its role as an important ecological corridor as well as provided habitat upstream of Lucan for a range of protected species the Griffeen River is considered to be of high local to county level ecological value and nature conservation interest (Rating D – C).

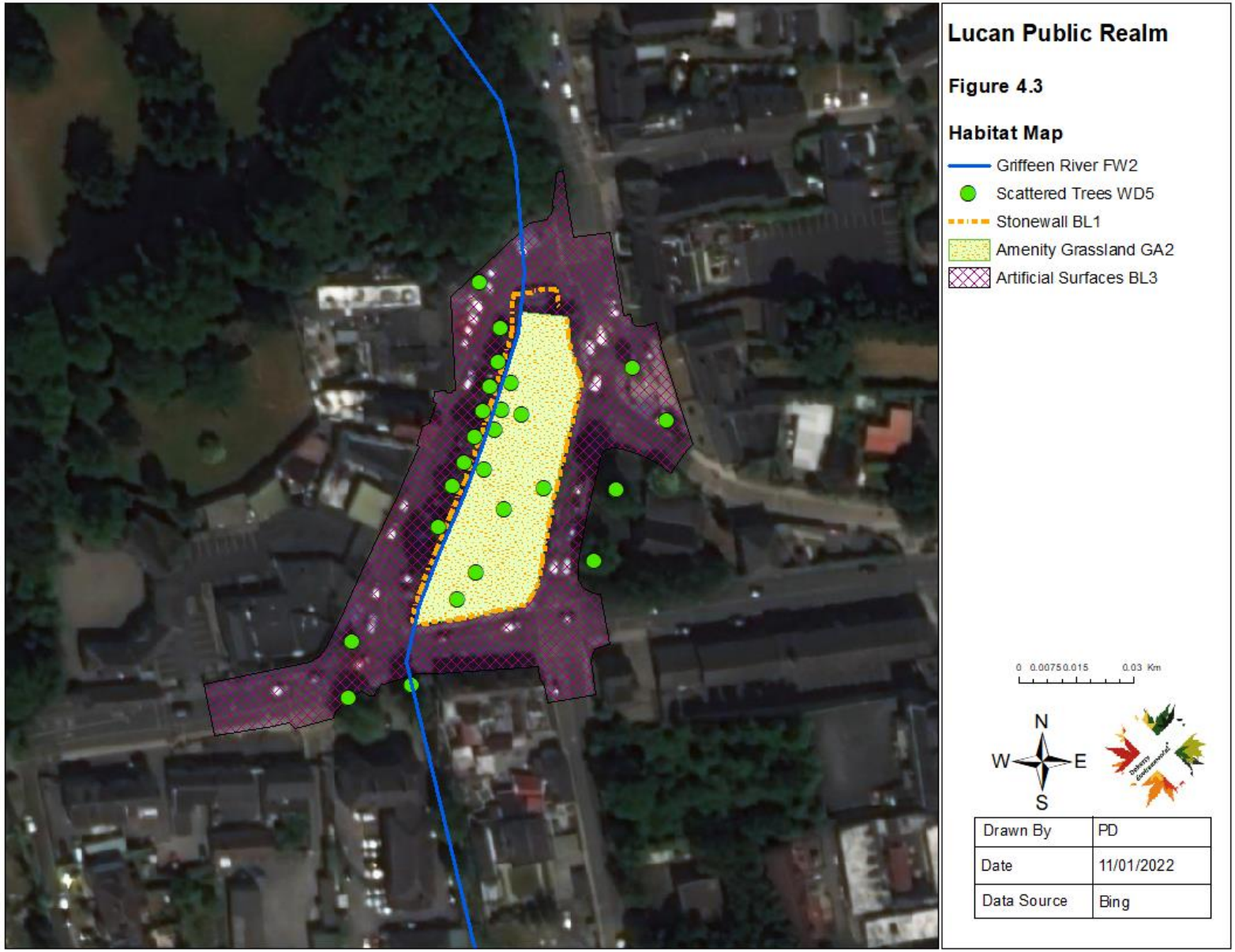
Artificial surfaces (BL3) in the form of buildings and paved areas. These are artificial habitats that do not support vegetation or fauna. This habitat is of low ecological value and nature conservation interest (Rating E).

Amenity grassland (GA2) – the grassland habitat occurring within the village green is representative of amenity grassland. It supports a restricted range of grasses and herbs and is intensively managed for recreational purposes. The habitat is of low ecological value and nature conservation interest (Rating E).

Treelines (WL2) – a minor treeline in the form of semi-mature birch occurs along the right-hand bankside of the Griffeen River. These trees do not support nesting birds and do not have potential to support roosting bats. This habitat is of low ecological value and nature conservation interest (Rating E).

Scattered Trees (WD5) – the village green supports a scattering of trees that include red horse-chestnut (Aesculus carnea), weeping willow (Salix alba); Norway spruce (Picea abies); Mountain ash (Sorbus acuparia); birch (Betula pubescens) and sycamore (Acer pseudoplatanus). Scattered trees also occur along the publich footpath to the east of the village green. Here hornbeam (Carpinus betulus) occur as relatively recently planted and immature specimens. The scattered trees in within the village green provide foliage cover and habitat for birds. Rook nests were identified in two trees, both of which are to be retained. None of the 7 trees that are to be removed supported bird nests during the 2021 breeding bird season. The scattered tree habitat is of low to moderate ecological value and nature conservation interest (Rating E - D).

Flower beds (BC4) – landscaped flower beds are maintained within the ground of the village green. These flower beds provide some foraging habitat for invertebrates including bee species. The flower beds are of low ecological value and nature conservation interest (Rating E).


Lucan Public Realm
Figure 4.3
Habitat Map
Griffeen River FW2
Scattered Trees WD5
Stonewall BL1
Amenity Grassland GA2
Artificial Surfaces BL3
0 0.0075 0.015 0.03 Km
N
W
E
S
Drawn By PD
Date 11/01/2022
Data Source Bing

4.6.2 Fauna

An overview of the fauna supported by the site is outlined in the following sections. The nature conservation value of the site in supporting populations of fauna is also outlined in the following sub-section.

4.6.2.1 Non-Volant Mammals

No field signs indicating the presence of non-volant mammals were recorded during the surveys at the Liffey Promenade.

4.6.2.2 Volant Mammals – Bat

No bats were recorded as active within the village green and Main Street area during bat surveys completed for the project.

The trees occurring within the village green and Main Street are overall of low potential to support roosting bats with limited preferred roost features for bats identified on trees. The 7 trees to be removed as part of the project do not support preferred roost features for bats and are of negligible bat roost potential.

4.6.2.3 Birds

Mallard are resident along the section of the Griffeen River flows through the village green and Main Street area. Other waterbird species occurring include Black-headed Gull and Herring Gulls. Rook nest were supported by two trees to be retained within the village green during the 2021 breeding season. Commonly occurring songbirds such as robin, blackbird, great tit, chaffinch, pied wagtail, wren, rook, jackdaw and wood pigeon were observed within the village green and Main Street area during field surveys.

5.0 IMPACT ASSESSMENT

5.1 CONSTRUCTION PHASE

5.1.1 Designated Conservation Areas

The nearest conservation area to the project site is the Liffey Valley pNHA, which is located approximately 130m to the north of the village green and Main Street area. The Griffeen River forms a hydrological pathway connecting the project site to the pNHA. No other pNHAs or NHAs occur in the wider area surrounding the project site or are connect to it via pathways.

No European Sites occur in the wider area surrounding the project site and the potential for impacts to European Sites has been examined as part of a screening report for Appropriate Assessment that accompanying the Part VIII planning application.

Given the separation distance of the project site from the Liffey Valley pNHA there will be no potential for the project to result in direct impacts to the pNHA. The potential for indirect impacts to the pNHA could arise in the event of the release of contaminated surface waters from the footprint of the project during works to the Griffeen River and the conveyance of such deleterious substances downstream to the River Liffey and the pNHA. The sources of contaminated surface water runoff generated during works will potentially include silt-laden surface water associated with runoff from denuded areas within the village green during excavations, for instance of the amphitheatre, the accidental spillage of hydrocarbon fuels and other construction related solutions and/or the discharge of any wet cement that will be required for the installation of the amphitheatre. As noted above the status of the Griffeen is currently assessed at poor water quality while the River Liffey downstream is also perturbed being classified as moderately polluted. The discharge of any of the above deleterious substance to the Griffeen and on downstream to the Liffey will have the potential to combine with existing sources of water quality pressure to the river to result in localised negative impacts to water quality along the River Liffey and within the pNHA.

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5.1.2 Habitat Loss

The works will result in the loss of 7 trees within the project area. These trees have been categorised as category C and U trees for their arboricultural value. In terms of their ecological value these trees are considered to be of low ecological value and nature conservation interest and do not provide nesting or roosting habitat for birds or bats. The loss of these trees will represent an impact of negligible significance.

The provision of the amphitheatre within the village green will result in the loss of a small area of amenity grassland as well as a minor section of artificial bankside along the Griffeen River's right-hand bankside. These habitats are of low ecological value and nature conservation interest and their loss will represent an impact of negligible significance.

Other works along Main Street will replace and upgrade existing artificial surfaces, thereby result in no change in land cover or habitat.

5.1.3 Disturbance to Habitats

As outlined above under Section 5.1.1 the project will have the potential to result in the discharge of deleterious materials to the Griffeen River and the River Liffey downstream. The discharge of such material to these watercourses will have the potential to result in localised impacts to instream habitats downstream of the project site.

5.1.4 Disturbance to/Loss of Habitat for Terrestrial Fauna

Construction works will generate noise and additional human activity immediately adjacent to the Griffeen River. The principal fauna receptors along this section of the river are birds in the form of mallard and gull species. These species are well habituated to high levels of human activity and are considered to be resilient to any disturbance generated as a result of construction works, the main element of which will be the installation of the amphitheatre along the right-hand bankside of the river. The works associated with this element of the project will be of a temporary nature and overall, the disturbance impact to birds will represent an impact of low significance.

The construction works will not have the potential to result in disturbance to non-volant mammals such as otters as these species are not reliant on this area. The works will not result in negative impacts to bat species.

5.1.5 Disturbance to Aquatic Receptors

The main element of the works that will have the potential to result in disturbance to aquatic receptors relates to the provision of the amphitheatre at the right-hand bankside of the Griffeen River towards the south of the village green. This will be installed along a c. 15m stretch of the right-hand bankside of the river. The lower Griffeen River is already channelised at this location and the works will involve changes to levels to the east of the river so that they grade gently towards river.

In the absence of appropriate safeguards and construction practices the potential will exist for the release of deleterious materials to the Griffeen River during the installation of the amphitheatre. The release of such materials, as described in Section 5.1.1 above will have the potential to undermine water quality and instream habitats and will in turn have the potential to result in disturbance to aquatic fauna including fish species and invertebrates that are relied upon as a foraging resource by bird species. Disturbance to instream habitats and the fauna supported by the Griffeen River will have the potential to result in temporary to short term moderate negative impacts to this habitat for high local/county level importance.

5.2 OPERATION PHASE

5.2.1 Habitat Loss

The operation phase of the development will not result in any further habitat loss within the project site.

5.2.2 Impacts Terrestrial Fauna

The operation phase of the project is not predicted to have the potential to result disturbance to protected terrestrial mammals or bird species.

New light poles will be provided as part of the project along Main Street. This area is already subject to high levels of night time illumination and the provision of additional lighting will not

have the potential to result in significant changes to baseline night lighting. In addition sensitive nocturnal species such as bats were not found to be reliant on the Village Green and Main Street area. As such the operation phase of the project will not have the potential to result in negative impacts to bat species.

Once works are completed the village green and Main Street area will continued to be used as town centre and recreational spaces and as such there will be no change in land use during the operation phase that could result in negative impacts to fauna.

5.2.3 Impacts to Aquatic Fauna

The ongoing use of the project area as a town centre and recreational area will not have the potential to result negative impacts to aquatic habitats and water quality and the aquatic species supported by the Griffeen River or the River Liffey downstream.

6.0 MITIGATION MEASURES

The mitigation measures outlined in the following sections aim to ensure that a best practice approach during works is implemented.

6.1 MEASURES TO MINIMISE IMPACTS TO HABITATS & FAUNA

All construction work will be confined strictly to within the direct land-take of the proposed works.

Construction machinery will be restricted to site roads and the footprint of the proposed scheme.

Replacement and enhancement tree planting will be undertaken as part of the proposed landscaping for the village green and Main Street will ensure that the project does not result in any net loss of tree cover within the area. The provision of wildflower meadows and pollinator friendly vegetation within the village green as part of the overall landscaping of this area will have the potential to result in positive impacts for biodiversity through the provision of enhanced foraging resource of invertebrates.

6.2 MANAGEMENT OF SURFACE WATER

In order to minimise the potential for pollution to storm waters generated on site the proposed approach to surface water management during the operation phase, as outlined in Section 2.2 above, will be implemented in full.

The management of surface water during the construction phase will adhere to the recommendations of the CIRIA guides *Control of Water Pollution from Construction Sites* (2001) and *Control of Water Pollution from Linear Construction Projects* (2006).

During construction key requirements for control of chemical pollution risk will include:

- Storage – all equipment, materials and chemicals will be stored away from any watercourse. Only minor quantities of fuels and other aqueous construction solutions will be held on site and these will be contained in bunded and secured containers held within a mobile COSHH store on site.
- The integrity and water tightness of all the bunding structures and their resistance to penetration by water or other materials stored therein shall also be tested and demonstrated.
- All fuel oil fill areas will have an appropriate spill apron.
- Vehicles and refuelling – standing machinery will have drip trays placed underneath to prevent oil and fuel leaks causing pollution. Where practicable, refuelling of vehicles and machinery will be carried out on an impermeable surface in designated areas, well away from any surface watercourse;
- Maintenance – maintenance to construction plant will not be permitted on site, unless vehicles have broken down necessitating maintenance at the point of breakdown. All necessary pollution prevention measures will be put in place prior to commencement of maintenance in this instance;
- Concrete - No wet concrete operations will be required as part of the project works.

- Storm water will be directed to drains installed as part of the surface water management plan;

6.3 MEASURES TO SAFEGUARD THE GRIFFEEN RIVER DURING WORKS

During the excavations and installation of the amphitheatre an impermeable barrier will be maintained between the footprint of the amphitheatre and the river. This will eliminate the potential for interactions between the amphitheatre works and the river while it is in place. Once the works are completed, the barrier will be removed and the amphitheatre will be connected to the river bank. In addition to this, all works for this element of the project will adhere to Inland Fisheries Ireland best practice construction works at watercourses.

The works associated with the amphitheatre will be undertaken during the and summer months, July to September, during drier conditions when river flows are expected to be lower. It is predicted that the works associated with the provision of the amphitheatre will be completed within a maximum 2-month period during the July to September time-frame. The works will be undertaken in as short a timeframe as possible to minimise disturbance and the exposure of denuded soil material adjacent to the river.

Material removed during excavations (which will be to a maximum depth of 1.8m) for the amphitheatre will not be stored within 10m of the river.

It is anticipated that the excavations for the footprint of the amphitheatre will be completed within 14 days. Once completed the excavated base will be immediately lined prior to the installation of the new amphitheatre.

All material to be use for the provision of the amphitheatre will be pre-cast, dry materials and will be fitted in place on site. This will avoid the need for the use of wet concrete and will in turn eliminate the risk of emission of cement-based materials to the river.

Prior to commencing the works associated with the installation of the amphitheatre the contractor will be required to prepare a method statement. The method statement will be reviewed by a construction phase Ecological Clerk of Works, who will be appointed by South Dublin County Council to oversee these works. The contractor will be required to liaise with Inland Fisheries Ireland (IFI) and to ensure that the IFI are satisfied with the approach to the

works prior to their commencement. The works at the river bankside associated with the amphitheatre installation will be overseen by a Ecological Clerk of Works who will be responsible for ensuring that all works are implemented as per the approach agreed to in the method statement.

The removal of the low number of trees along the bankside of the river will be undertaken by hand by tree surgeons, thereby ensuring that a sensitive approach to tree removal that avoids disturbance to the bankside is put in place.

Only minor quantities of fuels and other aqueous construction solutions will be held on site and these will be contained in bunded and secured containers held within a mobile COSHH store on site.

The above measures will form part of the method statement of works associated with the public realm works and particularly those associated with the installation of the amphitheatre. The completion of works in line with IFI guidelines and the requirement to liaise with and satisfy all IFI requirements with regard to these works prior to their commencement will ensure that a robust approach to the works is implemented such that they do not pose a risk to water quality and fisheries supported by the Griffeen River.

6.4 EVALUATION OF MITIGATION MEASURES

The mitigation measures outlined above for the construction and operation phase of the project are taken from established best practice guidelines that have been successfully implemented for a wide range of project-level infrastructural developments. These measures have undergone extensive and rigorous monitoring for their effectiveness at development sites where they have previously been applied to ensure adverse environmental impacts are avoided.

7.0 RESIDUAL IMPACTS

In the absence of mitigation measures the proposed works at the village green and Main Street will have the potential to result in negative impacts to biodiversity receptors associated with the release of deleterious materials to the Griffeen River during the construction phase. The implementation of the best practice construction measures as outlined above will ensure that the project does not result in disturbance to the Griffeen River or the River Liffey downstream.

With the implementation of these measures, the project will not have the potential to result in residual negative impacts to biodiversity.

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