Clifton Scannell Emerson Associates

Grange Castle West Access Road
Part 8 Preliminary Design Report

Comhairle Contae Átha Cliath Theas
South Dublin County Council

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CONSULTING ENGINEERS

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1 Introduction and Background

1.1 Background

In July 2017, South Dublin County Council (SDCC) appointed Clifton Scannell Emerson Associates (CSEA) to provide Technical Consultancy Services for the planning process for the proposed Grange Castle West Access Road.

The proposed Grange Castle West (GCW) Access Road contains 1.03km of Dual Carriageway with an average corridor width of 34m and 1.15km of Single Carriageway with an average corridor width of 25m. There are a total of 1 No. double lane and 3 No. single lane fully segregated roundabouts proposed for the Grange Castle West Access Road development. Pedestrian and cyclist crossing facilities are predominately provided at all four proposed roundabouts.

6 No. Bus stops and sustainable transport facilities are proposed to be facilitated within the Grange Castle Access Road development. An architecturally landscape designed attenuation lake is proposed to accommodate surface water drainage requirements generated from the proposed road and surrounding hard-standing areas. The design of the attenuation pond and surrounding lands has incorporated measures to enhance the biodiversity and amenity value of this area.

Landscaped entrance and security structures to aesthetically harmonize with existing Grange Castle and Grange Castle South Business Park entrances is additionally proposed.

All works will include a fully integrated landscape plan and will accommodate all the required services under the GCW Access Road footprint. The following services and utilities that will be introduced are as follows;

- Gas Main
- Power
- Telecoms
- Storm Water Drainage
- Foul Sewer Drainage
- Watermain
- Public Lighting
- CCTV

The GCW Access Road scheme has been designed to current standards including the Design Manual for Urban Roads and Streets (DMURS), TII DMRB, the National Cycle Manual (NCM) and in accordance with smarter travel objectives.

1.2 South Dublin County Council Development Plan 2016 - 2022

On the 16th February 2018, South Dublin County Council (SDCC) gave notice that it had prepared Proposed Variations No.1 and No. 2 to the South Dublin County Development Plan 2016-2022, pursuant to Section 13 of the Planning and Development Act 2000 (as amended). For the purpose of this report, Variation No. 1 will only be discussed from this point forward. Please see below the following details pertaining Variation No. 1;

Proposed Variation No.1 - Zoning Amendment to Lands at Grange Castle West

It is proposed to change the zoning objective of 193 hectares of land from zoning objective RU (Rural and Agriculture) to objective EE (Enterprise and Employment). These lands are located in the townlands of Loughtown Upper and Milltown, which are south of the Grand Canal and west and north of the R120, adjoining the existing Grange Castle Business Park. It is also proposed to realign the indicative route for the Western Dublin Orbital Route (North).

The Public consultation period took place from the 16th February 2018 to 16th March 2018 inclusive (a period of 4 weeks) during which time information on Proposed Variation No.1 to the South Dublin County Development Plan 2016-2022 and environmental reports (Strategic Environmental Assessment Environmental report, SEA Screening Reports, Appropriate Assessment Screening Reports and Strategic Flood Risk Assessment) were disseminated to the public where submissions from a range of relevant agencies, organisations and the wider public were duly invited.

Taking account of the proper planning and sustainable development of the County, it was recommended that Proposed Variation No.1 to the South Dublin County Council Development Plan 2016 - 2022 be made in accordance with the recommendations of the Chief Executive Report which was published in April 2018.

As discussed above and with respect to approved Variation No. 1, the proposed GCW Access Road footprint is located within the rezoned lands that now obtains the planning objective of EE (Enterprise and Employment). As stated in the text describing Variation No. 1, it is also proposed to realign the indicative route for the Western Dublin Orbital Route (North). Located in Chapter 6 of the SDCC Development Plan 2016 - 2022 written statement is Table 6.6 that provides a description and function of SDCC's medium to long term road objectives.

The Western Dublin Orbital Route (North) is one of SDCC's medium to long term road objectives which is described as a '*New high capacity road from Tootenhill to the Leixlip Interchange (with a provision to make a further connection to the N3)*'. The function of this SDCC roads objective is as follows; *'Major regional link between the N7 to N4. Any further connections, and a possible alternative route to the west of Leixlip and/or Celbridge, will be determined in consultation with Kildare and Fingal County Councils, the National Roads Authority and the National Transport Authority. The primary objective of South Dublin County Council in this regard shall be to protect the scenic Liffey Valley parklands and amenities at Lucan Demesne and St Catherine's Park, and to examine all possible engineering options for a future route so as to minimise the impact on the environment, landscape and amenities'.*

Additionally located and described in Chapter 6 of the SDCC Development Plan 2016 - 2022 written statement is Table 6.5 that provides a description and function of SDCC's six year road programme. The New Nangor Road/R134 upgrade is one of SDCC's six year road programme objectives and is

described as the '*Upgrade/realignment of existing road between Nangor and Ballybane'*. The function of the New Nangor Road/R134 upgrade is '*To provide improved access to the Grange Castle employment lands from Clondalkin and the R120 with further links to the proposed Western Orbital Route*'. This road upgrade scheme is currently on site and is due to be brought into full service by Q1/Q2 2019.

The SDCC Development Plan 2016 - 2022 Zoning Objective Map was recently revised to accommodate Variation No. 1. The revised SDCC's 2016 - 2022 zoning objective map now displays a slightly realigned Western Dublin Orbital Route (North) which now traverses along the western boundary of the Grange Castle Western lands recently rezoned to objective EE (Enterprise and Employment). The updated SDCC's 2016 - 2022 zoning objective mapping also caters (indicative alignment only) for the Nangor Road/R134 upgrade which is one of the SDCC's six year road programme objectives.

The SDCC road objective connecting the Western Dublin Orbital Route (North) and the Nangor Road/R134 upgrade is also displayed within the SDCC Development Plan 2016 - 2022 Zoning Objective Map that duly falls within the footprint of the recently rezoned 'EE' Grange Castle western lands. It is this SDCC roads objective that the proposed GCW Access Road will follow the alignment of this roads objective, as displayed in the recently revised SDCC Development Plan 2016 - 2022 Zoning Objective Map, is indicative and the exact location of the proposed GCW Access Road alignment will be determined though detailed design and an array of environmental assessments prior to proceeding through the relevant Part 8 planning process.

The proposed GCW Access Road will additionally accommodate raised cycle and pedestrian footway infrastructure within its respective footprint in accordance with the 2011 NTA National Cycle Manual.

1.3 The Proposed Scheme

The proposed GCW Access Road scheme comprises of the following:

- 1.03km of Dual Carriageway with any average corridor width of 34m.
- 1.15km of Single Carriageway with an average corridor width of 25m.
- 1 No. double lane and 3 No. single lane fully segregated roundabouts.
- Raised 2m wide cycle path and separate 2m wide pedestrian walkway.
- An attenuation lake to accommodate surface water drainage requirements from the proposed road and surrounding hardstand areas, this will double up as an amenity area.
- Controlled and uncontrolled pedestrian and cyclist road crossings.
- Landscaped entrance and security structures to aesthetically harmonize with existing Grange Castle and Grange Castle South Business Park entrances.
- Bus stops and sustainable transport facilities.
- Underground utilities and services including: Storm Water Drainage, Foul Drainage, Watermain, Gas, Power, Telecoms, Public Lighting and CCTV.
- All associated ancillary works and integrated landscape plans.

Access and egress into the proposed GCW Access Road will be gained from a newly formed Grange Castle western lands entrance off the western leg of a newly formed signalised junction constructed under the R120/R134 upgrade scheme.

1.4 Need for the Scheme

The proposed GCW Access Road is a SDCC roads objective as outlined in chapter 6 of the SDCC Development Plan 2016 - 2022 written statement and as displayed in SDCC's Development Plan 2016 - 2022 Zoning Objective Map. Furthermore, the Grange Castle Western lands which accommodate the proposed GCW Access Road footprint have been recently rezoned from zoning objective RU (Rural and Agricultural) to objective EE (Employment and Enterprise). With this in mind, SDCC's six year road programme under the New Nangor Road/R134 Upgrade roads objective facilitates the overall function of the proposed GCW Access Road which states that the new Nangor Road/R134 upgrade will be built to '*provide improved access to the Grange Castle employment lands from Clondalkin and the R120 with further links to the proposed Western Orbital Route*'. Furthermore, the function of the future upgrade of existing road from Adamstown to Ballybane, as per table 6.6 of SDCC's medium to long term road objectives, states that these upgrades are to effectively '*provide improved access to the Grange Castle employment area*'.

In summary, Table 6.6 located in Chapter 6 of the SDCC Development Plan 2016 - 2022 written statement outlines corridors that are essential to facilitate a long term road network to provide access between major areas of economic activity and the national and regional road network.

The proposed GCW Access Road is required to fulfil all the above SDCC road objectives and to effectively utilise and fulfil the current zoning objective of the Grange Castle western lands which secures a zoning objective EE (Employment and Enterprise) under the recent and approved Variation No. 1 which were made effective in April 2018.

2 Environmental Constraints

2.1 Habitats Directive Stage 1 Screening for Appropriate Assessment

Doherty Environmental Consultants (DEC) were commissioned by Clifton Scannell Emerson to undertake a Habitats Directive Stage 1 Screening for Appropriate Assessment for the proposed Grange Castle West Access Road, Co. Dublin. For further details regarding the full Screening Statement for Appropriate Assessment, please refer to **Appendix B** of this report.

The Screening for Appropriate Assessment forms Stage 1 of the Habitats Directive Assessment process and was carried out to comply with the requirements of the Habitats Directive Article. The function of this Screening Exercise is to identify the potential for the project to result in likely significant effects to European Sites and to provide information so that the competent authority can determine whether a Stage 2 Appropriate Assessment is required for the project.

The Screening of the proposed Grange Castle West Access Road identified five European Sites that occur within a 15km radius of the project site and an additional four European Sites occur at a greater distance (i.e. approximately 27km downstream). The nearest European Site (Rye Water Valley SAC) to the project site is located approximately 4km to the north. All of five European Sites (and their associated qualifying features of interest/special conservation interests) within 15km to the project site are adjudged to be located outside the zone of influence of all activities associated with the proposed development of the access road.

Three of the four European Sites occurring at Dublin Bay have been identified as occurring within the zone of influence of the project by virtue of the presence of a hydrological pathway linking the project site to these European Sites. As such, a total of three European Sites were identified as occurring within the zone of influence of the project. These European Sites are:

- North Dublin Bay SAC (Special Area of Conservation);
- South Dublin Bay River Tolka Estuary SPA (Special Protected Area); and
- North Bull Island SPA.

The potential for the hydrological pathway that links the project to these European Sites, to function as an impact pathway was assessed as part of this Screening for Appropriate Assessment. This assessment was completed by considering all aspects of the proposed project, including all design elements that aim to control and treat surface water generated at the project site during both the construction phase and operation phase.

This Screening has determined that, given the provisions of project design to control and treat surface water generated at the project site, there will be no potential for the hydrological pathway connecting the project to the three European Sites, to function as an impact pathway.

Given this assessment of the hydrological pathway, the project will not have the potential to undermine water quality within the Liffey catchment and will not have the potential to result in likely significant effects to the conservation status of the three Dublin Bay European Sites that occur within the zone of influence of the project.

Considering the findings of this Screening for Appropriate Assessment, it can be concluded by the competent authority that the project will not have a significant negative effect on European Sites and will not negatively affect their conservation objectives or integrity.

SDCC have assessed the AA Screening Report prepared and have issued a determination on same, see **Appendix F**. This determination concludes that a Stage 2 Appropriate Assessment Screening will not be required to inform the project either alone or in combination with other plans and projects, with respect to any Natura 2000 site and its conservation objective.

2.2 Ecological Impact Assessment

DEC have been commissioned by Clifton Scannell Emerson to undertake an Ecological Impact Assessment for the proposed GCW Access Road. For further details regarding the full Ecological Impact Assessment, please refer to **Appendix A** of this report. The following sections give an overview of the ecological impacts from introduction of the GCW Access Road.

2.2.1 Designated Conservation Areas

There will be no potential for direct or indirect impacts to designated conservation areas occurring in the surrounding area.

The severance of linear woodland habitats such as hedgerows and treelines will have the potential to result in the loss of linear corridor linkages to the Grand Canal pNHA to the north. The loss of such linkages is likely to be most relevant to mammal species that may rely on these linear features as commuting corridor.

2.2.2 Habitat Loss

The principal land cover changes associated with the proposed Access Road will be the loss of arable land habitat and the severance of linear woodland habitats to the footprint of the proposed development.

The arable land habitats occurring under the footprint of the proposed access road is of low nature conservation value (Rating E). The footprint of the project will involve the loss of a small area of this habitat in the context of its overall extent in the surrounding area. Such a loss will represent a low magnitude impact to this habitat. A low magnitude impact to this habitat of low nature conservation value will represent an impact of negligible significance.

The loss of small areas of hedgerows and treelines to the footprint of the project will represent at least a moderate negative magnitude effect to this habitat, particularly in terms of its potential to function as a linear corridor for the movement of fauna. A moderate magnitude impact to this habitat of local nature conservation value will represent an impact of minor significance.

The proposed access road will require the realignment of the upper section of the Lucan (Tobermaclugg) Stream under a new culvert that will discharge the upper section of this stream, located to the south of the alignment to the proposed attenuation pond. The upper section of this stream is of low ecological value being choked and heavily encroached by hedgerow vegetation. The realignment of this stream will not have the potential to result in significant adverse effects to the aquatic ecology and no sensitive aquatic receptors will be effected by the proposed realignment.

In the implementation of all surface water management measures, including the provision of the attenuation pond, as the first item of works for the proposed road will also ensure that the works associated with the alignment will not result in the mobilisation of significant levels of suspended solids downstream along the Lucan Stream.

2.2.3 Disturbance to/Loss of Habitat for Terrestrial Fauna

As no evidence of protected non-volant mammals was recorded within or adjacent to the project site, the construction phase of the project will not have the potential to result in significant disturbance to breeding or resting places of non-volant terrestrial mammals such as badgers.

The absence of any field signs indicating the presence of protected non-volant mammal species suggests that the severance of hedgerow and treelines by the project will not have the potential to result in a significant adverse effect to such species. As such severance of linear woodland habitats crossed by the proposed access road will represent a potential minor negative impact to protected non-volant mammal species.

Baseline bat surveys within the project site and at points along hedgerows to be crossed by the proposed access road resulted in high levels of bat activity being recorded along some of these hedgerows. Foraging activity for Common pipistrelle and Soprano pipistrelle were recorded along field boundaries. In addition consistently high levels of bat activity were recorded during the automatic monitoring sessions along field boundaries.

In the interest of maintaining foraging habitat and commuting route for bats between severed hedgerow field boundaries to the north and south of the proposed access road, the remaining sections of field boundary hedgerows should be managed so that these hedgerows taper to a height either side of the alignment corridor. This will require the planting of taller-growing trees immediately adjacent to the alignment so that the height of the hedgerow gradually increases on approach to the alignment from both directions. This treeline will tie into planted hedgerow-treeline running parallel to the road alignment in an east to west orientation. Where field boundary hedgerows intersects the hedgerow/treeline running parallel to the route alignment, the latter hedgerow/treeline will also be planted with taller growing tree species that will act as a screen to the road corridor and forcing bats to fly over the road at safer heights above the line of traffic.

2.2.4 Impacts to Birds

The vegetation to be lost within the project site is of low value to bird species and there will be minimal loss of bird foraging habitat as a consequence of the proposed development. No nesting habitat will be lost as a result of the proposed development.

2.2.5 Habitat Loss & Disturbance to Fauna

Developments within greenfield sites, such as the project site can result in indirect habitat loss for fauna from emissions, particularly lighting.

The installation of street lighting along the access road will have the potential to result in the loss of known foraging and commuting habitat used by Common pipistrelle and Soprano pipistrelle. In

particular any street lighting in the vicinity of hedgerow field boundaries will have the potential to result in disturbance to and loss of suitable foraging habitat for these species.

Measures to minimise impacts to Habitats and Fauna are recommended below;

- Habitat disturbance during construction work will be confined strictly to within the direct land-take of the proposed route alignment area.
- Construction machinery will be restricted to site roads and designated access routes to excavation and construction area.
- Hedgerow habitat removed during the alignment construction phase will be reinstated post construction along the edges of the road so that no net loss of this habitat occurs over the longer term. Hedgerows will be required to knit in with the existing hedgerow and treeline network and will be replaced with native vegetation typical of this region. The replacement trees to be planted along hedgerows should include fruiting trees. The replacement of hedgerows will ensure no net loss of potential vegetated corridor foraging habitat for bat species.
- In the interest of maintaining foraging habitat and commuting route for bats between severed hedgerow field boundaries to the north and south of the proposed access road, the remaining sections of field boundary hedgerows 3 and 5 should be managed so that these hedgerows taper to a height either side of the alignment corridor. This will require the planting of taller-growing trees immediately adjacent to the alignment so that the height of the hedgerow gradually increases on approach to the alignment from both directions. This treeline will tie into planted hedgerow-treeline running parallel to the road alignment in a east to west orientation. Where field boundary hedgerows 3 and 5 intersects the hedgerow/treeline running parallel to the route alignment, the latter hedgerow/treeline will also be planted with taller growing tree species that will act as a screen to the road corridor and forcing bats to fly over the road at safer heights above the line of traffic.
- No street lighting should be installed in close proximity to field boundary hedgerows no. 3 and 5 as shown in figure 1 below.
- The spacing between lights should be maximized to reduce light intensity.
- In order to reduce light spill, street lighting will be directed to areas only where it is needed. The upward spread of light above the horizontal plane will be avoided by installing low beam angle lights, less than 70 above the horizontal plane and baffling light columns.
- Blue-white short wavelength lights will not be used on site; and
- Lights with a high UV content will be avoided. Instead narrow spectrum lighting with a low UV content will be used on site.
- Low intensity lighting will be used on site.

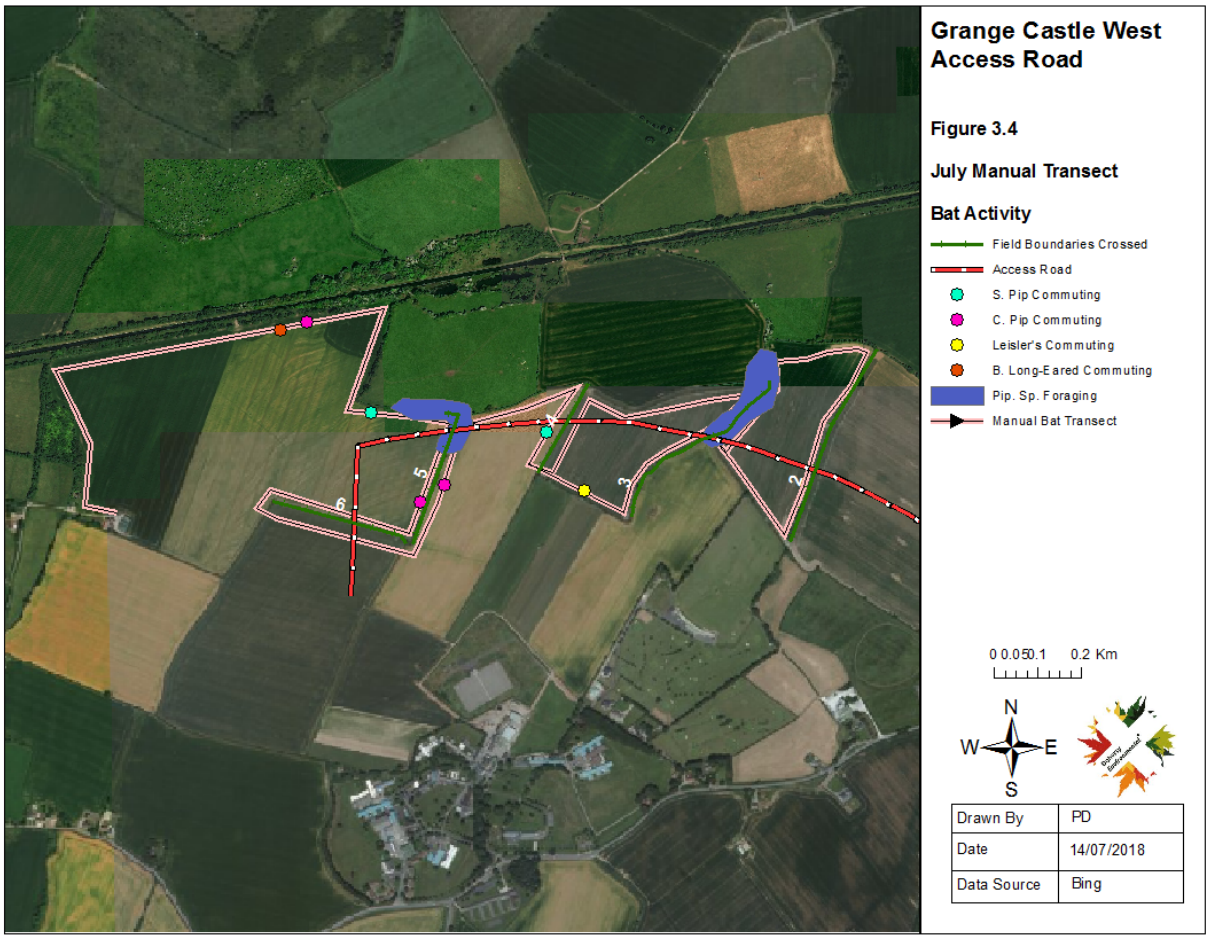


Figure 1 GCW Access Manual Transect Map

2.3 Archaeological and Architectural Heritage Constraints

Courtney Deery Heritage Consultancy were commissioned by Clifton Scannell Emerson Associates (CSEA) to provide an archaeological, architectural heritage and cultural heritage appraisal for the proposed Grange Castle West Access Road (Figure 2).

The appraisal describes the archaeological and historical background of the landscape within which the study area lies. The main purpose of the study was to assess the potential significance and sensitivity of the existing archaeological, architectural, and cultural heritage environment and to identify the issues this potential presents for the proposed development.

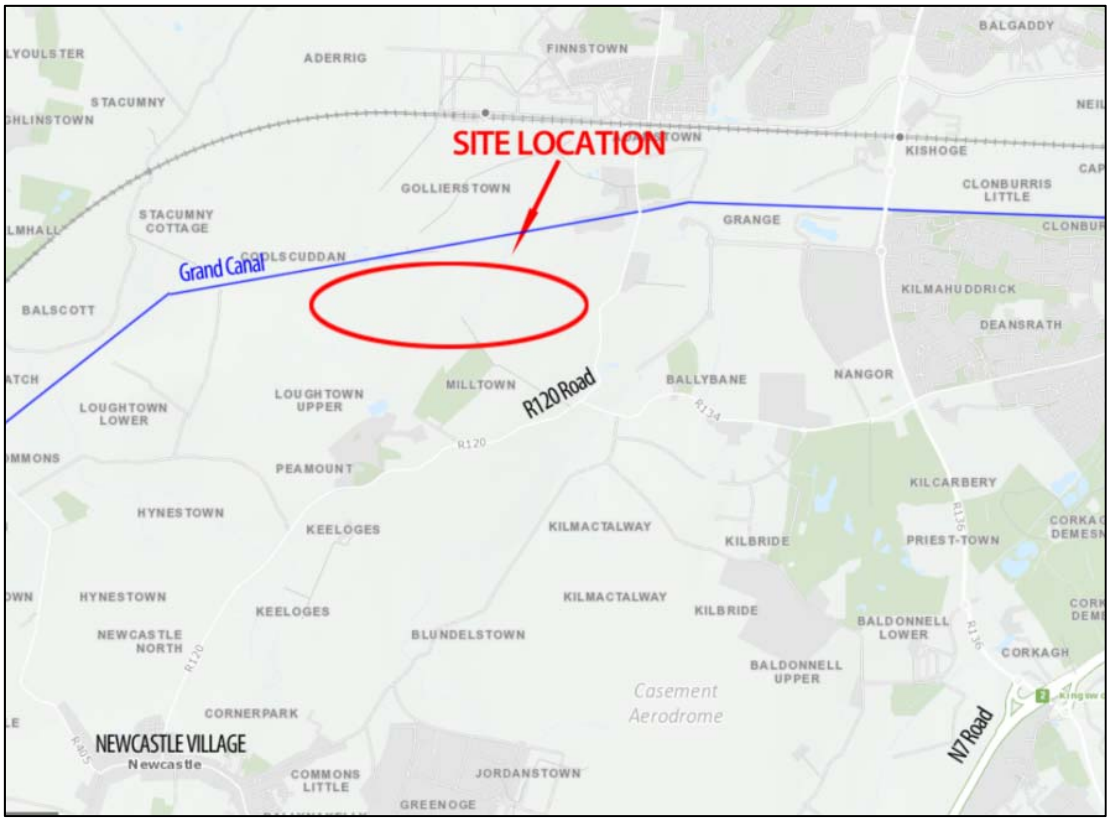


Figure 2 Site Location and Proposed Study Area

2.3.1 Archaeological and Cultural Heritage

This assessment has several specific areas of archaeological sensitivity in proximity to the proposed road (see Figure 3):

- SMR site DU017-095, enclosure. This enclosure was identified as a cropmark in aerial imagery and is scheduled for inclusion in the next revision of the RMP. It is located c. 25m west of the proposed road. It is possible that associated features (e.g. field system or annexe) may be uncovered within the proposed road;

- A previously unknown cemetery site was revealed during archaeological monitoring in 2002, c. 35m north of the proposed road. The burials were left *in situ* and the full extent of the site is unknown. It is possible that the site or features associated with it extend southwards into the line of the proposed road;

- Three areas of archaeological potential were identified through aerial photographic analysis, with cropmarks suggesting the presence of sub-surface archaeological sites or features (AP 1 to AP 3). The proposed road would directly impact on the northern limits of the features visible at AP 2, should they prove to be archaeological in nature;

- There has been a mill and settlement at Milltown since the 13th century. Based on the historic map analysis, the former settlement is located c. 120m south of the proposed road. There is a possibility (albeit slight) that outlying activity, e.g. field systems or mill-race / ponds, may extend within the proposed road. It is also possible that there was a tower house in the vicinity

of the Milltown settlement, as indicated on the Down Survey map, though exactly where is unknown;

- No features of cultural heritage interest will be affected by the proposed road.

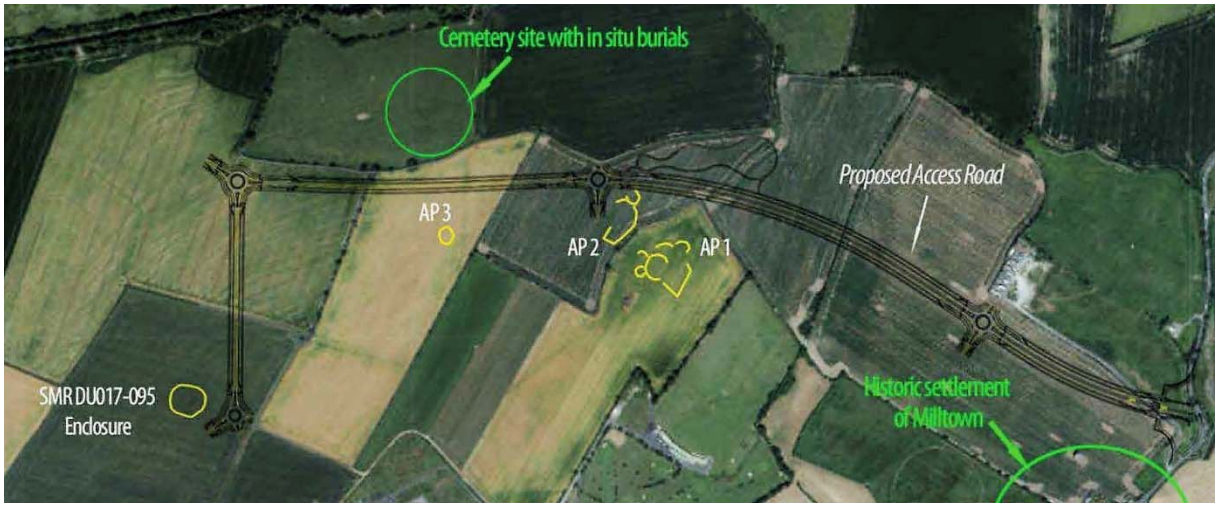


Figure 3 Archaeological constraints in vicinity of proposed road (study area boundary in red)

2.3.2 Architectural Heritage

No architectural heritage features will be affected by the proposed road.

2.3.3 Recommendations

As the archaeological investigations undertaken in the vicinity of the study area have shown, sub-surface archaeological features can occur in places where nothing is visible at ground level. This is an area of high archaeological potential and the assessment has also identified specific areas of archaeological potential in proximity to the proposed road.

It is recommended that a programme of geophysical survey be carried out along the length of the proposed road, well in advance of development. For further details regarding the GCW Access Road archaeological, architectural heritage and cultural heritage appraisal report, please refer to **Appendix D** of this report.

2.4 Flooding Constraints

In order to ascertain whether flooding and drainage is a critical issue within the GCW Access Road study area, CSEA carried out a Strategic Flood Risk Assessment. The main watercourse contained within the GCW Access Road study area is the Tobermaclugg (Lucan) stream. The Lucan Stream has a total catchment area of approximately 486 hectares and ultimately discharges into the River Liffey. The Lucan Stream flows in a south to north direction.

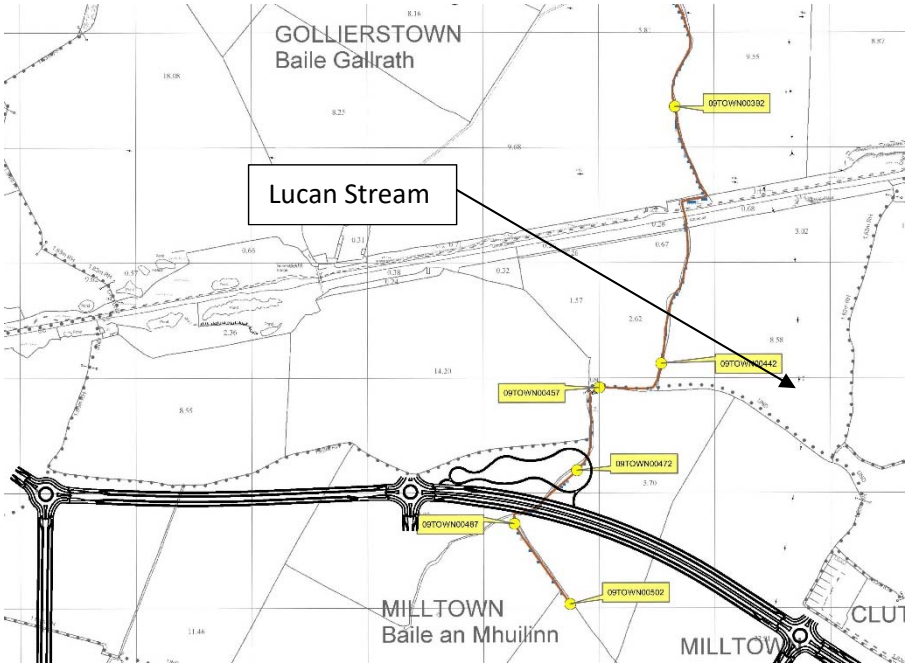


Figure 4 Extract from 'Lucan to Chapelizod' CFRAM maps of portion of the Grange Castle West lands

Upon inspection of the fluvial 'Lucan to Chapelizod' flood extent map, it is suggested that the Tobermaclugg stream is not susceptible to flooding for the 10% (1 in 10), 1% (1 in 100) or 0.1% (1 in 1000) fluvial AEP events.

With regards to the node ID labels displayed in Figure 4 above, the following and most notable (node 09TOWN00502 represents the commencement of the Tobermaclugg stream) information has been yielded from said fluvial 'Lucan to Chapelizod' flood extent map which is tabulated below as follows;

Node Label	Water Level (10% AEP)	Flow (m3/s) 10% AEP	Water Level (1% AEP)	Flow (m3/s) 1% AEP	Water Level (0.1% AEP)	Flow (m3/s) 0.1% AEP
09TOWN00502	72.58	0.01	72.62	0.02	72.66	0.03

With regards to the existing topography attributed to the proposed GCW Access Road footprint, it has been determined that in the event that a 1 in 100 or 1 in 1000 year event was to occur, that the existing Tobermaclugg stream channel, as displayed in Figure 4, would be capable of conveying and containing raised water levels yielded from either storm event materialising presently and/or into the future.

Inspections were undertaken based around RPS's Fluvial Flood Zone Mapping that was incorporated within SDCC's Strategic Flood Risk Assessment adopted within South Dublin's County Development Plan 2016 -2022. Information yielded from the above referenced RPS flood zone mapping ultimately places the proposed road footprint outside flood Zones A (greater than 1% or 1 in 100 for river flooding or 0.5% or 1 in 200 for coastal flooding) & Zone B (between 0.1% or 1 in 1000 and 1% or 1 in 100 for river flooding and between 0.1% or 1 in 1000 year and 0.5% or 1 in 200 for coastal flooding).

The PFRA (Preliminary Flood Risk Assessment) mapping shows that there is little or no risk that the proposed GCW Access Road footprint would be subjected to flooding for the 1% annual exceedance potential (AEP) event (1 in 100 year return period).

When assessing and reviewing the OPW CFRAM (Catchment Flood Risk Management Assessment and Management) Fluvial Flood Extent Maps for Baldonnel, Lucan to Chapelizod and Hazlehatch maps for the 0.1% AEP event (1 in 1000), 1% AEP Event (1 in 100) and 10% AEP event (1 in 10), it was noted that there is no risk that the proposed GCW Access Road footprint would be subject to flooding.

When assessing and reviewing the OPW CFRAM Fluvial AEP Flood Depth Maps for Baldonnel, Lucan to Chapelizod and Hazlehatch maps for the 0.1% AEP event (1 in 1000), 1% AEP Event (1 in 100) and 10% AEP event (1 in 10), again it has been assessed that there is no risk that the proposed GCW Access Road footprint would be subject to flooding.

There is no further evidence to suggest that the proposed GCW Access Road footprint has flooded in the past. Furthermore, the indicative Lucan to Chapelizod, Hazelhatch and Baldonnell PFRA & CFRAM maps and the SFRA for South Dublin County Development Plan 2016 to 2022 places the proposed road footprint outside both Flood Zone A (i.e. an area likely to suffer flooding in a 1 in 100 year fluvial event) and Flood Zone B (i.e. an area likely to suffer flooding in a 1 in 1000 year fluvial event).

This Strategic Flood Risk Assessment has been prepared based on zoning objective EE (Employment and Enterprise) where the vulnerable classification for the proposed GCW Access Road would duly fall under the 'Less Vulnerable Developments' Zone B category.

In addition it is worth noting, now that the surrounding lands have been rezoned to EE, the lands will potentially be carved into land parcels of various sizes and shapes. Each owner of said land parcels will carry out their own Site Specific Flood Risk Assessment at planning stage based on the type of industry proposed and the infrastructure required to bring it into full service.

For further details regarding the full GCW Access Road Strategic Flood Risk Assessment, please refer to **Appendix E** of this report.

2.5 Planning & Land Ownership

2.5.1 Planning

The South Dublin County Council Development Plan 2016-2022 identifies the lands proposed to accommodate the GCW Access Road as having a zoning objective EE (Employment and Enterprise). The proposed Grange Castle West Access Road will be processed through the Part 8 Planning procedure. Procedures relating to this are set out in Part 11, Section 179 of the Planning and Development Act 2000. The timeframe for the Part 8 process is as displayed in **Figure 5** below.

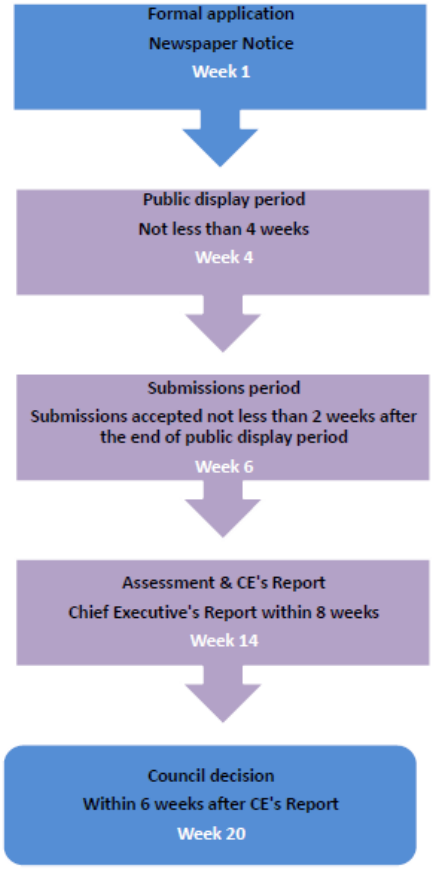


Figure 5 – Summary of Part 8 Planning Procedure

2.5.2 Land Ownership

All lands proposed to accommodate the GCW Access Road scheme are owned by South Dublin County Council.

2.6 Traffic

The design of the proposed GCW Access Road including its respective junctions and roundabouts is based on a Business Park population of 5000+ employees. This road design accounts for the future development and employment growth of the surrounding lands which were rezoned as EE (Enterprise and Employment) in April 2018.

The proposed road network is designed in accordance with TII DN-GEO-03060 Geometric Design of Junctions, Design Manual for Urban Roads and Streets (DMURS) and National Cycles Manual to encourage sustainable transport while catering for the required traffic volumes.

3 Environmental Impact Assessment Screening

3.1 EIA Requirement

Screening is the process of assessing the requirement of a project to be subject to Environmental Impact Assessment, based on project type and scale and on the significance or environmental sensitivity of the receiving environment.

The overriding consideration in determining whether a road scheme should be subject to EIA is the likelihood of significant environmental effects. Significant effects may arise by virtue of the type of road scheme, the scale or extent of the road scheme and the location of the road scheme in relation to sensitive environments.

In interpreting which projects are likely to have significant environmental effects, the EIA Directive lists those projects for which EIA is mandatory and those projects for which EIA may be required.

3.2 Summary of Legislative Requirements for EIA Screening

The following table provides an overview of the legislative requirements that determine whether a road scheme will require an EIA. With reference to the proposed GCW Access Road the minimum criteria have been assessed.

Mandatory		**Comparative Assessment**	**EIA Required**
Construction of a motorway		The proposed road is not a motorway	No
Construction of a busway		The proposed road is not a busway	No
Construction of a service area		The proposed road does not contain a service area	No
Any prescribed type of proposed road development consisting of the construction of a proposed public road or the improvement of an existing public road, namely:	The construction of a new road of four or more lanes, or the realignment or widening of an existing road so as to provide four or more lanes, where such new, realigned or widened road would be eight kilometres or more in length in a rural area, or 500 metres or more in length in an urban area;	The proposed road contains four lanes and is 1.03km in length in a rural area	No

	The construction of a new bridge or tunnel which would be 100 metres or more in length.	The road does not contain a bridge or tunnel of 100m or more	No

Table 3.1 Summary of Legislative Requirements for EIA Screening

Environmental reports have been prepared in relation to Ecology, Archaeology, Flooding Impact and Traffic Impact. These reports have not identified significant environmental effects.

3.3 EIA Screening Conclusion

With reference to table 3.1 above the proposed GCW Access Road is sub threshold in all cases and therefore does not require a mandatory EIA. Please find the attached EIA Screening Report located in **Appendix C** of this report.

SDCC have assessed the EIA Screening Report prepared and have issued a determination on same, see **Appendix F**. This determination concludes that the environmental affects arising from the project will generally be localised, and minor in nature.

4 Preliminary Design

4.1 The Scheme

The proposed GCW Access Road commences at the newly formed R120/R134 Signalised Junction where the future entrance into Grange Castle West Business Park is duly proposed. The proposed Grange Castle West (GCW) Access Road contains 1.03km of Dual Carriageway with an average corridor width of 34m and 1.15km of Single Carriageway with an average corridor width of 25m. There are a total of 1 No. double lane and 3 No. single lane fully segregated roundabouts proposed for the Grange Castle West Access Road development. Controlled pedestrian and cyclist crossing facilities are predominately provided at all four proposed roundabouts with two uncontrolled crossing locations proposed at roundabout No. 4. Future access spurs are additionally provided off each of the 4 No. proposed roundabouts. Adjacent to the road corridor on both sides are raised cycle tracks and pedestrian footway infrastructure accompanied by controlled road crossing locations as required. Adjacent to the road footprint is an attenuation lake designed to accommodate and cater for the proposed road surface and surrounding hardstanding areas surface/storm water drainage requirements. All works will include a fully integrated landscape plan and will accommodate all the required services under the GCW Access Road footprint.

4.2 Proposed Road Cross Section

The proposed GCW Access Road scheme has been designated with a 50kph speed limit. In accordance with the DMURS and TII DN-GEO-03031 Rural Road Link Design (single and dual carriageway), the proposed lane widths for the dual carriageway (3.0m/lane) and single carriageway (3.75m/lane) were ultimately generated. The proposed road cross section for the 1.03km length of dual carriageway will consist of an average corridor width of 34m. The proposed road cross section for the 1.15km single carriageway will consist of an average corridor width of 25m.

The road cross section has been designed to encourage and maximise sustainable transport with particular emphasis on creating a modal shift for the future residents of the EE Zoned Lands. The individual cross-section elements for the proposed 1.03km of dual carriageway will therefore be made up as follows:

- 2.0m Footpath
- 5.0m Grass Verge
- 2.0m Cycle track
- 6.0m Traffic Carriageway (3m/lane)
- 4.0m Medium Strip
- 6.0m Traffic Carriageway (3m/lane)
- 2.0m Cycle track
- 5.0m Grass Verge
- 2.0m Footpath

The individual cross-section elements for the proposed 1.15km of single carriageway will therefore be made up as follows:

- 2.0m Footpath
- 4.75m Grass Verge

- 2.0m Cycle track
- 7.5m Traffic Carriageway (3.75/lane)
- 2.0m Cycle track
- 4.75m Grass Verge
- 2.0m Footpath

4.3 Horizontal & Vertical Alignment

The horizontal and vertical alignment for the proposed Grange Castle West Access Road has been designed in accordance with TII DN-GEO-03031 Rural Road Link Design and DMURS.

4.4 Roundabout Layouts

The proposed GCW Access Road contains 1 No. double lane and 3 No. single lane fully segregated roundabouts, all designed in accordance with TII DN-GEO-03060 Geometric Design of Junctions (priority Junctions, direct accesses, roundabouts, grade separated and compact grade separated junctions) and in line with the national Cycles Manual guidelines. Controlled pedestrian and cyclist crossing locations are predominately provided at all four proposed roundabouts attributed to the proposed Grange Castle West Access Road development. There are two proposed uncontrolled crossing locations provided at proposed roundabout No. 4.

4.5 Sustainable Transport & Smarter Travel

The continued growth of the overall Grange Castle Business Park considerably increases traffic volumes in the area. In order to address congestion and maintain the continued success of Grange Castle Business Park a Smart Travel policy is required in the area. It is proposed to work with the National Transport Authority (NTA) in order to develop and achieve a suitable Smart Travel policy for Grange Castle Business Park which will encourage and promote a modal shift from private cars to more sustainable modes of transports among Business Park Residents.

To achieve a modal shift and create a cleaner safer future, a change of mind-set is required. The introduction of new innovative measures combined with existing successful smart travel methods along the GCW Access Road can go a long way to facilitating this change.

Either side of the proposed Access Road corridor is a 2 metre wide cycleway and a separate 2 metre wide pedestrian walkway. Toucan and zebra crossings are located on all roundabout approach and departure traffic lanes to provide safe pedestrian and cyclist crossing routes and increase ease of access through the Business Park. This pedestrian and cyclists network provides sustainable travel connectivity between the EE Lands and the main public transport hubs (Hazelhatch, Kishoige and Adamstown Train Stations) as well as facilitating walking and cycling from bus stops located along the route.

4.6 Road Lighting

For the safety and convenience of vehicular road users, pedestrian and cyclists; LED public lighting will be introduced throughout the proposed GCW Access Road scheme. The proposed public lighting design shall be designed in accordance with ISEN 13201-1:2015 and ETCI 101:2008 (cable calculations). The proposed public lighting design shall also be designed in accordance with South Dublin County

Councils Public Lighting Specification. Furthermore, the proposed public lighting design attributed to the Grange Castle Access Road development shall be cognisant of the recommendations outlined in Chapter 2.2.5 of this report. Construction and installation of the proposed LED Public Lighting system shall not be implemented on site until SDCC approval has been granted from SDCC Public Lighting Section.

4.7 Surface Water Drainage

Adequate provision shall be made for the drainage of the proposed GCW Access Road scheme to give satisfactory performance throughout its design life. The principal functions of a road drainage system are:

- To prevent flooding of the carriageway by direct rainfall or by water flowing onto the road from adjoining footways, cycle tracks and/or properties;
- To avoid weakening of the sub-grade or pavement layers due to the presence of groundwater;
- To avoid erosion of side slopes on embankments and cut slopes;
- To facilitate the passage of watercourses through a scheme by constructing culverts or carrying out localised diversions.
- To provide safe driving conditions for all vehicles.

The proposed road drainage system will ensure that surface water drains quickly from the carriageway (including footway and cycle track Infrastructure) and is collected and conveyed to the nearest outfall in order to avoid localised flooding or ponding on the roads surface. The proposed drainage system will also ensure that groundwater is not permitted to infiltrate the sub-grade and pavement layers to the extent where it could cause a build-up of excess pore water pressure capable of undermining or weakening the proposed roads foundation. The water table must be maintained at an adequate level below the pavement at all times of the year. The proposed drainage system will also ensure that flooding of the proposed road by water from adjoining properties/lands is prevented by intercepting it with suitable drains and conveying it to a suitable outfall.

The Greater Dublin Strategic Drainage Study (GDSDS) mandates that Sustainable urban Drainage Systems (SuDS) proposals are implemented in order that the completed development run-off characteristics mimic the existing green-field as closely as possible. Appropriately designed, constructed and maintained SuDS are more sustainable than conventional drainage methods because they can mitigate many of the adverse effects of urban storm water runoff on the environment. They can achieve this through:

- reducing runoff rates, and reducing the risk of downstream flooding
- reducing the additional runoff volumes and runoff frequencies that tend to be increased as a result of urbanisation, and which can exacerbate flood risk and damage receiving water quality
- encouraging natural groundwater recharge (where appropriate) to minimise the impacts on aquifers and river base flows in the receiving catchment
- reducing pollutant concentrations in storm water, and protecting the quality of the receiving water body

- acting as a buffer for accidental spills by preventing direct discharge of high concentrations of contaminants to the receiving water body
- reducing the volume of surface water runoff discharging to combined sewer systems, and reducing discharges of polluted water to watercourses via Combined Sewer Overflow (CSO) spills
- contributing to the enhanced amenity and aesthetic value of developed areas
- providing habitats for wildlife in urban areas and opportunities for biodiversity enhancement.

It is proposed that the GCW Access Road scheme will incorporate as many Sustainable Drainage Systems as feasibly possible to ensure that the above objectives are satisfactorily introduced and ultimately implemented within the lifetime of the proposed road scheme.

The proposed road drainage system will incorporate a system of culverts (where required) for accommodating watercourses that intersect the scheme footprint. An application for consent pursuant to Section 50 of the Arterial Drainage Act, 1945 will be submitted to the OPW in respect of the existing Tobermaclugg Stream which is proposed to be culverted under the footprint of the proposed GCW Access Road Scheme.

There are several types of drainage systems which are proposed for the GCW Access Road scheme that are outlined as follows;

- **Sealed Drainage**: This drainage system collects, conveys and discharges carriageway/hardstanding surface runoff to a suitable outfall via sealed (impervious) conduits. A typical example of this type of drainage system is the kerb and gully drain.
- **Positive Drainage**: As sealed drainage is impervious, it does not drain groundwater; therefore its use in cut areas should be combined with or accompanied by a filter drain. Where this system of drainage is used, it is imperative that it is designed so that road runoff is prevented from dissipating through the filter drains. As filter drains can also drain road runoff, the use of positive drainage should be restricted to areas that are sensitive to high concentrations of flow arising from road runoff such as Karst areas.
- **Sealed Manhole Chambers**: Sealed storm water chambers in accordance with TII Standard Construction Details - Series 500.
- **Flow Restricting Devices**: Hydro-brake flow restricting devices shall be introduced to convey allowable discharge rates in accordance with Qbar. Allowable discharge rates in accordance with Qbar (GDSDS - Typically 2l/s/Ha) will be generated for all catchment surfaces/areas.
- **Bypass Separators:** Petrol/Oil Bypass Interceptors shall be introduced down stream of hydro brake chambers prior to discharging/connecting into existing storm network/open channel watercourses located in close proximity.
- **Attenuation Lake**: All storm water runoff generated from the GCW Access Road scheme footprint will ultimately discharge into a proposed attenuation lake prior to discharging downstream, in a controlled manner, back into the existing Lucan (Tobermaclugg) stream which flows in a south to north direction prior to discharging into the River Liffey. In order to maintain the ecology of the stream, the existing flow rates of the stream will be maintained through the attenuation basin using flow control devices.

The design of the closed/sealed drainage system for the proposed GCW Access Road scheme shall be used through the aid of XP Microdrainage software in accordance with the Modified Rational Method. XP Microdrainage is supported by both FSR and FEH rainfall data in the UK and Ireland. Pipe capacities are calculated by using the Colebrook-White equations. XP Microdrainage employs a full hydrograph method to design, size and test storage/attenuation systems in accordance with BRE 365, Sewers for Adoption, CIRIA guidance and the Building Regulations. The analysis of each storm network, including attenuation/storage, is analysed using automatic storm generation of both FSR and FEH rainfall from 15 minutes (summer/winter) to 7 days duration and return periods of up to 1000 years in the UK and Ireland.

All the above is designed in parallel and in accordance with the Greater Dublin Strategic Drainage Study (GDSDS), the 2010 Building Regulation - Technical Guidance Document H, the SuDS Manual, the TII Design of 'earthworks drainage, network drainage, attenuation and pollution control' DN-DNG-03066 and all other relevant drainage standards and guidance documents available at the time of design.

4.8 Foul Water Drainage

The proposed foul drainage design for the GCW Access Road scheme will been carried out in accordance with the Building Regulations 2010 Technical Guidance Document 'H' and the Environmental Protection Agency's (EPA) "Wastewater Treatment Manuals: Treatment Systems for Small Communities, Businesses, Leisure Centres and Hotels". In areas where the above document does not provide specific guidance, or where the guidance provided is ambiguous, reference will be made to the EPA's "Code of Practice: Wastewater Treatment and Disposal Systems Serving Single Houses". The proposed GCW Access Road foul sewer design shall also take cognisance of Irish Waters Code of Practice for Wastewater Infrastructure document IW-CDS-5030-03. The design software used for proposed GCW Access Road scheme foul drainage design requirements is XP Micro-Drainage.

As stated in chapter 1.2 of this report, the lands within which the proposed GCW Access Road will be constructed upon obtains a zoning objective EE (Employment & Enterprise) under the SDCC 2016 - 2022 Development Plan. For this reason alone, it will therefore be deemed necessary to introduce and incorporate a foul sewer system (trunk mains) under the proposed GCW Access Road footprint to accommodate the future lands that will be developed under the zoning objective EE (Employment and Enterprise). The proposed foul sewer system will be designed as a gravity sewer which will ultimately discharge into the existing Grange Castle Foul Pump Station located within Grange Castle Business Park. The foul exiting from the existing Grange Castle Foul Pump Station ultimately discharges into the existing 9B Foul Sewer System.

4.9 Water Main

The New Nangor Road R120/R134 upgrade is one of SDCC's six year road programme objectives and is described as the '*Upgrade/realignment of existing road between Nangor and Ballybane'.* Accommodated under the R120/R134 Road Upgrade project is the provision to install a 300mm and 400mm diameter watermain, both of which run in close proximity to the proposed Grange Castle West Business Park entrance which is located off the western arm of the newly formed R120/R134 signalised junction. It is therefore proposed to take a 400mm diameter watermain connection off the proposed 300mm diameter R120/R134 watermain.

The proposed 400mm diameter distribution watermain shall then enter the Grange Castle western lands through the proposed Grange Castle West Business Park entrance located adjacent to the newly

formed R120/R134 signalised junction. The proposed 400mm diameter distribution watermain will traverse under the footprint of the proposed GCW Access Road and will provide water provisions for the future proposed development of the Grange Castle western lands under the zoning objective EE (Employment and Enterprise). To further disperse water provisions around the future Grange Castle West Business Park site, the introduction of 250mm diameter watermain infrastructure will be necessary. Connectivity for all future 250mm diameter watermain will be taken off the proposed 400mm diameter distribution main.

Water meters to measure water usage shall be installed at every service connection supplying both domestic and commercial premises. Bulk flow meters, measuring the total development water use, shall be provided at the connection point of the works to the main distribution watermain in cases where the development exceeds 20m^3 per day.

The introduction of sluice valves, butterfly valves, scour valves, air valves, hydrants and washout hydrants (including their respective chambers) shall be introduced as deemed necessary through the design process.

The proposed watermain design shall be carried out in accordance with Irish Waters Code of Practice for Water Infrastructure document IW-CDS-5020-03 and Irish Waters Water Infrastructure Standard Details IW-CDS-5020-01. The design for the works shall be such that a minimum design life is achieved of 60 years for pipework and structures, 25 years for mechanical and electrical plant and 15 years for information, communication and telemetry (ICT) plant.

4.10 Telecommunications

It has been determined that fibre connectivity to service the future Grange Castle Western lands has been deemed as extremely viable.

The existing T50 infrastructure comprises of an 18 way duct system which is currently owned and operated by Zayo. The existing T50 fibre network runs in close proximity to the Grange Castle west lands and currently services the existing Grange Castle and Grange Castle South Business Parks from a section of the T50 network that traverses under the exist Nangor Road (R134) that essentially loops in a south to south eastern direction following under the footprint of the existing L2901 local Road. Please see Figure 6 below for further details with regards to the existing T50 infrastructure network.

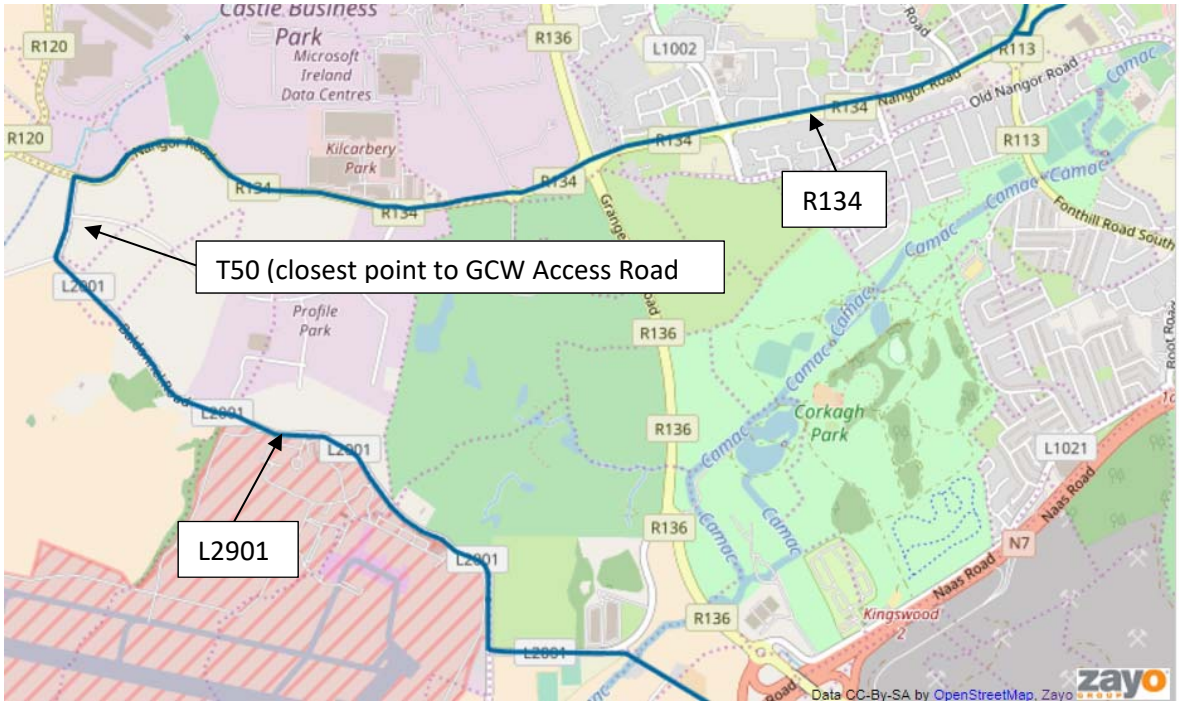


Figure 6 - Existing T50 Fibre Network

As previously discussed, the New Nangor Road R120/R134 Upgrade scheme is due to be brought into full service by Q1/Q2 2019. Included within the New Nangor Road R120/R134 Upgrade scheme is a 16 way 110mm diameter telecom ducting network. This 16 way telecom ducting network will also be included under the footprint of the newly formed R120/R134 signalised junction which will bring telecommunication infrastructure to the doorstep of the proposed entrance of the future Grange Castle West Business Park. It is therefore proposed to extend this 16 way telecom ducting into the Grange Castle western lands under the proposed GCW Access Road footprint.

All proposed ducting and chamber construction required to facilitate the new 16 way 110mm dimeter telecommunication network proposed for the Grange Castle western lands shall be designed in accordance with TII's Standard Construction details (series 500) and TII's Specification for Road Works Series 500 - Drainage and Service Ducts.

4.11 Gas

Located under the footprint of the existing R136 Regional Road is the existing high pressure 70 bar interconnector gas main. It is this existing high pressure 70 bar gas main that will ultimately provide gas provisions that will service the Grange Castle recently rezoned EE (Employment & Enterprise) western lands. There are three individual locations along the existing R136 Regional Road where a potential connection could be made off this existing high pressure gas main. The fourth proposal would involve the upgrading of an existing AGI Station located within Grange Castle Business Park.

Gas Network Ireland (GNI) will therefore be tasked with the undertaking of a route selection process based on the four proposed gas connection options briefly discussed above. GNI will also undertake the required design of the preferred gas main route. A major factor in the design and route selection process would be the registered interest of an end user who would require and request the distribution and delivery of high pressure gas provisions to their respective site within the EE (Employment and Enterprise) zoned Grange Castle western lands.

It is proposed to construct an AGI station within the Grange Castle western lands once the preferred gas main route has been fully identified, designed and agreed with GNI and SDCC representatives. From the proposed AGI Station, the 70bar Gas main pressure attributed to the proposed hot tap connection (or upgrade to existing AGI Station) will be reduced down to an acceptable distribution pressure of between 4 - 19bar. The proposed AGI Station will then distribute Gas provisions ranging from 4 - 19bar across the Grange Castle western lands site under the proposed GCW Access Road footprint and through a series of dedicated services corridors and wayleaves which will offer connectivity to each of the future land parcels that will be created as part of the future Grange Castle West Business Park development.

4.12 Power

A 220kV Substation currently under construction within Grange Castle South Business Park is proposed to provide the required power provisions into the Grange Castle western lands. Power connectivity from the 220kV Substation is provided by installing a series of 110kV Double Power Circuits from the future 220kV Substation to a new 110kV Distribution Substation within the Grange Castle West Business Park lands.

Depending on the Business park occupants, there is a potential that additional 110kV Substations could be constructed within the Business Park. The number and locations of the future 110kV substations will be based on demand and the size and function of the development proposed for that particular client and will be privately developed within their sites.

The design of the proposed 110kV Double ESB Circuits shall be in accordance with all relevant ESB specification and guidelines and will take cognisance of Eirgrids double/single separation requirements.

The above HV connectivity to the Park will be subject to a future planning application and associated environmental assessments inclusive of HV ducting routes and substation building(s) as required. The routing of the cable network and location of substation(s) will be subject to a detailed network assessment by Eirgrid/ESBN.

4.13 Renewable Energy

There are limited renewable energy proposals available for inclusion when considering the GCW Access Road as a stand-alone road scheme. One such proposal would predominately focus in on the introduction of solar street lighting that would be required to light the proposed GCW Access Road and its adjoining cycle and footway infrastructure.

Solar Street lights are powered by photovoltaic panels generally mounted on the lighting structure or integrated in the pole itself. The photovoltaic panels charge a rechargeable battery, which powers a LED lamp during the night. The main advantage of solar lights is the environmental saving incurred. Regular street lights are connected to the grid which is ultimately powered by fossil fuels in most cases. The burning of fossil fuels pollutes the air, causing a health hazard as well as increasing the concentration of green-house gasses which lead to global warming. Solar energy is clean, renewable, with no harmful side effects. There is also a financial saving since street light uses solar energy rather than being powered off the grid thus eliminating at the electrical bill.

As previously discussed, the lands containing the road footprint have been recently rezoned from zoning objective RU (Rural and Agricultural) to objective EE (Employment and Enterprise). The main objective of the proposed GCW Access Road is to open up the existing lands to future development under the EE (Employment and Enterprise) zoned objectives. It is SDCC's intention to introduce as many Renewable Energy initiatives into future developments within the lands.

Such potential Green Energy initiatives are as summarised as follows;

- District heating/cooling networks utilising available waste heat;
- The development of dedicated energy centres within the Park;
- Renewable electricity generation;
- CHP Power Plant Feasibility;
- Sustainable Transport;
- Tile surface and electromagnetic generators technology;
- Other relevant opportunities;

4.14 GCW Access Road Entrance

The GCW Access Road is located off the western arm of the newly formed R120/R134 signalised junction. The landscaped entrance to GCW Access Road is clearly recognisable and visible to approaching vehicles.

The entrance is modelled to cater for large turning movements from large HGV's and buses as well as designed to accommodate pedestrian and cyclist movements via dedicated pathways.

The landscape architecture of the entrance is designed at a large scale in keeping with the size of the main access avenue and the overall Business Park within and the anticipated scale of the buildings that it will contain.

The landscape is designed to create both a distinctive character but also one in which the key elements of the existing Grange Castle Business Park are recognisable. This is achieved through the selection of similar finishes, such as the polished stone that is already present in the existing Grange Castle and Grange Castle South Business Parks, the use of the current type of boundary wall and railing and the civil engineering design.

Lighting and paving selection will further enhance the entrance along with cuboidal concrete features and a free-standing signage wall/sculptural feature.

4.15 Access Road Landscaping

The detailed landscape architecture for the GCW Access Road is an extension of the grandeur of the entrance with trees planted linearly to emphasise the avenue effect.

The median is marked by Lonicera pileata ground cover and open crown Tilia cordata trees that create a soft divide between the routes in either direction. The grass verges to the side are adorned by undulating grass mounds with Acer platanoides planted at regular intervals which creates both varied visual interest whilst driving or walking the route and seasonal change with the Maple leaf colours. Further complementing the lines of trees is Sequoiadendron giganteum planted to the extreme

margins of the dual carriageway; these amplify the magnificent views into the Business Park, provide evergreen steadiness across the seasons and being one of the world's largest trees re-emphasise the grand scale of the park. Beech hedging along the edges helps provide screening from the avenue to the buildings and vice-versa and softens the overall route. However, where views out are needed the hedging is omitted.

4.16 Attenuation Lake

The landscape architecture of Grange Castle West includes a visually spectacular area alongside the main avenue with an extensive attenuation lake.

As highlighted in section 4.5, the attenuation lake design caters for run off surface water as well as the creation of both a valuable recreational resource for park residents and one of aesthetic impact, in keeping with the scale of the development. Further interest is created by having different levels in the lake divided by weirs with a proposal for multiple fountains in the lower pond that create a celebratory statement.

It is also expected that this feature will be of important value to wildlife. The margins will be planted with native wetland plants and trees. This will be an important habitat for insects and local bird life.

The remaining landscape areas around the lake are designed to be open parkland. The ground will be contoured to form mounds for visual and recreational interest. The planting will include extensive areas of lawn, meadows and parkland trees. Tree types will be predominantly native, but some unusual varieties will also be planted for arboricultural interest. Some shrub and ornamental planting will be used in places to further enhance the parkland atmosphere. However, good views will be retained across the area to retain the sense of scale.

A specific universal access walking route will be created around the lake with onward connections to other walking routes around the Business Park. Some close access to the lake is provided by the inclusion of contemporary concrete steps that also acts as seating and further enhances the character of the lake.

Lighting, park furnishing, and detailed paving areas will form part of the design.

An emphasis on enhancing the biodiversity of the park has been considered through plant species selection and layout as well as consideration to the retention of existing trees and field boundary hedgerows.

4.17 Security

Located in a prominent location in the centre of the GCW Access Road Entrance it is proposed to construct a security structure in conjunction with wing walls, traffic calming measures and security gates. These features combined with security patrols and static assignments highlight security control measures to users entering and exiting the access road.

In addition, a CCTV video surveillance system is earmarked to be installed along the proposed access route at strategic locations covering footways, cycleway and roadways, to address the complex safety and security needs of the Business Park. A static security guard stationed in the security structure at

the entrance to Grange Castle West Business Park will provide 24:7 remote monitoring and controlling of the CCTV surveillance equipment.

CCTV surveillance systems managed by Grange Castle Business Park security contractors provides for the security & safety for road users, protects buildings and facilities, deters crime and assists with investigating traffic and criminal incidents and activities.

5 Cost of Scheme

5.1 Budget Construction Cost

The budget cost of the scheme is estimated at € 12,920,000 (excluding V.A.T.), excluding land costs. This figure is based on current construction rates and is broken down as follows:

• 1.01km of Dual Carriageway at €4,500/m	= €4,545,000
• 1.10km of Single Carriageway at €2,500/m	= €2,750,000
• 1 No. double lane roundabout at €275,000	= € 275,000
• 3 No. single lane fully segregated roundabouts at €200,000/rb	= € 600,000
• An attenuation lake and surrounding amenity area	= €3,500,000
• Landscaped entrance and security structures	= € 500,000
• Berms & Landscaping	= € 750,000
Total	= €12,920,000 (ex. Vat)

Appendix A – Ecological Impact Assessment

Ecological Impact Assessment

Grange Castle West Access Road, Co. Dublin

Doherty Environmental

September 2018

Ecological Impact Assessment

September 2018

Document Stage	Document Version	Prepared by
Final	3	Pat Doherty MSc, MCIEEM

For and on behalf of

Doherty Environmental

Prepared By: Pat Doherty

Signed: 

This report has been prepared by Doherty Environmental 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 Clifton Scannell Emerson Associates Consulting Engineers on behalf 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.

Table of Contents

1.0 INTRODUCTION

Doherty Environmental Consultants Ltd. (DEC) have been commissioned by Clifton Scannell Emerson Associates (CSEA) to undertake an ecological impact assessment for the proposed Grange Castle West Access Road, Co. Dublin.

DEC understand that this work is to prepare an ecological assessment of the proposed development to allow the relevant information and findings to be incorporated into a planning application for the proposed access road on the subject lands.

The proposed residential dwelling location is presented in Figure 1.1.

1.1 PROJECT DESCRIPTION

1.1.1 Background

The proposed Grange Castle West (GCW) Access Road contains 1.03km of Dual Carriageway with an average corridor width of 34m and 1.15km of Single Carriageway with an average corridor width of 25m. There are a total of 3 No. double lane and 1 No. single lane fully segregated roundabouts proposed for the Grange Castle West Access Road development. Controlled pedestrian and cyclist crossing facilities are predominately provided at all four proposed roundabouts with two uncontrolled crossing facilities proposed at roundabout No. 4.

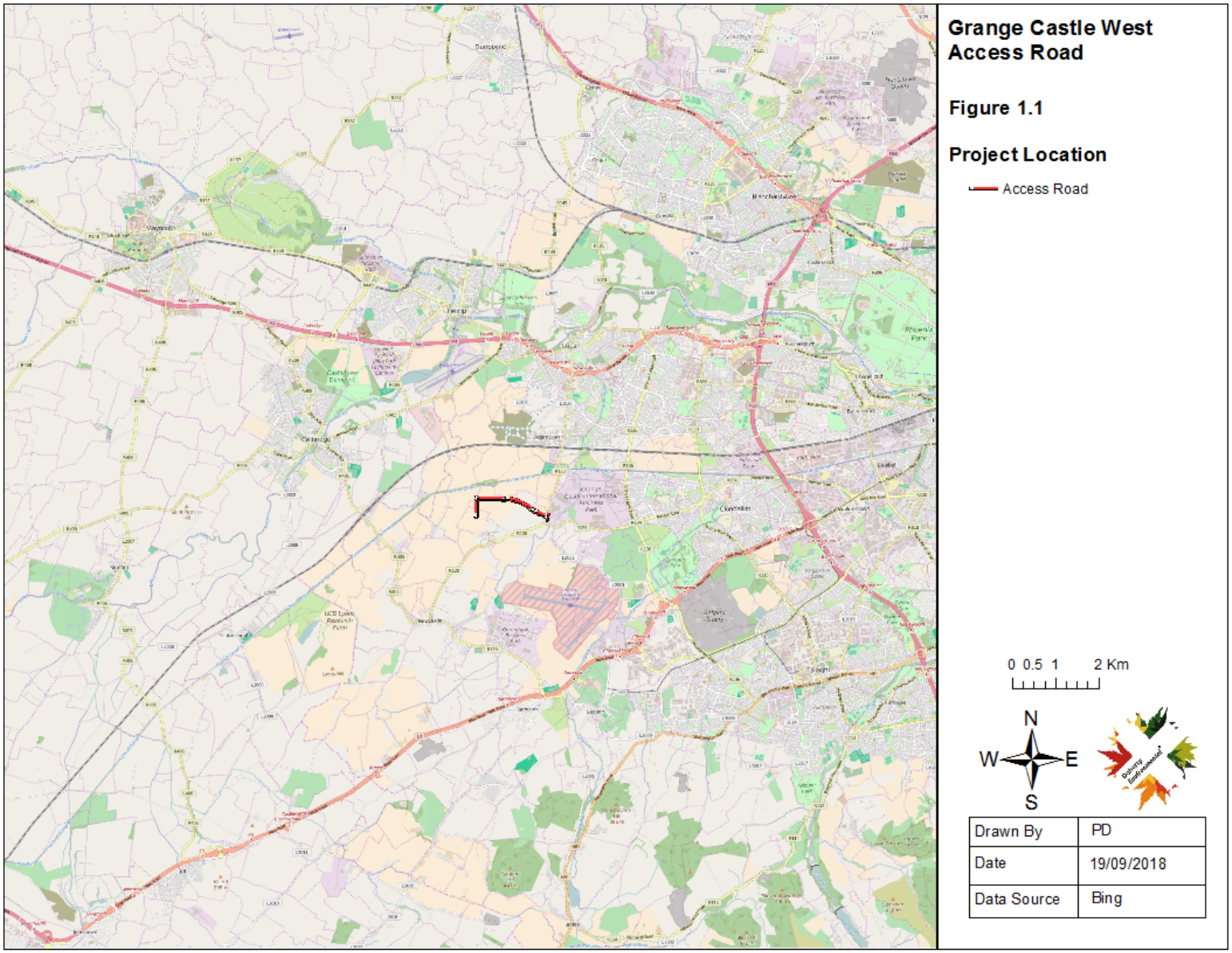
6 No. Bus stops and sustainable transport facilities are proposed to be facilitated within the Grange Castle Access Road development. A architecturally landscape designed attenuation lake is proposed to accommodate surface water drainage requirements generated from the proposed road and surrounding hard-standing areas. The design of the attenuation pond and surrounding lands has incorporated measures to enhance the biodiversity and amenity value of this area.

Landscaped entrance and security structures to aesthetically harmonize with existing Grange Castle and Grange Castle South Business Park entrances is additionally proposed.

The proposed GCW Access Road scheme comprises of the following:

- 1.03km of Dual Carriageway with any average corridor width of 34m.
- 1.15km of Single Carriageway with an average corridor width of 25m.
- 3 No. double lane and 1 No. single lane fully segregated roundabouts.
- Raised 2m wide cycle path and separate 2m wide pedestrian walkway.
- An attenuation lake to accommodate surface water drainage requirements from the proposed road and surrounding hardstand areas, this will double up as an amenity area.
- Controlled and uncontrolled pedestrian and cyclist road crossings.
- Landscaped entrance and security structures to aesthetically harmonize with existing Grange Castle and Grange Castle South Business Park entrances.
- Bus stops and sustainable transport facilities.
- Underground utilities and services including: Storm Water Drainage, Foul Drainage, Watermain, Gas Main (4bar & HP), Power (HV/MV/LV), Telecoms, Public Lighting, CCTV.
- All associated ancillary works and integrated landscape plans.

Access and egress into the proposed GCW Access Road will be gained from a newly formed Grange Castle West Business Park entrance off the western leg of a newly formed signalised junction constructed under the R120/R134 upgrade scheme.


Grange Castle West Access Road
Figure 1.1
Project Location
Access Road
0 0.5 1 2 Km
N
W
E
S
Drawn By PD
Date 19/09/2018
Data Source Bing

1.1.2 The Proposed Scheme

A full description of the proposed access road is provided in the Part 8 Preliminary Design Report prepared by CSEA. The proposed GCW access road scheme comprises of the following:

- 1.03km of dual carriageway with an average corridor width of 34m
- 1.15km of single carriageway with an average corridor width of 25m.
- 3 No. double lane and 1 No. single lane fully segregated roundabouts.
- Future access spurs provided off each of the 4 No. proposed roundabouts.
- 2m wide raised cycle track and pedestrian footway infrastructure and shared surfacing where necessary.
- Bus Stop facilities
- Attenuation Lake
- Security Structures (Kiosk/Tower)
- Road markings, signage and all associated safety features
- Site services (Gas, Power, Telecom, CCTV, Drainage, Watermain and Public lighting)
- All associated landscape finishes and planting

Access and egress into the proposed GCW Access Road will be gained from a newly formed Grange Castle West Business Park entrance off the western leg of a newly formed signalised junction constructed under the SDCC R120/R134 upgrade scheme.

1.1.3 Need for the Scheme

The proposed GCW Access Road is an SDCC roads objective as outlined in chapter 6 of the SDCC Development Plan 2016 - 2022 written statement and as displayed in SDCC's Development Plan 2016 - 2022 Zoning Objective Map. Furthermore, the Grange Castle Western lands which accommodate the proposed GCW Access Road footprint have been recently rezoned from zoning objective RU (Rural and Agricultural) to objective EE (Employment and Enterprise). With this in mind, SDCC's six year road programme under the New Nangor Road/R134 Upgrade roads objective facilitates the overall function of the proposed GCW Access Road which states that the new Nangor Road/R134 upgrade will be built to '*provide improved access to the Grange Castle employment lands from Clondalkin and the R120 with further links to the proposed Western Orbital Route*'.

Furthermore, the function of the future upgrade of existing road from Adamstown to Ballybane, as per table 6.6 of SDCC's medium to long term road objectives, states that these upgrades are to effectively '*provide improved access to the Grange Castle employment area*'.

In summary, Table 6.6 located in Chapter 6 of the SDCC Development Plan 2016 - 2022 written statement outlines corridors that are essential to facilitate a long term road network to provide access between major areas of economic activity and the national and regional road network.

For reason outlined above, the proposed GCW Access Road is required to fulfill all the above SDCC road objectives and to effectively utilise and fulfill the current zoning objective of the Grange Castle western lands which secures a zoning objective EE (Employment and Enterprise) under the recent and approved Variation No. 1 which were made effective in April 2018.

1.1.4 Surface Water Drainage

Details of surface water drainage and management are provided in Section 4.8 of the Preliminary Design Report prepared by CSEA. The proposed surface water management and drainage measures that are detailed in the Preliminary Design Report will be implemented as the first items of the project works during the construction phase. It is proposed to

implemented these items of works first so that surface water can be managed throughout both the construction phase and operation phase of the project.

1.2 LEGISLATION

Flora and fauna in Ireland is 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 (Natural Habitats) Regulations 1997 – 2011 (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. 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 METHODS

2.1 EXTENDED PHASE 1 HABITAT SURVEY

An extended Phase 1 Habitat Survey was undertaken by Doherty Environmental on the 24th May and the 17th June 2018. 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*.

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 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. 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:

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

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

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

2.2 BAT SURVEYS

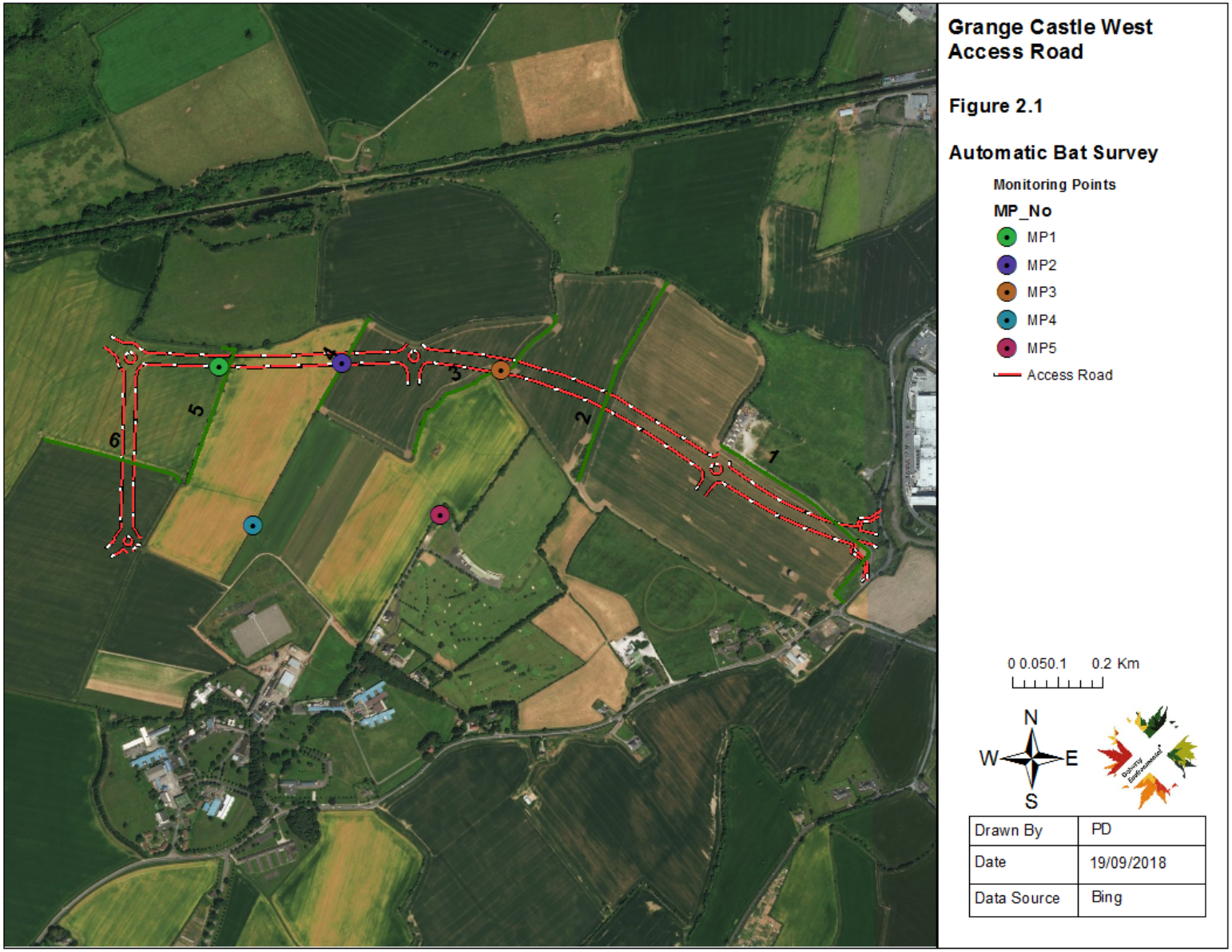
A targeted bat survey was completed to establish the presence or otherwise of bats along hedgerows that will be severed by the proposed access road. Automatic bat detector surveys, using Wildlife Acoustics SM4 Bat Detectors and manual hand-held bat detector transect surveys were completed. The location of the automatic monitoring points and the hand held bat detector surveys are shown on Figure 2.1 below. The six hedgerows to be severed by the proposed access road are number on Figure 2.1 and automatic monitoring points (MPs) were positioned at hedgerows no. 3 (MP3), 4 (MP2) and 5 (MP1) as indicated on Figure 2.1. In addition sections of hedgerow to the south of the access road were also monitored during August 2018. MP4 and MP5 were placed at these locations. Monitoring was completed at these locations to the south to investigate whether there was a noticeable difference in the levels of bat activity recorded along the hedgerows in the vicinity of the access road and near the Grand Canal compared with sections of linked hedgerow further to the south and further away from the Grand Canal.

The automatic surveys were completed over a 25 night period from the 24th May until the 17th June 2018 and again over a seven night period from the 21st August to the 27 August inclusive. Continuous nightly monitoring, commencing 30 minutes before sunset and terminating 30 minutes after sunrise was undertaken during each night of monitoring.

Three rounds of manual hand-held bat detector surveys were completed along hedgerows within and adjacent to the footprint of the proposed access road. The manual transect surveys were completed on the 24th May, 17th July 2018 and 21st August. The manual transect survey on the 24th May and 21st August commenced at 15 minutes prior to sunset. The manual survey on the 17th July commenced with an emergence survey at a farmyard to the west of the of the proposed access road and then commenced the transect survey 45 minutes after sunset. The manual transect surveys lasted for approximately 2.5 hours after sunset.

All bat calls recorded during the automatic monitoring sessions were analysed using Kaleidoscope Pro software (V4.3.0). The bat call classifiers for British Bats provided by Kaleidoscope Pro were used to identify the species responsible for generating the bat call. These classifiers assign calls to species based on call characteristics, with the peak frequency of the calls being particularly important in distinguishing between species with similar call characteristics (i.e. Pipistrelle species). Kaleidoscope Pro automatically identified calls recorded during the monitoring sessions to Serotine, Noctule and Nathusius Pipistrelle bats. Serotine and Noctule are not known to occur in the West of Ireland and the project site is located outside their known distribution range. Nathusius Pipistrelle has been rarely recorded in South Dublin and analysis by Lundy et al. (2011) suggests a low probability of this species occurring in this part of Ireland. As such all automatically identified Serotine and Noctule calls were manually analysed using Analook W and following this analysis all of these calls were assigned to Leisler's Bats. All automatically idenitifed Nathusius Pipistrelle calls were also manually analysed using Analook W. It is noted that the automatic detector monitoring point were positioned in uncluttered habitat. As such any automatically idenitifed Nathusius Pipistrelle call that showed a peak frequency at 40kHz or above were reassigned to Common Pipistrelle. This approach, which is in line with the recommendations outlined in Russ (2012), resulted in all automatically identified Nathusius Pipistrelle calls being reassigned as Common Pipistrelle calls.

The results of the automatic monitoring session are categorised into activity categories that follows those recommended by Matthews et al. (2016). Matthews et al. (2016) categorised nightly activity into low, moderate and high groups with low activity assigned to <5 passes per night; moderate assigned to 5 – 49 passes per night; and high assigned to ≥50 passes per night. This activity hierarchy is used in the analysis and interpretation of automatic monitoring results.


Grange Castle West Access Road
Figure 2.1
Automatic Bat Survey
Monitoring Points
MP_No
MP1
MP2
MP3
MP4
MP5
Access Road
1
2
3
4
5
6
0 0.050.1 0.2 Km
N
W
E
S
Drawn By PD
Date 19/09/2018
Data Source Bing

2.3 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)

2.4 IMPACT ASSESSMENT

2.4.1 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 population's 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.

2.4.2 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 2.1 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 2.1: 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

3.0 RESULTS

3.1 SITE OVERVIEW

The area of the proposed Grange Castle West Access Road comprises a road corridor of approximately 1.76km in length and is located within the townlands of Milltown, Loughtown Upper and Peamount.

The land cover occurring under the footprint of the proposed access road and adjacent to it are dominated by intensively managed cultivated lands. The principal crops noted within the lands during surveys in the summer of 2018 were cereal crops. The subject land and surrounding area comprise primarily the Straffan Soil series, these are fine loamy drifts with limestones. The bedrock also comprised of limestone. The proposed access road lies within the Dublin Bay and Liffey Catchment.

The land cover is also characterised by large field-size pattern and much of the field boundaries comprise box-cut hedgerows.

3.2 DESKTOP ANALYSIS

3.2.1 Designated Conservation Areas

The project site is not located within the boundary of any designated conservation area. Only one European Sites, the the Rye Water Valley/Carton SAC, is located within 5km of the project site. The boundary of this SAC is located approximately 4km to the north of the project site. A Screening Statement for Appropriate Assessment has been prepared for the project and provides an assessment of the project's potential to result in likely significant effects to European Sites. The Screening Statement has concluded that the project will not have the potential to result in likely significant effects to any European Sites occurring in the wider area surrounding the project site.

No Natural Heritage Area (NHA) occur within a 5km radius of the project site.

Two proposed NHAs (pNHAs) occur within a 5km radius of the project site. These are the Grand Canal pNHA, located approximately 200m to the north of the proposed access road

and the Liffey Valley pNHA, located approximately 3.4km to the north. An overview of both these pNHAs is provided in the following subsections.

The relationship between the project site and the above designated conservation areas is shown on Figure 3.1.

3.2.1.1 Overview of the Grand Canal pNHA

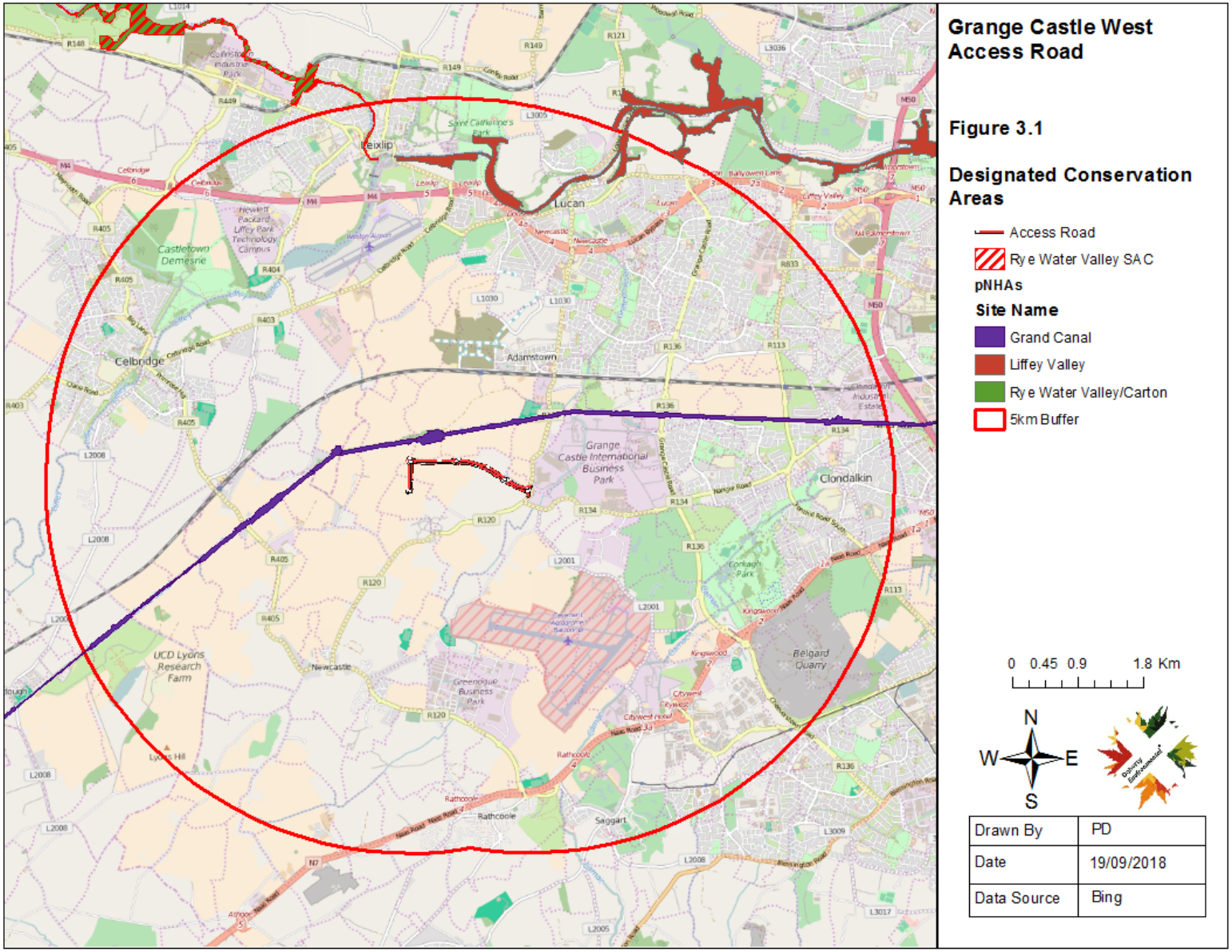
Detailed surveys of the habitats, flora and fauna of the section of the Grand Canal in the vicinity of the project site were completed during August and September 2015 and between June and September 2016. The 2015 surveys were completed by Roughan & O'Donovan Consulting Engineers (ROD) on behalf of Waterways Ireland and the 2016 surveys were completed by FERS Ltd. on behalf of South Dublin County Council.

The ROD 2015 surveys mapped habitats and recorded the flora and fauna occurring along the Grand Canal during the field surveys. The FERS Ltd. 2016 surveys involved targeted bat and otter surveys along the Grand Canal between the 12th Lock and Hazelhatch.

The ROD 2015 surveys were published in March 2016 (ROD, 2016). A detailed description of the habitats, flora and fauna occurring along the canal between Hazelhatch and Gollierstown Bridge and Gollierstown Bridge and the 12th Lock are provided in the ROD Ecological Assessment Report and are summarised below.

An Ecological Sensitive Area (ESA: noted as ESA 6 in the ROD 2016 report) is located along both sides of the canal between Hazelhatch and the 12th Lock. The ESA is restricted to the northern bankside of the canal along the stretch of the canal to the north of the proposed access road. The ROD 2016 report describes this ESA as follows:

This ESA is identified for the diverse vegetation within the open channel and the rich diversity and zonation on the canal verge. The aquatic diversity includes Sagittaria sagittifolia swamp amongst well developed fringe Nuphar-Potamogeton communities. The Phragmites swamp is also well developed along the canal margins between Aylmers and Golierstown Bridges.


Grange Castle West Access Road
Figure 3.1
Designated Conservation Areas
Access Road
Rye Water Valley SAC
pNHAs
Site Name
Grand Canal
Liffey Valley
Rye Water Valley/Carton
5km Buffer
0 0.45 0.9 1.8 Km
N
W
E
S
Drawn By PD
Date 19/09/2018
Data Source Bing
Leixlip
Lucan
Celbridge
Adamstown
Clondalkin
Castletown Demesne
Grange Castle International Business Park
UCD Lyons Research Farm
Belgard Quarry
Rathcoole
Saggart
Newcastle

The south canal verge is also diverse with Common Spotted Orchid (Dactylorhiza fuchsii) and many constant species of neutral and dry calcareous grassland abundant. Beyond the south canal boundary there is a mature species-rich hedgerow/woodland including Oak, Ash, Spindle, Sycamore, Willow and Beech. The scrub and woodland mosaic along the north boundary of the canal between Hazelhatch and Aylmer Bridges is also diverse.

The habitats recorded along the section of the canal between Hazelhatch and the 12th Lock are listed in Table 3.1 below.

Table 3.1: Habitats occurring along the Grand Canal pNHA to the north of the porposed Access Road

Habitat Code	Habitat Name
FW3	Canals
GS2	Dry meadows and grassy verges
BL3	Buildings and artificial surfaces
BL3	Buildings and artificial surfaces/Amenity Grassland
GA2	Amenity Grassland
WD1/WS1	Broadleaved Woodland (mixed)/Scrub
GA1	Improved agricultural grassland
WD1	Broadleaved Woodland (mixed)
ED3	Recolonising bare ground
WS1	Scrub
WL2	Treeline
FL8	Artificial Ponds
Towpath Mosaic	

The ROD 2016 report described the habitats and flora between Hazelhatch and the 12th Lock as follows:

Between Hazelhatch and Gollierstown Bridge the towpath runs along the northern side of the canal and comprises a gravel surface to the west before changing to a grassy towpath with surrounding habitats including treelines to the north and reed and tall sedge swamp to the south on the canal verge. As the pathway continues along the northern side of the canal

eastwards the treeline that borders the site expands into areas of broadleaved woodland (WD1) with patches of Riparian woodland (WN5) present in places on both sides of the canal. The species diversity in this section is relatively low with horsetails, common vetch, nettles and brambles common throughout. Several artificial ponds (FL8) are present just outside the towpath area as the pathway comes closer to Gollierstown Bridge.

Between Gollierstown Bridge and the 12th Lock the canal the towpath continues on the northern side of the canal along this section and is comprised of a grassy pathway with some occasional gravel. The southern side of the canal close to Gollierstown shows some signs of poaching by farm animals that may access the canal from the agricultural fields to the south.

The northern side of the canal is bordered by scrub (WS1) and treeline (WL2) with hemp agrimony and Phragmites australis frequent along the canal verge throughout this section.

The middle section of this stretch is shaded and sheltered by high treeline (WL2) on either side of the canal.

On the approach to the 12th lock the surrounding habitats change and the area becomes more urbanised with commercial units adjacent to the towpath and artificially surfaced areas (BL3) increasing.

The invasive waterweeds Canadian Waterweed (Elodea canadensis) and Nuttal's Waterweed (Elodea nutallii) were recorded along this section of the canal. No rare or protected flora noted during the 2015 surveys.

A dedicated otter survey of the Grand Canal between the 12th Lock and Hazelhatch was completed between June and September 2016 (FERS, 2016). The surveys found that the entire stretch survey area, with the exception of a 400m buffer zone from Hazelhatch and a 300m buffer zone from the 12th Lock was used by otters. Spraints were regularly recorded along the canal with tracks/trails and slides also ubiquitous along the length of the survey area.

A preliminary walkover survey of the Grand Canal to the north of the proposed access road was completed in September 2017. Habitats and flora consistent with that noted during the ROD 2015 surveys were recorded during this walkover survey. In addition evidence of otters

in the form of spraints, slides and footprints were noted along the canal in the vicinity of the artificial ponds (to the west of Gollierstown Bridge) along the southern canal bankside.

In addition to the above the National Biodiversity Data Centre (NBDC) hold records for Desmoulin's Whorl Snail (*Vertigo moulinsiana*) and Narrow-mouthed Whorl Snail (*Vertigo angustior*) on the Grand Canal. Marsh Whorl Snail (Vertigo antivertigo) has also been recorded here, which is another European and Nationally protected species due to its rarity and recent declines in its population numbers. Suitable habitats for these species occur along the section of the canal to the north of the project site.

Other rare and protected species supported by the Grand Canal include white-clawed crayfish, opposite-leaved pondweed and kingfisher. However the banks of the Grand Canal to the north of the project site are not suitable as nest sites for kingfisher as they are vegetation and generally low. Lamprey have also been recorded along the 11th level of the Canal (i.e. downstream of the 12th Lock) during Inland Fisheries Ireland (IFI) fish surveys in October 2011. Other fish species recorded along the canal during IFI surveys include roach, bream, tench, rudd, pike, and perch.

3.2.1.2 Overview of the Liffey Valley pNHA

The River Liffey is a designated salmonid water and the Liffey Valley pNHA forms part of the Liffey Valley Special Amenity Areas Order 1990. The Liffey Valley pNHA is important because of the diversity of the habitats within the site, ranging from aquatic to terrestrial. A number of rare and threatened plant species have been recorded from the site including the threatened Green Figwort (*Scrophularia umbrosa)*, a species listed in the Irish Red Data Book, which has been recorded from a number of stations along the river within the site. The rare and legally protected Hairy St. John's-Wort (*Hypericum hirsutum)* (Flora Protection Order 2015) has been recorded from woodlands in this site. This species has only been recorded in Kildare and Dublin, at sites on the river Liffey, since 1970. The threatened Yellow Archangel (*Lamiastrum galeobdolon)*, listed in the Irish Red Data Book, is also recorded in the Liffey Valley pNHA woodlands.

3.2.2 Protected Species Records

The available landholding spans the four tetrads O03A, O03B, O03F O03G and O03R. A review of protected and rare species records for each of these tetrads held by Biodiversity Ireland (www.biodiversityireland.ie accessed on the 20th November 2017) was undertaken.

The protected, rare and/or sensitive species recorded within the 4 tetrads surrounding the Proposed access road are outlined in *Table 4.3* As virtually all birds are protected in Ireland, only records for amber and red listed species are detailed in this table. A comment on the likelihood of each of these species occurring within the Proposed access road is also provided in the table below.. The likelihood of presence is based upon the habitat occurring within the Proposed access road.

Table 3.2: Protected and/or Rare Species occurring in the 4 Tetrads surrounding the Proposed access road

Common Name	Status	Record Date	Likelihood of being supported by the project site and adjacent area
Smooth Newt	Protected Species: Wildlife Acts	2010	Suitable habitat is provided along field boundary hedgerow and drainage ditches and along the Coldflow Stream. Ponds located adjacent to the Grand Canal to the north of the proposed access road provide suitable habitat for this species also.
Common Frog	Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts	1997 2011	Suitable habitat is provided along field boundary hedgerow and drainage ditches and along the Coldflow Stream. Ponds located adjacent to the Grand Canal to the north of the proposed access road provide suitable habitat for this species also.
Kestrel	Amber Listed	Bird Atlas 2007 - 2011	Suitable foraging habitat is available for kestrel within and adjacent to the SDZ.
Common Buzzard	Green Listed	Bird Atlas 2007 - 2011	Suitable habitat is provided within the proposed access road.
Sparrowhawk	Green Listed	Bird Atlas 2007 - 2011	Suitable habitat is provided within the proposed access road.
Red Kite	Amber Listed	2016	Suitable habitat is provided within the proposed access road.

Common Name	Status	Record Date	Likelihood of being supported by the project site and adjacent area
Skylark	Amber Listed	Bird Atlas 2007 - 2011	Suitable habitat is provided within the proposed access road.
Common Swift	Amber Listed	Bird Atlas 2007 - 2011	Suitable habitat is provided within the proposed access road.
Yellowhammer	Red Listed	Bird Atlas 2007 - 2011	Suitable habitat is provided within the proposed access road.
Black-headed Gull	Red Listed	Bird Atlas 2007 - 2011	Winter roosting habitat is provided within the proposed access road.
Grey Wagtail	Red Listed	Bird Atlas 2007 - 2011	Suitable habitat is provided within the proposed access road.
Golden Plover	Red Listed	Bird Atlas 2007 - 2011	Suitable roosting and winter grazing on stubble is provided within the Proposed access road.
Mistle Thrush	Amber Listed	Bird Atlas 2007 - 2011	Suitable habitat is provided within the Proposed access road.
Kingfisher	Protected Species; Listed on Annex 1 of EU Birds Directive; Amber-listed.	Bird Atlas 2007 - 2011	Suitable roosting and foraging habitat is provided along the Grand Canal to the north. Habitat within the Proposed access road is limited for kingfisher.
Little Egret	Protected Species; Listed on Annex 1 of EU Birds Directive	Bird Atlas 2007 - 2011	Suitable roosting habitat is provided along the Grand Canal. Suitable foraging habitat is provided in artificial ponds in the wider area surrounding the SDZ.
House Martin	Amber Listed	Bird Atlas 2007 - 2011	Suitable habitat is provided within the proposed access road.
Little Grebe	Amber Listed	Bird Atlas 2007 - 2011	Suitable roosting and foraging habitat is provided along the Grand Canal to the north.
Northern Lapwing	Red Listed	Bird Atlas 2007 - 2011	Suitable roosting habitat is provided along the Grand Canal. Grasslands within the Proposed access road provide suitable foraging habitat for lapwing.
Tufted Duck	Red Listed	Bird Atlas 2007 - 2011	Suitable roosting and foraging habitat is provided along the Grand Canal to the north.
Common Coot	Amber Listed	Bird Atlas 2007 - 2011	Suitable roosting and foraging habitat is provided along the Grand Canal to the north.

Common Name	Status	Record Date	Likelihood of being supported by the project site and adjacent area
Mute Swan	Amber Listed	Bird Atlas 2007 - 2011	Suitable roosting and foraging habitat is provided along the Grand Canal to the north.
Cormorant	Amber Listed	Bird Atlas 2007 - 2011	Suitable roosting and foraging habitat is provided along the Grand Canal to the north.
Herring Gull	Red Listed	Bird Atlas 2007 - 2011	Winter roosting habitat is provided within the Proposed access road.
Lesser Black-backed Gull	Amber Listed	Bird Atlas 2007 - 2011	Winter roosting habitat is provided within the Proposed access road.
Great Black-backed Gull	Amber Listed	Bird Atlas 2007 - 2011	Winter roosting habitat is provided within the Proposed access road.
Linnet	Amber Listed	Bird Atlas 2007 - 2011	Suitable habitat is provided within the SDZ.
Barn Swallow	Amber Listed	Bird Atlas 2007 - 2011	Suitable habitat is provided within the proposed access road.
House Sparrow	Amber listed	Bird Atlas 2007 - 2011	Suitable habitat is provided within the proposed access road.
Common Starling	Amber listed	Bird Atlas 2007 - 2011	Suitable habitat is provided within the proposed access road.
Redshank	Red Listed	Bird Atlas 2007 - 2011	Suitable roosting habitat is provided along the Grand Canal.
Trimmer's Mining Bee	Critically Endangered	1977	No recent record of this species. The last record of this species in the tetrad O03G was from 1977. Preferred nest sites for this species occurs in sparsely vegetated or short cropped areas exposed to sunshine such as south-facing banks and slopes. Such banksides are limited within the proposed access road. Furthermore there is a limited abundance of food plants within the proposed access road.
Andrena (Melandrena) nigroaenea	Vulnerable	1977	See appraisal for Trimmer's Mining Bee.
Pisidium hibernicum	Near threatened	2003	Last recorded in 2003 in the tetrad O03G. Likely to be supported by the freshwater habitats adjacent to the Proposed access road such as the Grand Canal.

Common Name	Status	Record Date	Likelihood of being supported by the project site and adjacent area
Pisidium pulchellum	Near Threatened	2003	Last recorded in 2003 in the tetrad O03G. Likely to be supported by the freshwater habitats within and adjacent to the SDZ such as the canal and Griffeen Streams.
Myxas glutinosa	Endangered		Last recorded in 2003 in the tetrad O03R. The Grand Canal is known to support this species.
Chaetarthria seminulum	Threatened	1987	This species is mainly associated with large lake habitats. No record for this species in the wider region was noted in the Red List of Irish Water Beetles (Foster, 2009).
Otter	Protected Species; EU Habitats Directive Annex II	1980 1982	Suitable foraging habitat is provided along the Grand Canal. Limited foraging potential is provided along the Coldblow Stream flowing through the lands.
Irish Hare	Protected Species: Wildlife Acts	2006	Suitable foraging habitat is provided within and adjacent to the Proposed access road.
Badger	Protected Species: Wildlife Acts	1992 2008	Suitable foraging habitat is provided within and adjacent to the Proposed access road.
Hedgehog	Protected Species: Wildlife Acts	2012	Suitable foraging habitat is provided within and adjacent to the Proposed access road.
Daubenton's Bat	Protected Species; EU Habitats Directive Annex IV	2013 2014	Suitable foraging habitat is provided along the Grand Canal.
Leisler's bat	Protected Species; EU Habitats Directive Annex IV	2002 2009	Suitable foraging habitat is provided within and adjacent to the Proposed access road.
Soprano pipistrelle	Protected Species; EU Habitats Directive Annex IV	2009 2013	Suitable foraging habitat is provided within and adjacent to the Proposed access road.
Common pipistrelle	Protected Species; EU Habitats Directive Annex IV	2002 2009	Suitable foraging habitat is provided within and adjacent to the Proposed access road.

Common Name	Status	Record Date	Likelihood of being supported by the project site and adjacent area
Brown long-eared	Protected Species; EU Habitats Directive Annex IV	2002	Suitable foraging habitat is provided within and adjacent to the Proposed access road.
Pygmy shrew	Protected Species: Wildlife Acts	2012	Suitable foraging habitat is provided within and adjacent to the Proposed access road.
Meadow Barley	Protected: Flora Protection Order; Endangered	1922	No recorded since 1922. Unlikely to occur within the Proposed access road.

3.2.3 Invasive Plant Species

There are no records of invasive plant species occurring within the footprint of the proposed access road. Snowberry (*Symphoricarpos albus*) was noted along hedgerows within the vicinity access road. This is an amber listed invasive species.

3.3 SURVEY RESULTS

3.3.1 Habitats

The following Sub-Sections describe the habitats occurring within and immediately adjacent to the project site. Each habitat described below has been identified to Level 3 of Fossit's *Guide to Habitats in Ireland*. The alpha-numeric code for each habitat is also provided alongside the habitat name (e.g. Treeline WL2). The locations and extent of each habitat described below are illustrated in Figure 3.2: Habitat Map.

Four Level 1 broad habitat groups were identified within and adjacent to the proposed access road. These include Freshwater, Grassland, Woodland and Cultivated & Built Land habitats. The level 3 habitat types occurring within each of this habitat groups are described under the following sub-sections.

3.3.1.1 Freshwater Habitats

The freshwater habitats crossed by the proposed access road is restricted to the Coldblow Stream. Drainage ditches, which are ephemeral in nature, also occur along field boundaries

crossed by the proposed access road. During field surveys in September, May, June, July and August these ditches were dry and did not support wetland vegetation.

The Coldflow/Lucan Stream flowing north through the site is representative of a minor lowland depositing stream. The upper stretch of this stream will be crossed by the proposed access road. This section of the watercourse is predominantly enveloped by field boundary hedgerows. Where the channel is open it is choked with abundant macrophytes, dominated by *Apium nodiflorum*. This watercourse flows into the River Liffey approximately 4km to the north of the proposed access road. The section of this watercourse to the south of the Grand Canal has very little fishery potential and is not considered to be important in terms of supporting aquatic fauna.

3.3.1.1.1 Nature Conservation Value

The nature conservation value of the section of the Coldblow Stream to be crossed by the proposed access road is of low nature conservation value (Rating E). The drainage ditches occurring along the proposed alignment are of low nature conservation value (Rating E).

3.3.1.2 Grassland

The examples of grassland occurring to the north of the proposed access road are dominated by improved agricultural grassland (GA1). This habitat is dominated by grasses throughout, particularly *Lolium perenne*, with very little herb cover. *Agrostis stoloni*fera is also abundant in examples of this habitat and *Ranunculus repens, Senecio jacobaea* and *Cirsium arvense* are the dominant herbs.

3.3.1.2.1 Nature Conservation Value

This habitat is of low nature conservation value (Rating E).

3.3.1.3 Woodland

The woodland habitats occurring within and immediately adjacent to the proposed access road consist of linear woodland habitats in the form of field boundary hedgerows and treelines. These habitat are of local nature conservation value and provide connectivity between lands to the south and the Grand Canal pNHA to the north. The hedgerow field

boundaries crossed by the access route are historic with all boundaries evident on 6 inch historic maps from the early 1800's. Hedgerows no. 1 and 6 (see no. field boundaries crossed by the proposed access road on Figure 3.2) are also representative of townland boundaries.

The hedgerows crossed by the proposed access road are dominated by *Crataegus monogyna*, *Prunus spinosa, Sambucus nigra* and *Rosa canina*. Mature trees occur along hedgerows and these are dominated by *Fraxinus excelsior*, with *Acer pseudoplatanus, Quercus petraea* and *Fagus sylvatica* also occurring. A line of *Popolus* sp. also occurs towards the eastern end of the proposed alignment. The herb layer along the field boundaries is of low diversity and is dominated by commonly occurring species such as *Urtica dioica, Rubus fruticosus agg., Chamerion angustifolium, Heracleum sphondylium, Rumex acetosa* and *Ranunculus repens*.

3.3.1.3.1 Nature Conservation Value

While the hedgerows and treelines crossed by the proposed access road are highly managed and species-poor they do provide habitat for fauna, particularly birds, bat species and smaller mammals. The hedgerows are of local nature conservation value (Rating D).

3.3.1.4 Cultivated & Built Land

The cultivated and built land habitats occurring within and immediately adjacent to the access road consist of arable crops (BC1) and built land (BL3). The arable crop habitats support little native flora and are of low ecological value. The buildings and artificial surfaces habitats that occur in the vicinity of the proposed access road comprise a halting site located to the north of the proposed alignment.

3.3.1.4.1 Nature Conservation Value

The cultivated and built land habitats are of low ecological value (Rating E).

3.3.2 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.

3.3.2.1 Birds

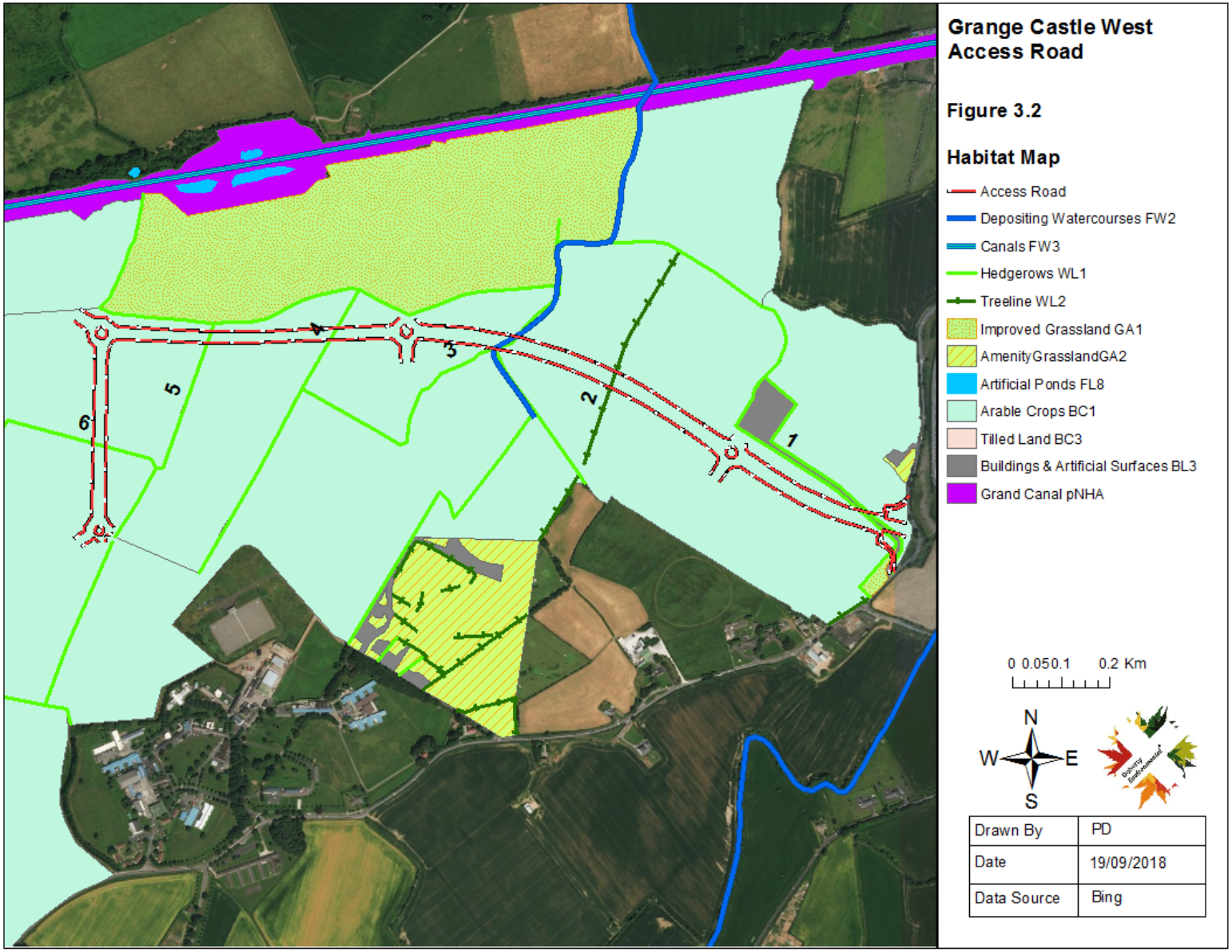
A range of commonly occurring passerine species were noted during field surveys. Herring gulls were also recorded frequently overflying the area during field surveys in September 2017. Other species recorded in the vicinity of the site during Grand Canal surveys (ROD, 2015; Tobins, 2015) include whitethroat, chiffchaff, willow warbler, blackcap, tree sparrow, blue tit, great tit, long-tailed tit, bullfinch, chaffinch, goldfinch, greenfinch, swallow, meadow pipit, robin, skylark, song thrush and starling. In addition three yellowhammers were recorded to the north of the Grand Canal and the project site in the vicinity of Adamstown (Tobins, 2015).

Species recorded during field surveys in May and June 2018 include kestrel, buzzard, chiffchaff, blackcap, robin, wren, wood pigeon, song thrush, starling, swallow, blue tit, coal tit, great tit, goldfinch. Chaffinch and greenfinch.

Raptor bird prey remains were noted at a number of locations along field boundaries in the vicinity of mature trees.

3.3.2.2 Non-Volant Mammals

Field boundaries to be crossed by the proposed access road were walked and a search of badger setts or field signs indicating the presence of other protected non-volant mammal species was undertaken along these boundaries. No evidence of badgers or their setts were identified along these field boundaries.


Grange Castle West Access Road
Figure 3.2
Habitat Map
Access Road
Depositing Watercourses FW2
Canals FW3
Hedgerows WL1
Treeline WL2
Improved Grassland GA1
AmenityGrasslandGA2
Artificial Ponds FL8
Arable Crops BC1
Tilled Land BC3
Buildings & Artificial Surfaces BL3
Grand Canal pNHA
0 0.050.1 0.2 Km
N
W
E
S
Drawn By PD
Date 19/09/2018
Data Source Bing
1
2
3
4
5
6

3.3.2.3 Volant Mammals – Bats

3.3.2.3.1 Manual Survey Results

During the May manual survey Leisler's bat and pipistrelle species dominated the activity recorded along the transect. Figure 3.3 shows the locations where Leisler's bat, Soprano pipistrelle and Common pipistrelle foraging and commuting activity were recorded during May and July 2018. During this survey no more than one Leisler's bat was visually observed at any one time. A total of three Common pipistrelle were observed foraging along the hedgerow associated with the Coldblow Stream in the vicinity of Automatic Monitoring Point No. 3.

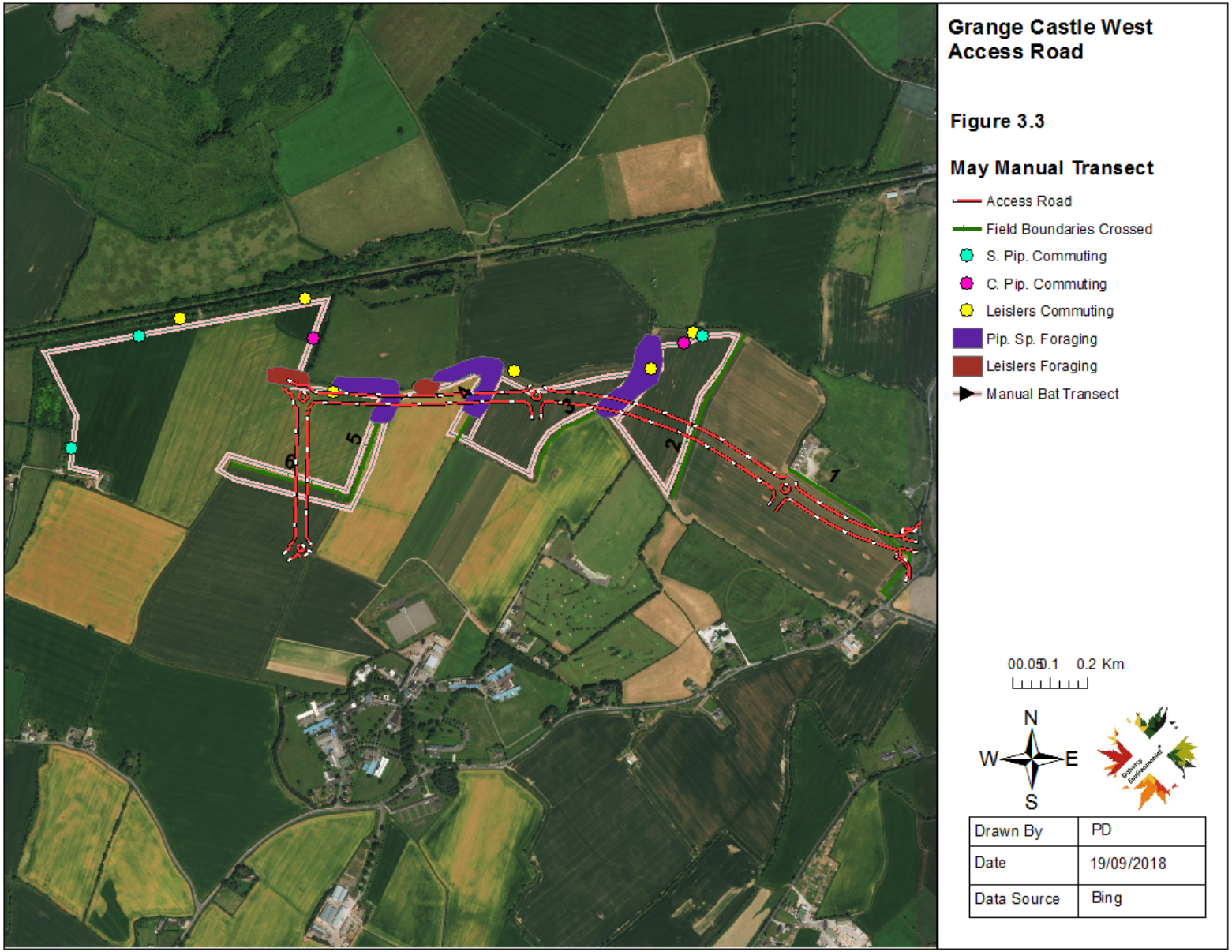
During the July manual survey no bats were recorded emerging from the farmyard buildings to the west of the access road. Activity during the manual transect survey was overall low with Soprano pipistrelle being the dominant species recorded. Leisler's bats were recorded at only two locations with fleeting calls registered, indicative of commuting bats. Locations of Soprano pipistrelle foraging activity are shown on Figure 3.4. Two locations of foraging activity were recorded and these locations are consistent with those recorded during the May transect surveys. Aside from these locations activity was otherwise low with only brief commuting passes recorded.

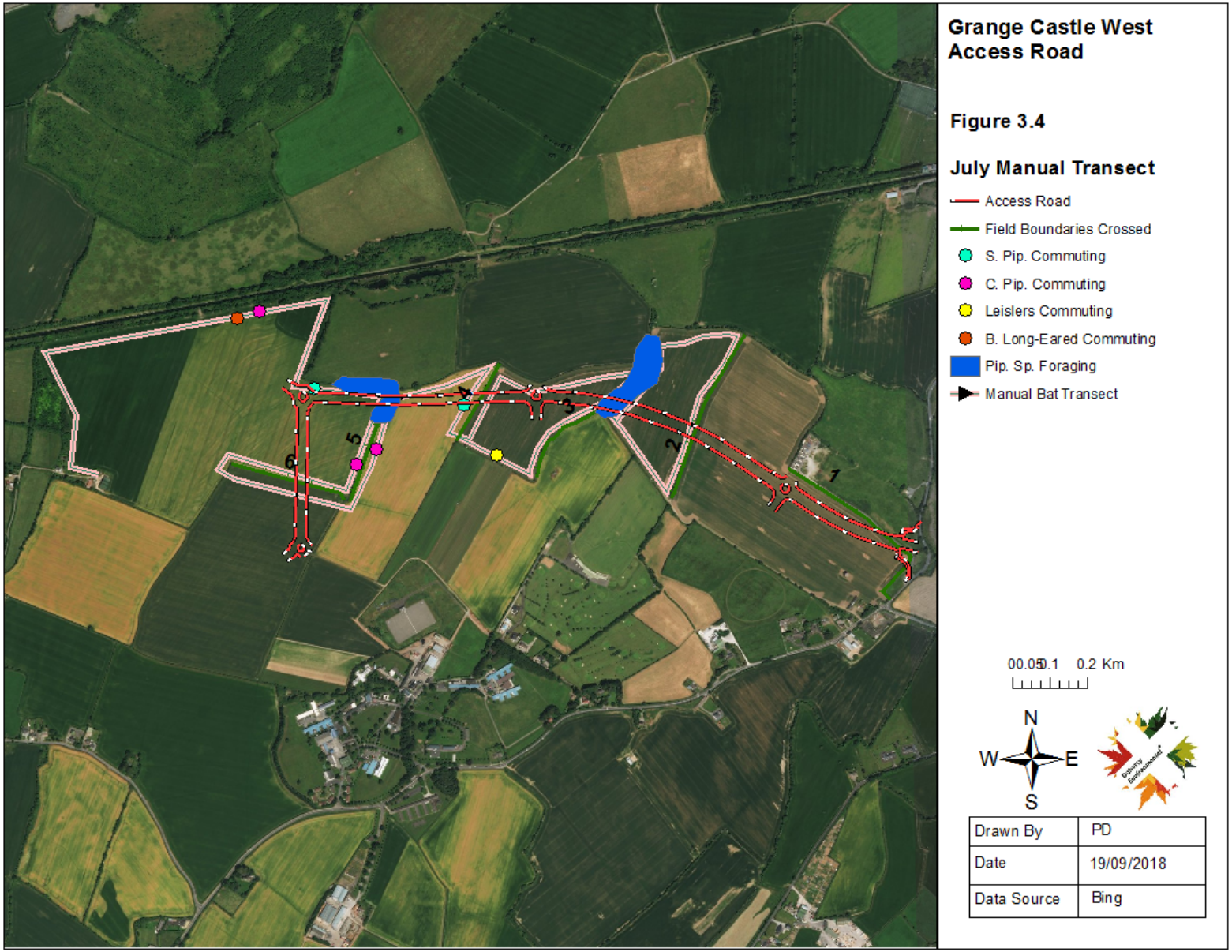
Activity during the August manual transect survey was low with Common pipistrelle being the dominant species recorded. Activity for this species was restricted to the northern sections of the transect. Foraging of this species by at least two individuals was recorded along the Coldblow Stream hedgerow. The locations of Common pipistrelle foraging activity is shown on Figure 3.5.

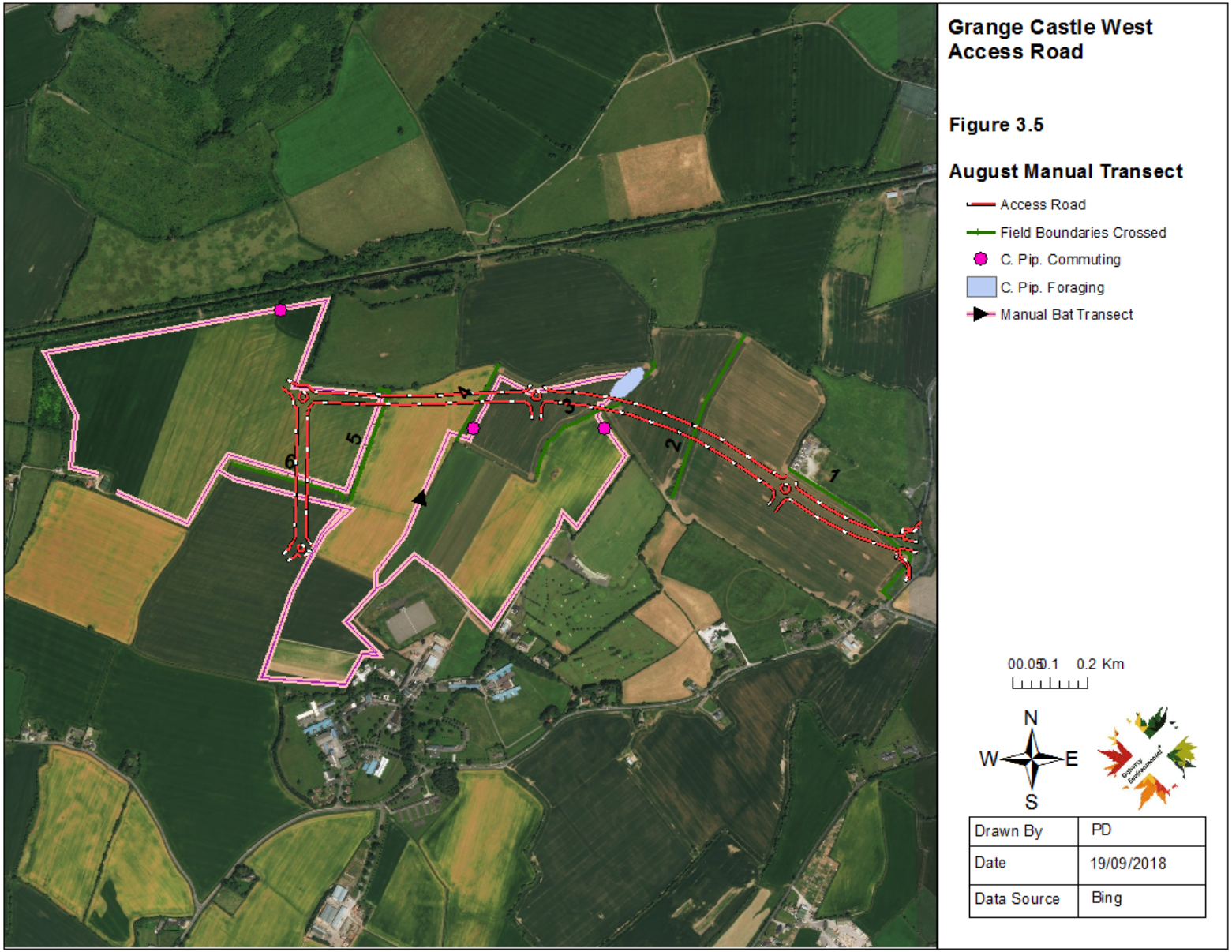
During both the May, June and August manual surveys a combined total of four bat species were recorded along the survey transect. These were Leisler's bat, Common pipistrelle, Soprano pipistrelle and Brown long-eared bat. No Myotis species were recorded during the transect surveys.

In terms of the hedgerows to be severed by the proposed access road the following results are noted. No bat activity was recorded along Field Boundaries 2 and 6 during the manual transect surveys in both May and July. Foraging Common pipistrelle activity was recorded

along Field Boundaries 3, 4 and 5 during the manual transect survey in May. No bat activity was recorded along Field Boundary 4 during the July transect survey, while foraging Common pipistrelle and Soprano pipistrelle activity was recorded at Field Boundary 3 and 5 during the July transect survey. Leisler's bat foraging activity was recorded over hedgerows immediately to the north of the alignment during May. No Leisler's bat foraging activity was recorded during the July survey.


Grange Castle West Access Road
Figure 3.3
May Manual Transect
Access Road
Field Boundaries Crossed
S. Pip. Commuting
C. Pip. Commuting
Leislers Commuting
Pip. Sp. Foraging
Leislers Foraging
Manual Bat Transect
1
2
3
4
5
6
0 0.05 0.1 0.2 Km
N
W
E
S
Drawn By PD
Date 19/09/2018
Data Source Bing


Grange Castle West Access Road
Figure 3.4
July Manual Transect
Access Road
Field Boundaries Crossed
S. Pip. Commuting
C. Pip. Commuting
Leislers Commuting
B. Long-Eared Commuting
Pip. Sp. Foraging
Manual Bat Transect
0 0.05 0.1 0.2 Km
N
W
E
S
Drawn By PD
Date 19/09/2018
Data Source Bing


Grange Castle West Access Road
Figure 3.5
August Manual Transect
Access Road
Field Boundaries Crossed
C. Pip. Commuting
C. Pip. Foraging
Manual Bat Transect
1
2
3
4
5
6
0 0.05 0.1 0.2 Km
N
W
E
S
Drawn By PD
Date 19/09/2018
Data Source Bing

3.3.2.3.2 Automatic Survey Results

May – June 2018

An extensive session of automatic nightly monitoring for bats was completed at the project site. Monitoring was undertaken from the 24th May until the 18th June, consisting of 24 nights of continuous bat monitoring. The results of the monitoring at the project site are presented in Tables 3.3 to 3.5 below.

During the monitoring session weather conditions were ideal for bat activity with the exception of the night of the 13th June when stormy conditions with high winds and rain persisted. The adverse conditions on this night are reflected in the results of the monitoring with very low levels of activity for all bat species recorded.

Table 3.3: Results of Automatic Nightly Bat Monitoring at Monitoring Point 1

Date	MY SP	NYLE	PIPI	PIPY	PLAUR	Total/Night	Bat Activity Category
20180524	1	520	135	7	1	664	High
20180525	0	409	427	15	1	852	High
20180526	0	290	44	10	0	344	High
20180527	0	226	20	1	0	247	High
20180528	0	106	96	3	2	207	High
20180529	0	136	93	17	0	246	High
20180530	0	256	19	7	1	283	High
20180531	0	257	16	1	0	274	High
20180601	1	160	4	1	0	166	High
20180602	0	253	72	0	0	325	High
20180603	0	106	7	2	0	115	High
20180604	0	169	43	1	0	213	High
20180605	0	137	5	1	0	143	High
20180606	0	155	8	1	0	164	High
20180607	1	97	25	3	1	127	High
20180608	1	251	43	9	1	305	High
20180609	0	120	42	1	0	163	High
20180610	0	379	92	10	0	481	High
20180611	0	276	9	3	0	288	High
20180612	0	224	35	5	0	264	High
20180613	0	1	0	0	0	1	Low
20180614	0	86	4	1	0	91	High
20180615	0	180	34	0	0	214	High
20180616	0	142	0	0	0	142	High

20180617	0	38	1	1	0	40	Medium
Total Passes	4	4974	1274	100	7	6359	

MY SP = Myotis species; NYLE = Leisler's bat; PIPI = Common pipistrelle; PIPY = Soprano pipistrelle; PLAUR = Brown long-eared bat.

The bat activity recorded at monitoring point (MP) 1 was overwhelmingly dominated by Leisler's bats. High levels of activity were recorded for this species throughout the monitoring session. These levels of activity are representative of foraging activity over the project site. Common pipistrelle was also consistently recorded during the monitoring session but levels of activity varied from low to high category levels. Activity levels for Myotis species, Soprano pipistrelle and Brown long-eared were low through the survey period.

Table 3.4: Results of Automatic Nightly Bat Monitoring at Monitoring Point 2

Date	My SP	NYLE	PIPI	PIPY	PLAUR	Total/Night	Bat Activity Category
20180524	0	31	45	14	0	90	High
20180525	0	37	8	1	0	46	Medium
20180526	0	10	2	0	0	12	Medium
20180527	0	18	43	8	0	69	High
20180528	0	8	91	4	0	103	High
20180529	0	6	10	1	0	17	Medium
20180530	0	16	37	8	0	61	High
20180531	1	28	29	5	0	63	High
20180601	0	37	37	1	0	75	High
20180602	0	12	52	2	0	66	High
20180603	0	9	30	2	0	41	Medium
20180604	0	13	75	3	0	91	High
20180605	1	8	43	3	1	56	High
20180606	0	5	47	2	0	54	High
20180607	0	12	33	7	0	52	High
20180608	0	8	60	5	0	73	High
20180609	0	4	22	3	0	29	Medium
20180610	0	11	39	3	0	53	High
20180611	0	27	9	0	0	36	Medium
20180612	0	11	59	2	0	72	High
20180614	0	9	2	1	0	12	Medium
20180615	0	10	8	0	0	18	Medium
20180616	0	45	3	0	0	48	Medium

20180617	0	3	0	0	0	3	Low
Total Passes	2	378	784	75	1	1240	

Bat activity at MP2 was dominated by Common pipistrelles, accounting for over 60% of all activity recorded. The levels of nightly activity recorded for this species were within the Medium Activity Category. Leisler's bat was the next most active bat during the monitoring session, with its activity levels also falling into the Medium Activity Category. Activity for all other species was on the whole very low throughout the monitoring session at MP2.

Nightly bat activity for all species was dominated by High Activity levels with 14 of the nights of surveying falling into this activity category.

Table 3.5: Results of Automatic Nightly Bat Monitoring at Monitoring Point 3

Date	MY SP	NYLE	PIPI	PIPY	PLAUR	Total/Night	Bat Activity Category
20180524	0	244	139	107	0	490	High
20180525	0	288	17	1	0	306	High
20180526	0	170	9	0	0	179	High
20180527	0	55	51	3	0	109	High
20180528	1	61	48	1	0	111	High
20180529	0	126	15	3	0	144	High
20180530	0	79	94	26	0	199	High
20180531	0	131	37	9	0	177	High
20180601	6	246	106	23	0	381	High
20180602	1	148	30	15	0	194	High
20180603	0	110	10	7	0	127	High
20180604	2	129	11	13	0	155	High
20180605	0	109	15	1	0	125	High
20180606	0	232	32	3	0	267	High
20180607	0	267	7	1	0	275	High
20180608	0	222	46	7	0	275	High
20180609	1	26	30	4	0	61	High
20180610	0	35	19	1	0	55	High
20180611	0	127	13	1	0	141	High
20180612	0	239	34	20	0	293	High
20180613	0	1	0	0	0	1	Low
20180614	0	226	3	2	0	231	High
20180615	1	49	10	7	0	67	High
20180616	0	564	4	1	0	569	High
20180617	0	137	0	1	0	138	High
Total	12	4021	780	257	0	5070	

The bat activity recorded at MP3 was overwhelmingly dominated by Leisler's bats. High levels of activity were recorded for this species throughout the monitoring session. These levels of activity are representative of foraging activity over the project site. Common pipistrelle was also consistently recorded during the monitoring session but levels of activity varied from low to high category levels. Activity levels for Myotis species, Soprano pipistrelle were low through the survey period while no activity associated with Brown long-eared bats was recorded.

August 2018

During the August 2018 survey monitoring was completed at MPs 3, 4 and 5. MP 4 and 5 were located to the south of the alignment and monitoring was completed at these locations to provide a comparison of bat activity to the south moving away from the Grand Canal. MP5 was positioned along a hedgerow connected to the MP3 location so that a comparison between activity levels at both locations could be undertaken.

Monitoring was undertaken at MP3, MP4 and MP5 from the 21st August until the 27th August, consisting of 7 nights of continuous bat monitoring. The results of the monitoring at the project site are presented in Tables 3.6 to 3.8 below.

During the monitoring session weather conditions were ideal for bat activity with mild, calm and dry weather dominating conditions.

Table 3.6: Results of Automatic Nightly Bat Monitoring at MP 3

Date	MY SP	NYLE	PIPI	PIPY	PLAUR	Total/Night	Bat Activity Category
20180821	0	11	518	7	0	536	High
20180822	1	10	190	16	0	217	High
20180823	2	3	70	0	0	75	High
20180824	0	2	12	0	1	15	Medium
20180825	3	10	142	4	0	159	High
20180826	0	34	40	0	0	74	High
20180827	2	14	42	4	0	62	High
Total Passes	8	84	1,014	31	1		

The bat activity recorded at MP3 was overwhelmingly dominated by Common pipistrelle, with particularly high levels of activity recorded on the first night of monitoring on 21st August 2018. However nightly activity levels for this species ranged from medium on four of the survey nights to high on three of the survey nights. The levels of activity recorded for this species are similar to those recorded during the May and June monitoring session, which were dominated by medium levels of activity with some nights of high activity.

Leisler's bat activity was lower during the August monitoring session when compared to a sample of any seven nights of continuous monitoring completed during May and June at MP3.

Results for Myotis species, Brown long-eared and Soprano pipistrelle were similar to those recorded during May and June, with monitoring during all three months indicating low levels of activity in the vicinity of MP3.

However, in terms of overall bat activity recorded for all species on a nightly basis, the results during August were similar to those recorded during May and June in that high levels of nightly bat activity dominated the activity during the monitoring session.

The results recorded at MP3 during August contrast to those recorded at MP4 and MP5 further south along connected linear hedgerows (see below for results). Activity levels were lower at these locations, particularly in the vicinity of MP5. The decrease in activity moving south may be related to a decrease in the quality of foraging habitat moving south away from the Grand Canal. The similarity in activity categories recorded at MP3 during all monitoring months and the contrast in the activity category recorded at MP1 and MP2 in May and June, where high activity was dominant, against that recorded in August at MP4 and MP5 where low to medium activity was dominant may also be suggestive of a drop off in activity to the south moving away from the Grand Canal.

Table 3.7: Results of Automatic Nightly Bat Monitoring at MP 4

Date	MY SP	NYLE	PIPI	PIPY	PLAUR	Total/Night	Bat Activity Category
20180821	0	9	5	3	0	17	Medium
20180822	1	17	44	2	0	64	High

20180823	0	3	1	0	0	4	Low
20180824	2	5	4	0	0	11	Medium
20180825	0	16	36	11	0	63	High
20180826	0	21	1	0	0	22	Medium
20180827	2	17	14	5	0	38	Medium
Total Passes	5	88	105	21	0		

MY SP = Myotis species; NYLE = Leisler's bat; PIPI = Common pipistrelle; PIPY = Soprano pipistrelle; PLAUR = Brown long-eared bat.

The bat activity recorded at MP 4 was overwhelmingly dominated by Common pipistrelle and Leisler's bat activity. Nightly activity for these two species during the monitoring session was dominated by low to medium activity levels. No high levels of activity were recorded for any individual species during the monitoring session. Activity levels for all species combined was also dominated by medium activity levels, being recorded on four of the seven nights. High levels of activity for all species was recorded on two nights, while low levels were recorded on one night. Activity levels of Soprano pipistrelle and Myotis species were very low, while no Brown long-eared activity was recorded.

Table 3.8: Results of Automatic Nightly Bat Monitoring at MP 5

Date	MY SP	NYLE	PIPI	PIPY	PLAUR	Total/Night	Bat Activity Category
20180821	0	1	0	0	0	1	Low
20180822	0	9	0	0	0	9	Medium
20180823	0	2	0	0	0	2	Low
20180824	0	1	0	0	0	1	Low
20180825	0	2	14	0	0	16	Medium
20180826	0	0	0	0	0	0	Low
20180827	0	12	15	0	0	27	Medium
Total Passes	0	27	29	0	0		

Bat activity at MP5 was dominated by Common pipistrelles, accounting for over 60% of all activity recorded. The levels of nightly activity recorded for this species were within the Medium Activity Category. Leisler's bat was the next most active bat during the monitoring session, with its activity levels also falling into the Medium Activity Category. Activity for all other species was on the whole very low throughout the monitoring session at MP2.

Nightly bat activity for all species was dominated by High Activity levels with 14 of the nights of surveying falling into this activity category.

4.0 IMPACT ASSESSMENT

4.1 CONSTRUCTION PHASE

4.1.1 Designated Conservation Areas

There will be no potential for direct or indirect impacts to designated conservation areas occurring in the surrounding area.

The severance of linear woodland habitats such as hedgerows and treelines will have the potential to result in the loss of linear corridor linkages to the Grand Canal pNHA to the north. The loss of such linkages is likely to be most relevant to mammal species that may rely on these linear features as commuting corridor. As assessment of the impact of such severance to mammal species is provided in Section 4.1.3 below.

4.1.2 Habitat Loss

The principal land cover changes associated with the proposed access road will be the loss of arable land habitat and the severance of linear woodland habitats to the footprint of the proposed development.

The arable land habitats occurring under the footprint of the proposed access road is of low nature conservation value (Rating E). The footprint of the project will involve the loss of a small area of this habitat in the context of its overall extent in the surrounding area. Such a loss will represent a low magnitude impact to this habitat. A low magnitude impact to this habitat of low nature conservation value will represent an impact of negligible significance.

The loss of small areas of hedgerows and treelines to the footprint of the project will represent at least a moderate negative magnitude effect to this habitat, particularly in terms of its potential to function as a linear corridor for the movement of fauna. A moderate magnitude impact to this habitat of local nature conservation value will represent an impact of minor significance.

The proposed road will require the realignment of the upper section of the Coldblow Stream under a new culvert that will discharge the upper section of this stream, located to the south of the alignment to the proposed attenuation pond. The upper section of this stream is of low ecological value being choked and heavily encroached by hedgerow vegetation. The realignment of this stream will not have the potential to result in significant adverse effects to the aquatic ecology and no sensitive aquatic receptors will be effected by the proposed realignment. In the implementation of all surface water management measures, including the provision of the attenuation pond, as the first item of works for the proposed road will also ensure that the works associated with the alignment will not result in the mobilisation of significant levels of suspended solids downstream along the Coldblow Stream.

4.1.3 Disturbance to/Loss of Habitat for Terrestrial Fauna

As no evidence of protected non-volant mammals was recorded within or adjacent to the project site, the construction phase of the project will not have the potential to result in significant disturbance to breeding or resting places of non-volant terrestrial mammals such as badgers.

The absence of any field signs indicating the presence of protected non-volant mammal species suggests that the severance of hedgerow and treelines by the project will not have the potential to result in a significant adverse effect to such species. As such severance of linear woodland habitats crossed by the proposed road will represent a potential minor negative impact to protected non-volant mammal species.

Baseline bat surveys within the project site and at points along hedgerows to be crossed by the proposed access road resulted in high levels of bat activity being recorded along some of these hedgerows. Foraging activity for Common pipistrelle and Soprano pipistrelle were recorded along field boundaries 3, 4, and 5 as shown on Figures 3.3 and 3.4. In addition consistently high levels of bat activity were recorded during the automatic monitoring sessions at MP1 and MP3 along field boundaries no. 3 and 5.

In the absence of mitigation the severance of these hedgerows in particular by the proposed access road will have the potential to result in the loss of bat foraging and commuting habitat.

4.1.4 Impacts to Birds

The vegetation to be lost within the project site is of low value to bird species and there will be minimal loss of bird foraging habitat as a consequence of the proposed development. No nesting habitat will be lost as a result of the proposed development.

4.1.5 Spread of Invasive Plant Species

Snowberry was the only non-native invasive species recorded along hedgerow field boundaries during site surveys. Provided all works are completed in line with the recommendations outlined in Section 5 below the project will not have the potential to result in the spread of such species.

4.2 OPERATION PHASE

4.2.1 Habitat Loss & Disturbance to Fauna

Developments within greenfield sites, such as the project site can result in indirect habitat loss for fauna from emissions, particularly lighting.

The installation of street lighting along the access road will have the potential to result in the loss of known foraging and commuting habitat used by Common pipistrelle and Soprano pipistrelle. In particular any street lighting in the vicinity of hedgerow field boundaries 3 and 5 will have the potential to result in disturbance to and loss of suitable foraging habitat for these species.

Measures are recommended in Section 5 below that aim to reduce the impact of hedgerow severance and street lighting to bat species.

5.0 RECOMMENDATIONS

The recommendations outlined in the following sections aim to ensure that project is constructed and operated in a sensitive manner that will minimise negative effects to the biodiversity supported by the project site and adjacent lands.

5.1 MEASURES TO MINIMISE IMPACTS TO HABITATS & FAUNA

- Habitat disturbance during construction work will be confined strictly to within the direct land-take of the proposed route alignment area.

- Construction machinery will be restricted to site roads and designated access routes to excavation and construction area.

- Hedgerow habitat removed during the alignment construction phase will be reinstated post construction along the edges of the road so that no net loss of this habitat occurs over the longer term. Hedgerows will be required to knit in with the existing hedgerow and treeline network and will be replaced with native vegetation typical of this region. The replacement trees to be planted along hedgerows should include fruiting trees. The replacement of hedgerows will ensure no net loss of potential vegetated corridor foraging habitat for bat species.

- In the interest of maintaining foraging habitat and commuting route for bats between severed hedgerow field boundaries to the north and south of the proposed access road, the remaining sections of field boundary hedgerows 3 and 5 should be managed so that these hedgerows taper to a height either side of the alignment corridor. This will require the planting of taller-growing trees immediately adjacent to the alignment so that the height of the hedgerow gradually increases on approach to the alignment from both directions. This treeline will tie into planted hedgerow-treeline running parallel to the road alignment in a east to west orientation. Where field boundary hedgerows 3 and 5 intersects the hedgerow/treeline running parallel to the route alignment, the latter hedgerow/treeline will also be planted with taller growing tree species that will act as a screen to the road corridor and forcing bats to fly over the road at safer heights above the line of traffic.

- No street lighting should be installed in close proximity to field boundary hedgerows no. 3 and 5.

- The spacing between lights should be maximized to reduce light intensity.

- In order to reduce light spill, street lighting will be directed to areas only where it is needed. The upward spread of light above the horizontal plane will be avoided by installing low beam angle lights, less than 70 above the horizontal plane and baffling light columns.

- Blue-white short wavelength lights will not be used on site; and

- Lights with a high UV content will be avoided. Instead narrow spectrum lighting with a low UV content will be used on site.

- Low intensity lighting will be used on site.

5.2 MEASURES TO ENHANCE HABITATS

A landscape plan has been prepared for the proposed attenuation pond area to the north of the proposed access road. The landscape plan includes the provision of additional planting along hedgerows to the north and south of the alignment. It also provides for the provision of parkland trees in a wider area surrounding the proposed attenuation pond. It is recommended that pockets of denser tree planting be provided within this parkland area and that fruiting trees be included as part of the mix of proposed native tree species planting. It is also recommended that marginal wet woodland habitat, consisting of Salix sp. and Alnus glutinosa be planted along the margins of the attenuation pond.

It is also recommended that grassland within the parkland surrounding the proposed attenuation pond be managed in an ecologically sensitive manner that enhances the invertebrate community supported by it. This in turn will provide additional prey resource for a range of species including bats and birds.

Furthermore it is recommended that no street lighting be provided in the vicinity of the attenuation pond and the parkland area surrounding it.

The above measures will have the potential to enhance the area surrounding the attenuation pond for bat species, particularly Leisler's bat, which was the most activity species recorded during the bat monitoring along the proposed alignment.

5.3 MANAGEMENT OF SURFACE WATER DURING CONSTRUCTION

In order to minimise the potential for pollution of surface watercourses and wetland habitats to the west of the construction area the following measures will be implemented.

The construction management of the site will take account of the recommendations of the CIRIA guides *Control of Water Pollution from Construction Sites* (2001) and *Control of Water Pollution from Linear Construction Projects* (2006) and Inland Fisheries Ireland's (IFI's) *Requirements for the Protection of Fisheries Habitat during Construction and Development Works*. It will be a condition of the contract between proponent and the Main

Contractor that the Construction Management Plan (CMP) specifies how materials with the potential to adversely affect surface water quality, for example diesel and oil, will be stored and handled in a manner that minimises the risk of accidental spills or leaks. The CMP will also ensure that spill containment and clean-up equipment is provided and maintained during the construction phase of the development.

Standard dust suppression measures will be implemented during periods of dry weather. This will avoid any impacts arising from the spread of dust particles during the construction phase.

An appropriate temporary barrier (e.g. a silt fence) will be installed along the western side of the construction footprint to prevent the migration of silt-laden surface runoff from the construction footprint into adjacent sections of the Coldblow Stream and drainage ditches;

All excess spoil material will be removed from site immediately following excavation and will be disposed of at an approved facility. No temporary spoil depot areas will be located within 25m of the Coldblow Stream.

Excavated soil material to be re-used for landscaping purposes will be stored on level ground away from watercourses and wetland habitats.

Landscaping and seeding of adjacent roadside embankments will be undertaken at the start of the growing season so that surface soils are consolidated with vegetation in as short a timeframe as possible.

Refuelling of plant during construction will be carried out at a designated area, a minimum of 50m from watercourses. Drip trays and spill kits will be available on site. Maintenance of all plant and machinery will be undertaken off-site. Only emergency break-down maintenance will be carried out on site.

Oil fuel should be stored within containment areas and emergency response measures for oil spillage on site should be prepared.

Interceptor swales will be incorporated into the design of the road to ensure that all road runoff during the operation phase is directed to swales, from where runoff will drain to

ground. These swales will form a barrier between the road and the Coldblow Stream to the west.

REFERENCES

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Appendix B – Screening Statement for Appropriate Assessment

Screening Statement for Appropriate Assessment

Grange Castle West Access Road

Doherty Environmental

September 2018

Screening Statement for Appropriate Assessment

Grange Castle West Access Road

Document Stage	Document Version	Prepared by
Draft	2	Pat Doherty MSc, MCIEEM

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 Clifton Scannell Emerson Associates Consulting Engineers on behalf 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.

Table of Contents

1.0 INTRODUCTION

Doherty Environmental was commissioned in 2018 by Clifton Scannell Emerson to undertake a Habitats Directive Stage 1 Screening for Appropriate Assessment for the proposed Grange Castle West Access Road, Co. Dublin (see Figure 1.1 for location).

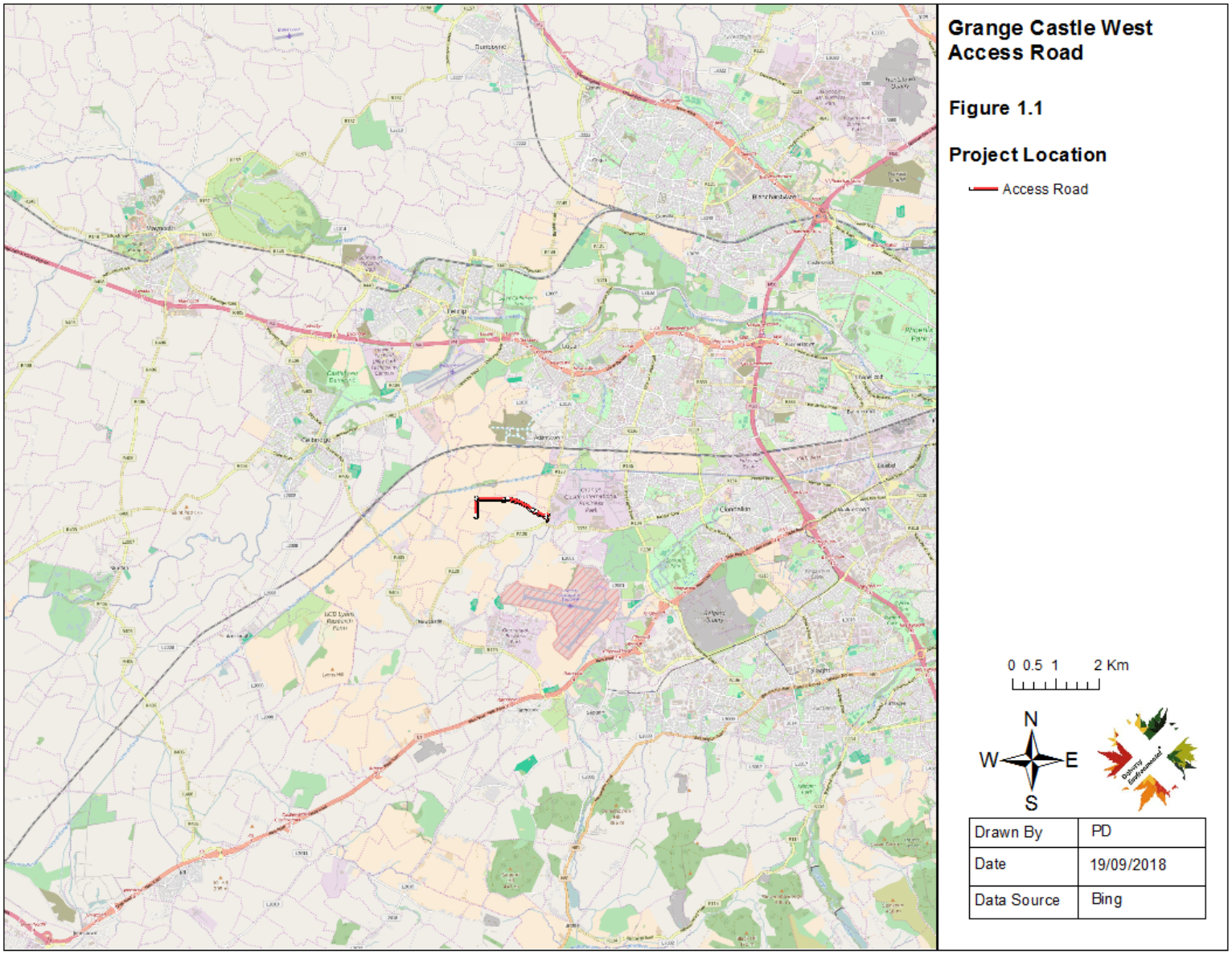
This Screening for Appropriate Assessment forms Stage 1 of the Habitats Directive Assessment process and is being undertaken in order to comply with the requirements of the Habitats Directive Article 6(3). The function of this Screening Exercise is to identify the potential for the project to result in likely significant effects to European Sites and to provide information so that the competent authority can determine whether a Stage 2 Appropriate Assessment is required for the project.

1.1 STAGE 1 SCREENING METHOD

The function of the Screening exercise is to identify whether or not the proposal will have the potential to result in likely significant effect on European Sites. In this context "likely" refers to the presence of doubt with regard to the absence of significant effects (ECJ case C-127/02) and "significant" means not trivial or inconsequential but an effect that has the potential to undermine the site's conservation objectives (English Nature, 1999; ECJ case C-127/02 &). In other words, any effect that compromises the conservation status of a European Sites and interferes with achieving its conservation objectives would constitute a significant effect.

The nature of the likely interactions between the project and the conservation status of European Sites will depend upon the sensitivity of these sites and their reasons for designation to potential impacts arising from the project; the current conservation status of the features for which European Sites have been designated; and any likely changes to key environmental indicators (e.g. habitat structure; vegetation community) that underpin the conservation status of European Sites, in combination with other plans and projects.

This Screening exercise has been undertaken with reference to respective National and European guidance documents: Appropriate Assessment of Plans and Projects in


Grange Castle West Access Road
Figure 1.1
Project Location
Access Road
0 0.5 1 2 Km
N
W
E
S
Drawn By PD
Date 19/09/2018
Data Source Bing

Ireland: Guidance for Planning Authorities (DEHLG 2010) and *Assessment of Plans and Projects Significantly Affecting Natura 2000 sites – Methodological Guidance of the Provisions of Article 6(3) and (4) of the Habitats directive 92/43/EEC* and recent European and National case law (ECJ C-258/11 & High Court case ref 2014-320-JR). The following guidance documents were also of relevance during this Screening Assessment:

- A guide for competent authorities. Environment and Heritage Service, Sept 2002. Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (2010). DEHLG.
- Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites – Methodological Guidance of the Provisions of Article 6(3) and (4) of the Habitats Directive 92/42/EED. European Commission (2001).
- Managing Natura 2000 Sites – The provisions of Article 6 of the Habitats directive 92/43/EEC. European commission (2000). (To be referred to as MN 2000).
- Guidance on Article 6(4) of the Habitats Directive 92/43/EEC – Clarification of the Concepts of: Alternative Solutions, Imperative reasons of Overriding Public Interest, Compensatory Measures, Overall coherence, Opinion of the Commission. European Commission (2007).

The EC (2001) guidelines outline the stages involved in undertaking a Screening exercise of a project that has the potential to have likely significant effects on European Sites. The methodology adopted for this Screening exercise is informed by these guidelines and was undertaken in the following stages:

1. Describe the project and determine whether it is necessary for the conservation management of European Sites;
2. Identify European Sites that could be influenced by the project;
3. Where European Sites are identified as occurring within the sphere of influence of the project identify potential effects arising from the project and screen the potential for such effects to negatively affect European Sites identified under Point 2 above; and

4. Identify other plans or projects that, in combination with the project, have the potential to affect European Sites.

2.0 PROJECT DESCRIPTION

2.1 BACKGROUND

The proposed Grange Castle West (GCW) Access Road contains 1.76km of dual carriageway with an average corridor width of 34m and 350m of single carriageway with an average corridor width of 25m. There are a total of 3 No. double lane and 1 No. single lane fully segregated roundabouts proposed for the GCW Access Road Scheme. Future access spurs are additionally provided off each of the 4 No. proposed roundabouts. Also contained within the footprint of this road scheme are raised cycle track and pedestrian footway infrastructure and a proposed attenuation lake designed to accommodate the proposed road and surrounding hardstanding areas surface water drainage requirements. It is additionally proposed to accommodate all the required services under the GCW Access Road footprint. The following services that will be introduced are as follows;

- Gas Main
- Power (HV/MV/LV)
- Telecoms
- Storm Water Drainage
- Foul Sewer Drainage
- Watermain
- Public Lighting
- CCTV

The GCW Access Road scheme has been designed to current standards including the Design Manual for Urban Roads and Streets (DMURS), TII DMRB, the National Cycle Manual (NCM) and in accordance with smarter travel objectives.

2.2 THE PROPOSED SCHEME

The proposed GCW Access Road scheme comprises of the following:

- 1.76km of dual carriageway with an average corridor width of 34m
- 350m of single carriageway with an average corridor width of 25m.
- 3 No. double lane and 1 No. single lane fully segregated roundabouts.
- Future access spurs provided off each of the 4 No. proposed roundabouts.
- 2m wide raised cycle track and pedestrian footway infrastructure and shared surfacing where necessary.
- Bus Stop facilities
- Attenuation Lake
- Security Structures (Kiosk/Tower)
- Road markings, signage and all associated safety features
- Site services (Gas, Power, Telecom, CCTV, Drainage, Watermain and Public lighting)
- All associated landscape finishes and planting

Access and egress into the proposed GCW Access Road will be gained from a newly formed Grange Castle West Business Park entrance off the western leg of a newly formed signalised junction constructed under the SDCC R120/R134 upgrade scheme. The proposed GCW Access Road will traverse for 1.76km in a western direction from the newly formed entrance located at the R120/R134 signalised junction. At the third proposed roundabout, the scheme will revert from dual carriageway construction (1.76km) to single carriageway construction and will traverse in southern direction for approximately 350m before terminating at proposed roundabout No. 4 located North West of the existing Peamount reservoir site.

2.3 NEED FOR THE SCHEME

The proposed GCW Access Road is an SDCC roads objective as outlined in chapter 6 of the SDCC Development Plan 2016 - 2022 written statement and as displayed in SDCC's Development Plan 2016 - 2022 Zoning Objective Map. Furthermore, the Grange Castle Western lands which accommodate the proposed GCW Access Road footprint have been recently rezoned from zoning objective RU (Rural and Agricultural) to objective EE (Employment and Enterprise). With this in mind, SDCC's six year road programme under the New Nangor Road/R134 Upgrade roads objective facilitates the overall function of the proposed GCW Access Road which states that the new Nangor Road/R134 upgrade will be built to '*provide improved access to the Grange Castle employment lands from Clondalkin and the R120 with further links to the proposed Western Orbital Route*'.

Furthermore, the function of the future upgrade of existing road from Adamstown to Ballybane, as per table 6.6 of SDCC's medium to long term road objectives, states that these upgrades are to effectively '*provide improved access to the Grange Castle employment area*'.

In summary, Table 6.6 located in Chapter 6 of the SDCC Development Plan 2016 - 2022 written statement outlines corridors that are essential to facilitate a long term road network to provide access between major areas of economic activity and the national and regional road network.

For reason outlined above, the proposed GCW Access Road is required to fulfill all the above SDCC road objectives and to effectively utilise and fulfill the current zoning objective of the Grange Castle western lands which secures a zoning objective EE (Employment and Enterprise) under the recent and approved Variation No. 1 which were made effective in April 2018.

3.0 DESCRIPTION OF PROJECT SITE

The area of the proposed Grange Castle West Access Road comprises a road corridor of approximately 1.76km in length and is located within the townlands of Milltown, Loughtown Upper and Peamount.

The land cover occurring under the footprint of the proposed access road and adjacent to it are dominated by intensively managed cultivated lands. A habitat map showing the extent and location of habitats occurring within the project site is provided as Figure 3.1 below. The principal crops noted within the lands during surveys in the summer of 2018 were cereal crops. The land cover is also characterised by large field-size pattern and much of the field boundaries comprise box-cut hedgerows. The hedgerows are dominated by cropped Crataegus monogyna and Prunus spinosa at less than 2m in height. Mature trees occur along these hedgerows and in places they form treelines. The mature trees include Acer pseudoplatanus, Fraxinus excelsior and Quercus petraea. A Fraxinus excelsior treeline forms one of the field boundaries that will be bisected by the route (see Figure 3.1).

3.1 HABITATS OCCURRING WITHIN & ADJACENT TO THE PROJECT

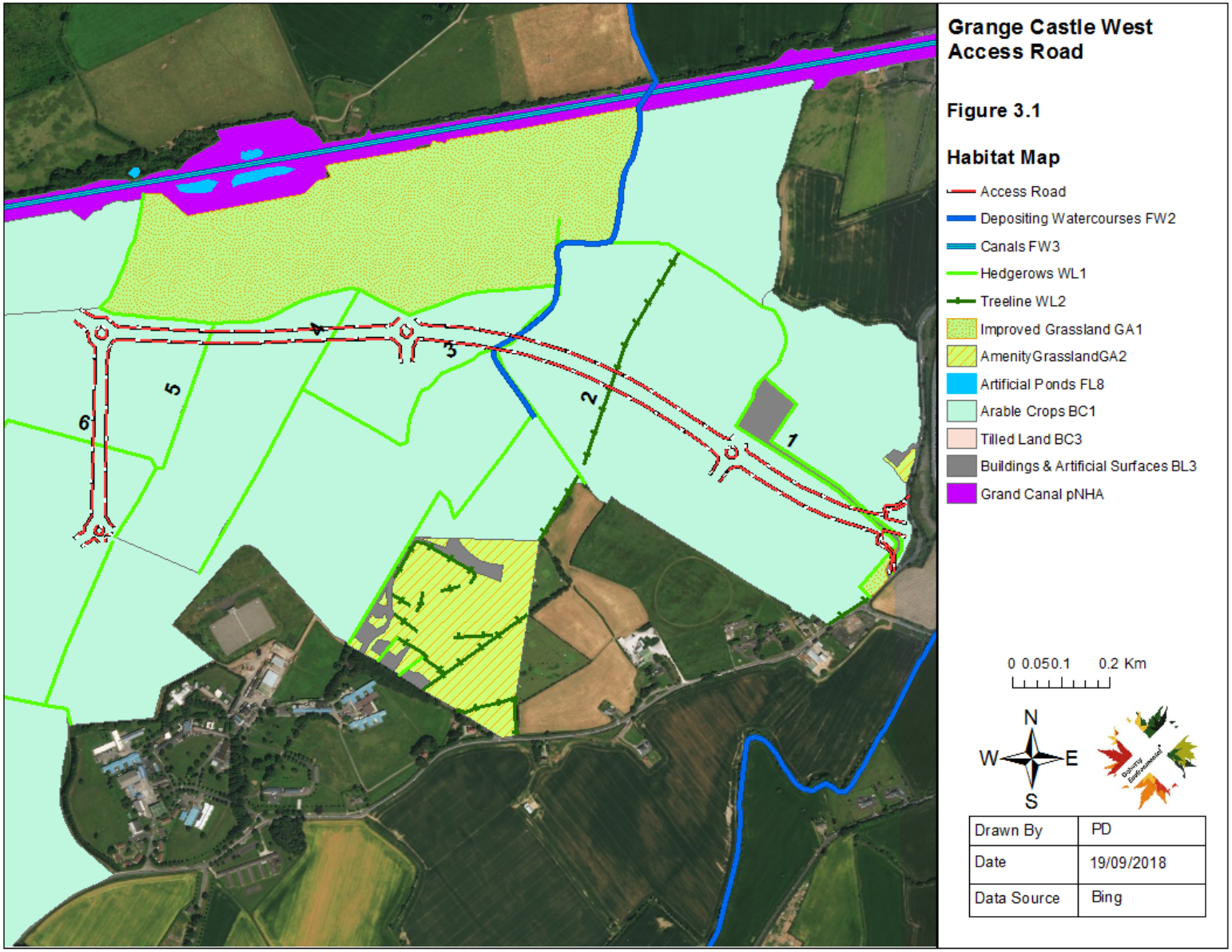
The following sections provide a description of the habitats occurring within and immediately adjacent to the project. Figure 3.1 provides a Habitat Map of the lands surrounding the proposed road. This habitat map and the description of habitats provided below is based on a review of aerial and satellite imagery and a field surveys completed in late September 2017, November 2017, May 2018 and June 2018. All habitats occurring within and adjacent to the proposed road corridor are categorised according to the Heritage Council's *Guide to Habitats in Ireland* (Heritage Council, 2000). 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.

Four Level 1 broad habitat groups were identified within and adjacent to the project. These include Freshwater, Grassland, Woodland and Cultivated & Built Land habitats. The level 3 habitat types occurring within each of this habitat groups are described under the following sub-sections.

3.1.1 Freshwater Habitats

The freshwater habitats occurring within and immediately adjacent to the proposed road is restricted to the Coldblow Stream, which is crossed by the propsoed road. The Grifeen River occurs to the east of the proposed road while the Grand Canal is located to the north. Drainage ditches, which are ephemeral in nature also occur along field boundaries crossed by the proposed road.

The Coldflow/Lucan Stream flowing north through the site is representative of a minor lowland depositing stream. The upper stretch of this stream in the vicinity of the proposed road is choked with abundant macrophytes, dominated by *Apium nodiflorum*. This watercourse flows into the River Liffey approximately 4km to the north of the proposed road.


Grange Castle West Access Road
Figure 3.1
Habitat Map
Access Road
Depositing Watercourses FW2
Canals FW3
Hedgerows WL1
Treeline WL2
Improved Grassland GA1
AmenityGrasslandGA2
Artificial Ponds FL8
Arable Crops BC1
Tilled Land BC3
Buildings & Artificial Surfaces BL3
Grand Canal pNHA
1
2
3
4
5
6
0 0.050.1 0.2 Km
N
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Drawn By PD
Date 19/09/2018
Data Source Bing

Drainage ditches occur along the majority of the hedgerow field boundaries crossed by the proposed road. However the majority of these are ephemeral/transient freshwater features and are only likely to convey surface water during times of flood. During all field surveys these ditches were dry and did not support wetland vegetation.

3.1.2 Cultivated & Built Land

Arable crops (BC1), tilled land (BC3) and buildings and artificial surfaces (BL3) make up the cultivated and built land habitats occurring within and adjacent to the proposed road corridor. The arable crop and tilled land habitats support little native flora and are of low ecological value. The buildings and artificial surfaces habitats comprise existing road surfaces at the eastern end of the alignment and hard standing and access road associated with the halting site to the north of the proposed road corridor.

3.2 FAUNA

3.2.1 Birds

A range of commonly occurring passerine species were noted within the lands during the site surveys in September 2017, May and June 2018. Herring gulls were also recorded frequently overflying the area. Other species recorded in the vicinity of the site during Grand Canal surveys (ROD, 2015; Tobins, 2015) include whitethroat, chiffchaff, willow warbler, blackcap, tree sparrow, blue tit, great tit, long-tailed tit, bullfinch, chaffinch, goldfinch, greenfinch, swallow, meadow pipit, robin, skylark, song thrush and starling. In addition three yellowhammers were recorded to the north of the Grand Canal and the proposed road corridor in the vicinity of Adamstown (Tobins, 2015).

3.2.2 Non-Volant Mammals

A dedicated otter survey of the Grand Canal, to the north of the project site, between the 12th Lock and Hazelhatch was completed between June and September 2016

(FERS, 2016). The surveys found that the entire stretch survey area, with the exception of a 400m buffer zone from Hazelhatch and a 300m buffer zone from the 12th Lock was used by otters. Spraints were regularly recorded along the canal with tracks/trails and slides also ubiquitous along the length of the survey area.

During the survey all field boundaries crossed by the proposed road were walked and a search of field signfs indicating the presence of otter or badgers was undertaken along these boundaries. No evidence of otters or badgers or their holts/setts were identified along these field boundaries. During previous surveys in 2016 (FERS, 2016) an active badger sett was identified along the northern bank of the Grand Canal. Significant disturbance to this sett was noted during the later summer of 2016 when evidence indicating attempts to dig out the sett were recorded during surveys.

3.2.3 Bats

Between June and September of 2016, an assessment of the usage of the section of the Grand Canal between Hazelhatch and the 12th Lock was undertaken by FERS Ltd.

During this survey eight bat species were recorded as present along this stretch of the Grand Canal. These species included Common Pipistrelle, Soprano Pipistrelle, Nathusius' Pipistrelle, Leisler's Nat, Brown Long-eared Bat, Daubenton's Bat, Natterer's Bat and Whiskered Bat. Bat activity was found to be highest in areas furthest from light and noise pollution, along the central stretch of the survey area in question (i.e. to the north of the western half of the proposed route. There was a notable decrease in bat usage towards the Adamstown and Hazelhatch ends of the stretch of Grand Canal surveyed. This may indicate that bats utilising this section of the Canal arrive via hedgerow/treeline commuting corridors to the north and south of the Canal as opposed to utilising the Canal itself (there is a large degree of disturbance at the Hazelhatch Bridge end, associated with streetlights, canal barges and the Hazelhatch Public House). These surveys suggest that field boundaries within crossed by the proposed route may be of importance as commuting routes for bats in the surrounding area. Also due to the predominantly large field pattern in the vicinity of the proposed route and the associated low number of linear woodland corridors is

it likely that, should any of these linear features function as commuting corridors for bats, then they will be of increased value for bats due to the low number of alternative routes in the area.

Focused surveys for bat activity in the vicinity of the road corridor was completed within the lands during May and June 2018. Monitoring of nightly bat activity was completed from three monitoring points along/adjacent to the project site. High levels of bat activity were recorded along the hedgerows in the vicinity of the monitoring points during the field surveys. Further information on bat activity levels recorded during monitoring is provided in the Ecological Impact Assessment of the proposed Grange Castle West Access Road.

3.2.4 Fish & Amphibians

Smooth newt and common frog have been recorded in the tetrads within which the vicinity of the project site and suitable habitat for these species occurs along the Coldflow/Lucan River. The fisheries potential of the Coldflow/Lucan River in the vicinity of the project site is low.

3.2.5 Terrestrial Invertebrates

Terrestrial invertebrates recorded in the vicinity of the project site during recent surveys along the Grand Canal (ROD, 2016) include a range of odonata species (brown hawker; common hawker; variable damselfly; common blue damselfly; blue-tailed damselfly; large-red damselfly; common darter) and lepidoptera species (oblique carpet; speckled wood; large white; green-veined white; small white; common blue; small tortoiseshell; meadow brown and painted lady).

The Grand Canal is known to support a number of protected, rare and threatened aquatic invertebrate species such as white-clawed crayfish and Vertigo snails. No suitable habitat for these species occur within the project site and there was no evidence of white-clawed crayfish occurring along the upper section of the Coldflow/Lucan River that will be crossed by the project site.

4.0 EUROPEAN SITES OCCURRING WITHIN THE ZONE OF INFLUENCE OF THE PROJECT

Current guidance recommends that all European Sites occurring within 15km of project sites should be identified at the outset of an impact assessment process. A total of five European Sites have been identified in the surrounding 15km area. Table 4.1 lists these European Sites and the spatial relationship between each of these sites and the study area is shown on Figure 4.1 & 4.2.

In addition to the European Sites occurring within a 15km area of the project site the DEHLG 2010 guidelines on Appropriate Assessment of Plans and Projects in Ireland also advise that where the potential exists for a hydrological pathway to occur between the project site and European Sites beyond the 15km distance, then these sites should also be included as part of the Screening Assessment. As such the European Sites hydrologically linked to the study area are also included. The River Liffey, which receives surface waters draining the project site via the Coldblow/Lucan River, drains to Dublin Bay, where a number of European Sites are located. A total of four European Sites are located at Dublin Bay. These European Sites are shown in Figure 4.3 and are also listed in Table 4.2.

The next step of the Screening Assessment is to identify which, if any of these sites occur within the zone of influence of the project site. As the nearest European Site (Rye Water Valley SAC) is located at a remote distance (approximately 4km) from the project site, the project will not have the potential to result in direct impacts to European Sites. Thus this Screening exercise focuses on investigating whether the project will have the potential to result in indirect effects to European Sites or affect mobile species associated with European Sites beyond the boundaries of their designated conservation areas.

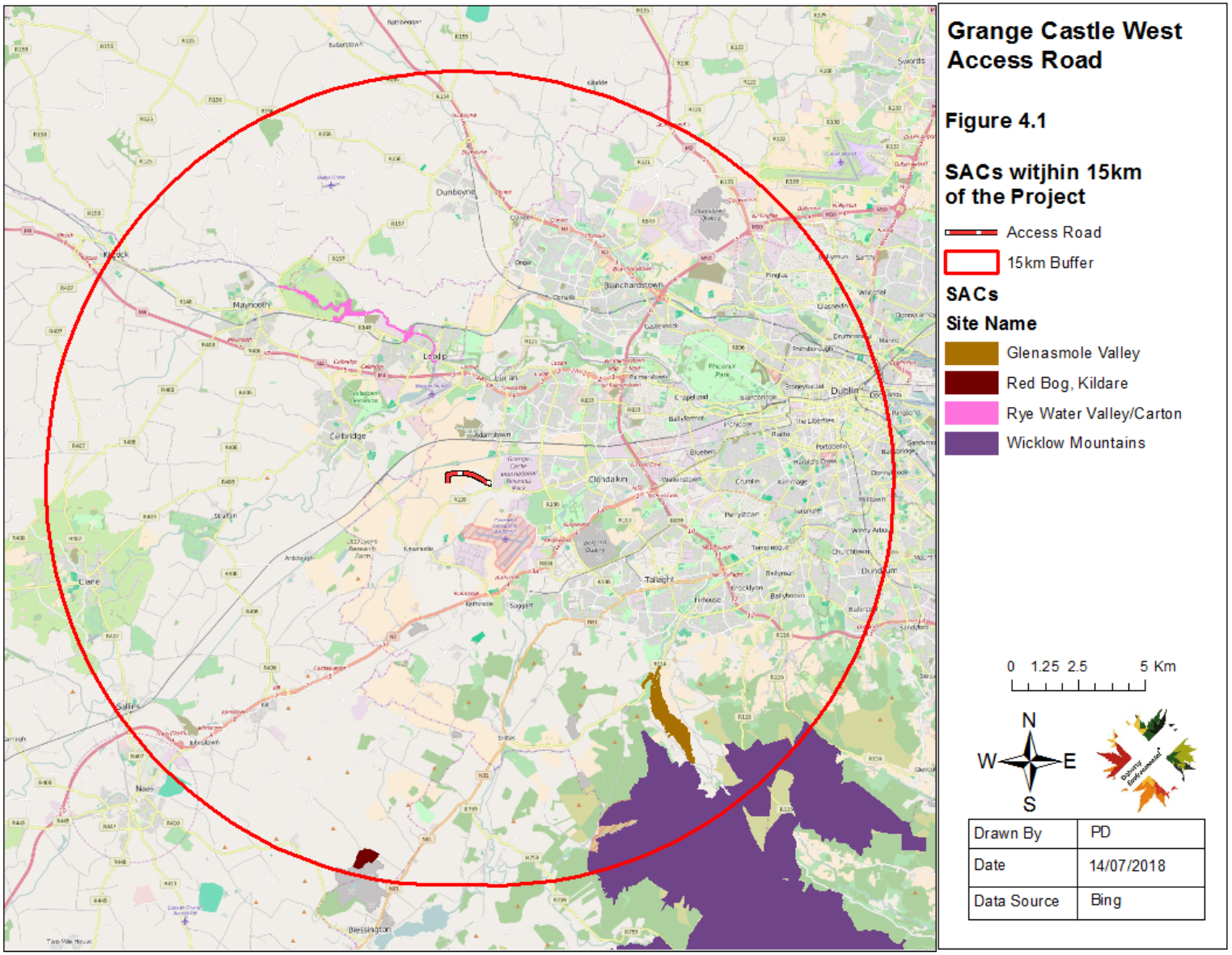
A source-pathway-receptor model has been used to establish which European Sites could occur within the sphere of influence of potential indirect impacts. Under such a model the project, as described above, represents the source.

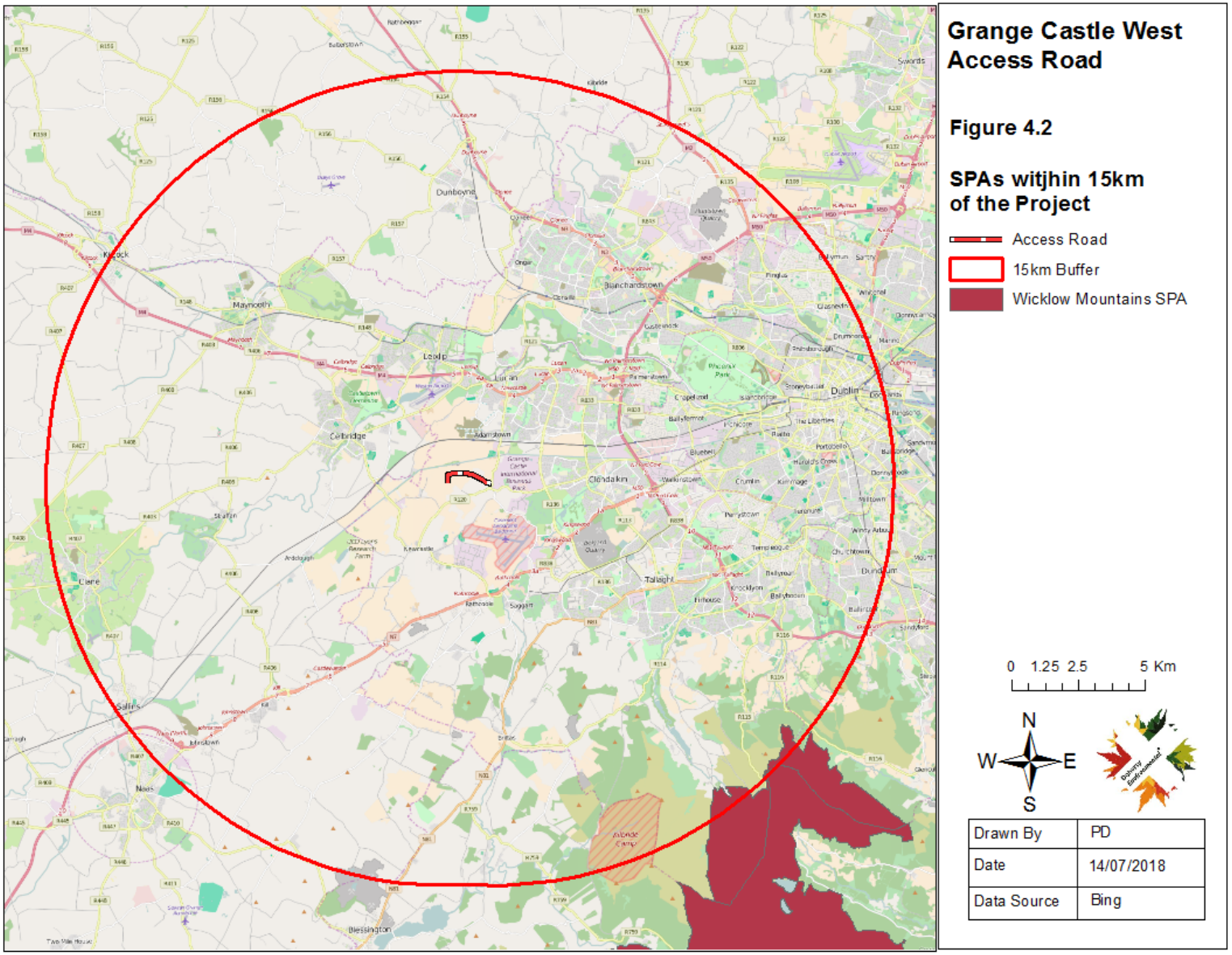
Potential impact pathways are restricted to hydrological and aerial pathways as these represent the principal emissions generated by activities at the project site. Any European Sites occurring downstream of, or otherwise linked to the project site via hydrological pathways are considered to occur within the zone of influence of the project site. The potential for qualifying species of surrounding European Sites to interact with the study area is also included as a potential impact pathway.

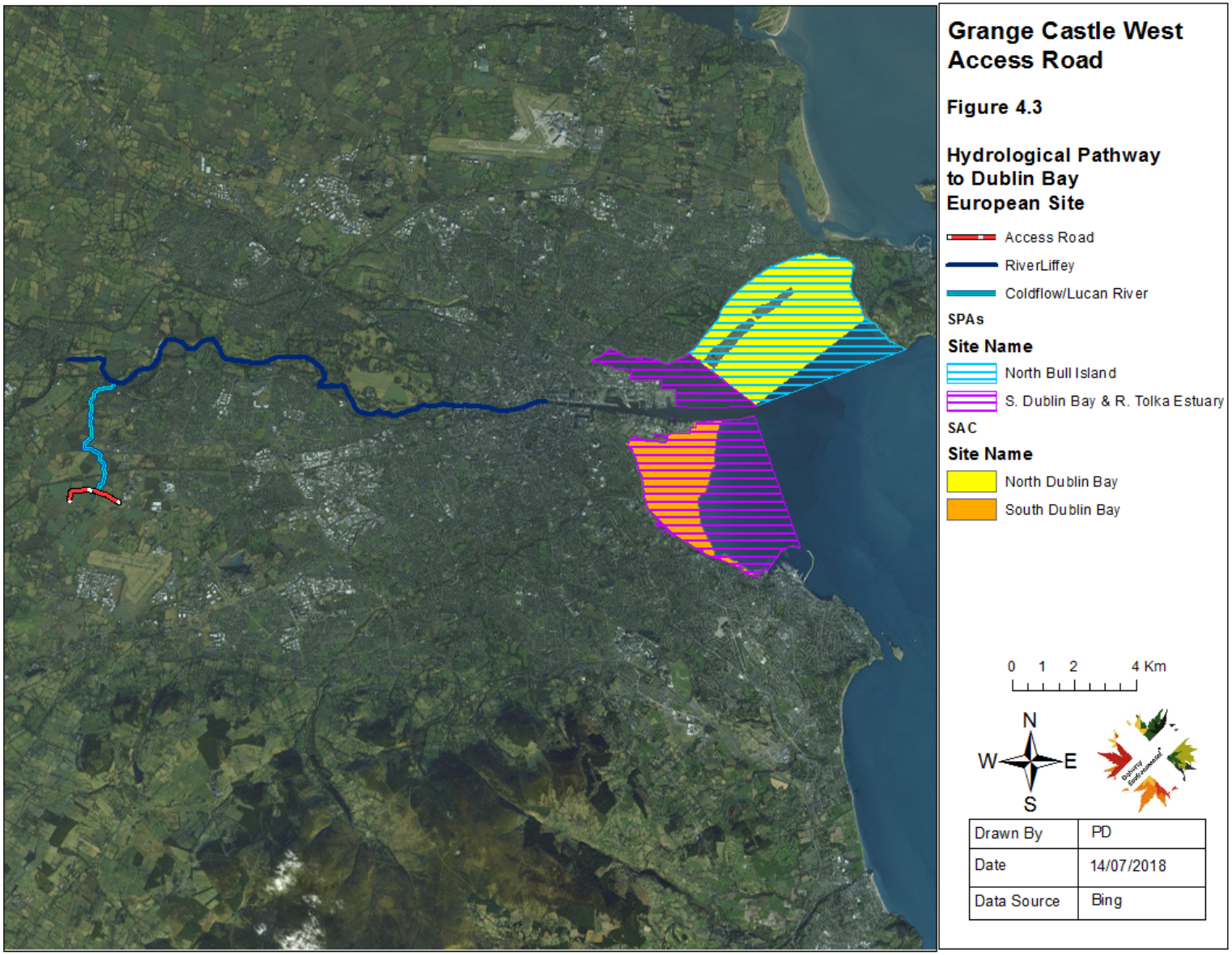
The receptors represent European Sites and their associated qualifying features of interest.

European Sites and their associated qualifying features are likely to occur in the zone of influence of the project only where the above pathways establish a link between the project site and European Sites or where the project site is likely to play an important role in supporting populations of mobile species that are listed as special conservation interests/qualifying species for surrounding European Sites. Table 4.1 provides a determination as to whether each European Site within a 15km buffer distance of the project site occur within the zone of influence of the project. This determination has been undertaken in line with the following assessment questions:

- Is there a hydrological pathway linking the Project site to European Sites and does this pathway have the potential to function as an impact pathway?
- Are qualifying habitats of these European Sites at risk of experiencing impacts as a result of the project?
- Does the project site have the potential to interact with or support Annex II qualifying species/special conservation interest species of these European Sites?


Grange Castle West Access Road
Figure 4.1
SACs witjhin 15km of the Project
Access Road
15km Buffer
SACs
Site Name
Glenasmole Valley
Red Bog, Kildare
Rye Water Valley/Carton
Wicklow Mountains
0 1.25 2.5 5 Km
N
W
E
S
Drawn By PD
Date 14/07/2018
Data Source Bing


Grange Castle West Access Road
Figure 4.2
SPAs witjhin 15km of the Project
Access Road
15km Buffer
Wicklow Mountains SPA
0 1.25 2.5 5 Km
N
W
E
S
Drawn By PD
Date 14/07/2018
Data Source Bing
Dunboyne
Maynooth
Leixlip
Celbridge
Clondalkin
Dublin
Clane
Naas
Sallins
Blessington


Grange Castle West Access Road
Figure 4.3
Hydrological Pathway to Dublin Bay European Site
Access Road
RiverLiffey
Coldflow/Lucan River
SPAs
Site Name
North Bull Island
S. Dublin Bay & R. Tolka Estuary
SAC
Site Name
North Dublin Bay
South Dublin Bay
0 1 2 4 Km
N
W
E
S
Drawn By PD
Date 14/07/2018
Data Source Bing

European Sites	Distance from Project Site	Is there a Hydrological Pathway and does it have the potential to function as an Impact Pathway	Is there an Aerial Pathway and does it have the potential to function as an Impact Pathway	Do the Project have the potential to interact with Mobile Species	Do European Sites occur within the Projects Zone of Influence?
Rye Water Valley SAC	4km to the north	No. This SAC is located within a separate surface water sub-catchment to the project site.	No. This SAC is located over 4km from the project site. Motor vehicle pollutant concentrations tend to be higher closer to roads, with the highest levels generally within the first 150m of the roadway and reaching background levels within approximately 600m of a roadway, depending on the pollutant, time of day and surrounding terrain (Karner et al., 2010). As this European Site is located over 4km from the project site there will be no potential for an aerial pathway to link emissions associated with the	No. No mobile species are listed as qualifying features of interest for this SAC.	No. No impact pathways link the project to this SAC.

			operation of a road to this SAC.		
Glenasmole Valley SAC	9.5km to the southeast	No. This SAC is designated for the presence of the Annex 1 habitats grassland habitats and petrifying spring. The grassland habitats do not rely on lotic processes while the spring relies on soligenous hydrological processes. Furthermore this SAC is located within a separate surface water catchment to the project.	No. This SAC is located at a remote distance from the project, which is predicted to lie outside the influence of any air emissions from road traffic that will be accommodated by the project.	No. No Annex 2 species are listed as qualifying features of interest for this SAC.	No. No impact pathways link the project to this SAC.
Wicklow Mountains SAC	10.9km to the southeast	No. This SAC is designated for the presence of the Annex 1 upland peatland and grassland habitats. Furthermore this SAC is located within a separate surface water catchment to the project.	No. This SAC is located at a remote distance from the project, which is predicted to lie outside the influence of any air emissions from road traffic that will be accommodated by the project.	No. Otters are listed as an Annex 2 qualifying species of this SAC. There are no hydrological pathways connecting the project site to the watercourses of this SAC that are likely to support otters. Furthermore no evidence of otters using the upper sections of the Coldflow/Lucan River were identified during field surveys within the project site and the	No. No impact pathways link the project to this SAC.

				overall potential for the upper section of this watercourse to support otters is low. Given the above the otter population of this SAC is not expected to interact with the project site will not occur within its zone of influence.	
Red Bog SAC	12.9km to the south	No. This SAC is designated for Annex 1 peatland habitats, namely transition mires and quaking bogs. These Annex 1 habitats are ombrotrophic in nature and there is no hydrological pathway linking these habitats or this SAC to the project site.	No. This SAC is located at a remote distance from the project, which is predicted to lie outside the influence of any air emissions from road traffic that will be accommodated by the project.	No. No Annex 2 species are listed as qualifying features of interest for this SAC.	No. No potential impact pathways link the project site to this SAC.
Wicklow Mountain SPA	10.9km to the south	No. This is an upland SPA designated for its role in supporting merlin and Peregrine falcon. There is no hydrological pathway linking the study area to this SAC.	No. This SPA is located at a remote distance from the project, which is predicted to lie outside the influence of any air emissions from road traffic that will be accommodated by the project.	No. the project site does not support suitable or optimum breeding or foraging habitat for Peregrine or Merlin and does not play an important role in terms of the provision of roosting, nesting or	No. No potential impact pathways link the project site to this SPA.

				foraging habitat for either of these species. The populations of both species supported by this SPA are located outside the zone of influence of the project.	
Poulaphouca Reservoir SPA	14.6km to the south	No. The wetland habitats associated with this SPA are located at a remote distance from the project site and no hydrological pathway connects the project site and associated activities to the wetland habitats of this SPA.	No. This SPA is located at a remote distance from the project, which is predicted to lie outside the influence of any air emissions from road traffic that will be accommodated by the project.	No. This SPA is designated for its role in supporting populations of greylag goose and lesser black-backed gull. The project site does not play an important role in terms of providing suitable roosting, nesting or foraging habitat for either greylag goose and lesser black-backed gull. No black-backed gull were recorded at or in the vicinity of the project site during site surveys and during previous surveys in the vicinity of the project site (Tobins, 2015). The population of both these species supported by this SPA lie outside the zone of influence of the project.	No. No potential impact pathways link the project site to this SPA.

South Dublin Bay SAC	27km downstream and 17km to the east	No. While the project site is located within the Liffey catchment, which in turn drains to Dublin Bay, hydro-dynamic modelling of the Liffey Estuary and Dublin Bay has shown that the waters from the Liffey draining into Dublin Bay are deflected east and north towards Dollymount and Howth. The presence of the South Great Wall in Dublin Bay provides a barrier to the movement of waters discharging from the River Liffey towards the south (Bedri et al., 2012; Camp, Dresser & McKee, 2012). As such the presence of the South Great Wall forms an effective barrier to the movement of waters between the Liffey catchment and this SAC.	No. This SAC is located at a remote distance from the project, which is predicted to lie outside the influence of any air emissions from road traffic that will be accommodated by the project.	No. No Annex 2 species are listed as qualifying features of interest for this SAC.	No. No potential impact pathways link the project site to this SAC.
North	27km	Yes, there is a hydrological pathway.	No. This SAC is located at a remote	No. This SAC supports a	Yes. The potential

Dublin Bay SAC	downstream and to the east	This SAC is designated for the presence of coastal Annex 1 habitats. Surface water from the project site will eventually discharge to the River Liffey catchment and as shown on Figure 4.3, the River Liffey forms a hydrological pathway between the project site and this SAC.	distance from the project, which is predicted to lie outside the influence of any air emissions from road traffic that will be accommodated by the project.	population of the liverwort *Petalophyllum ralfsii*. This is a sedentary species, reliant on terrestrial dune slack habitats occurring on Bull Island and there is no potential for the project to interact with this species.	hydrological pathways linking the project site to this SAC require further examination to establish whether or not they have the potential to function as impact pathways.
North Bull Island SPA	27km downstream and to the east	Yes, see reasons outlined for North Dublin Bay SAC above	No. This SPA is located at a remote distance from the project, which is predicted to lie outside the influence of any air emissions from road traffic that will be accommodated by the project.	Yes. This SPA is designated for its role in supporting a number of wetland bird species (see Appendix 1 for a full list of the special conservation interest bird species of this SPA), including breeding terns. While surveys in the vicinty of the project site have not recorded any evidence to suggest that special conservation interest bird species of this SPA relying on lands in the vicinity of the project site, there is a hydrological pathway linking the project site to wetland habitats of this SPA upon which its special	Yes. The potential hydrological pathways linking the project site to this SPA requires further examination to establish whether or not they have the potential to function as impact pathways.

				conservation interest bird species rely.	
South Dublin Bay & Tolka Estuary SPA	27km downstream and to the east	Yes, see reasons outlined for North Dublin Bay SAC above	No. This SPA is located at a remote distance from the project, which is predicted to lie outside the influence of any air emissions from road traffic that will be accommodated by the project.	Yes. This SPA is designated for its role in supporting a number of wetland bird species (see Appendix 1 for a full list of the special conservation interest bird species of this SPA), including breeding terns. While surveys in the vicinty of the project site have not recorded any evidence to suggest that special conservation interest bird species of this SPA relying on lands in the vicinity of the project site, there is a hydrological pathway linking the project site to wetland habitats of this SPA upon which its special conservation interest bird species rely.	Yes. The potential hydrological pathways linking the project site to this SPA requires further examination to establish whether or not they have the potential to function as impact pathways.

Table 4.1 above outlines the relationship between the project site and the European Sites occurring within the surrounding 15km buffer area and downstream at Dublin Bay. None of the five European Sites occurring within a 15km radius of the project site have been identified as occurring within the zone of influence of the project.

Of the four European Sites occurring downstream at Dublin Bay, three (namely South Dublin Bay River Tolka Estuary SPA; North Dublin Bay SAC, and North Bull Island SPA) have been identified as occurring within the zone of influence of the project.

The remainder of this Screening aims to identify whether the project will have the potential to result in likely significant effects to the following European Site:

1. South Dublin Bay River Tolka Estuary SPA
2. North Dublin Bay SAC
3. North Bull Island SPA

5.0 EUROPEAN SITES BASELINE

5.1 NORTH DUBLIN BAY SAC

This site covers the inner part of north Dublin Bay, the seaward boundary extending from the Bull Wall lighthouse across to the Martello Tower at Howth Head. The North Bull Island is the focal point of this site. Qualifying features for which this site has been designated as a SAC are listed in Table 5.1 below. The distribution of the habitats associated with this SAC are outlined in the Conservation Objectives for this SAC (see NPWS, 2013).

The threats and pressures to this SAC have been documented in the Standard Natura 2000 Data Form for the site (NPWS, 2017). The documented threats and pressures to this SAC are as follows:

- Urbanised areas, human habitation
- Walking, horseriding and non-motorised vehicles

- Golf course
- Industrial or commercial areas
- Discharges

Table 5.1 lists:

- each of the qualifying features of interest for this SAC;
- their conservation status; and
- identifies the qualifying features of interest of the SAC that occur within the zone of influence of the project by virtue of the hydrological pathway along the River Liffey.

Table 5.1: North Dublin Bay SAC qualifying features of interest, conservation status, threats and pressures and identification of the features of interest occurring within the zone of influence of the project

Qualifying Annex Feature	Conservation Status (Site-Level)	Conservation Status (National-Level)	Does the qualifying features of interest occur within the zone of influence of the project?
Mudflats and sandflats not covered by seawater at low tide	Favourable	Poor	Yes. A hydrological pathway occurs between the project site and this qualifying habitat.
Annual vegetation of drift lines	Not established	Poor	No. The qualifying habitat is terrestrial in nature and is not influenced by waters conveyed along the River Liffey to Dublin Bay.
Salicornia and other annuals colonizing mud and sand	Unfavourable	Poor	Yes. A hydrological pathway occurs between the project site and this qualifying habitat.
Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	Favourable	Poor	Yes. A hydrological pathway occurs between the project site and this qualifying habitat.
Petalwort (Petalophyllum ralfsii)	Not established	Good	No. This species occurs within dune slacks on North Bull Island. It is terrestrial in nature and is not influenced by waters conveyed along the River Liffey to Dublin Bay.

Mediterranean salt meadows (Juncetalia maritimi)	Favourable	Poor	Yes. A hydrological pathway occurs between the project site and this qualifying habitat.
Embryonic shifting dunes Shifting dunes along the shoreline with Ammophila arenaria (white dunes)	Unfavourable-inadeqaute	Poor	No. The qualifying habitat is terrestrial in nature and is not influenced by waters conveyed along the River Liffey to Dublin Bay.
Fixed coastal dunes with herbaceous vegetation (grey dunes)	Unfavourable-Bad	Bad	No. The qualifying habitat is terrestrial in nature and is not influenced by waters conveyed along the River Liffey to Dublin Bay.
Humid dune slacks	Unfavourable-inadeqaute	Bad	No. The qualifying habitat is terrestrial in nature and is not influenced by waters conveyed along the River Liffey to Dublin Bay.

5.2 NORTH BULL ISLAND SPA

This site covers all of the inner part of north Dublin Bay, with the seaward boundary extending from the Bull Wall lighthouse across to Drumleck Point at Howth Head. The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Light-bellied Brent Goose, Shelduck, Teal, Pintail, Shoveler, Oystercatcher, Ringed Plover, Golden Plover, Grey Plover, Knot, Sanderling, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Turnstone and Black-headed Gull. The site is also of special conservation interest for holding an assemblage of over 20,000 wintering waterbirds. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The qualifying features for which this site has been designated as a SPA are listed in Table 5.2 below. The threats and pressures to this SAC have been documented in the Standard Natura 2000 Data Form for the site (NPWS, 2017). The documented threats and pressures to this SPA are as follows:

- Disposal of household / recreational facility waste

- Golf Course
- Industrial or commercial areas
- Walking, horseriding and non-motorised vehicles
- Bridge, viaduct
- Roads, motorways
- Discharges

Table 5.2 lists:

each of the special conservation interests for this SPA;

their conservation status; and

identifies the qualifying features of interest of the SAC that occur within the zone of influence of the project by virtue of the hydrological pathway along the River Liffey.

The distribution of foraging and/or roost sites for the special conservation interest bird species within the SPA as mapped by the NPWS (NPWS, 2014) has been relied upon to identify the species that could be influenced by the hydrological pathway.

Table 5.2: North Dublin Bay SAC qualifying features of interest, conservation status, threats and pressures and identification of the features of interest occurring within the zone of influence of the project

SCIs	Conservation Status	Does the qualifying features of interest occur within the zone of influence of the project?
Light-bellied Brent Goose (*Branta bernicla hrota*)	Amber listed species- Species of medium conservation concern	Yes. Foraging habitat for this species occurring downstream of the project site at the Liffey Estuary.
Shelduck (*Tadorna tadorna*)	Amber listed species- Species of medium conservation concern	Yes. Foraging habitat for this species occurring downstream of the project site at the Liffey Estuary.
Teal (*Anas crecca*)	Amber listed species- Species of medium	Yes. Foraging habitat for this species occurring

	conservation concern	downstream of the project site at the Liffey Estuary.
Pintail (*Anas acuta*)	Red listed species – Species of high conservation concern†	Yes. Foraging habitat for this species occurring downstream of the project site at the Liffey Estuary.
Shoveler (*Anas clypeata*)	Red listed species – Species of high conservation concern†	Yes. Foraging habitat for this species occurring downstream of the project site at the Liffey Estuary.
Oystercatcher (*Haematopus ostralegus*)	Amber listed species- Species of medium conservation concern	Yes. Foraging habitat for this species occurring downstream of the project site at the Liffey Estuary.
Golden Plover (*Pluvialis apricaria*)	Red listed species – Species of high conservation concern	Yes. Foraging habitat for this species occurring downstream of the project site at the Liffey Estuary.
Grey Plover (*Pluvialis squatarola*)	Amber listed species- Species of medium conservation concern	Yes. Foraging habitat for this species occurring downstream of the project site at the Liffey Estuary.
Knot (*Calidris canutus*)	Red listed species – Species of high conservation concern†	Yes. Foraging habitat for this species occurring downstream of the project site at the Liffey Estuary.
Sanderling (*Calidris alba)*	Green listed species – Species not threatened	Yes. Foraging habitat for this species occurring downstream of the project site at the Liffey Estuary.
Dunlin (*Calidris alpina*)	Amber listed species- Species of medium conservation concern	Yes. Foraging habitat for this species occurring downstream of the project site at the Liffey Estuary.
Black-tailed Godwit (*Limosa limosa*)	Amber listed species- Species of medium conservation concern	Yes. Foraging habitat for this species occurring downstream of the project site at the Liffey Estuary.
Bar-tailed Godwit (*Limosa lapponica*)	Amber listed species- Species of medium conservation concern	Yes. Foraging habitat for this species occurring downstream of the project site at the Liffey Estuary.
Curlew (*Numenius arquata*)	Red listed species – Species of high conservation concern	Yes. Foraging habitat for this species occurring downstream of the project site at the Liffey Estuary.
Redshank (*Tringa totanus*)	Red listed species – Species of high conservation concern	Yes. Foraging habitat for this species occurring downstream of the project site at the Liffey Estuary.
Turnstone (*Arenaria interpres*)	Green listed species – Species not threatened	Yes. Foraging habitat for this species occurring downstream of the project site at the Liffey Estuary.
Black-headed Gull (*Larus*	Red listed species – Species	Yes. Foraging habitat for this species occurring

ridibundus)	of high conservation concern	downstream of the project site at the Liffey Estuary.
Wetlands & Waterbirds		Yes. Mudflat and sandflat habitats occur downstream of the project site at the Liffey Estuary.

5.3 SOUTH DUBLIN BAY RIVER TOLKA ESTUARY SPA

The South Dublin Bay and River Tolka Estuary SPA comprises a substantial part of Dublin Bay. It includes the intertidal area between the River Liffey and Dun Laoghaire, and the estuary of the River Tolka to the north of the River Liffey, as well as Booterstown Marsh. A portion of the shallow marine waters of the bay is also included.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species over-wintering species: Light-bellied Brent Goose, Oystercatcher, Ringed Plover, Grey Plover, Knot, Sanderling, Dunlin, Bar-tailed Godwit, Curlew, Redshank, and Black-headed Gull. This SPA is also designated for its role in supporting breeding colonies of the following species: Roseate Tern, Common Tern and Artic Tern. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The qualifying features for which this site has been designated as a SPA are listed in Table 5.3 below. The threats and pressures to this SAC have been documented in the Standard Natura 2000 Data Form for the site (NPWS, 2017). The documented threats and pressures to this SPA are as follows:

- Walking, horseriding and non-motorised vehicles
- Reclamation of land from sea, estuary or marsh
- Discharges
- Roads, motorways
- Industrial or commercial areas

Table 5.3 lists:

- each of the special conservation interests for this SPA;
- their conservation status; and
- identifies the qualifying features of interest of the SAC that occur within the zone of influence of the project by virtue of the hydrological pathway along the River Liffey.

The distribution of foraging and/or roost sites for the special conservation interest bird species within the SPA as mapped by the NPWS (NPWS, 2014) has been relied upon to identify the species that could be influenced by the hydrological pathway.

Table 5.3: South Dublin Bay River Tolka Estuary SPA qualifying features of interest, conservation status, threats and pressures and identification of the features of interest occurring within the zone of influence of the project

SCIs	Conservation Status	Does the qualifying features of interest occur within the zone of influence of the project?
Light-bellied Brent Goose (*Branta bernicla hrota*)	Amber listed species- Species of medium conservation concern	Yes. Foraging habitat for this species occurring downstream of the project site at the Liffey Estuary.
Oystercatcher (*Haematopus ostralegus*)	Amber listed species- Species of medium conservation concern	Yes. Foraging habitat for this species occurring downstream of the project site at the Liffey Estuary.
Ringed Plover (*Charadrius hiaticula*)	Amber listed species- Species of medium conservation concern	No. This species does not rely on the section of the SPA occurring at the River Tolka Estuary.
Grey Plover (*Pluvialis squatarola*)	Amber listed species- Species of medium conservation concern	Yes. Foraging habitat for this species occurring downstream of the project site at the Liffey Estuary.
Knot (*Calidris canutus*)	Red listed species – Species of high conservation concern†	Yes. Foraging habitat for this species occurring downstream of the project site at the Liffey Estuary.
Sanderling (*Calidris alba*)	Green listed species – Species not threatened	No. This species does not rely on the section of the SPA occurring at the River Tolka Estuary.
Dunlin (*Calidris alpina*)	Amber listed species- Species of medium conservation concern	Yes. Foraging habitat for this species occurring downstream of the project site at the Liffey Estuary.
Bar-tailed Godwit (*Limosa*	Amber listed species-	Yes. Foraging habitat for this species occurring

lapponica)	Species of medium conservation concern	downstream of the project site at the Liffey Estuary.
Redshank (*Tringa totanus*)	Red listed species – Species of high conservation concern	Yes. Foraging habitat for this species occurring downstream of the project site at the Liffey Estuary.
Black-headed Gull (*Croicocephalus ridibundus*)	Red listed species – Species of high conservation concern	Yes. Foraging habitat for this species occurring downstream of the project site at the Liffey Estuary.
Roseate Tern (*Sterna dougallii*)	Green listed species – Species not threatened	Yes. This species forages in the Liffey Estuary and Dublin Bay.
Common Tern (*Sterna hirundo*)	Amber listed species- Species of medium conservation concern	Yes. This species forages in the Liffey Estuary and Dublin Bay.
Arctic Tern (*Sterna paradisaea*)	Amber listed species- Species of medium conservation concern	Yes. This species forages in the Liffey Estuary and Dublin Bay.
Wetlands & Waterbirds		Yes. Mudflat and sandflat habitats occur downstream of the project site at the Liffey Estuary.

Following on from Tables 5.21 to Table 5.3 above, Table 5.4 provides a summary of the qualifying features of interest occurring within the zone of influence of the project. The qualifying features of interest are grouped into broader groups that will be referred to in the assessment sections below.

Qualifying feature Group	Qualifying feature of interest	Associated European Site
Coastal/Littoral Habitats	Mudflats and sandflats not covered by seawater at low tide	North Dublin Bay SAC
	Annual vegetation of drift lines	North Dublin Bay SAC

	Salicornia and other annuals colonising mud and sand	North Dublin Bay SAC
	Spartina swards (Spartinion maritimae)	North Dublin Bay SAC
	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	North Dublin Bay SAC
	Mediterranean salt meadows (Juncetalia maritimi)	North Dublin Bay SAC
Coastal/Littoral Bird Species	Special conservation interests wetland bird species	South Dublin Bay River Tolka Estuary SPA & North Bull Island SPA

6.0 EUROPEAN SITES CONSERVATION OBJECTIVES

Generic Conservation Objectives and Site-specific Conservation Objectives (SSCOs) have been formulated for all three European Sites occurring within the zone of influence of the project.

The overall aim of the Habitats Directive and the Conservation Objectives for these European Sites is to maintain or restore the favourable conservation status of habitats and species of community interest.

The favourable conservation status of these habitats is achieved when:

- Its natural range, and area it covers within that range, is stable or increasing, and

- The ecological factors that are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and

- The conservation status of its typical species is favourable as defined below.

The favourable conservation status of these habitats is achieved when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and

- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and

- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

The favourable conservation status special conservation interest bird species of SPAs is achieved when:

- to maintain at a stable level or increase the long-term population trend for all species is maintained at a stable level or increasing.

- no significant decrease in the range, timing or intensity of use or areas by special conservation interest species, other than that occurring from natural patterns of variation.

The favourable conservation status of wetland habitats of SPAs is achieved when:

- the permanent area occupied by wetland habitat maintained, other than that occurring from natural patterns of variation.

The following subsection list the qualifying feature of interest/special conservation interests of the European Sites occurring within the zone of influence of the project and their current conservation status. An assessment is also outlined in the following subsections to identify the qualifying features of interest/special conservation interests of these European Sites that occur within the zone of influence of the project.

7.0 DESCRIPTION OF ELEMENT OF THE PLAN THAT COULD RESULT IN LIKELY SIGNIFICANT EFFECTS TO QUALIFYING INTERESTS

In the event that polluted surface water is discharged from the project to the receiving Coldblow/Lucan River, the potential will exist for adverse effects to the water quality in this watercourse. Any perturbations to the water quality of this watercourse will have the potential to contribute to water quality pressures along the River Liffey and downstream at the Liffey Estuary.

Any declines in water quality within the Coldblow/Lucan River and downstream along the Liffey catchment as a consequence of the project, could combine with other pressures to water quality within the Liffey estuary to result in potential effects to the conservation status of the wetland habitats occurring at Dublin Bay, and the associated assemblage of special conservation interest bird species that rely on these habitats.

7.1 IN-COMBINATION EFFECTS

Other relevant Plans in the surrounding area include:

- Clonburris Proposed SDZ Planning Scheme and Proposed Local Area Plan Environmental Report (August 2007);
- Fortunestown Local Area Plan (2012);
- Newcastle Local Area Plan (2012);
- Ballycullen – Oldcourt Local Area Plan (2013);
- South Dublin County Council Development Plan (2016-2022).
- Clonburris SDZ Masterplan (2017)

A Habitats Directive Assessment has been prepared for each of these Plans. The Appropriate Assessment for the first five plans listed above were recently reviewed as part of the Clonburris SDZ Masterplan Screening for Appropriate Assessment (Scott Cawley, 2017). During this review similar potential impacts that have been identified for the project were also identified for each of these Plans. In addition similar impacts were also identified for the Clonburris SDZ Masterplan.

These issues relate to:

Potential transfer of harmful and contaminating substances through surface water drainage system which ultimately empties to Dublin bay, thereby providing a hydrological link to the suite of European sites located within the Bay;

Such potential effects are also related to the existing threat/pressure posed by discharges to these European Sites, as identified in the NPWS Natura 2000 Data Forms for each of the three sites (see Section 5 above). Other threats and pressures identified in the Natura 2000 Data Forms as listed in Section 5 above are not relevant to the project and there will be no potential for the project to exacerbate the threat posed by these other identified pressures.

In light of the above Section 8 below aims to assess the potential for the project to undermine the water quality of the River Liffey and combine with other discharges to this catchment to result in adverse effects to the conservation status of the three European Sites occurring at Dublin Bay.

8.0 ASSESSMENT OF THE PROJECT'S POTENTIAL TO RESULT IN LIKELY SIGNIFICANT EFFECTS TO THE QUALIFYING INTERESTS OCCURRING WITHIN ITS ZONE OF INFLUENCE

The function of this Screening for Appropriate Assessment is to determine whether the project could have significant effects on the European Sites occurring within its zone of influence, in view of the Conservation Objectives for the qualifying features of interest of these European Sites that also occur within the zone of influence of the project. The structural and functional elements of a European Site to maintain the favourable conservation status of qualifying feature of interest are embedded into the list of detailed SSCOs for each of the site's interest features. As such the detailed Conservation Objectives of a European Sites represent the parameters against which an assessment of a project's potential to result in likely significant effects should be undertaken.

SSCOs for the the special conservation interests of the South Dublin Bay River Tolka Estuary SPA and the North Bull Island SPA; and the relevant qualifying features of interest of the

North Dublin Bay SAC occurring within the zone of influence of the project have been published by the NPWS (NPWS, 2013; 2015a; & 2015b). Table 8.1 lists the Conservation Objectives attributes and targets for each of these features and provides an assessment of the potential for the project to undermine each of these targets.

Table 8.1: Assessment Of Likely Significant Effects Against The SSCOs For Qualifying Features Of Interest Occurring Within The Zone Of Influence Of The Project

Attribute. No.	Attribute	Target	Assessment
Estuaries (North Dublin Bay SAC)			
1	Habitat area	The permanent habitat area is stable or increasing, subject to natural processes.	The project is located at a remote distance from this habitat and will not have the potential to result in changes to its extent at North Dublin Bay.
2	Community distribution	Conserve the following community types in a natural condition: Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex; Estuarine subtidal muddy sand to mixed sediment with gammarids community complex; Subtidal sand to mixed sediment with *Nucula nucleus* community complex; Subtidal sand to mixed sediment with *Nephtys* spp. community complex; Fucoid - dominated intertidal reef community complex; Faunal turf-dominated subtidal reef community; and Anemone - dominated subtidal reef community.	The project will not have the potential to result in any changes to the infauna and epifaunal communities supported by the littoral sands and muds of this habitat. The only pathway linking the project and this habitat will be through surface water runoff. The approach to the construction phase and operation phase of the project, as outlined in Section 2 above, which includes key features of the project that will manage surface waters generated at the project site during the construction phase and operation phase, will ensure that the potential for polluted surface water runoff to occur will be minimised and will not have the potential to result in likely significant effects to the status of communities supported by this habitat. Only clean surface water runoff will occur during the construction phase and operation phase and this will not present a risk to the water quality of receiving watercourses, thereby eliminating the potential for adverse effects downstream.

Mudflat (North Dublin Bay SAC)			
3	Habitat area	The permanent habitat area is stable or increasing, subject to natural processes.	The project is located at a remote distance from this habitat and will not have the potential to result in changes to its extent at North Dublin Bay.
4	Community distribution	Conserve the following community types in a natural condition: Intertidal sand with *Scolelepis squamata* and *Pontocrates* spp. community; and Intertidal sand to mixed sediment with polychaetes, molluscs and crustaceans community complex.	For reasons outlined for Attribute No. 2 above the project will not have the potential to result in changes to the status of the communities supported by this habitat.
Atlantic & Mediterranean Saltmarsh (North Dublin Bay SAC)			
5	Habitat area	Area stable or increasing, subject to natural processes, including erosion and succession.	The project is located at a remote distance from this habitat and will not have the potential to result in changes to its extent at North Dublin Bay.
6	Habitat distribution	No decline or change in habitat distribution, subject to natural processes.	The project is located at a remote distance from the saltmarsh habitats occurring at North Dublin Bay SAC and will not have the potential to influence the processes (such as hydrology) that underpin the distribution of this habitat within the SAC. As such it will not have the potential to undermine this target.
7	Physical structure: sediment supply	Maintain/restore natural circulation of sediments and organic matter, without any physical obstructions	Due to the design elements of the project that aim to control and manage surface water discharges from the project site, as outlined in Section 2 above, the project will not result in changes to the rates of sediment supply to the Liffey catchment and downstream at Dublin Bay.
8	Physical structure: creeks and pans	Maintain creek and pan structure, subject to natural processes, including erosion and succession	The creeks and pans of the saltmarsh habitats are influenced by hydrological processes such as freshwater influxes and tidal regimes. The project will not result in any changes to the hydrological regime of the Liffey catchment

			and will not have the potential to result in changes to the hydrological at Dublin Bay that influence the structure of creeks and pans within the North Dublin Bay saltmarsh habitats.
9	Physical structure: flooding regime	Maintain natural tidal regime	The project will not have the potential to influence the tidal regime at Dublin Bay.
10	Vegetation structure: zonation	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	The zonation of lower and upper saltmarsh habitats is influence by a variety of processes including the rate of freshwater influx at the saltmarsh. The project will not have the potential to result in changes to the flow rates of receiving watercourses occurring at the local sub-catchment levels surrounding the project site. In light of this the project will not have the potential to result in changes to the flow rates at the Liffey estuary and will in turn have no potential to influence the zonation and vegetation structure of saltmarsh habitats.
11	Vegetation structure: vegetation height	Maintain structural variation within sward	For reasons outlined above for Attribute No. 10 the project will not have the potential to result in changes to the sward height of saltmarsh habitats occurring at North Dublin Bay SAC.
12	Vegetation structure: vegetation cover	Maintain more than 90% of the saltmarsh area vegetated	For reasons outlined above for Attribute No. 10 the project will not have the potential to result in changes to the vegetation cover of saltmarsh habitats occurring at North Dublin Bay SAC.
13	Vegetation composition: typical species and sub-communities	Maintain range of sub-communities with typical species listed in Saltmarsh Monitoring Project (McCorry and Ryle, 2009)	For reasons outlined above for Attribute No. 10 the project will not have the potential to result in changes to the typical species and sub - communities of saltmarsh habitats occurring at North Dublin Bay SAC.
14	Vegetation structure: negative indicator species- *Spartina*	No significant expansion of common cordgrass (*Spartina anglica*), with an annual spread of	The project is located at a remote distance from the North Dublin Bay SAC and will not result in any disturbance to stands of *Spartina*

	anglica	less than 1%	and will not have the potential to result in the spread of this species within the SAC.
Special conservation interest bird species (South Dublin Bay River Tolka Estuary SPA & North Bull Island SPA)			
15	Population trend	Long term population trend stable or increasing	The project is located at a remote distance from these SPAs at Dublin Bay and will not represent a change in land cover or land use within the vicinity of the SPA. Baseline use patterns of the wetland habitats that support these bird species will not be influenced by the project. Furthermore, given the reasons outlined above for Attribute No. 2 there will be no potential for the project to indirectly influence the status of wetland habitats within the SPA, upon which these bird species rely.
16	Distribution	There should be no significant decrease in the range, timing or intensity of use of areas by special conservation interest bird species of the SPA occurring within the zone of influence other than that occurring from natural patterns of variation	For the reasons outlined for Attribute No. 2 & 15, the project will not have the potential to undermine this target.
Wetland habitat (South Dublin Bay River Tolka Estuary SPA & North Bull Island SPA)			
17	Wetland habitat area	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 32,261ha, other than that occurring from natural patterns of variation	For the reasons outlined for Attribute No. 2 & 15 above the project will not have the potential to result in any reduction in wetland habitat.

Table 8.2 provides a Screening Matrix in line with EU Guidance (2001) Assessment Criteria used to examine the potential of the proposed development to adversely impact upon European Sites. These assessment criteria are used to further examine whether the project will

have the potential to result in likely significant effects to the qualifying features/special conservation interests of the European Sites occurring within its zone of influence.

Table 8.2: Screening Matrix

Assessment Criteria	
Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) to the qualifying interests of European Sites occurring within the zone of influence of the project:	
Size and Scale	The project is considered to be of a moderate size and scale and involves the provision of an access road within the lands of Grange Castle West, Co. Dublin.
Land-take	The project does not involve any land-take from European Sites. The project will result in the loss of arable land and improved agricultural grassland and the severance of field boundary hedgerows and treelines.
Distance from European sites or key features of the site	The nearest European Sites to the project is the Rye Water Valley SAC, located approximately 4km to the north.
Resource requirements	No resources associated with the above listed European Sites will be required for, or utilised by the project.
Emissions	***Surface Waters***

	The project will not have the potential to result in the discharge of silt-laden or otherwise polluted runoff to surrounding watercourses. The design measures outlined in Section 2 above to control and treat surface water runoff will provide for the control and management of surface waters so that the risk of potentially polluting substances entering surrounding watercourses is reduced to an insignificant level. In addition the development of the project will be required to adhere to all environmental protection measures that have been published as part of the SEA and Screening Statement for Variation No. 1 to the South Dublin County Council Development Plan. ***Noise*** All European Sites are located a remote distance from the project site and noise generated by the project's construction and operation phases will not have the potential to result in disturbances to qualifying species supported by these European Sites. As no suitable otter habitat occurs within the vicinity of the project there will be no potential for noise to result in disturbance to this species, which is listed as a qualifying species of the Wicklow Mountains SAC. ***Light*** Light emissions associated with the project will not have the potential to result in disturbance surrounding European Sites due to the distance between the project site and these sites.
Excavation requirements	No excavations will be completed within or in close proximity to European Sites.
Describe any likely changes to qualifying features arising as a result of:	

Reduction of habitat area	The proposed road corridor will not result in a reduction in the extent of qualifying habitats or wetland supported by the European Sites occurring within its zone of influence.
Disturbance of key species	As outlined in Table 8.1 the project will not have the potential to result in any disturbance to qualifying species of surrounding European Sites that may occur within its zone of influence.
Habitat or species fragmentation	The project will not result in the fragmentation of any qualifying habitats of European Sites or the habitats upon which qualifying species rely.
Reduction in species density	The project will not have the potential to result in a decrease in the densities of special conservation interest bird species of the SPAs at Dublin Bay. This is due to the absence of a functional impact pathway between these European Sites at the project.
Changes in key indicators of conservation status	The attributes outlined in Table 8.1 represent the key indicators of conservation status of the qualifying features of interest/special conservation interests of the European Sites occurring within the zone of influence of the project. As detailed in Table 8.1 the project will not have the potential to result in changes to these key indicators.
Describe any likely impacts on European Sites as a whole in terms of:	
Interference with key relationships that define the structure and function of the	The attributes listed in Table 8.1 have been selected during the drafting of the SSCOs for the European Sites occurring within the zone of influence of the project as they represent the key features that define the structure and function of these European Sites. As detailed in Table 8.1 the project will not have the

site	potential to interfere with these key attributes.
Describe from the above the elements of the project or plan or combination of elements, where the above impacts are likely to be significant or where the scale of magnitude of impacts is not known.	
It has been concluded that likely significant effects to the four European Sites identified as occurring within the zone of influence of the project will not arise as a result of the project. Therefore a Stage 2 Appropriate Assessment is not required.	

9.0 SCREENING STATEMENT CONCLUSION

During the Screening of the proposed Grange Castle West Access Road it was found that five European Sites occur within a 15km radius of the project site and an additional four European Sites occur at a greater distance (i.e. approximately 27km downstream). The nearest European Site (Rye Water Valley SAC) to the project site is located approximately 4km to the north. All of five European Sites (and their associated qualifying features of interest/special conservation interests) within 15km o the project site are adjudged to be located outside the zone of influence of all activities associated with the proposed development of the access road.

Three of the four European Sites occurring at Dublin Bay have been identified as occurring within the zone of influence of the project by virtue of the presence of a hydrological pathway linking the project site to these European Sites. As such, a total of three European Sites were identified as occurring within the zone of influence of the project. These European Sites are:

- North Dublin Bay SAC;
- South Dublin Bay River Tolka Estuary SPA; and
- North Bull Island SPA.

The potential for the hydrological pathway, that links the project to these European Sites, to function as an impact pathway was assessed as part of this Screening for Appropriate Assessment. This assessment was completed by considering all aspects of the proposed project, including all design elements that aim to control and treat surface water generated at the project site during both the construction phase and operation phase.

This Screening has found that, given the provisions of project design to control and treat surface water generated at the project site, there will be no potential for the hydrological pathway connecting the project to the three European Sites, to function as an impact pathway.

Given this assessment of the hydrological pathway, the project will not have the potential to undermine water quality within the Liffey catchment and will not have the potential to result in likely significant effects to the conservation status of the three Dublin Bay European Sites that occur within the zone of influence of the project.

In light of the findings of this Screening for Appropriate Assessment it can be concluded by the competent authority that the project will not have a significant negative effect on European Sites and will not negatively affect their conservation objectives or integrity.

This Screening has resulted in a Finding of No Significant Effects and as such a Stage II Appropriate Assessment is not required.

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APPENDIX 1: QUALIFYING FEATURES OF INTEREST OF EUROPEAN SITES OCCURRING WITHIN THE WIDER SURROUNDING AREA

A total of seven European Sites were identified as occurring within a 15km radius of the project site and an addition four European Sites were identified as occurring downstream of the project site at Dublin Bay. Table A1.1 below lists the qualifying features of interest of each of these European Sites.

Table A1.1: Qualifying Features of Interest European Sites occurring within 15km of the Project

European Sites	Qualifying features of interest
Glenasmole Valley SAC	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210]
	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]
	Petrifying springs with tufa formation (Cratoneurion) [7220]
Rye Water Valley SAC	Petrifying springs with tufa formation (Cratoneurion) [7220]

	Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]
	Vertigo moulinsiana (Desmoulin's Whorl Snail) [1016]
Red Bog SAC	Transition mires and quaking bogs [7140]
Wicklow Mountain SAC	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110]
	Natural dystrophic lakes and ponds [3160]
	Northern Atlantic wet heaths with Erica tetralix [4010]
	European dry heaths [4030]
	Alpine and Boreal heaths [4060]
	Calaminarian grasslands of the Violetalia calaminariae [6130]
	Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230]
	Blanket bogs (* if active bog) [7130]
	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani) [8110] Calcareous rocky slopes with chasmophytic vegetation [8210]

	Siliceous rocky slopes with chasmophytic vegetation [8220]
	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]
	Lutra lutra (Otter) [1355]
South Dublin Bay SAC	Mudflats and sandflats not covered by seawater at low tide [1140]
	Annual vegetation of drift lines [1210]
	Salicornia and other annuals colonising mud and sand [1310]
	Embryonic shifting dunes [2110]
North Dublin Bay SAC	Mudflats and sandflats not covered by seawater at low tide [1140]
	Annual vegetation of drift lines [1210]
	Salicornia and other annuals colonising mud and sand [1310]
	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]
	Mediterranean salt meadows (Juncetalia maritimi) [1410]
	Embryonic shifting dunes [2110]
	Shifting dunes along the shoreline with Ammophila arenaria

	(white dunes) [2120]
	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]
	Humid dune slacks [2190]
	Petalophyllum ralfsii (Petalwort) [1395]
North Bull Island SPA	Light-bellied Brent Goose (Branta bernicla hrota) [A046]
	Shelduck (Tadorna tadorna) [A048]
	Teal (Anas crecca) [A052]
	Pintail (Anas acuta) [A054]
	Shoveler (Anas clypeata) [A056]
	Oystercatcher (Haematopus ostralegus) [A130]
	Golden Plover (Pluvialis apricaria) [A140]
	Grey Plover (Pluvialis squatarola) [A141]
	Knot (Calidris canutus) [A143]
	Sanderling (Calidris alba) [A144]
	Dunlin (Calidris alpina) [A149]

	Black-tailed Godwit (Limosa limosa) [A156]
	Bar-tailed Godwit (Limosa lapponica) [A157]
	Curlew (Numenius arquata) [A160]
	Redshank (Tringa totanus) [A162]
	Turnstone (Arenaria interpres) [A169]
	Black-headed Gull (Chroicocephalus ridibundus) [A179]
	Wetland and Waterbirds [A999]
South Dublin Bay & Tolka Estuary SPA	Light-bellied Brent Goose (Branta bernicla hrota) [A046]
	Oystercatcher (Haematopus ostralegus) [A130]
	Ringed Plover (Charadrius hiaticula) [A137]
	Grey Plover (Pluvialis squatarola) [A141]
	Knot (Calidris canutus) [A143]
	Sanderling (Calidris alba) [A144]
	Dunlin (Calidris alpina) [A149]
	Bar-tailed Godwit (Limosa lapponica) [A157]

	Redshank (Tringa totanus) [A162]
	Black-headed Gull (Chroicocephalus ridibundus) [A179]
	Roseate Tern (Sterna dougallii) [A192]
	Common Tern (Sterna hirundo) [A193]
	Arctic Tern (Sterna paradisaea) [A194]
	Wetland and Waterbirds [A999]

Appendix C – EIA Screening Report

Grange Castle West Access Road, Co. Dublin

Environmental Impact Assessment Screening

Doherty Environmental

September 2018

Grange Castle West Access Road

Environmental Impact Assessment Screening

Document Stage	Document Version	Prepared by
Final	2	Pat Doherty MSc, MCIEEM

For and on behalf of

Doherty Environmental

Prepared By: Pat Doherty

Signed: 

This report has been prepared by Doherty Environmental 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.

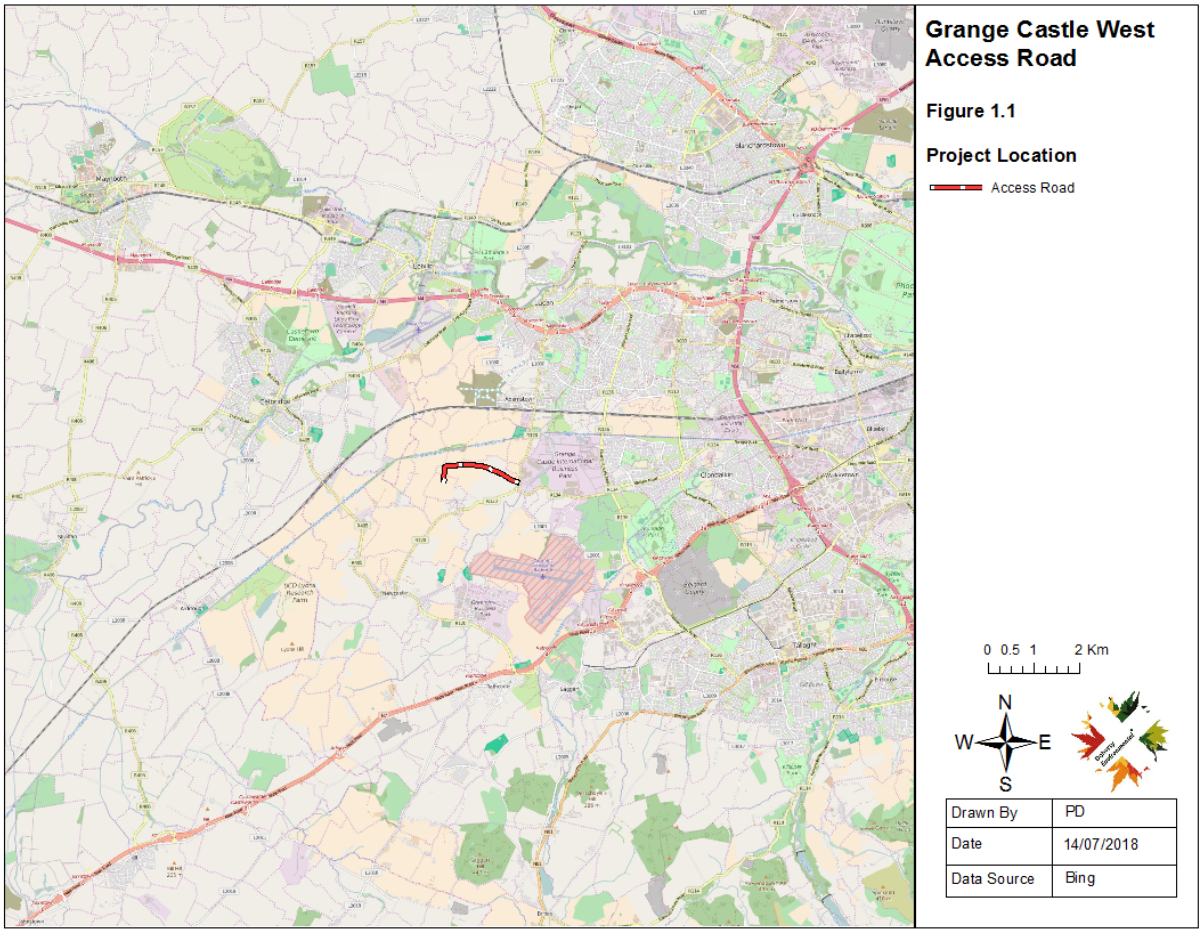
This report is prepared for CSEA Consulting Engineers and we accept no responsibility to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.

Table of Contents

1.0 INTRODUCTION

Doherty Environmental Consultants (DEC) Ltd. have been commissioned by South Dublin County Council to undertake a Environmental Impact Assessment Screening Report for the proposed Grange Castle West (GCW) Access Road, Co. Dublin (see Figure 1.1 for location).

The findings of the EIA Screening assessment for the proposed GCW access road (i.e. the project) are presented in this report.



2.0 PROJECT DESCRIPTION

2.1 OVERVIEW

The proposed Grange Castle West (GCW) Access Road contains 1.03km of Dual Carriageway with an average corridor width of 34m and 1.15km of Single Carriageway with an average

corridor width of 25m. There are a total of 1 No. double lane and 3 No. single lane fully segregated roundabouts proposed for the Grange Castle West Access Road development. Controlled pedestrian and cyclist crossing facilities are predominately provided at all four proposed roundabouts with two uncontrolled crossing facilities proposed at roundabout No. 4.

6 No. Bus stops and sustainable transport facilities are proposed to be facilitated within the Grange Castle Access Road development. An architecturally landscape designed attenuation lake is proposed to accommodate surface water drainage requirements generated from the proposed road and surrounding hard-standing areas. The design of the attenuation pond and surrounding lands has incorporated measures to enhance the biodiversity and amenity value of this area.

Landscaped entrance and security structures to aesthetically harmonize with existing Grange Castle and Grange Castle South Business Park entrances is additionally proposed.

The proposed GCW Access Road scheme comprises of the following:

1.03km of Dual Carriageway with any average corridor width of 34m.

1.15km of Single Carriageway with an average corridor width of 25m.

1 No. double lane and 3 No. single lane fully segregated roundabouts.

Raised 2m wide cycle path and separate 2m wide pedestrian walkway.

An attenuation lake to accommodate surface water drainage requirements from the proposed road and surrounding hardstand areas, this will double up as an amenity area.

Controlled and uncontrolled pedestrian and cyclist road crossings.

Landscaped entrance and security structures to aesthetically harmonize with existing Grange Castle and Grange Castle South Business Park entrances.

Bus stops and sustainable transport facilities.

Underground utilities and services including: Storm Water Drainage, Foul Drainage, Watermain, , Gas, Power, Telecoms, Public Lighting and CCTV.

All associated ancillary works and integrated landscape plans.

Access and egress into the proposed GCW Access Road will be gained from a newly formed Grange Castle West Business Park entrance off the western leg of a newly formed signalised junction constructed under the R120/R134 upgrade scheme.

2.2 GENERAL APPROACH TO THE CONSTRUCTION PHASE

In addition to the design approach to be implemented for the control of surface waters the following measures will be implemented during the construction phase:

- Habitat disturbance during construction work will be confined strictly to within the direct land-take of the proposed route alignment area.
- Construction machinery will be restricted to site roads and designated access routes to excavation and construction area.
- With the exception of the hedgerows and treeline that will be severed as a result of the project, no other hedgerow or treeline habitat will be removed during the construction phase.
- All construction works will be undertaken in accordance with the following:
    - Inland Fisheries Ireland's *Requirements for the Protection of Fisheries Habitat during Construction and Development Works.*
    - CIRIA (Construction Industry Research and Information Association) Guidance Documents
        - Control of water pollution from construction sites (C532)
        - Control of water pollution from linear construction projects: Technical Guidance (C648)
        - Control of water pollution from linear construction projects: Site Guide (C649)
        - Environmental Good Practice on Site (C692)
    - NRA Guidance Documents
        - Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes

  - Guidelines for the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads
  - Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, during and Post Construction of National Road Schemes

- It will be a condition of the contract between proponent and the Main Contractor that the Construction & Environmental Management Plan (CEMP) specifies how materials with the potential to adversely affect surface water quality, for example diesel and oil, will be stored and handled in a manner that minimises the risk of accidental spills or leaks. The CEMP will also ensure that spill containment and clean-up equipment is provided and maintained during the construction phase of the development.
- Standard dust suppression measures will be implemented during periods of dry weather. This will avoid any impacts arising from the spread of dust particles during the construction phase.
- An appropriate temporary barrier (e.g. a silt fence) will be installed along all drainage swales to prevent the migration of silt-laden surface runoff from the construction footprint into adjacent watercourses and drainage ditches;
- All excess spoil material will be stockpiled at dedicated temporary spoil depot areas, which will be located a minimum distance of 50m from any surface watercourse. It is noted that the only watercourse occurring proximate to the proposed route is the Coldblow/Lucan Stream, which will be realigned and culverted under the proposed road development.
- Excavated soil material to be re-used for landscaping purposes will be stored on level ground away from watercourses and wetland habitats.
- Landscaping and seeding of adjacent roadside embankments will be undertaken at the start of the growing season so that surface soils are consolidated with vegetation in as short a timeframe as possible.
- Refuelling of plant during construction will be carried out at a designated area, a minimum of 50m from watercourses. Drip trays and spill kits will be available on site. Maintenance of all plant and machinery will be undertaken off-site. Only emergency break-down maintenance will be carried out on site.

- Oil fuel should be stored within containment areas and emergency response measures for oil spillage on site should be prepared.
- All plant, machinery and site operative clothing will be inspected prior to site access to ensure that no materials are contaminated with non-native invasive species.
- Where instream works are required all plant, machinery and site operative clothing will be cleaned and disinfected prior to entering watercourses to minimise the risk of spreading non-native invasive species.
- Interceptor swales will be incorporated into the design of the road to ensure that all road runoff during the operation phase is directed to swales.

Swales will convey surface water to attenuation settling ponds. Water will be discharged from attenuation ponds at green field rates. All waters discharging from attenuation ponds will pass through a hydrocarbon interceptor prior to discharge to the receiving surface water network.

2.3 SURFACE WATER MANAGEMENT

Adequate provision shall be made for the drainage of the proposed GCW Access Road scheme to give satisfactory performance throughout its design life. The principal functions of a road drainage system are:

- To prevent flooding of the carriageway by direct rainfall or by water flowing onto the road from adjoining footways, cycle tracks and/or properties;
- To avoid weakening of the sub-grade or pavement layers due to the presence of groundwater;
- To avoid erosion of side slopes on embankments and cut slopes;
- To facilitate the passage of watercourses through a scheme by constructing culverts or carrying out localised diversions.
- To provide safe driving conditions for all vehicles.

The proposed road drainage system will ensure that surface water drains quickly from the carriageway (including footway and cycle track Infrastructure) and is collected and conveyed to the nearest outfall in order to avoid localised flooding or ponding on the roads surface. The proposed drainage system will also ensure that groundwater is not permitted to infiltrate the sub-grade and pavement layers to the extent where it could cause a build-up of excess pore

water pressure capable of undermining or weakening the proposed roads foundation. The water table must be maintained at an adequate level below the pavement at all times of the year. The proposed drainage system will also ensure that flooding of the proposed road by water from adjoining properties/lands is prevented by intercepting it with suitable drains and conveying it to a suitable outfall.

The Greater Dublin Strategic Drainage Study (GDSDS) mandates that Sustainable urban Drainage Systems (SuDS) proposals are implemented in order that the completed development run-off characteristics mimic the existing green-field as closely as possible. Appropriately designed, constructed and maintained SuDS are more sustainable than conventional drainage methods because they can mitigate many of the adverse effects of urban storm water runoff on the environment. They can achieve this through:

- reducing runoff rates, and reducing the risk of downstream flooding
- reducing the additional runoff volumes and runoff frequencies that tend to be increased as a result of urbanisation, and which can exacerbate flood risk and damage receiving water quality
- encouraging natural groundwater recharge (where appropriate) to minimise the impacts on aquifers and river base flows in the receiving catchment
- reducing pollutant concentrations in storm water, and protecting the quality of the receiving water body
- acting as a buffer for accidental spills by preventing direct discharge of high concentrations of contaminants to the receiving water body
- reducing the volume of surface water runoff discharging to combined sewer systems, and reducing discharges of polluted water to watercourses via Combined Sewer Overflow (CSO) spills
- contributing to the enhanced amenity and aesthetic value of developed areas
- providing habitats for wildlife in urban areas and opportunities for biodiversity enhancement.

It is proposed that the GCW Access Road scheme will incorporate as many Sustainable Drainage Systems as feasibly possible to ensure that the above objectives are satisfactorily introduced and ultimately implemented within the lifetime of the proposed road scheme.

The proposed road drainage system will incorporate a system of culverts (where required) for accommodating watercourses that intersect the scheme footprint. An application for consent pursuant to Section 50 of the Arterial Drainage Act, 1945 will be submitted to the OPW in respect of the existing Tobermaclugg Stream which is proposed to be culverted under the footprint of the proposed GCW Access Road Scheme.

There are several types of drainage systems which are proposed for the GCW Access Road scheme that are outlined as follows;

Sealed Drainage: This drainage system collects, conveys and discharges carriageway/hardstanding surface runoff to a suitable outfall via sealed (impervious) conduits. A typical example of this type of drainage system is the kerb and gully drain.

Positive Drainage: As sealed drainage is impervious, it does not drain groundwater; therefore its use in cut areas should be combined with or accompanied by a filter drain. Where this system of drainage is used, it is imperative that it is designed so that road runoff is prevented from dissipating through the filter drains. As filter drains can also drain road runoff, the use of positive drainage should be restricted to areas that are sensitive to high concentrations of flow arising from road runoff such as Karst areas.

Sealed Manhole Chambers: Sealed storm water chambers in accordance with TII Standard Construction Details - Series 500.

Flow Restricting Devices: Hydro-brake flow restricting devices shall be introduced to convey allowable discharge rates in accordance with Qbar. Allowable discharge rates in accordance with Qbar (GDSDS - Typically 2l/s/Ha) will be generated for all catchment surfaces/areas.

Bypass Separators: Petrol/Oil Bypass Interceptors shall be introduced down stream of hydro brake chambers prior to discharging/connecting into existing storm network/open channel watercourses located in close proximity.

Attenuation Lake: All storm water runoff generated from the GCW Access Road scheme footprint will ultimately discharge into a proposed attenuation lake prior to discharging downstream, in a controlled manner, back into the existing Lucan (Tobermaclugg) stream which flows in a south to north direction prior to discharging into the River Liffey. In order to maintain the ecology of the stream, the existing flow rates of the stream will be maintained through the attenuation basin using flow control devices.

The design of the closed/sealed drainage system for the proposed GCW Access Road scheme shall be used through the aid of XP Microdrainage software in accordance with the Modified Rational Method. XP Microdrainage is supported by both FSR and FEH rainfall data in the UK and Ireland. Pipe capacities are calculated by using the Colebrook-White equations. XP Microdrainage employs a full hydrograph method to design, size and test storage/attenuation systems in accordance with BRE 365, Sewers for Adoption, CIRIA guidance and the Building Regulations. The analysis of each storm network, including attenuation/storage, is analysed using automatic storm generation of both FSR and FEH rainfall from 15 minutes (summer/winter) to 7 days duration and return periods of up to 1000 years in the UK and Ireland.

All the above is designed in parallel and in accordance with the Greater Dublin Strategic Drainage Study (GDSDS), the 2010 Building Regulation - Technical Guidance Document H, the SuDS Manual, the TII Design of 'earthworks drainage, network drainage, attenuation and pollution control' DN-DNG-03066 and all other relevant drainage standards and guidance documents available at the time of design.

2.4 FOUL WATER DRAINAGE

The proposed foul drainage design for the GCW Access Road scheme will been carried out in accordance with the Building Regulations 2010 Technical Guidance Document 'H' and the Environmental Protection Agency's (EPA) "Wastewater Treatment Manuals: Treatment Systems for Small Communities, Businesses, Leisure Centres and Hotels". In areas where the above document does not provide specific guidance, or where the guidance provided is ambiguous, reference will be made to the EPA's "Code of Practice: Wastewater Treatment and Disposal Systems Serving Single Houses".

The proposed GCW Access Road foul sewer design shall also take cognisance of Irish Waters Code of Practice for Wastewater Infrastructure document IW-CDS-5030-03. The design software used for proposed GCW Access Road scheme foul drainage design requirements is XP Micro-Drainage.

As stated in chapter 1.2 of this report, the lands within which the proposed GCW Access Road will be constructed upon obtains a zoning objective EE (Employment & Enterprise) under the SDCC 2016 - 2022 Development Plan. For this reason alone, it will therefore be deemed necessary to introduce and incorporate a foul sewer system (trunk mains) under the proposed GCW Access Road footprint to accommodate the future lands that will be developed under the zoning objective EE (Employment and Enterprise). The proposed foul sewer system will be designed as a gravity sewer which will ultimately discharge into the existing Grange Castle Foul Pump Station located within Grange Castle Business Park. The foul exiting from the existing Grange Castle Foul Pump Station ultimately discharges into the existing 9B Foul Sewer System.

2.5 NOISE

The construction phase of the project will generate noise emissions that have the potential to result in nuisance to surrounding receptors, particularly existing residential dwellings to the east and the school to the south of the project site.

In order to minimise any potential for noise nuisance mitigation measures will be implemented during the construction phase. These measures will adhere to the best practice guidelines outlined in BS5228: Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1 Noise (2009 + A1 2014). These standard guidelines offer detailed guidelines on the control of noise and vibration from construction activities. The following mitigation measures will be implemented during the construction phase of the proposed development to ensure noise and vibration limit values are complied with:

- The hours during which site activities are likely to create high levels of noise will be limited to a set time period;
- During the construction phase a clear line of communication will be established between the contractor/developer, Local Authority and residents;

- A site representative will be appointed to take responsibility of all matters relating to noise and vibration;
- Noise monitoring will be undertaken during the construction phase, particularly during critical periods and at sensitive locations;
- All site access roads will be kept even to mitigate the potential for noise and vibration from lorries.
- Plant with low inherent potential for generating noise and/ or vibration will be selected for construction;
- Where required noise barriers will be erected around items such as generators or high duty compressors;
- Noisy plant will be sited as far away from sensitive properties as permitted by site constraints.
- Construction site hoarding will be erected along noise sensitive boundaries where works are taking place in proximity to existing residential properties where no substantial screening exists. Such hoarding will be provided along the eastern boundary of the project site.

  With the implementation of the measures it is predicted that the nuisance impact of noise generated during the construction phase will be of a short-term, slight, negative nature.

2.6 LANDSCAPING

It is proposed to retain all vegetation associated with the existing woodland habitats bounding the project site to the north, south and west.

Hedgerow habitat removed during the alignment construction phase will be reinstated post construction along the edges of the road so that no net loss of this habitat occurs over the longer term. Hedgerows will be required to knit in with the existing hedgerow and treeline network and will be replaced with native vegetation typical of this region. The replacement trees to be planted along hedgerows should include fruiting trees. The replacement of hedgerows will ensure no net loss of potential vegetated corridor foraging habitat for bat species.

In the interest of maintaining foraging habitat and potential commuting route connections for bats between severed hedgerow field boundaries to the north and south of the proposed access road, the remaining sections of field boundary hedgerows 3 and 5 (see Figure 2.1 for location) should be managed so that these hedgerows taper to a high point either side of the alignment corridor. This will require the planting of taller-growing trees immediately adjacent to the alignment so that the height of the hedgerow gradually increases on approach to the alignment from both directions. This treeline will tie into planted hedgerow-treeline running parallel to the road alignment in a east to west orientation. Where field boundary hedgerows 3 and 5 intersects the hedgerow/treeline running parallel to the route alignment, the latter hedgerow/treeline will also be planted with taller growing tree species that will act as a screen to the road corridor and forcing bats to fly over the road at safer heights above the line of traffic.

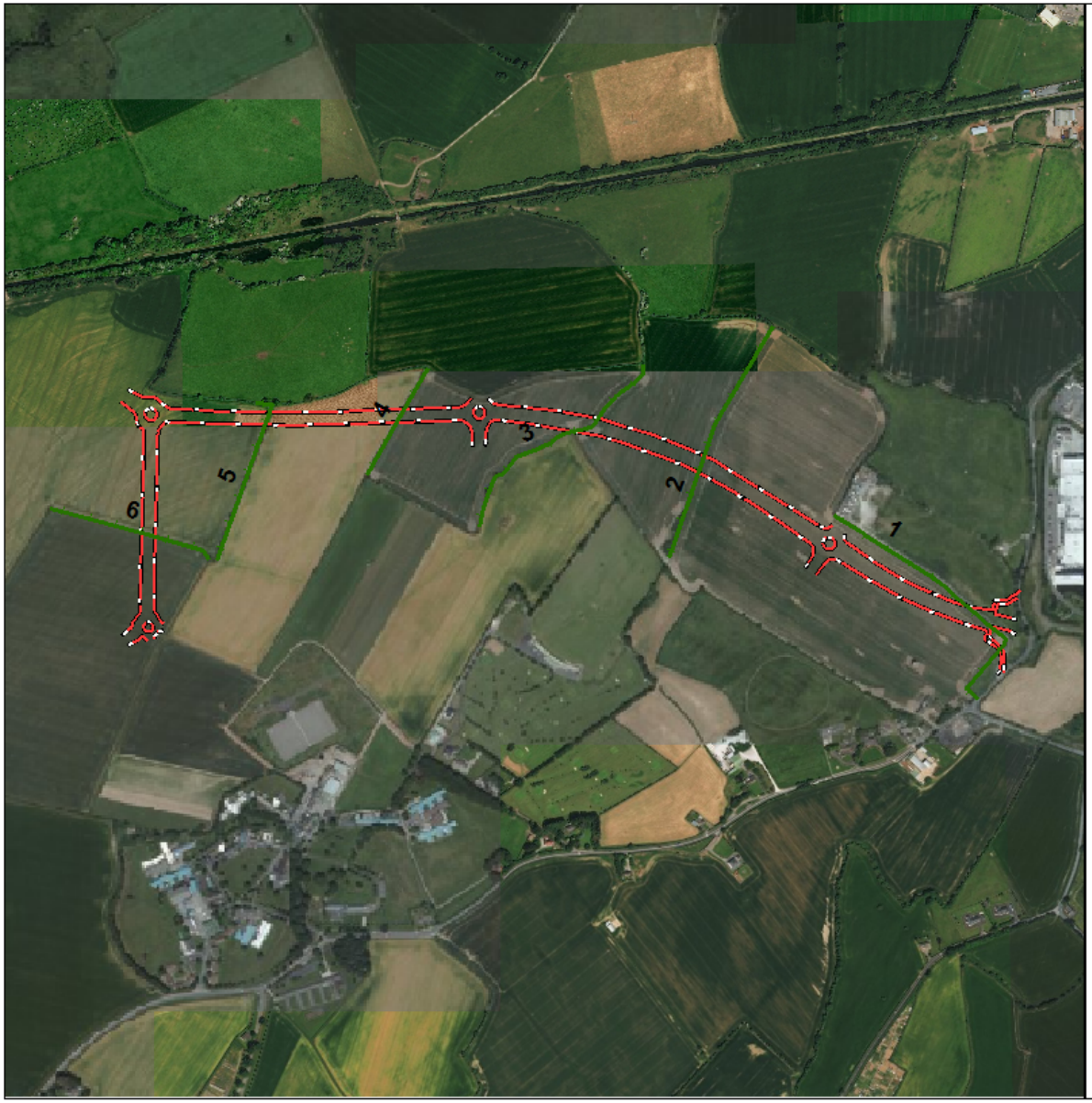
2.7 LIGHTING

The following measures should be implemented as part of the lighting for the project:

- No street lighting should be installed in close proximity to field boundary hedgerows no. 3 and 5.
- The spacing between lights should be maximized to reduce light intensity.
- In order to reduce light spill, street lighting will be directed to areas only where it is needed. The upward spread of light above the horizontal plane will be avoided by installing low beam angle lights, less than 70 above the horizontal plane and baffling light columns.
- Blue-white short wavelength lights will not be used on site; and
- Lights with a high UV content will be avoided. Instead narrow spectrum lighting with a low UV content will be used on site.
- Low intensity lighting will be used on site.

2.8 REALIGNMENT OF THE COLDBLOW/LUCAN STREAM

As part of the project it will be required to realign a section of the Coldblow/Lucan Stream under the proposed road corridor. The stream, which emerges from field boundary drainage ditches will be realigned perpendicular to the road corridor and will discharge into the



Grange Castle West Access Road

Figure 2.1

Project Location

Access Road

Numbers indicate Hedgerow Numbers

0 0.050.1 0.2 Km

N
W E
S

Drawn By	PD
Date	19/09/2018
Data Source	Bing

proposed attenuation pond to the north of the access road. The realignment of the stream will be completed in line with the following requirements:

- Realignment Coldblow/Lucan Stream will completed in line with all recommendations for instream works outlined in the IFI's guidance document *Guidelines on Protection of Fisheries during Construction Works In and Adjacent to Waters.*
- A method statement for the proposed realignment works will be prepared in advance of their commencement and will be agreed to by the IFI prior to any realignment works commencing.
- A bottomless box culvert, or similar with a mammal pass will be provided for the proposed crossing of the realigned Coldblow/Lucan River. The design of the project has sought to minimise the length of the culverted section of the realigned stream by providing a crossing that is perpendicular to the proposed road alignment. The box culvert will be embedded at the edge of the realigned stream and will be appropriately sized to match the existing stream profile. The realigned section will be back filled with gravels and small stones so that a natural stream bed is provided once waters are directed into the realigned section. The open section of the realigned stream flowing north from the culvert will discharge to the proposed attenuation pond. Riparian vegetation will be provided along this open section of the stream between the culvert and the attenuation pond.

2.9 CONSTRUCTION PHASE MONITORING

The construction phase of the project will be monitored to ensure that environmental best practice is adhered to and effectively implemented throughout the duration of this phase. The following systems will be put in place to ensure adherence to best practice:

- The contractor will assign a member of the site staff as the environmental officer with the responsibility for ensuring the environmental measures prescribed above are adhered to. A checklist will be filled in on a weekly basis to show how the measures have been complied with. Any environmental incidents or non-compliance issues will immediately be reported to the project team.

The project managers will be continuously monitoring the works and will be fully briefed and aware of the environmental constraints and protection measures to be employed.

3.0 REQUIREMENT FOR EIA: LEGISLATIVE BACKGROUND

EIA requirements derive from EU Directive 85/337/EEC (as amended by Directive 97/11/EC, Directive 2014/52/EU and S.I. 454 of 2011; S.I. 464 of 2011; S.I. 456 of 2011) on the assessment of the effects of certain public and private projects on the environment. The purpose of this Environmental Impact Assessment Screening Report is to determine whether this proposed development will require full Environmental Impact Assessment.

The EIA Directive (Council Directive 2014/52/EU) outlines in Article 4 (1) 21 the "Annex 1 projects" that require mandatory EIA. Article 4 (2) outlines "Annex 2 projects" that require consideration for EIA further to a case by case examination or through thresholds and criteria established by Member States. Projects requiring mandatory EIA are listed in Schedule 5 of the Planning and Development Regulations 2001, as amended. Where developments are under the relevant EIA threshold, planning authorities are required under Article 103 of the 2001 Regulations, as amended, to request an EIS where it considers the proposed development is likely to have a significant effect on the environment. In these cases the significant effects of the project are assessed relative to the criteria contained in Schedule 7a of the regulations, principally:

- The projects characteristics
- Sensitivity of the project location, and
- Characterisation of potential impacts.

In addition, where the development would be located on or in an area, site etc. set out in Article 103(2), the planning authority shall decide whether the development would or would not be likely to have significant effects on the environment for such a site, area or land etc., the implication being that if it decides that it would be likely to have significant effects on the environment, it can invoke its powers to request an EIS.

Article 103(2) sites comprise the following:

a) A European Site;

b) An area the subject of a notice under section 16(2) (b) of the Wildlife (Amendment) Act, 2000;

c) An areas designated as a Natural Heritage Area under section 18 of the Wildlife (Amendment) Act, 2000;

d) Land established or recognised as a nature reserve within the meaning of section 15 or 16 of the Wildlife Act, 1976, as amended by sections 26 and 27 of the Wildlife (Amendment) Act, 2000; or

e) Land designated as a refuge for flora or as a refuge for fauna under section 17 of the Wildlife Act, 1976, as amended by section 28 of the Wildlife (Amendment) Act, 2000.

The project site is not located on or in an area as listed above in 103(2).

A Screening Statement for Appropriate Assessment and Ecological Impact Assessment has also been prepared for this proposed project and should be read in conjunction with this report.

According to European Commission Guidance (2017[1])

"Screening has to implement the Directive's overall aim, i.e. to determine if a Project listed in Annex II is likely to have significant effects on the environment and, therefore, be made subject to a requirement for Development Consent and an assessment, with regards to its effects on the environment. At the same time, Screening should ensure that an EIA is carried out only for those Projects for which it is thought that a significant impact on the environment is possible, thereby ensuring a more efficient use of both public and private resources. Hence, Screening has to strike the right balance between the above two objectives."

[1] Environmental Impact Assessment of Projects Guidance on Screening (Directive 2011/92/EU as amended by 2014/52/EU). European Commission 2017. Page 23.

Recent guidelines from the Department of Housing, Planning and Local Government (2018) [2] in relation to screening state:

"3.1. Screening is the initial stage in the EIA process and determines whether or not specified public or private developments are likely to have significant effects on the environment and, as such, require EIA to be carried out prior to a decision on a development consent application being made. A screening determination is a matter of professional judgement, based on objective information relating to the proposed project and its receiving environment. Environmental effects can, in principle, be either positive or negative.

3.2. Screening must consider the whole development. This includes likely significant effects arising from any demolition works which must be carried out in order to facilitate the proposed development. In the case of transboundary developments, screening must consider the likely significant effects arising from the whole project both sides of the boundary. A screening determination that EIA is not required must not undermine the objective of the Directive that no project likely to have significant effects on the environment, within the meaning of the Directive, should be exempt from assessment."

3.1 RECENT CHANGES TO THE EIA SCREENING PROCESS.

The EIA Directive (2014/52/EU) has not been transposed into legislation but is considered to have direct effect from May 2017. A number of changes to the EIA process were instigated through this new Directive, with a strengthening of the Screening process as follows:

Article 4(4) of this Directive introduces a new Annex IIA to be used in the case of a request for a screening determination for Annex II projects. This is information to be provided by the developer on the projects listed in Annex II (see below):

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[2] Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment

3.1.1 Annex IIA: Information to be provided by the developer on the projects listed in Annex II.

1. A description of the project, including in particular:

(a) a description of the physical characteristics of the whole project and, where relevant, of demolition works (*Section 2 of this report*);

(b) a description of the location of the project, with particular regard to the environmental sensitivity of geographical areas likely to be affected (*Section 3 of this report*)

2. A description of the aspects of the environment likely to be significantly affected by the project (*Section 3 of this report*)

3. A description of any likely significant effects, to the extent of the information available on such effects, of the project on the environment resulting from:

(a) the expected residues and emissions and the production of waste, where relevant;

(b) the use of natural resources, in particular soil, land, water and biodiversity (*Section 4 of this report*).

4. The criteria of Annex III shall be taken into account, where relevant, when compiling the information in accordance with points 1 to 3 (*Section 4 of this report*).

Article 4(4) specifies that the developer may provide a description of any features of the project and/or mitigation measures to avoid or prevent what might otherwise have been significant effects on the environment. It should be noted that this does NOT include compensation measures (Mitigation measures are provided in Section 2).

3.2 REQUIREMENT FOR EIA FOR A PUBLIC ROAD PROJECT

The requirements for EIA for a public road development is determined by reference to mandatory and discretionary provisions set out in the Roads Act, 1993 to 2015 (as amended). This screening determines whether the project is:

1. Representative of a project that falls within the requirements for mandatory EIA as specified in the Roads Act, as amended; or

2. Representative of a sub-threshold road project that, due to the nature of its character, location or potential environmental impact triggers a requirement for a discretionary EIA.

The following sections screen the project for mandatory EIA and sub-threshold discretionary EIA.

4.0 MANDATORY EIA

The legislation requiring a mandatory EIA for a road development are outlined in Section 50 of the Roads Act, 1993 (as amended) and in Article 8 of the Roads Regulations, 1994. Table 4.1 lists these requirements and establishes whether the proposed road project triggers these requirements.

Table 4.1: Screening for Mandatory EIA

Screening Question	Regulatory Reference	Response
Does the project comprise the construction of a motorway, busway or service area?	S.50(1)(a) of the Roads Act, 1993, as amended.	The proposed road development is not a motorway, busway or service area. This requirement for mandatory EIA is not triggered.
Is the project representative of a prescribed type of proposed road development consisting of the construction of a proposed public road or the improvement of an existing public road, where the prescribed types of road development comprise:	Article 8 of the Roads Regulations, 1994 (Road development prescribed for the purposes of S. 50(1)(a) of the Roads Act, 1993	The proposed road development is situated in a rural area. It does not involve the provision of a road of four or more lanes for a distance of 8km or more. The proposed development does not involve the

• The construction of a new road of four or more lanes, or the realignment or widening of an existing road so as to provide four or more lanes, where such new, realigned or widened road would be eight kilometres or more in length in a rural area, or 500 metres or more in length in an urban area. • The construction of a new bridge or tunnel which would be 100 metres or more in length.		construction of a bridge or tunnel. These requirements for mandatory EIA are not triggered.
Has a direction been issued by An Bord Pleanála (ABP) to the Road Authority to prepare an EIS?	S.50(1)(b) of the Roads Act, 1993	ABP has not directed the Road Authority (South Dublin County Council) to prepare an Environmental Impact Statement for the proposed road development.
Does the road authority consider that the proposed road development would be likely to have significant effects on the environment and has it informed ABP in writing of such an opinion?	S.50(1)(c) of the Roads Act, 1993	South Dublin County Council have been advised that the proposed road development is not predicted to have significant effects on the environment.
Is the proposed road development located on 'certain environmental sites' and has the road authority determined whether any significant effects are likely	S. 50(1)(d) of the Roads Act, 1993, as amended by reg. 56(7) of the European Communities (Birds and Natural Habitats) Regulations 2011)	No. A Screening Statement in Support of Appropriate Assessment has been prepared for the project and has concluded that there is no potential for the project,

on the environment as a result?		alone or in combination with other projects, to result in likely significant effects to the qualifying features of interest and Conservation Objectives of European Sites. The project will not have the potential to interact with or adverse effect the conservation status of any Natural Heritage Areas in the wider area surrounding the project site. The Grand Canal pNHA is located approximately 200m to the north of the project site. An Ecological Impact Assessment of the project has found that the project will not have the potential to interact with or adversely effect the conservation status of this pNHA or any other pNHAs occurring in the wider area surrounding the project site. No geological heritage sites are located in close proximity to the project site.

Conclusion: The proposed road development project is not trigger the mandatory requirements for EIA and is therefore considered to be a sub-threshold development.

5.0 SUB-THRESHOLD DEVELOPMENT

The key issue for the competent/consent authority in the context of the possible need for EIA of a sub-threshold road project is whether or not such a project is likely to have significant effects on the environment. When screening a project for its potential to result in significant

effects to the environment regard must be given to the criteria specified in Schedule 7a of the Planning and Development Regulations 2001. The criteria contained in Schedule 7a are grouped under the following category headings.

1. Characteristics of the Proposed Development - Table 4.1

2. Location of the Proposed Development - Table 4.2 and

3. Characteristics of Potential Impact Tables 4.3

The criteria listed under each of these three category headings that must be taken into account when making screening decisions on a case by case basis will be considered in the context of the proposed road development in the following sections.

5.1 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The characteristics of the Proposed Development are outlined in Table 5.1 below against a screening of established EIA Screening questions.

Table 5.1: Characteristics of the Proposed Development

Screening Question	**Response**
1. Characteristics of projects The characteristics of projects must be considered, with particular regard to:	
(a) the size and design of the whole project	The proposed road development is representative of a project that is well below the level required to trigger a mandatory EIA i.e. a road of 8km or more or four or more lanes. The footprint of the proposed road is approximately 7 Ha in size. All construction works will be restricted to the footprint of the project site and will be completed within a 20-month period. The construction phase will be guided by a Construction and Environmental Management Plan (CEMP) that will seek to ensure

Screening Question	Response
1. Characteristics of projects The characteristics of projects must be considered, with particular regard to:	
	the construction phase is completed in line with best practice and does not result in adverse effects to surrounding receptors. A landscape design has been prepared for the project, which includes for the retention and enhancement of boundary woodland habitats resulting in an overall gain in the extent of woodland habitats surrounding the project site. Other areas will also be retained as open space for recreation. Having regard to the above and the size of the proposed development no significant effects on the environment are predicted to occur.
(b) cumulation with other existing and/or approved projects;	A review of other plans and projects in the wider surrounding area has been completed for the Screening for Appropriate Assessment for the project and has found that, given the design approach to surface water management on site the project will not have the potential to combine with other plans or projects to result in cumulative adverse effects to the environment.
(c) the use of natural resources, in particular land, soil, water and biodiversity;	Construction related activities will be largely restricted to the footprint of the project site. Soil that will be excavated within the project site will be reused for landscaping and filling. Where surplus soil material is generated it will be disposed of at an approved facility. Water required for the construction phase and operation phase of the project will be supplied by the existing mains water supply. Irish Water has confirmed that there is adequate water to meet the future needs of the project. No significant effects to biodiversity will arise as a result of the construction or operation of the project. Mitigation measures have been provided to ensure there is no loss of or significant disturbance

Screening Question	Response
1. Characteristics of projects The characteristics of projects must be considered, with particular regard to:	
	to foraging bat habitat and nesting bird habitat in surrounding hedgerow habitats. Natural resources in the form of hydrocarbons will be required for energy and electricity during the construction phase and operation phase of the project. Other building raw materials will be required during the construction phase. However the natural resources required will be typical of those required for the development and operation of a road development and there provision will not have the potential to result in significant negative effects.
(d) the production of waste;	Solid inert waste in the form of soil and stone will be produced during construction but materials will be only ordered as required. Any wastes from the construction process will either be reused within the scheme, or recycled/disposed of at an authorised waste facility. During the construction phase the waste management hierarchy will be implemented onsite, which prioritises the prevention and minimisation of waste generation. No waste will be produced during the operation phase of the road.
(e) pollution and nuisances;	The construction phase presents the greatest risk of pollution to water resources. Potential sources of water pollution to both surface and groundwater include fuel, lubricants, suspended solids and concrete. Silt-laden surface runoff could arise during vegetation stripping. However to surface water management on site which includes for the attenuation and treatment of all surface water generated during the project will eliminate or at minimum reduce to an insignificant risk to potential for polluted surface water to be emitted from the project.
(f) the risk of major accidents and/or disasters which are relevant to the project concerned, including those caused by climate change, in	Provided that all measures to be outlined in the CEMP for the project are implemented and that all associated building and environmental regulations are adhered to it is not predicted that the

Screening Question	Response
1. Characteristics of projects The characteristics of projects must be considered, with particular regard to:	
accordance with scientific knowledge;	project will not have the potential to result in a major accident or disaster.
(g) the risks to human health (for example due to water contamination or air pollution).	Section 2 above details measures that are to be implemented to ensure that the project does not result in pollution to waters or air or nuisance generated by noise, dust or vibration emissions. All measures outlined in Section 2 will represent a minimum requirement to be implemented as part of the CEMP for the construction phase of the project. With the implementation of these measures the construction phase will not represent a significant risk to human health. Vehicle emissions such as SO^x, CO^2 and PM_{10s} will be generated during the operation phase of the road. The quantities of these emissions have not been calculated but it is predicted that the concentrations emitted will not have the potential to result in a significant effect on the environment or result in a risk to human health.

Conclusion: No significant effects likely to arise associated with the characteristics of the proposed development.

Rationale: The scale and extent of the works proposed are representative of a small scale road project and are proposed on habitats of low ecological value. Design measures that form part of the project will also ensure protection of the receiving environment. These design measures include the implementation of SUDs and the landscaping of the project site boundary with the planting of additional trees. Design measures for lighting will minimise the potential for disturbance to woodland habitats and the fauna, such as bats supported by them. The implementation of targeted mitigation measures to minimise noise levels at sensitive receptors will also ensure that the project does not result in nuisance to the receiving population.

5.2 LOCATION OF THE PROPOSED DEVELOPMENT

Table 5.2 below provides information on the location of the proposed development with respect to a set of established Screening Questions. The environmental sensitivity of geographical areas likely to be affected by projects must be considered, with particular regard to the questions listed in Table 5.2 below.

Table 5.2: Location of the Proposed Development

Screening Question ***The environmental sensitivity of geographical areas likely to be affected by projects must be considered, with particular regard to:***	**Response**
(a) the existing and approved land use;	The existing land use within the project site is arable for the growing of cereal crops. The project site is highly disturbed being intensively managed as arable crops are rotated on site on a seasonal and annual basis. The existing South Dublin County Development Plan has zoned the project site for enterprise and employment and the provision of the access road will be compatible with this land use zoning.
(b) the relative abundance, availability, quality and regenerative capacity of natural resources (including soil, land, water and biodiversity) in the area and its underground	The project site is currently subject to intensive agricultural management for the growth of arable crops and is not sensitive in terms of natural resources. The Coldflow/Lucan Stream flowing north through the site is representative of a minor lowland depositing stream. The upper stretch of this stream will be crossed by the proposed access road. This section of the watercourse is predominantly enveloped by field boundary hedgerows. Where the channel is open it is choked with abundant macrophytes, dominated by *Apium nodiflorum*. This watercourse flows into the River Liffey approximately 4km to the north of the proposed access road. The section of this watercourse to the south of the Grand Canal has very little fishery potential and is not considered to be important in terms of supporting aquatic fauna

Screening Question ***The environmental sensitivity of geographical areas likely to be affected by projects must be considered, with particular regard to:***	**Response**
	The overall design of the project has included landscaping and lighting designs that will aim to minimise the effect of the project on field boundary woodland habitats (i.e. hedgerows and treelines) and the role they play in supporting fauna such as bats and birds. The proposed development will not have a significant effect on the relative abundance, availability, quality and regenerative capacity of natural resources.
(c) the absorption capacity of the natural environment, paying particular attention to the following areas: (i) wetlands, riparian areas, river mouths; (ii) coastal zones and the marine environment; (iii) mountain and forest areas; (iv) nature reserves and parks; (v) areas classified or protected under national legislation; Natura 2000 areas designated by Member States pursuant to Directive 92/43/EEC and Directive 2009/147/EC;	The potential for the proposed project to significantly effect the absorption capacity of the environment, with respect to the parameters listed in Column 1 opposite are outlined below. (i) no works are proposed that will affect wetlands or river mouths. A section of the upper Coldblow/Lucan Stream will be realigned to accommodate the project. This section of the stream is close to the source of the stream, which is generated from a series of ephemeral drainage ditches along surrounding field boundaries. The section of the stream to be realigned is of low fisheries potential and its realignment will not represent a significant adverse effect to the aquatic environment. Mitigation measures have been incorporated for the proposed realignment that will provide for mammal passes and the reinstatement of a natural stream-bed along the realigned section of the watercourse. (ii) not applicable, the project is located at a remote distance from the coastal zone. (iii) not applicable, the project is located at a remote distance from mountainous and forested areas. (iv) not application, the project is located at a remote distance from any nature reserves and parks. (v) The Screening Statement in support of Appropriate Assessment that accompanies the proposed development application has assessed

Screening Question ***The environmental sensitivity of geographical areas likely to be affected by projects must be considered, with particular regard to:***	**Response**
	the likely significant effects of the proposal on the conservation objectives of European Sites within a 15km buffer of the route and downstream of the project and determined a finding of no likely significant effects. An Ecological Impact Assessment of the proposed development has assessed the potential for the likely significant effects to NHAs and pNHAs and has concluded that the project does not have the potential to result in likely significant effects to these conservation areas.
(vi) areas in which there has already been a failure to meet the environmental quality standards, laid down in Union legislation and relevant to the project, or in which it is considered that there is such a failure;	The Coldblow/Lucan Stream has been assessed under the Water Framework Directive (WFD) as being "At Risk" of not achieving good status. The Air Quality Index for health (EPA) provides air quality information with health advice for both the general public and people sensitive to air pollution. The index is displayed on a colour-coded map, updated hourly. The index is based on information from monitoring instruments at representative locations in each region. South Dublin is located with the 'Dublin City' region. As of 20/09/2018 air quality is good for Dublin City region. A Noise Action Plan (NAP) has been prepared for South Dublin and identifies existing road traffic noise and the only exist source of noise in the vicinity of the project site. Residential properties along the R120 Road to the east and south and across the Peamount Hospital experience highest road traffic noise levels, however these are typically below the *undesirably high* noise threshold defined in the NAP.
(vii) densely populated areas;	The subject lands are currently representative of a agricultural land use, with a low density population. The surrounding lands, particularly to the east are more suburban in nature owing to the presence of commercial and enterprise land uses and an existing busy road network.

Screening Question ***The environmental sensitivity of geographical areas likely to be affected by projects must be considered, with particular regard to:***	**Response**
(viii) landscapes and sites of historical, cultural or archaeological significance	**Landscape** The subject lands lie to the west of the existing Grange Castle Business Park and immediately to the south of the Grand Canal. The existing landscape is composed primarily of agricultural land composed of large arable fields surrounded by mixed hedgerows. The terrain is low lying, generally flat and can be described as open in character but interrupted by lines of trees and taller, unmanaged hedgerows. In some places, the perimeter hedgerows of fields are managed, being closely cut to a metre or two in height, in others they are taller and let grow loose. In other places, they also contain lines of mature trees; these hedgerows coincide with shelter belt planting surrounding farm buildings and other settlements. Specifically, the field patterns within the site are defined by dense hedgerows enclosing large, rectangular fields predominately medium to large in size, which date largely from the 18th or 19th century and reflect the traditional agricultural landscape in this area. In many places this pattern has been modified through boundary removal and land rationalisation to facilitate modern agricultural methods. The Coldblow/Lucan Stream flows north from the project site. The land boundary is defined by pNHA Grand Canal and arable lands to the north; Grange Castle Business Park to the east; Peamount hospital to the south and more arable land including sparse sub urban development to the west which also coincides with the County Dublin boundary. Two regional roads transect the site; the R405 to the west and R120 to the south and east but minor roads off the regional road provide access to farmstead and residential areas towards the south and west of the lands. The Grange Castle Business Park South located to the East is a dominating feature located to the immediate east of the lands. Other business parks such as Profile park and Grange Castle Business Park are also located near the lands.

Screening Question ***The environmental sensitivity of geographical areas likely to be affected by projects must be considered, with particular regard to:***	**Response**
	There are no existing commercial developments within lands proposed for rezoning. Land uses around the area are dispersed with residential settlement ranged along the road network. There are sub-urban residential developments towards the west of the site; these are sparse and consist of cluster of individual houses arranged in a linear manner along the minor access road from R405. The neighbouring land use also includes Peamount hospital, previously a country home from 1800s. The hospital premises also include an overhead water reservoir. Hence, the Peamount hospital premises demarcate a sensitive neighbouring land. The land is largely composed of flat terrain. As there are tall field boundaries and few vantage points, therefore the views across the lands are limited. From within the lands, the Dublin mountains to the south are visible at a long distance. The buildings within the existing Grange Castle Business Park development to the east are visible within eastward views. The Grand Canal is an important semi natural resource to the north of the lands, which is densely planted with semi-natural woodland. The project site is located in LCA-2 Newcastle lowlands described as low-lying and gently undulating agricultural lands over limestone. It is agricultural land primarily pasture and tillage with a long history of historic settlement and human activity associated with Newcastle village and surrounds. The LCA describes (of relevance to these lands) the landscape character and type which is denoted by the Grand Canal, discontinuous historic urban and medieval settlement, and Limestone farmland. It also identifies the valuable elements of the landscape to be preserved are pNHA Grand Canal, designed lands and former estates as shown on the NIAH. The elements that create a strong landscape character are the Grand Canal, traditional farmlands, and large fields. The Grand Canal is an important recreational route with its associated semi-natural woodland planting and ecological habitats. The fields separated by

Screening Question ***The environmental sensitivity of geographical areas likely to be affected by projects must be considered, with particular regard to:***	**Response**
	dense hedgerows reflect the rural character of the landscape. The significance of the effects on the character of the lands and appearance of the landscape will be in proportion to the level of development. The Peamount hospital located to the south is also a sensitive area as it was originally a country house from 1800s and latterly converted to a hospital. The forces of change for the landscape stated in the LCA are • increasing urban influence that impacts the rural character, • vulnerability of the landscape to adverse visual/landscape impacts The recommendations include- boundary treatment at the fringe close to the urban development and maintaining the recreational value of the Grand Canal as well as retaining the overall rural character of the lands as intact and cohesive and strengthening the relationship between the historic core and surrounding character with stronger design of new developments. **Archaeological and Cultural Heritage** Existing recorded sites and monuments occur in the surrounding area and there is a rich medieval history for this area. Extensive subsurface archaeological remains have been uncovered to the east of the study area. These factors are indicative of a high archaeological potential for the entire region surrounding the project site and it is considered likely that further material will be exposed wherever the ground is disturbed by development. Several specific areas of archaeological sensitivity have been identified in proximity to the proposed road. These are: SMR Site DU017-095, located approximately 25m to the west of the proposed road. A cemetery site, approximately 35m to the north of the proposed

Screening Question ***The environmental sensitivity of geographical areas likely to be affected by projects must be considered, with particular regard to:***	**Response**
	road. It is possible that this site or features associated with it extend south into the line of the proposed road. The location of three areas of archaeological potential have been identified in close proximity to the road. These are AP1 to AP3. The proposed road would directly impact on the northern limits of the features visible at AP2. The settlement of Millstown, which has been in place since the 13th Century is located approximately 120m south of the proposed road. There is a slight possibility that the outlying activity associated with this settlement extends within the footprint of the proposed road. There are no features of cutural heritage in the vicinity of the project site and none will be affected by the proposed road.

5.3 CHARACTERISTICS OF THE POTENTIAL IMPACTS

The 2014 EIA Directive requires that an assessment of the likely significant effects of a project on the environment must be considered in relation to criteria set out in Tables 5.1 and 5.2 above, with regard to the impact of the project on the factors specified in Article 3(1) of the Directive, taking into account:

(a) the magnitude and spatial extent of the impact (for example geographical area and size of the population likely to be affected);

(b) the nature of the impact;

(c) the transboundary nature of the impact;

(d) the intensity and complexity of the impact;

(e) the probability of the impact;

(f) the expected onset, duration, frequency and reversibility of the impact;

(g) the cumulation of the impact with the impact of other existing and/or approved projects;

(h) the possibility of effectively reducing the impact.

The criteria outlined in Article 3(1) of the Directive are presented in Table 5.3 below and baseline information for each of these parameters is provided along with an assessment of potential impacts. The results of the assessment of potential impacts to these criteria, as presented in Table 5.3, are then used to inform answers to the screening questions (a) to (h) listed above in Table 5.4.

Table 5.3: The Nature of Potential Impacts to Environmental Parameters as set out in Article 3(1) of the Directive

Environmental Topic	Potential Impact
Human Beings	Potential temporary negative impacts to existing residents and staff of adjacent residential dwellings, commercial and enterprise buildings and Peamount Hospital. Measures as outlined in Section 2 and a detailed Construction and Environmental Management plan will reduce temporary effects associated with construction. These measures will included the implementation of noise and vibration threshold limits for the construction phase and the ongoing monitoring of noise and vibration levels during construction. Dust control measures will be implemented as part of the CEMP during the construction phase. No operational impacts are identified for human beings. With the implementation of mitigation measure there will be no potential for the project to result in significant adverse effects to human beings.
Biodiversity	The existing baseline ecological conditions at the project site have been subject to an ecological impact assessment. The nature conservation value

Environmental Topic	Potential Impact
	of habitats within the proposed site have been classified in accordance with best practice guidelines and have identified the predominant habitat on site, arable land, as being of low local importance (Rating E). hedgerows and treelines crossed by the road corridor have been classified as being of high local value (Rating D). The Coldblow/Lucan Stream has been classified as being of low local value (Rating E) and of low fisheries potential. Protected species recorded within the vicinity of the project site include bat species and breeding birds. Field surveys indicate that bat foraging activity is concentrated along the Grand Canal and along hedgerows in the vicinity of the canal and that they do not rely on hedgerows and treelines running south from the canal, through the footprint of the road corridor for commuting. No otter activity was recorded along the Coldblow/Lucan Stream and no resting or breeding sites for this species occur within the immediate vicinity of the project site. A population of this species is supported by the Grand Canal, located approximately 200m from the project site and buffered from the project site by existing hedgerows and treelines. No badgers have been recorded in the vicinity of the proposed road. In the absence of a sensitive approach to the design of the project and lighting regime the potential will exist for disturbance to woodland habitats bounding the project site. However the project will incorporate mitigation measures, as outlined in the Ecological Impact Assessment for the proposed road development, that aim to minimise disturbance to these habitats and the fauna supported by them. With the implementation of the recommendations and mitigation measures outlined in the EcIA report it is predicted that the project will not have the potential to result in significant negative impacts to habitats and fauna occurring within and adjacent to the proposed road development.
Lands, Soil and Geology	The project site is located on relatively flat land, with no high grade areas occurring within or adjacent to the project site. Inspections of available Geological Survey of Ireland (GSI) data show that the bedrock geology underlying the site and surrounding area is dominated by rocks of Carboniferous Age. The site and local area is underlain by Dinantian (Upper Impure) Limestones or 'Calp' limestone that is dark grey to black limestone and shale. The depth to bedrock throughout the lands is generally shallow ranging from 0 to 5 metres below ground level. The GSI database presently lists no karst features in the immediate vicinity

Environmental Topic	Potential Impact
	of the lands and significant karstification would not be expected in this type of limestone. The lands within and adjacent to the project site have no formal designations for conservation and there are no Geological Heritage Sites in close proximity to the project site. There are no active quarries located within close proximity to the project site. The nearest active quarry, Belgard Quarry, is located approximately 4km to the southeast. According to the GSI web database, there are presently no records of geo-hazards such as landslides within a radius of 10km of the site. Adverse effects to soils and geology underlying the project site will arise due to the need to import material to fill sections of the route and to excavate material. There may also be for ground disturbance of soils and geology to interact with other environmental parameters such as ecology, landscape, noise and vibration, water environment. However within the implementation of best practice measures and the approach to the project as outlined in Section 2 above the potential impacts to soils and geology will not represent a significant adverse environmental effect. Furthermore there will be no potential for the project to adversely affect any Geological Heritage Sites, areas of existing economic geology or result in potential geo-hazards in the surrounding area.
Water	The project site is not located in close proximity to any major watercourse. The project will result in the realignment of the Coldblow/Lucan Stream. This watercourse is of low nature conservation value and its realignment will not represent a significant adverse environmental effect. Recommendations and mitigation measures are outlined in the EcIA for the project to ensure that a sensitive approach to the realignment is undertaken. In particular all measures outlined in the IFI's guidance document *Guidelines on Protection of Fisheries during Construction Works In and Adjacent to Waters* will be implemented during the proposed realignment works. A Method Statement for the proposed realignment works will be prepared in advance of their commencement and will be agreed to by the IFI prior to any realignment works commencing. No high value riparian habitat will be lost as a result of the project. The project has included a range of measures to manage and control surface water generated during the construction phase and operation phase

Environmental Topic	Potential Impact
	of the project. These measures are representative of standard best practice measures for the control of surface waters at construction site and for road schemes. The implementation of these measures will eliminated or reduce to an insignificant risk the potential for the project to result in the release of polluted surface water to the receiving aquatic environment. The GSI has classified the aquifer occurring in the surrounding area as Locally Important (Ll) i.e. an aquifer which is moderately productive only in local zones. The GSI presently classifies the aquifer in the region of the subject site as High - Extreme (E) which indicates an overburden depth of 0-3m in places. A review of the on-line database www.cfram.ie indicated no projected significant fluvial flooding (i.e. the areas projected to be prone to flooding) along the Coldblow/Lucan stream which runs through the site and Griffeen River to the east of the site, based on the final fluvial flood extent maps for the modelled 1 in 10-year, 1 in 100-year and 1 in 1000-year flood events
Air Quality and climate	As noted in Table 5.2 above air quality in the area surrounding the project site is classed as good in September 2018. The potential will exist for localised, temporary impacts associated with dust generated from construction plant and machinery such as diggers or excavators. Emissions during works phase will be minimised through the implementation of best practice mitigation techniques as outlined in Section 2 above.
Noise and Vibration	Existing noise from roads to the west and south of the project site have been identified as the only existing source of noise within the vicinity of the project site. Noise generated during the construction phase may combine within existing sources of noise, particularly along the R126 to result in nuisance however, noise and vibration during works phase will be minimised through best practice and the implementation of mitigation measures outlined in Section 2 above. With the implementation of these measures the construction phase will not result in significant noise nuisance to sensitive receptors and will be minimised to a short term, slight negative impact.

Environmental Topic	Potential Impact
	Traffic noise and vibration during the operation phase are not considered likely to be significantly increased as a result of the project.
Archaeological and Cultural Heritage	As identified in Table 5.2 above there are features of archaeological heritage occurring within and possibly under the footprint of the proposed road development. In order to avoid significant adverse effects to archaeological heritage a programme of geophysical survey be carried out along the length of the proposed road, well in advance of development. This will seek to provide clarification in relation to AP 2. It will also seek to identify any features associated with the recorded enclosure site (DU017-095) or the partly excavated cemetery site, or any additional sites / features that may be present. Further recommendations will be made on the basis of the geophysical survey results. It is also noted that preservation *in situ* is the preferred policy of the National Monuments Service (Department of Culture, Heritage and the Gaeltacht). Archaeological sites should be avoided, unless it can be demonstrated that this is not possible. The developer will make provision to allow for and fund whatever archaeological work may be needed on the site in accordance with the National Monuments legislation (1930–2004; Appendix 1). With the implementation of the above approach it is considered that potential significant adverse effects to archaeological heritage occurring along or adjacent to the proposed road development can be avoided.
Landscape	Table 4.2 provides baseline information on the landscape in which the project site is located which has been determined to be rural in character and influenced by the presence of the Grand Canal. However given the proximity of these lands to the Grange Castle Business Park the rural character is diluted somewhat with buildings associated with the Business Park comprising views particularly towards the east. Notwithstanding this, the primary landuse currently being agricultural, the provision of a road will represent a significant permanent change in landscape character. Recommendations for the treatment of lands within this area are outlined in the Landscape Character Assessment for South Dublin. These recommendations include the provision of boundary treatment at the

Environmental Topic	Potential Impact
	fringe close to the urban development and maintaining the recreational value of the Grand Canal as well as retaining the overall rural character of the lands as intact and cohesive and strengthening the relationship between the historic core and surrounding character with stronger design of new developments. The proposed landscape design for the project will provide fringing boundary treatment along the proposed road and the presence of a buffer of circa 200m at its nearest point between the proposed road and the Grand Canal will ensure that the recreational value of the canal is maintained. As the rural setting at the project site is already diluted it is considered that the provision of the proposed road will not represent a significant adverse effect to the landscape character of this area.
Interrelationship between above parameters	The key interrelationships arise between soils, geology, biodiversity and landscape associated with construction works and the provision of a new road surface and air quality and noise associated with traffic emissions and excavation during construction and human health. The implementation of mitigation measures outlined in Section 2 above will ensure that these emissions are minimised to a level that will not result in significant noise, vibration or dust nuisance to surrounding sensitive receptors.

Table 5.4: Characteristics of the potential impacts

Characteristics of potential impacts **The potential significant effects of proposed development in relation to criteria set out under Tables 5.1. to 5.3 above, and having regard in particular to:**	
(a) the magnitude and spatial extent of the impact (for example geographical area and size of the population likely to be affected);	Minor and localized temporary impacts are identified primarily at construction stage only. The provision of the road will not result in significant, permanent negative effects to environmental parameters as set out in Table 5.3 above.

(b) the nature of the impact;	The nature of the impact associated with the proposed development to environmental parameters have been set out in Table 5.3 above. It has been concluded that provided all best practice and mitigation measures as outlined in Section 2 are implemented the project will not have the potential to result in significant environmental effects.
(c) the transboundary nature of the impact;	Given the size, scale and location of the proposed development potential transfrontier impacts will not arise.
(d) the intensity and complexity of the impact;	The project is representative of a small road development. The construction phase will be of a short term duration with an estimated timeframe of 20 months. With the implementation of best practice measures and associated mitigation it will not result in intense or complex impacts to the receiving environment.
(e) the probability of the impact;	There is a high probability of low impact localised increases in noise and potential for air pollution during construction (as a result of construction vehicles and activities). The operation phase of the proposed road is not anticipated to result in discernible changes to noise and air pollution. There will be some impacts on ecology (e.g. through loss of habitat and severance of hedgerows) and landscape (e.g. construction of road and associated infrastructure items). However these impacts were not identified a significant adverse effect that will have the potential to trigger EIA. Furthermore the probability these impacts occurring and their residual effect will be minimised through the implementation of best practice environmental guidelines during construction and the implementation of mitigatory design measures during the operation phase.
(f) the expected onset, duration, frequency and reversibility of the impact;	It is estimated that impacts associated with the construction phase will commence within 6 months of planning approval and will last for approximately 20 months. This will represent a short-term impact. No long-term or permanent significant

	negative impacts are predicted to arise as a result of the construction phase. There will be an irreversible and permanent loss of arable land and hedgerow and treeline habitat to the footprint of the project. Furthermore there will be a permanent loss of soils and geology and landscape of a rural character to the footprint of the project. The conversion of this land to a road surface will not represent a significant negative environmental effect. It is also noted that significant effects to the archaeological heritage known and likely to occur within or adjacent to the footprint of the project site will also be avoided by completing pre-construction geophysical surveys of the project's footprint and devising an approach to the protection and preservation of archaeological heritage that is compatible with the proposed road development.
(g) the cumulation of the impact with the impact of other existing and/or approved projects;	As outlined in Table 5.1 above the potential for cumulative effects to occur with other existing plans and projects has been completed as part of the Screening Statement for Appropriate Assessment and it has been found that the project will not have the potential to combine with other plans or projects to result in significant adverse environmental effects.
(h) the possibility of effectively reducing the impact.	Measures are detailed in Section 2 that are derived from best practice guidelines. These measures have been implemented as a best practice approach for the proposed developments and are proven to be effective at reducing the potential for adverse environmental impacts to occur. In addition a range of design measures have been incorporated into the project to ensure the potential for the project to result in adverse environmental effects are minimised. These design measures include the proposed approach to surface water and wastewater management during the construction phase and operation phase, the approach to lighting during the operation phase, and the proposed landscaping design for the operation phase of the development.

Conclusion: No significant effects likely to arise associated with the potential impacts on environmental parameters.

Rationale: As outlined in Table 5.3 the proposed development will not have the potential to result in significant adverse effects to biodiversity, soils and geology, water, landscape and archaeological and cultural heritage. There will be potential for some impacts to biodiversity, soils and geology, landscape and human beings as a result of noise and air emissions during the construction phase of the proposed development. However these impacts have been assessed as having the potential to result in significant adverse environmental effects and measures have been outlined in Section 2 above to ensure that potential impacts are mitigated such that the project does not result in significant adverse environmental effects. As such no significant residual impacts to environmental parameters as outlined in Table 5.3 are predicted to arise as a result of the proposed road development.

Conclusion: No significant effects likely to arise associated with the characteristics of the potential impacts.

6.0 SCREENING DETERMINATION

6.1 SCREENING DETERMINATION

Article 4(5) of the EIA Directive states that:

"The competent authority shall make its determination, on the basis of information provided by the developer in accordance with paragraph 4 taking into account, where relevant, the results of preliminary verifications or assessments of the effects on the environment carried out pursuant to Union legislation other than this Directive. The determination shall be made available to the public and:

(a) where it is decided that an environmental impact assessment is required, state the main reasons for requiring such assessment with reference to the relevant criteria listed in Annex III; or

(b) where it is decided that an environmental impact assessment is not required, state the main reasons for not requiring such assessment with reference to the relevant criteria listed in Annex III, and, where proposed by the developer, state any features of the project and/or measures envisaged to avoid or prevent what might otherwise have been significant adverse effects on the environment."

The proposed development has been assessed as a sub-threshold EIA development. This EIA Screening Assessment has determined that the characteristics of the proposed development are considered potentially not significant due to the size, scale and location of the development, the characteristics and sensitivities of the receiving environment and design and mitigation measures that will be implemented as part of the construction phase and operation phase of the proposed development.

The design and mitigation measures that will be implemented to avoid significant environmental effects arising as a result of the construction phase and operation phase of the project are as follows:

- Habitat disturbance during construction work will be confined strictly to within the direct land-take of the proposed route alignment area.

- Construction machinery will be restricted to site roads and designated access routes to excavation and construction area.

- With the exception of the hedgerows and treeline that will be severed as a result of the project, no other hedgerow or treeline habitat will be removed during the construction phase.
- All construction works will be undertaken in accordance with the following:
    - Inland Fisheries Ireland's *Requirements for the Protection of Fisheries Habitat during Construction and Development Works.*
    - CIRIA (Construction Industry Research and Information Association) Guidance Documents
        - Control of water pollution from construction sites (C532)
        - Control of water pollution from linear construction projects: Technical Guidance (C648)
        - Control of water pollution from linear construction projects: Site Guide (C649)
        - Environmental Good Practice on Site (C692)
    - NRA Guidance Documents
        - Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes
        - Guidelines for the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads
        - Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, during and Post Construction of National Road Schemes

- It will be a condition of the contract between proponent and the Main Contractor that the Construction & Environmental Management Plan (CEMP) specifies how materials with the potential to adversely affect surface water quality, for example diesel and oil, will be stored and handled in a manner that minimises the risk of accidental spills or leaks. The CEMP will also ensure that spill containment and clean-up equipment is provided and maintained during the construction phase of the development.

- Standard dust suppression measures will be implemented during periods of dry weather. This will avoid any impacts arising from the spread of dust particles during the construction phase.

- An appropriate temporary barrier (e.g. a silt fence) will be installed along all drainage swales to prevent the migration of silt-laden surface runoff from the construction footprint into adjacent watercourses and drainage ditches.

- All excess spoil material will be stockpiled at dedicated temporary spoil depot areas, which will be located a minimum distance of 50m from any surface watercourse. It is noted that the only watercourse occurring proximate to the proposed route is the Coldblow/Lucan Stream, which will be realigned and culverted under the proposed road development.

- Excavated soil material to be re-used for landscaping purposes will be stored on level ground away from watercourses and wetland habitats.

- Landscaping and seeding of adjacent roadside embankments will be undertaken at the start of the growing season so that surface soils are consolidated with vegetation in as short a timeframe as possible.

- Refuelling of plant during construction will be carried out at a designated area, a minimum of 50m from watercourses. Drip trays and spill kits will be available on site. Maintenance of all plant and machinery will be undertaken off-site. Only emergency break-down maintenance will be carried out on site.

- Oil fuel should be stored within containment areas and emergency response measures for oil spillage on site should be prepared.

- All plant, machinery and site operative clothing will be inspected prior to site access to ensure that no materials are contaminated with non-native invasive species.

- Where instream works are required all plant, machinery and site operative clothing will be cleaned and disinfected prior to entering watercourses to minimise the risk of spreading non-native invasive species.

- A sealed drainage system will be implemented for the project throughout the construction phase and operation phase. The installation of the drainage system will be the first item of works to be completed as part of the project.

- Interceptor swales will be incorporated into the design of the road to ensure that all road runoff during the construction phase and operation phase is directed to swales.

- Swales will convey surface water to attenuation settling ponds.

- Water will be discharged from attenuation ponds at green field rates.

- All waters discharging from attenuation ponds will pass through a hydrocarbon interceptor prior to discharge to the receiving surface water network.
- Where required silt-busters will be used during the construction phase to remove any additional silt material from surface waters prior to discharge to the interceptors.

- Noise and vibration limits will be prescribed and adhered to throughout the construction phase of the project. The limits will be based on best practice construction phase approach to managing noise emissions.

- The hours during which site activities are likely to create high levels of noise will be limited to a set time period;

- During the construction phase a clear line of communication will be established between the contractor/developer, Local Authority and residents;

- A site representative will be appointed to take responsibility of all matters relating to noise and vibration;

- Noise monitoring will be undertaken during the construction phase, particularly during critical periods and at sensitive locations;

- All site access roads will be kept even to mitigate the potential for noise and vibration from lorries.

- Plant with low inherent potential for generating noise and/ or vibration will be selected for construction;

- Where required noise barriers will be erected around items such as generators or high duty compressors;

- Noisy plant will be sited as far away from sensitive properties as permitted by site constraints.

- Construction site hoarding will be erected along noise sensitive boundaries where works are taking place in proximity to existing residential properties where no

substantial screening exists. Such hoarding will be provided along the eastern boundary of the project site.

- Vegetation associated with woodland habitats (i.e. hedgerows) bounding the project site will be retained.

- Hedgerow habitat removed during the alignment construction phase will be reinstated post construction along the edges of the road so that no net loss of this habitat occurs over the longer term. Hedgerows will be required to knit in with the existing hedgerow and treeline network and will be replaced with native vegetation typical of this region. The replacement trees to be planted along hedgerows should include fruiting trees. The replacement of hedgerows will ensure no net loss of potential vegetated corridor foraging habitat for bat species.

- In the interest of maintaining foraging habitat and potential commuting route connections for bats between severed hedgerow field boundaries to the north and south of the proposed access road, the remaining sections of field boundary hedgerows 3 and 5 (see Figure 2.1 for location) should be managed so that these hedgerows taper to a high point either side of the alignment corridor. This will require the planting of taller-growing trees immediately adjacent to the alignment so that the height of the hedgerow gradually increases on approach to the alignment from both directions. This treeline will tie into planted hedgerow-treeline running parallel to the road alignment in a east to west orientation. Where field boundary hedgerows 3 and 5 intersects the hedgerow/treeline running parallel to the route alignment, the latter hedgerow/treeline will also be planted with taller growing tree species that will act as a screen to the road corridor and forcing bats to fly over the road at safer heights above the line of traffic.

- No street lighting should be installed in close proximity to field boundary hedgerows no. 3 and 5.

- The spacing between lights should be maximized to reduce light intensity.

- In order to reduce light spill, street lighting will be directed to areas only where it is needed. The upward spread of light above the horizontal plane will be avoided by installing low beam angle lights, less than 70 above the horizontal plane and baffling light columns.

- Blue-white short wavelength lights will not be used on site; and

- Lights with a high UV content will be avoided. Instead narrow spectrum lighting with a low UV content will be used on site.

- Low intensity lighting will be used on site.

- Realignment Coldblow/Lucan Stream will completed in line with all recommendations for instream works outlined in the IFI's guidance document *Guidelines on Protection of Fisheries during Construction Works In and Adjacent to Waters.*

- A method statement for the proposed realignment works will be prepared in advance of their commencement and will be agreed to by the IFI prior to any realignment works commencing.

- A bottomless box culvert, or similar with a mammal pass will be provided for the proposed crossing of the realigned Coldblow/Lucan River. The design of the project has sought to minimise the length of the culverted section of the realigned stream by providing a crossing that is perpendicular to the proposed road alignment. The box culvert will be embedded at the edge of the realigned stream and will be appropriately sized to match the existing stream profile. The realigned section will be back filled with gravels and small stones so that a natural stream bed is provided once waters are directed into the realigned section. The open section of the realigned stream flowing north from the culvert will discharge to the proposed attenuation pond. Riparian vegetation will be provided along this open section of the stream between the culvert and the attenuation pond.

- The contractor will assign a member of the site staff as the environmental officer with the responsibility for ensuring the environmental measures prescribed above are adhered to. A checklist will be filled in on a weekly basis to show how the measures have been complied with. Any environmental incidents or non-compliance issues will immediately be reported to the project team.

- A programme of geophysical survey be carried out along the length of the proposed road, well in advance of development. This will seek to provide clarification in relation to AP 2. It will also seek to identify any features associated with the recorded enclosure site (DU017-095) or the partly excavated cemetery site, or any additional sites / features that may be present. Further recommendations will be made on the basis of the geophysical survey results.

- Preservation *in situ* is the preferred policy of the National Monuments Service (Department of Culture, Heritage and the Gaeltacht). Archaeological sites should be avoided, unless it can be demonstrated that this is not possible.

- The developer will make provision to allow for and fund whatever archaeological work may be needed on the site in accordance with the National Monuments legislation (1930–2004; Appendix 1).

With the implementation of these measures the overall conclusion for this screening exercise is that a full Environmental Impact Assessment Report is not required for the proposed Grange Castle West Access Road.

Appendix D – Archaeological Review and Assessment

COURTNEY • DEERY

ARCHAEOLOGY & CULTURAL HERITAGE

Proposed Central Access Road,

Grangecastle,

County Dublin

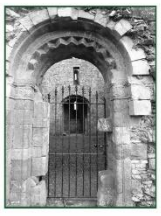
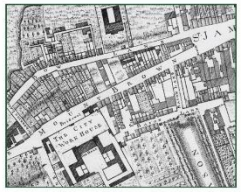
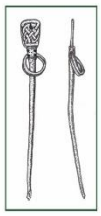
Cultural Heritage Report

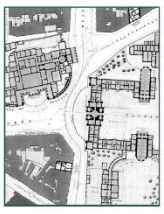
Pre-Planning Assessment

Author: Dr Clare Crowley

On behalf of Clifton Scannell Emerson Associates

18th September 2018



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EXECUTIVE SUMMARY

This report provides an assessment of the archaeological, architectural and cultural heritage potential for the proposed Grange Castle West Access Road, in South County Dublin, for Clifton Emerson Scannell Associates.

The existing recorded archaeological sites, the rich medieval history of the area, and the extensive subsurface archaeological remains that have been uncovered in the vicinity, all indicate the high archaeological potential of this entire region and the likelihood of further material turning up wherever the ground is disturbed by development.

There are no RMP / SMR sites located along the line of the proposed road, however, a recorded enclosure site is located c. 25m west of the proposed road (SMR DU017-095). The site was identified as a cropmark in aerial imagery and it is possible that associated features (e.g. field system or annexe) may be uncovered within the proposed road.

A previously unknown cemetery site was revealed during archaeological monitoring in 2002, c. 35m north of the proposed road (the site has, as yet, not been placed on the SMR for inclusion in the RMP). The burials were left *in situ* and the full extent of the site is unknown. It is possible that the site or features associated with it extend southwards into the line of the proposed road.

Three areas of archaeological potential were identified through aerial photographic analysis, with cropmarks suggesting the presence of sub-surface archaeological sites or features (AP 1 to AP 3). The proposed road would directly impact on the northern limits of the features visible at AP 2, should they prove to be archaeological in nature.

There has been a mill and settlement at Milltown since the 13th century. Based on the historic map analysis, the former settlement is located c. 120m south of the proposed road. There is a possibility (albeit slight) that outlying activity, e.g. field systems or mill-race / ponds, may extend within the proposed road. It is also possible that there was a tower house in the vicinity of the Milltown settlement, as indicated on the Down Survey map, though exactly where is unknown.

No cultural or architectural heritage features will be affected by the proposed road.

It is recommended that a programme of geophysical survey be carried out along the length of the proposed road, well in advance of development. This will seek to provide clarification in relation to AP 2. It will also seek to identify any features associated with the recorded enclosure site (DU017-095) or the partly excavated cemetery site, or any additional sites / features that may be present. Further recommendations will be made on the basis of the geophysical survey results.

1. INTRODUCTION

1.1. General

This report examines the archaeological, architectural and cultural heritage potential for the proposed Grange Castle West Access Road, in South County Dublin (Figure 1). It has been undertaken on behalf of Clifton Emerson Scannell Associates.

The appraisal describes the archaeological and historical background of the landscape within which the study area lies. The main purpose of the report is to assess the potential significance and sensitivity of the existing archaeological, architectural, and cultural heritage environment and to identify the issues this potential presents for the proposed development.

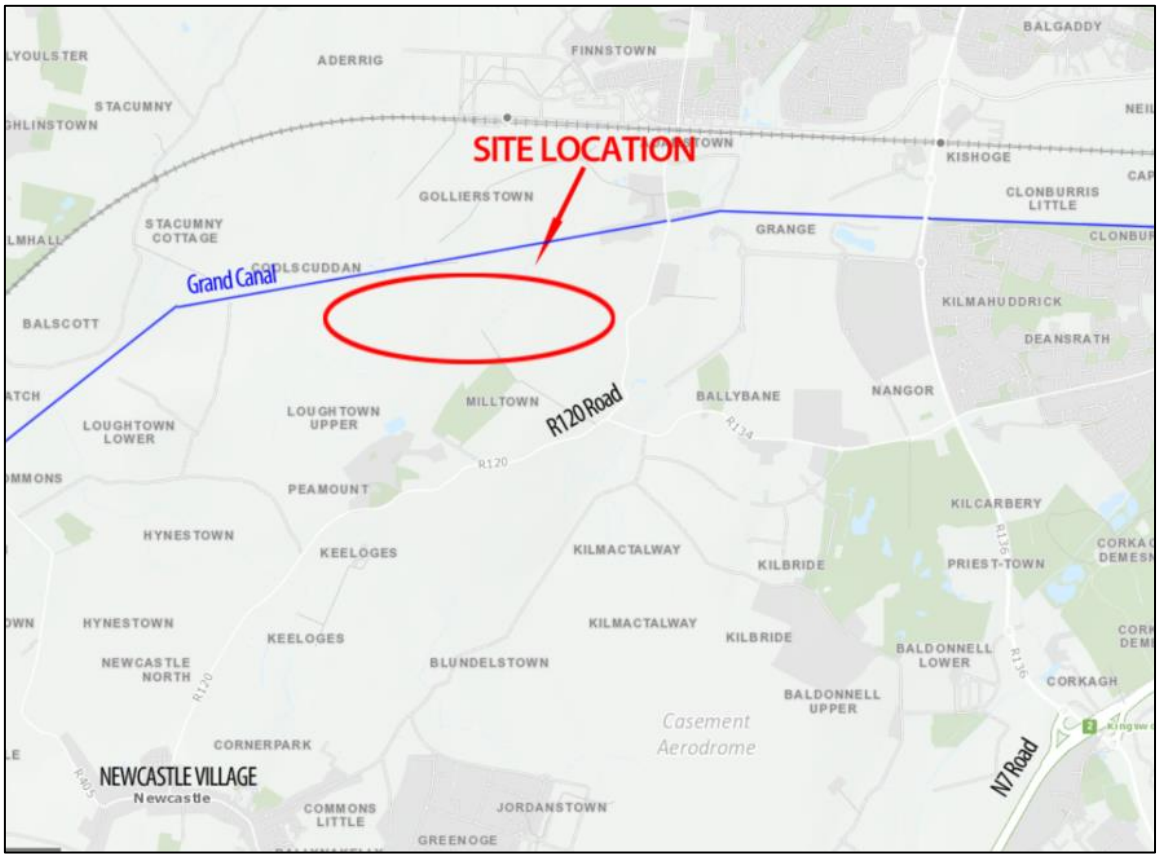


Figure 1 Site location

1.2. Description of Proposed Development

The proposed Grange Castle West (GCW) Access Road contains 1.03km of Dual Carriageway with an average corridor width of 34m and 1.15km of Single Carriageway with an average corridor width of 25m. There are a total of 3 No. double lane and 1 No. single lane fully segregated roundabouts proposed for the Grange

Castle West Access Road development. Controlled pedestrian and cyclist crossing facilities are predominately provided at all four proposed roundabouts with two uncontrolled crossing facilities proposed at roundabout No. 4.

6 No. Bus stops and sustainable transport facilities are proposed to be facilitated within the Grange Castle Access Road development. A architecturally landscape designed attenuation lake is proposed to accommodate surface water drainage requirements generated from the proposed road and surrounding hardstanding areas which will additionally double up as an amenity area. Landscaped entrance and security structures to aesthetically harmonize with existing Grange Castle and Grange Castle South Business Park entrances is additionally proposed.

The proposed GCW Access Road scheme comprises of the following:

- 1.03km of Dual Carriageway with any average corridor width of 34m.
- 1.15km of Single Carriageway with an average corridor width of 25m.
- 3 No. double lane and 1 No. single lane fully segregated roundabouts.
- Raised 2m wide cycle path and separate 2m wide pedestrian walkway.
- An attenuation lake to accommodate surface water drainage requirements from the proposed road and surrounding hardstand areas, this will double up as an amenity area.
- Controlled pedestrian and cyclist road crossings.
- Landscaped entrance and security structures to aesthetically harmonize with existing Grange Castle and Grange Castle South Business Park entrances.
- Bus stops and sustainable transport facilities.
- Underground utilities and services including: Storm Water Drainage, Foul Drainage, Watermain, Gas Main (4bar & HP), Power (HV/MV/LV), Telecoms, Public Lighting, CCTV.
- All associated ancillary works and integrated landscape plans.

Access and egress into the proposed GCW Access Road will be gained from a newly formed Grange Castle West Business Park entrance off the western leg of a newly formed signalised junction constructed under the R120/R134 upgrade scheme. The proposed GCW Access Road will traverse for 1.76km in a western direction from the newly formed entrance located at the R120/R134 signalised junction. At the third proposed roundabout, the scheme will traverse in a southern direction for approximately 350m before terminating at proposed roundabout No. 4 located North West of the existing Peamount reservoir site.

1.3. Methodology

The appraisal is a desk-based study, comprising an examination of published and unpublished documentary and cartographic material. In order to understand the character of the study area, all designated archaeological sites and monuments located within c. 250m of the proposed road were assessed (RMP / SMR sites), as were all designated architectural heritage sites (RPS / NIAH sites) and cultural heritage sites within c. 100m. This served to establish the existing archaeological, architectural and cultural heritage environment in this area, and to provide an understanding of the cultural heritage constraints for the proposed scheme. Sites in the wider landscape are discussed in the context of the archaeological and

historical background. The desk-based study included an examination of available aerial imagery for this area, which allowed the identification of a number of possible archaeological sites.

The material sources consulted as part of the desk study are as follows:

- National Monuments, Preservation Orders, Register of Historic Monuments lists for County Dublin, sourced from the Department for Culture, Heritage and the Gaeltacht (DCHG);
- Record of Monuments and Places (RMP) and Sites and Monuments Record (SMR), DCHG;
- Record of Protected Structures (RPS), South Dublin County Council Development Plan 2016-2022;
- South Dublin County Council Heritage Plan, 2010-2015;
- National Inventory of Architectural Heritage (NIAH, www.buildingsofireland.ie);
- The topographical files of the National Museum of Ireland (NMI);
- Documentary sources (see references section at the end of the report);
- Cartographic sources, including Down Survey barony and parish maps (c. 1656), Rocque's map of County Dublin (1760), Taylor's map of the environs of Dublin (1816), Ordnance Survey mapping 1843, 1906-9, 1939-40);
- Excavations Bulletins and Excavations Database (1970-2018), Dublin Excavations GIS project;
- Aerial imagery (OSi 1995, 2000, 2005, 2011, 2013 & Google Earth 2015).

No field inspection was undertaken as the fields through which the proposed road runs were under crop at the time of assessment.

2. ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

2.1. Development of the study area

Archaeological investigations in the surrounding area, particularly in relation to the existing Grange Castle Business Park located to the east and southeast of the study area have added a great deal to the archaeological record in the two decades and indicates the archaeological richness of the lands. Numerous sub-surface sites have been identified dating from the neolithic through to the early modern periods. This has added significantly to our understanding of this area, where the upstanding archaeological remains largely reflect the medieval / post-medieval occupation of the area.

2.2. Prehistoric Period

Excavations in Grange, Nangor, Kishoge and Kilmahuddrick townlands to the east and northeast of the study area have revealed several prehistoric monuments dating to the neolithic period, the Bronze Age and Iron Age.

The Neolithic (c. 4000-2500 BC) represents a key period in the evolution of society and civilisation, with the advent of farming and permanent settlements promoting a more sedentary lifestyle, along with new social and cultural developments. Agriculture brought with it small-scale clearance of the forest cover to accommodate pasture and tillage. This period saw the introduction of cereal crops and weeds into Ireland. This level of organisation required a focal point for settlement and a neolithic house (Licence No. 01E0061), which may be an indication of this, was excavated in Grange townland (close to its boundary with Kishoge) to the northeast of Grange Castle (O'Donovan 2001).

During the Bronze Age (c. 2500 to c. 500 BC), individual burials were set in pits or cists (stone-lined pits), often accompanied by pottery vessels (known as food vessels) or other small grave goods, or contained within large pottery urns. These sites could be under tumuli or cairns, or barrows, set into natural sand hills, or have no permanent above-ground markers. A substantial ring-barrow and a fulacht fia were uncovered during excavations in Kilmahuddrick and Grange townlands (Licence Nos 00E0448 & 00E718, SMR DU017-080 & -084; Doyle 2000a, 2001b, 2001c). In addition, two ring-ditches have been identified through aerial survey in Keeloges townland (SMR DU021-110 & -111). Archaeological investigations further west, in Ballybane and Grange townlands, revealed three burnt mounds during the realignment of the Griffeen river (Licence No. 04E0299). More recently, two fulachta fia were excavated in Ballybane townland (Licence No. 13E0471).

Together, these monument types typify a Bronze Age landscape, the ring-barrow representing a ritual deposition of cremated human remains, and the fulachta fia indicating Bronze Age habitation activity. The fulachta fia or burnt mound is the most common prehistoric monument in Ireland, with over 4500 known sites (Waddell 1998) and the number is rising all the time. Fulachta fia consist of a low mound of burnt stone commonly in horseshoe shape and are found in low-lying marshy areas or close to streams. The presence of burnt mounds or fulachta fia is often indicative of Bronze Age seasonal communal activity in river valleys (as here along the River Griffeen and its environs, lakeshores and boggy ground; scientific dating of a randomly excavated sample has shown a predominance of 2nd millennium BC dates for their use (Brindley & Lanting 1990). There is no agreement that burnt mounds were cooking places, although it does seem that they were used to prepare large quantities of boiling water and that they were repeatedly used, resulting in a large mound of heat shattered stones accumulating. Other theories for the use of these sites include bathing, saunas or sweathouses, washing or dyeing large quantities of cloth, the preparation of leather and brewing.

Although the Iron Age is not well-represented in the study area, a furnace pit representing iron smelting was excavated along the route of a proposed central carriageway in Grange Castle Business Park in 2013 and was dated to the early Iron Age (732-400 BC; Licence No. 13E0435, McLoughlin 2013).

There are five enclosures recorded within c. 1km of the study area (SMR DU017-089, -093, DU021-108, -109, -112) and one within it (SMR DU017-095), all of which were identified through aerial survey. While some of these have been proven to date to the early medieval period (e.g. DU021-108 & -109), the others may represent either ploughed-out ringforts or ring-barrows. These sites generally possess no diagnostic features which would allow for a definitive classification within another monument category; they are of unknown date and function and may date to any period from prehistory onwards.

2.3. Early Medieval Period

In the early medieval period (c. 5th to 12th century AD) this region was under the control of Leinster rulers until the arrival of the Anglo-Normans in the late 12th century. During this period, each kingdom was divided into cantreds and trícha céts, units of royal tenure, classification, local government, and military levy (i.e. local kingdoms or sub-kingdoms). Early dynasties of the Uí Bairrche clan occupied Clondalkin, Saggart and Kilnamanagh (MacShamhráin 1996). These early dynasties subsequently came under the rule of Uí Máil and Dúnlaing overlords.

This period saw the development of a mixed-farming economy managed by kings, nobles and free farmers. Additional improvements in agriculture from the 5th century AD resulted in a further wave of settlement expansion and population increase in rural Ireland, leading to the construction of the modern landscape's most common archaeological site: the ringfort, or its Irish equivalent, the rath.

Despite being the numerous archaeological site type in Ireland, there is a general paucity of known or upstanding monuments in County Dublin. This is undoubtedly the result of intensive agricultural practices, with ploughing removing surface traces of the monuments (the far more numerous enclosures recorded in the study area and county may represent denuded or destroyed ringforts). Ringforts are circular enclosures, essentially habitation sites or farmsteads. They were not simple isolated homesteads, however, and should be considered within their contemporary settlement landscape, which would have consisted of unenclosed settlements, farms and fields, route ways and natural resources (Stout 1997). Typically, they are sited on good, well-drained soils, usually over the 100m contour, close to a water source, and often located in proximity to routeways (ridges, eskers, moraines).

There is considerable evidence for occupation in the wider area during the early medieval period. Geophysical survey in the vicinity of Nangor Castle revealed the presence of a circular feature that had been cut by the New Nangor Road, and subsequent archaeological testing indicated that the enclosure represents the remains of a ploughed-out ringfort (Licence No. 96E273, McConway 1996). Human skeletal remains were also uncovered, as were numerous charcoal-flecked irregular features (McConway 1996). Geophysical survey was undertaken in 2015 in Ballybane townland to the east / southeast, in an area containing two recorded sub-surface archaeological sites that were identified through aerial survey (SMR DU021-108 & -

109). Subsequent archaeological testing and excavations identified an early medieval settlement complex comprising at least four separate enclosures (Licence No. 16E0531). Archaeological investigations further east / northeast in the same townland identified several early medieval enclosures (dated to the 7th and 8th centuries AD) that appear to represent ritual and ceremonial activities (Licence No. 13E0471).

Other, more discrete evidence has also been found that suggests widespread activity during this period, including an isolated charcoal production pit excavated along the central carriageway of the existing business park that was dated to AD 671-867 AD (Licence No. 13E0435, McLoughlin 2013).

Where ringforts were the major secular component of early Christian settlement, ecclesiastical centres became the focus of the new religion that was readily adopted in the 5th and 6th centuries. Early medieval monastic settlements tend to be defined by a large curvilinear bank and ditch or stone enclosure (topography permitting), enclosing an area circa 90-120m in diameter, often preserved in the line of townland or field boundaries and roads (Swan 1988). The majority of ecclesiastical settlements had one or more concentric curvilinear enclosures, with the church placed at the centre, in the inner sanctum (frequently preserved in the surviving graveyard boundary), with more secular activities (domestic, commercial and industrial) reserved for the outer enclosures. They often had associated farms, field systems, and agricultural features such as watermills and cereal drying kilns, either within the outer enclosure or in its immediate environs. They usually had a network of radiating roads, with the principal approach road (often from the east) terminating in a triangular market place. Features commonly found to be associated with early ecclesiastical sites include holy wells (usually outside of the main settlement), bullaun stones, high crosses, cross-inscribed stones, and round towers.

An ecclesiastical enclosure is recorded west of the study area in Loughtown Lower townland (DU021-001001). It is described in the RMP file as the western quadrant of an ecclesiastical enclosure surviving within an existing burial ground, which may represent the remainder of a small early medieval ecclesiastical site.

2.4. Medieval Period

The Anglo-Normans first arrived in Ireland in 1169, as mercenaries in the service of Dermot Mac Murrough, deposed king of Leinster. By the end of the 12th century, the Anglo-Normans had succeeded in conquering much of the country (though their hold on much of the conquered lands would prove tenuous), bringing with them new military traditions and fortifications, a new language and new social structures and divisions (e.g. boroughs, demesne manors and individual manors or manorial villages).

Castle sites in the vicinity of the study area testify to the extent of the Anglo-Norman presence. While there are some large Anglo-Norman castles in Ireland, most castles are tower houses – small, fortified residences

of the gentry dating to the 14th to 16th centuries, such as the site of a castle and field system at Hynestown (DU021-002, c. 965m southwest). Other examples in the wider area include those at (or formerly at) Nangor (DU017-037), Grange (DU017-034), Adamstown (DU017-029), Kilbride (DU021-004). As new military technologies such as gunpowder rendered thick walls less useful as a defence, houses gradually became less defensive and more comfortable. Tower houses were replaced in some areas by hall houses and fortified houses, similar to tower houses but less strongly fortified. Eventually, from the 17th century onwards, larger, more comfortable houses became the norm, and large houses such as those at Grange and Nangor, were built onto the existing castles.

The archaeological investigations in the vicinity of Nangor and Grange castles have added to our understanding of the medieval landscape in this area. There are no upstanding remains of the medieval Nangor Castle (DU017-037) and it is difficult to determine the form the castle took in the 13th century and no archaeological excavation has been undertaken on the site of the castle itself. A medieval field system which produced over 1500 sherds of 13th century pottery was revealed in Nangor townland, however, to the north of the castle site and was probably associated with it (Licence No. 00E0754; SMR DU017-082).

The constant skirmishes with the Irish on the southern limits of the Pale (a boundary designed to protect the lands and interests of individual landowners) brought about a frenzy of castle building (as evidenced by the number of tower houses in this area). This was supported by the 1429 Pale Statute of Henry IV that offered to subsidise the cost of your castle by £10. This incentive led to the widespread incastellation of south county Dublin in the 15th and 16th centuries with what are known as '£10 castles'. It is likely that the first stone castle at Nangor dates to this period, with Grange Castle erected up to 100 years later. The castles, while structurally defensive were, in effect, fortified farmhouses and also represent the agricultural expansion required to feed the markets of Dublin.

An early description of Grange Castle (DU017-034) by Cooper in 1780 describes 'a neat well-built castle inhabited by a farmer and kept in very good repair' (Price 1942). In the Irish Builder in 1897, Grange Castle was described as 'very much modernised…the northeast corner projects the unusual tower, which still contains two small slit-windows unusual in stair towers.' However, the author goes on to claim 'that the form of the old castle stands clearly out still, and graces its modern partners' (McC. Dix 1897). Ball (1906) describes Grange Castle 'as an unimportant castle… now incorporated into a modern house.' Healy (1974) describes it only as an 'occupied fifteenth century castle in County Dublin.' Grange Castle underwent some minor changes in the 18th century and was altered to reflect the stature of its occupant. The 16th century tower house was extended by the addition of a two-storey farmhouse in the Georgian style. Archaeological investigations in the vicinity of Grange Castle in 2001 uncovered a medieval field system and part of a possible enclosing ditch (Licence No. 01E0754). The field system associated with the castle site in Hynestown

townland is visible on aerial imagery, which is further indication of the nature of these sites as fortified farmhouses (DU021-002002).

2.4.1. Grange and St Mary's holdings

There is extensive evidence for the medieval landholding pattern in this area. From at least the 12th century, the Cistercian abbey of St Mary's held lands in the Clondalkin locality. St Mary's (founded c. 1139) was located on the north bank of the River Liffey in the area of Dublin city and became a powerful and wealthy religious house with extensive landholdings throughout Dublin and Ireland. Ballymacheilmer later became known as 'the Grange of Ballymacheilmer' and 'Newgrange, alias Ballichmeler'. After 1640 the lands of Ballymacheilmer were referred to as Grange (Tobin 2004). The name Ballymacheilmer may have originated with the pre-Norman family associated with the area (Ó Conbhuidhe 1962).

Ó Conbhuidhe (1962) places the lands of Ballymacheilmer under the ownership of St Mary's before 1172 and possibly prior to the arrival of the Anglo-Normans. Ownership is confirmed by two charters, 1174 and 1179 issued by Henry II, with the Archbishop of Dublin confirming lands (including Ballymacheilmer and Kilmacoldrick), chapel and tithes in 1186. 'Grange of Ballichelmer' is listed in the lands of the monastery at the time of dissolution in 1540-41 (Hagen & Courtney 2002). Grange then passed to 'Fagan of Feltrim' while Kilmacuddrick was held by Mr Aylmer (Ó Conbhuidhe 1962). In 1650, we find 'New Grange' occupied by a farmer called Nicholas Wolverston and twenty other persons, including a weaver and a 'greymerchant' (Ball 1906, cited in Hagan & Courtney).

2.4.2. Milltown and Griffeen River

At the time of the Anglo-Norman conquest, the parish lands of Kilmactalway where given to the Irish chief MacGillamocholmog, but in 1215, the crown took them back to enlarge the manor at nearby Newcastle. This extension gave an opportunity for the erection of a mill for the use of the King's tenants on the River Griffeen, which flows through Kilmactalway parish. The mills and the associated village became known as the King's Milltown, in order to distinguish it from another village of the same name which stood close to it. Its exact location is not certain, but it may be represented by the small cluster of buildings named 'Milltown' on Rocque's map of 1760 and the later first edition OS map of 1843, at the southeastern corner of the study area. During the reign of Queen Elizabeth, a holding described as 'a water mill in the King's Milltown and the windmill-land in the manor of Newcastle of the Queen's old inheritance', was leased to various persons (Tobin 2004). The Civil Survey of 1654 makes reference to a castle, a mill and some cabins at Milltown.

2.5. Post-Medieval / Early Modern Period

2.5.1. The Grand Canal

The Grand Canal dates from the mid-18th century and formed a crucial role in the industrial development of the rural landscape of the county. The canal began construction in 1756, following the passing of an Act in 1715, proposing a link between Dublin and the Rivers Shannon and Barrow. Interest waned, until 1755, when Thomas Omer, an engineer was finally appointed to the project. The building of the canal caused a major change to the landscape and the initial twelve mile stretch began at Clondalkin in 1756 and was completed in 1773.

The earliest locks built by Omer – at Clondalkin (11th lock), Lucan Road bridge or Leck Bridge (12th lock, almost 1km northeast of the proposed road) and Lyons (13th lock) – were shortened and narrowed in subsequent years by John Trail and later still by John Smeaton to conform to the lock dimensions of the rest of the line. They were originally 137ft long and 20ft wide (41.75m -6.09m) but now have an unusual shape, with the original lower gate recesses still visible today below the 11th and 12th locks. The primary considerations for these alterations were twofold: the large amount of water required to fill such locks, and the size of the boats suitable for the Irish canal trade. Smeaton argued that, as boats carrying upwards of 40 tons would be most suited to the volume of trade that could be expected on Irish canals, locks measuring 60ft by 14ft 918.28m – 4.26m) would suffice (Delany 1973). These became the standard dimensions of the Grand Canal.

The canal and its associated structures became an integral part of the development of this area. The construction of the canal was taken over by Dublin Corporation, but nine years later, the canal was in private hands again. It was opened to cargo boat traffic on February 2, 1779; the first passenger service began in 1780 between Dublin and Sallins.

From the time table of the Grand Canal Company, we find that three passenger boats travelled each way daily between Dublin and Tullamore, and averaged a speed of between three and four miles an hour. Meals were served on board, the dinner almost invariably consisting of boiled mutton and turnips; a meat dinner was served up every day in the week, Fridays included. No wine was sold to passengers in the second-class cabin, and the charges for meals there were somewhat lower (Tobin 2004). The maximum number of passengers was 45 1st class and 35 2nd class, 'and should any persons above that number force themselves into the boat, the boat-master is not on any account to proceed until they are removed' (Joyce 1913). The passenger boats consisted of a cabin, which extended nearly the whole length of the vessel. This was divided into two parts, 1st and 2nd class, each having two rows of seats with a table between, on which meals were served and games were played by the passengers. The roof of the cabin was flat so as to form a deck, which, being railed around and furnished with seats. This area was reserved for 1st class passengers.

The line of the canal, through both open country side and urban area, inevitably intersected many roads. Thus, the construction of the canal required the erection of many bridges in order that existing roads would be carried over it and on the other hand to accommodate landowners whose land was bisected by it. The vast majority of the surviving 18th and early 19th century Irish canal bridges are single-span, masonry arched structures. A number of Omer's early bridges on the Grand Canal near Clondalkin were constructed with timber, although these were removed when passenger services were first introduced, owing to their restricted headroom (Delany 1995).

Two basic varieties of masonry arched bridge were built over the Grand Canal, the first, and more common, is the distinctive hump-backed, narrow-waisted bridge, which spanned both canal and towpath (e.g. Gollierstown Bridge, RPS No. 131, c. 360m north of the proposed road). The second variety was used to span the tail of a lock chamber, where the fall of the ground was used to obviate the need for a steep approach ramp (e.g. the road bridge, Leck Bridge, at the 12th Lock, RPS No.127). The road bridge is contemporary with the construction of the canal lock but was widened to the east (and refurbished) in 1932 to allow for the widening of the R120 at that time.

The construction of the canal also precipitated the construction of additional associated industrial structures such as flour mills, water mills, mill races and warehouses, which took advantage of the direct link with Dublin and the midlands. A number of mills are located in the vicinity of the 12th lock and are marked on various map editions of the Ordnance Survey (e.g. the flour mill located immediately to the northwest of the 12th lock, RPS No. 118, which still stands although it ceased to function as a mill a number of years ago).

The Lock Keeper's house at 12th Lock is another example of associated structures. It was built c. 1865 by Thomas Omer and is a detached three-bay, two-storey gabled fronted classical style structure. It was noted by John Brownrigg in 1801, engineer to the Grand Canal Company that Omer's lock-keeper's house at Clondara on Shannon navigation, like his others 'smoaks so dreadfully as to be scarcely habitable at some times' (Delany 1988).

The canals were superseded by the railways in the 19th century and by 1854 most of the mail railway routes had been established. The introduction of the railways brought about a decline in traffic on the canals and the last boats were withdrawn in 1959-60 (Bennett, 1991). The canal is now operated as a leisure amenity.

3. CARTOGRAPHIC SOURCES

3.1. Down Survey Barony Map of Newcastle and Upper Cross, c. 1656

The baronial map (Figure 2) names 'Milltonne' (Milltown) and '*Bronnestonne and Part of Loughtonne*' (Brownstown and Loughtown Lower / Upper). The River Griffeen is depicted but not named, flowing through Milltown, with a mill and tower house shown on its south side. The Down Survey parish terrier for '*Killmatallway*' describes a mixture of arable, pasture and meadow land within the parish, with the quality of the soil noted as being good. It notes that at Milltown 'there stands a Castle a Mill and some Cabins'. There is no recorded castle site in Milltown townland, though the map and terrier would suggest the former presence of such a site in the vicinity of the mill and its associated settlement.

3.2. Rocque's Map of County Dublin, c. 1760

Rocque's map (Figure 2) shows the landscape as being clear of trees, enclosed into a regular field system and predominately under pasture. The Grand Canal - shown as the 'new canal' - is a dominant feature in the landscape. The map was surveyed prior to its completion, as evidenced by the absence of new roads, bridges and even the locks along its length. A small settlement or hamlet is depicted at Milltown, at the southeastern corner of the study area, focused on the River Griffeen.

The river flows through the hamlet, possibly diverted to flow alongside the road to form a mill-race. Several of the properties have associated gardens or orchards. It is situated at a junction of the east-west road from Grange Castle to Loughtown and the road running southwards to Kilmactalway Church. A lime kiln is indicated to the west. Loughtown House at 'Laughtown' (Loughtown Lower), to the southwest of the study area, is also shown. A smaller house (and outbuilding?) is named at 'Browns Town', just outside the study area. A 'Burying Place' is indicated at the site of the present graveyard (RMP DU021-001). Grange Castle (RMP DU017-037) is shown and named to the south of the Griffeen river.

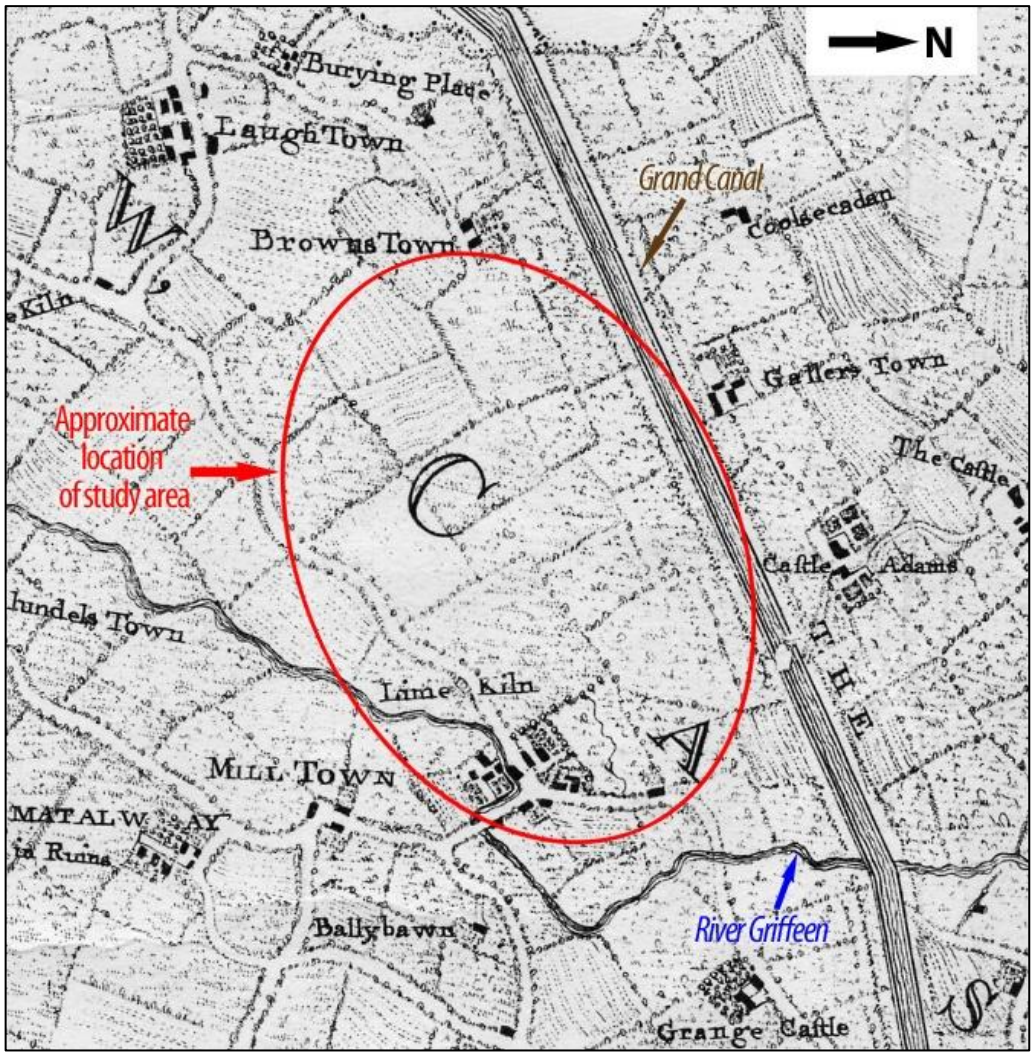


Figure 2 Rocque's map of County Dublin, 1760

3.3. Taylor's Map of the Environs of Dublin, 1816

Taylor's map of 1816 (Figure 3) is less detailed Rocque's 18th century map, though it provides some new information. Peamount country house and its demesne are depicted, giving both boundaries and a name to the present townland. The village at Milltown is still depicted. A new road has been constructed, crossing the canal at the 12th Lock (the present R120 road). There are mills at the lock is indicated and Gollierstown Bridge is indicated to the west ('Gollardstown Br.'). Large quarries and a kiln are shown along the canal to the north of the study area.

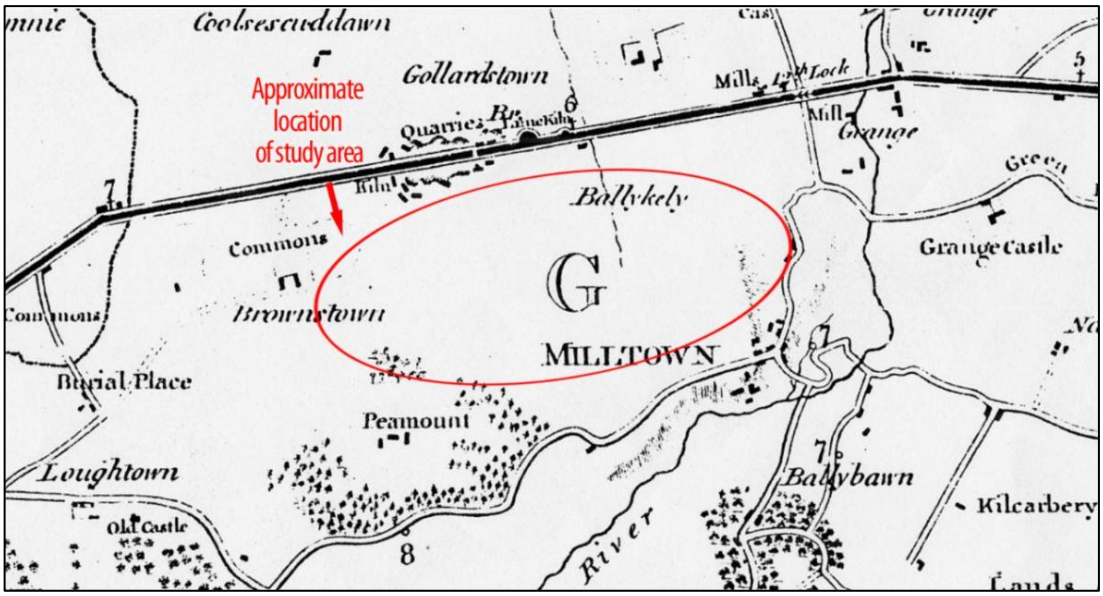


Figure 3 Taylor's map of Dublin, 1816

3.4. First edition Ordnance Survey six-inch map, 1843

This represents the earliest accurate and detailed cartographic source for the study area (Figure 4). The proposed road traverses agricultural fields located south of the Grand Canal; there are no features depicted within the fields. The outer parkland of the Peamount estate lies immediately south, with Peamount House and associated gardens and entrance avenue further southwest. The former village or settlement at Milltown is named and appears to have contracted slightly, leaving only Milltown House and associated outbuildings, a farmhouse and yard to the north, and several other houses either side of the junction. A broad tree-line avenue runs northwest from the farmyard accessing a narrow field beyond. The river is no longer flowing past Milltown House and functioning as a mill-race, though its former course may survive to the southwest.

Properties in the surrounding area are largely focused around the Brownstown / Loughtown Lower townland boundary. On the east side, in Brownstown, are four small structures set within two tree-lined fields, that appear to form a single, large farmstead. On the west side, in Loughtown Lower, a laneway runs north from the graveyard and adjacent 'Relickan Well' (RMP DU021-001). Four small houses are scattered along its length, with a fifth set back to the west down a laneway and a 'Fox Cover' indicated to its rear.

There is evidence of significant quarrying in the area, most obviously along the banks of the canal, at the location depicted on Taylor's map. A second large area of quarrying is depicted along the canal banks to the west of the 12th Lock, with a further three in the Peamount and Raniskey estates. A small quarry is also indicated to the north of the proposed road in Clutterland townland.

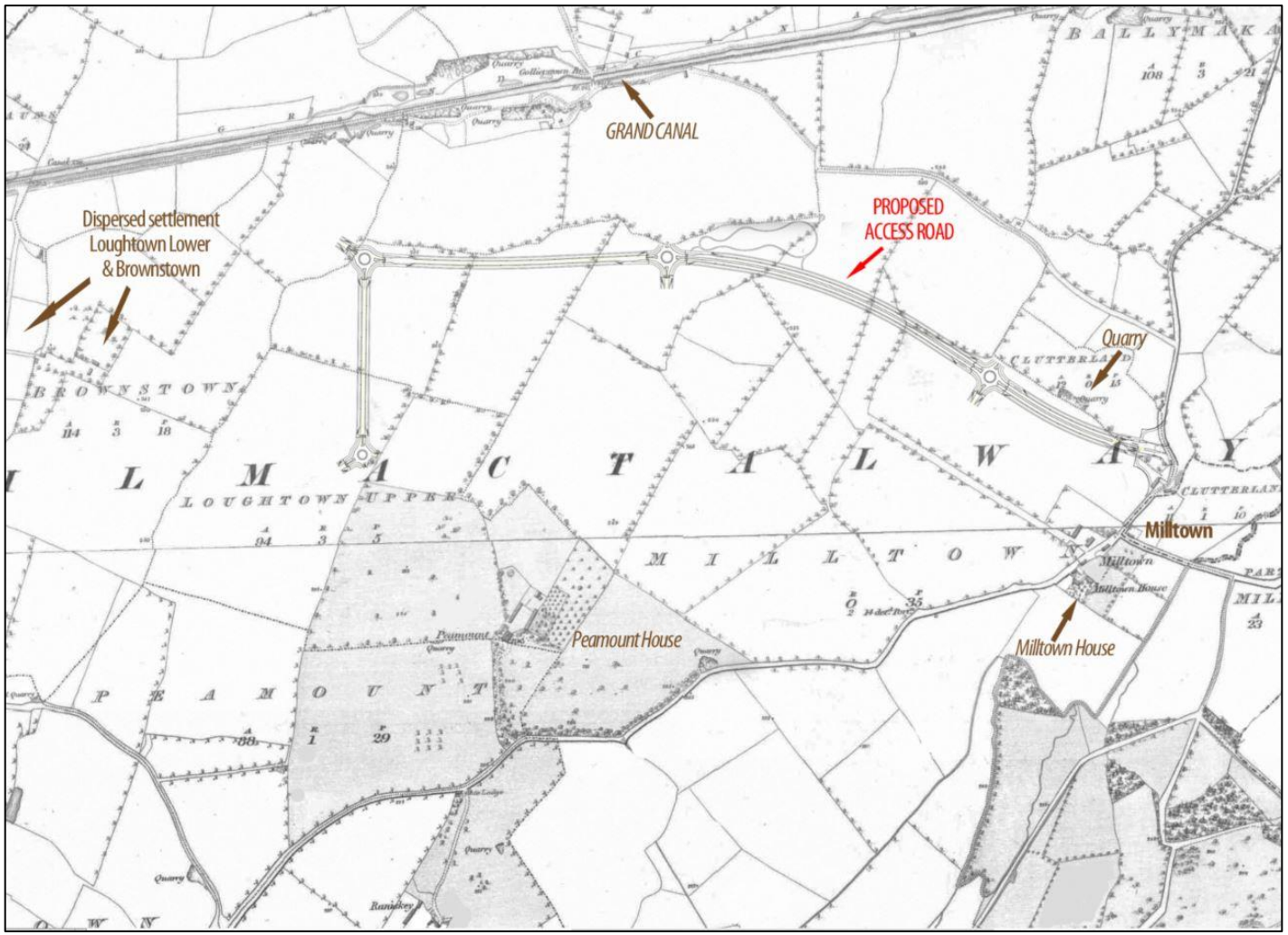


Figure 4 First edition Ordnance Survey map, 1843, showing proposed road

3.5. Revised edition Ordnance Survey 25-inch map (1907-9) & six-inch map (1935-8)

There are few significant changes on the early 20th century 25-inch OS map (not shown). The tree-lined avenue running northwest from the farmstead at Milltown is no longer depicted, surviving only partially as short stretch of laneway at the yard. The parkland with its clumps of trees in the Peamount demesne is now depicted as featureless agricultural fields. There are no significant changes by the time of the revised six-inch edition OS map of 1935-38 (not shown).

4. ARCHAEOLOGICAL HERITAGE

4.1. National Monuments

There are no National Monuments along the proposed road or in its vicinity.

4.2. RMP / SMR Sites

The Sites and Monuments Record (SMR), as revised in the light of fieldwork, formed the basis for the establishment of the statutory Record of Monuments and Places in 1994 (RMP; pursuant to Section 12 of the National Monuments (Amendment) Act, 1994). The RMP records known upstanding archaeological monuments, their original location (in cases of destroyed monuments) and the position of possible sites identified as cropmarks on vertical aerial photographs. The information held in the RMP files is read in conjunction with published constraint maps. Archaeological sites identified since 1994 have been added to the non-statutory SMR database of the Archaeological Survey of Ireland (National Monuments Service, DCHG), which is available online at www.archaeology.ie and includes both RMP and SMR sites. Those sites designated as SMR sites have not yet been added to the statutory record, but are scheduled for inclusion in the next revision of the RMP

There is one recorded archaeological site located within the study area and in close proximity to the proposed access road, c. 25m west. The enclosure site was identified in 2015 from aerial photography (by Tom Condit, National Monuments Service) and added to the Sites and Monuments Record as SMR No. DU017-095 (the site is scheduled for inclusion in the next revision of the RMP). It comprises a sub-circular enclosure visible as a crop mark on an aerial photograph (Google Maps, Figure 5; Dimensions c. 56m WNW / ESE by c. 49m NNE / SSW). The site is located in Loughtown Upper Townland (ITM centre-point 700903, 731247; Cf. Figures 5 & 6).

A further eight recorded archaeological sites are located within a 1km radius of the proposed access road, the majority of which are enclosure sites. These sites are illustrated on Figure 6 and discussed in the context of the archaeological and historical background.

Figure 5 Enclosure site visible as cropmark, SMR DU017-095

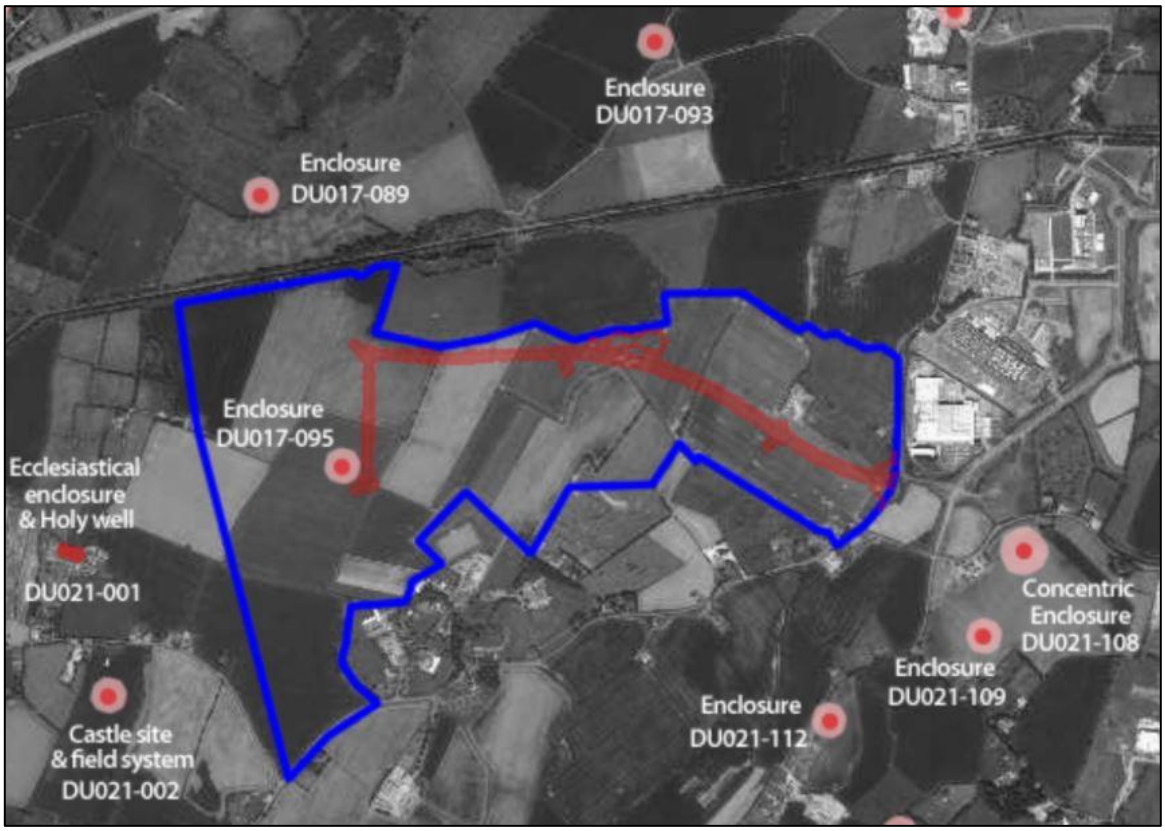


Figure 6 Location of RMP / SMR sites within study area (in blue) and c. 1km of proposed road (in red)

4.3. Stray Finds

The topographical files of the Irish Antiquities Division of the National Museum of Ireland record the discovery of pottery sherds of medieval date in the townland of Grange; the finds varied in size and form but most retained evidence of glazing on the outer surfaces (NMI 1972:92-104). A review of the National

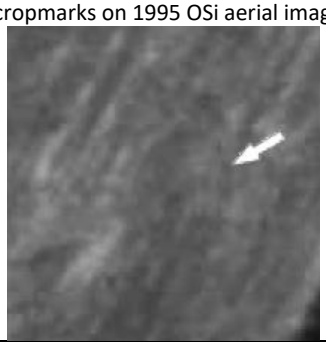
Museum of Ireland database of topographical files on the heritage council website revealed no records of any other stray finds within or in the vicinity of the study area.

4.4. Aerial Photographic Analysis

An enclosure site c. 25m west of the proposed road was identified in 2015 from aerial photography and added to the Sites and Monuments Record (SMR No. DU017-095; Cf. Section 4.2 above). An examination of available aerial imagery from 1995 to present was undertaken (www.osi.ie, Google Earth), which identified a further three features / complexes of features that may represent previously unknown, below-ground archaeological sites, located partly within or in close proximity to the proposed road (described in Table 1; locations illustrated on Figure 7 below).

Table 1 Potential archaeological sites identified through aerial photographic analysis

Feature ID	Status	Location	Description	Distance from Proposed Road
AP 1	None	Milltown Td (ITM centre-point 701715, 731497)	Complex of features visible as cropmarks on current aerial imagery (OSi Digital Globe). Although difficult to decipher, there appears to be at least two enclosures; a larger subcircular one measuring c. 37 x c. 21m and a smaller circular enclosure c. 18m diameter. Traces of two arcing lines are visible to the N and NE, suggesting the presence of further enclosures. Two linear features may form part of a large rectilinear enclosure to the WSW (c. 37m x c. 60m).  Given the proximity of the stream, it is possible that these features (and those noted below in AP 2) may be the result of drainage activity / waterlogged ground. Nonetheless, intensive agricultural activity (e.g. ploughing) can mask the presence of below-ground archaeological sites and features and there is	c. 55m south

			proven potential in this area for the discovery of previously unknown archaeological sites.	
AP 2	None	Milltown Td (ITM centre-point 701650, 731563)	75m NNE/SSW by 45m ENE/WSW), with small enclosure on NE side (c. 23m diameter). Visible as cropmarks on 2000 OSi aerial imagery. Located on NW bank of stream, at curve in field boundary. Additional features visible on SE side of stream in neighbouring field (see AP 1). 	Small enclosure on NE side lies partly within proposed road
AP 3	None	Milltown Td (ITM centre-point 701346, 731527)	Sub-circular enclosure (c. 30m N/S by c. 23m E/W), visible as cropmarks on 1995 OSi aerial imagery. 	c. 65m south

4.5. Previous Archaeological Investigations

There have been no previous archaeological investigations carried out within the townlands traversed by the proposed road. Archaeological monitoring of the Lucan to Palmerstown Water Supply Scheme pipeline in 2002, however, uncovered a previously unknown cemetery site c. 35m north of the proposed road in Milltown townland (Licence No. 02E1281; Figures 7 & 8; the site has, as yet, not been placed on the SMR for inclusion in the RMP).

Monitoring of the removal of topsoil along the pipeline corridor at Milltown revealed a new cemetery site, which was located in open farmland and not directly close to any known historic monument. Preliminary recording of the extent and apparent east-west orientation of the burials (within the pipeline corridor) suggests an early Christian date, however this could only be proven conclusively through any future excavation.

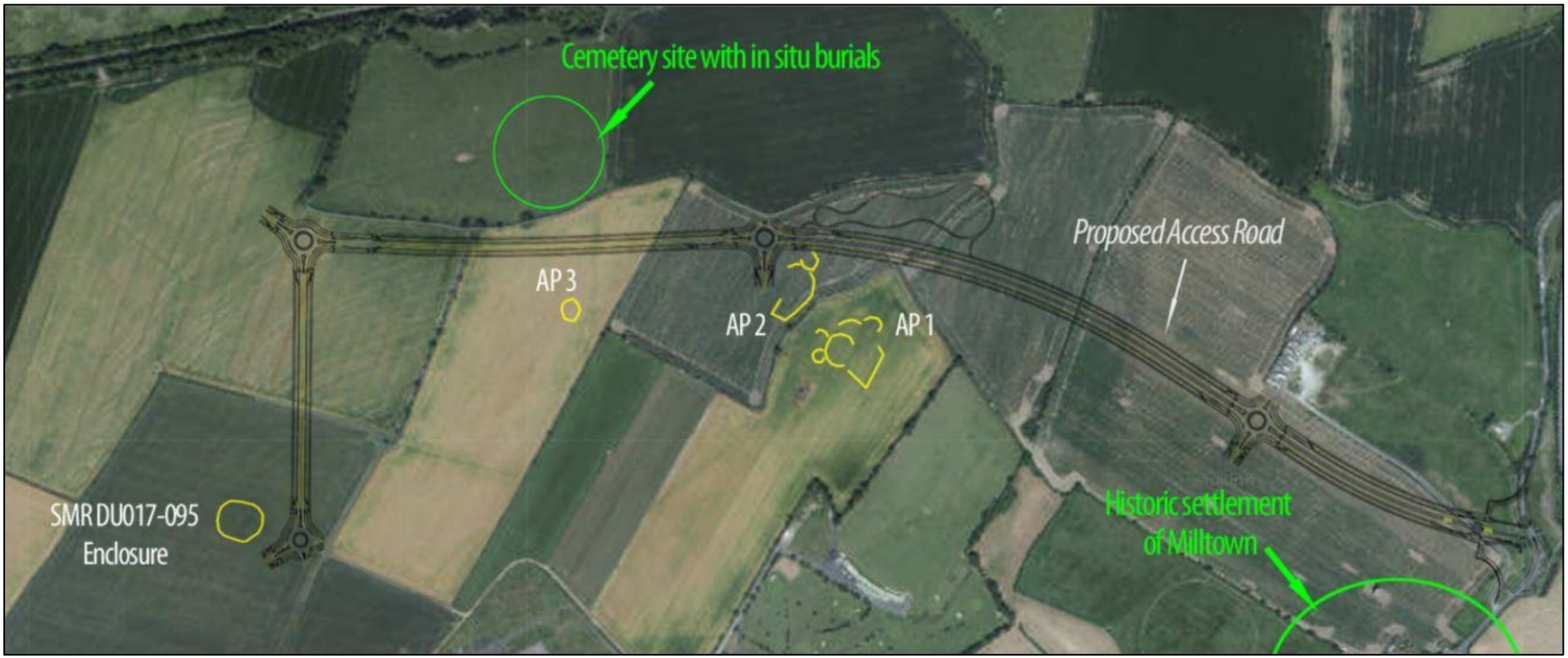


Figure 7 Archaeological constraints in vicinity of proposed road

Figure 8 Previous archaeological investigations in vicinity of proposed road

The burials appeared to extend westwards outside the pipeline corridor and may indicate other associated archaeological features present in this field. The skeletal material exposed appeared to have been partially disturbed, most likely from past ploughing, and were generally in a poor state of preservation. There were no finds noted which may have been associated with the burials. In agreement with the relevant authorities, the skeletal deposits remain in situ, and the pipeline route was re-directed 10m east into the adjacent eastern field, in which no evidence for skeletal deposits was found during archaeological monitoring (Kehoe 2002).

In addition, a large number of archaeological investigations have been carried out in the surrounding area, in the existing Grange Castle Business Park and its immediate environs. These investigations revealed archaeological sites dating from the Neolithic to the post-medieval period. Figure 8 shows the location of the sites (as well as those locations where no archaeology was uncovered), with summary details of the sites contained in Table 2.

Table 2 Archaeological sites uncovered in existing Grange Castle Business Park & environs

Licence No.	SMR/RMP	Excavations Bulletin Ref.	Archaeological Investigations	Townland	Site Type
96E0273	n/a	1996:068	Testing	Nangor	Early medieval ringfort (c. 12th century AD)
97E0116 (& ext.)	Assoc. with RMP DU017-034	1997:086 & 087	Testing & Excavation	Grange / Nangor	Medieval field system
00E0263 & 00E0448	SMR DU017-080	2000:0223 & 0225	Geophysical survey, testing, excavation	Grange / Kilmahuddrick	Bronze Age Ring-barrow. Cobbled surfaces, series of linear ditches, associated with medieval pottery
00E0718	SMR DU017-084	2000:0224	Excavation	Nangor	Bronze Age Fulacht Fia
01E0061	n/a	2001:428	Excavation	Grange	Neolithic house
01E0754	SMR DU017-082	2001:0455	Excavation	Nangor	Medieval field system & ditch
02E1281	n/a	None	Monitoring	Gollierstown	Cemetery site, at least 13 burials, possibly early Christian (left *in situ*)
03E0643	n/a	None	Monitoring	Grange	Burnt deposit and linear ditches (early modern)
03E1210	n/a	2003:0604	Excavation	Grange	18th/19th century grist / corn mill, at River Griffeen
04E0299	n/a	2004:0602	Monitoring & excavation	Ballybane / Grange	Bronze Age burnt mounds & post-medieval brick clamps
13E0435	n/a	2013:043	Monitoring & excavation	Ballybane / Grange / Nangor	Early Iron Age smelting site (c. 732-400 BC) & early medieval charcoal clamp (c. 671-867 AD)
13E0459	n/a	2016:495	Monitoring, testing & excavation	Grange	Isolated pits
13E0471	n/a	2016:083	Geophysical survey, testing, excavation	Ballybane	Two Bronze Age fulachta fia. Early medieval enclosures (7th/8th centuries AD), possible ritual & ceremonial uses.
14E0453	n/a	2016:084	Geophysical survey, testing, excavation	Nangor	Bronze Age cremation pits. Medieval corn-drying kiln & field system.

15E0394	n/a	2016:147	Geophysical survey, testing, excavation	Grange	Early modern agricultural activity
16E0531	SMR DU021-108 DU021-109	2016:464	Aerial survey, geophysical survey, testing, excavation	Ballybane	Early medieval settlement complex, including significant archaeological remains of four separate enclosure sites (two previously identified by aerial survey: DU021-108 & -109).

5. CULTURAL HERITAGE

5.1. Townland Boundaries

Townlands are land divisions that form a unique feature in the Irish landscape, their origins can be of great antiquity and many are of pre-Norman date. They existed well before the establishment of parishes or counties. Townland boundaries can take the form of natural boundaries or routeways as well as artificially constructed earthen banks and ditch divisions. They are predominantly formed of substantial boundaries which are usually distinguishable from standard field division boundaries. There are 62,000 townlands in Ireland, grouped into civil parishes, then counties and finally provinces.

The proposed road traverses the width of Milltown townland, with a small section at its east end in the small townland of Clutterland and the southern spur at the west end extending into Loughtown Upper. The townlands form part of the Barony of Newcastle and Civil Parish of Kilmactalway.

5.2. Placename Evidence

Townland names are a valuable source of information, not only on the topography, land ownership and land use within the landscape, but also on its history, archaeological monuments and folklore. While most place names were anglicised or translated relatively accurately, some were corrupted virtually beyond recognition. Townland names can incorporate Irish names, preserving a reference to native Gaelic land-ownership, as appears to be the case with Brownstown (see Table 3). They can also contain English language personal or family names, indicating the Anglo-Norman and/or later English settlement of the area (e.g. Clutterland, Gollierstown, and perhaps Peamount and Coolscuddan). Other townland names in the study area refer to topography (e.g. Loughtown Upper / Lower) and land usage (e.g. Grange and Milltown).

Table 3 Townland names in the study area

Townland	**Irish Name**	**Translation / Derivation**	**Archival Records** (Cf. www.logainm.ie)
Brownstown	*Baile an Bhrúnaigh*	Personal / family name: Townland / homestead of ó Brún	Possible reference as '*Obrun'* in 1287. Documented as 'Brownsland alias Brownstown' in 1582 and Brownstowne in 1598 & 1670.

Clutterland	*Talamh Chlutair*	The English surnames le Clutere, Clutere, Clouter are attested in the Middle Ages; this placename probably contains one of these or similar.	Named as Clutterland in 1664 Hearth Money Rolls.
Coolscuddan	*Cúil Scadán*	'Corner or angle of the herrings'. Alternatively it may derive from an Anglo-Norman family name Scadan. (OS Name Book)	n/a
Gollierstown	*Baile Gallrath*	According to O'Donovan, Galrett is a family name.	St Mary's Abbey acquired 'Galrothentown' (Gollierstown) in the mid-15th century, formerly the property of the bishop of Killaloe. Appears in 1547 as 'Gallrowtheston' (under 'Adderge demesne') & in the same year is referenced as a hamlet ('Gallonteston') forming part of the Prebend of Castleknock. Various references in 17th & 18th centuries.
Grange	*An Ghráinseach*	The placename *Grange* is relatively common and refers to land used for food production, associated with a monastery, priory or abbey.	The name 'Grange' originated in the 12th century when the lands of Grange and Kilmahuddrick fell under the ownership of the Cistercian monastery of St Mary's in Dublin. Grange was originally known as Ballymacheilmer, later to become 'the Grange of Ballymacheilmer'. The placename is first mentioned in 1547 as 'Grang' and again in c.1624 as 'little Graing', in references to the lands associated with the Church and Cathedral of St Patrick in Dublin (Mason, 1820, 51; logainm.ie).
Loughtown Lower / Upper	*Baile an Locha*	Townland of the lake	n/a
Milltown	*Baile an Mhuilinn*	Townland of the mill	Milltown is first referred to in the Down survey in 1656.
Peamount	*Mullach na Pise*	Unknown. The townland does not form part of the parish in the 17th century. Possible later division? Family name?	n/a

6. ARCHITECTURAL HERITAGE

6.1. Record of Protected Structures

There are no protected structures located along or in close proximity to the proposed road. The nearest is a mid-18th century farm-house in Milltown townland that once formed part of the former village or settlement at Milltown, located c. 165m southwest (RPS 155; Figure 8). It is given a regional rating by the National Inventory of Architectural Heritage (NIAH 11208015) and comprises a detached four-bay two-storey farm house, built c.1760, with attached outbuildings. According to the NIAH appraisal it is fine example of an 18th century farm cottage and barn, demonstrating a classic sequence of vernacular evolution.

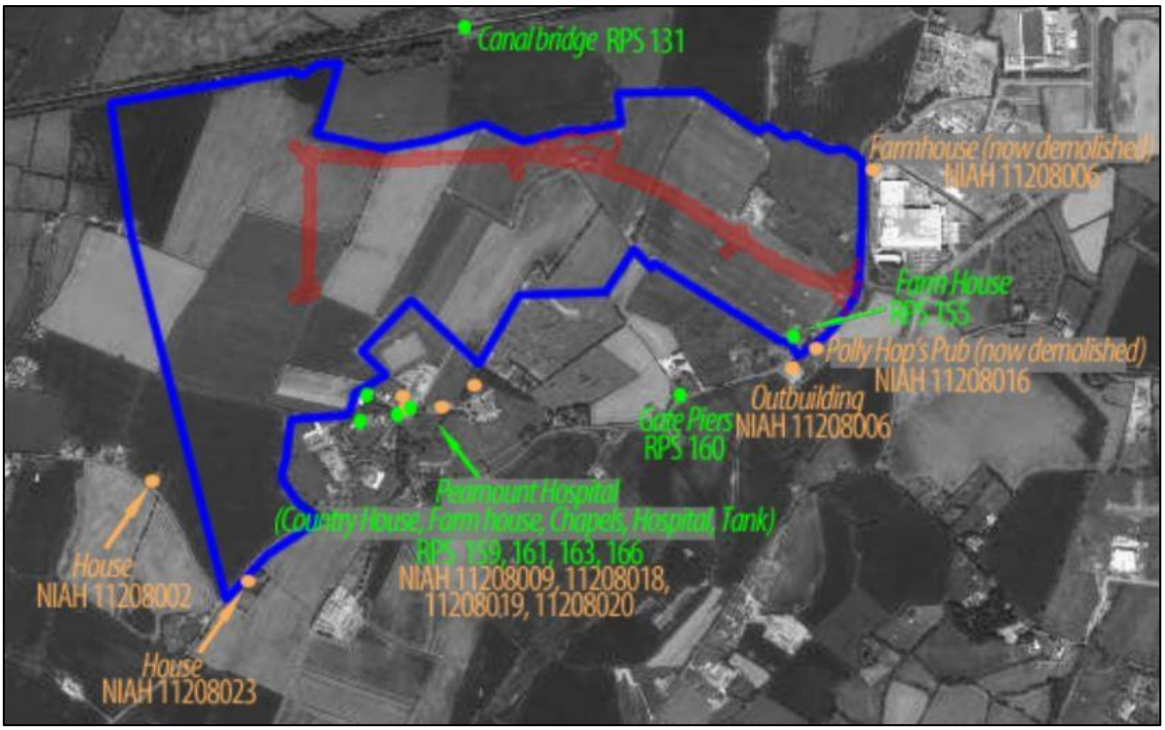


Figure 9 Architectural heritage sites within or around study area (blue), with proposed road in red

In addition, there are a number of protected structures or NIAH sites located around the perimeter of the study area (as shown on Figure 9). These are primarily clustered around the south perimeter of the study area, with a concentration at the former Peamount estate (now Peamount Hospital), but also include Gollierstown Bridge c. 360m north at the canal (RPS 131). Of these, two have been demolished: Polly Hop's Pub (NIAH 11208016) and a farmhouse (NIAH 11208006).

6.2. Undesignated Sites

No undesignated sites of built heritage interest were identified along or in the vicinity of the proposed road.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1. General

The existing recorded sites and monuments, the rich medieval history of the area, and the extensive subsurface archaeological remains that have been uncovered to the east of the study area, all indicate the high archaeological potential of this entire region and the likelihood of further material turning up wherever the ground is disturbed by development.

7.2. Archaeological and Cultural Heritage

This assessment has several specific areas of archaeological sensitivity in proximity to the proposed road (see Figure 7):

- SMR site DU017-095, enclosure. This enclosure was identified as a cropmark in aerial imagery and is scheduled for inclusion in the next revision of the RMP. It is located c. 25m west of the proposed road. It is possible that associated features (e.g. field system or annexe) may be uncovered within the proposed road;

- A previously unknown cemetery site was revealed during archaeological monitoring in 2002, c. 35m north of the proposed road. The burials were left *in situ* and the full extent of the site is unknown. It is possible that the site or features associated with it extend southwards into the line of the proposed road;

- Three areas of archaeological potential were identified through aerial photographic analysis, with cropmarks suggesting the presence of sub-surface archaeological sites or features (AP 1 to AP 3). The proposed road would directly impact on the northern limits of the features visible at AP 2, should they prove to be archaeological in nature;

- There has been a mill and settlement at Milltown since the 13th century. Based on the historic map analysis, the former settlement is located c. 120m south of the proposed road. There is a possibility (albeit slight) that outlying activity, e.g. field systems or mill-race / ponds, may extend within the proposed road. It is also possible that there was a tower house in the vicinity of the Milltown settlement, as indicated on the Down Survey map, though exactly where is unknown;

- No features of cultural heritage interest will be affected by the proposed road.

7.3. Architectural Heritage

No architectural heritage features will be affected by the proposed road.

7.4. Recommendations

As the archaeological investigations undertaken in the vicinity of the study area have shown, sub-surface archaeological features can occur in places where nothing is visible at ground level. This is an area of high archaeological potential and the assessment has also identified specific areas of archaeological potential in proximity to the proposed road.

It is recommended that a programme of geophysical survey be carried out along the length of the proposed road, well in advance of development. This will seek to provide clarification in relation to AP 2. It will also seek to identify any features associated with the recorded enclosure site (DU017-095) or the partly excavated cemetery site, or any additional sites / features that may be present. Further recommendations will be made on the basis of the geophysical survey results.

It should be noted that preservation *in situ* is the preferred policy of the National Monuments Service (Department of Culture, Heritage and the Gaeltacht). Archaeological sites should be avoided, unless it can be demonstrated that this is not possible.

The developer will make provision to allow for and fund whatever archaeological work may be needed on the site in accordance with the National Monuments legislation (1930–2004; Appendix 1).

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www.osi.ie

www.heritagemaps.ie

www.tcd.ie/downsurvey

APPENDIX 1 SUMMARY OF RELEVANT LEGISLATION

National Monuments Legislation 1930-2004.

All archaeological sites have the full protection of the national monuments legislation (Principal Act 1930; Amendments 1954, 1987, 1994 and 2004).

In the 1987 Amendment of Section 2 of the Principal Act (1930), the definition of a national monument is specified as:

any artificial or partly artificial building, structure or erection or group of such buildings, structures or erections,

any artificial cave, stone or natural product, whether forming part of the ground, that has been artificially carved, sculptured or worked upon or which (where it does not form part of the place where it is) appears to have been purposely put or arranged in position,

any, or any part of any, prehistoric or ancient

(i) tomb, grave or burial deposit, or

(ii) ritual, industrial or habitation site,

and

any place comprising the remains or traces of any such building, structure or erection, any cave, stone or natural product or any such tomb, grave, burial deposit or ritual, industrial or habitation site...

Under Section 14 of the Principal Act (1930):

It shall be unlawful...

to demolish or remove wholly or in part or to disfigure, deface, alter, or in any manner injure or interfere with any such national monument without or otherwise than in accordance with the consent hereinafter mentioned (a licence issued by the Office of Public Works National Monuments Branch),

or

to excavate, dig, plough or otherwise disturb the ground within, around, or in the proximity to any such national monument without or otherwise than in accordance...

Under Amendment to Section 23 of the Principal Act (1930),

A person who finds an archaeological object shall, within four days after the finding, make a report of it to a member of the Garda Síochána...or the Director of the National Museum...

The latter is of relevance to any finds made during a watching brief.

In the 1994 Amendment of Section 12 of the Principal Act (1930), all of the sites and 'places' recorded by the Sites and Monuments Record of the Office of Public Works are provided with a new status in law. This

new status provides a level of protection to the listed sites that is equivalent to that accorded to 'registered' sites [Section 8(1), National Monuments Amendment Act 1954] as follows:

The Commissioners shall establish and maintain a record of monuments and places where they believe there are monuments and the record shall be comprised of a list of monuments and such places and a map or maps showing each monument and such place in respect of each county in the State.

The Commissioners shall cause to be exhibited in a prescribed manner in each county the list and map or maps of the county drawn up and publish in a prescribed manner information about when and where the lists and maps may be consulted.

- In addition, when the owner or occupier (not being the Commissioners) of a monument or place which has been recorded, or any person proposes to carry out, or to cause or permit the carrying out of, any work at or in relation to such monument or place, he shall give notice in writing of his proposal to carry out the work to the Commissioners and shall not, except in the case of urgent necessity and with the consent of the Commissioners, commence the work for a period of two months after having given the notice.

The National Monuments Amendment Act 2004

The National Monuments Amendment Act enacted in 2004 provides clarification in relation to the division of responsibilities between the Minister of Environment, Heritage and Local Government, Finance and Arts, Sports and Tourism together with the Commissioners of Public Works. The Minister of Environment, Heritage and Local Government will issue directions relating to archaeological works and will be advised by the National Monuments Section and the National Museum of Ireland. The Act gives discretion to the Minister of Environment, Heritage and Local Government to grant consent or issue directions in relation to road developments (Section 49 and 51) approved by An Bord Pleanála and/or in relation to the discovery of National Monuments

14A. (1) The consent of the Minister under section 14 of this Act and any further consent or licence under any other provision of the National Monuments Acts 1930 to 2004 shall not be required where the works involved are connected with an approved road development.

(2) Any works of an archaeological nature that are carried out in respect of an approved road development shall be carried out in accordance with the directions of the Minister, which directions shall be issued following consultation by the minister with the Director of the National Museum of Ireland.

Subsection 14A (4) Where a national monument has been discovered to which subsection (3) of this section relates, then

(a) the road authority carrying out the road development shall report the discovery to the Minister
(b) subject to subsection (7) of this section, and pending any directions by the minister under paragraph (d) of this subsection, no works which would interfere with the monument shall be carried out, except works urgently required to secure its preservation carried out in accordance with such measures as may be specified by the Minister

The Minister will consult with the Director of the National Museum of Ireland for a period not longer than 14 days before issuing further directions in relation to the national monument.

The Minister will not be restricted to archaeological considerations alone, but will also consider the wider public interest.

Planning and Development Act, 2000

Structures of architectural, cultural, scientific, historical or archaeological interest can also be protected under the Planning and Development Act, 2000.

This act provides for the inclusion of protected structures into the planning authorities' development plans and sets out statutory regulations regarding works affecting such structures. Under the new legislation, no distinction is made between buildings formerly classified under development plans as List 1 and List 2. Such buildings are now all regarded as 'protected structures'.

The act defines a 'protected structure' as follows:

(a) a structure, or

(b) a specified part of a structure,

which is included in a record of protected structures, and, where that record so indicates, includes any specified feature which is within the attendant grounds of the structure and which would not otherwise be included in this definition.

'Protection', in relation to a structure or part of a structure, includes conservation, preservation, and improvement compatible with maintaining the character and interest of the structure or part;

Part IV of the act deals with architectural heritage, and Section 57 deals specifically with works affecting the character of protected structures or proposed protected structures.

…the carrying out of works to a protected structure, or a proposed protected structure, shall be exempted development only if those works would not materially affect the character of—

(a) the structure, or

(b) any element of the structure which contributes to its special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest.

Section 58, subsection 4 states that:

Any person who, without lawful authority, causes damage to a protected structure or a proposed protected structure shall be guilty of an offence.

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Appendix E – Flood Risk Assessment

Clifton Scannell Emerson Associates

Strategic Flood Risk Assessment

Grange Castle West Access Road

Comhairle Contae Átha Cliath Theas
South Dublin County Council

Client: South Dublin County Council

Date: 3rd October 2018

Job Number: 17_129

CONSULTING ENGINEERS

Civil Engineering | Structural Engineering | Transport Engineering | Environmental Engineering | Project Management | Health and Safety

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Document Control Sheet

Project Name:	Grange Castle West Access Road
Project Number:	17_129
Report Title:	Strategic Flood Risk Assessment
Filename:	RPT-17_129-003

Issue No.	Issue Status	Date	Prepared by	Checked by
1st	DRAFT	8th June 2018	SQ	DRL/RG
2nd	DRAFT	15th June 2018	SQ	DRL/RG
3rd	DRAFT	30th August 2018	DRL	RG
4th	DRAFT	21st Sept 2018	DRL	RG
5th	FINAL	3rd October 2018	DRL	RG

Table of Contents

1 Introduction

1.1 Background

On behalf of South Dublin County Council (SDCC), Clifton Scannell Emerson Associates (CSEA) were tasked with the undertaking of a Strategic Flood Risk Assessment (SFRA) study for the Grange Castle West (GCW) Access Road located within the Enterprise and Employment (EE) zoned lands, west of Grange Castle Business Park and intersecting with the R120 Regional Road (under construction and due to be completed by Q1/Q2 2019).

The SFRA is carried out in full compliance with the requirements of "The Planning System & Flood Management Guidelines" published by the Department of Environment in November 2009.

1.2 Site Location

The proposed GCW Access Road runs west from a newly formed signalised junction with the R120 Regional Road (under construction and due to be completed by Q1/Q2 2019) and is located within the Enterprise and Employment (EE) zoned lands west of Grange Castle Business Park.

The proposed GCW Access Road is connected to the national road network by its proximity to various arterial routes; within 6km of the M50 (Dublin orbital route), 3km of the N7/M7 (South and South West) and 6km of the M4 (West and North West). The M7 motorway provides access to the west and south west of Ireland as well as offering vital connectivity to the M50 Orbital Motorway. The M50 Orbital Motorway circles the northern, southern and western suburbs of Dublin City and provides access to the North and South of Ireland.

The proposed GCW Access Road is located within the townlands of Milltown and Loughtown Upper.

Local amenities include the Grand Canal which is located 320metres to its north and Peamount Hospital & Reservoir which are approx. 700mm to the south of the proposed roads footprint.

For further information, please see **Figure 1** below which displays all the townland boundaries that are located within the proposed GCW Access Roads footprint.

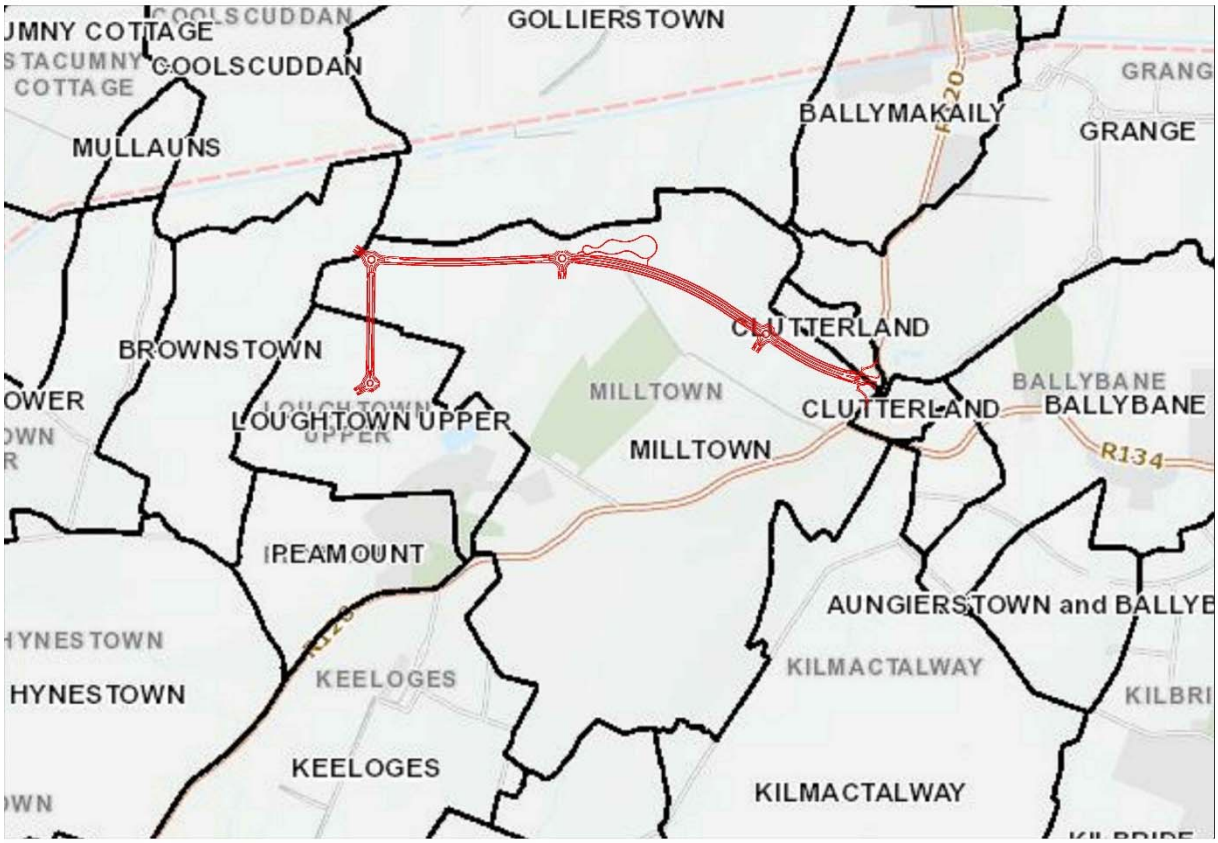

Figure 1 - Existing Townland Boundaries (GSI Website)

As mentioned above the proposed GCW Access Road is located within the Enterprise and Employment (EE) zoned lands. These lands have recently been rezoned in May 2018 from 'Rural (RU)' to 'Enterprise and Employment (EE)'. The current use for the existing lands is functioning predominately as both arable and pastoral farming.

1.3 Site Description

The proposed Grange Castle West (GCW) Access Road contains 1.03km of Dual Carriageway with an average corridor width of 34m and 1.15km of Single Carriageway with an average corridor width of 25m. There are a total of 1 No. double lane and 3 No. single lane fully segregated roundabouts proposed for the Grange Castle West Access Road development. Controlled pedestrian and cyclist crossing facilities are predominately provided at all four proposed roundabouts with two uncontrolled crossing facilities proposed at roundabout No. 4.

6 No. Bus stops and sustainable transport facilities are proposed to be facilitated within the Grange Castle Access Road development. A architecturally landscape designed attenuation lake is proposed to accommodate surface water drainage requirements generated from the proposed road and surrounding hardstanding areas. The design of the attenuation pond and surrounding lands has incorporated measures to enhance the biodiversity and amenity value of this area.

Landscaped entrance and security structures to aesthetically harmonize with existing Grange Castle and Grange Castle South Business Park entrances is additionally proposed.

All works will include a fully integrated landscape plan and will accommodate all the required services under the GCW Access Road footprint. The following services that will be introduced are as follows;

- Gas Main
- Power
- Telecoms
- Storm Water Drainage
- Foul Sewer Drainage
- Watermain
- Public Lighting
- CCTV

The GCW Access Road scheme has been designed to current standards including the Design Manual for Urban Roads and Streets (DMURS), TII DMRB, the National Cycle Manual (NCM) and in accordance with smarter travel objectives.

2 The Planning System and Flood Risk Management Guidelines

2.1 Introduction

In 2009 the Department of Environment, Heritage and Local Government in conjunction with the Office of Public Works published The Planning System and Flood Risk Management: Guidelines for Planning Authorities. The purpose of the Guidelines is to ensure that flood risk is considered by all levels of government when preparing development plans and planning guidelines. They should also be used by developers when addressing flood risk in development proposals. The Guidelines should be implemented in conjunction with the relevant flooding and water quality EU Directives including the Water Framework Directive (River Basin Management Plans (RBMPs)) and the Floods Directive (Catchment Flood Risk Assessment and Management Studies (CFRAMS)).

The core objectives of the Guidelines are to:

- Avoid inappropriate development in areas at risk of flooding.
- Avoid new developments increasing flood risk elsewhere, including that which may arise from surface water run-off.
- Ensure effective management of residual risks for development permitted in floodplains.
- Avoid unnecessary restriction of national, regional or local economic and social growth.
- Improve the understanding of flood risk among relevant stakeholders; and
- Ensure that the requirements of EU and national law in relation to the natural environment and nature conservation are complied with at all stages of flood risk management.

The Guidelines recommend that Flood Risk Assessments (FRA) be carried out to identify the risk of flooding to land, property and people. FRAs should be carried out at different scales by government organisations, local authorities and for proposed developments appropriate to the level of information required to implement the core objectives of the Guidelines. The FRA scales are:

- **Regional Flood Risk Appraisal (RFRA)** - a broad overview of flood risk issues across a region to influence spatial allocations for growth in housing and employment as well as to identify where

flood risk management measures may be required at a regional level to support the proposed growth. Currently being undertaken by the OPW through the CFRAMs process.

- **Strategic Flood Risk Assessment (SFRA)** - an assessment of all types of flood risk informing land use planning decisions. This will enable the Planning Authority to allocate appropriate sites for development, whilst identifying opportunities for reducing flood risk. This SFRA will revisit and develop the flood risk identification undertaken in the RFRA, and give consideration to a range of potential sources of flooding. An initial flood risk assessment, based on the identification of Flood Zones, will also be carried out for those areas, which will be zoned for development. Where the initial flood risk assessment highlights the potential for a significant level of flood risk, or there is conflict with the proposed vulnerability of development, then a site specific FRA will be recommended, which will necessitate a detailed flood risk assessment.
- **Site Specific Flood Risk Assessment (FRA)** - site or project specific flood risk assessment to consider all types of flood risk associated with the site and propose appropriate site management and mitigation measures to reduce flood risk to and from.

2.2 Flood Risk Assessment Approach

The Guidelines recommend that Flood Risk Assessments (FRA) be carried out to identify the risk of flooding to land, property and people. FRAs should use the Source-Pathway-Receptor (S-P-R) Model to identify the sources of flooding, the flow paths of the floodwaters and the people and assets impacted by the flooding. **Figure 2** shows the SPR model that should be adopted in FRAs.

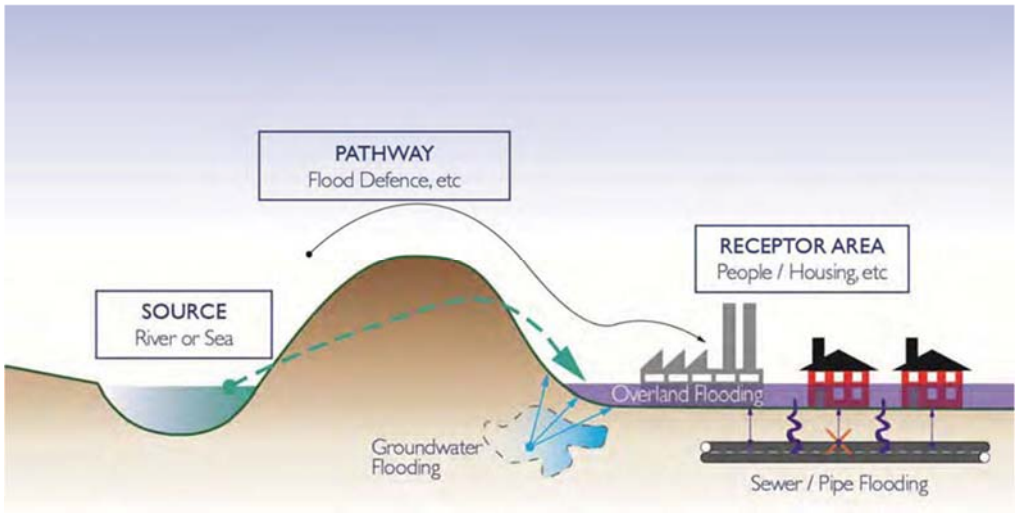

Figure 2 - Flood Risk Assessment Source - Pathway - Receptor Model (SFRA-SDCC Dev. Plan 2016 - 2022)

FRAs should be carried out using the following staged approach;

- **Stage 1 Flood Risk Identification** - to identify whether there may be any flooding or surface water management issues related to either the area of regional planning guidelines, development plans and LAP's or a proposed development site that may warrant further investigation at the appropriate lower level plan or planning application levels.

- **Stage 2 Initial Flood Risk Assessment** - to confirm sources of flooding that may affect a plan area or proposed development site, to appraise the adequacy of existing information and to scope the extent of the risk of flooding which may involve preparing indicative flood zone maps. Where hydraulic models exist the potential impact of a development on flooding elsewhere and of the scope of possible mitigation measures can be assessed. In addition, the requirements of the detailed assessment should be scoped.

- **Stage 3 Detailed Flood Risk Assessment** - to assess flood risk issues in sufficient detail and to provide a quantitative appraisal of potential flood risk to a proposed or existing development or land to be zoned, of its potential impact on flood risk elsewhere and of the effectiveness of any proposed mitigation measures.

This report addresses the requirements for both stages 1 and 2 respectively.

2.3 Types of Flooding

There are two main sources of flooding, inland and coastal. Inland flooding is caused by prolonged and/or intense rainfall. This results in fluvial, pluvial or ground water flooding acting independently or in combination. Coastal flooding is not a concern for SDCC as it is a landlocked county, however a combination of high flow in rivers and a high tide may prevent the river from discharging into the sea thus increasing water levels inland causing rivers to overtop their banks.

- Fluvial flooding occurs when a river overtops its banks due to a blockage in the channel or the channel capacity is exceeded.
- Pluvial flooding occurs when overland flow cannot infiltrate into the ground, when drainage systems exceed their capacity or are blocked and when the water cannot discharge due to a high water level in the receiving watercourse.
- Groundwater flooding occurs when the level of water stored in the ground rises as a result of prolonged rainfall to meet the ground surface and flows out over it.

2.4 Flood Risk

Guidelines state flood risk is a combination of the likelihood of flooding and the potential consequences arising. Flood risk is expressed as:

Flood risk = Likelihood of flooding x Consequences of flooding

The Guidelines define the likelihood of flooding as the percentage probability of a flood of a given magnitude as occurring or being exceeded in any given year. A 1% probability indicates the severity of a flood that is expected to be exceeded on average once in 100 years, i.e. it has a 1 in 100 (1%) chance of occurring in any one year. **Table 1.0** shows flood event probabilities used in flood risk management.

Annual Exceedance Probability (%)	Return Period (Years)
50	2
10	10
1	100

0.1	1000

Table 1.0 - Flood Event Probabilities

The consequences of flooding depend on the hazards associated with the flooding (e.g. depth of water, speed of flow, rate of onset, duration, wave action effects, water quality), and the vulnerability of people, property and the environment potentially affected by a flood (e.g. the age profile of the population, the type of development, presence and reliability of mitigation measures etc.).

2.5 Flood Zones

The Guidelines recommend identifying flood zones which show the extent of flooding for a range flood event probabilities. The Guidelines identify three levels of flood zones:

- **Flood Zone A** - where the probability of flooding from rivers and the sea is highest (greater than 1% or 1 in 100 for river flooding or 0.5% or 1 in 200 for coastal flooding).
- **Flood Zone B** - where the probability of flooding from rivers and the sea is moderate (between 0.1% or 1 in 1000 and 1% or 1 in 100 for river flooding and between 0.1% or 1 in 1000 year and 0.5% or 1 in 200 for coastal flooding).
- **Flood Zone C** - where the probability of flooding from rivers and the sea is low (less than 0.1% or 1 in 1000 for both river and coastal flooding). Flood Zone C covers all areas of the plan which are not in zones A or B.

The flood zones are generated without the inclusion of climate change factors. The flood zones only account for inland and coastal flooding. They should not be used to suggest that any areas are free from flood risk as they do not account for potential flooding from pluvial and groundwater flooding. Similarly, flood defences should be ignored in determining flood zones as defended areas still carry a residual risk of flooding from overtopping, failure of the defences and deterioration due to lack of maintenance.

2.6 Climate Change

Climate Change is expected to increase flood risk. It could lead to more frequent flooding and increase the depth and extent of flooding. Due to the uncertainty surrounding the potential effects of climate change a precautionary approach is recommended in the Guidelines:

- Recognise that significant changes in the flood extent may result from an increase in rainfall or tide events and accordingly adopt a cautious approach to zoning land in these potential transitional areas.
- Ensure that the levels of structures designed to protect against flooding, such as flood defences, land-raising or raised floor levels are sufficient to cope with the effects of climate change over the lifetime of the development they are designed to protect.
- Ensure that structures to protect against flooding and the development protected are capable of adaptation to the effects of climate change when there is more certainty about the effects and still time for such adaptation to be effective.

2.7 Sequential Approach

The Guidelines recommend using a sequential approach to planning to ensure the core objectives are implemented. Development should be avoided in areas at risk of flooding, where this is not

possible, a land use that is less vulnerable to flooding should be considered. If the proposed land use cannot be avoided or substituted a Justification Test must be applied and appropriate sustainable flood risk management proposals should be incorporated into the development proposal. **Figure 3** shows the sequential approach principles in flood risk management. **Table 2.0 and Table 3.0** outline recommendations from the Guidelines for the types of development that would be appropriate to each flood zone and those that would be required to meet the Justification Test.

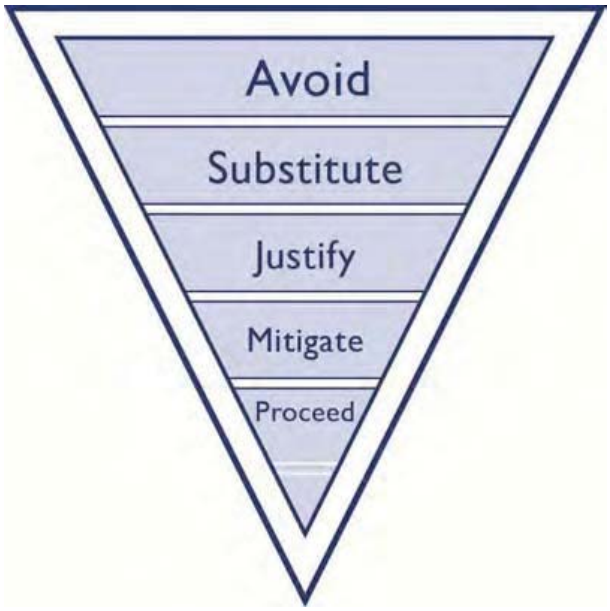

Figure 3 - Sequential Approach Principles in Flood Risk Management

	Flood Zone A	Flood Zone B	Flood Zone C
Highly vulnerable development	Justification Test	Justification Test	Appropriate
Less vulnerable development	Justification Test	Appropriate	Appropriate
Water compatible development	Appropriate	Appropriate	Appropriate

Table 2.0 - Matrix of vulnerability versus flood zone to illustrate appropriate development and that required to meet the Justification Test.

The Justification Test is used to assess the appropriateness of developments in flood risk areas. The test is comprised of two processes. The first is the Plan-making Justification Test and is used at the plan preparation and adoption stage where it is intended to zone or otherwise designate land which is at moderate or high risk of flooding. The second is the Development Management Justification Test and is used at the planning application stage where it is intended to develop land at moderate or high risk of flooding for uses or development vulnerable to flooding that would generally be inappropriate for that land.

Vulnerability Class	Land uses and types of development which include*:
Highly vulnerable development (including essential infrastructure)	• Garda, ambulance and fire stations and command centres required to be operational during flooding; • Hospitals; • Emergency access and egress points; • Schools; • Dwelling houses, student halls of residence and hostels; • Residential institutions such as residential care homes, children's homes and social services homes; • Caravans and mobile home parks; • Dwelling houses designed, constructed or adapted for the elderly or, other people with impaired mobility; and • Essential infrastructure, such as primary transport and utilities distribution, including electricity generating power stations and sub-stations, water and sewage treatment, and potential significant sources of pollution (SEVESO sites, IPPC sites, etc.) in the event of flooding.
Less vulnerable development	• Buildings used for: retail, leisure, warehousing, commercial, industrial and non-residential institutions; • Land and buildings used for holiday or short-let caravans and camping, subject to specific warning and evacuation plans; • Land and buildings used for agriculture and forestry • Waste treatment (except landfill and hazardous waste); • Mineral working and processing; and • Local transport infrastructure.
Water-compatible development	• Flood control infrastructure; • Docks, marinas and wharves; • Navigation facilities; • Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location; • Water-based recreation and tourism (excluding sleeping accommodation); • Lifeguard and coastguard stations; • Amenity open space, outdoor sports and recreation and essential facilities such as changing rooms; and • Essential ancillary sleeping or residential accommodation for staff required by uses in this category (subject to a specific warning and evacuation plan).
*Uses not listed here should be considered on their own merit	

Table 3.0 - Classification of vulnerability of different types of development

3 Flood Risk Identification

3.1 Flood Risk Identification

The purpose of Stage 1 – Flood Risk Identification is to identify whether there may be any flooding or surface water management issues related to the proposed access road development site that may warrant further investigation at the appropriate lower level plan or planning application levels. If there is a potential flood risk issue then, in accordance with 'The Planning System and Flood Risk Management – Guidelines for Planning Authorities (DOEHLG 2009)', the flood risk assessment procedure should move to 'Stage 2 – Initial flood risk assessment'. If no potential flood risk is identified during Stage 1 then the overall flood risk assessment can be concluded. The following information and data was collated as part of the screening assessment for the proposed GCW Access Road corridor.

As mentioned in section 1.1 the proposed GCW Access Road is located within the townlands of Milltown and Loughtown Upper is bounded to the north by the Grand Canal which travels east to Grand Canal Dock. The current use for the existing lands in which the proposed GCW Access Road is situated is functioning predominately as both arable and pastoral farming.

The general topography of these lands fall from Peamount reservoir and Hospital located south and central to the proposed GCW Access Road and is considered the highest point of the surrounding area set at 80m above Malin Head Irish Grid reference system. From this location, the site gradually falls in a northerly, north westerly and north easterly direction towards the Grand Canal with a small portion falling in a south westerly direction.

The footprint of the proposed GCW Access Road runs east to west through the northern section of the surrounding arable lands footprint (EE zoned lands). Therefore the catchment area for the proposed GCW Access Road is made up of the surrounding lands as highlighted below:

- South to North West Falling Lands
  The overall level difference between the highest (Peamount Reservoir) and lowest point attributed to the furthest north westerly point of the surrounding lands is 12metres.

- South to North Falling Lands
  The overall level difference between the highest (Peamount Reservoir) and lowest point attributed to the furthest northern point of the site is 4m.

- South to North East Falling Lands
  The overall level difference between the highest (Peamount Reservoir) and lowest point attributed to the furthest north easterly point of the site is 13m.

3.2 Hydrology of the Surrounding Area

Contained within the existing Milltown lands attributed to the proposed GCW Access Roads catchment area is an existing spring located just north east of the existing Peamount reservoir site. Groundwater surging up through this spring has been identified as the commencement of the Lucan (Tobermaclugg) stream. This stream then continues in a northerly direction, traverses the intended footprint of the proposed GCW Access Road and traverses under the Grand Canal, eventually discharging into an

estuary attributed to the Liffey River. A culvert system is required to be constructed beneath the proposed GCW Access Road to accommodate this stream.

Contained within Grange Castle Business Park is the Griffeen River which was diverted from its natural course in 2004/2005 to ultimately maximise site plots within the Business Park and to provide for necessary flood capacity alleviation works. The Griffeen River is located approximately 200m to the east of the proposed GCW Access Roads' junction with the R120 which is its closest point. No diversionary works are required to facilitate the existing Griffeen River with respect to the proposed lands.

Located approximately 2km from the western boundary of the proposed GCW Access Road is the Shinkeen stream. Upon review it has been concluded that the Shinkeen Stream poses no direct threat with regards to fluvial flooding as the footprint of the stream channel is deemed to not be in close proximity to the proposed GCW Access Road footprint. For further details with regards to the location of each of the aforementioned streams/rivers, please see **Figure 4** below which has been extracted from Environmental Protection Agency (EPA) Map Viewer website.

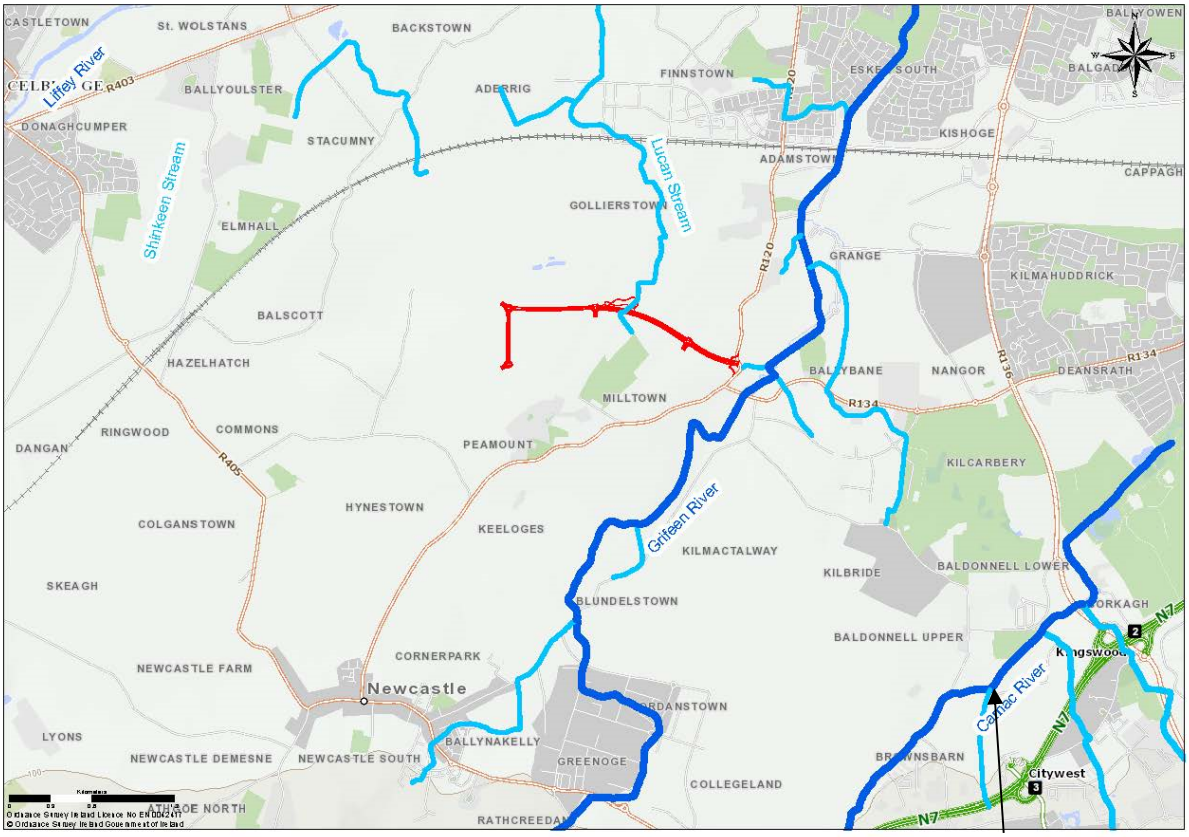

Figure 4 - of Existing watercourses that fall within footprint and in close proximity of the proposed GCW Access Road (EPA Map Viewer)

3.3 OPW Flood Hazard Maps Website

The examination of recorded flood events as detailed on OPW Flood Hazard Maps Website www.floodmaps.ie in relation to available historical or anecdotal information on any flooding incidences or occurrence in the vicinity of the proposed GCW Access Road corridor. It is important to note that www.floodmaps.ie is managed by OPW and Local Authorities and is not an exhaustive archive of flood events. The interactive mapping website displays two recorded flood events which occurred at Peamount R134/R120 Junction (Nov 2004) and Peamount Road (April 2005). As previously mentioned, the proposed Nangor Road/R120 Realignment project is imminent. This project encompasses the construction of the new R120/Nangor Road Junction which will ultimately negate any of the historic flooding issues identified in the OPW interactive flood mapping discussed and identified above in relation to the November 2004 flood event.

With regards to the Peamount Road flood event (April 2005), this was deemed to be insignificant as it is not considered to be in close proximity of the proposed GCW Access Roads footprint. For further details, please see **Figure 5** displayed below. Furthermore, please find reports/meeting minutes attributed to the two identified flooding events located in **Appendix B** of this report.

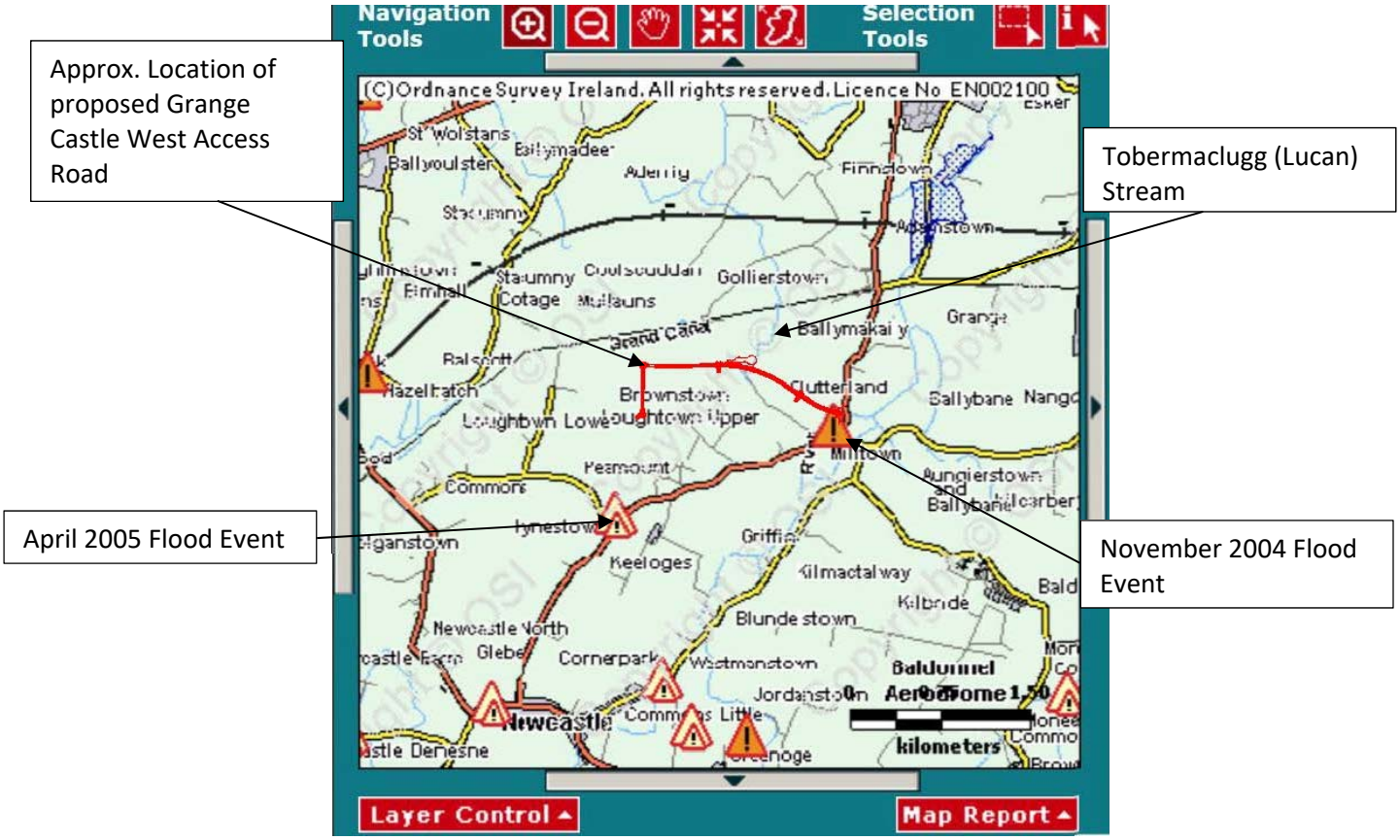

Figure 5 - National Flood Hazard Mapping (OPW)

3.4 Geology, Water and Hydrology

Geological and Hydrological Information obtained from the Geological Survey of Ireland (GSI) are attached in **Appendix C** of this report.

The GSI Bedrock 100K Solid Geology for the proposed GCW Access Road is found to be Lucan Formation (Dark Limestone & Shale - Formation ranges from 300m to 800m in Thickness).

The National Draft Bedrock Aquifer identified within the proposed GCW Access Roads footprint has been described as a 'Locally Important Aquifer - Bedrock which is moderately productive only in local zones.

The geological society of Ireland (GSI) maintain a database of ground investigation works undertaken and keep records of borehole and trial pit data. It was found that no boreholes or trial pit testing have been undertaken to date within the footprint for the proposed GCW Access Road.

As deemed necessary, a full Ground Investigation contract shall be procured in the future to establish existing ground conditions attributed to the proposed GCW Access Road.

3.5 Hydrometric Gauging Stations

CSEA have reviewed the hydrometric information available from the OPW/EPA in proximity to the proposed GCW Access Road site. It has been determined that there was no data available that would have been of any major benefit to this study.

3.6 OSI Historical Mapping

The 6" (1837 – 1842) and the 25" (1888 – 1913) historical maps have been examined (See Figures 6 and 7). Historical mapping is often a very useful source of information for assessing the flood history of an area. The historical maps examined include the 'Griffeen River' which was diverted from its natural course in 2004/2005 to ultimately maximise site plots within Grange Castle Business Park and to provide for necessary flood capacity alleviation works. There is no indication of historical flooding upon review of both (**Figures 6** & **7** below) OSI Historical Maps.

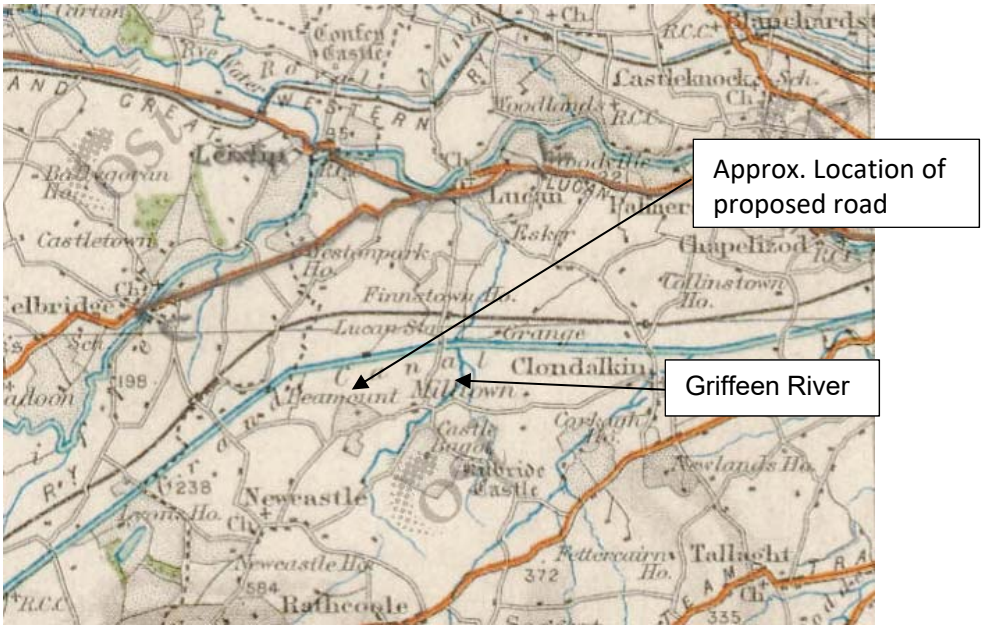

Figure 6 - 25" Historical Mapping (Myplan.ie)

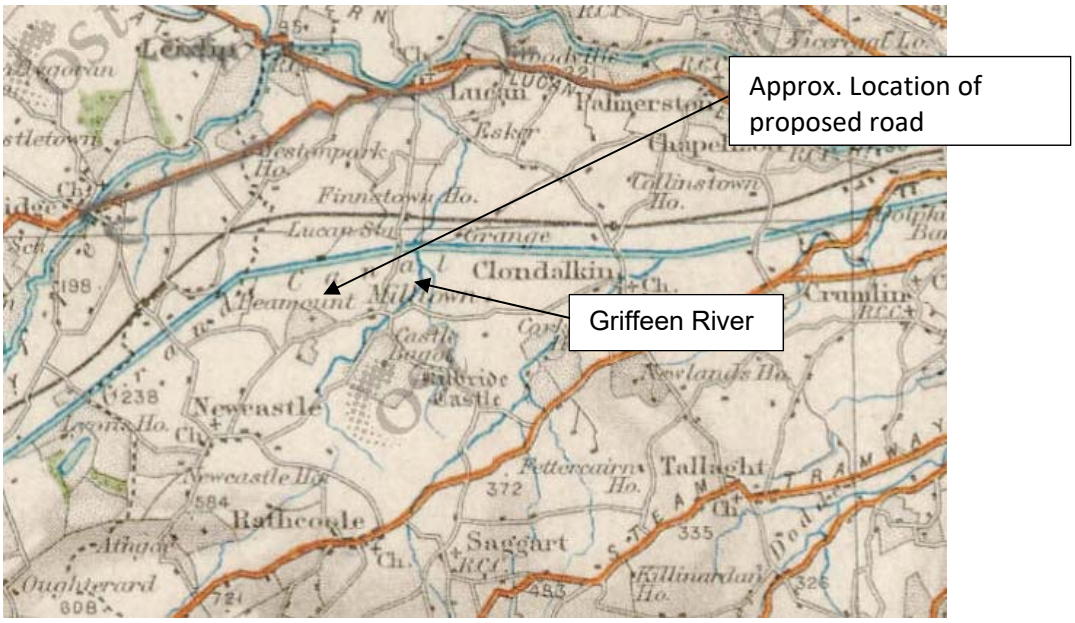

Figure 7 - 6" Historical Mapping (Myplan.ie)

3.7 Walkover Survey

On the 20th April 2018 Clifton Scannell Emerson Associates visited the proposed GCW Access Roads site and its surrounding environment to establish any potential sources of flooding, likely routes of flood waters and the sites key features. The following items was established on site:

- The footprint of the proposed GCW Access Road runs east to west through the northern section of the surrounding arable lands footprint (EE zoned lands).
- The site gradually falls in a northerly, north westerly and north easterly direction towards the Grand Canal with a small portion falling in a south westerly direction.
- Crops in surrounding lands had not yet been harvested.
- Dry weather conditions experienced during site walkover.
- The commencement location of the Tobermaclugg stream (spring) was partially identified during site visit.
- The Tobermaclugg stream's route through the arable lands was conveyed through drainage ditch lines and formed the existing farmland field boundaries in the area.
- These ditch lines had shallow running/stagnate water and was maintained to a reasonable standard.
- The Tobermaclugg stream crosses the Grand Canal via a manmade reinforced concrete underflow.

3.8 Initial Estimates of Flood Zone and Flood Risk

3.8.1 Indicative Flood Zone Maps

As discussed previously, it has been determined that the Tobermaclugg stream traverses the footprint of the proposed GCW Access Road and surrounding lands. An extract of the fluvial flood extent maps from the 'Lucan to Chapelizod' Area is shown in Figure 8, the full map can be seen in **Appendix D** of this report. Upon inspection of the fluvial 'Lucan to Chapelizod' flood extent map, it is suggested that the Tobermaclugg stream is not susceptible to flooding for the 10% (1 in 10), 1% (1 in 100) or 0.1% (1 in 1000) fluvial AEP events. With regards to the node ID labels displayed in **Figure 8** below, the following and most notable (node 09TOWN00502 represents the commencement of the Tobermaclugg stream) information has been yielded from said fluvial 'Lucan to Chapelizod' flood extent map which is tabulated below as follows;

Node Label	Water Level (10% AEP)	Flow (m3/s) 10% AEP	Water Level (1% AEP)	Flow (m3/s) 1% AEP	Water Level (0.1% AEP)	Flow (m3/s) 0.1% AEP
09TOWN00502	72.58	0.01	72.62	0.02	72.66	0.03

With regards to the existing topography attributed to the proposed GCW Access Road footprint, it has been determined that in the event that a 1 in 100 or 1 in 1000 year event was to occur, that the existing Tobermaclugg stream channel, as displayed in Figure 8 below, would be capable of conveying and containing raised water levels yielded from either storm event materialising presently and/or into the future.

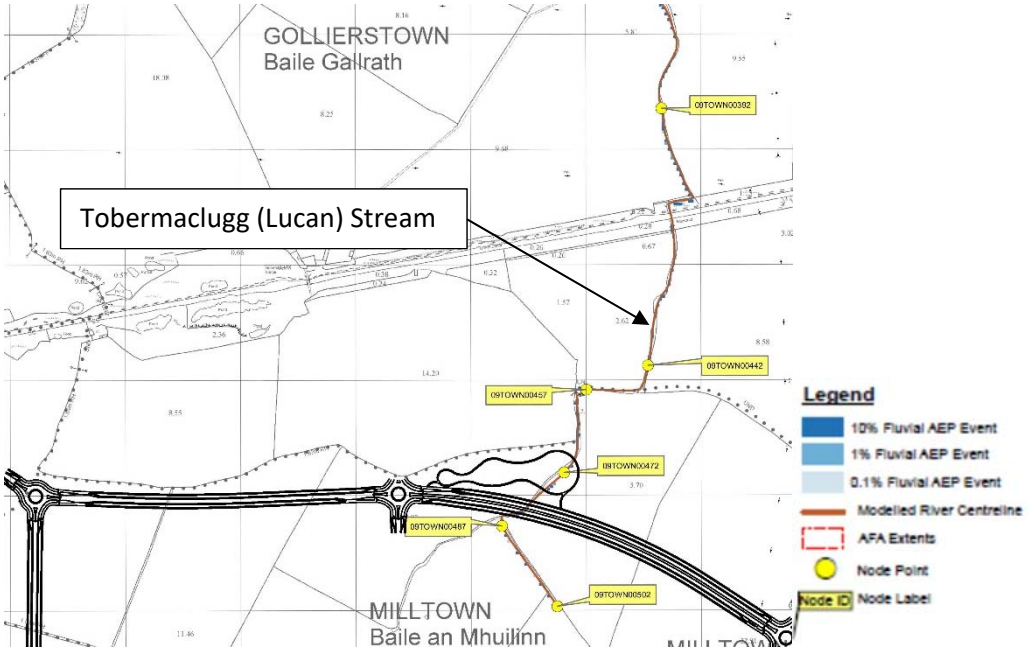

Figure 8 Extract from 'Lucan to Chapelizod' CFRAM maps of portion of the Grange Castle West site

Further inspections were undertaken based around RPS's Fluvial Flood Zone Mapping that was incorporated within SDCC's Strategic Flood Risk Assessment adopted within South Dublin's County Development Plan 2016-2022. Information yielded from the above referenced RPS flood zone mapping ultimately places the existing Tobermaclugg stream and the proposed GCW Access Road footprint

outside flood Zones A & B. For further details, please refer to **Appendix E** with regards to RPS Fluvial Flood Zone mapping drawing.

An initial assessment of the flood risk for the proposed GCW Access Road and catchment area is made with reference to existing published information provided by the Office of Public Works (OPW). This data is comprised of (i) Preliminary flood risk assessment mapping (PFRA) and (ii) records of historical flood events in the environs and the periphery elements of the proposed GCW Access Road.

The PFRA mapping (See **Appendix F**) is based on broad scale simple analysis and cannot be deemed accurate for any specific location. A review of Map 237 for the site environs shows that there is little or no risk that the proposed GCW Access Road footprint would be subjected to flooding for the 1% annual exceedance potential (AEP) event (1 in 100 year return period).

When assessing and reviewing the OPW CFRAM (Catchment Flood Risk Management Assessment and Management) Fluvial Flood Extent Maps (see **Appendix D**) for Baldonnel, Lucan to Chapleizod and Hazlehatch maps for the 0.1% AEP event (1 in 1000), 1% AEP Event (1 in 100) and 10% AEP event (1 in 10), it was apparent that there is no risk that the proposed GCW Access Road footprint would be subject to flooding.

When assessing and reviewing the OPW CFRAM Fluvial AEP Flood Depth Maps (see **Appendix G**) for Baldonnel, Lucan to Chapleizod and Hazlehatch maps for the 0.1% AEP event (1 in 1000), 1% AEP Event (1 in 100) and 10% AEP event (1 in 10), again it has been assessed that there is no risk that the proposed GCW Access Road footprint would be subject to flooding.

Upon review of the OPW 'Fluvial Risk to the Environment' (see **Appendix H)** for Baldonnel, Lucan to Chapleizod and Hazlehatch maps, it has been assessed that the proposed GCW Access Roads footprint contains no risk to it surrounding environs.

It has also been established that no tidal/coastal flood maps were generated for the site study area under consideration and therefore no further information was available to be assessed and included in this report.

3.8.2 Flood Zone

In this Strategic Flood Risk Assessment the precautionary principals advocated in The Planning System and Flood Risk Management Guidelines was followed. There is no further evidence to suggest that the proposed GCW Access Roads footprint has flooded in the past. Furthermore, the indicative Lucan to Chapelizod, Hazelhatch and Baldonnell PFRA and CFRAM maps and the SFRA for South Dublin County Development Plan 2016 to 2022 places the proposed GCW Access Roads footprint outside both Flood Zone A (i.e. an area likely to suffer flooding in a 1 in 100 year fluvial event) and Flood Zone B (i.e. an area likely to suffer flooding in a 1 in 1000 year fluvial event).

Therefore CSEA have concluded that the proposed GCW Access Roads footprint is located outside both Flood Zone A (i.e. an area likely to suffer flooding in a 1 in 100 year fluvial event) and Flood Zone B (i.e. an area likely to suffer flooding in a 1 in 1000 year fluvial event).

4 Initial Flood Risk Assessment

4.1 Source of Flooding

When carrying out a Strategic Flood Risk Assessment one should consider all the potential flood risks and sources of flood water at the site. In general the relevant flood sources are:

i. **Fluvial:**
Fluvial Flooding is the result of a river exceeding its capacity and excess water spilling out onto the adjacent floodplain. A flood risk in the vicinity of proposed GCW Access Road from fluvial sources does exist.

ii. **Pluvial:**
Pluvial flooding is the result of rainfall-generated overland flows which arise before run-off can enter any watercourse or sewer. It is usually associated with high intensity rainfall. Flood risk from pluvial sources is not thought to be significant at this site due to the topography of the site and the existing drainage characteristics of the subsoil.

iii. **Coastal:**
Coastal flooding is the result of sea levels which are higher than normal and result in sea water overflowing onto the land. It is not thought that there is a significant risk of coastal flooding with respect to the location of the proposed site.

4.2 Flood Zone

With reference to Section 3.8.2 of this report, it has been determined that the proposed GCW Access Road footprint is located outside Flood Zones A & B. On this basis, CSEA have taken no further action with regards to justification test attributed to the proposed GCW Access Road.

4.3 Vulnerability

Table 3.1 of the Planning System and Flood Risk Management Guidelines for Planning Authorities gives a detailed classification of vulnerability of different types of development.

This Strategic Flood Risk Assessment has been prepared based on the land use of proposed GCW Access Road to be classified as local transport infrastructure i.e. 'Less Vulnerable Developments' Zone B category. Based on Table 3.2 identified within The Planning System and Flood Risk Management Guidelines, a justification test is therefore not required to be undertaken for the proposed GCW Access Road site.

At this stage it is worth noting that as discussed in section 1.1, the land in which the proposed GCW Access Road is located has recently (May 2018) been rezoned from ***RU*** *- To protect and improve rural amenity and to provide for the development of agriculture' to '****EE*** *- To provide for enterprise and employment uses'*. Now that the surrounding lands have been rezoned, the lands will potentially be carved into land parcels of various sizes and shapes. Each owner of said land parcels will carry out their own Site Specific Flood Risk Assessment at planning stage based on the type of industry proposed and the infrastructure required to bring it into full service.

4.4 Potential Impact on Flooding Elsewhere

Upon assessing the PFRA maps, OPW CFRAM maps, the Strategic Flood Risk Assessment for SDCC Development Plan 2016 to 2022 and OPW Interactive flood maps for the proposed GCW Access Road footprint, it is CSEA's opinion that there is little or no evidence to suggest that there is any risk of flooding for both a 1 in 100 and a 1 in 1000 fluvial event.

Furthermore and due to the fact that the proposed GCW Access Road footprint falls outside flood zones A and B respectively, it is CSEA's opinion that any potential flooding to lands outside the footprint of the proposed GCW Access Road will not be adversely affected if and when the proposed GCW Access Road is constructed and brought into full service.

Through detailed design, the introduction of sustainable drainage systems, flood risk management and proper planning procedures, any potential flood risks to lands/properties located outside the proposed GCW Access Road footprint will ultimately be avoided.

4.5 Flood Risk Management

Flood risk management under the EU Floods Directive aims to minimise the risks arising from flooding to people, property and the environment. Minimising risk can be achieved through structural measures that block, restrict or divert the pathways of floodwaters, such as river defences or non-structural measures that are often aimed at reducing the vulnerability of people and communities such as flood warning, effective flood emergency response, or resilience measures for communities or individual properties.

With regards to the proposed GCW Access Road, it is not anticipated that any of the above referenced measures will need to be introduced to minimise flood risks to any of the existing lands or properties that currently fall within the catchment area of the proposed GCW Access Road.

Furthermore in addition to this study, it will be the responsibility of each landowner who purchases lands for future development within this EE zoned area to carry out their own Site Specific Flood Risk Assessment during the planning stage attributed to that specific development.

5 Conclusion

The proposed GCW Access Road's footprint has been assessed for a flood risk using all available sources of information as summarised in the following paragraphs.

Inspections were undertaken based around RPS's Fluvial Flood Zone Mapping that was incorporated within SDCC's Strategic Flood Risk Assessment adopted within South Dublin's County Development Plan 2016 -2022. Information yielded from the above referenced RPS flood zone mapping ultimately places the proposed GCW Access Road footprint outside flood Zones A & B.

The PFRA mapping shows that there is little or no risk that the proposed GCW Access Road footprint would be subjected to flooding for the 1% annual exceedance potential (AEP) event (1 in 100 year return period).

When assessing and reviewing the OPW CFRAM (Catchment Flood Risk Management Assessment and Management) Fluvial Flood Extent Maps for Baldonnel, Lucan to Chapleizod and Hazlehatch maps for the 0.1% AEP event (1 in 1000), 1% AEP Event (1 in 100) and 10% AEP event (1 in 10), it was noted that there is no risk that the proposed GCW Access Road footprint would be subject to flooding.

When assessing and reviewing the OPW CFRAM Fluvial AEP Flood Depth Maps for Baldonnel, Lucan to Chapleizod and Hazlehatch maps for the 0.1% AEP event (1 in 1000), 1% AEP Event (1 in 100) and 10% AEP event (1 in 10), again it has been assessed that there is no risk that the proposed GCW Access Road footprint would be subject to flooding.

There is no further evidence to suggest that the proposed GCW Access Road footprint have flooded in the past. Furthermore, the indicative Lucan to Chapelizod, Hazelhatch and Baldonnell PFRA & CFRAM maps and the SFRA for South Dublin County Development Plan 2016 to 2022 places the proposed GCW Access Road footprint outside both Flood Zone A (i.e. an area likely to suffer flooding in a 1 in 100 year fluvial event) and Flood Zone B (i.e. an area likely to suffer flooding in a 1 in 1000 year fluvial event).

This Strategic Flood Risk Assessment has been prepared based on the existing zoning objectives where the vulnerable classification for the proposed GCW Access Road would duly fall under the 'Less Vulnerable Developments' Zone B category.

In addition it is worth noting, now that the surrounding lands have been rezoned to EE, the lands will potentially be carved into land parcels of various sizes and shapes. Each owner of said land parcels will carry out their own Site Specific Flood Risk Assessment at planning stage based on the type of industry proposed and the infrastructure required to bring it into full service.

Appendix A

Comhairle Contae
Átha Cliath Theas
South Dublin County Council

GRANGE CASTLE WEST
ACCESS ROAD LAYOUT

Clifton Scannell Emerson
Associates

MILLTOWN
Baile an Mhuilinn

CLUTTERLAND

LOUGHTOWN UPPER

Golf Course

Reservoir (Cov)

Church

Catholic Church

Peamount Hospital

Milltown

Ramp

Car Park

Griffeen River

Appendix B

SOUTH DUBLIN COUNTY COUNCIL
COMHAIRLE CHONTAE ATHA CLIATH THEAS

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Lar an Bhaile, Tamhlacht
Baile Atha Cliath 24

Telefon: 01-4149000
Facs: 01-4149101

ENVIRONMENTAL SERVICES DEPARTMENT
P.O. Box 4122
Town Centre, Tallagh
Dublin 24

Telephone: 01-4149000
Fax: 01-4149101

South Dublin County Report on Flooding 5th & 6th November, 2000

Rainfall

- Rainfall varied across the County from the 76mm recorded at Baldonnell to 137mm recorded at Boharnabreena for the period 9.00a.m. Sunday to 9.00a.m. Monday.

Geography of South Dublin

- South Dublin County Council Administrative Area is divided into 3 main catchment areas, drained respectively by the Griffeen, Camac and Dodder Rivers.

- The most serious flooding events occurred in the Griffeen Catchment area. Drainage works carried out post '93, Camac Phase 1, effectively served to protect the Camac Catchment from serious flooding and thus protected urban areas downstream of Corkagh Park, in particular Clondalkin.

  Some flooding occurred in the Dodder Catchment at Dodder Park Road and Lower Dodder Road, also the Tallagh Stream, a tributary of the Dodder.

  To the west of the Griffeen Catchment some flooding occurred in areas that ultimately drain to the Liffey via a series of watercourses and small streams flowing northwards through Kildare in the Newcastle/Hazelhatch area.

Details of flooding

- Serious flooding occurred in the Griffeen Catchment particularly in 2 areas.

  To the north at its confluence with the Liffey, the Griffeen river caused considerable flooding in the old village of Lucan.

  The second area affected by serious flooding was in the Griffeen Valley just to the north of the Dublin Cork Railway line in the new housing areas of Old Forge and Grange Manor estates.

Chronology & Response

- South Dublin County Council received its first emergency call at 12.30p.m. on 5.11.00.

  Consequent on this call and following inspections by Supervisory personnel, Drainage Department work crews were mobilised at 2.00p.m. on the 5.11.00. Work crews from the Council's Roads, Cleansing and Housing sections subsequently joined in the emergency works. These squads remained on duty from 2.00p.m. 5.11.00 to 3.00a.m. on 6.11.00 and from 8.00a.m. on 6.11.00 to 1.00a.m. on 7.11.00 to deal with the various problems arising.

  On Sunday evening and Sunday night, squads were engaged in the cleaning or river and culvert screens to facilitate flows, filling, distribution of sandbags to protect vulnerable areas and freeing blockages throughout the system caused by debris.

During this period excavations were carried out to lower the bank of the Camac at Corkagh Park to allow the pitches to serve as attenuation ponds.

- Early on Monday morning (6.11.00) at approximately 4.00a.m., the Griffeen broke its banks at the northern extremity of Griffeen Valley Park (north of the N4) and flooded Lucan Village.

  Between 4.00a.m. and 7.00a.m. on Monday the Griffeen also flooded the estates of Old Forge and Grange Manor in the South Lucan Area.
  This flooding persisted throughout Monday and the Griffeen was only returned to its channel at approximately 8.00p.m. on Monday night.

Emergency Plan

- The extent of the storm and the flooding caused local emergency plans to be put into operation. There were considered adequate to deal with the situation which developed. It was not considered necessary to declare a major emergency in South Dublin due to the very specific and confined areas affected.

Road Closures
The only national route closed was the national secondary road N81 at Jobstown (11.00p.m. 5.11.00 – 4.00p.m. 6.11.00).

Regional and Local Roads closed included:

Adamstown Road at Lucan Village (4.00a.m. 6.11.2000 – 9.11.2000)
Lucan Ballowen Road (9.00a.m. – 4.00p.m. 6.11.2000)
New Link Road at Grange Manor (8.00a.m. – 8.00p.m. 6.11.2000)
Adamstown Road Flooded but passable.
Alymer Road (4.00a.m. – 8.00p.m. 6.11.2000)
Lucan Peamount (Polly Hops) (4.00a.m. – 8.00p.m. 6.11.2000)
College Lane (8.00a.m. – 8.00p.m. 6.11.00 – passable)
Hatch road flooded – passable
Belgard Road flooded – passable
Fortunestown Lane (8.00a.m. – 8.00p.m.)
Barnhill Road (Weirview Cottages) 4.00a.m. 6.11.2000 – 9.11.2000

Properties Flooded

Residential
12 houses at Avonmore Park (Nos. 7 – 18)
4 No. houses, Kiltipper Road, Tallaght (individually named)
25 No. houses, Old Forge Estate, Lucan
18 No. houses, Grange Manor Park/Drive, Lucan
House beside 'Griffeen Valley Nursing Home', Arthur Griffith Park, Lucan
House to rear of 'Courtneys Pub', Lucan Village
2 No. Bungalows Newcastle Village
2 No. Bungalows beside Newcastle Treatment Works
2 No. Houses, Knocklyon Avenue, Firhouse
3 No. Houses, Edmonstown Road (individually named)
15 No. Houses, Woodview Cottages, Rathfarnham
1 house beside Chemserve on Edmonstown Road

'Homeville' opposite Mount Carmel Park, Firhouse3 Houses at Hazelhatch

Total number of residential properties known to be flooded: 90.

Commercial
'Virtus Ltd' Haydens Lane, Lucan

All the following in Lucan Village:
Centra Supermarket
Village Oriental Food Stores
Spice Inn Chinese Fast
Creative Flowers
Irish Permanent
O'Neills Pub
Kennys Pub
Courtneys Pub
Bank of Ireland
Pat Toolan Bookmaker
Carrolls Butchers

Also:
Jobstown Inn, Jobstown, Tallaght
'Johns Takeaway' Walkinstown Roundabout
'Motorworld' Robinhood Industrial Estate and adjoining premises
Chemserve on Edmondstown Road
'Eurometals' Mill Road, Saggart

Total number of commercial known to be flooded: 17.

The above are the premises which have come to the attention of this South Dublin County Council to date.

Evacuations

- No large-scale evacuations were required. However in a number of limited cases South Dublin County Council personnel helped to evacuate houses, a particular example being an expectant mother in the Old Forge estate.
- These evacuations were from Private Residential houses.
- No alternative accommodation was either requested or provided.
- We do not consider that anyone is still evacuated due to the flooding.

General

- No water treatment works were affected due to the flooding.
- Certain sewerage systems were affected by the flooding:

(a) The treatment Plant at Newcastle was submerged, preventing its operations for 24 hours.

(b) The Lucan Low Level Pumping Station on the Adamstown Road was flooded. As a result the pump motors were burnt out and need to be replaced. Alternative pumping arrangements will be in place by 10.11.00.

ESB International

MINUTES OF MEETING

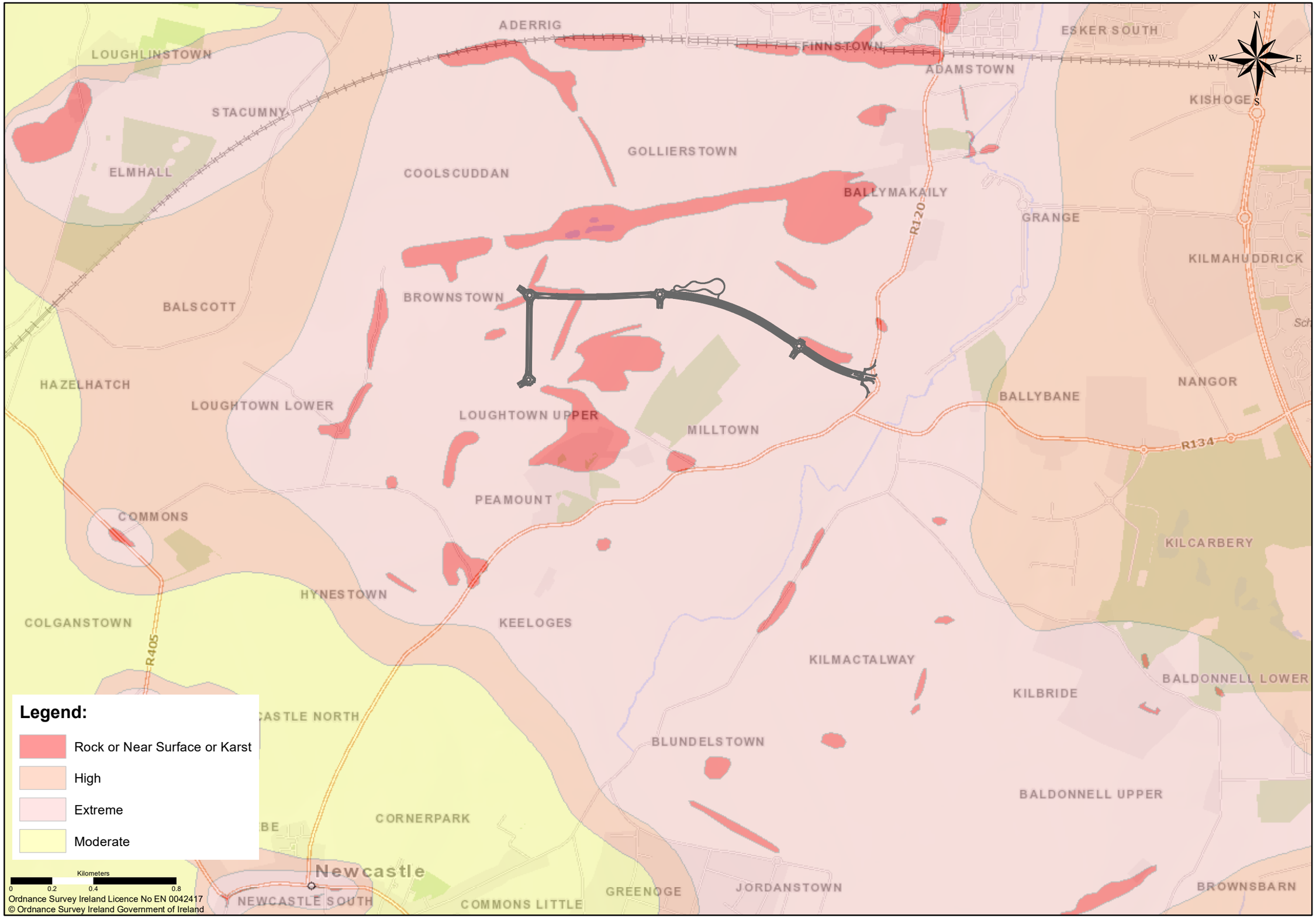
Document No. / File Reference:	P4D403A – F310 – 030 – 004	
Project No.:	PD403A	
Project Title:	OPW Flood Hazard Mapping – Phase 1	
Purpose of Meeting:	South Dublin County Council – Areas of flooding – Drainage Division and Roads(North County)	
Participating:	Senior Executive Engineer Drainage Senior Engineer Env Serv (part-time) Roads Engineer Search Manage)	South Dublin County Council (SDCC) South Dublin County Council South Dublin County Council ESBI
Venue:	South Dublin County Council Offices, Tallaght	
Date(s) of Meeting:	25/04/05	
Copies to:	SDCC	
Status:	**Final**	
Compiled by:	Search Manager	
Approved for ESBI:	Search Manager	
Approved for South Dublin County Council	SEE Environmental Services Drainage	
Date:		

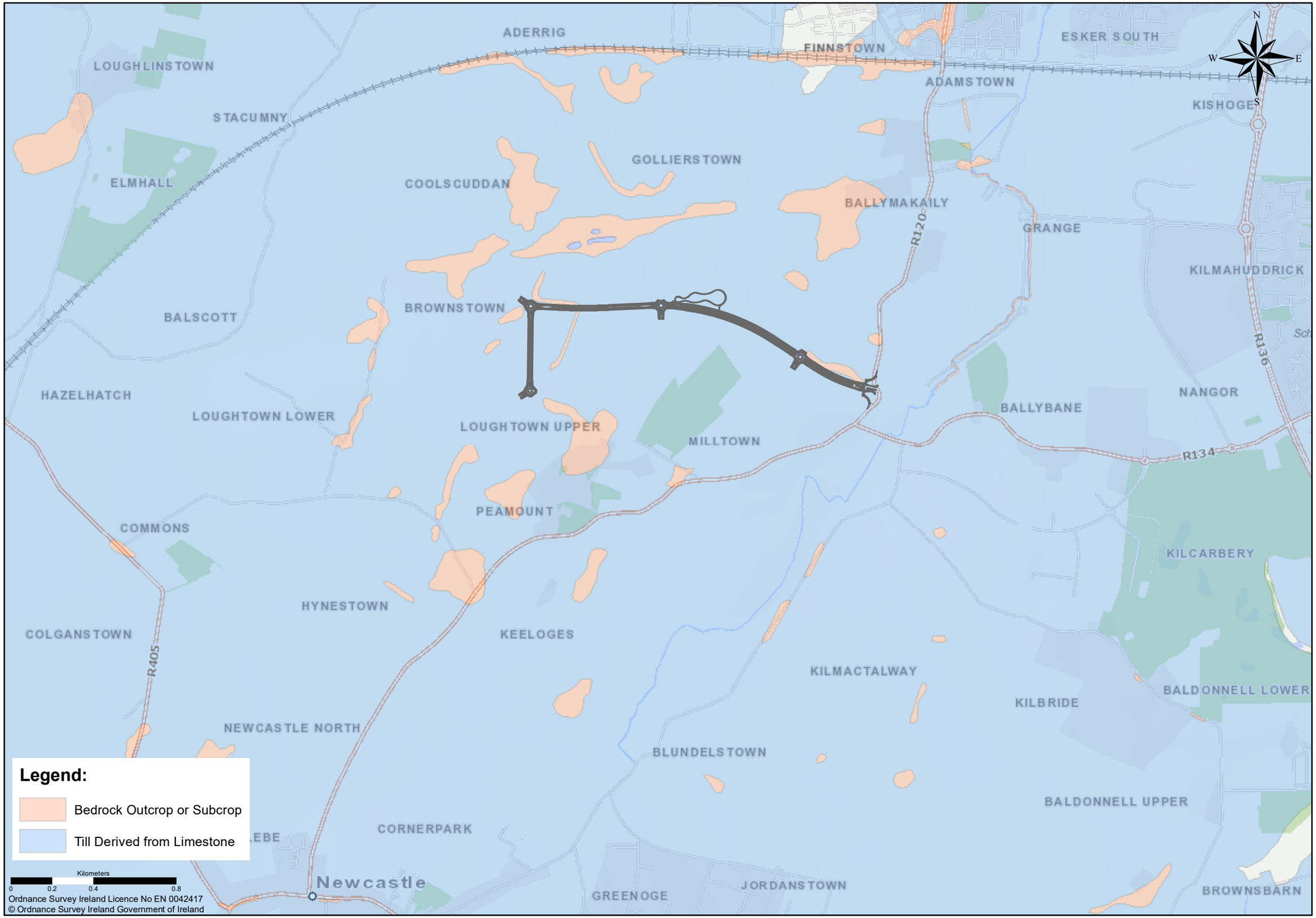
ESB INTERNATIONAL LTD.
Stephen Court, 18/21 St. Stephen's Green, Dublin 2, Ireland
Telephone: +353-1-7038000 Fax: +353-1-6764400
Website: www.esbi.ie

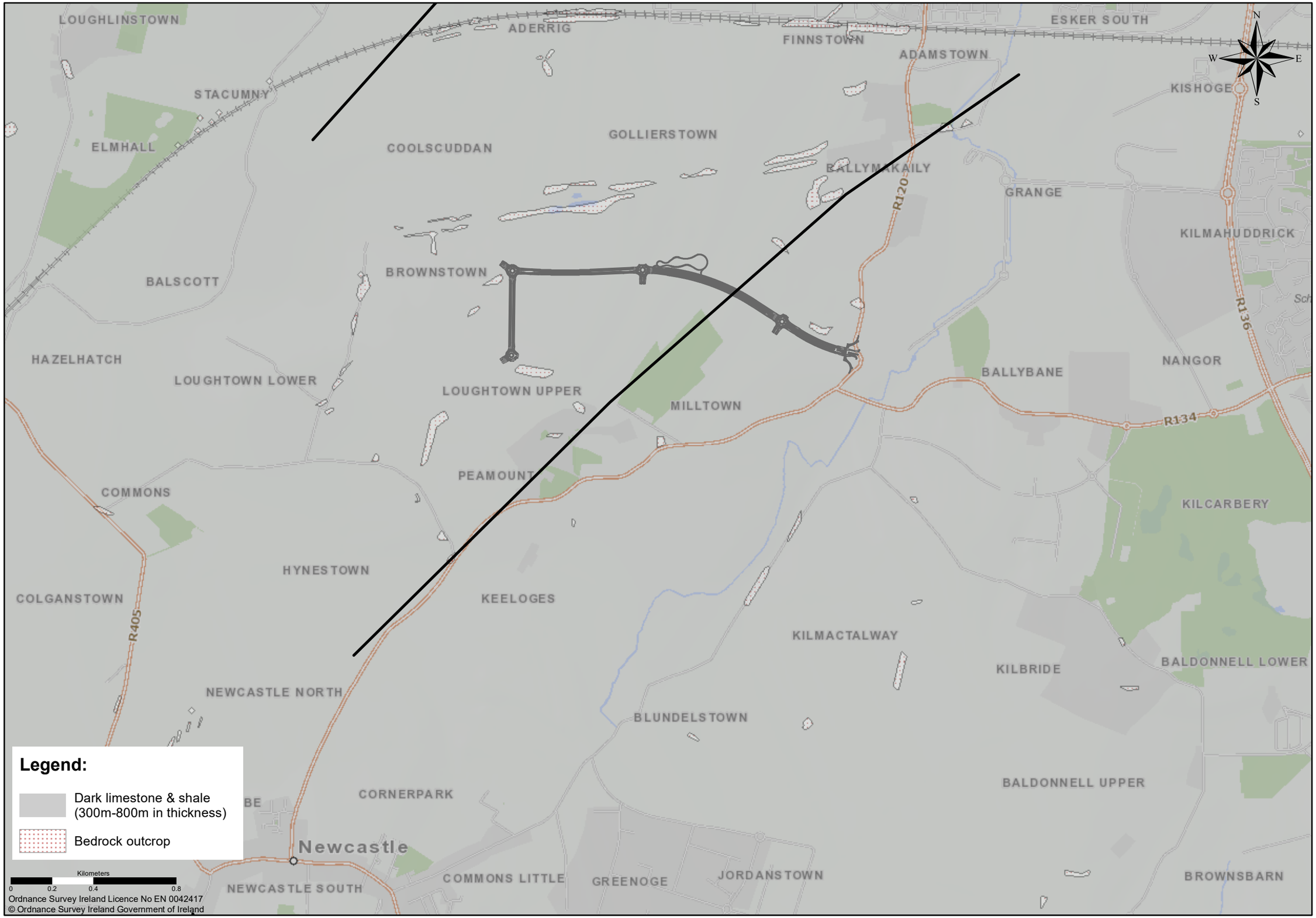
ITEM NO.	MINUTE	ACTION BY
1	**Documents Issued**	
1.1	The following were issued by SDCC to ESBI: A. A map of South Dublin County illustrating areas vulnerable to flooding derived from discussions within the Drainage Section of SDCC. B. A list of locations vulnerable to flooding generated by the SDCC Roads Section (North) was presented. C. A CD issued by JB Barry to SDCC containing ▪ Report of Flood Event 5/6 November 2000, ▪ Hydro Environmental Report on Lucan Village, ▪ Flood Extent mapping (Adobe pdf) ▪ Flood photos and ▪ As-built Flood Defence Asset drawings (AutoCAD).	
1.2	At the meeting, the locations vulnerable to flooding indicated on Map A (see heading 1.1) were reviewed by SDCC. The locations were assigned numbers and described. The locations and descriptions are listed below under Heading 2. The flooding information provided by the Roads Section (Document B heading 1.1) was added to Map A, then numbered and is described below under Heading 3.	
2	**Flood Locations (Drainage Section)**	
2.1	1. Newcastle Village – Glebe – Recurring. Basement of house. Flood ID 1181. 2. Peamount Road Recurring. Flood ID 1182. 3. Beech Row Cottages Ronanstown Recurring. 6 houses affected. Flood ID 1183. 4. Cappaghmore Culvert Recurring – 9th Lock Road. Flood ID 1184. 5. Camac Culvert recurring – Irish Farm Centre, Old Naas Road. Problems with structural integrity of culvert. Flood ID 1185. 6. Killinarden Stream Jobstown recurring. Blocked regularly with debris. Flood ID 1186. 7. Robinhood Stream Walkinstown Recurring. Flood ID 1187. 8. Whitehall Road Kimmage Recurring. Drainage Related. Flood ID 1188. 9. Dodder Mount Carmel Park recurring. Parkland. Flood ID 1189. 10. Dodder – Lower Dodder Road Recurring. Flood ID 1190. 11. Tobermaclog Backweston Stream Recurring. Refer to OPW and Kildare County Council. Flood ID 1211 12. Baldonnell Barney's Lane Recurring. Flood ID 1214 13. Newcastle Greenoge Recurring. Flood ID 1215 14. Palmerston – Mill Lane. Regular flooding near Liffey. Flood ID 1216 15. Camac Watery Lane Clondalkin Recurring. Flood ID 1220 16. Owendoher Stream Edmonstown Road. Nov 2000. Possible link to M50 works. Flood ID 1221 17. Hazelhatch Flooding Shinkeen recurring. Refer to OPW information	
3	**Flood Locations (Engineer - Roads Section – North by telephone)**	
3.1	18. Lucan St Edmonsbury. Flooding of Road. Flood ID 1222 19. Aylmer Road Newcastle. Location to be confirmed. Flood ID 1223 20. Rathcoole Bridge. Affects slip road Dublin bound traffic to Rathcoole. Flood ID	

ITEM NO.	MINUTE	ACTION BY
	1224 21. Lyons Road Newcastle. Recurring. Flood ID 1225	
4.	**Processing of Data**	
4.1	The locations listed under Headings 2 and 3 above will be incorporated into the project database as Flood Events. They will then be mapped in the project GIS as points in accordance with the locations indicated on Map B.	

Appendix C


ADERRIG
FINNSTOWN
ESKER SOUTH
ADAMSTOWN
KISHOGE
LOUGHLINSTOWN
STACUMNY
ELMHALL
GOLLIERSTOWN
COOLSCUDDAN
BALLYMAKAILY
R120
GRANGE
KILMAHUDDRICK
BROWNSTOWN
BALSCOTT
HAZELHATCH
LOUGHTOWN LOWER
LOUGHTOWN UPPER
MILLTOWN
BALLYBANE
NANGOR
R134
PEAMOUNT
COMMONS
KILCARBERY
HYNESTOWN
COLGANSTOWN
KEELOGES
R405
KILMACTALWAY
KILBRIDE
BALDONNELL LOWER
BLUNDELSTOWN
BALDONNELL UPPER
CORNERPARK
Newcastle
NEWCASTLE SOUTH
COMMONS LITTLE
GREENOGE
JORDANSTOWN
BROWNSBARN
N
W
E
S
Legend:
Rock or Near Surface or Karst
High
Extreme
Moderate
Kilometers
0 0.2 0.4 0.8
Ordnance Survey Ireland Licence No EN 0042417
© Ordnance Survey Ireland Government of Ireland





Appendix D

Node Label	Water Level (OD) 10% AEP	Flow (m³/s) 10% AEP	Water Level (OD) 1% AEP	Flow (m³/s) 1% AEP	Water Level (OD) 0.1% AEP	Flow (m³/s) 0.1% AEP
09TOWN00502	72.58	0.01	72.62	0.02	72.66	0.03
09TOWN00487	71.53	N/A	71.61	N/A	71.69	N/A
09TOWN00472	69.85	N/A	69.95	N/A	70.06	N/A
09TOWN00457	68.40	N/A	68.48	N/A	68.58	N/A
09TOWN00442	66.76	N/A	66.87	N/A	67.00	N/A
09TOWN00392	64.19	N/A	64.35	N/A	64.55	N/A

GOLLIERSTOWN
Baile Gallrath

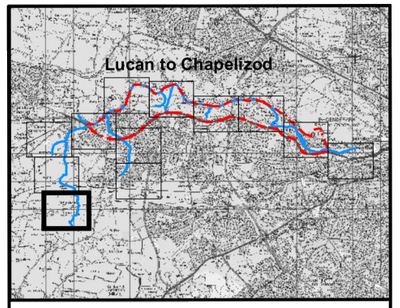
MILLTOWN
Baile an Mhuilinn

09TOWN00392
09TOWN00442
09TOWN00457
09TOWN00472
09TOWN00487
09TOWN00502

301000 301200 301400 301600 301800 302000 302200 302400

232600 232400 232200 232000 231800 231600 231400

0 50 100 200 300 400 500 Metres



IMPORTANT USER NOTE:
THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP.

Legend

- 10% Fluvial AEP Event
- 1% Fluvial AEP Event
- 0.1% Fluvial AEP Event
- Modelled River Centreline
- AFA Extents
- Node Point
- Node ID Node Label

FINAL

REV:	NOTE:	DATE:

EASTERN CFRAM STUDY
CATCHMENT FLOOD RISK ASSESSMENT AND MANAGEMENT

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Map: Lucan to Chapelizod Fluvial Flood Extents

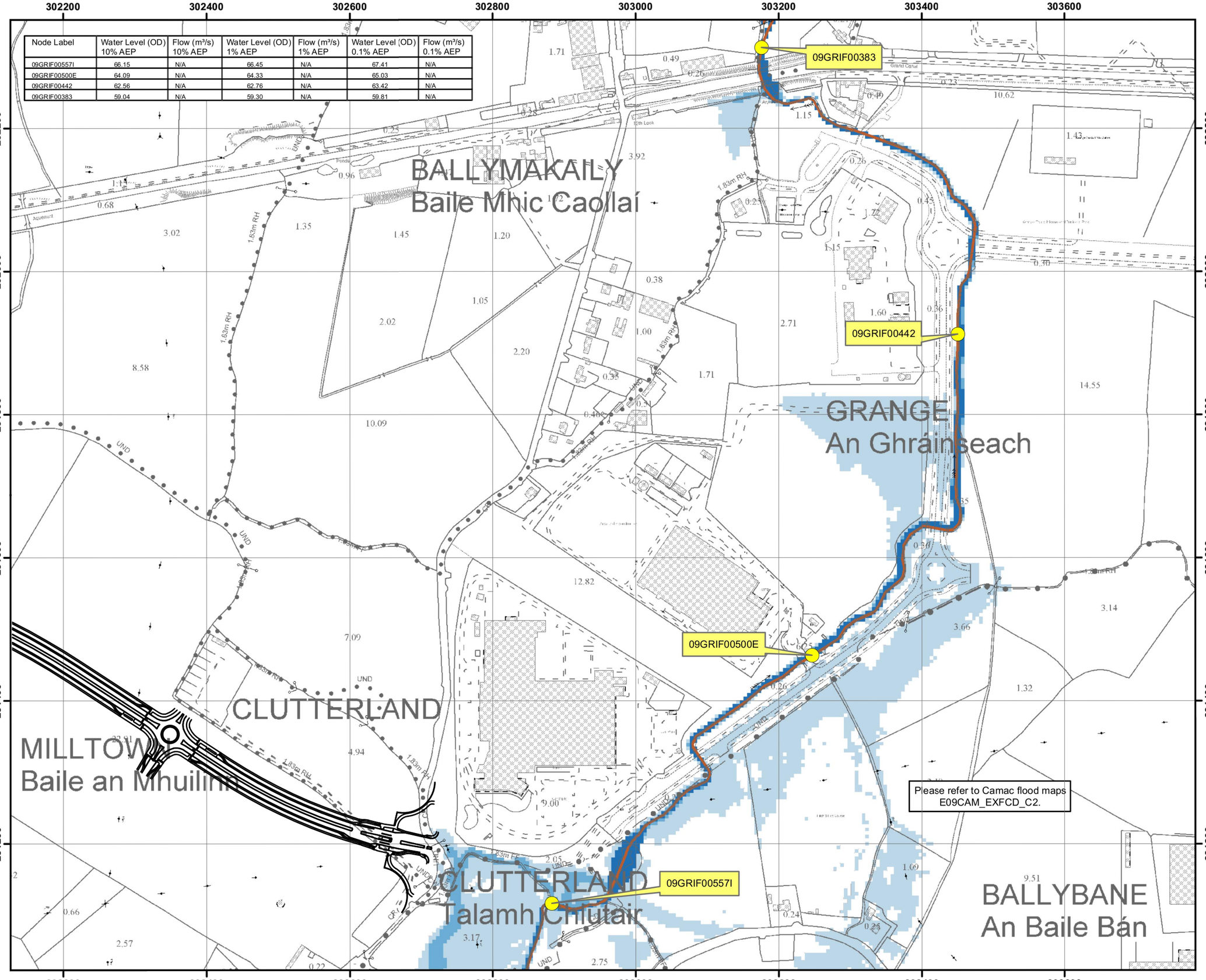
Map Type:	EXTENT	
Source:	FLUVIAL	
Map Area:	HPW	
Scenario:	CURRENT	
Drawn By :	C.C.	Date : 27 July 2016
Checked By :	S.P.	Date : 27 July 2016
Approved By :	G.G.	Date : 27 July 2016

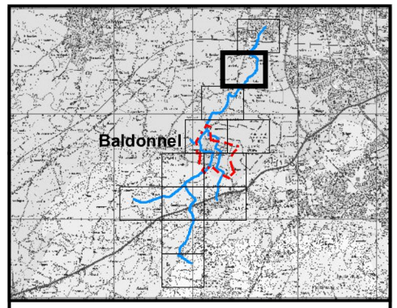
Drawing No. : E09LUC_EXFCD_F0_01

Map Series : Page 1 of 12

Drawing Scale : 1:5,000 @ A3

Node Label	Water Level (OD) 10% AEP	Flow (m³/s) 10% AEP	Water Level (OD) 1% AEP	Flow (m³/s) 1% AEP	Water Level (OD) 0.1% AEP	Flow (m³/s) 0.1% AEP
09GRIF00557I	66.15	N/A	66.45	N/A	67.41	N/A
09GRIF00500E	64.09	N/A	64.33	N/A	65.03	N/A
09GRIF00442	62.56	N/A	62.76	N/A	63.42	N/A
09GRIF00383	59.04	N/A	59.30	N/A	59.81	N/A





IMPORTANT USER NOTE:
THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP.

Legend

- 10% Fluvial AEP Event
- 1% Fluvial AEP Event
- 0.1% Fluvial AEP Event
- Modelled River Centreline
- AFA Extents
- Node Point
- Node ID Node Label

FINAL

REV:	NOTE:	DATE:

EASTERN CFRAM STUDY
CATCHMENT FLOOD RISK ASSESSMENT AND MANAGEMENT

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Map:
Baldonnel Fluvial Flood Extents

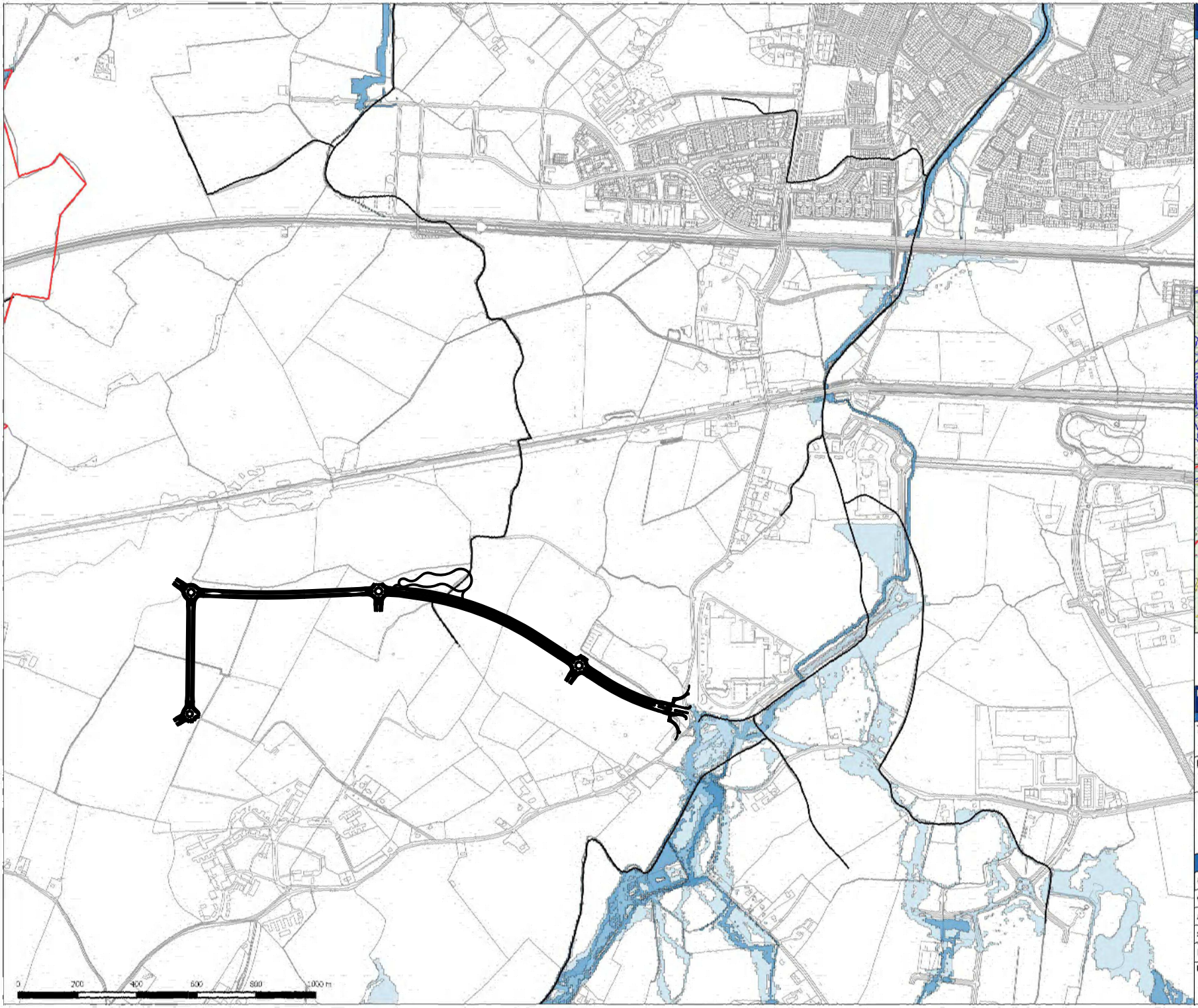
Map Type:	EXTENT
Source:	FLUVIAL
Map Area:	HPW
Scenario:	CURRENT
Drawn By : C.C.	Date : 21 July 2016
Checked By : D.I.	Date : 21 July 2016
Approved By : G.G.	Date : 21 July 2016

Drawing No. :
E09BAL_EXFCD_F0_10

Map Series : Page 10 of 12

Drawing Scale : 1:5,000 @ A3

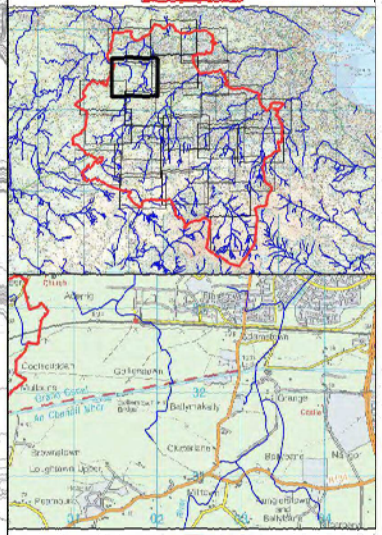
Appendix E



Legend

- Flood Zone A - 1% AEP Flood Extent (1 in 100 chance in any given year)
- Flood Zone B - 1% AEP Flood Extent (1 in 1000 chance in any given year)
- Defended Area
- Watercourse Centreline
- Indicative Flood Extents
- County Boundary

DRAFT



Comhairle Contae
Átha Cliath Theas
South Dublin County Council

Project: Strategic Flood Risk Assessment

Title: Fluvial Flood Zone Mapping

Figure: MDW657_0004

RPS Consulting Engineers
West Pier Business Campus
Dun Laoghaire
Co. Dublin
Tel: +353 1 488 2900
Fax: +353 1 462 0814

Issue Details

Drawn:	BT	Project No.	MDW0657
Checked:	JH	File Ref	MDW0657QG010P02
Approved:	JH		
Scale:	1:6000 @ A1	Drawing No.	Projection
Date:	14/01/2015	4 of 25	IG

Notes
1. The viewer of this map should refer to the SFRA Report and Disclaimer

Appendix F

No Fluvial Data Available For Area

MAYNOOTH

LEIXLIP

No Fluvial Data Available For Area

LUCAN TO CHAPELIZOD

FINNSTOWN

ADAMSTOWN

ESKER SOUTH

CELBRIDGE

HAZELHATCH

STRAFFAN

TURNINGS

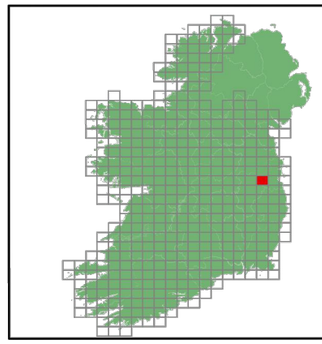
No Fluvial Data Available For Area

RATHCOOLE, SAGGART & BALD

No Fluvial Data Available For Area

0.5 0.25 0 0.5 1 1.5 2 2.5 3 3.5 4 4.5 5 Kilometers

Location Plan :



Legend:

Flood Extents

- Fluvial - Indicative 1% AEP (100-yr) Event
- Fluvial - Extreme Event
- Coastal - Indicative 0.5% AEP (200-yr) Event
- Coastal - Extreme Event
- Pluvial - Indicative 1% AEP (100-yr) Event
- Pluvial - Extreme Event
- Groundwater Flood Extents
- Lakes / Turloughs

PFRA Outcomes

- Probable Area for Further Assesment
- Possible Area for Further Assesment

Important User Note:

The flood extents shown on these maps are based on broad-scale simple analysis and may not be accurate for a specific location. Information on the purpose, development and limitations of these maps is available in the relevant reports (see www.cfram.ie). Users should seek professional advice if they intend to rely on the maps in any way.

If you believe that the maps are inaccurate in some way please forward full details by contacting the OPW (refer to PFRA Information leaflets or 'Have Your Say' on www.cfram.ie).

Office of Public Works
Jonathon Swift Street
Trim
Co Meath
Ireland

OPW

Project :
PRELIMINARY FLOOD RISK ASSESMENT (PFRA)

Map :
PFRA Indicative extents and outcomes
- Draft for Consultation

Figure By : PJW Date : July2011

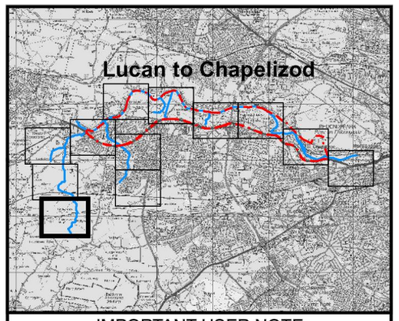
Checked By : MA Date : July 2011

Figure No. : 2019 / MAP / 237 / A

Revision 0

Drawing Scale : 1:50,000 Plot Scale : 1:1 @ A3

Appendix G



IMPORTANT USER NOTE:
THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP.

Legend

10% Fluvial AEP Flood Depth

- 0 - 0.25m
- 0.25 - 0.5m
- 0.5 - 1m
- 1.0 - 1.5m
- 1.5 - 2m
- >2m
- Modelled River Centreline
- AFA Extents

FINAL

REV:	NOTE:	DATE:

EASTERN CFRAM STUDY
CATCHMENT FLOOD RISK ASSESSMENT AND MANAGEMENT

OPW
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RPS

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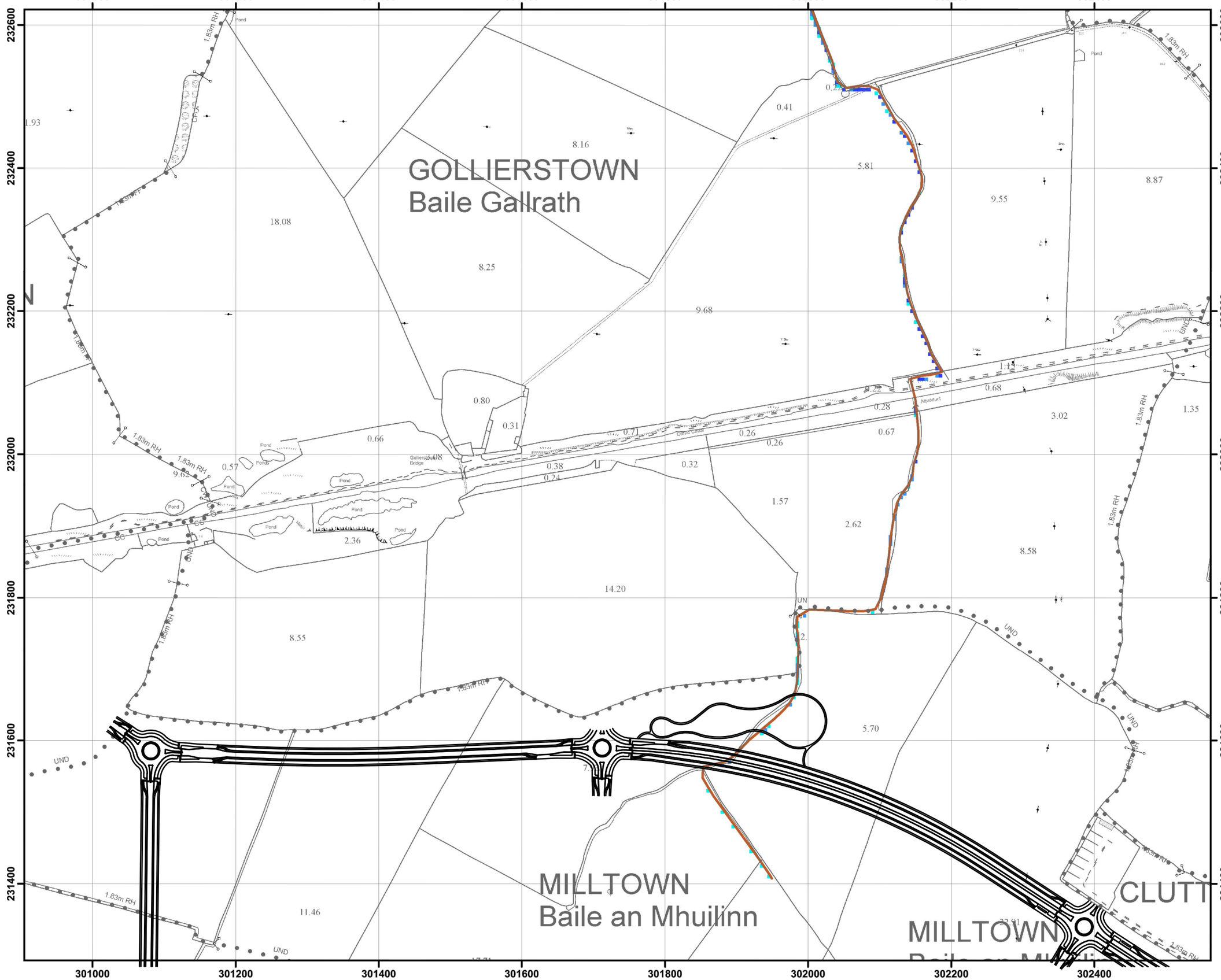
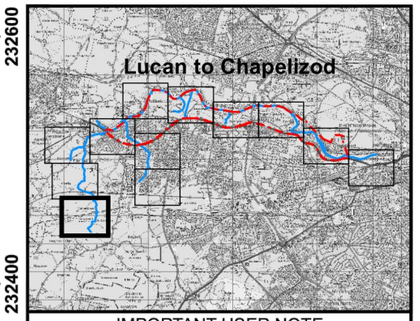
Map:
Lucan to Chapelizod Fluvial Flood Depths

Map Type:	DEPTH
Source:	FLUVIAL
Map Area:	HPW
Scenario:	CURRENT
Drawn By :	C.McG. Date : 28 July 2016
Checked By :	S.P. Date : 28 July 2016
Approved By :	G.G. Date : 28 July 2016
Drawing No. :	E09LUC_DPFCD100_F0_01
Map Series :	Page 1 of 12
Drawing Scale :	1:5,000 @A3





IMPORTANT USER NOTE:
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Legend

1% Fluvial AEP Flood Depth

- 0 - 0.25m
- 0.25 - 0.5m
- 0.5 - 1m
- 1.0 - 1.5m
- 1.5 - 2m
- >2m
- Modelled River Centreline
- AFA Extents

FINAL

REV:	NOTE:	DATE:

EASTERN CFRAM STUDY
CATCHMENT FLOOD RISK ASSESSMENT AND MANAGEMENT

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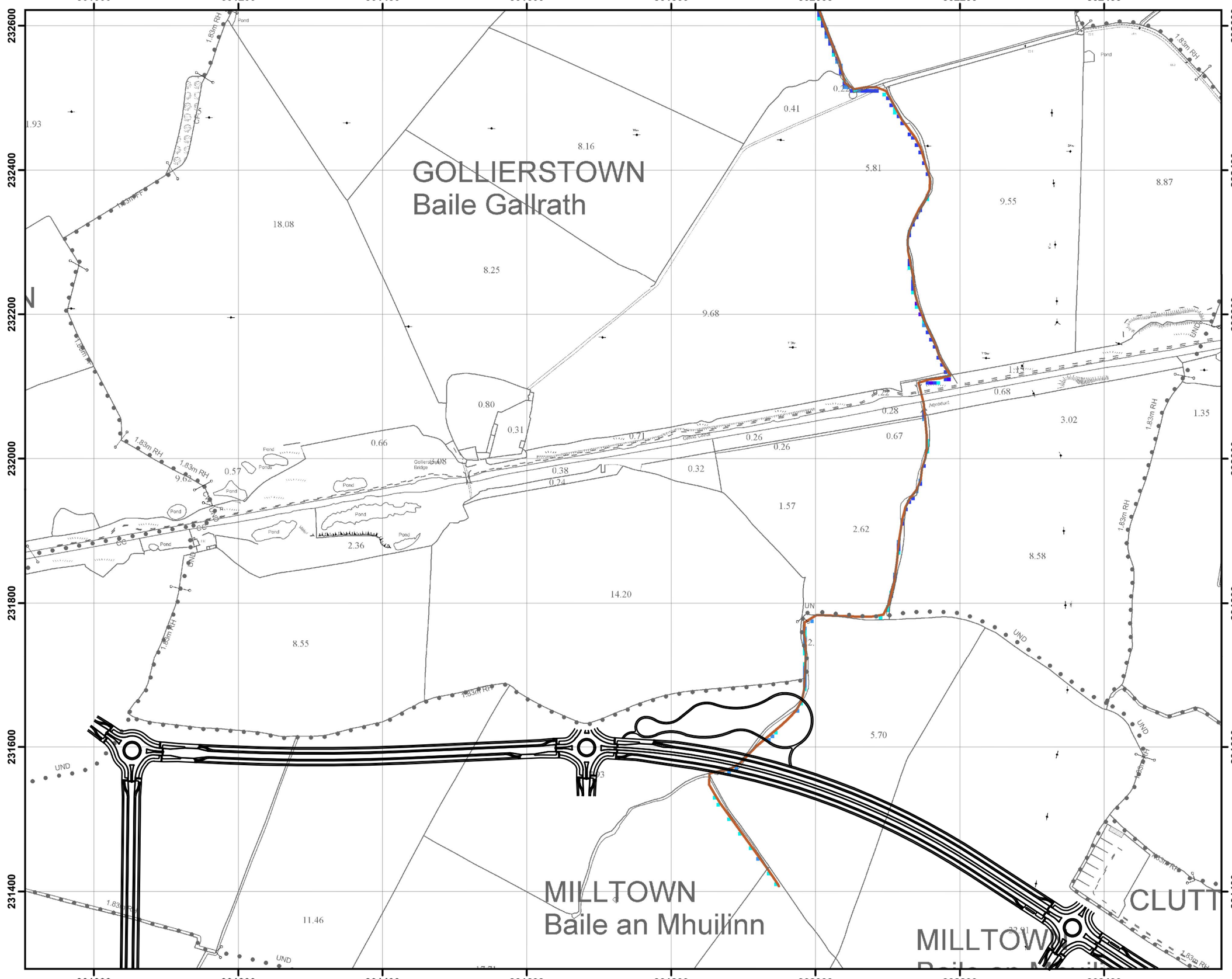
Map:
Lucan to Chapelizod Fluvial Flood Depths

Map Type:	DEPTH
Source:	FLUVIAL
Map Area:	HPW
Scenario:	CURRENT
Drawn By :	C.McG. Date : 28 July 2016
Checked By :	S.P. Date : 28 July 2016
Approved By :	G.G. Date : 28 July 2016
Drawing No. :	E09LUC_DPFCD010_F0_01
Map Series :	Page 1 of 12
Drawing Scale :	1:5,000 @A3



IMPORTANT USER NOTE:
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Legend

0.1% Fluvial AEP Flood Depth

- 0 - 0.25m
- 0.25 - 0.5m
- 0.5 - 1m
- 1.0 - 1.5m
- 1.5 - 2m
- >2m

Modelled River Centreline

AFA Extents

FINAL

REV:	NOTE:	DATE:

EASTERN CFRAM STUDY
CATCHMENT FLOOD RISK ASSESSMENT AND MANAGEMENT

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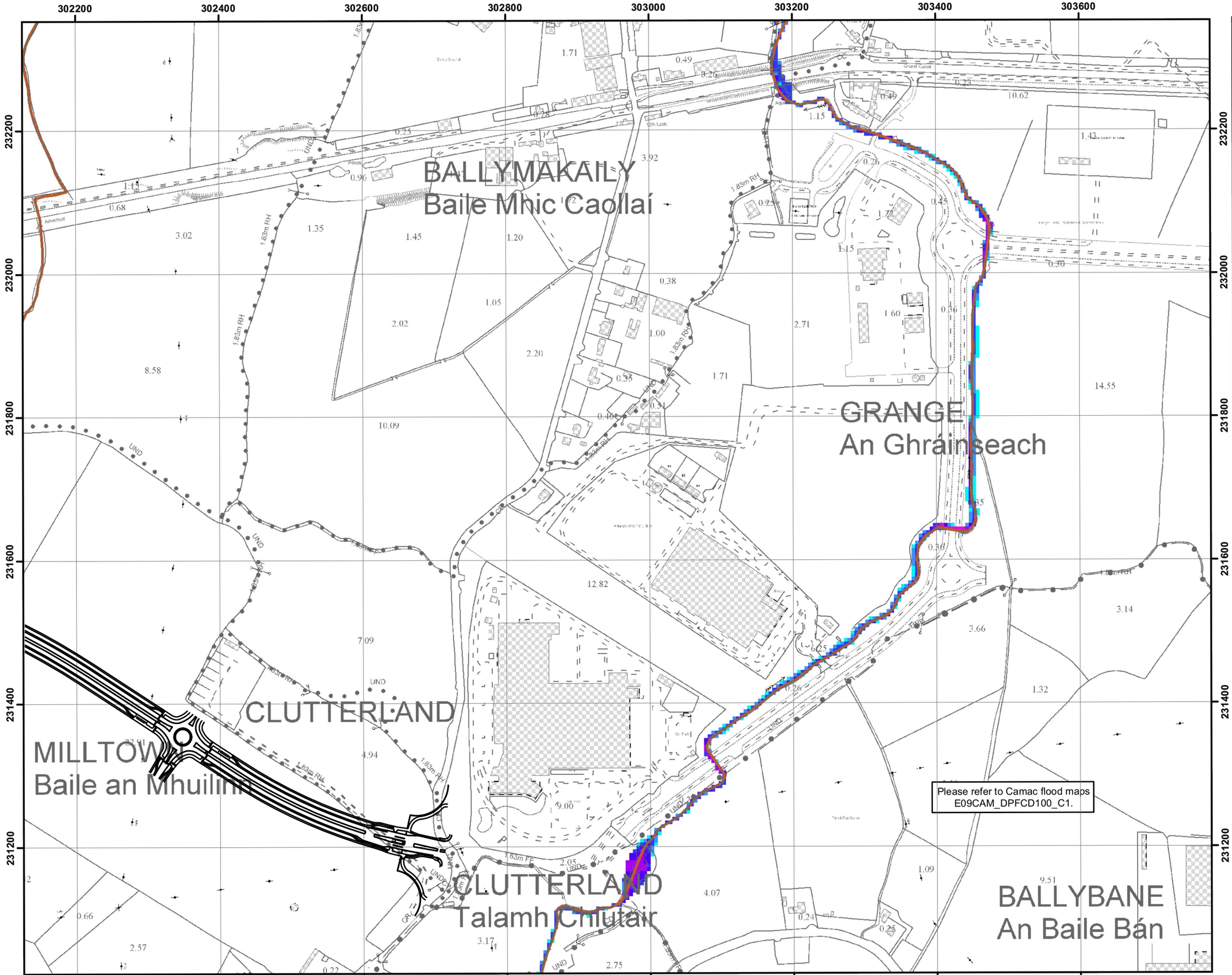
Map:
Lucan to Chapelizod Fluvial Flood Depths

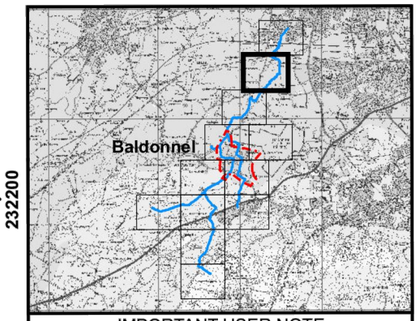
Map Type:	**DEPTH**	
Source:	**FLUVIAL**	
Map Area:	**HPW**	
Scenario:	**CURRENT**	
Drawn By :	**C.McG.**	**Date : 28 July 2016**
Checked By :	**S.P.**	**Date : 28 July 2016**
Approved By :	**G.G.**	**Date : 28 July 2016**

Drawing No. :
E09LUC_DPFCD001_F0_01

Map Series : Page 1 of 12

Drawing Scale : 1:5,000 @ A3





IMPORTANT USER NOTE:
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Legend

10% Fluvial AEP Flood Depth

- 0 - 0.25m
- 0.25 - 0.5m
- 0.5 - 1m
- 1.0 - 1.5m
- 1.5 - 2m
- >2m
- Modelled River Centreline
- AFA Extents

FINAL

REV:	NOTE:	DATE:

EASTERN CFRAM STUDY
CATCHMENT FLOOD RISK ASSESSMENT AND MANAGEMENT

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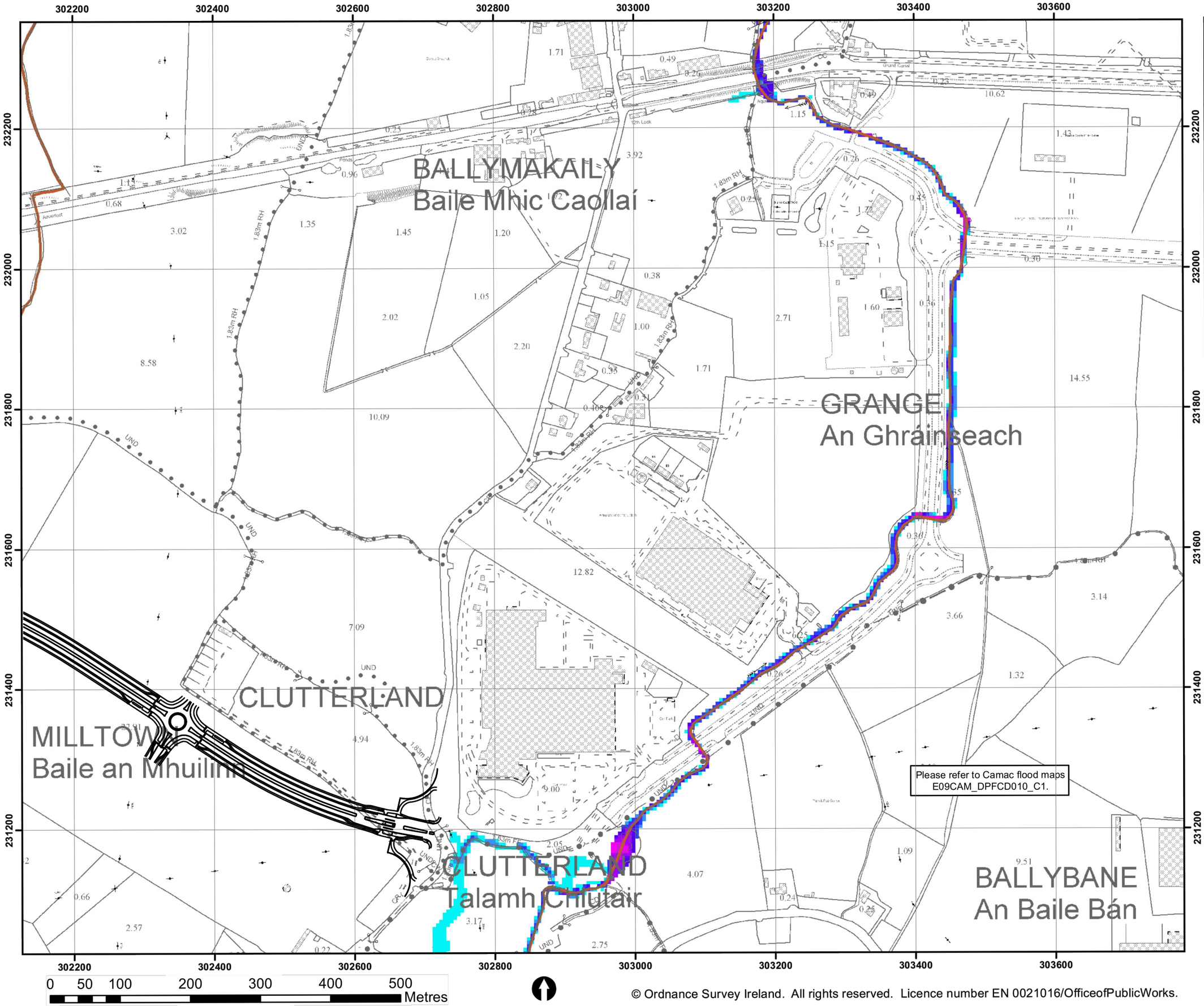
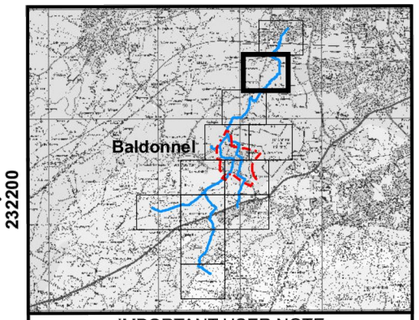
Map:	Baldonnel Fluvial Flood Depths
Map Type:	DEPTH
Source:	FLUVIAL
Map Area:	HPW
Scenario:	CURRENT
Drawn By :	C.C. Date : 29 July 2016
Checked By :	D.I. Date : 29 July 2016
Approved By :	S.P. Date : 29 July 2016
Drawing No. :	E09BAL_DPFCD100_F0_10
Map Series :	Page 10 of 12
Drawing Scale :	1:5,000 @ A3





IMPORTANT USER NOTE:
THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP.

Legend

1% Fluvial AEP Flood Depth

- 0 - 0.25m
- 0.25 - 0.5m
- 0.5 - 1m
- 1.0 - 1.5m
- 1.5 - 2m
- >2m
- Modelled River Centreline
- AFA Extents

FINAL

REV:	NOTE:	DATE:

EASTERN CFRAM STUDY
CATCHMENT FLOOD RISK ASSESSMENT AND MANAGEMENT

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Map:	**Baldonnel Fluvial Flood Depths**
Map Type:	**DEPTH**
Source:	**FLUVIAL**
Map Area:	**HPW**
Scenario:	**CURRENT**
Drawn By :	**C.C.** **Date : 29 July 2016**
Checked By :	**D.I.** **Date : 29 July 2016**
Approved By :	**S.P.** **Date : 29 July 2016**
Drawing No. :	**E09BAL_DPFCD010_F0_10**
Map Series :	**Page 10 of 12**
Drawing Scale :	**1:5,000 @ A3**

302200 302400 302600 302800 303000 303200 303400 303600

232200 232000 231800 231600 231400 231200

BALLYMAKAILY
Baile Mhic Caollaí

GRANGE
An Ghráinseach

CLUTTERLAND

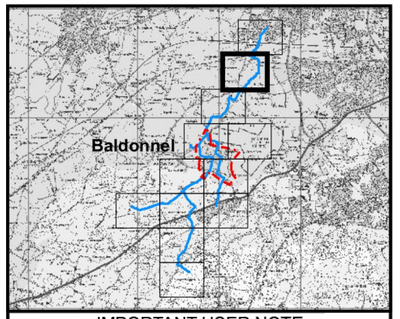
MILLTOWN
Baile an Mhuilinn

CLUTTERLAND
Talamh Chlutair

BALLYBANE
An Baile Bán

Please refer to Camac flood maps E09CAM_DPFCD001_C1.

0 50 100 200 300 400 500 Metres



IMPORTANT USER NOTE:
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Legend

0.1% Fluvial AEP Flood Depth

- 0 - 0.25m
- 0.25 - 0.5m
- 0.5 - 1m
- 1.0 - 1.5m
- 1.5 - 2m
- >2m
- Modelled River Centreline
- AFA Extents

FINAL

REV:	NOTE:	DATE:

EASTERN CFRAM STUDY
CATCHMENT FLOOD RISK ASSESSMENT AND MANAGEMENT

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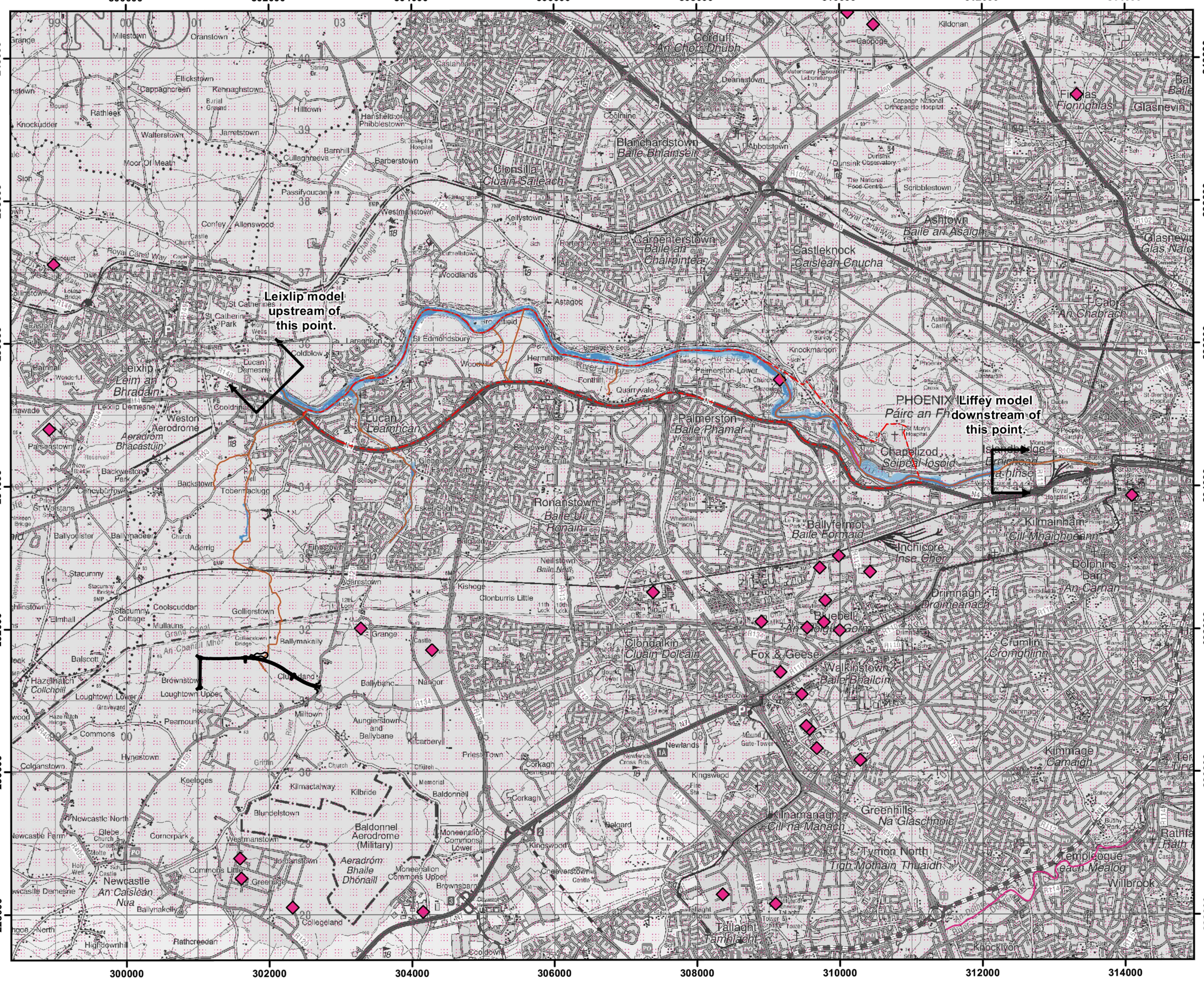
Map:	Baldonnel Fluvial Flood Depths
Map Type:	DEPTH
Source:	FLUVIAL
Map Area:	HPW
Scenario:	CURRENT
Drawn By : C.C.	Date : 29 July 2016
Checked By : D.I.	Date : 29 July 2016
Approved By : S.P.	Date : 29 July 2016
Drawing No. :	E09BAL_DPFCD001_F0_10
Map Series :	Page 10 of 12
Drawing Scale : 1:5,000	@ A3

Appendix H



IMPORTANT USER NOTE:
THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP.

Legend

- 10% Fluvial AEP Event
- 1% Fluvial AEP Event
- 0.1% Fluvial AEP Event
- IED Sites
- Designated for Drinking Water Abstraction
- Designated for Drinking Water Abstraction
- Recreational Waters
- SAC Water Dependent
- SAC Water Dependent
- SAC Water Dependent
- SPA Water Dependent
- Modelled River Centreline
- AFA Extent

FINAL

REV:	NOTE:	DATE:

EASTERN CFRAM STUDY
CATCHMENT FLOOD RISK ASSESSMENT AND MANAGEMENT

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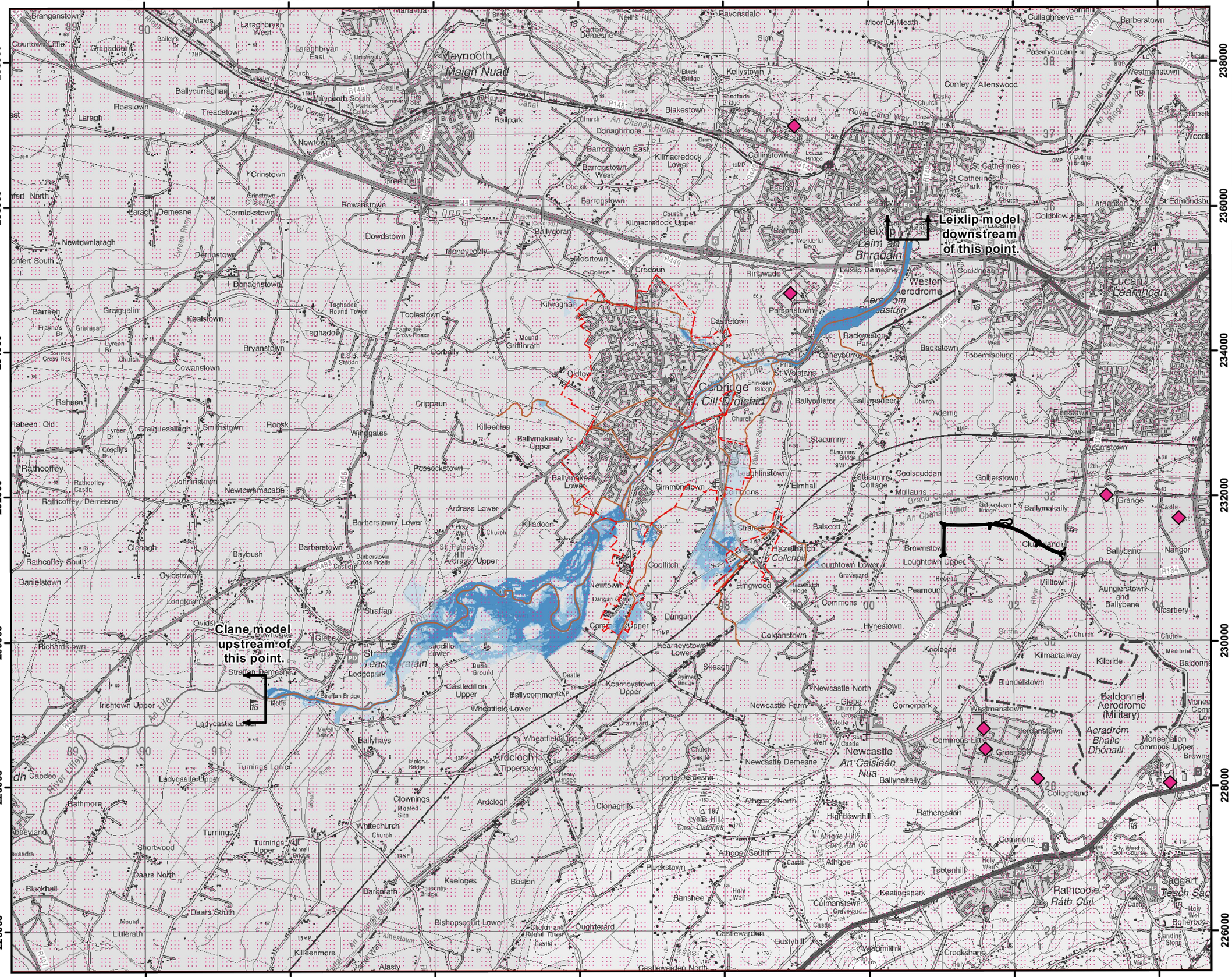
Map: Lucan to Chapelizod Risk to Environment Map

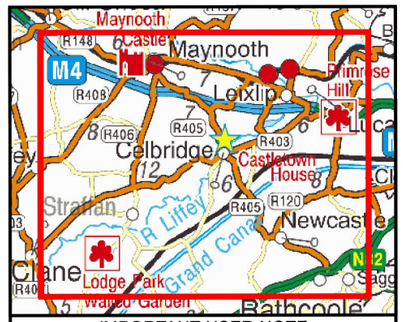
Map Type:	GENERAL RISK - ENVIRONMENT		
Source:	FLUVIAL		
Map Area:	HPW		
Scenario:	CURRENT		
Drawn By :	C.C.	Date :	28 July 2016
Checked By :	S.P.	Date :	28 July 2016
Approved By :	G.G.	Date :	28 July 2016

Drawing No. : E09LUC_RVFCD_F0_01

Map Series : Page 1 of 1

Drawing Scale : 1:50,000 @ A3





IMPORTANT USER NOTE:
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Legend

- 10% Fluvial AEP Event
- 1% Fluvial AEP Event
- 0.1% Fluvial AEP Event
- IED Sites
- Designated for Drinking Water Abstraction
- Designated for Drinking Water Abstraction
- Recreational Waters
- SAC Water Dependent
- SAC Water Dependent
- SAC Water Dependent
- SPA Water Dependent
- Modelled River Centreline
- AFA Extent

FINAL

REV:	NOTE:	DATE:
01	Model update on Crippaun watercourse	15/05/2017

EASTERN CFRAM STUDY
CATCHMENT FLOOD RISK ASSESSMENT AND MANAGEMENT

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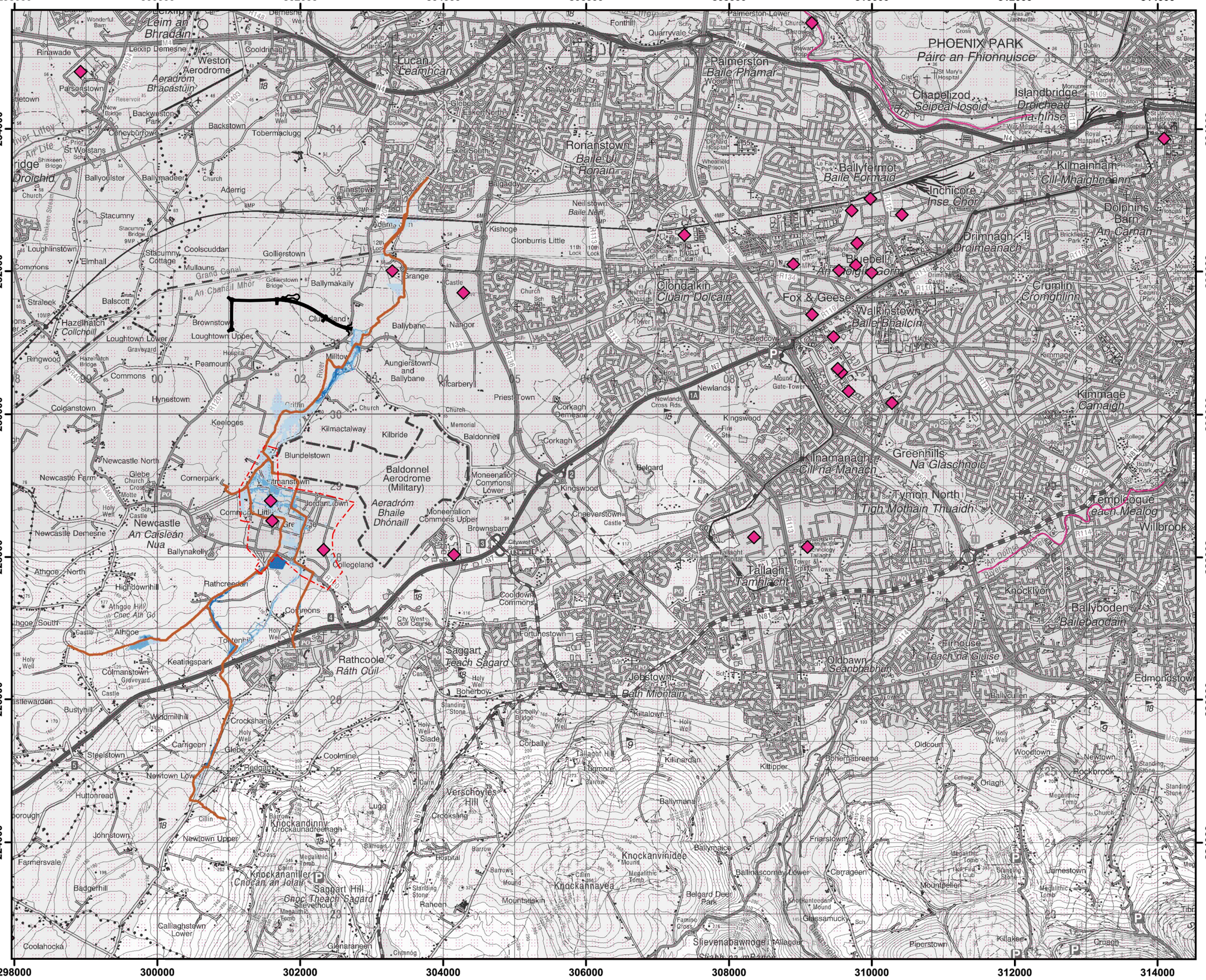
Map: Celbridge/Hazelhatch Risk to Environment Map

Map Type:	GENERAL RISK - ENVIRONMENT
Source:	FLUVIAL
Map Area:	HPW
Scenario:	CURRENT
Drawn By : C.C.	Date : 19 May 2017
Checked By : S.P.	Date : 19 May 2017
Approved By : G.G.	Date : 19 May 2017
Drawing No. :	E09CEL_RVFCD_F0_01
Map Series :	Page 1 of 1
Drawing Scale :	1:50,000 @ A3



IMPORTANT USER NOTE:
THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP.

Legend

- 10% Fluvial AEP Event
- 1% Fluvial AEP Event
- 0.1% Fluvial AEP Event
- IED Sites
- Designated for Drinking Water Abstraction
- Designated for Drinking Water Abstraction
- Recreational Waters
- SAC Water Dependent
- SAC Water Dependent
- SAC Water Dependent
- SPA Water Dependent
- Modelled River Centreline
- AFA Extent

FINAL

REV:	NOTE:	DATE:

EASTERN CFRAM STUDY
CATCHMENT FLOOD RISK ASSESSMENT AND MANAGEMENT

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Map:
Baldonnell Risk to Environment Map

Map Type:	GENERAL RISK - ENVIRONMENT
Source:	FLUVIAL
Map Area:	HPW
Scenario:	CURRENT
Drawn By :	F.M.C. Date : 26 July 2016
Checked By :	D.I. Date : 26 July 2016
Approved By :	S.P. Date : 26 July 2016
Drawing No. :	E09BAL_RVFCD_F0_01
Map Series :	Page 1 of 1
Drawing Scale :	1:50,000 @ A3

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Appendix F – SDCC Determinations

GRANGE CASTLE WEST ACCESS ROAD

Appropriate Assessment (AA) Screening Determination

Planning and Development Act 2000 (Part XAB) (as amended)

Planning and Development Regulations, 2001 (Part 8) (as amended)

Pursuant to the requirements of the above, South Dublin County Council is proposing to develop the Grange Castle West Access Road Co Dublin.

Having regard to Article 6(3) of the Habitats Directive and Part XAB of the Planning and Development Acts 2000 (as amended), the guidance contained in the Department of Housing Planning, Community and Local Governments *"Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities"* (2010) following an examination, analysis and evaluation of the objective information provided in the *" Screening Statement for Appropriate Assessment of Grange Castle West Access Road"* prepared by Doherty Environmental, South Dublin County Council, as the Competent Authority determines that the proposed Grange Castle West Access Road Co Dublin will not have a significant negative effect on European Sites and will not negatively affect their conservation objectives or integrity. The principal reasons supporting this determination include:

- Given the provisions of project design to control and treat surface water generated at the project site, there will be no potential for the hydrological pathway connecting the project to the three European Sites, to function as an impact pathway.
- Given the assessment of the hydrological pathway, the project will not have the potential to undermine water quality within the Liffey catchment and will not have the potential to result in likely significant effects to the conservation status of the three Dublin Bay European Sites that occur within the zone of influence of the project.

Therefore a Stage 2: Appropriate Assessment will not be required to inform the project either alone or in combination with other plans & projects, with respect to any Natura 2000 site and its conservation objective

Brian Keaney

Senior Planner

Order: That South Dublin County Council as the Competent Authority, having considered the AA Screening Report, prepared by Doherty Environmental, makes a determination that a Stage 2 Appropriate Assessment will not be required to inform the Grange Castle West Access Road either alone or in combination with other plans or projects, with respect to any Natura 2000 site and its conservation objectives.

Date: 1/10/18

A/Director of Land Use,
Planning & Transportation

GRANGE CASTLE WEST ACCESS ROAD

Environmental Impact Assessment (EIA) Screening Determination

Planning and Development Act 2000 (Part XI) (as amended)

Planning and Development Regulations, 2001 (Part 8) (as amended)

Pursuant to the requirements of the above, South Dublin County Council is proposing to develop the Grange Castle West Access Road Co Dublin.

Having regard to EIA Directive 2011/92/EU as amended by Directive 2014/52/EU (the EIA Directive), the guidance contained in the Department of Housing, Planning and Local Government's "*Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment*" (2018) and on the basis of the objective information provided in the "*Grange Castle West Access Road Environmental Impact Assessment Screening*" (the Screening Report) prepared by Doherty Environmental, South Dublin County Council as the Competent Authority determines that the proposed, individually, and in combination with other plans and projects, does not require an EIA.

It is considered that the Screening Report, has been carried out giving full consideration to the EIA Directive and in particular to Annex I, II and III of that Directive, which sets out requirements for mandatory and sub-threshold EIA.

It is further considered that the Screening Report contains a fair and reasonable assessment of the likelihood of significant effects of the development on the environment. Having regard to the foregoing and in particular the characteristics of the proposed development are considered potentially not significant due to the size, scale and location of the development, the characteristics and sensitivities of the receiving environmental and design and mitigation measures including:

- The proposed approach to surface water and wastewater management during the construction phase and operation phase;
- The approach to lighting during the operation phase ; and
- The proposed landscaping design for the operation phase of the development.

It is considered that the environmental effects arising from the project will generally be localised, and minor in nature.

Dick Kearney

Senior Planner

ORDER: That South Dublin County Council as the Competent Authority, having considered the EIA Screening Report, prepared by Doherty Environmental, makes a determination that the proposed Grange Castle West Access Road would not be likely to have significant effects on the environment and that the project does not require an Environmental Impact Assessment as recommended by the foregoing report by the Senior Planner.

Date: 1/10/18

Laura Geoghegan

A/Director of Land Use, Planning & Transportation

Clifton Scannell Emerson Associates Limited, Civil & Structural Consulting Engineers
Seafort Lodge, Castledawson Avenue, Blackrock, Co. Dublin, Ireland.

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