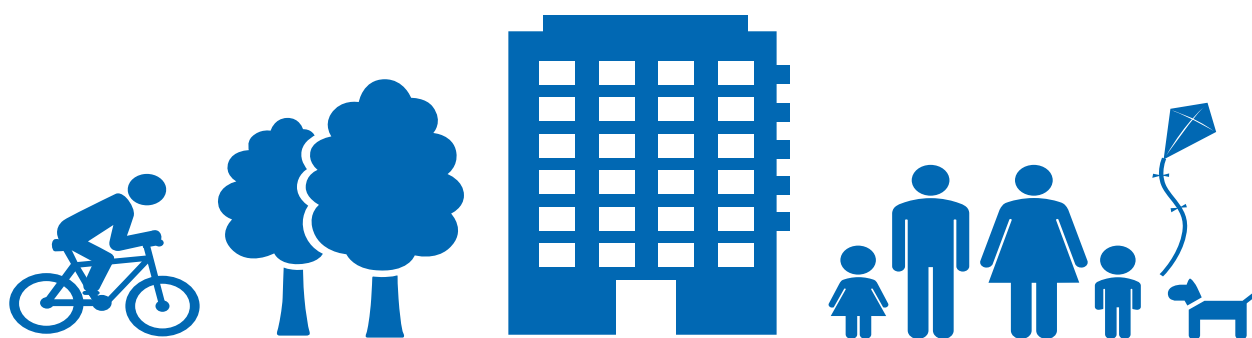


Kellystown

Draft Local Area Plan

September 2020



Appendices



Appendix 1

Biodiversity Report

Appendix 2

Surface Water Management Plan Part 1: Strategic Flood Risk Assessment

Surface Water Management Plan Part 2: Sustainable Drainage Systems (SuDS) Strategy

Appendix 3

Strategic Environmental Assessment (SEA) Screening Report

Appendix 4

Appropriate Assessment (AA) Screening

Appropriate Assessment (AA) Screening Determination

Appendix 5

Traffic Modelling Assessment

Appendix 1

Biodiversity Report



KELLYSTOWN LOCAL AREA PLAN

Biodiversity Report prepared to inform
preparation of Local Area Plan for Fingal
County Council

Minogue and Associates September 2020

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This report has been prepared by Minogue Environmental Consulting Ltd with all reasonable skill, care and diligence. Information reported 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 Fingal County Council, 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.

1 INTRODUCTION

Avison Young were appointed to prepare the Kellystown Local Area Plan (LAP).

Minogue and Associates undertook a series of ecology surveys to describe the existing ecological baseline and help inform the LAP and Green Infrastructure Measures and proposals as part of the plan preparation.

1.2 OVERVIEW OF LANDS

Kellystown is located approximately 1.5 km from Blanchardstown Town Centre, 1.8 km from Blanchardstown Main Street and 9.8 km from O'Connell Street, Dublin. The subject lands are situated directly south of the Royal Canal and the Dublin-Maynooth Railway Line and between Diswellstown Road to the east and Clonsilla Road (R121) to the west. A mature hedgerow and trees along the northern boundary offers a defined visual barrier between the lands and Clonsilla village, located north of the canal.

Luttrellstown Road, a country thoroughfare frames the lands to the south.

Diswellstown Road to the east offers an access point for vehicular and pedestrian traffic to cross the canal and railway line without traversing via a level crossing. The R121/Clonsilla Road, a well-trafficked route, defines the boundary of the lands to the west and is part of a network of roads linking Blanchardstown to Lucan.

The lands at present are largely undeveloped and contain detached residential units and agricultural holdings.

1.3 OBJECTIVES OF THE STUDY

The following Objective for the preparation of the Kellystown LAP informed the ecological surveys:

- *Provide a study of the tress, hedgerows and other features of biodiversity value suitable for retention and a programme agreed with the Council's Biodiversity Officer as to how these features can be protected or improved and the biodiversity value of the Canal maintained or improved.*

The following surveys were undertaken to meet the above requirements:

1. Habitat and flora survey of subject lands

2. Hedgerow Appraisal Survey
3. Bat Survey- 2 transects between June to September.
4. Bird Survey (outside the original brief but included during hedgerow survey fieldwork).

1.3 STRUCTURE OF THIS REPORT

Section Two: Habitat and Flora Survey

Section Three: Hedgerow Appraisal Survey

Section Four: Bat Survey

Section Five: Bird Survey

Supporting appendices:

Appendix A: Habitat Survey of agricultural fields

Appendix B: Species List from Habitat Survey

Appendix C: Hedgerow Appraisal Forms

Appendix D: Bird Survey Notes

2 HABITAT SURVEY

This report documents a walk-over species record and habitat survey of fields under the ownership of Kellystown House and two short sections of the north and south tow path of the Royal Canal, Dublin.

Minogue and Associates commissioned Dr Frances Giaquinto CEnv MCIEEM to undertake a phase 1 habitat survey and botanical survey of the lands as part of the LAP plan preparation.

2.1 TEAM COMPETENCIES

Dr Giaquinto CMCIEEM, was assisted by Phoebe O'Brien, BSc Botany in undertaking the fieldwork and reporting elements.

2.2 METHODOLOGY

2.2.1 DESKTOP REVIEW

A desktop review was completed for the Local Area Plan lands. This involved a review of published information on the site and surrounding area, a review of historical mapping and satellite imagery, published atlases and national databases. Information held by nature conservation organisations, including the National Parks & Wildlife Service were also consulted during the desktop review.

In addition to the above, a search of the National Biodiversity Data Centre (NBDC) for all records of flora and fauna for the tetrad in which the study site is located was also completed. The NBDC was accessed on the 7th August 2019.

Ordnance Survey Ireland (OSI) historical maps were also reviewed to identify the presence of field enclosures and long-standing hedgerow boundaries within the study site.

2.2.2 RELEVANT LEGISLATION, POLICY & GUIDELINES

This report has been prepared with regard to the following legislation, policy documents, and guidelines as relevant:

National and International Legislation

- Planning and Development (Amendment) Act 2010, as amended; hereafter collectively referred to as the Planning Acts;
- Wildlife Act, 1976 and Wildlife (Amendment) Act (2000) (as amended); hereafter collectively referred to as the Wildlife Acts;
- European Communities (EC) (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011 (as amended); hereafter referred to as the Birds and Habitats Regulations;
- EU Birds Directive 2009/147/EEC;
- EU Habitats Directive 92/43/EEC (as amended); and,
- Flora (Protection) Order, 2015.

RELEVANT GUIDELINES

- Advice Notes on Current Practice (in preparation of Environmental Impact Statements) (EPA, 2003 and updated Draft 2015);
- Guidelines on the Information to be contained in Environmental Impact Statements (EPA, 2002 and updated Draft 2015);
- Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd Edition. (CIEEM 2016);
- Guidelines for Preliminary Ecological Appraisal (CIEEM, 2013)
- Best Practice Guidance for Habitat Survey and Mapping (Heritage Council, 2011);
- A Guide to Habitats in Ireland (Fossitt, 2000);

and

- Environmental Planning and Construction Guidelines Series (National Roads Authority, 2005 – 2011).

2.2.3. DESK STUDY

In addition to those listed in the references section of this chapter, key resources included:

- Ordnance Survey of Ireland mapping and aerial photography available from www.osi.ie;
- Online data available on protected species as held by the National Biodiversity Data Centre (NBDC) from www.biodiversityireland.ie;
- Online data available on European sites as held by the National Parks and Wildlife Service (NPWS) from www.npws.ie;
- Information on land-use zoning from the online mapping of the Department of the Environment, Community and Local Government www.myplan.ie;
- Information on water quality in the area available from the Environmental Protection Agency (EPA) www.epa.ie;

- Information on the status of EU protected habitats and species in Ireland (National Parks & Wildlife Service, 2013a & 2013b);

RELEVANT LOCAL POLICIES AND PLANS:

- Fingal County Development Plan 2017-2023;
- River Basin Management Plan 2018-2021.

2.3 PHASE 1 HABITAT SURVEY & FLORA SURVEYS

The habitat survey was based upon an extended Phase 1 Survey in line with the Heritage Council's Best Practice Guidance for Habitat Survey and Mapping (2010). The classification of habitats recorded during the field survey is based on the Heritage Council's A Guide to Habitats in Ireland.

The Guide to Habitats in Ireland classifies habitats according to a hierarchical framework with Level 1 habitats representing broad habitat groups, Level 2 representing habitat sub-groups and Level 3 representing individual habitat types. The Phase I Field Survey focused on identifying habitats to Level 3 of the Guide to Habitats in Ireland. The survey was completed on the 8th August 2019.

Plant nomenclature in this report follows Webb (1996) for vascular plants and Smith (2004) for mosses.

2.4 RESULTS

2.4.1 DESKTOP ANALYSIS

Designated Conservation Areas

The lands occurring within and immediately adjacent to the study site are not subject to any European Site designations. The nearest European Sites to the study area is over 5km away. There are five SACs and two SPAs occurring in the wider vicinity. Table 1 presents the European Sites within a 15km buffer of the Kellystown Lands.

TABLE 1 EUROPEAN SITES WITHIN A 15KM BUFFER OF LAP LANDS

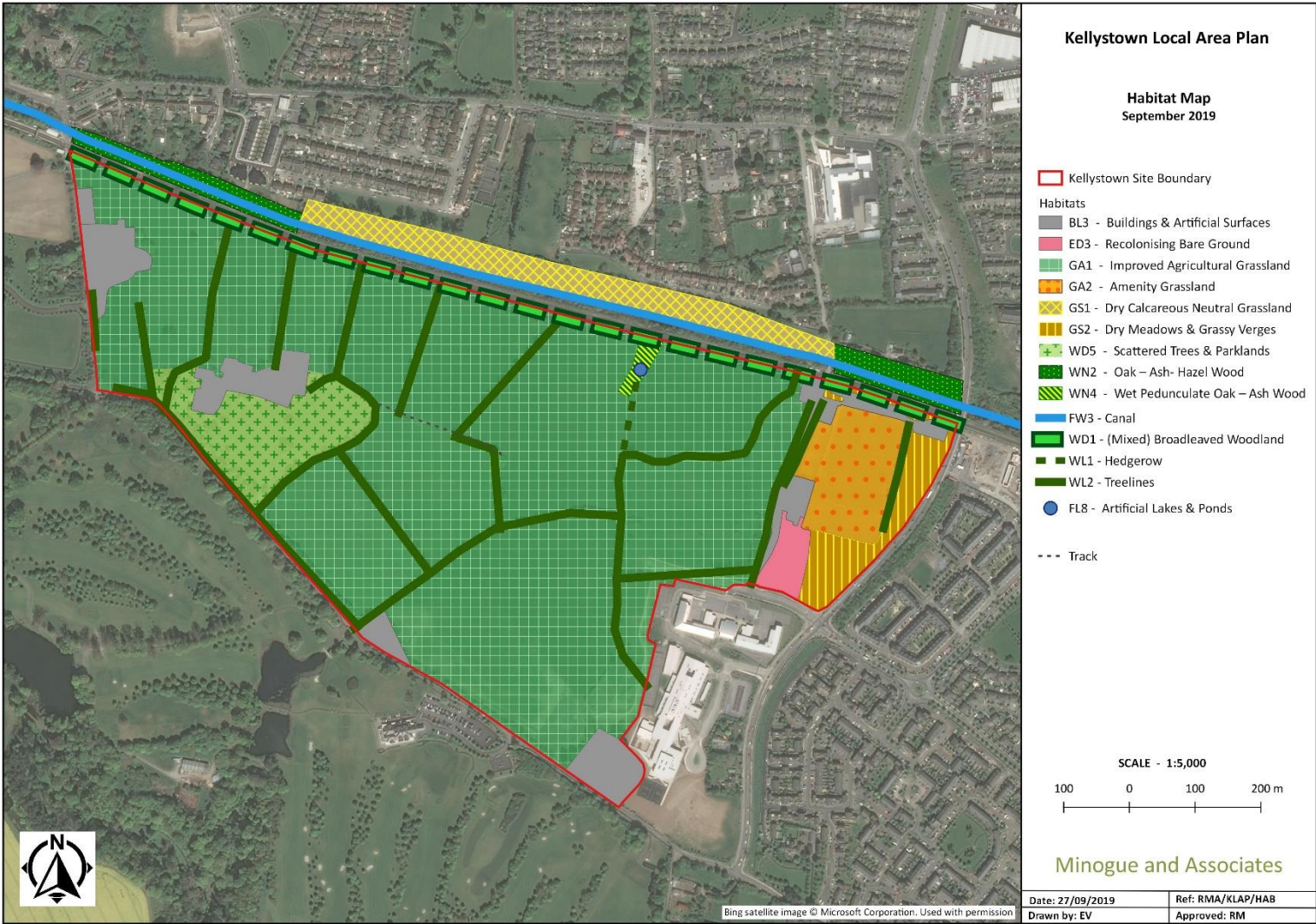
Site Code	Site Name	Distance To (m)	Qualifying Interests (* denotes a priority habitat)
001398	Rye Water Valley/Cartron SAC	5187.12	Habitats 7220 Petrifying springs with tufa formation (Cratoneurion)* Species 1016 Desmoulin's Whorl Snail (<i>Vertigo moulinsiana</i>) 1014 Narrow-mouthed Whorl Snail (<i>Vertigo angustior</i>)
001209	Glenasmole Valley SAC	13610.69	Habitats 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) 6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) 7220 Petrifying springs with tufa formation (Cratoneurion)*
000210	South Dublin Bay SAC	14173.69	Habitats 1140 Mudflats and sandflats not covered by seawater at low tide 1210 Annual vegetation of drift lines 1310 Salicornia and other annuals colonising mud and sand 2110 Embryonic shifting dunes
0004024	South Dublin Bay and River Tolka Estuary SPA	12477.13	Birds A144 Sanderling (<i>Calidris alba</i>) A157 Bar-tailed Godwit (<i>Limosa lapponica</i>) A149 Dunlin (<i>Calidris alpina</i>) A162 Redshank (<i>Tringa totanus</i>) A179 Black-headed Gull (<i>Chroicocephalus ridibundus</i>) A143 Knot (<i>Calidris canutus</i>) A192 Roseate Tern (<i>Sterna dougallii</i>) A046 Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) A141 Grey Plover (<i>Pluvialis squatarola</i>) A130 Oystercatcher (<i>Haematopus ostralegus</i>) A194 Arctic Tern (<i>Sterna paradisaea</i>) A193 Common Tern (<i>Sterna hirundo</i>) A137 Ringed Plover (<i>Charadrius hiaticula</i>) Habitats Wetlands

The nearest proposed Natural Heritage Area to the subject lands is the Royal Canal pNHA which forms the northern boundary outwith the subject lands. This has been surveyed as part of the Royal Canal Greenway proposals, most recently in 2018¹.

The following Sub-Sections describe the habitats occurring within and immediately adjacent to the survey 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. wet grassland GS4). The locations and extent of each habitat described below are illustrated on Figure 1. Appendix 1 provides a description of the fields surveys as part of the habitat survey undertaken.

¹ Royal Canal Urban Greenway Biodiversity Assessment, Fingal CC Natura Ltd 2018

FIGURE 1 HABITATS WITHIN KELLYSTOWN LAP BOUNDARY



2.4.1 IMPROVED AGRICULTURAL GRASSLAND (GA1)

The nine fields surveyed correspond to improved agricultural grassland (GA1). Most of the fields are included within the curtilage of Kellystown House and are grazed by high value horses and / or cows. The standard management practice adopted on the estate is routine herbicide treatment of all hedgerow edges to prevent seed dispersal of noxious weeds such as docks (*Rumex* spp.) and spear thistle (*Cirsium vulgare*). This has resulted in a sparse native ground flora and over-abundance of weedy species such as willowherbs and noxious weeds which tend to quickly colonise ground laid bare by herbicide treatment. Over the medium to long term the health of the hedgerows is likely to be damaged by the build-up of herbicide residues. The grassland is mainly rye (*Lolium perenne*) and white clover (*Trifolium repens*) with plentiful bentgrass (*Agrostis stolonifera*) and occasional weeds characteristic of high nitrogen conditions, such as docks (*Rumex* spp.) and Spear thistle (*C. vulgare*). Annex A presents a summary of each of the nine fields surveyed as part of the habitat survey. Note that the lands at Greenmount House, west of Kellystown are not yet accessible.

2.4.2 AMENITY GRASSLAND (GA2)

This corresponds to the playing pitch on the eastern boundary of the LAP at St Mochta's Football Club.

2.4.3 DRY MEADOWS AND GRASSY VERGES (GS1)

Again this habitat is located at the eastern boundary of the LAP lands and forms the southern and eastern boundary of the LAP.

Rounding the corner to the main road there are planted Ash (*Fraxinus excelsior*), and Dogwood (*Cornus* spp) with bindweed (*Calystegia sylvatica*) and ragosa roses behind. Behind this there is an earth bank of brambles, red bartsia, red clover. Bumblebees were plentiful during the survey. Through the bank there is an ungrazed field, with a rough path used as a short-cut to the playing field. The grass is long and herb rich with some *Festuca* sp., rushes (*Juncus* sp.) and plentiful Tufted vetch and Black knapweed. An unidentified vetch, possibly (*Vicia sativa*), has been dominant earlier in the summer and has now gone over. This grassland could be brought back to species rich grassland with careful management. Rosebay willowherb has established a stand mid-field and there are occasional Ragwort plants.

2.4.4 HEDGEROWS (WL1)/ TREELINES (WL2)

All fields within the study area are enclosed by hedgerows and treelines. A total of 19 hedgerows and treelines have been identified within the study area. The hedgerows and treeline field boundaries are numbered in Figure 2. The study area supports approximately 5.6km of linear hedgerow and treelines.

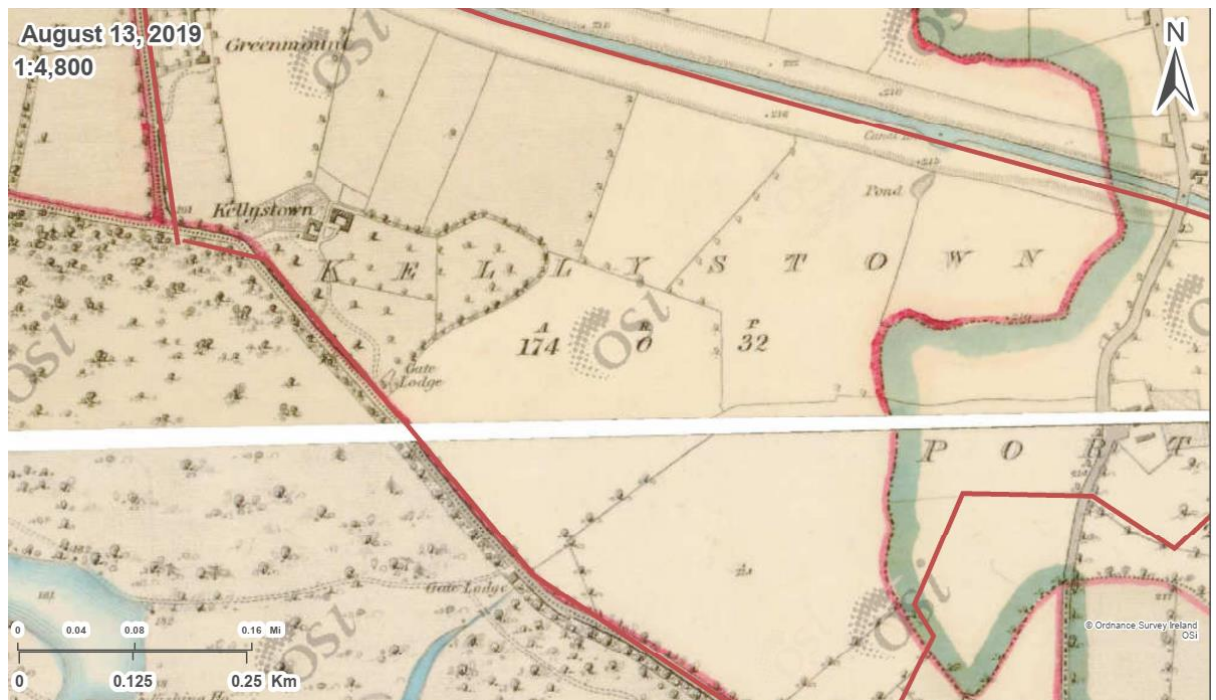
The dominant species in hedgerows are Ash (*Fraxinus excelsior*), Hawthorn (*Crataegus monogyna*) and Elder (*Sambucus nigra*). Shrub species noted along the hedgerows and treelines include Holly (*Ilex aquifolium*), Rowan (*Sorbus aucuparia*), elder (*S. nigra*) with occasional blackthorn (*Prunus spinosa*). Sycamore (*Acer pseudoplatanus*) was recorded in eight of the hedgerows and treelines surveyed.

The historic hedgerows and treelines occurring within the site are shown on Figure 2. Each of these field boundaries are indicated on the 1838 6-inch maps and the non linear boundary that runs north to south along the eastern part of the LAP lands is a parish and townland boundary. In three instances field boundaries at Kellystown house follow the 1838 boundaries but have been replaced in the past 40 year by a treeline of planted Poplar species.

18 of the 19 hedgerows are more accurately described as treelines or linear strips of woodland given their width exceeds 4m. Of note in this regard is the mature treelines that forms the northern boundary between the LAP lands and the railway corridor (H2).

A hedgerow appraisal and evaluation survey has been undertaken and the results are presented in Appendix 2. A summary of the appraisal in terms of significance and condition is presented in Table 2.

FIGURE 2 ORDNANCE SURVEY MAP 1ST EDITION, LANDS AT KELLYSTOWN (HERITAGEMAPS.IE)



2.4.5 WET PEDUNCULATE OAK-ASH WOODLAND (WN4)

Associated with the infrastructure of the Royal Canal is a canal pond (classified as Artificial Lake and Pond FL8, see below). The woodland is not present on the 1st edition Ordnance Survey map whilst the pond is marked. Most probable is the construction of the railway closely after the Royal Canal construction rendered this pond unusable for its original purpose to hold bricks and the mixed treeline developed around the pond.

Tree species recorded include a mature woodland of ash (*F. excelsior*), hawthorn (*C. monogyna*) and blackthorn (*P. spinosa*) with established woodland flora including Lords and Ladies (*Arum maculatum*), and Hart's tongue fern (*Asplenium scolopendrium*) although it was inaccessible at the time of the survey and may contain more vernal species.

2.4.6 ARTIFICIAL LAKES AND PONDS (FL8)

As outlined above in Section 2.3 this is a manmade pond associated with the industrial heritage of the Royal Canal. It is enclosed by woodland WN4 and includes steep embankments to the pond itself. Access is not possible due to the fencing and steep slopes. Based on a visual inspection, this pond is still with no obvious water supply in evidence. It is heavily shaded by the woodland and shows signs of nutrient enrichment with vegetation dominated by duckweed (*Lemna* sp.).

2.4.7 DRAINAGE DITCHES

Drainage ditches are present infrequently on the LAP lands, with ditches associated in whole or part with 5 hedgerows; one is a dry double ditch (H13); whilst the only wet ditch is at H16, a steep embankment on the eastern side with water flowing in it on the day of the survey, and contained some different species not found elsewhere in the site, including brown sedge (*Carex disticha*), great manner grass (*Glyceria maxima*), and wild celery (*Apium* sp). Ground flora next to the ditch included the invasive shrub, snowberry (*Symphoricarpos albus*), native hogweed (*H. sphondylium*), and coltsfoot (*Tussilago farfara*).

2.4.8 RECOLONISING BARE GROUND (ED3)

The first small area is disturbed ground where some rubbish has been dumped on the eastern part of the lands. The flora contains a few (*Lolium italicum*), red shanks, shepherd's purse, knotgrass and swine cress and several willowherb species. Coltsfoot is establishing as are buddleia and willow saplings toward the northern edge. Grass cover is low, with herbs dominating creeping buttercup, (*Vicia sativa*), Black medic, silverweed (*P. anserina*) and creeping cinquefoil (*P.reptans*), red bartsia (*Odontites vernus*), pineapple weed (*Matricaria discoidea*) and ragweed point towards recent disturbance. Along the roadside fence there are small dogwood shrubs (*Cornus* sp.), presumable escapes from planting.

2.4.9 BUILT LAND AND ARTIFICIAL SURFACES (BL3)

This corresponds to houses, outbuildings, lanes and hard surfaces within the LAP boundary. Some of the older buildings such as those associated with Kellystown House, and a derelict building on the east offer crevices and potential roosting opportunities for bats.

2.4.10 SCATTERED TREES AND PARKLAND (WD5)

A small area to the east and south of Kellystown House is classified as Scattered Trees and Parkland and is likely demesne planting associated with the construction of Kellystown House in the 1800s. This parkland is grazed by horses, enclosed by timber fencing and includes a variety of mature specimen trees including a Lebanon Cyprus (*Cedrus liban*) and Lime Tree (*Tillia spp*) (forming part of H16). A small area of calcareous grassland was noted adjacent to this area There is a narrow border of Dry Calcareous Grassland, GS1, near Kellystown House (Plate 1), indicating what the vegetation would be like under different management.

PLATE 1 CALCAREOUS GRASSLAND ON EDGE OF IMPROVED AGRICULTURAL GRASSLAND.



2.5 ROYAL CANAL TOWPATH

2.5.1 ROYAL CANAL TOW PATH NORTH

The tow path to the north of the Royal Canal was surveyed from the entrance on the Porterstown Road, to just past the bridge where steps lead down from the railway station, approximately 1 km.

The path is laid to tarmac with a steep dry earth bank on the north side which rises 2 to 3 m to a flatter area above, and a narrow vegetation margin of 1 to 3 m on the south side with a steep bank down to the river (Image 4).

The dry bank alternated between being shaded with woodland ground flora and areas which were in full sunlight and not shaded by the canal-side trees. To the south of the path the bank is shaded and the sharp slope prohibited direct surveying and sampling of the aquatic vegetation in the canal. This difficulty of access may help protect the waterway from invasive plants.

The tow path north was walked from east to west. Terrestrial plants seen are discussed first, followed by aquatic species.

At the entrance to the tow path there is a mature larch (*Larix decidua*) where vegetation on the bank has been cut to keep the pathway clear. This is the only area which appears to be managed.

2.5.2 WILDFLOWERS

There was a great diversity of wildflowers which are supporting several bumblebee, butterfly and insect species. Meadowsweet (*Filipendula ulmaria*), herb Robert (*Geranium robertianum*), bush vetch (*Vicia sepium*), cat's ear (*Hypochaeris radicata*), honeysuckle (*Lonicera periclymenum*), black medic (*Medicago lupulina*), white clover (*T. repens*), red clover (*Trifolium pratense*), upright hedge parsley (*Torilis japonica*), Garlic mustard (*Alliaria petiolata*), Tutsan (*Hypericum androsaemum*), square stalked St John's wort (*Hypericum tetrapterum*), yellow vetchling (*Lathyrus pratensis*) and native hogweed (*H. sphondylium*) are all fairly common. More noteworthy species include wild carrot (*Daucus carota*) (Image 5), lady's bedstraw (*Galium verum*), agrimony (*Agrimonia eupatoria*), salad burnet (*Sanguisorba minor*), common restharrow (*Ononis repens*), dove's foot cranesbill (*Geranium molle*), wild marjoram (*Origanum vulgare*), field scabious (*Knautia arvensis*), kidney vetch (*Anthyllis vulneraria*), black knapweed (*Centaurea nigra*), red campion (*Silene dioica*) and Hemp agrimony (*Eupatorium cannabinum*). Many of these species favour calcareous and free-draining soils.

In the more shaded areas, the poisonous lords and ladies (*Arum maculatum*) and Hart's tongue fern (*Asplenium scolopendrium*) were locally abundant.



PLATE 2 WILD CARROT (DAUCUS CAROTA), CHARACTERISTIC OF CALCAREOUS HABITATS

2.5.3 SHRUBS AND TREES

Elder (*S. nigra*), wild privet (*Ligustrum vulgare*), gorse (*Ulex europea*), alder (*Alnus glutinosa*), rowan (*Sorbus aucuparia*), ash (*F. excelsior*) which was showing signs of ash dieback disease, hawthorn (*C. monogyna*), brambles (*Rubus fruticosus* agg.), dog rose (*Rosa canina*), and wild raspberry (*Rubus occidentalis*).

Buddleia (*Buddleia davidii*) and box-leaved honeysuckle (*Lonicera nitida*) were occasional. Both these shrubs can become highly invasive and implementation of control measures are recommended.

2.5.4 INVASIVE SPECIES

Rosebay willowherb (*Epilobium hirsutum*) was abundant. This native seed-dispersed plant can create large stands, particularly following disturbance in late summer and early autumn.

Coltsfoot (*T. farfara*) was locally abundant. This species, although native, can become invasive, spreading rapidly by rhizome fragments. Because it dies back in winter, soil contaminated with coltsfoot can be easily disturbed or transported to another area.

Bindweed (*Convolvulus major*) was recorded as infesting shrubs and ground flora near the station, which will eventually lead to suffocation of the plants it grows up. It is important not to inadvertently spread it by disturbance.

2.5.5 INVASIVE ALIEN SPECIES

Giant butterbur (*Petasites japonicus*) infests the north canal bank for 30 m opposite the steps to the station car park (Image 6). This introduced species rapidly spreads by underground rhizomes and destroys native vegetation by shading out ground dwelling species. Timely eradication is critical.

Buddleia (*Buddleia davidii*) and box-leaved honeysuckle (*Lonicera nitida*) are both highly invasive, and a programme of management is strongly recommended.

Winter heliotrope (*P. fragrans*) infests the area around the train track, old station building, and the steep wooded south bank of the canal. This species spreads remarkably quickly, particularly if the soil is disturbed. It shades out all native ground flora and rapidly becomes an unsightly monoculture. It is very difficult to eradicate, but efforts should be made to control its rate of spread.

Sycamore (*Acer pseudoplatanus*) and red valerian (*Centranthus ruber*) are not native but they are naturalised throughout Ireland. Both species were recorded as invading stone work along the tow path (Images 7 and 8). Their roots have the capacity to destabilise walls and control measures are recommended.



Plate 3 Giant butterbur infesting the canal bank.



Plate 4 Red valerian (*Centranthus ruber*) can break apart stone work and damage structures.

Plate 5:. Sycamore (*Acer pseudoplatanus*) invading stone work at the canal edge by the bridge.



2.5.6 AQUATIC SPECIES

Floating sweet-grass (*Glyceria fluitans*), yellow water lily (*Nupha lutea*), unbranched bur-reed (*Sparganium emersum*), arrowhead (*Sagittaria latifolia*), common water plantain (*Alisma plantago-aquatica*), water-milfoil (*Myriophyllum sp.*) and broad-leaved pondweed (*Potamogeton natans*).

No invasive alien aquatic species were recorded during the survey; however, the banks were very steep and the water was largely inaccessible. A more detailed survey by boat, along with routine monitoring is recommended.

2.5.7 MEADOW

An area of unmanaged grassland above the tow path and accessed by a step muddy track is species rich and could be restored to conservation status. Common rest harrow (*O. repens*) is locally abundant as is field scabious (*K. arvensis*), kidney vetch (*A. vulneraria*), and black knapweed (*C. nigra*).

The presence of restharrow is important in conservation terms. Although formerly widespread in its Irish distribution, this species is becoming scarce. A familiar species in sand dune systems of Wicklow and Wexford, its range was described by a leading botanist as follows: 'Frequent in the South and East [of Ireland], rare elsewhere', (Webb, 1967). Since then it has declined further. The New Atlas of the British & Irish Flora (2000) indicates contraction of its Midlands distribution and only three locations west of the Shannon (D'Arcy, 2005).²

Restoration of this habitat has the potential for citizen science projects and outdoor classrooms. It can be restored to a species rich status by mowing on a high setting in early autumn after seed set or by carefully managed horse grazing. Currently, there is encroachment by brambles throughout the meadow and by blackthorn (*P. spinosa*) at the hedgerow boundaries. These should be cut back manually.

Signage to raise awareness and for educational purposes is recommended.

2.5.8 TOW PATH SOUTH

The short section of the south tow path is very different from the north tow path with high, very steep banks and dense overhanging vegetation, creating dense shade in

² D'Arcy, G (2005) Clarinbridge Cow Park, habitats and heritage report. Prepared for Clarinbridge Cow Park Steering Committee.

places. Bank erosion is severe on both river banks. Vegetation is characteristic of woodland species and a further survey is recommended for the spring.



Plate 6: Entrance to the tow path (south)

2.5.9 WILDFLOWERS AND GROUND FLORA

Many of the plants recorded are those typically found in woodlands because of the dense shade created by the high unmanaged hedgerow. Species recorded include wood avens (*Geum urbanum*), herb robert (*G.*), native hogweed (*H. sphondylium*), Hemp agrimony (*E. cannabinum*), broad leaf plantain (*Plantago major*), willowherbs, bush vetch (*Vicia sepium*), viola spp., selfheal (*Prunella vulgaris*), germander speedwell (*Veronica chamaedrys*), lords and ladies (*A. maculatum*), and the ferns polypody (*Polypodium vulgare*) and Harts tongue (*Asplenium scolopendrium*). There may be more vernal species found if surveyed again in the spring. Less shaded areas were vegetated by lady's bedstraw (*G. verum*), marjoram (*O. vulgare*) and black knapweed (*Centaurea nigra*). Nettles (*U. dioica*) may become a problem given the narrowness of the path.

2.5.10 SHRUBS AND TREES

The hedgerow is predominately composed of ash (*F. excelsior*), hawthorn (*C. monogyna*) and elder (*S. nigra*). Sycamore (*A. pseudoplatanus*) borders the canal where there has been bank collapse. Buddleia (*B. davidii*) infests the north bank and there is a large stand of invasive snowberry (*S. albus*) at the entrance to the path.

2.4.10 INVASIVE NATIVE SPECIES

As described in Section 2.4.5, rosebay willowherb and coltsfoot can spread to form extensive stands and manual (not herbicide) control is recommended.

Prickly lettuce (*Lactuca serriola*) is an invasive alien species that was first recorded in Ireland in 2015. To date, it appears to be confined to Leinster and southern parts of Munster. Its control is recommended.

3 HEDGEROW APPRAISAL SURVEY KELLYSTOWN LOCAL AREA PLAN

3.1 INTRODUCTION

This report presents the results of the Hedgerow Appraisal and Condition Assessment undertaken on the hedgerows and treelines identified on the lands covered by the draft Kellystown Local Area Plan.

Field surveys were undertaken on 8th August 2019 by Ruth Minogue MCIEEM, Dr Fran Giaquinto MCIEEM, CEnv and Phoebe O'Brien, Bsc Botany. Additional fieldwork was undertaken on 19.08.2019. A site visit by the wider team was undertaken on 18.09.2019 to access the western lands at Greenmount estate.

3.2 METHODOLOGY

The hedgerow survey and appraisal methodologies followed the *Hedgerow Appraisal System – Best Practice Guidance on Hedgerow Survey, Data Collation and Appraisal* (Foulkes et al., 2013).

The hedgerows within the LAPS lands were surveyed. Access was not always possible to both sides or the interior of the hedgerow (for example the hedgerow/treeline that bounds the railway corridor). The hedgerow flora species were identified as well as any hedgerow features and where possible the confirmation of earth bank/ditch or stone wall. The surveyors walked the length of the hedgerow where access was possible and a 30m representative survey section. For the lands in Kellystown House farm access was limited in two fields due to the presence of bulls or high value race horses.

The main constraint relates to the ground flora and seasonality of the survey, many of the species identified in the Hedgerow Appraisal System are Spring or early Summer flowering and given the time of the surveys in August would no longer be in flower so may be under recorded.

Figures 3. presents the hedgerows surveyed and the 30m survey strip. Figure 4 presents the appraisal of the hedgerows surveyed in terms of overall significance and condition.

Section 2 presents a summary of the hedgerow appraisal and recommended enhancement/mitigation measures where relevant. It is proposed to retain all the hedgerows on site but a number of hedgerows will be severed to facilitate the proposed road through the LAP lands.

3.3 SUMMARY OF HEDGEROW APPRAISAL SURVEY

All fields within the LAP area are enclosed by hedgerows and treelines. A total of 18 treelines and one hedgerow have been identified within the study area. Of the treelines, three were not surveyed as they are relatively recently planted treelines comprising Poplar spp. that replace earlier field boundaries. The hedgerows and treeline field boundaries are numbered in Figure 3. The study area supports approximately 5.66km of linear hedgerow and treelines.

The dominant species in hedgerows are *Fraxinus excelsior* with *Crataegus monogyna* and some *Sambucus nigra*. Shrub species recorded include *Ilex aquifolium*, *Corylus avellana*, and *Rosa canina*. The occasional mature broadleaved *Quercus petraea* also occurs along the treeline of the townland boundary. A range of common herb species occur along the hedgerows that have not been treated with herbicide.

Most of the hedgerows and treelines on site are recorded as field boundaries in the 1838 6 -inch maps. Some of the historic field boundaries within the study area may be representative of ancient hedgerows. The unmanaged nature of the field boundary that forms then northern boundary of the LAP adjacent to the railway corridor has facilitated their spread into adjoining habitat, resulting in wide field boundary corridors. The width of some of this treeline is in excess of 5m, resulting in the development of features more representative of linear woodland.

3.3.1 NATURE CONSERVATION VALUE

The hedgerows occurring within the study site represent a long-term habitat feature within the area. The majority of them are representative of species-rich hedgerows, are of historic value and are of high local conservation value with respect to the species potentially dependent upon them for shelter and food. These hedgerows may function as important commuting and foraging corridors for bats and non-volant terrestrial mammals as well as nesting habitat for a variety of bird species. The native flora supported by the hedgerows are also likely to support a diverse community of invertebrates. The nature conservation value of this habitat is of high local conservation importance (Rating D).

FIGURE 3 HEDGEROW SURVEY KELLYSTOWN

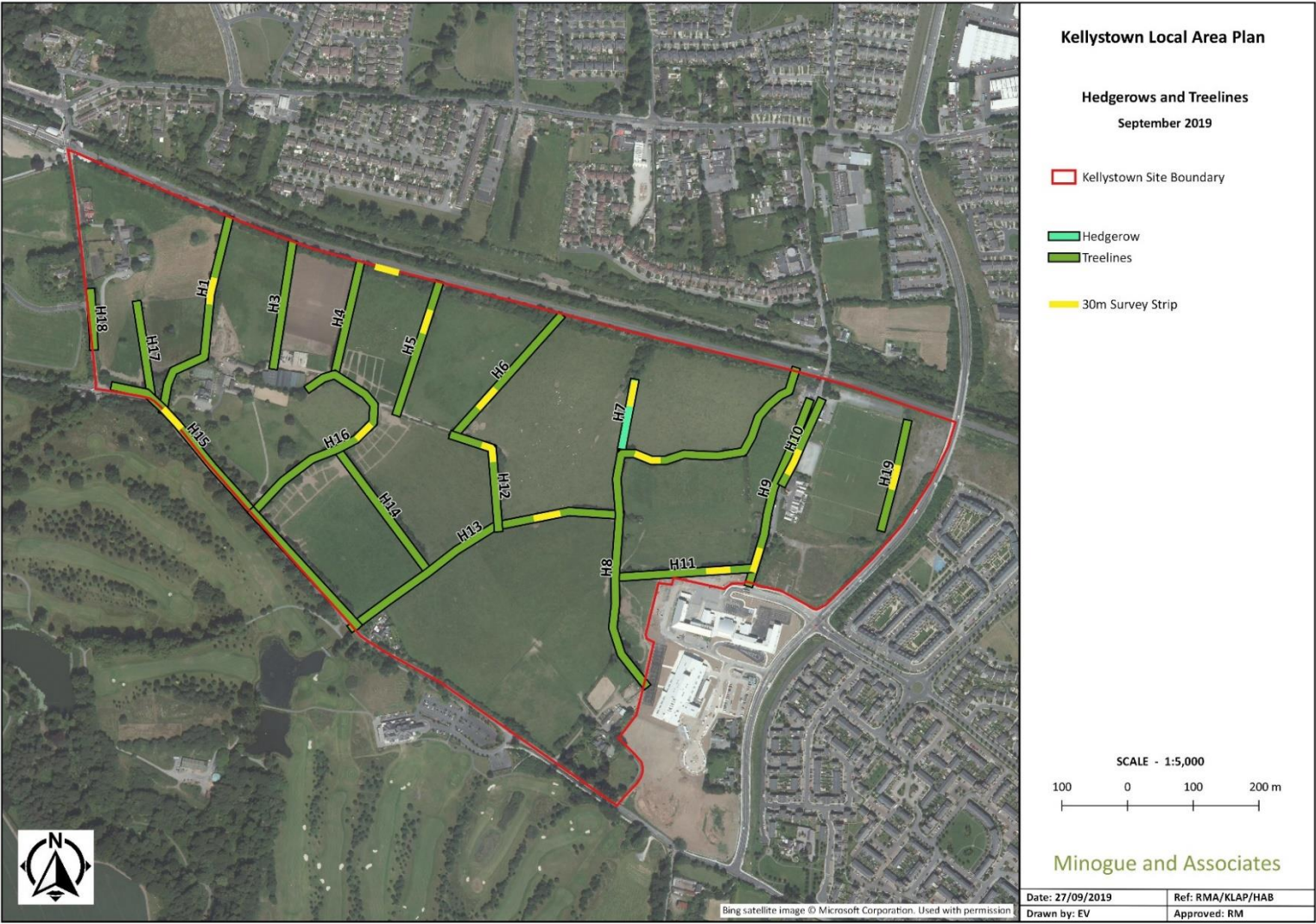
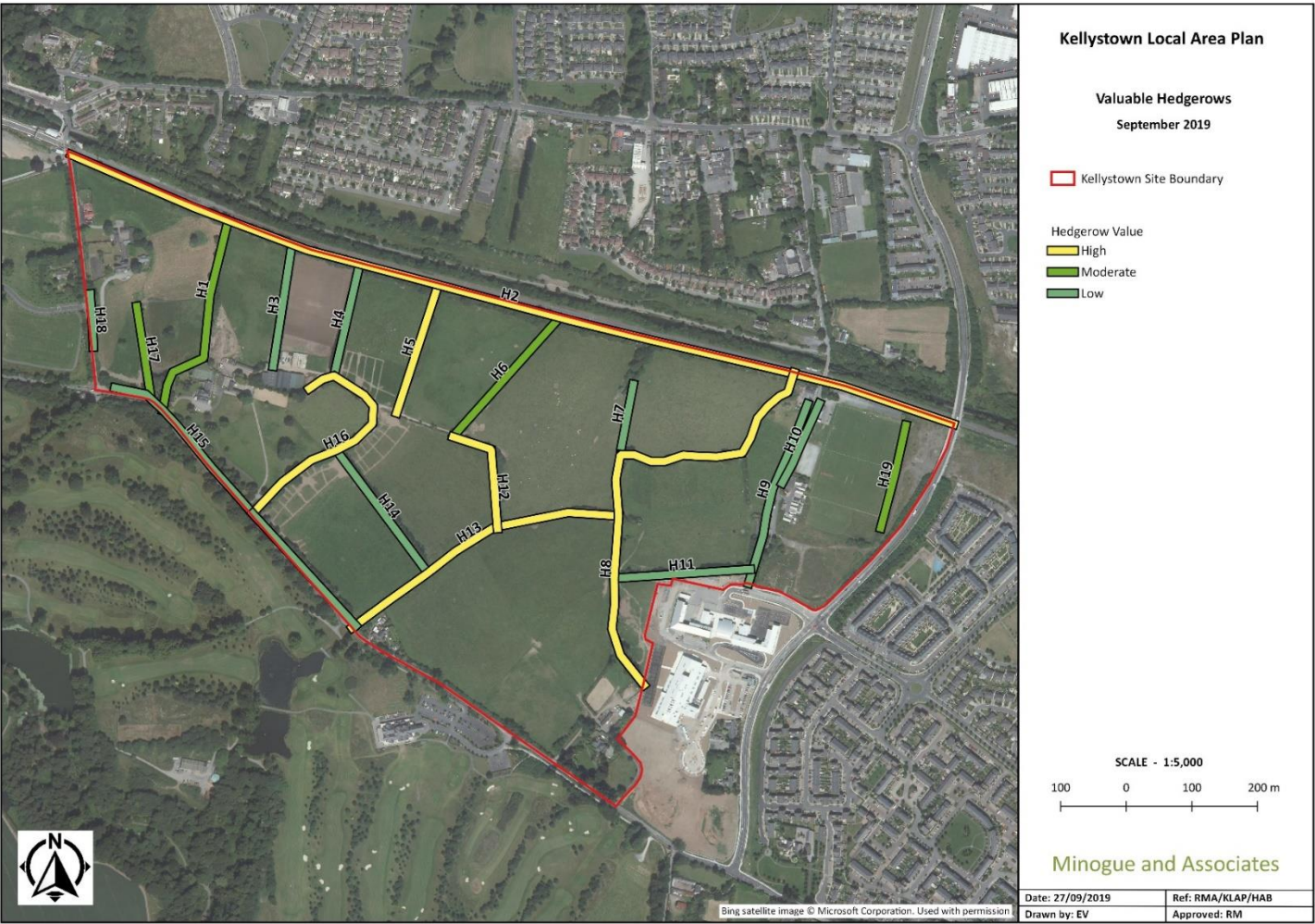


FIGURE 4.EVALUATION OF HEDGEROWS AND TREELINES



3.4 SUMMARY OF HEDGEROW APPRAISAL SURVEY

TABLE 2 SUMMARY OF HEDGEROW APPRAISAL SURVEY

Hedgerow Number	Summary	Fossit Classification	Significance	Condition
H1	A mature hedgerow at the property boundary between Kellystown and Greenmount House; this the most intact westerly hedgerow in the LAP boundary. The lands are subject to spraying with herbicide with a ground flora of herbs tolerant of herbicide application which is used throughout the farm on field borders and under fencing. This hedgerow is mapped as a treeline on the 1st edition series and connects with the mature treeline and embankment to the north associated with the railway corridor.	WL2	13	10
H2	A mature treeline that grades into linear woodland forming the northern boundary of the LAP lands. This treeline is the longest linear boundary on the lands and is largely intact forming an important ecological linear feature and connecting with directly with 8 hedgerows/treelines that run north south within the LAP lands. The transport corridor of the railway line and the Royal Canal pNHA form the northern habitats increasing its overall ecological significance. The treeline and woodland are not marked as such on the 1st Edition O.S maps but are recorded as a boundary. This treeline is dominated by ash (<i>F. excelsior</i>), holly (<i>Ilex aquifolium</i>), and hawthorn (<i>Crataegus monogyna</i>).	WL2	19	17
H3 and H4	Recently planted (within 40 years) treelines of poplars replacing any earlier hedgerow planting. These are fenced by timber and herbicide application. They are of low ecological value based on mono species and narrow base with little ground flora.	WL2	0	0
H5	A well maintained dense hedgerow with a box shaped and supporting some good stands of mature Ash that runs north to south from the railway treeline and linear woodland. The species comprise hawthorn (<i>C. monogyna</i>), blackthorn (<i>Prunus spinosa</i>),	WL2	13	20

Hedgerow Number	Summary	Fossit Classification	Significance	Condition
	ash (<i>F. excelsior</i>), holly (<i>Ilex aquifolium</i>), and elder (<i>Sambucus nigra</i>).			
H6	This hedgerow provides good north south connectivity between railway corridor and two hedgerows south. The species comprise ash (<i>F.excelsior</i>), with shrub layer of holly (<i>Ilex aquifolium</i>), ivy (<i>Hedera helix</i>) and elder (<i>Sambucus nigra</i>).	WL2	14	12
H7	A gappy hedgerow that is dominated by hawthorn and is heavily poached and used by cattle for shelter. Its overall importance relates to the proximity to the Canal Pond and woodland fringe immediately to the north, that in turn links to the Railway corridor woodland (H2), to the south the hedgerow links to the townland boundary treeline	WL1	11	5
H8	A townland and parish boundary, this non linear and structurally diverse treeline runs north from the railway corridor to Luttrellstown Raod. Some gaps are present, primarily related to access to fields. The boundary varies with banks, wet ditches, occasional stone walls and a good diversity of tree and shrub species though dominated by Ash (<i>F.excelsior</i>) and occasional Oak (<i>Querucs peatrea</i>)	WL2	21	24
H9	A roadside treeline that is bisected by old farm buildings, and is recorded as a treeline on the 1st Edition Ordnance Survey Map. A yew tree is present close to the southern part of the treeline facing the roadside. Sycamore(<i>Acer pseudoplatanus</i>), blackthorn (<i>Prunus spinosa</i>), and hawthorn (<i>C.monogyna</i>) in the hedgerows have brambles and nettles growing under them..	WL2	13	6
H10	A roadside treeline that is has a number of gaps associated with access to housing and sports grounds, and is recorded as a treeline on the 1st Edition Ordnance Survey Map. A drain with extensive rubbish is present as well as a stand of winter heliotrope, and dogwood, a presumable garden escape is present along parts of this hedgerow. Ash, hawthorn, hazel are principal species.	WL2	8	8
H11	A treeline comprised entirely of mature ash on a low earth bank, formerly a longer treeline, now separated by recent road infrastructure. Between the road and the ash trees there is an earth mound covered in creeping thistle, fumitory and other ruderals	WL2	11	5

Hedgerow Number	Summary	Fossit Classification	Significance	Condition
H12	An important hedgerow for connectivity around the lands, linking with four other hedgerows. This hedgerow supports a more diverse tree species compared to others on the lands. Dominant species are ash, hawthorn with rowan, field rose and blackberry present also	WL2	14	16
H13	A long hedgerow that runs northeast-southwest, this partly includes a double hedgerow with embankments for part of the hedgerow, creating a small scale green lane. This feature may have been a former internal farm track. Another important hedgerow for connectivity that links with H8 (townland boundary hedgerow) and three other hedgerows/treelines. Hawthorn (<i>C.monogyna</i>), Ash (<i>F.excelsior</i>), Holly (<i>I.aquifolium</i>) and Rowan (<i>Sorbus aucoparia</i>) are present.	WL2	22	12
H14	A Single treeline of poplar trees (matchstick poplars); this is of low ecological value and the trees are in dangerous condition given their propensity to snap in windy and stormy weather. The poplars are fenced with timber and herbicide applied	WL2	0	0
H15	This forms the southern boundary of the lands and fronts Porterstown Road. Remnants of the original hedgerow remain. Around Kellystown House, the treeline comprises beech (<i>Fagus sylvatica</i>), planted small leaved lime (<i>Tilia cordata</i>), turkey oak (<i>Quercus cerris</i>) and whitebeam (<i>Sorbus aria</i>). The eastern end now comprises a stone wall and hedging associated with Luttrellstown College, thereafter the hedgerow includes hawthorn, blackthorn and occasional specimen trees such as lebanan cypress as well as mature ash. Ivy growth is heavy on these parts of the treeline. The hedgerow is intact primarily in two stretches along this road as identified on the hedgerow map.	WL2	10	8
H16	This curved treeline suggests demesne planting associated with Kellystown House, and is marked as such on the 1st edition O.S map. There is a gravel track and deep ditch on the eastern boundary of the hedgerow. This ditch had water flowing in it on the day of the survey, and contained some different species not found elsewhere in the site, including brown sedge (<i>Carex disticha</i>), great manner grass (<i>Glyceria maxima</i>), and wild celery (<i>Apium sp.</i>). Ground flora next to the ditch	WL2	21	17

Hedgerow Number	Summary	Fossil Classification	Significance	Condition
	included the invasive shrub, snowberry (<i>Symphoricarpos albus</i>), native hogweed (<i>H. sphondylium</i>), and coltsfoot (<i>Tussilago farfara</i>). Tree species present include Ash (<i>F.excelsior</i>) , Hawthorn (<i>C.monogyna</i>), Lime (<i>Tillia spp</i>), sycamore (<i>A.pseudopiantaus</i>) and rowan (<i>S.aucoparia</i>)			
H17	An internal remnant field boundary approximately 140m in length. Desktop survey only. As with other treelines on the lands, Ash is a dominant species.		11	12
H18	Hedgerow along Clonsilla Road. Similar to Luttrellstown Road, it is fragmented with a range of boundaries and stretches of intact hedgerow remain. This road is also a townland boundary increasing its historical value.		11	7
H19	A single hedgerow within the eastern part of the lands, evidence of large tree cutting within the past 2 decades. This supports a good diversity of tree and shrub species nonetheless. Some rubble associated with construction (road?) works are present on the eastern bank and herbicide application on the playing fields western side reduces ground flora diversity. It does provide a linear corridor between the Royal Canal and potential high value grassland to the south.		13	11

4 BAT SURVEY

4.1 INTRODUCTION

In line with the requirements of the brief, two transect surveys were undertaken on the Kellystown Lands over the 2019 activity season.

Prior to undertaking bat surveys, the status of habitats occurring within the study area were classified in terms of their potential to function as bat foraging habitat. The classifications follows the approach outlined by Bat Conservation Trust (2012) to assessing the value of potential development sites for bats, based on the occurrence of habitat features within the landscape, and the likelihood of bats being present. The classifications range from low to high.

4.1.1 IDENTIFICATION OF POTENTIAL BAT ROOSTS

There are a number of structures within the survey site that represent potential bat roosts. In addition, there are a high number of mature trees, mostly ash that could also function as bat roosts.

This assessment followed established Bat Conservation Trust (BCT) guidance and sought to identify features of trees commonly used by bats for roosting and shelter. Such features include natural holes, cracks in major limbs, loose bark, hollows/cavities and dense ivy cover. Where such features were identified they were inspected for field signs indicating the presence of bats. These field signs include scratches and staining at entry points, the presence of bat droppings and the smoothing of surfaces around cavities.

Much of H2 (Railway corridor treeline) supports a variety of trees that could function as bat roosts along its full length. Other veteran and mature trees on site also potentially support roosting bats, in particular at the following hedgerows and treelines: H8, H12, H13, H16.

4.1.2 MANUAL FORAGING ACTIVITY SURVEY

Manual foraging activity surveys were undertaken on the 26th July 2019 and again during 19th August 2019. The manual surveys focused on walking transects along hedgerow and treeline field boundaries occurring within the Kellystown LAP lands. Transects were walked slowly and the location of all bat passes were recorded during each transect survey. Where bats were encountered the time, species of bat, direction of flight, number of passes and estimated number of bats were recorded. Please note that due to access restrictions to lands on Kellystown House and Farm and Greenmount Farm, these transect surveys concentrated on the accessible, eastern part of the lands and along the Porterstown Road.

The manual foraging survey was undertaken using a Ciel electronique and echometer pro (heterodyne and frequency division). Other equipment used during the survey included a high-powered torch and binoculars.

4.1.3 HABITAT CLASSIFICATION

Habitats occurring within and adjacent to the study area provide a potential foraging resource for bat species. The canal pond, hedgerows and treelines, and drainage ditches within the LAP area support a prey resource for foraging bats. There is an abundance of “structured vegetation” in the form of hedgerows and treelines and these features are well connected throughout the site and also provide habitat connections to the railway corridor and Royal Canal to the north, and Luttrellstown Castle and River Liffey to the south.

Habitats of high value occurring to the north include open waterbodies in the form of the Royal Canal, fringing wet woodland and reedbeds, terrestrial woodland and scrub. The habitats associated with Luttrellstown Castle and estate include old mature broadleaved woodland, lakes and the River Lusk which joins the River Liffey to the south. ponds and the River and the River Camac corridor. The habitats occurring within the study area have been classified for their value to function as foraging and commuting habitat for bats in line with Table 4.1 of the BCT guidance manual (Collins, J, 2016). Based on the categorisation of habitats in this guidance manual the habitats occurring within the Masterplan Area are considered to be of at least moderate value for foraging and commuting bats.

ROOST SURVEYS

Emergence surveys on the 19th August 2019 focused on the derelict farm building on the east of the lands adjacent to Porterstown Road. This emergence survey was completed between 21:05 and 22:00. all for bat activity with dry and still conditions and mild temperatures prevailing. Two surveyors undertook the emergence survey, one based on the farmyard, the other at the gable end of the derelict two storey building. Weather conditions were 14C with a slight northwest breeze. See Figure below for location of emergence survey.

In addition, during access for the other surveys, the team were brought to the upper floors of the farm buildings of Kellystown House (two story, traditional slate, forming part of original farm outbuildings). A visual inspection to ascertain evidence of usage by bats indicated through droppings the use of this building as a roost by bats.

Heritage Maps



4.2 RESULTS

Table 3 presents the results from the emergence survey with the location shown below:

4.2.1 EMERGENCE SURVEY

TABLE 3 EMERGENCE SURVEY RESULTS

Emergence Survey 19.08.2019	time	Activity. Visual confirmation (v)
Leisler	21:12	pass
Leisler	21:13	passing across yard to the west (v)
Leisler	21:23	passing along yard to the south (v)
Leisler	21:25	pass
Common Pipistrelle	21:29	pass
Soprano pipistrelle	21:31	pass
Leisler	21:35	pass
Leisler	21:36	pass
Common Pipistrelle	21:37	pass
Common Pipistrelle	21:49	Foraging
Leisler	21:50	foraging across from shed (H8 treeline)
Soprano	21:58	pass
Leisler x 2	21:58	foraging along H9

No bats were recorded emerging from these buildings during emergence survey. However it is clear that bat are active in and around the building and may be roosting in a less accessible (or visible) part of the structure or close by.

4.2.2 MANUAL TRANSECT SURVEYS

Low levels of bat activity were recorded during the manual transects in July and August; however certain linear features on site supported foraging bat activity. The results are presented below in Table 4 below.

TABLE 4 TRANSECT SURVEY RESULTS

Transect Survey 26.07.2019	time	Activity. Visual confirmation (v)
Common Pipistrelle Leisler	21:38	pass along H9 (inside field)
No bat activity recorded along Porterstown Road along H9 and H10.		
Leisler	22:03- 22:04	foraging over H8 (north) and grassland
Common Pipistrelle	22:11	pass along H8 close to H13
Transect Survey 19.08.2019		
common pipistrelle	22:01	H8 (north) east and western aspect (v) Foraging
soprano pipistrelle	22:16	commuting south along H8
common pipistrelle x 2 Leisler x 1	22: 19- 22:23	Foragingcorner of field enclosed by H8 and H13 (northeast corner)
unidentified pipistrelle	22:29	commuting along H8 south

5 BIRD SURVEY



5.1. INTRODUCTION

Minogue and Associates were asked to undertake a late season bird survey on the Kellystown Lands. Although not part of the brief, a bird survey was undertaken during the second field survey of the Hedgerows.

5.2 SITE DESCRIPTION

The site was visited on the morning of the 19th of August 2019. Due to access issues (access not possible without supervision on the grounds of Kellystown House), the survey concentrated on the lands at the eastern part of the site.

There was a wind from the north west which was cool but with dry conditions. Extensive grazing using set stocking over a number of fields was being practised, leading to uneven grazing patterns, resulting in some grass species seeding and some being grazed tightly. Some of the internal hedges were gappy while the external boundary was stock proof ; the hedgerows were stemmy and had not been maintained.

5.3 METHODOLOGY

The survey commenced at 10.10 hr after a walk around the perimeter of the fields. Hedges and trees were examined for bird activity. The buildings were examined internally for nests and perches. Though at this late point in the year, late fledglings would be taking to the wing.

One vantage point was selected on the south western side of the farmstead buildings in the middle of a field which gave good vantage over the entire buildings, this area leads directly to tree lines and pasture, as well as being adjacent to the roadway that serves the school. The vantage point survey was 1:50 mins in duration. Recorded observation was of birdlife within identifiable sight of the observation point. Any bird species sighted and identified were recorded. Identification was visual from song, flight and form. This was further aided by use of 10x50 binoculars.

5.4 SURVEY RESULTS

In the external building inspection, no evidence of nesting activity could be determined. In the internal survey a few older swallow nests were evident. As access was difficult and dangerous, an accurate count of swallow nesting activity could not be made. The nests seen were in various states of repair. Of these two were reworked upon this year as recent clay and moss construction was evident.

There was one bird species of note recorded during the survey, The Herring Gull, which is red listed. This species has encountered a large decline in its Breeding population. It is relatively common in Co Dublin and its European population is assessed as secure. The Swallow is Amber listed, though due to declining European population, for this reason it has been assessed as Depleted. The House Sparrow is also Amber listed due to moderate decline in the European Breeding population. The Irish population is stable.

The species are recorded in descending order of number of recorded sightings and presented in Table 5 below:

TABLE 5 BIRD SPECIES RECORDED AND CONSERVATION STATUS

Bird Species	<i>Latin name</i>	Conservation status
Woodpigeon	<i>Columba palumbus</i>	Green listed
Swallow	<i>Hirundo rustica</i>	Amber listed
Magpie	<i>Pica pica</i>	Green listed
Hooded crow	<i>Corvus corone</i>	Green listed
Jackdaw	<i>Corvus monedula</i>	Green listed
Chaffinch	<i>Fringilla coelebs</i>	Green listed
Song Thrush	<i>Turdus philomelos</i>	Green listed
Blackbird	<i>Turdus merula</i>	Green listed
Herring Gull	<i>Larus argentatus</i>	Red listed
Pied Wagtail	<i>Motacilla alba yarrellii</i>	Green listed
House Sparrow	<i>Passer domesticus</i>	Amber listed
Robin	<i>Erithacus rubecula</i>	Green Listed

The birdlife recorded during the survey was dominated by wood pigeon, around the treelines and field margins and swallows, flying north of the buildings and feeding around the farmyard.

5.5 MITIGATION AND ENHANCEMENT

In the longer term additional planting around the site incorporating fruit and berry bearing trees could enhance foraging opportunities for bird species. Species such as rowan (*Sorbus aucuparia*), blackthorn (*Prunus spinosa*), hawthorn (*Crataegus monogyna*), holly (*Ilex aquifolium*), crab apple (*Malus sylvestris*) and wild cherry (*Prunus avium*) would be suitable for consideration.

5.6. CONCLUSION.

There was no birdlife recorded that were rare or of any significant national or international conservation interest. The conservation status was referenced from Birdwatch Ireland's "Irish

Birds". Under EU legislation Ireland has to implement the Habitats Directive and the Birds Directive. Under National Legislation there are commitments under the Irish Wildlife Act 2000. The majority of the species associated with the site at present are common locally and nationally. Bird species listed as red on the Birdwatch Ireland, Birds of Conservation Concern List are of greatest conservation concern. Birds listed as amber are of medium conservation concern, while bird species listed as green are not considered threatened. The sighting of the Herring Gull was due to this species foraging around the Dublin Bay area. It would be unlikely that the site would be utilised by this species, other than to fly over. While the swallows and the house sparrows identified during the survey have an amber status for conservation this is generally due to declines in a European context, while they can be locally or nationally well represented. Any actions therefore that impact on the life cycles of these species should be mitigated against. The farmstead seems to provide nesting space for this species. It may be damaging during nesting season to curtail their access to the ground floor of the building where old nests were noted and currently has open access from the doorways. The species listed are well represented locally however, when any planned works are conducted outside the nesting season, they would not represent any threat to their conservation status. These species exhibit elements of adaptability in choosing nesting sites.

6 GREEN INFRASTRUCTURE RECOMMENDATIONS

6.1 INTRODUCTION

This section presents recommendations as they relate to biodiversity, green and blue infrastructure around the Kellystown LAP. They are informed by both the baseline ecological surveys presented in the preceding sections, as well as scientific research and good practice in the area of green and blue infrastructure. A reference list is provided at the end of this chapter.

This chapter is structured as follows:

- Recommendations regarding Habitats on site:
- Key components for Green and Blue Infrastructure (with Hedgerows)
Key component for Lighting and Bats

6.2 RECOMMENDATIONS FOR HABITAT MANAGEMENT

When appropriately managed, hedgerow edges represent hotspots for biodiversity, and provide essential ecosystem services such as water regulation, prevention of erosion, and pest control.

6.2.1 PREVENT SPREAD OF ASH DIEBACK DISEASE

Currently, the hedgerows bordering the fields contain some fine mature ash (*F. excelsior*) which show little to no signs of ash dieback disease. However, the trees representing new hedgerow planting at 3fE are evidently diseased and the pathogen could easily spread from here to the mature ash elsewhere.

- Monitor all ash on the estate. Fell diseased specimens and burn all brush on site.

6.2.3 MONITOR FOR INVASIVE ALIEN SPECIES

The proximity of the railway at the estate boundary means there is an ongoing risk of incursion of invasive alien plants onto the estate lands. The most likely species are Japanese knotweed (*Fallopia japonica*), winter heliotrope (*Petasites fragrans*) and giant butterbur (*Petasites japonicus*). Regular surveillance and early intervention measures are essential.

Snowberry (*S. albus*) was recorded next to the ditch in field 3h. This non-native shrub was widely planted in Ireland in the past, but it can become highly invasive because of

its capacity to spread by suckering. It is advisable to monitor its spread in this area and to control as necessary.

6.2.4 BIODIVERSITY

From a biodiversity perspective the fields and their boundaries have the potential to be species rich because of the mature and dense native hedgerows (some of which were recorded on the 1st Edition OS map series), and the grassland which would have represented dry calcareous grassland prior to grazing and current land management practices.

Every effort should be made to protect and maintain the hedgerows because they represent ecological corridors and important refuges for wildlife, and they have a vital ecosystem function. Less intensive grazing and cessation of routine herbicide use would, over time, allow some of the characteristics of the grassland to recover.

- Allow tussocky grass growth to develop at the base of hedgerows, extending into the field by at least 2m, cutting this only to control scrub encroachment (about once every 5 years).
- The potential exists for more species diverse grassland habitats to recover in the absence of herbicide treatment; in particular the margins around the hedgerows and also the southeastern corner of the LAP lands that have been disturbed in recent years for development but have potential to recover as calcareous grassland subject to an appropriate management regime.
- All development proposals within 30m meters from the Canal Pond shall be accompanied by an Ecological Impact Assessment. This shall be prepared by a qualified Ecologist and in line with Guidelines for Ecological Impact Assessment in the UK and Ireland, Terrestrial, Freshwater and Coastal (CIEEM 2nd ed 2016) .

All development proposals should seek to enhance biodiversity and avoid or minimise loss of existing habitats and wildlife corridors.

6.3 KEY COMPONENTS FOR GREEN AND BLUE INFRASTRUCTURE

The Green and blue infrastructure within the LAP will consist of existing hedgerows to be retained, new hedgerow and/or treeline corridors and a necklace of ponds and swales. These Green Corridors, which are drawn from the Ecology Baseline Report, will comprise the following:

- The following existing hedgerows/treelines will be retained: H1, H2, H5, H6, H7, H8, H9, H10, H13, H15, H16, H17 and H19. However, these will be severed due facilitate the proposed east-west road through the lands.
- The retained hedgerows will be maintained so that a diversity of hedgerow structure is provided. Tall and short ($\leq 3\text{m}$) sections will be provided. Thick and dense cover at the base of the hedgerow will be maintained and gaps along hedgerows will be minimised. Gaps to facilitate pedestrian access or visual permeability will be provided at selected locations along hedgerows.
- The outer edges of the retained Hedgerows will be maintained so that they undulate, or have a wavy plan profile.

Retained Hedgerows will be managed as follows:

- The retained hedgerows on site should be managed to provide a diversity of structure along the hedgerow, that include tall sections over 5m in height as well as shorter sections, less than 3m in height. The varying structure in hedgerows is important for enhancing the role of this habitat in supporting a greater variety of bird species.
- Hedgerow trimming will be undertaken on three year rotations.
- Hedgerow trimming will be alternated between sections of hedgerows so that at least one-third of the hedgerow length remains uncut.
- Hedgerow trimming will be undertaken between the months of January and February.
- Where these hedgerows cannot be retained, or will be severed, a new hedgerow network composed of the same species shall be planted along roadways within the development. Given the issues around Ash dieback disease, the following species are recommended:
 - Hawthorn
 - Blackthorn
 - Rowan
 - Elder

- Holly
- Oak
- A Method Statement for the construction, planting regime and species selection of both 'dry' and 'wet' hedgerows shall be provided with all planning applications for developments within 10m of existing hedgerows within the LAP lands.
- Where new canal crossings i.e footbridges/cycle bridges are proposed, they shall be designed so as to avoid fragmentation of linear habitats associated with the Royal Canal Corridor.

BLUE INFRASTRUCTURE

- A signature Green and Blue Corridor field boundary treatment will be applied along the western park boundary. A wide swale and pond necklace landscape treatment will be provided along this boundary that will accommodate Hedgerow 13, part of H8 and H7.
- These ponds should be managed for wildlife. The bank slopes should vary in gradation with the development of marginal wetland habitats being facilitated along shallow graded slopes. Patches of wet woodland, wet scrub and marginal, emergent vegetation should be provided around the edges of the ponds. Wet woodland and scrub species should include native willow species (*Salix* sp.), and alder. The dominant emergent vegetation can include a range of species including *Carex rostrata*, *Carex paniculata*, *Typha latifolia*, *Phragmites australis* and *Iris pseudacorus*. Optimum water depths for large sedges and reeds are up to 5 cm. Marginal wetland plant communities should be provided in areas that will not be susceptible to prolonged drying out.
- Filter strips should be provided either side of new swales. The centre of the swale should be managed as a damp area and planted with hydrophilous species typical of the area.
- Only clean surface water runoff should be channeled into wildlife ponds.

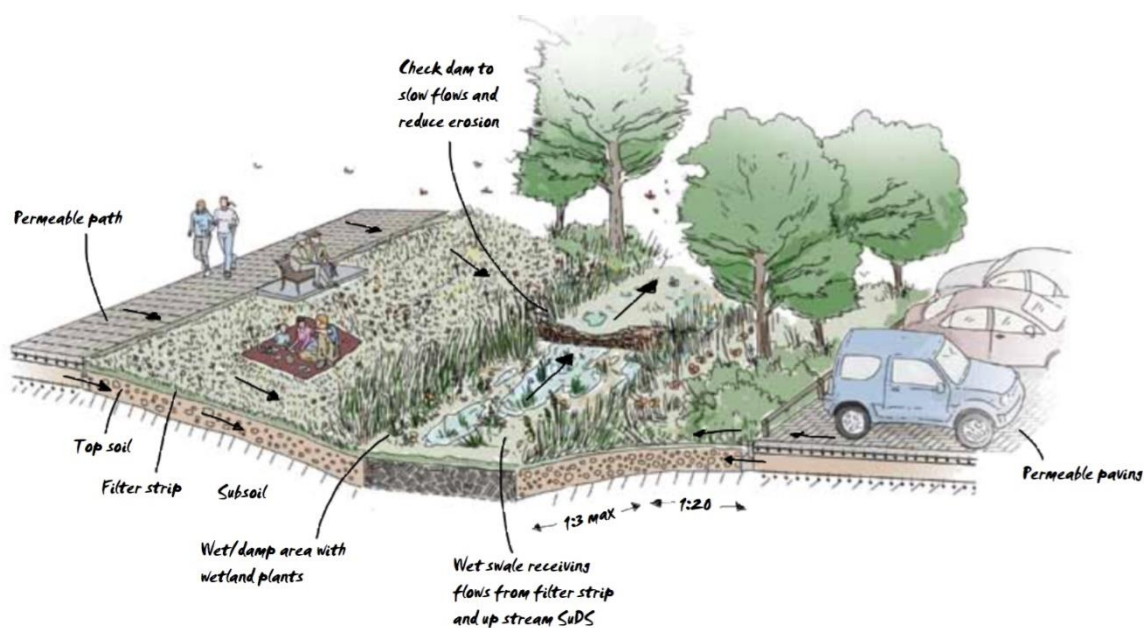
SWALES:

- Design criteria for swales will include the following:
 - Maximum side slopes will be 3:1. Slopes and depths should be minimised to the extent practical for aesthetic and safety reasons. The base width should be a minimum width of 2 feet.
 - Check dams should be installed at regular intervals along the swales to promote ponding. Large rocks that are obvious and do not become concealed by vegetation should be used as check dams. Such rocks will create an attractive as well as effective check dam and will provide micro-habitat for species (e.g. basking sites for invertebrates etc.). Figure 5 provides examples of swales.
 - All new swales will be bounded by filter strips a minimum of 2m in width. Broadleaved trees should be planted along the filter strips (see example diagram in Figure 6).
 - Grassy verges along retained field boundaries and new green corridors will function as natural filter strips.

Figure 5 Example of Swale (source: Natural England 2009)



Figure 6 Example of Swale Design Features (source: Graham et al. 2012)



PROTECTION OF BIRDS

Look after mature hedgerow trees and encourage new ones by selecting and marking promising saplings or stems to grow on, or by new planting. Mature native fruit and berry producing trees like crab apple and hawthorn are valuable as well as large trees like oak.

Allow tussocky grass growth to develop at the base, extending into the field by at least 2m, cutting this only to control scrub encroachment (about once every 5 years).

Aim to avoid trimming between March and early September, and instead cut hedges in January or February.

It is an offence under Section 22 of the Wildlife Act to intentionally injure or mutilate eggs or nests. All future developments within the LAP Area should be cognizant of the importance of hedgerows within the area for birds. Where hedgerow habitat must be removed to facilitate future development it is recommended that this habitat is removed during the months of January and the first half of February. Where hedgerows must be removed or disturbed during the breeding season, a pre-vegetation clearance survey for the presence of nests must be completed by a qualified ecologist. In the event that nests are present the NPWS must be consulted prior to any further action being taken. The subsequent course of action will be guided by consultations with the NPWS.

PROTECTION OF BATS AND OTHER WILDLIFE

The following key principles for public lighting along Green Corridors (i.e. all retained and new hedgerows and treeline corridors) within the plan should be implemented to reduce the potential negative impacts of lighting on wildlife:

- Where feasible a Central Monitoring System (CMS) for lighting should be used for all public lighting within the plan Area. This will facilitate the implementation of a variable lighting regime (VLR) to suit both people and wildlife within the plan Area.
- All external lighting should be downlighting and should be time limited where possible. Lighting should be avoided in sensitive wildlife areas and light pollution, in general, should be avoided. Any additional nocturnal illumination of the canal corridor resulting from the development of the LAP should be kept to a minimum.
- Maintain a “Dark Corridor” along the railway boundary treeline (H2), H5, the retained treelines associated with the wetland park (H7, H8, H13 and H16).
- In light of the need for a dark corridor and the wetlands area, there will need to be careful consideration of potential light spill onto this dark corridor associated with the playing pitches to the east of same. There should be an avoidance of light closest to the wetland park area as this will represent a key mitigation measure as a commuting and foraging area for bats and other wildlife.
- Maximise the spacing between lights to reduce light intensity.
- Reduce light spill by directing light only where it is needed. The upward spread of light above the horizontal plane should be avoided. This will be achieved by installing low beam angle lights, less than 70° above the horizontal plane.
- Blue-white short wavelength lights should be avoided.
- Lights with a high UV content should be avoided.

MEASURES TO MINIMISE SEVERANCE EFFECTS ASSOCIATED WITH PROPOSED EAST-WEST ROAD

- Illumination associated with the road should be carefully considered and avoid excessive light spill as outlined above.
- In line with Transport Infrastructure Ireland Guidelines (2019) additional higher tree planting should be extended through the proposed street where it intersects with the

existing hedgerow network to encourage higher flight by bats over these crossings. In particular the following intersections with hedgerow is essential to both provide for additional tree planting and absence of light – H1,H5, H8,H12, H13.

Detailed design should consider the provision of green verges associated with these locations and comprising suitable tree planting of fast growing, native species. Tree planting on verges should commence in advance of road construction to allow the advance establishment and growth of tree species along these verges.

Figure 7 shows an indicative Hop Over Crossing.

Bat Crossing Type B: Indicative 'Hop Over' Crossing

The 'hop over' crossing method entails extensive tree planting which is to be allowed to develop to form a dense canopy that will, in time, bridge the carriageway.

The new carriageway will be designed to run as close as possible to existing mature broadleaf woodland so that the tree canopy will extend partially across the road from the outset. A 'no dig' solution may need to be agreed upon to achieve this and will be subject to the approval of appointed highways engineers and arboriculturalists.

Both the shared cycle/footway and the footway are to deviate away from the route of the main carriageway at the 'hop over' point in order to minimize the gap between the existing tree canopy and new tree planting.

Tree specific species, density and ratios to be submitted to the Forest of Dean District Council for approval. Planting should include trees ranging in size from 8-10cm girth feathered 300-350cm high, to 20-25 cm girth semi mature 425 - 600 cm high.

Indicative plant list:

Trees

English Oak *Quercus robur*, Ash *Fraxinus excelsior*, Beech *Fagus sylvatica*, Common Alder *Alnus glutinosa*, Silver Birch *Betula pendula*, Norway spruce *Picea abies*, Wild Cherry *Prunus avium*, European Larch *Larix decidua* and Hawthorn *Crataegus monogyna*.

Sectional Elevation: Shows Planting at Year 1



Figure 7 Example of hop over crossing (TII 2019)

- Timing of demolition and tree-felling to consider potential effects and disturbance to bats
- A number of buildings and trees on the lands are potential bat roosts. In particular the following buildings – the older farm building on the eastern boundary, the outbuildings of Kellystown House. The enhancement of these structures to improve the conditions for bat species should be considered in future development.

6.4 MANAGEMENT OPTIONS FOR THE NORTH TOW PATH

- Stonework at the entrance to the tow path and by the bridge should be kept clear of vegetation, particularly sycamore and red valerian, to prevent damage.
- Ragwort should be monitored and manually pulled up wherever possible. It may be advisable to erect signage alerting the public and requesting that ragwort plants are not gathered and then thrown away where they could be eaten by horses and cattle.
- A programme of control against *Buddleia davidii* and *Petasites japonicus* should be implemented in a timely fashion. Skill and experience are required to effectively

eradicate these species and it is advisable to appoint a reputable invasive species contractor to conduct work. Please note that the abandoned site by the old school to the immediate north of the tow path is heavily infested with buddleia. Seed dispersal from this area is likely to infest the local area if actions are not taken to control spread.

- The meadow has considerable biodiversity and conservation value. It is recommended that a management plan for this area is implemented to include collaboration with the general public to restore the meadow to a good status.

RECOMMENDATIONS FOR MANAGEMENT

- Erosion control measures are urgently needed along this section of the canal. The collapse of the banks beside the tow path may create a health and safety issue in the short to mid-term, although fencing is being erected.
- The native hedgerow has the potential to provide an important refuge for wildlife and careful management is recommended.
- A spring survey may reveal other, more interesting vernal species along this section.
- Control of snowberry and buddleia are strongly recommended.

APPENDIX A: HABITAT SURVEY OF FIELDS AND FIELD BOUNDARIES

Annex A: Habitat Survey of individual fields

Overview

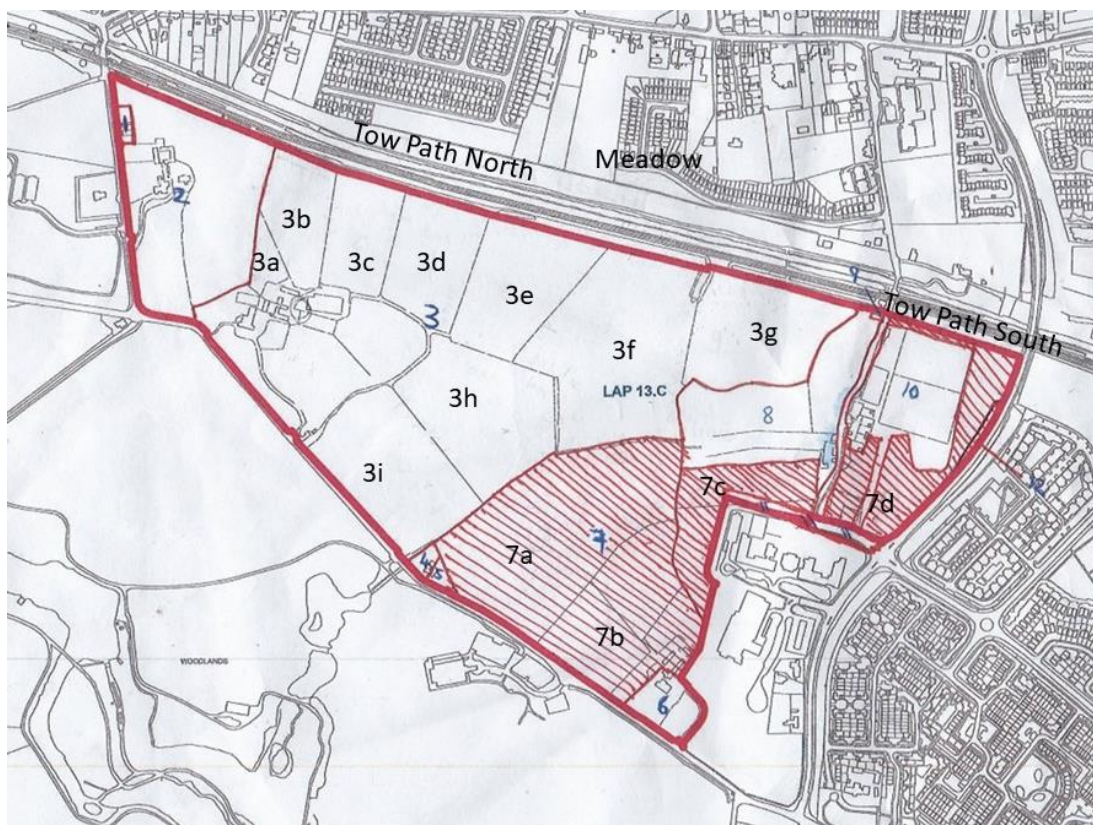
Nine fields were surveyed with particular attention paid to the hedgerow boundaries. The fields

When appropriately managed, hedgerow edges represent hotspots for biodiversity, and provide essential ecosystem services such as water regulation, prevention of erosion, and pest control.

The fields, 3a to 3i (Fig. 1) fall under GA1 improved agricultural grassland (Fossitt, 2000) which is generally species poor. There is a narrow border of Dry Calcareous Grassland, GS1, near Kellystown House (Image 1), indicating what the vegetation would be like under different management.

In the following descriptions, hedges are named after the fields they border and the direction they face i.e. 3bN, or when between fields 3c/3d. The full species list is given in **Appendix B**.

Figure A1 **Surveyed fields, Kellystown House**



Habitat survey of fields

Field 3a

The field contained cows on the day of the survey and the field is laid mostly to closely grazed grass with a raised area to the south which is part of a septic tank. Chemical fertilisers have not been applied for 3 or more years.

The grassland is mainly rye (*Lolium perenne*) and white clover (*Trifolium repens*) with plentiful bentgrass (*Agrostis stolonifera*) and occasional weeds characteristic of high nitrogen conditions, such as docks (*Rumex* spp.) and Spear thistle (*C. vulgare*). This presentation is typical of improved agricultural grassland, Fossitt habitat GA1.

The hedge 3aW is a mature native hedge, with a ground flora of herbs tolerant of herbicide application which is used throughout the farm on field borders and under fencing. There is increased *Poa trivialis* to the edge of the field, with abundant nettles (*Urtica dioica*), brambles (*Rubus* agg.) and occasional native hogweed (*Heracleum sphondylium*). The noxious weed, ragwort (*Senecio vulgaris*), was occasionally evident.

Two unusual plants are worth mentioning: a hybrid or garden escape elder and a white clover displaying phyllody (Image 2), where flowers revert to leaf like structures due to phytoplasma infection.



Image 1. Phyllody in white clover.

Field 3b

This field is currently grazed by horses. It was last reseeded 8-10 years ago with seed from Green Acre. The vegetation represents improved agricultural grassland, GA1.

There is a mature ash (*Fraxinus excelsior*) treeline to the north (3bN). Fossitt code WL2 The health status of the trees here appears to be good, with little to no sign of disease.

Fields 3b and 3c (3b/3c), and 3c and 3d (3b/3c) are both divided by a single planted row of tall poplar trees (probably *Populus nigra* var. *Italica*), some of which are suckering.

Field 3c

This field has also been reseeded and primarily consists of rye grass (*L. perenne*) and white clover (*T. repens*), with dandelions (*Taraxacum* agg.) an indication of high fertility.

Beneath the fence to the south (3cS) there are weeds tolerant of heavy herbicide application, namely the introduced weed, swine cress (*Lepidium didymum*), veronica (*Veronica persica*) and the liverwort (*Marchantia polymorpha*).



Image 2. *Marchantia polymorpha*

Field 3d

The entrance to the field is dominated by knotgrass (*Polygonum* sp.), scarlet pimpernel (*Anagallis arvensis*), shepherd's purse (*Capsella bursa-pastoris*), broad-leaf plantain (*Plantago major*) and ribwort plantain (*P. lanceolata*), which then transitions to GA1 improved agricultural grassland, with rye (*L. perenne*), white clover (*T. repens*) and bentgrass (*A. stolonifera*).

To the north the field is bounded by a tall and dense native hedgerow of ash (*F. excelsior*), holly (*Ilex aquifolium*), and hawthorn (*Crataegus monogyna*), with an understory of ivy (*Hedera helix*), field rose (*Rosa arvensis*), smooth sow thistle (*Sonchus oleraceus*), false brome (*Brachypodium sylvaticum*) and a small patch of red fescue (*Festuca rubra*).

Field 3e

This field is closely grazed by horses and represents GA1, improved agricultural grassland with poor species diversity.

There is a dense native hedgerow at the field boundary to the north, abutting the railway, and between field 3e and 3f. There is a similar, medium height hedgerow to the south. All hedgerows bordering this field consist of hawthorn (*C. monogyna*), blackthorn (*Prunus spinosa*), ash (*F. excelsior*), holly (*Ilex aquifolium*), and elder (*Sambucus nigra*).

Field 3f

This field is heavily grazed by cattle which can freely move through the non-continuous hawthorn hedge into field 3g. Ground flora includes rye (*L. perenne*), Cocksfoot (*Dactylis glomerata*), bentgrass (*A. stolonifera*), rough meadow grass (*P. trivialis*), creeping thistle (*Cirsium arvense*) and meadow buttercup (*Ranunculus repens*).

There is an old drainage ditch which was blocked when the railway was built so contains some standing water dominated with duckweed (*Lemna* sp.). Around this there is a mature woodland of ash, hawthorn and blackthorn with established woodland flora including Lords and Ladies (*Arum maculatum*), and Hart's tongue fern (*Asplenium scolopendrium*) although it was inaccessible at the time of the survey and may contain more vernal species.

Field 3g

A continuation of the same grassland which has been cut for silage/hay recently.

The hedgerow between this field and the neighbouring land has some fine mature ash (*F. excelsior*); however, as this hedgerow turns south and begins to border field 3fE/Section 8 (Fig 1) there is increasing evidence of ash dieback disease, caused by the invasive alien pathogen *Hymenoscyphus fraxineus* on young ash trees among the more recent planting of elm, oak, elder and hawthorn. Oaks here have powdery mildew. This area was disturbed when the water line was put in (comment from our guides who work on the farm).

Ash die back was also seen in the hedgerows 3f/7a and 3f/3h.

Field 3h

As with the other fields, the grassland represents GA1 and is dominated by rye (*Lolium perenne*), bentgrass (*A. stolonifera*) and white clover (*T. repens*), with some docks (*Rumex* spp.), sorrel (*Rumex acetosa*) and buttercups (*R. repens* and *R. acris*). There is a planted row of poplars (*Populus* sp.) between fields 3h and 3i. The estate manager explained that these recently planted trees comprise a species unsuitable for the location and function because they easily snap.

There is a gravel track and deep ditch to the south west of field 3h. This ditch had water flowing in it on the day of the survey, and contained some different species not found elsewhere in the site, including brown sedge (*Carex disticha*), great manner grass (*Glyceria maxima*), and wild celery (*Apium* sp.). Ground flora next to the ditch included the invasive shrub, snowberry (*Symphoricarpos albus*), native hogweed (*H. sphondylium*), and coltsfoot (*Tussilago farfara*).

Field 3i

As before, the closely grazed field comprises GA1 habitat with some areas of *Poa annua* and broad leaf plantain (*Plantago major*). There is fine, mature large leaved lime (*Tilia platyphyllos*) in the hedgerow which is suffering from over-abundant ivy (*H. helix*).

To the south west boundary with the road there is a fenced off border approximately 10m wide. Trees include beech (*Fagus sylvatica*), planted small leaved lime (*Tilia cordata*), turkey oak (*Quercus cerris*) and whitebeam (*Sorbus aria*). The ground flora is generally sparse, with a low carpet of ivy. There is a small area of coltsfoot (*T. farfara*) which should not be disturbed and spread accidentally. Near the boundary to the neighbouring property there is an old stone-built gate. These mature trees, under which it is possible to walk could be a nice feature for future planning.

Three agricultural fields grazed by cows 7a, 7b, 7c border section 3 and the school. Area 7d which borders the halting site and playing field is ungrazed.

Field 7a and 7b

Field 7a and 7b are agricultural grassland surrounded by a good native hedgerow of hawthorn elder and ash. Ivy management is needed on some trees. Swallows were flying overhead at the time of the survey. The gateway between the fields has much silverweed (*Potentilla anserina*) due to the passage of cattle.



Image 3 Agricultural grassland

Field 7c

The boundary to this field is heavily sprayed with herbicide. Between the road and the mature beech and ash trees there is an earth mound covered in creeping thistle, fumitory and other ruderals. Sycamore, blackthorn, and hawthorn in the hedgerows have brambles and nettles growing under them. The field is mainly rye grass, Yorkshire fog, white clover, ribwort plantain, common sorrel, meadow buttercup and broadleaf dock. The ash trees seem healthy and there is a possibility that the hedge has possible bat roosts.

The field continues to the south west where the hedges are wider containing elder and have an adjacent area of creeping thistle and spear thistle encroaching into the grass. The same grassland continues to the south with the pathway leading to field 7b containing more annuals, red clover, Cut-leaved Crane's-bill (*Geranium dissectum*) and swine cress.

Field 7d

This section is divided with fences into a small area across the road from field 7c and a large field that borders the main road and the playing field. The first small area is disturbed ground where some rubbish has been dumped. The flora contains a few (*Lolium italicum*), red shanks, shepherd's purse, knotgrass and swine cress and several willowherb species. Coltsfoot is establishing as are buddleia and willow saplings toward the northern edge. Grass cover is low, with herbs dominating creeping buttercup, (*Vicia sativa*), Black medic, silverweed (*P. anserina*) and creeping cinquefoil (*P. reptans*), red bartsia (*Odontites vernus*), pineapple weed (*Matricaria discoidea*) and ragweed point towards recent disturbance. Along the roadside fence there are small dogwood shrubs (*Cornus* sp.), presumable escapes from planting.

Rounding the corner to the main road there are planted Ash and Dogwood with bindweed (*Calystegia sylvatica*) and ragosa roses behind. Behind this there is an earth bank of brambles, red bartsia, red clover. Bumblebees were plentiful during the survey. Through the bank there is an ungrazed field, with a rough path used as a short-cut to the playing field. The grass is long and herb rich with some *Festuca* sp., rushes (*Juncus* sp.) and plentiful Tufted vetch and Black knapweed. An unidentified vetch, possibly (*Vicia sativa*), has been dominant earlier in the summer and has now gone over. This grassland could be brought back to species rich grassland with careful management. Rosebay willowherb has established a stand mid-field and there are occasional Ragwort plants. Any cutting or grazing of this field should be careful not to open the sward in late August or September to avoid spreading the seed and hence greater distribution of these plants. Ragweed is toxic to horses if cut and incorporated into hay, however they avoid it when it is fresh and growing.



Image 4 Disturbed ground

APPENDIX B: HABITAT SURVEY SPECIES LIST

TABLE B1 SPECIES LIST KELLYSTOWN HOUSE AND FARM

<i>Acer pseudoplatanus</i>	L.	Seiceamóir	Sycamore
<i>Agrostis stolonifera</i>	L.	Feorainn	Creeping Bent
<i>Anagallis arvensis</i>	L.	Falcaire fiáin	Scarlet Pimpernel
<i>Arum maculatum</i>	L.	Cluas chaoín	Lords-and-Ladies
<i>Asplenium scolopendrium</i>	L.	Creamh na muice fia	Hart's-tongue Fern
<i>Brachypodium sylvaticum</i>	(Hudson) P. Beauv.	Brómas bréige	False-brome
<i>Capsella bursa-pastoris</i>	(L.) Medik.	Lus an sparáin	Shepherd's-purse
<i>Cerastium fontanum</i>	Baumg.	Cluas luchóige	Common Mouse-ear
<i>Chamerion angustifolium</i>	(L.) Holub	Lus na tine	Rosebay Willowherb
<i>Cirsium arvense</i>	(L.) Scop.	Feochadán reatha	Creeping Thistle
<i>Cirsium palustre</i>	(L.) Scop.	Feochadán corraigh	Marsh Thistle
<i>Cirsium vulgare</i>	(Savi) Ten.	Feochadán colgach	Spear Thistle
<i>Corylus avellana</i>	L.	Coll	Hazel
<i>Crataegus monogyna</i>	Jacq.	Sceach gheal	Hawthorn
<i>Dactylis glomerata</i>	L.	Garbhfhéar	Cock's-foot
<i>Epilobium hirsutum</i>	L.	Lus na Tríoinóide	Great Willowherb
<i>Epilobium montanum</i>	L.	Saileachán leathan	Broad-leaved Willowherb
<i>Eupatorium cannabinum</i>	L.	Cnáib uisce	Hemp-agrimony
<i>Euphorbia helioscopia</i>	L.	Lus na bhfaitní	Sun Spurge
<i>Festuca ovina</i>	L.	Feisciú caorach	Sheep's-fescue
<i>Fraxinus excelsior</i>	L.	Fuinseog	Ash
<i>Geranium robertianum</i>	L.	Ruithéal rí	Herb-Robert
<i>Geum urbanum</i>	L.	Machall coille	Wood Avens
<i>Glyceria maxima</i>	(Hartman) O. Holmb.	Milseán mór	Reed Sweet-grass
<i>Hedera helix</i>	L.	Eidhneán	Ivy
<i>Heracleum sphondylium</i>	L.	Feabhrán	Hogweed
<i>Holcus lanatus</i>	L.	Féar an chinn bháin	Yorkshire-fog
<i>Hypochaeris radicata</i>	L.	Cluas chait	Cat's-ear
<i>Ilex aquifolium</i>	L.	Cuilleann	Holly
<i>Lapsana communis</i>	L.	Duilleog Bhríde	Nipplewort
<i>Lemna sp.</i>			Duckweed
<i>Lepidium didymum</i>	L.	Cladhthach mhín	Lesser Swine-cress
<i>Lolium perenne</i>	L.	Seagalach buan	Perennial Rye-grass
<i>Medicago lupulina</i>	L.	Dúmheidic	Black Medick
<i>Myosotis arvensis</i>	(L.) Hill	Lus míonla goirt	Field Forget-me-not
<i>Nasturtium officinale</i>	R.Br.	Biolar	Water-cress
<i>Plantago lanceolata</i>	L.	Slánlus	Ribwort Plantain
<i>Plantago major</i>	L.	Cuach Phádraig	Greater Plantain
<i>Poa trivialis</i>	L.	Cuise garbh	Rough Meadow-grass
<i>Polygonum aviculare</i>	L.	Glúineach bheag	Knotgrass

<i>Populus nigra</i>	L.	Poibleog dhubh	Black-poplar
<i>Potentilla anserina</i>	L.	Briosclán	Silverweed
<i>Potentilla reptans</i>	L.	Cúig mhéar mhuire	Creeping Cinquefoil
<i>Prunus spinosa</i>	L.	Draighean	Blackthorn
<i>Quercus petraea</i>	L.	Dair ghealach	Sessile oak
<i>Ranunculus acris</i>	L.	Fearbán feír	Meadow Buttercup
<i>Ranunculus repens</i>	L.	Fearbán (reatha)	Creeping Buttercup
<i>Rosa canina</i>	L.	Feirdhris	Dog-rose
<i>Rubus fruticosus agg.</i>		Dris	Blackberry
<i>Rumex acetosa</i>	L.	Samhadh bó	Common Sorrel
<i>Rumex crispus</i>	L.	Copóg chatach	Curled dock
<i>Rumex obtusifolius</i>	L.	Copóg shráide	Broad-leaved Dock
<i>Sambucus nigra</i>	L.	Trom	Elder
<i>Senecio vulgaris</i>	L.	Grúnlas	Groundsel
<i>Solanum dulcamara</i>	L.	Fuath gorm	Bittersweet
<i>Sonchus arvensis</i>	L.	Bleachtán léana	Perennial Sow-thistle
<i>Sonchus asper</i>	(L.) Hill	Bleachtán colgach	Prickly Sow-thistle
<i>Sonchus oleraceus</i>	L.	Bleachtán mín	Smooth Sow-thistle
<i>Stellaria media</i>	(L.) Villars	Fliodh	Common Chickweed
<i>Taraxacum agg.</i>		Caisearbhán	Dandelion
<i>Trifolium repens</i>	L.	Seamair bhán	White Clover
<i>Ulex europaeus</i>	L.	Aiteann gallda	Gorse
<i>Ulmus glabra</i>	Hudson	Leamhán sléibhe	Wych Elm
<i>Veronica persica</i>	Poiret	Lus cré garraí	Common Field-speedwell

TABLE B2 ST MOCHTAS FC AND LANDS SOUTH OF FOOTBALL CLUB

<i>Acer pseudoplatanus</i>	L.	Seiceamóir	Sycamore
<i>Achillea millefolium</i>	L.	Athair thalún	Yarrow
<i>Agrostis stolonifera</i>	L.	Feorainn	Creeping Bent
<i>Arrhenatherum elatius</i>	(L.) P. Beauv. ex J.S. Presl & C. Presl	Coirce bréige	False Oat-grass
<i>Buddleja davidii</i>	Franchet	Tor an fhéileacáin	Butterfly-bush
<i>Capsella bursa-pastoris</i>	(L.) Medik.	Lus an sparáin	Shepherd's-purse
<i>Cerastium fontanum</i>	Baumg.	Cluas luchóige	Common Mouse-ear
<i>Cirsium arvense</i>	(L.) Scop.	Feochadán reatha	Creeping Thistle
<i>Cirsium vulgare</i>	(Savi) Ten.	Feochadán colgach	Spear Thistle
<i>Cornus sp.</i>			Dogwood
<i>Crataegus monogyna</i>	Jacq.	Sceach gheal	Hawthorn
<i>Epilobium hirsutum</i>	L.	Lus na Tríoinóide	Great Willowherb
<i>Festuca rubra</i>	L.	Feisciú rua	Red Fescue
<i>Fraxinus excelsior</i>	L.	Fuinseog	Ash
<i>Geranium dissectum</i>	L.	Crobh giobach	Cut-leaved Crane's-bill
<i>Hedera helix</i>	L.	Eidhneán	Ivy
<i>Holcus lanatus</i>	L.	Féar an chinn bháin	Yorkshire-fog
<i>Juncus articulatus</i>	L.	Lachán na ndamh	Jointed Rush
<i>Lathyrus pratensis</i>	L.	Peasairín buí	Meadow Vetchling
<i>Lepidium didymum</i>	L.	Cladhthach mhín	Lesser Swine-cress
<i>Lolium multiflorum</i>	Lam.	Seagalach Iodálach	Italian Rye-grass
<i>Lolium perenne</i>	L.	Seagalach buan	Perennial Rye-grass
<i>Matricaria discoidea</i>	DC.	Lun na hiothlann	Pineappleweed
<i>Medicago lupulina</i>	L.	Dúmheidic	Black Medick
<i>Odontites vernus</i>	(Bellardi) Dumort.	Hocas tae	Red Bartsia
<i>Plantago lanceolata</i>	L.	Slánlus	Ribwort Plantain
<i>Polygonum aviculare</i>	L.	Glúineach bheag	Knotgrass
<i>Potentilla anserina</i>	L.	Briosclán	Silverweed
<i>Prunus spinosa</i>	L.	Draighean	Blackthorn
<i>Ranunculus acris</i>	L.	Fearbán feir	Meadow Buttercup
<i>Rosa rugosa</i>	Thunb. ex Murray	Rós rúsacach	Japanese Rose
<i>Rubus fruticosus agg.</i>		Dris	Blackberry
<i>Rumex acetosa</i>	L.	Samhadh bó	Common Sorrel
<i>Rumex obtusifolius</i>	L.	Copóg shráide	Broad-leaved Dock
<i>Salix sp.</i>			Willow sp.
<i>Sambucus nigra</i>	L.	Trom	Elder
<i>Senecio jacobaea</i>	L.	Buachalán buí	Common Ragwort
<i>Senecio jacobaea</i>	L.	Buachalán buí	Common Ragwort
<i>Trifolium pratense</i>	L.	Seamair dhearg	Red Clover

<i>Trifolium repens</i>	L.	Seamair bhán	White Clover
<i>Tussilago farfara</i>	L.	Sponc	Colt's-foot
<i>Urtica dioica</i>	L.	Neantóg	Common Nettle
<i>Vicia cracca</i>	L.	Peasair na luch	Tufted Vetch
<i>Vicia sativa</i>	L.	Peasair chapail	Common vetch

TABLE B3: SPECIES LIST NORTHERN TOWPATH

<i>Acer pseudoplatanus</i>	L.	Seiceamóir	Sycamore
<i>Agrimonia eupatoria</i>	L.	Marbhdhraighean	Agrimony
<i>Alisma plantago-aquatica</i>	L.	Corrchopóg	Water-plantain
<i>Alnus glutinosa</i>	(L.) Gaertner	Fearnóg	Alder
<i>Anagallis arvensis</i>	L.	Falcaire fiáin	Scarlet Pimpernel
<i>Anthyllis vulneraria</i>	L.	Méara Muire	Kidney Vetch
<i>Arrhenatherum elatius</i>	(L.) P. Beauv. ex J.S. Presl & C. Presl	Coirce bréige	False Oat-grass
<i>Arum maculatum</i>	L.	Cluas chaoín	Lords-and-Ladies
<i>Asplenium scolopendrium</i>	L.	Creamh na muice	Hart's-tongue Fern
<i>Buddleja davidii</i>	Franchet	Tor an fhéileacáin	Butterfly-bush
<i>Centaurea nigra</i>	L.	Mínscoth	Common Knapweed
<i>Centranthus ruber</i>	(L.) DC. in Lam. & DC.	Slán iomaire	Red Valerian
<i>Chamerion angustifolium</i>	(L.) Holub	Lus na tine	Rosebay Willowherb
<i>Crataegus monogyna</i>	Jacq.	Sceach gheal	Hawthorn
<i>Dactylis glomerata</i>	L.	Garbhfhéar	Cock's-foot
<i>Daucus carota</i>	L.	Mealbhacán	Wild Carrot
<i>Epilobium hirsutum</i>	L.	Lus na Tríoinóide	Great Willowherb
<i>Eupatorium cannabinum</i>	L.	Cnáib uisce	Hemp-agrimony
<i>Filipendula ulmaria</i>	(L.) Maxim.	Airgead luachra	Meadowsweet
<i>Fraxinus excelsior</i>	L.	Fuinseog	Ash
<i>Galium aparine</i>	L.	Garbhlus	Cleavers
<i>Galium verum</i>	L.	Boladh cnis	Lady's Bedstraw
<i>Geranium dissectum</i>	L.	Crobh giobach	Cut-leaved Crane's-bill
<i>Geranium molle</i>	L.	Crobh bog	Dove's-foot Crane's-bill
<i>Geranium robertianum</i>	L.	Ruithéal rí	Herb-Robert
<i>Geum urbanum</i>	L.	Machall coille	Wood Avens
<i>Glyceria maxima</i>	(Hartman) O. Holmb.	Milseán mór	Reed Sweet-grass
<i>Hedera helix</i>	L.	Eidhneán	Ivy
<i>Heracleum sphondylium</i>	L.	Feabhrán	Hogweed
<i>Holcus lanatus</i>	L.	Féar an chinn bháin	Yorkshire-fog
<i>Hypericum androsaemum</i>	L.	Meas torc allta	Tutsan

<i>Hypericum perforatum</i>	L.	Lus na Maighdine Muire	Perforate St John's-wort
<i>Hypericum tetrapterum</i>	Fries	Beathnua fireann	Square-stalked St John's-wort
<i>Hypochaeris radicata</i>	L.	Cluas chait	Cat's-ear
<i>Iris pseudacorus</i>	L.	Feileastram	Yellow Iris
<i>Knautia arvensis</i>	(L.) Coulter	Cab an ghasáin	Field Scabious
<i>Lapsana communis</i>	L.	Duilleog Bhríde	Nipplewort
<i>Larix decidua</i>	Mill.	--	European Larch
<i>Lathyrus pratensis</i>	L.	Peasairín buí	Meadow Vetchling
<i>Ligustrum vulgare</i>	L.	Pribhéad	Wild Privet
<i>Lonicera nitida</i>	E.H. Wilson	--	Wilson's Honeysuckle
<i>Lonicera periclymenum</i>	L.	Féithleann	Honeysuckle
<i>Lotus corniculatus</i>	L.	Crobh éin	Common Bird's-foot-trefoil
<i>Medicago lupulina</i>	L.	Dúmheidic	Black Medick
<i>Myriophyllum sp.</i>			Water mil-foil sp.
<i>Nuphar lutea</i>	(L.) Smith in Sibth. & Smith	Cabhan abhann	Yellow Water-lily
<i>Ononis repens</i>	L.	Fréamhacha tairne	Common Restharrow
<i>Origanum vulgare</i>	L.	Máirtín fiáin	Wild Marjoram
<i>Plantago lanceolata</i>	L.	Slánlus	Ribwort Plantain
<i>Poa trivialis</i>	L.	Cuise garbh	Rough Meadow-grass
<i>Polygonum aviculare</i>	L.	Glúineach bheag	Knotgrass
<i>Potamogeton natans</i>	L.	Liach Bhríde	Broad-leaved Pondweed
<i>Potentilla reptans</i>	L.	Cúig mhéar mhuire	Creeping Cinquefoil
<i>Poterium sanguisorba</i>	L.	Lus na uille	Salad Burnet
<i>Prunus laurocerasus</i>	L.	Labhras síliní	Cherry Laurel
<i>Ranunculus repens</i>	L.	Fearbán (reatha)	Creeping Buttercup
<i>Rosa arvensis</i>	Hudson	Rós léana	Field-rose
<i>Rubus idaeus</i>	L.	Sú craobh	Raspberry
<i>Rumex sanguineus</i>	L.	Copóg choille	Wood dock
<i>Sagittaria sagittifolia</i>	L.	Rinn saighde	Arrowhead
<i>Senecio jacobaea</i>	L.	Buachalán buí	Common Ragwort
<i>Silene dioica</i>	(L.) Clairv.	Coireán coilleach	Red Campion
<i>Sisymbrium officinale</i>	(L.) Scop.	Lus an óir	Hedge Mustard
<i>Sorbus aucuparia</i>	L.	Caorthann	Rowan
<i>Sparganium emersum</i>	Rehmann	Rísheisc lom	Unbranched Bur-reed
<i>Taraxacum agg.</i>		Caisearbhán	Dandelion
<i>Torilis japonica</i>	(Houtt.) DC.	Fionnas fáil	Upright Hedge-parsley
<i>Tussilago farfara</i>	L.	Sponc	Colt's-foot
<i>Ulex europaeus</i>	L.	Aiteann gallda	Gorse
<i>Urtica dioica</i>	L.	Neantóg	Common Nettle
<i>Valeriana officinalis</i>	L.	Caorthann corraigh	Common Valerian
<i>Vicia sepium</i>	L.	Peasair fhiáin	Bush Vetch

TABLE B4: SPECIES LIST SOUTHERN TOWPATH

<i>Acer pseudoplatanus</i>	L. (L.)	Seiceamóir	Sycamore
<i>Alnus glutinosa</i>	Gaertner	Fearnóg	Alder
<i>Arum maculatum</i>	L.	Cluas chaoín	Lords-and-Ladies
<i>Asplenium scolopendrium</i>	L.	Creamh na muice fia	Hart's-tongue Fern
<i>Buddleja davidii</i>	Franchet	Tor an fhéileacáin	Butterfly-bush
<i>Centaurea nigra</i>	L.	Mínscóth	Common Knapweed
<i>Chamerion angustifolium</i>	(L.) Holub	Lus na tine	Rosebay Willowherb
<i>Crataegus monogyna</i>	Jacq.	Sceach gheal	Hawthorn
<i>Epilobium hirsutum</i>	L.	Lus na Tríoinóide	Great Willowherb
<i>Eupatorium cannabinum</i>	L.	Cnáib uisce	Hemp-agrimony
<i>Fraxinus excelsior</i>	L.	Fuinseog	Ash
<i>Galium verum</i>	L.	Boladh cnis	Lady's Bedstraw
<i>Geranium robertianum</i>	L.	Ruithéal rí	Herb-Robert
<i>Geum urbanum</i>	L.	Machall coille	Wood Avens
<i>Hedera helix</i>	L.	Eidhneán	Ivy
<i>Heracleum sphondylium</i>	L.	Feabhrán	Hogweed
<i>Hypericum tetrapterum</i>	Fries	Beathnua fireann	Square-stalked St John's-wort
<i>Lactuca serriola</i>	L. (Bellardi)	--	Prickly Lettuce
<i>Odontites vernus</i>	Dumort.	Hocas tae	Red Bartsia
<i>Origanum vulgare</i>	L.	Máirtín fiáin	Wild Marjoram
<i>Plantago lanceolata</i>	L.	Slánlus	Ribwort Plantain
<i>Plantago major</i>	L.	Cuach Phádraig	Greater Plantain
<i>Polypodium sp.</i>	#N/A	#N/A	Polypody sp.
<i>Prunella vulgaris</i>	L.	Duán ceannchosach	Selfheal
<i>Rosa canina</i>	L.	Feirdhris	Dog-rose
<i>Sambucus nigra</i>	L.	Trom	Elder
<i>Senecio vulgaris</i>	L. (L.) S.F.	Grúnlas	Groundsel
<i>Symphoricarpos albus</i>	Blake	Póirín sneachta	Snowberry
<i>Tussilago farfara</i>	L.	Sponc	Colt's-foot
<i>Urtica dioica</i>	L.	Neantóg	Common Nettle
<i>Veronica chamaedrys</i>	L.	Anuallach	Germander Speedwell
<i>Vicia sepium</i>	L.	Peasair fhiáin	Bush Vetch
<i>Viola sp.</i>			Violet sp.

APPENDIX C: HEDGEROW APPRAISAL FORMS

HEDGEROW 1

SITE NAME	HEDGEROW/TREELINE NUMBER: H1
Survey date: 08.08.2019	Fossitt: WL2
<p>Hedgerow Description:</p> <p>A mature hedgerow at the property boundary between Kellystown and Greenmount House; this the most intact westerly hedgerow in the LAP boundary. It has improved agricultural grassland, on the eastern side; and wetter grassland on the western side. A bank is present at the very southern boundary of the hedgerow adjacent to the walled garden boundary and is associated with the septic house for the main house. The lands are subject to spraying with herbicide with a ground flora of herbs tolerant of herbicide application which is used throughout the farm on field borders and under fencing. There is increased <i>Poa trivialis</i> to the edge of the field, with abundant nettles (<i>Urtica dioica</i>), brambles (<i>Rubus agg.</i>) and occasional native hogweed (<i>Heracleum sphondylium</i>). The noxious weed, ragwort (<i>Senecio vulgaris</i>), was occasionally evident. Cattle are currently grazing in this field. This hedgerow is mapped as a treeline on the 1st edition series and connects with the mature treeline and embankment to the north associated with the railway corridor.</p>	



Hedgerow significance assessment

0	1	2	3	4
Low significance	Slightly significant	Moderately significant	Significant	Highly significant
Historical Significance				
Recently established	Internal field boundary	Roadside/canal boundary/Farm boundary	Boundary appears on 1 st Edition OS	Townland/Parish/County boundary; shown as/or connected to

0	1	2	3	4
				woodland on 1 st edition OS Connects to features on SMR
			<u>3</u>	
	Past evidence of coppicing or laying		Non-linear (excluding roadside)	
Species diversity significance: tree/shrub/climber species count (all)/30m strip				
1-3	4-5	6-7	8-9	10+
			<u>3</u>	
Ground flora significance				
Dominated by ruderal species.				
0				
Species count (from list) 30m strip				
<2	2-3	4-5	6-7	>7
Pteridophytes from			3-5	>5

0	1	2	3	4
list/30m strip				
0				
Structure, construction & associated features				
	Wall /bank <0.5m (h/d)	Wall/bank 0.5-1m	Wall/bank >1m	Double ditch
			<u>2</u>	
		Dry ditch		
		Badger sett		
		Green lane		
Habitat connectivity Significance				
No connection	Single link with semi natural habitat inc hedgerow	Multiple links with semi natural hedgerows including other hedgerows	Link with woodland/forest habitat	Link with designated area, particularly woodland
			<u>3</u>	
Landscape Significance	Wind shaped	Mature hedgerow trees		Area covered by landscape designation
		<u>2</u>		
Other factors of significance				

0	1	2	3	4
Total Significance Score	13			

Hedgerow condition assessment

	0	1	2	3
	Unfavourable	Adequate	Favourable	Highly favourable
Structural variables				
Height	<1.5	1.5-2.5	2.5 -4	>4m
		<u>1</u>		
Width	<1m	1-2m	2-3m	>3m
		<u>1</u>		
Profile	Remnant /derelict	Wind shaped/losing base structure	Boxed/ a-shaped ; straight sided	Overgrown; top heavy/undercut; outgrowths at base
			<u>2</u>	
Basal density/porosity to light of woody shrubs	Open	Semi-transparent	Semi-opaque	Opaque/dense
			<u>2</u>	
Continuity				
% gaps	>10%	5-10%	<5%	continuous
		<u>1</u>		

	0	1	2	3
Specific gaps	Individual gap >5m	Individual gap <5m	No gaps	No gaps
		<u>1</u>		
Negative indicators/degradation/issues affecting long term viability				
Bank/wall	>20% of length of hedge degraded	<20% of the hedge degraded	Minor degradation	No degradation
			<u>2</u>	
% of canopy dominated by ivy	>25%			
Unfavourable species composition: % woody growth volume comprised of unfavourable species	10%			
	<u>0</u>			
Ground flora/hedge base: % ground layer showing evidence of herbicide use	>20%		Green lane	
	<u>0</u>			
Ground flora/hedge base:	>20%			

	0	1	2	3
% noxious weeds/nutrient rich species				
	<u>0</u>			
Ground flora/ hedge base: Alien invasive species	Present			
			<u>2</u>	
Degraded margin	Ploughing upto base of hedge shrubs or poaching /erosion		(grassy) margin (2m or greater on one side of the hedge)	(grassy) margin (2m or greater on both sides of the hedge)
	<u>0</u>			
	Total Condition Assessment Score :10			

HEDGEROW 2.

SITE NAME	HEDGEROW/TREELINE NUMBER: H2
Survey date: 08.08.2019	Fossitt: WL2
<p>Hedgerow Description:</p> <p>A mature treeline that forms part of a linear strip of woodland forming the northern boundary of the LAP lands. This treeline is the longest linear boundary on the lands and is largely intact forming an important ecological linear feature and connecting with directly with 8 hedgerows/treelines that run north south within the LAP lands.</p> <p>A steep embankment is present immediately behind the treelines that rises upto approximately 3m and then grades steeply down to the railway corridor. Landuse to the south is a primarily cattle grazing with some horses present also. The transport corridor of the railway line and the Royal Canal pNHA form the northern habitats increasing its overall ecological significance. The treeline and woodland are not marked as such on the 1st Edition O.S maps but are recorded as a boundary. This treeline is dominated by ash (<i>F. excelsior</i>), holly (<i>Ilex aquifolium</i>), and hawthorn (<i>Crataegus monogyna</i>), with an understory of ivy (<i>Hedera helix</i>), field rose (<i>Rosa arvensis</i>), smooth sow thistle (<i>Sonchus oleraceus</i>), false brome (<i>Brachypodium sylvaticum</i>). Herbicide application around the farm results in ground flora of herbs tolerant of herbicide application.</p>	



Hedgerow significance assessment

0	1	2	3	4
Low significance	Slightly significant	Moderately significant	Significant	Highly significant
Historical Significance				
Recently established	Internal field boundary	Roadside/canal boundary/Farm boundary	Boundary appears on 1 st Edition OS	Townland/Parish/County boundary; shown as/or connected to woodland on 1 st edition OS Connects to features on SMR

0	1	2	3	4
			<u>3</u>	
	Past evidence of coppicing or laying		Non-linear (excluding roadside)	
Species diversity significance: tree/shrub/climber species count (all)/30m strip				
1-3	4-5	6-7	8-9	10+
			<u>3</u>	
Ground flora significance				
Dominated by ruderal species.				
<u>0</u>				
Species count (from list) 30m strip				
<2	2-3	4-5	6-7	>7
		<u>2</u>		
Pteridophytes from list/30m strip			3-5	>5
<u>0</u>				
Structure, construction & associated features				
	Wall /bank <0.5m (h/d)	Wall/bank 0.5-1m	Wall/bank >1m	Double ditch
			<u>3</u>	
		Dry ditch	Wet ditch/drain	Stream/river
		Badger sett		
		Green lane		

0	1	2	3	4
			<u>3</u>	
Habitat connectivity Significance				
No connection	Single link with semi natural habitat inc hedgerow	Multiple links with semi natural hedgerows including other hedgerows	Link with woodland/forest habitat	Link with designated area, particularly woodland
			<u>3</u>	
Landscape Significance	Wind shaped	Mature hedgerow trees		Area covered by landscape designation
		<u>2</u>		
Other factors of significance	Longest treeline with linear woodland, important for connectivity across lands.			
Total Significance Score				19

Hedgerow condition assessment

	0	1	2	3
	Unfavourable	Adequate	Favourable	Highly favourable
Structural variables				
Height	<1.5	1.5-2.5	2.5 -4	>4m
				<u>3</u>
Width	<1m	1-2m	2-3m	>3m
				<u>3</u>
Profile	Remnant /derelict	Wind shape d/losing base structure	Boxed/a-shaped; straight sided	Overgrown; top heavy/undercut; outgrowths at base
				<u>3</u>
Basal density/porosity to light of woody shrubs	Open	Semi-translucent	Semi-opaque	Opaque/dense
				<u>3</u>
Continuity				
% gaps	>10%	5-10%	<5%	continuous
			<u>2</u>	
Specific gaps	Individual gap >5m	Individual gap <5m	No gaps	No gaps
		<u>1</u>		
Negative indicators/degradation/issues affecting long term viability				

	0	1	2	3
Bank/wall	>20% of length of hedge degraded	<20% of the hedge degraded	Minor degradation	No degradation
				<u>3</u>
% of canopy dominated by ivy	>25%			
Unfavourable species composition: % woody growth volume comprised of unfavourable species	10%			
	<u>0</u>			
Ground flora/hedge base: % ground layer showing evidence of herbicide use	>20%			
	<u>0</u>			
Ground flora/hedge base: % noxious weeds/nutrient rich species	>20%			
	<u>0</u>			
Ground flora/hedge base: Alien invasive species	Present			


	0	1	2	3
Degraded margin	Ploughing upto base of hedge shrubs or poaching /erosion		(grassy) margin (2m or greater on one side of the hedge)	(grassy) margin (2m or greater on both sides of the hedge)
			<u>2</u>	
Total Condition Assessment Score 17				

HEDGEROWS 3 & 4

Recently planted (within 40 years) treelines of poplars replacing any earlier hedgerow planting. These are fenced by timber and herbicide application. They are of low ecological value based on mono species and narrow base with little ground flora.



HEDGEROW 5

SITE NAME	HEDGEROW/TREELINE NUMBER: H5
Survey date: 08.08.2019	Fossitt: WL2
<p>Hedgerow Description: A well maintained dense hedgerow with a box shaped and supporting some good stands of mature Ash that runs north to south from the railway treeline and linear woodland. The species comprise hawthorn (<i>C. monogyna</i>), blackthorn (<i>Prunus spinosa</i>), ash (<i>F. excelsior</i>), holly (<i>Ilex aquifolium</i>), and elder (<i>Sambucus nigra</i>).</p>	
	

Hedgerow significance assessment

0	1	2	3	4
Low significance	Slightly significant	Moderately significant	Significant	Highly significant
Historical Significance				

0	1	2	3	4
Recently established	Internal field boundary	Roadside/canal boundary/Farm boundary	Boundary appears on 1 st Edition OS	Townland/Parish /County boundary; shown as/or connected to woodland on 1 st edition OS Connects to features on SMR
			3	
	Past evidence of coppicing or laying		Non-linear (excluding roadside)	
Species diversity significance: tree/shrub/climber species count (all)/30m strip				
1-3	4 - 5	6-7	8-9	10+
		2		
Ground flora significance				
Dominated by ruderal species.				
		2		
Species count (from list) 30m strip				
<2	2 - 3	4-5	6-7	>7

0	1	2	3	4
Pteridophytes from list/30m strip			3-5	>5
<u>0</u>				
Structure, construction & associated features				
	Wall /bank <0.5m (h/d)	Wall/bank 0.5-1m	Wall/bank >1m	Double ditch
		<u>2</u>		
		Dry ditch	Wet ditch/drain	Stream/river
		Badger sett		
		Green lane		
Habitat connectivity Significance				
No connection	Single link with semi natural habitat inc hedgerow	Multiple links with semi natural hedgerows including other hedgerows	Link with woodland/forest habitat	Link with designated area, particularly woodland
		<u>2</u>		
Landscape Significance	Wind shaped	Mature hedgerow trees		Area covered by landscape designation
		<u>2</u>		
Other factors of significance				
Total Significance Score				13

Hedgerow condition assessment

	0	1	2	3
	Unfavourable	Adequate	Favourable	Highly favourable
Structural variables				
Height	<1.5	1 . 5 - 2 . 5	2 . 5 - 4	>4m
			<u>2</u>	
Width	<1m	1 - 2 m	2 - 3 m	>3m
			<u>2</u>	
Profile	Remnant /derelict	Wind shaped/losing base structure	Boxed/as haped; straight sided	Overgrown; top heavy/undercut; outgrowths at base
			<u>2</u>	
Basal density/porosity to light of woody shrubs	Open	Semi-translucent	Semi-opaque	Opaque/dense
				<u>3</u>
Continuity				

	0	1	2	3
% gaps	>10%	5-10%	<5%	continuous
				<u>3</u>
Specific gaps	Individual gap >5m	Individual gap <5m	No gaps	No gaps
				<u>3</u>
Negative indicators/degradation/issues affecting long term viability				
Bank/wall	>20% of length of hedge degraded	<20% of the hedge degraded	Minor degradation	No degradation
				<u>3</u>
% of canopy dominated by ivy	> 25%			
Unfavourable species composition: % woody growth volume comprised of unfavourable species	10%			
	<u>0</u>			
Ground flora/hedge base: % ground layer showing	> 20%			

	0	1	2	3
evidence of herbicide use				
	<u>0</u>			
Ground flora/hedge base: % noxious weeds/nutrient rich species	> 2 0 %			
	<u>0</u>			
Ground flora/ hedge base: Alien invasive species	Present			
Degraded margin	Ploughing upto base of hedge shrubs or poaching /erosion		(grassy) margin (2m or greater on one side of the hedge)	(grassy) margin (2m or greater on both sides of the hedge)
			<u>2</u>	
Total Condition Assessment Score :20				

HEDGEROW 6

SITE NAME	HEDGEROW/TREELINE NUMBER: H6
Survey date: 08.08.2019	Fossitt: WL2
Hedgerow Description: Ash, with shrub level of holly, ivy and elder. This hedgerow provides good north south connectivity between railway corridor and two hedgerows south.	
	

Hedgerow significance assessment

0	1	2	3	4
Low significance	Slightly significant	Moderately significant	Significant	Highly significant
Historical Significance				
Recently established	Internal field boundary	Roadside/canal boundary/Farm boundary	Boundary appears on 1 st Edition OS	Townland/Parish/County boundary; shown as/or connected to woodland on 1 st edition OS Connects to features on SMR
			<u>3</u>	
	Past evidence of coppicing or laying		Non-linear (excluding roadside)	
Species diversity significance: tree/shrub/climber species count (all)/30m strip				
1-3	4-5	6-7	8-9	10+
			<u>3</u>	
Ground flora significance				
Dominated by ruderal species.				
Species count (from list) 30m strip				

0	1	2	3	4
<2	2-3	4-5	6-7	>7
	<u>1</u>			
Pteridophytes from list/30m strip			3-5	>5
<u>0</u>				
Structure, construction & associated features				
	Wall /bank <0.5m (h/d)	Wall/bank 0.5-1m	Wall/bank >1m	Double ditch
			<u>3</u>	
		Dry ditch	Wet ditch/drain	Stream/river
		Badger sett		
		Green lane		
Habitat connectivity Significance				
No connection	Single link with semi natural habitat inc hedgerow	Multiple links with semi natural hedgerows including other hedgerows	Link with woodland/forest habitat	Link with designated area, particularly woodland
		<u>2</u>		
Landscape Significance	Wind shaped	Mature hedgerow trees		Area covered by landscape designation
		<u>2</u>		
Other factors of significance				
Total Significance Score				14

Hedgerow condition assessment

	0	1	2	3
	Unfavourable	Adequate	Favourable	Highly favourable
Structural variables				
Height	<1.5	1.5-2.5	2.5-4	>4m
			<u>2</u>	
Width	<1m	1-2m	2-3m	>3m
		<u>1</u>		
Profile	Remnant/derelict	Wind shaped/losing base structure	Boxed/a-shaped; straight sided	Overgrown; top heavy/undercut; outgrowths at base
			<u>2</u>	
Basal density/porosity to light of woody shrubs	Open	Semi-translucent	Semi-opaque	Opaque/dense
			<u>2</u>	

	0	1	2	3
Continuity				
% gaps	>10%	5 - 1 0 %	< 5 %	continuous
			<u>2</u>	
Specific gaps	Individual gap >5m	Individual gap <5m	No gaps	No gaps
				<u>3</u>
Negative indicators/degradation/issues affecting long term viability				
Bank/wall	>20% of length of hedge degraded	<20% of the hedge degraded	Minor degradation	No degradation
			<u>2</u>	
% of canopy dominated by ivy	>25%			
Unfavourable species composition: % woody growth volume comprised of unfavourable species	10%			
	<u>0</u>			
Ground flora/hedge base:	>20%			

	0	1	2	3
% ground layer showing evidence of herbicide use				
	<u>0</u>			
Ground flora/hedge base: % noxious weeds/nutrient rich species	>20%			
	<u>0</u>			
Ground flora/hedge base: Alien invasive species	Present			
Degraded margin	Ploughing upto base of hedge shrubs or poaching/erosion		(grassy) margin (2m or greater on one side of the hedge)	(grassy) margin (2m or greater on both sides of the hedge)
	<u>0</u>			
	Total Condition Assessment Score :12			

HEDGEROW 7

SITE NAME	HEDGEROW/TREELINE NUMBER: H7
Survey date: 08.08.2019	Fossitt: WL1
<p>Hedgerow Description:</p> <p>This is a gappy hedgerow that is dominated by hawthorn and is heavily poached and used by cattle for shelter. Its overall importance relates to the proximity to the Canal Pond and woodland fringe immediately to the north, that in turn links to the Railway corridor woodland (H2), to the south the hedgerow links to the townland boundary treeline.</p>	
	

Hedgerow significance assessment

0	1	2	3	4
Low significance	Slightly significant	Moderately significant	Significant	Highly significant
Historical Significance				
Recently established	Internal field boundary	Roadside/canal boundary/Farm boundary	Boundary appears on 1 st Edition OS	Townland/Parish/County boundary; shown as/or connected to woodland on 1 st edition OS Connects to features on SMR
			3	
	Past evidence of coppicing or laying		Non-linear (excluding roadside)	
Species diversity significance: tree/shrub/climber species count (all)/30m strip				
1-3	4-5	6-7	8-9	10+
	1			
Ground flora significance				
Dominated by ruderal species.				
Species count (from list) 30m strip				
<2	2-3	4-5	6-7	>7
	1			
Pteridophytes from list/30m strip			3-5	>5
0				
Structure, construction & associated features				

0	1	2	3	4
	Wall /bank <0.5m (h/d)	Wall/bank 0.5- 1m	Wall/bank >1m	Double ditch
	<u>1</u>			
		Dry ditch	Wet ditch/drain	Stream/river
		Badger sett		
		Green lane		
Habitat connectivity Significance				
No connection	Single link with semi natural habitat inc hedgerow	Multiple links with semi natural hedgerows including other hedgerows	Link with woodland/forest habitat	Link with designated area, particularly woodland
			<u>3</u>	
Landscape Significance	Windshaped	Mature hedgerow trees		Area covered by landscape designation
	<u>1</u>			
Other factors of significance				
Total Significance Score				11

Hedgerow condition assessment

	0	1	2	3
	Unfavou rable	Adeq uate	Favoura ble	Highly favourable
Structural variables				
Height	<1.5	1.5- 2.5	2.5 -4	>4m


	0	1	2	3
		<u>1</u>		
Width	<1m	1-2m	2-3m	>3m
		<u>1</u>		
Profile	Remnant /derelict	Wind shape d/losing base structure	Boxed/a-shaped; straight sided	Overgrown; top heavy/undercut; outgrowths at base
		<u>1</u>		
Basal density/porosity to light of woody shrubs	Open	Semi-translucent	Semi-opaque	Opaque/dense
		<u>1</u>		<u>3</u>
Continuity				
% gaps	>10%	5-10%	<5%	continuous
	<u>0</u>			
Specific gaps	Individual gap >5m	Individual gap <5m	No gaps	No gaps
	<u>0</u>			
Negative indicators/degradation/issues affecting long term viability				
Bank/wall	>20% of length of hedge degraded	<20% of the hedge degraded	Minor degradation	No degradation
		<u>1</u>		

	0	1	2	3
% of canopy dominated by ivy	> 2 5 %			
Unfavourable species composition: % woody growth volume comprised of unfavourable species	1 0 %			
	<u>0</u>			
Ground flora/hedge base: % ground layer showing evidence of herbicide use	> 2 0 %			
	<u>0</u>			
Ground flora/hedge base: % noxious weeds/nutrient rich species	> 2 0 %			
	<u>0</u>			
Ground flora/ hedge base: Alien invasive species	Present			
Degraded margin	Ploughing upto base of hedge shrubs or		(grassy) margin (2m or greater on one side of	(grassy) margin (2m or greater on both sides of the hedge

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	0	1	2	3
	poaching /erosion		the hedge)	
	<u>0</u>			
	Total Condition Assessment Score :5			

HEDGEROW 8

SITE NAME	HEDGEROW/TREELINE NUMBER: H8
Survey date: 08.08.2019	Fossitt: WL2
<p>Hedgerow Description:</p> <p>The townland and parish boundary between Kellystown and, this non linear and structurally diverse treeline runs north from the railway corridor to Luttrellstown Raod, although some gaps are present, primarily related to access to fields. The boundary varies with banks, wet ditches, occasional stone walls and a good diversity of tree and shrub species thought dominated by Ash.</p>	
	

Hedgerow significance assessment

0	1	2	3	4
Low significance	Slightly significant	Moderately significant	Significant	Highly significant
Historical Significance				
Recently established	Internal field boundary	Roadside/canal boundary/Farm boundary	Boundary appears on 1 st Edition OS	Townland/Parish/County boundary; shown as/or connected to woodland on 1 st edition OS Connects to features on SMR
				<u>4</u>
	Past evidence of coppicing or laying		Non-linear (excluding roadside)	
			<u>3</u>	
Species diversity significance: tree/shrub/climber species count (all)/30m strip				
1-3	4-5	6-7	8-9	10+
				<u>4</u>
Ground flora significance				
Dominated by ruderal species.				
Species count (from list) 30m strip				
<2	2-3	4-5	6-7	>7
		<u>2</u>		

0	1	2	3	4
Pteridophytes from list/30m strip			3-5	>5
<u>0</u>				
Structure, construction & associated features				
	Wall /bank <0.5m (h/d)	Wall/bank 0.5-1m	Wall/bank >1m	Double ditch
			<u>3</u>	
		Dry ditch	Wet ditch/drain	Stream/river
		Badger sett	3-in part	
		Green lane		
Habitat connectivity Significance				
No connection	Single link with semi natural habitat inc hedgerow	Multiple links with semi natural hedgerows including other hedgerows	Link with woodland/forest habitat	Link with designated area, particularly woodland
			<u>3</u>	
Landscape Significance	Wind shaped	Mature hedgerow trees		Area covered by landscape designation
		<u>2</u>		
Other factors of significance				
Total Significance Score				21


Hedgerow condition assessment

	0	1	2	3
	Unfavourable	Adequate	Favourable	Highly favourable
Structural variables				
Height	<1.5	1.5-2.5	2 . 5 - 4	>4m
				<u>3</u>
Width	<1m	1 - 2 m	2 - 3 m	>3m
				<u>3</u>
Profile	Remnant /derelict	Wind shape d/losing base structure	Boxed/a- shaped; straight sided	Overgrown; top heavy/undercut; outgrowths at base
				<u>3</u>
Basal density/porosity to light of woody shrubs	O p e n	Semi-translucent	Semi-opaque	Opaque/dense
				<u>3</u>
Continuity				
% gaps	> 1 0 %	5- 10%	< 5 %	continuous

	0	1	2	3
				<u>3</u>
Specific gaps	Individual gap >5m	Individual gap <5m	No gaps	No gaps
				<u>3</u>
Negative indicators/degradation/issues affecting long term viability				
Bank/wall	>20% of length of hedge degraded	<20% of the hedge degraded	Minor degradation	No degradation
			<u>2</u>	
% of canopy dominated by ivy	> 25%			
			<u>2</u>	
Unfavourable species composition: % woody growth volume comprised of unfavourable species	10%			
	<u>0</u>			
Ground flora/hedge base: % ground layer showing evidence of herbicide use	> 20%			
	<u>0</u>			
Ground flora/hedge base:	> 2			

	0	1	2	3
% noxious weeds/nutrient rich species	0 %			
	<u>0</u>			
Ground flora/ hedge base: Alien invasive species	P r e s e n t			
Degraded margin	Ploughin g upto base of hedge shrubs or poaching /erosion		(grassy) margin (2m or greater on one side of the hedge)	(grassy) margin (2m or greater on both sides of the hedge)
	<u>0</u>		<u>2</u>	
Total Condition Assessment Score : 24				

HEDGEROW 9

SITE NAME	HEDGEROW/TREELINE NUMBER: H9
Survey date: 19.08.2019	Fossitt: WL2
<p>Hedgerow Description:</p> <p>A roadside treeline that is bisected by old farm buildings, and is recorded as a treeline on the 1st Edition Ordnance Survey Map. A yew tree (<i>Taxus battaca</i>) is present close to the southern part of the treeline facing the roadside. Sycamore(<i>Acer pseudoplatanus</i>), blackthorn (<i>Prunus spinosa</i>), and hawthorn (<i>C.monogyna</i>) in the hedgerows have brambles and nettles growing under them.</p>	
	

Hedgerow significance assessment

0	1	2	3	4
Low significance	Slightly significant	Moderately significant	Significant	Highly significant
Historical Significance				
Recently established	Internal field boundary	Roadside/canal boundary/Farm boundary	Boundary appears on 1 st Edition OS	Townland/Parish/County boundary; shown as/or connected to woodland on 1 st edition OS Connects to features on SMR
			<u>3</u>	
	Past evidence of coppicing or laying		Non-linear (excluding roadside)	
		<u>2</u>		
Species diversity significance: tree/shrub/climber species count (all)/30m strip				
1-3	4-5	6-7	8-9	10+
		<u>2</u>		
Ground flora significance				
Dominated by ruderal species.				
<u>0</u>				
Species count (from list) 30m strip				
<2	2-3	4-5	6-7	>7
<u>0</u>		<u>2</u>		

0	1	2	3	4
Pteridophytes from list/30m strip			3-5	>5
<u>0</u>				
Structure, construction & associated features				
	Wall /bank <0.5m (h/d)	Wall/bank 0.5-1m	Wall/bank >1m	Double ditch
	<u>1</u>			
		Dry ditch	Wet ditch/drain	Stream/river
		Badger sett		
		Green lane		
Habitat connectivity Significance				
No connection	Single link with semi natural habitat inc hedgerow	Multiple links with semi natural hedgerows including other hedgerows	Link with woodland/forest habitat	Link with designated area, particularly woodland
	<u>1</u>			
Landscape Significance	Wind shaped	Mature hedgerow trees		Area covered by landscape designation
		<u>2</u>		
Other factors of significance				
Total Significance Score				13


Hedgerow condition assessment

	0	1	2	3
	Unfavourable	Adequate	Favourable	Highly favourable
Structural variables				
Height	<1.5	1.5-2.5	2 . 5 - 4	>4m
		<u>1</u>		
Width	<1m	1 - 2 m	2 - 3 m	>3m
		<u>1</u>		
Profile	Remnant /derelict	Wind shaped/losing base structure	Boxed/a-shaped; straight sided	Overgrown; top heavy/undercut; outgrowths at base
		<u>1</u>		
Basal density/porosity to light of woody shrubs	Open	Semi-translucent	Semi-opaque	Opaque/dense
		<u>1</u>		
Continuity				
% gaps	> 1 0 %	5-10%	<5%	Continuous

	0	1	2	3
	<u>0</u>			
Specific gaps	Individual gap >5m	Individual gap <5m	No gaps	No gaps
Negative indicators/degradation/issues affecting long term viability				
Bank/wall	>20% of length of hedge degraded	<20% of the hedge degraded	Minor degradation	No degradation
	<u>0</u>			
% of canopy dominated by ivy	> 25 %			
Unfavourable species composition: % woody growth volume comprised of unfavourable species	10 %			
	<u>0</u>			
Ground flora/hedge base: % ground layer showing evidence of herbicide use	> 20 %			
	<u>0</u>			
Ground flora/hedge base:	> 2			

	0	1	2	3
% noxious weeds/nutrient rich species	0 %			
	<u>0</u>			
Ground flora/ hedge base: Alien invasive species	Present			
Degraded margin	Ploughing upto base of hedge shrubs or poaching /erosion		(grassy) margin (2m or greater on one side of the hedge)	(grassy) margin (2m or greater on both sides of the hedge)
	<u>0</u>		<u>2</u>	
Total Condition Assessment Score : 6				

HEDGEROW 10

SITE NAME	HEDGEROW/TREELINE NUMBER: H10
Survey date: 19.08.2019	Fossitt: WL2
<p>Hedgerow Description:</p> <p>A roadside treeline that is has a number of gaps associated with access to housing and sports grounds, and is recorded as a treeline on the 1st Edition Ordnance Survey Map. A drain with extensive rubbish is present as well as a stand of winter heliotrope, and dogwood, a presumable garden escape is present along parts of this hedgerow. Ash, hawthorn, hazel are principal species.</p>	
	

Hedgerow significance assessment

0	1	2	3	4
Low significance	Slightly significant	Moderately significant	Significant	Highly significant
Historical Significance				
Recently established	Internal field boundary	Roadside/canal boundary/Farm boundary	Boundary appears on 1 st Edition OS	Townland/Parish/County boundary; shown as/or connected to woodland on 1 st edition OS Connects to features on SMR
			<u>3</u>	
	Past evidence of coppicing or laying		Non-linear (excluding roadside)	
Species diversity significance: tree/shrub/climber species count (all)/30m strip				
1-3	4-5	6-7	8-9	10+
			<u>3</u>	
Ground flora significance				
Dominated by ruderal species.				
<u>0</u>				
Species count (from list) 30m strip				
<2	2-3	4-5	6-7	>7
<u>0</u>				
Pteridophytes from list/30m strip			3-5	>5

0	1	2	3	4
<u>0</u>				
Structure, construction & associated features				
	Wall /bank <0.5m (h/d)	Wall/bank 0.5-1m	Wall/bank >1m	Double ditch
		Dry ditch	Wet ditch/drain 3- partly associated with road drain and outfalls from housing site.	Stream/river
		Badger sett		
		Green lane		
Habitat connectivity Significance				
No connection	Single link with semi natural habitat inc hedgerow	Multiple links with semi natural hedgerows including other hedgerows	Link with woodland/forest habitat	Link with designated area, particularly woodland
	<u>1</u>			
Landscape Significance	Wind shaped	Mature hedgerow trees		Area covered by landscape designation
		<u>2</u>		
Other factors of significance				
Total Significance Score				8


Hedgerow condition assessment

	0	1	2	3
	Unfavourable	Adequate	Favourable	Highly favourable
Structural variables				
Height	<1.5	1.5-2.5	2.5-4	>4m
		<u>1</u>		
Width	<1m	1-2m	2-3m	>3m
		<u>1</u>		
Profile	Remnant /derelict	Wind shaped/losing base structure	Boxed/a-shaped; straight sided	Overgrown; top heavy/undercut; outgrowths at base
		<u>1</u>		
Basal density/porosity to light of woody shrubs	Open	Semi-translucent	Semi-opaque	Opaque/dense
		<u>1</u>		
Continuity				
% gaps	>10%	5-10%	<5%	continuous
	<u>0</u>			

	0	1	2	3
Specific gaps	Individual gap >5m	Individual gap <5m	No gaps	No gaps
		<u>1</u>		
Negative indicators/degradation/issues affecting long term viability				
Bank/wall	>20% of length of hedge degraded	<20% of the hedge degraded	Minor degradation	No degradation
	<u>0</u>			
% of canopy dominated by ivy	>25%			
Unfavourable species composition: % woody growth volume comprised of unfavourable species	10%			
	<u>0</u>			
Ground flora/hedge base: % ground layer showing evidence of herbicide use	>20%			
		<u>1</u>		
Ground flora/hedge base:	>20%			

	0	1	2	3
% noxious weeds/nutrient rich species				
	<u>0</u>			
Ground flora/ hedge base: Alien invasive species	Present			
	<u>0</u>			
Degraded margin	Ploughing upto base of hedge shrubs or poaching /erosion		(grassy) margin (2m or greater on one side of the hedge)	(grassy) margin (2m or greater on both sides of the hedge)
	<u>0</u>		<u>2</u>	
Total Condition Assessment Score : 8				

HEDGEROW 11

SITE NAME	HEDGEROW/TREELINE NUMBER: H10
Survey date: 19.08.2019	Fossitt: WL2
<p>Hedgerow Description: A treeline comprised entirely of mature ash on a low earth bank, formerly a longer treeline, now separated by recent road infrastructure. Between the road and the ash trees there is an earth mound covered in creeping thistle, fumitory and other ruderals</p>	
	

Hedgerow significance assessment

0	1	2	3	4
Low significance	Slightly significant	Moderately significant	Significant	Highly significant

0	1	2	3	4
Historical Significance				
Recently established	Internal field boundary	Roadside/canal boundary/Farm boundary	Boundary appears on 1 st Edition OS	Townland/Parish/County boundary; shown as/or connected to woodland on 1 st edition OS Connects to features on SMR
			3	
	Past evidence of coppicing or laying		Non-linear (excluding roadside)	
Species diversity significance: tree/shrub/climber species count (all)/30m strip				
1-3	4-5	6-7	8-9	10+
		2		
Ground flora significance				
Dominated by ruderal species.				
0				
Species count (from list) 30m strip				
<2	2-3	4-5	6-7	>7
0	1			
Pteridophytes from list/30m strip			3-5	>5
0				

0	1	2	3	4
Structure, construction & associated features				
	Wall /bank <0.5m (h/d)	Wall/bank 0.5-1m	Wall/bank >1m	Double ditch
		<u>2</u>		
		Dry ditch	Wet ditch/drain	Stream/river
		Badger sett		
		Green lane		
Habitat connectivity Significance				
No connection	Single link with semi natural habitat inc hedgerow	Multiple links with semi natural hedgerows including other hedgerows	Link with woodland/forest habitat	Link with designated area, particularly woodland
	<u>1</u>			
Landscape Significance	Wind shaped	Mature hedgerow trees		Area covered by landscape designation
		<u>2</u>		
Other factors of significance				
Total Significance Score				11


Hedgerow condition assessment

	0	1	2	3
	Unfavourable	Adequate	Favourable	Highly favourable
Structural variables				
Height	< 1 . 5	1.5- 2.5	2 . 5 - 4	>4m
				<u>3</u>
Width	< 1 m	1 - 2 m	2 - 3 m	>3m
		<u>1</u>		
Profile	Remnant /derelict	Wind shape d/losi ng base struct ure	Boxed/a- shaped; straight sided	Overgrown; top heavy/undercut; outgrowths at base
		<u>1</u>		
Basal density/porosity to light of woody shrubs	Open	Semi-translucent	Semi-opaque	Opaque/dense
	<u>0</u>			
Continuity				
% gaps	>10%	5- 10%	<5%	continuous
	<u>0</u>			

	0	1	2	3
Specific gaps	Individual gap >5m	Individual gap <5m	No gaps	No gaps
Negative indicators/degradation/issues affecting long term viability				
Bank/wall	>20% of length of hedge degraded	<20% of the hedge degraded	Minor degradation	No degradation
	0			
% of canopy dominated by ivy	> 25 %			
Unfavourable species composition: % woody growth volume comprised of unfavourable species	10 %			
	0			
Ground flora/hedge base: % ground layer showing evidence of herbicide use	> 20 %			
	0			
Ground flora/hedge base:	> 2			

	0	1	2	3
% noxious weeds/nutrient rich species	0 %			
	<u>0</u>			
Ground flora/ hedge base: Alien invasive species	Present			
Degraded margin	Ploughing upto base of hedge shrubs or poaching /erosion		(grassy) margin (2m or greater on one side of the hedge)	(grassy) margin (2m or greater on both sides of the hedge)
	<u>0</u>			
Total Condition Assessment Score : 5				

HEDGEROW 12

SITE NAME	HEDGEROW/TREELINE NUMBER: H12
Survey date: 19.08.2019	Fossitt: WL2
An important hedgerow for connectivity around the lands, linking with four other hedgerows. This hedgerow supports a more diverse tree species compared to others on the lands. Dominant species are ash, hawthorn with rowan, field rose and blackberry present also.	
	

Hedgerow significance assessment

0	1	2	3	4
Low significance	Slightly significant	Moderately significant	Significant	Highly significant
Historical Significance				
Recently established	Internal field boundary	Roadside/canal boundary/Farm boundary	Boundary appears on 1 st Edition OS	Townland/Parish/County boundary; shown as/or connected to woodland on 1 st edition OS Connects to features on SMR
			3	
	Past evidence of coppicing or laying		Non-linear (excluding roadside)	
Species diversity significance: tree/shrub/climber species count (all)/30m strip				
1-3	4-5	6-7	8-9	10+
				4
Ground flora significance				
Dominated by ruderal species.				
0				
Species count (from list) 30m strip				
<2	2-3	4-5	6-7	>7
0				

0	1	2	3	4
Pteridophytes from list/30m strip			3-5	>5
<u>0</u>				
Structure, construction & associated features				
	Wall /bank <0.5m (h/d)	Wall/bank 0.5-1m	Wall/bank >1m	Double ditch
			<u>3</u>	
		Dry ditch	Wet ditch/drain	Stream/river
		Badger sett		
		Green lane		
Habitat connectivity Significance				
No connection	Single link with semi natural habitat inc hedgerow	Multiple links with semi natural hedgerows including other hedgerows	Link with woodland/forest habitat	Link with designated area, particularly woodland
		<u>2</u>		
Landscape Significance	Wind shaped	Mature hedgerow trees		Area covered by landscape designation
		<u>2</u>		
Other factors of significance				
Total Significance Score				14

Hedgerow condition assessment

	0	1	2	3
	Unfavou rable	Adeq uate	Favoura ble	Highly favourable
Structural variables				
Height	<1.5	1 . 5 - 2 . 5	2 . 5 - 4	>4m
			<u>2</u>	
Width	<1m	1-2m	2-3m	>3m
				<u>3</u>
Profile	Remnant /derelict	Wind shape d/losi ng base struct ure	Boxed/a- shaped; straight sided	Overgrown; top heavy/undercut; outgrowths at base
			<u>2</u>	
Basal density/porosity to light of woody shrubs	Open	Semi- transl ucent	Semi- opaque	Opaque/dense
			<u>2</u>	
Continuity				
% gaps	>10%	5- 10%	<5%	continuous
			<u>2</u>	
Specific gaps	Individua l gap >5m	Indivi dual gap <5m	No gaps	No gaps
		<u>1</u>		

	0	1	2	3
Negative indicators/degradation/issues affecting long term viability				
Bank/wall	>20% of length of hedge degraded	<20% of the hedge degraded	Minor degradation	No degradation
	0		2	
% of canopy dominated by ivy	> 2 5 %			
Unfavourable species composition: % woody growth volume comprised of unfavourable species	1 0 %			
	0			
Ground flora/hedge base: % ground layer showing evidence of herbicide use	> 2 0 %			
	0			
Ground flora/hedge base: % noxious weeds/nutrient rich species	> 2 0 %			
	0			

	0	1	2	3
Ground flora/ hedge base: Alien invasive species	Present			
Degraded margin	Ploughin g upto base of hedge shrubs or poaching /erosion		(grassy) margin (2m or greater on one side of the hedge)	(grassy) margin (2m or greater on both sides of the hedge)
	<u>0</u>		<u>2</u>	
Total Condition Assessment Score : 16				

HEDGEROW 13

SITE NAME	HEDGEROW/TREELINE NUMBER: H13
Survey date: 19.08.2019	Fossitt: WL2
A long hedgerow that runs northeast-southwest, this also includes a double hedgerow with embankments for part of the hedgerow, creating a small scale green lane. This feature may have been a former internal farm track. Another important hedgerow for connectivity that links with H8 (townland boundary hedgerow) and three other hedgerows/treelines. Hawthorn, Ash, Holly and Rowan are present.	
	

Hedgerow significance assessment

0	1	2	3	4
Low significance	Slightly significant	Moderately significant	Significant	Highly significant
Historical Significance				
Recently established	Internal field boundary	Roadside/canal boundary/Farm boundary	Boundary appears on 1 st Edition OS	Townland/Parish/County boundary; shown as/or connected to woodland on 1 st edition OS Connects to features on SMR
			<u>3</u>	
	Past evidence of coppicing or laying		Non-linear (excluding roadside)	
			<u>3</u>	
Species diversity significance: tree/shrub/climber species count (all)/30m strip				
1-3	4-5	6-7	8-9	10+
			<u>3</u>	
Ground flora significance				
Dominated by ruderal species.				
<u>0</u>				
Species count (from list) 30m strip				
<2	2-3	4-5	6-7	>7
<u>0</u>	<u>1</u>			
Pteridophytes from			3-5	>5

0	1	2	3	4
list/30m strip				
<u>0</u>				
Structure, construction & associated features				
	Wall /bank <0.5m (h/d)	Wall/bank 0.5-1m	Wall/bank >1m	Double ditch
				<u>4</u>
		Dry ditch <u>2</u>	Wet ditch/drain	Stream/river
		Badger sett		
		Green lane <u>2</u>		
Habitat connectivity Significance				
No connection	Single link with semi natural habitat inc hedgerow	Multiple links with semi natural hedgerows including other hedgerows	Link with woodland/forest habitat	Link with designated area, particularly woodland
		<u>2</u>		
Landscape Significance	Wind shaped	Mature hedgerow trees		Area covered by landscape designation
		<u>2</u>		
Other factors of significance				
Total Significance Score				22

Hedgerow condition assessment

	0	1	2	3
	U n f a v o u r a b l e	A d e q u a t e	F a v o u r a b l e	Highly favourable
Structural variables				
Height	< 1 · 5	1.5- 2.5	2.5 -4	>4m
			<u>2</u>	
Width	< 1 m	1-2m	2-3m	>3m
				<u>3</u>
Profile	Remnant /derelict	Wind shape d/losi ng base struct ure	Boxed/a- shaped; straight sided	Overgrown; top heavy/undercut; outgrowths at base
		<u>1</u>		
Basal density/porosity to light of woody shrubs	Open	Semi- transl ucent	Semi- opaque	Opaque/dense

	0	1	2	3
			<u>2</u>	
Continuity				
% gaps	>10%	5-10%	<5%	continuous
	<u>0</u>			
Specific gaps	Individual gap >5m	Individual gap <5m	No gaps	No gaps
		<u>1</u>		
Negative indicators/degradation/issues affecting long term viability				
Bank/wall	>20% of length of hedge degraded	<20% of the hedge degraded	Minor degradation	No degradation
		<u>1</u>		
% of canopy dominated by ivy	>25%			
Unfavourable species composition: % woody growth volume comprised of unfavourable species	10%			
	<u>0</u>			
Ground flora/hedge base:	>2			

	0	1	2	3
% ground layer showing evidence of herbicide use	0 %			
	<u>0</u>			
Ground flora/hedge base: % noxious weeds/nutrient rich species	>20%			
	<u>0</u>			
Ground flora/ hedge base: Alien invasive species	Present			
Degraded margin	Ploughing upto base of hedge shrubs or poaching /erosion		(grassy) margin (2m or greater on one side of the hedge)	(grassy) margin (2m or greater on both sides of the hedge)
	<u>0</u>		<u>2</u>	
	Total Condition Assessment Score : 12			

HEDGEROW 14

A Single treeline of poplar trees (matchstick poplars); this is of low ecological value and the trees are in dangerous condition given their propensity to snap in windy and stormy weather. The poplars are fenced with timber and herbicide applied.

HEDGEROW 15

SITE NAME	HEDGEROW/TREELINE NUMBER: H15
Survey date: 19.08.2019	Fossitt: WL2
This forms the southern boundary of the lands and fronts Porterstown Road. Remnants of the original hedgerow remain. Around Kellystown House, the treeline comprises beech (<i>Fagus sylvatica</i>), planted small leaved lime (<i>Tilia cordata</i>), turkey oak (<i>Quercus cerris</i>) and whitebeam (<i>Sorbus aria</i>). The ground flora is generally sparse, with a low carpet of ivy. The eastern end now comprises a stone wall and hedging associated with Luttrellstown College, thereafter the hedgerow includes hawthorn, blackthorn and occasional specimen trees such as lebanan cypruss as well as mature ash. Ivy growth is heavy on these parts of the treeline. The boundary treatments vary and are associated with a number of houses. The hedgerow is intact primarily in two stretches along this road as identified on the hedgerow map.	



Hedgerow significance assessment

0	1	2	3	4
Low significance	Slightly significant	Moderately significant	Significant	Highly significant
Historical Significance				
Recently established	Internal field boundary	Roadside/canal boundary/Farm boundary	Boundary appears on 1 st Edition OS	Townland/Parish/County boundary; shown as/or connected to woodland on 1 st edition OS Connects to features on SMR
			<u>3</u>	

0	1	2	3	4
	Past evidence of coppicing or laying		Non-linear (excluding roadside)	
Species diversity significance: tree/shrub/climber species count (all)/30m strip				
1-3	4-5	6-7	8-9	10+
		<u>2</u>		
Ground flora significance				
Dominated by ruderal species.				
<u>0</u>				
Species count (from list) 30m strip				
<2	2-3	4-5	6-7	>7
<u>0</u>	<u>1</u>			
Pteridophytes from list/30m strip			3-5	>5
<u>0</u>				
Structure, construction & associated features				
	Wall /bank <0.5m (h/d)	Wall/bank 0.5-1m	Wall/bank >1m	Double ditch
		Dry ditch	Wet ditch/drain	Stream/river
		Badger sett		
		Green lane		
Habitat connectivity Significance				
No connection	Single link with semi natural	Multiple links with semi natural hedgerows	Link with woodland/forest habitat	Link with designated area, particularly woodland

0	1	2	3	4
	habitat inc hedgerow	including other hedgerows		
		<u>2</u>		
Landscape Significance	Wind shaped	Mature hedgerow trees		Area covered by landscape designation
		<u>2</u>		
Other factors of significance				
Total Significance Score				10

Hedgerow condition assessment

	0	1	2	3
	Unfavourable	Adequate	Favourable	Highly favourable
Structural variables				
Height	< 1.5	1.5 - 2.5	2.5 - 4	>4m
			<u>2</u>	
Width	< 1 m	1 - 2 m	2 - 3 m	>3m
			<u>2</u>	
Profile	Remnant /derelict	Wind shaped/losing base	Boxed/a-shaped; straight sided	Overgrown; top heavy/undercut; outgrowths at base

	0	1	2	3
		struct ure		
		<u>1</u>		
Basal density/porosity to light of woody shrubs	Open	Semi-translucent	Semi-opaque	Opaque/dense
			<u>2</u>	
Continuity				
% gaps	>10%	5-10%	<5%	continuous
	<u>0</u>			
Specific gaps	Individual gap >5m	Individual gap <5m	No gaps	No gaps
		<u>1</u>		
Negative indicators/degradation/issues affecting long term viability				
Bank/wall	>20% of length of hedge degraded	<20% of the hedge degraded	Minor degradation	No degradation
	<u>0</u>			
% of canopy dominated by ivy	> 25%			
	<u>0</u>			
Unfavourable species composition: % woody growth volume comprised	10%			

	0	1	2	3
of unfavourable species				
	<u>0</u>			
Ground flora/hedge base: % ground layer showing evidence of herbicide use	> 2 0 %			
	<u>0</u>			
Ground flora/hedge base: % noxious weeds/nutrient rich species	> 2 0 %			
	<u>0</u>			
Ground flora/hedge base: Alien invasive species	Present			
Degraded margin	Ploughing upto base of hedge shrubs or poaching /erosion		(grassy) margin (2m or greater on one side of the hedge)	(grassy) margin (2m or greater on both sides of the hedge)
	<u>0</u>			
Total Condition Assessment Score : 8				

HEDGEROW 16

SITE NAME	HEDGEROW/TREELINE NUMBER: H16
Survey date: 19.08.2019	Fossitt: WL2
<p>This curved treeline suggests the old demesne planting associated with Kellystown House, and is marked as such on the 1st edition O.S map.</p> <p>There is a gravel track and deep ditch on the eastern boundary of the hedgerow. This ditch had water flowing in it on the day of the survey, and contained some different species not found elsewhere in the site, including brown sedge (<i>Carex disticha</i>), great manner grass (<i>Glyceria maxima</i>), and wild celery (<i>Apium</i> sp). Ground flora next to the ditch included the invasive shrub, snowberry (<i>Symphoricarpos albus</i>), native hogweed (<i>H. sphondylium</i>), and coltsfoot (<i>Tussilago farfara</i>).</p> <p>Tree species present include Ash, Hawthorn, Lime, sycamore and rowan.</p>	
	

Hedgerow significance assessment

0	1	2	3	4
Low significance	Slightly significant	Moderately significant	Significant	Highly significant
Historical Significance				
Recently established	Internal field boundary	Roadside/canal boundary/Farm boundary	Boundary appears on 1 st Edition OS	Townland/Parish/County boundary; shown as/or connected to woodland on 1 st edition OS Connects to features on SMR
			<u>3</u>	
	Past evidence of coppicing or laying		Non-linear (excluding roadside)	
			<u>3</u>	
Species diversity significance: tree/shrub/climber species count (all)/30m strip				
1-3	4-5	6-7	8-9	10+
		<u>2</u>		
Ground flora significance				
Dominated by ruderal species.				
<u>0</u>				
Species count (from list) 30m strip				
<2	2-3	4-5	6-7	>7
			<u>3</u>	

0	1	2	3	4
Pteridophytes from list/30m strip			3-5	>5
<u>0</u>				
Structure, construction & associated features				
	Wall /bank <0.5m (h/d)	Wall/bank 0.5-1m	Wall/bank >1m	Double ditch
			<u>3</u>	
		Dry ditch	Wet ditch/drain	Stream/river
		Badger sett		
		Green lane		
			<u>3</u>	
Habitat connectivity Significance				
No connection	Single link with semi natural habitat inc hedgerow	Multiple links with semi natural hedgerows including other hedgerows	Link with woodland/forest habitat	Link with designated area, particularly woodland
		<u>2</u>		
Landscape Significance	Wind shaped	Mature hedgerow trees		Area covered by landscape designation
		<u>2</u>		
Other factors of significance				
Total Significance Score				21

Hedgerow condition assessment

	0	1	2	3
	Unfavourable	Adequate	Favourable	Highly favourable
Structural variables				
Height	< 1 . 5	1 . 5 - 2 . 5	2 . 5 - 4	>4m
			<u>2</u>	
Width	< 1 m	1 - 2 m	2 - 3 m	>3m
			<u>2</u>	
Profile	Remnant /derelict	Wind shape d/losing base structure	Boxed/a- shaped; straight sided	Overgrown; top heavy/undercut; outgrowths at base
			<u>2</u>	
Basal density/porosity to light of woody shrubs	O p e n	Semi-translucent	Semi-opaque	Opaque/dense
			<u>2</u>	
Continuity				
% gaps	>10%	5- 10%	<5%	continuous
				<u>3</u>

	0	1	2	3
Specific gaps	Individual gap >5m	Individual gap <5m	No gaps	No gaps
				<u>3</u>
Negative indicators/degradation/issues affecting long term viability				
Bank/wall	>20% of length of hedge degraded	<20% of the hedge degraded	Minor degradation	No degradation
	<u>0</u>		<u>2</u>	
% of canopy dominated by ivy	>25%			
	<u>0</u>			
Unfavourable species composition: % woody growth volume comprised of unfavourable species	10%			
			<u>2</u>	
Ground flora/hedge base: % ground layer showing evidence of herbicide use	>20%			
	<u>0</u>			
Ground flora/hedge base: % noxious weeds/nutrient rich species	>20%			

	0	1	2	3
	<u>0</u>			
Ground flora/ hedge base: Alien invasive species	Present			
	<u>0</u>			
Degraded margin	Ploughin g upto base of hedge shrubs or poaching /erosion		(grassy) margin (2m or greater on one side of the hedge)	(grassy) margin (2m or greater on both sides of the hedge)
	<u>0</u>		<u>2</u>	
Total Condition Assessment Score : 17				

HEDGEROW 17

SITE NAME	HEDGEROW/TREELINE NUMBER: H17
Survey date: 18.09.2019	Fossitt: WL2
An internal remnant field boundary approximately 140m in length. Desktop survey only.	
	

Hedgerow significance assessment

0	1	2	3	4
Low significance	Slightly significant	Moderately significant	Significant	Highly significant
Historical Significance				

0	1	2	3	4
Recently established	Internal field boundary	Roadside/canal boundary/Farm boundary	Boundary appears on 1 st Edition OS	Townland/Parish/County boundary; shown as/or connected to woodland on 1 st edition OS Connects to features on SMR
			<u>3</u>	
	Past evidence of coppicing or laying		Non-linear (excluding roadside)	
Species diversity significance: tree/shrub/climber species count (all)/30m strip				
1-3	4-5	6-7	8-9	10+
		<u>2</u>		
Ground flora significance				
Dominated by ruderal species.				
<u>0</u>				
Species count (from list) 30m strip				
<2	2-3	4-5	6-7	>7
	<u>1</u>			
Pteridophytes from list/30m strip			3-5	>5
<u>0</u>				
Structure, construction & associated features				
	Wall /bank <0.5m (h/d)	Wall/bank 0.5-1m	Wall/bank >1m	Double ditch
		<u>2</u>		
		Dry ditch	Wet ditch/drain	Stream/river

0	1	2	3	4
		Badger sett		
		Green lane		
Habitat connectivity Significance				
No connection	Single link with semi natural habitat inc hedgerow	Multiple links with semi natural hedgerows including other hedgerows	Link with woodland/forest habitat	Link with designated area, particularly woodland
	<u>1</u>			
Landscape Significance	Wind shaped	Mature hedgerow trees		Area covered by landscape designation
		<u>2</u>		
Other factors of significance	Forms part of a townland boundary along this road.			
Total Significance Score				11

Hedgerow condition assessment

	0	1	2	3
	Unfavourable	Adequate	Favourable	Highly favourable
Structural variables				
Height	<1.5	1.5-2.5	2.5 -4	>4m
			<u>2</u>	
Width	<1m	1-2m	2-3m	>3m
			<u>2</u>	
Profile	Remnant/derelict	Wind shaped/losing base	Boxed/a-shaped; straight sided	Overgrown; top heavy/undercut; outgrowths at base

	0	1	2	3
		struct ure		
		<u>1</u>		
Basal density/por osity to light of woody shrubs	Open	Semi- transl ucent	Semi- opaque	Opaque/dense
				<u>3</u>
Continuity				
% gaps	>10%	5- 10%	<5%	continuous
		<u>1</u>		
Specific gaps	Individual gap >5m	Indivi dual gap <5m	No gaps	No gaps
				<u>3</u>
Negative indicators/degradation/issues affecting long term viability				
Bank/wall	>20% of length of hedge degraded	<20% of the hedg e degra ded	Minor degradat ion	No degradation
	<u>0</u>		<u>2</u>	
% of canopy dominated by ivy	>25%			
	<u>0</u>			
Unfavourabl e species composition : % woody	10%			

	0	1	2	3
growth volume comprised of unfavourable species				
			<u>2</u>	
Ground flora/hedge base: % ground layer showing evidence of herbicide use	>20%			
	<u>0</u>			
Ground flora/hedge base: % noxious weeds/nutrient rich species	>20%			
	<u>0</u>			
Ground flora/ hedge base: Alien invasive species	Present			
	<u>0</u>			
Degraded margin	Ploughing upto base of hedge shrubs or		(grassy) margin (2m or greater	(grassy) margin (2m or greater on both sides of the hedge

	0	1	2	3
	poaching/erosion		on one side of the hedge)	
	<u>0</u>			
	Total Condition Assessment Score : 12			

HEDGEROW 18

SITE NAME	HEDGEROW/TREELINE NUMBER: H18
Survey date: 18.09.2019	Fossitt: WL2
Hedgerow along Clonsilla Road. Similar to Luttrellstown Road, it is fragmented with a range of boundaries and stretches of intact hedgerow remain. This road is also a townland boundary.	

Hedgerow significance assessment

0	1	2	3	4
Low significance	Slightly significant	Moderately significant	Significant	Highly significant
Historical Significance				
Recently established	Internal field boundary	Roadside/canal boundary/Farm boundary	Boundary appears on 1 st Edition OS	Townland/Parish/County boundary; shown as/or connected to woodland on 1 st edition OS Connects to features on SMR
			<u>3</u>	
	Past evidence of		Non-linear (excluding roadside)	

0	1	2	3	4
	coppicing or laying			
Species diversity significance: tree/shrub/climber species count (all)/30m strip				
1-3	4-5	6-7	8-9	10+
		<u>2</u>		
Ground flora significance				
Dominated by ruderal species.				
<u>0</u>				
Species count (from list) 30m strip				
<2	2-3	4-5	6-7	>7
	<u>1</u>			
Pteridophyes from list/30m strip			3-5	>5
<u>0</u>				
Structure, construction & associated features				
	Wall /bank <0.5m (h/d)	Wall/bank 0.5- 1m	Wall/bank >1m	Double ditch
		<u>2</u>		
		Dry ditch	Wet ditch/drain	Stream/river
		Badger sett		
		Green lane		
Habitat connectivity Significance				
No connection	Single link with semi natural habitat inc hedgerow	Multiple links with semi natural hedgerows	Link with woodland/forest habitat	Link with designated area, particularly woodland

0	1	2	3	4
		including other hedgerows		
	<u>1</u>			
Landscape Significance	Wind shaped	Mature hedgerow trees		Area covered by landscape designation
		<u>2</u>		
Other factors of significance	Forms part of a townland boundary along this road.			
Total Significance Score				11

Hedgerow condition assessment

	0	1	2	3
	Unfavourable	Adequate	Favourable	Highly favourable
Structural variables				
Height	<1.5	1 . 5 - 2 . 5	2 . 5 - 4	>4m
			<u>2</u>	
Width	<1m	1 - 2 m	2 - 3 m	>3m
			<u>2</u>	
Profile	Remnant/derelict	Wind shaped/losing	Boxed/a-shaped; straight sided	Overgrown; top heavy/undercut; outgrowths at base

	0	1	2	3
		base struct ure		
		<u>1</u>		
Basal density/porosity to light of woody shrubs	Open	Semi- transl ucent	Semi- opaque	Opaque/dense
			<u>2</u>	
Continuity				
% gaps	>10%	5- 10%	< 5 %	continuous
	<u>0</u>			
Specific gaps	Individual gap >5m	Indivi dual gap <5m	No gaps	No gaps
Negative indicators/degradation/issues affecting long term viability				
Bank/wall	>20% of length of hedge degraded	<20% of the hedg e degra ded	Minor degradat ion	No degradation
	<u>0</u>			
% of canopy dominated by ivy	>25%			
	<u>0</u>			
Unfavourable species composition: % woody growth volume comprised of unfavourable species	10%			

	0	1	2	3
Ground flora/hedge base: % ground layer showing evidence of herbicide use	>20%			
	<u>0</u>			
Ground flora/hedge base: % noxious weeds/nutrient rich species	>20%			
	<u>0</u>			
Ground flora/ hedge base: Alien invasive species	Present			
	<u>0</u>			
Degraded margin	Ploughing upto base of hedge shrubs or poaching/erosion		(grassy) margin (2m or greater on one side of the hedge)	(grassy) margin (2m or greater on both sides of the hedge)
	<u>0</u>			
Total Condition Assessment Score : 7				

HEDGEROW 19

SITE NAME	HEDGEROW/TREELINE NUMBER: H19
Survey date: 19.08.2019	Fossitt: WL2
A single hedgerow within the eastern part of the lands, evidence of large tree cutting within the past 2 decades. This supports a good diversity of tree and shrub species nonetheless. Some rubble associated with construction (road?) works are present on the eastern bank and herbicide application on the playing fields western side reduces ground flora diversity. It does provide a linear corridor between the Royal Canal and potential high value grassland to the south.	
	

Hedgerow significance assessment

0	1	2	3	4
Low significance	Slightly significant	Moderately significant	Significant	Highly significant
Historical Significance				

0	1	2	3	4
Recently established	Internal field boundary	Roadside/canal boundary/Farm boundary	Boundary appears on 1 st Edition OS	Townland/Parish/County boundary; shown as/or connected to woodland on 1 st edition OS Connects to features on SMR
			3	
	Past evidence of coppicing or laying		Non-linear (excluding roadside)	
Species diversity significance: tree/shrub/climber species count (all)/30m strip				
1-3	4-5	6-7	8-9	10+
		<u>2</u>		
Ground flora significance				
Dominated by ruderal species.				
0				
Species count (from list) 30m strip				
<2	2-3	4-5	6-7	>7
	<u>1</u>			
Pteridophytes from list/30m strip			3-5	>5
0				
Structure, construction & associated features				
	Wall /bank <0.5m (h/d)	Wall/bank 0.5-1m	Wall/bank >1m	Double ditch

0	1	2	3	4
		<u>2</u>		
		Dry ditch <u>2</u>	Wet ditch/drain	Stream/river
		Badger sett		
		Green lane		
Habitat connectivity Significance				
No connection	Single link with semi natural habitat inc hedgerow	Multiple links with semi natural hedgerows including other hedgerows	Link with woodland/forest habitat	Link with designated area, particularly woodland
	<u>1</u>			
Landscape Significance	Wind shaped	Mature hedgerow trees		Area covered by landscape designation
		<u>2</u>		
Other factors of significance	Forms part of a townland boundary along this road.			
Total Significance Score				13

Hedgerow condition assessment

	0	1	2	3
	Unfavourable	Adquate	Favourable	Highly favourable

	0	1	2	3
Structural variables				
Height	<1.5	1 . 5 - 2 . 5	2 . 5 - 4	>4m
			<u>2</u>	
Width	<1m	1 - 2 m	2 - 3 m	>3m
			<u>2</u>	
Profile	Remnant/derelict	Wind shaped/losing base structure	Boxed/as shaped; straight sided	Overgrown; top heavy/undercut; outgrowths at base
			<u>2</u>	
Basal density/porosity to light of woody shrubs	Open	Semi-translucent	Semi-opaque	Opaque/dense
			<u>2</u>	
Continuity				
% gaps	>10%	5-10%	<5%	continuous
		<u>1</u>		

	0	1	2	3
Specific gaps	Individual gap >5m	Individual gap <5m	No gaps	No gaps
		<u>1</u>		
Negative indicators/degradation/issues affecting long term viability				
Bank/wall	>20% of length of hedge degraded	<20% of the hedge degraded	Minor degradation	No degradation
		<u>1</u>		
% of canopy dominated by ivy	>25%			
	<u>0</u>			
Unfavourable species composition : % woody growth volume comprised of unfavourable species	10%			
Ground flora/hedge base: % ground layer showing evidence of	>20%			

	0	1	2	3
herbicide use				
	<u>0</u>			
Ground flora/hedge base: % noxious weeds/nutrient rich species	>20%			
	<u>0</u>			
Ground flora/ hedge base: Alien invasive species	Present			
	<u>0</u>			
Degraded margin	Ploughing upto base of hedge shrubs or poaching/erosion		(grassy) margin (2m or greater on one side of the hedge)	(grassy) margin (2m or greater on both sides of the hedge)
	<u>0</u>			
Total Condition Assessment Score : 11				

APPENDIX D: BIRD SURVEY NOTES

①

Vantage Point Watch Recording Sheet																							
Site:			Vantage Point Location:			Date:		Observer:															
KELLYSTOWN			WEST OF FARNSHEAD.			19/8/19		JIM MINOJSE															
Weather Conditions:			Start Time: 10.10 AM																				
Fair Good visibility.			Finish Time: 11.50																				
Cool / Windy / Dry																							
Flight No.	Sp. Code/sex/age	No. of birds	Start time	Duration (s)	Start	Height at 15s intervals (1 = <20m; 2 = 20 - 40m; 3 = 40 - 120m; 4 = >120m)										Notes (hunting, displaying, carrying food/nesting material etc.)							
					0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240		
1	WP	1	10.13																				TREELINE TO N.
2	SD	1	10.17																				FLYING E TO W.
3	AS	2	10.21																				FLYING W. TO E
4	WP	1	10.22																				IN HAZARD BY FARNSHEAD.
5	SD	1	10.23																				TREELINE TO N.
6	ST	1	10.24																				WEST OF V.P.
7	WP	1	10.24																				WEST
8	CH	1	10.25																				
9	CH	3	10.26																				
10	WP	2	10.30																				TO NORTH.
11	SD	2	10.32																				OVER SCHOOL TO S.
12	CH	2	10.35																				TO N.
13	UG	2	10.37																				
14	HG	2	10.40																				
15	WP	2	10.43																				
16	HA	1	10.51																				SUNGLASS ABOVE FARNSHEAD
17	SL	9	10.54																				FLYING E TO W
18	SL	1	10.57																				
19	WP	2	10.58																				
20	HG	2	10.59																				
21	WP	2	11.01																				
22	SD	1	11.02																				
23	SL	2	11.03																				
24	SL	2	11.03																				
25	B	1	11.06																				
26	SL	1	11.11																				
27	WP	2	11.13																				FORAGING OVER GRASSLAND
28	H.G.	1	11.15																				TOWARDS SCHOOL N.
29	SL	5	11.17																				
30	SL	2	11.19																				

[illegible]

Appendix 2

Surface Water Management Plan Part 1:
Strategic Flood Risk Assessment

Surface Water Management Plan Part 2:
Sustainable Drainage Systems (SuDS) Strategy



Kellystown, Clonsilla, Dublin 15

Surface Water Management Plan (SWMP)

September 2020



INTRODUCTION

This Surface Water Management Plan (SWMP) was commissioned by Fingal County Council and prepared by McCloy Consulting for lands at Kellystown, Clonsilla, Dublin 15. The purpose of the SWMP is to determine flood risk at lands at Kellystown and to develop a strategy for the sustainable management of surface water as part of an overall Local Area Plan.

The SWMP consists of two parts:

- Strategic Flood Risk Assessment (SFRA)
- Sustainable Drainage Strategy (SDS)

Strategic Flood Risk Assessment (SFRA)

The SFRA is intended to produce a Stage 1 to 3 Flood Risk Assessment (FRA) as defined by the OPW Planning System and Flood Risk Management Guidelines to refine the existing SFRA for the Fingal Development Plan 2017-2023 and ensure that all relevant issues related to flooding are addressed.

The assessment will determine potential sources of flooding at the Plan Area and their associated risk to life and new development. The SFRA will determine the suitability of lands for development and set standards for flood protection material to the Plan Area.

Sustainable Drainage Strategy (SDS)

The purpose of the SDS is to set out a framework for the delivery of a drainage system which will integrate multi-functional SuDS components within the Plan Area to manage water at or near the surface, providing high quality blue / green infrastructure which enhances and improves biodiversity and brings significant community benefits within developed areas.

The SDS seeks to demonstrate that the objectives set out in Fingal Development Plan 2017 – 2023 and requirements set out in GDSDS (Volume 3) SuDS Requirements can be satisfied.

Health and Safety

The appointed Project Supervisor Design Process (PSDP) consultant has completed the required Health and Safety assessment which is provided under separate cover.

Strategic Flood Risk Assessment

Lands at Kellystown, Clonsilla, Dublin 15

M02127-02_DG02 | September 2020

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DISTRIBUTION

Recipient	Revision					
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1 INTRODUCTION

1.1 Terms of Reference

This Strategic Flood Risk Assessment (SFRA) was commissioned by Fingal County Council (hereafter *Fingal CC*) to form a Surface Water Management Plan (SWMP) in conjunction with a Sustainable Drainage Strategy (SDS) for lands at Kellystown, Clonsilla, Dublin 15 (hereafter *Plan Area*).

1.2 Purpose

Flood risk management for development planning is guided by 'The Planning System and Flood Risk Management – Guidelines for Planning Authorities (Department of the Environment & Local Government, November 2009)' [hereafter *OPW Guidelines*].

This SFRA is intended to produce a Stage 1 to 3 Flood Risk Assessment (FRA) as defined by the OPW Guidelines to refine the existing SFRA for the Fingal Development Plan 2017-2023 (hereafter *Fingal SFRA*) and ensure that all relevant issues related to flooding are addressed.

The assessment will determine potential sources of flooding at the Plan Area and their associated risk to life and new development as well as determine the suitability of lands for development and set standards for flood protection.

This assessment is intended for 'plan making' and is not intended to assess the risk to development proposals. Risk to development would be assessed separately by Site-Specific Flood Risk Assessment(s) (SSFRA) submitted in support of planning application(s) and would be specific to development proposal(s). Any latter SSFRA may be informed by flood hazard information determined by this assessment.

1.3 Statement of Authority

This report and assessment has been prepared and reviewed by qualified professionals with appropriate experience in the fields of flood risk, drainage, wastewater, and hydraulic modelling studies. The key staff members involved in this project are as follows:

- Michael Rea *MEng (Hons)* – Project Engineer with experience in the fields of flood risk assessment, flood modelling, drainage and surface water management design.
- Paul Singleton *BEng (Hons) MSc CEng MIEI* – Chartered Civil / Environmental Engineer with particular experience in drainage, SuDS and flood risk assessment, and a recognised industry professional having given industry training in these fields in Ireland and the UK.
- Kyle Somerville *BEng (Hons) CEng MIEI* – Associate and Chartered Engineer specializing in the fields of flood risk assessment, flood modelling, drainage and surface water management design for public and private sectors.

2 PLAN AREA DETAILS

2.1 Plan Area Location

The Plan Area is located in Kellystown, Clonsilla, Dublin 15 and is bound by the Dublin-Sligo railway line and Royal Canal Way to the north, the Luttrellstown Road (L3032) to the south, the Porterstown Road / Diswellstown Road to the east and Clonsilla Road (R121) to the west.

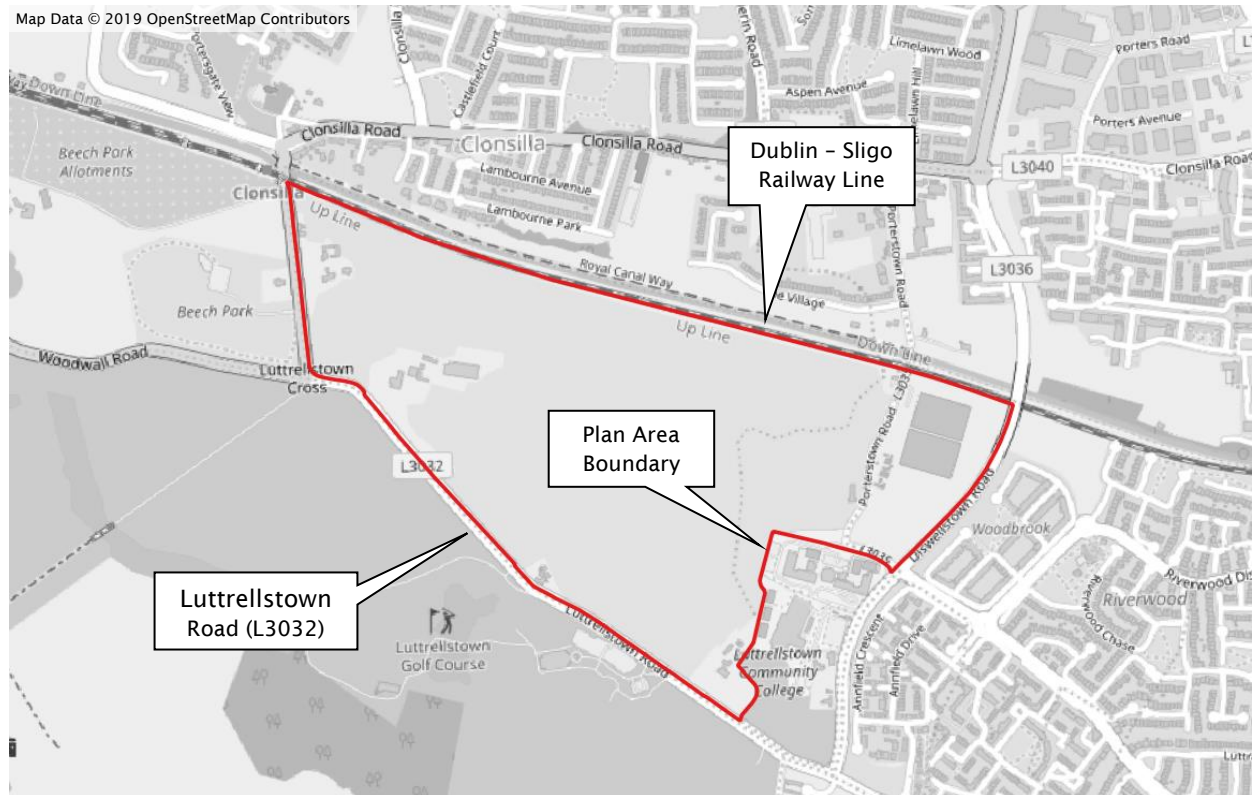


Figure 2-1 Plan Area Location

2.2 Plan Area Description

The Plan Area has an areal extent of 57 ha and currently comprises predominantly of agricultural land, with residential dwellings to the west and sports pitches to the east. Figure 2-2 illustrates the current land usage.

Land within the Plan Area generally falls from north east to south west with ground levels varying between 54 meters Ordnance Datum (m OD) to 64 m OD.

Existing levels used as the basis for this flood risk assessment are based on Ordnance Survey Ireland (OSI) 2 m LiDAR supplemented with ground based topographical survey, included in Appendix A. Photographs of the existing Plan Area and its surroundings taken as part of a walkover survey are included in Appendix B.



Figure 2-2 Existing Land Use

2.3 Existing Drainage

Analysis of Environmental Protection Agency (EPA) Water Framework Directive (WFD) datasets indicates that the entire Plan Area lies within the sub-catchment of a watercourse identified by EPA to be known as the Rusk Watercourse, located 0.4 km south west and part of the wider River Liffey catchment as shown in Figure 2-3. No watercourse known to EPA exists within the boundary of the plan area.

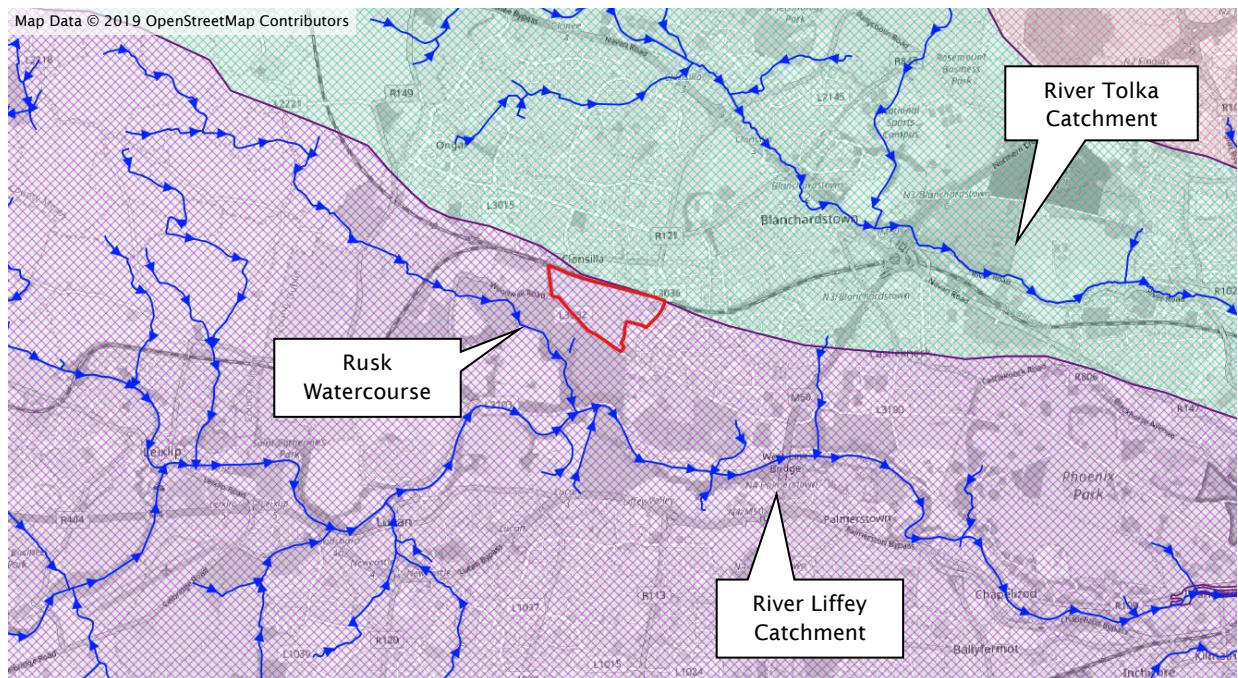


Figure 2-3 Wider Catchment Area

An open drain flows through the south east of the Plan Area and flows through the 480 mm x 770 mm concrete arch culvert under the Luttrellstown Road. The open drain discharges into a pond 50 m downstream within the grounds of Luttrellstown Castle Golf Course. The drain performs a local land / field drainage function, and therefore is not considered to be a watercourse with a fluvial function. Other smaller hydraulically unconnected land / field drains exist through the Plan Area, coinciding with field boundaries and perform a local drainage function for lands immediately adjacent.

The Royal Canal is situated c. 5 m below the Plan Area and causes a hydrological break along the northern boundary. Elevation difference negates potential for controlled or uncontrolled spills into the Plan Area.

A surface water feature, marked on historical mapping as a pond exists to the north east of the Plan Area, and is hydraulically unconnected to the field drain to the south east of the Plan Area or any other surface water feature.

A 1200 mm diameter storm sewer known as the 'Riverwood Storm Outfall' traverses the south eastern section of the Plan Area, generally following a similar alignment to that of the open drain. The sewer outlets to the open drain immediately downstream of the Luttrellstown Road and discharges to the Luttrellstown pond c. 50 m downstream. Surface water drainage asset information is described further in Section 4.5.1.

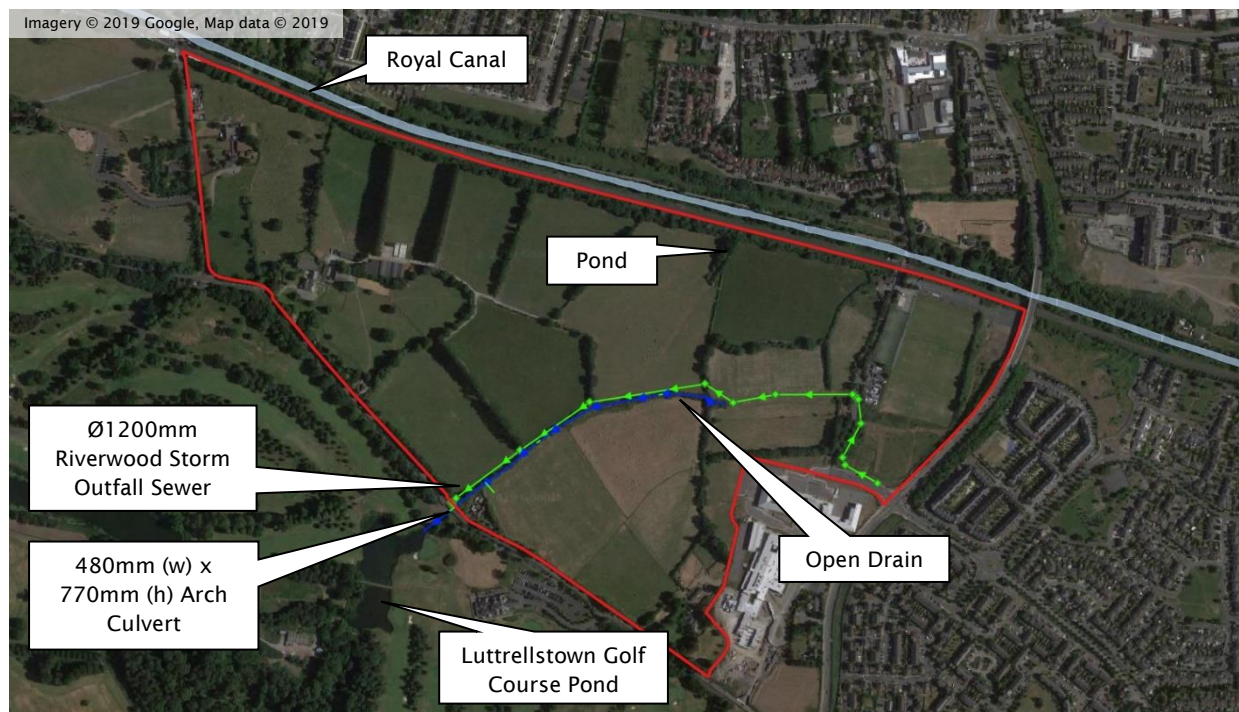


Figure 2-4 Drainage Features

2.4 Environment

While not material to the assessment of flood likelihood or flood risk, it is pertinent to determine water-environment linkages to sites of designated environmental importance, in order to inform the Strategic Environmental Assessment (SEA) for the Plan Area.

There are no Natura 2000 sites within the Plan Area. The South Dublin Bay and River Tolka Estuary SPA and South Dublin Bay SAC are located approximately 16 km east and are hydrologically linked (downstream of) the Plan Area.

Under Article 6 (3) of the EU Habitats Directive, an 'appropriate assessment' is required where any plan or project, either alone or in combination with other plans or projects, could have an adverse effect of the integrity of a Natura 2000 site.

Natural Heritage Areas (NHAs) are sites of national importance for nature conservation and are afforded protection under planning policy and the Wildlife Acts 1976-2012. Proposed NHAs (pNHAs) are published sites identified as of similar conservation interest but have not been statutorily proposed or designated.

The nearest NHA/pNHAs to the Plan Area are The Royal Canal and Rhy Water Valley / Carton pNHA are located 5 km to the south west of the Plan Area, neither of which are hydrologically linked to the Plan Area. For avoidance of doubt, the pNHA area for Royal Canal does not extend to the canal reach adjacent to the Plan Area.

2.5 Proposed Development

Notwithstanding particular objectives of the Plan Area that this assessment is intended to inform, Zoning objectives contained within the Fingal Development Plan 2017 – 2023 are shown in Figure 2-5 and summarised in Table 2.1.



Figure 2-5 Fingal CC Zoning Objectives

Table 2.1 Fingal CC Zoning Objectives

Objective	Description
RA – Residential Area (R1)	Provide for new residential communities subject to the necessary social and physical infrastructure.
OS – Open Space	Preserve and provide for open space and recreational amenities.

3 APPROACH AND METHODOLOGY

3.1 Introduction

This Strategic Flood Risk Assessment report has been prepared in accordance with the OPW Guidelines. The OPW Guidelines have been implemented and embedded within the context of the Fingal Development Plan 2017 – 2023 through informing the approach adopted by the Fingal SFRA.

This SFRA further refines the general requirements of the OPW Guidelines and particular requirements of the Fingal SFRA.

3.2 Definition of Flood Risk

Flood risk is a combination of the likelihood of the occurrence of a flood event and the potential consequences arising from that flood event, expressed as the following:

$$\text{Flood Risk} = \text{Likelihood of Flooding} \times \text{Consequences of Flooding}$$

3.2.1 Likelihood of Flooding

The likelihood of flooding is defined in the OPW Guidelines as the percentage probability of a flood of a given magnitude or severity, occurring or being exceeded in any given year. It is generally expressed as a return period or annual exceedance probability (AEP). For example, a 1% AEP indicates the severity of a flood that has a 1 in 100 (1%) chance of occurring in any one year. Annual exceedance probability is the inverse of return period as shown in Table 3.1 below.

Table 3.1 Return Periods and AEP

Return Period (Years)	Annual Exceedance Probability (%)
1	100
10	10
50	2
100	1
200	0.5
1000	0.1

3.2.2 Consequences of Flooding

The consequences of flooding are determined by the hazards associated with the flooding (e.g. depth of water, speed flow, rate of onset, duration, wave action, water quality), and the vulnerability of people, property and the environment potentially affected by a flood (e.g. age profile of the population, type of development, presence and reliability of mitigation measures).

3.3 Objectives and Principles of the OPW Guidelines

The Fingal SFRA recognises the core objectives of the OPW Guidelines which are designed 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 OPW Guidelines recommend that Flood Risk Assessments be carried out to identify the risk of flooding to land, property and people.

3.4 Flood Risk Assessment

The Fingal SFRA, in line with the OPW Guidelines, advocates the use of the Source – Pathway – Receptor model in Flood Risk Assessments (FRA) to identify the sources of flooding (e.g. high sea levels, intense or prolonged rainfall leading to increased runoff and increased flow in rivers and sewers), the people and assets impacted by flooding (receptors) and the pathways by which the flood water reaches those receptors (e.g. overland flow, river and coastal floodplains, river channels and sewers). Figure 3-1 shows the source-pathway-receptor model from the Fingal SFRA.

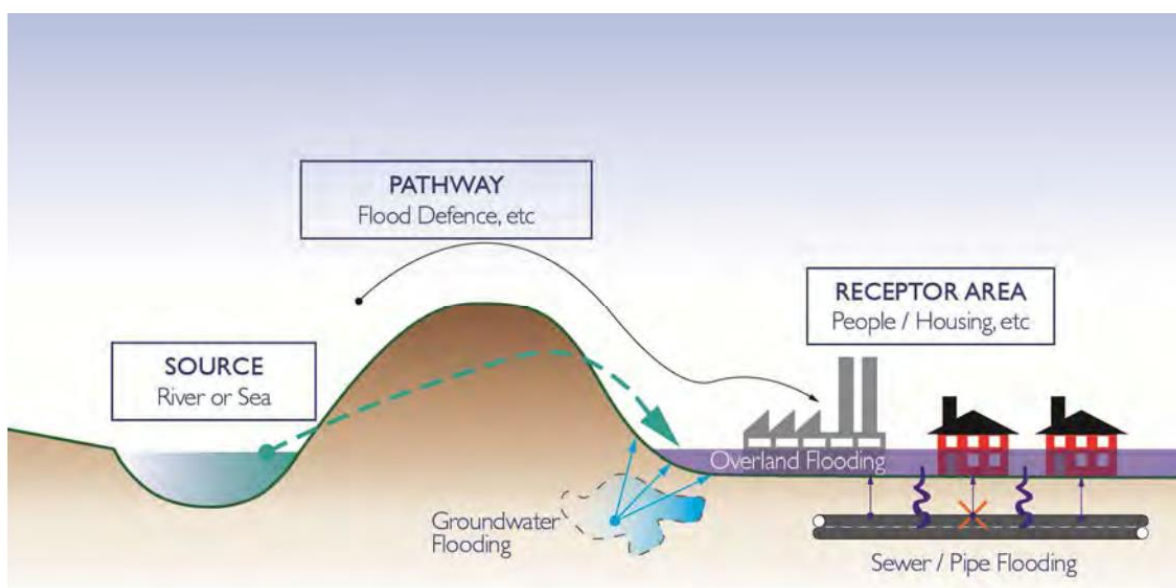


Figure 3-1 Sources, pathways and receptors of flooding from the Fingal SFRA

3.5 Flood Zones

Flood Zones are geographical areas within which the likelihood of flooding is in a particular range. The Fingal SFRA in conjunction with the OPW Guidelines defines three Flood Zones for **flooding from rivers and sea only** as indicated in Table 3.2.

Table 3.2 Flood Zones

Flood Zone	Description	Probability (Rivers)	Probability (Coastal)
A	Probability of flooding from rivers and sea is highest	Greater than 1% or 1 in 100	Greater than 0.5% or 1 in 200
B	Probability of flooding from rivers and sea is moderate	Between 0.1% or 1 in 1000 and 1% or 1 in 100	Between 0.1% or 1 in 1000 and 0.5% or 1 in 200
C	Probability of flooding from rivers and sea is low. Covers all Plan Areas which are not in zones A or B	Less than 0.1% or 1 in 1000	Less than 0.1% or 1 in 1000

Flood Zones are generated without the inclusion of climate change factors. When determining Flood Zones, the presence of flood protection structures should be ignored as areas protected by flood defences still carry a residual risk from overtopping or breach of defences.

Section 4.3 of the Fingal SFRA makes provision for consideration of residual risk factors such as culvert / bridge blockages and the effects of climate change which may expand the extents of Flood Zones A and B.

3.6 Climate Change

Climate change is expected to increase flood risk, in terms of more frequent flooding and increasing the depth and extent of flooding. Due to the uncertainty of the potential effects of climate change, the Fingal SFRA sets out recommendations in line with the precautionary approach adopted by the OPW Guidelines in managing the effects of climate change:

- 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 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.
- Ensure that structures to protect against flooding and the protected development 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.

3.7 The Sequential Approach and Justification Test

The Fingal SFRA, in line with the OPW Guidelines recommend a sequential approach to planning to ensure the core objectives outlined in section 3.3 are implemented. It is of particular importance at the plan making stage but is also applicable in the layout and design of development at the development management stage. The broad philosophy of the sequential approach in flood risk management from the Fingal SFRA / OPW Guidelines is shown in Figure 3-2.

In general, most types of development would be considered inappropriate in Flood Zone A. In Flood Zone B highly vulnerable development (e.g. hospitals, dwelling houses and primary infrastructure) would be considered inappropriate but less vulnerable development (e.g. retail, commercial and industrial uses) might be considered appropriate. Development within Flood Zone C is appropriate from a flood risk perspective.

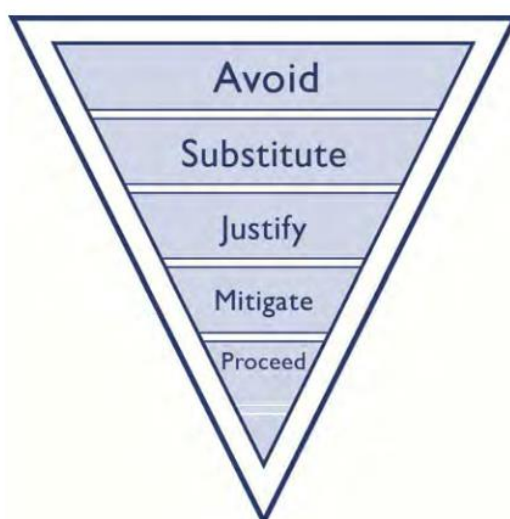


Figure 3-2 The Sequential Approach

The Justification Test has been designed to rigorously assess the appropriateness, or otherwise, of particular developments that, for the reasons outlined above, are being considered in areas of moderate or high flood risk. The test is comprised of two processes:

- **Plan Making Justification Test** – used at the plan preparation and adoption stage where it is intended to zone or otherwise designated land which is at moderate or high risk of flooding.
- **Development Management Justification Test** – used at the planning application state 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.

Table 3.3 below indicates the types of development that would be required to meet the Justification Test.

Table 3.3 Vulnerability and Flood Zone Matrix for Justification Test

Development Vulnerability ¹	Flood Zone A	Flood Zone B	Flood Zone C
Highly Vulnerable (including essential infrastructure)	Justification Test	Justification Test	Appropriate
Less Vulnerable	Justification Test	Appropriate	Appropriate
Water-compatible	Appropriate	Appropriate	Appropriate

¹ Full descriptions and examples of development vulnerability can be found in Section 3.6 of the Fingal SFRA

4 STAGE 1 – FLOOD RISK IDENTIFICATION

As part of the Stage 1 flood risk identification phase, several available sources of information generally as set out in the Fingal SFRA and OPW Guidelines were investigated in order to build an understanding of the potential risk of flooding to the Plan Area.

The following review highlights the key findings of the Stage 1 FRA to identify any flooding issues that may warrant further investigation.

Stage 1 data gathering informs the screening of potentially significant flood mechanisms (Stage 2 FRA) described in subsequent Section 5 of this assessment.

4.1 Information Sources Summary

The following table summarises the data sources consulted as part of the flood risk identification process. Pertinent data obtained from these sources is described and screened in the following sections.

Table 4.1 Flood Data Sources

Source	Relevant?	Described in Section
<i>Topographic Data</i>		
OSI Close-Scale Mapping	Close scale OSI mapping for the Plan Area has been reviewed was found not to accurately represent water features within the Plan Area per walkover survey and aerial photography. OSI datasets for flooding, marsh, and seasonal lakes indicate no features on and adjacent to the Plan Area.	N/A
OSI Historical Maps	OSI 6" and 25" mapping have been reviewed and do not indicate any additional information not included on current OSI mapping.	N/A
OSI Height Data	OSI 25 m DTM has been used to inform macro-level catchment assessments. 2 m Grid Urban LiDAR height data has been used to inform the Plan Area assessment.	4.2.1
Land Survey	Survey data instructed as part of this SFRA conducted by a 3 rd party surveyor has been reviewed.	4.2.1
<i>Flood Data (Predictive and Flood Records)</i>		
OPW 'Past Flood Events'	Review of flood records indicates one flood event within 1.6 km of the area of interest which occurred on the other side of the canal / railway.	N/A
OPW Preliminary Flood Risk Assessment Maps (PFRA)	Fluvial, pluvial, coastal and ground water flooding datasets have been reviewed.	4.3.1
Catchment Flood Risk Assessment and Management (CFRAM)	No CFRAM mapping is available for the Plan Area.	N/A
Dublin Pluvial Study	Pluvial flood mapping published as part of the study does not cover the Plan Area.	N/A
Greater Dublin Strategic Drainage Strategy (GDSDS)	Content relevant to the Plan Area has been reviewed.	4.3.2

Source	Relevant?	Described in Section
SFRA for Fingal Development Plan 2017-2013	Review of the Fingal SFRA in relation to predictive or historic flood data indicates no further information over and above that established from original sources already described.	N/A
Media Search	A media search has found evidence of flooding occurring within the general area on two occasions. No evidence of flooding within the Plan Area was found.	4.3.3
<i>Plan Area Observations</i>		
Walk Over Survey – July / August 2019	Ground truthing topographical information and drainage data.	4.4
<i>Drainage Data</i>		
Irish Water / Fingal CC Drainage Records	Sewerage records have been made available including as built information for the Riverwood Storm Outfall within the Plan Area.	4.5.1
EPA Datasets	No lakes, rivers, streams or canals mapped on EPA datasets were identified within 1 km of the Plan Area.	N/A
OPW Arterial Drainage Datasets	No drainage district, channel, embankment, or benefitting land affects the Plan Area.	N/A
Drainage Surveys	Additional survey was obtained for the culvert under the Luttrellstown Road and to verify the Riverwood Storm Outfall as built records.	4.5.2
<i>Ground Conditions</i>		
Geological Survey of Ireland (GSI) Maps	Bedrock and superficial geology datasets have been reviewed.	4.6

4.2 Topography

4.2.1 OSI Height Data

Review of OSI 2 m LiDAR datasets indicates that the natural hydrological catchment upstream north of the Plan Area has been broken by the lower lying royal canal. Lands to the east incorporating an area of c. 105 ha bounded by the Carpenterstown Road to the east and Luttrellstown Road to the south.

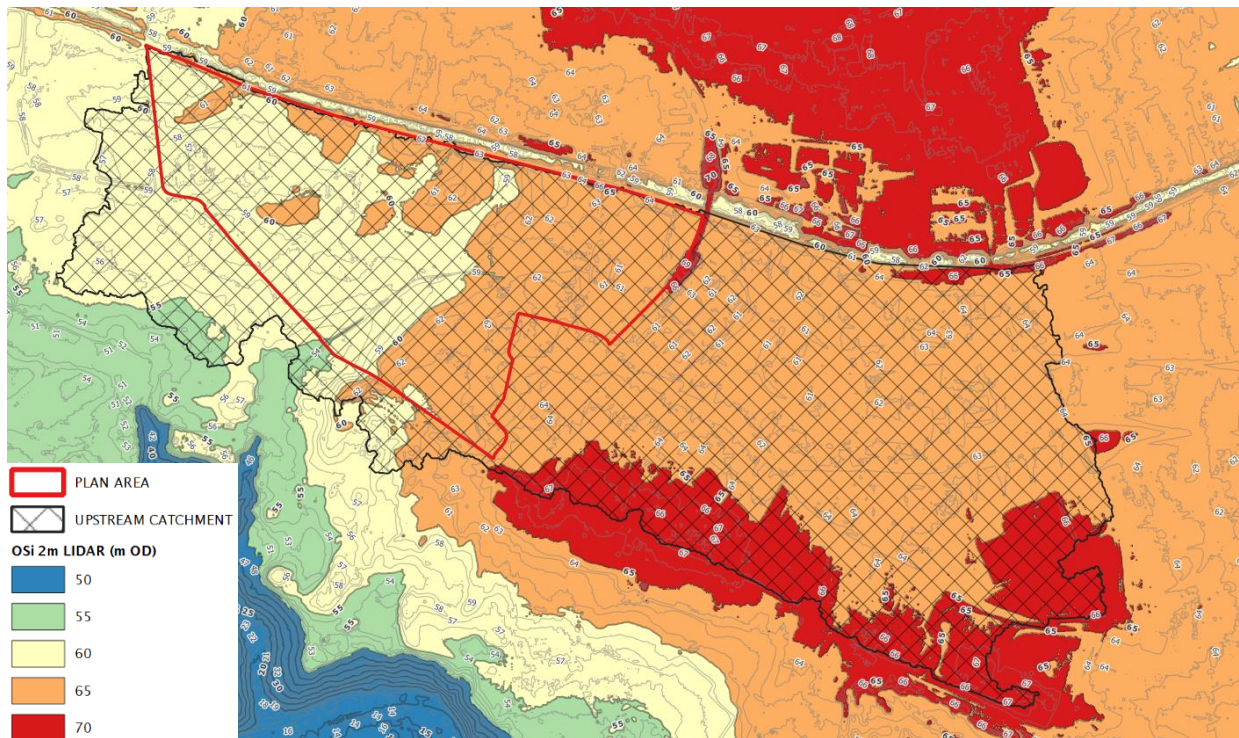


Figure 4-1 OSI Topographical Information

4.3 Flood Data

4.3.1 OPW Preliminary Flood Risk Assessment (PFRA) Maps

The Office of Public Works (OPW) has developed Preliminary Flood Maps as part of the Catchment Flood Risk Assessment and Management (CFRAM) Programme.

The first stage of the CFRAM process was to produce a Preliminary Flood Risk Assessment (PFRA) that included flood mapping for the entire country. The PFRA is a preliminary assessment only, based on available or readily-derivable information. The analysis was undertaken to identify areas prone to flooding but the analysis is purely indicative; mapping is considered to be coarse and is designed to inform further stages in the CFRAM process.

The PFRA flood mapping indicates that part of the Plan Area:

- is predicted to be partly affected by localised pluvial (surface water) flooding
- is not assessed as being at risk from fluvial or groundwater flooding.

An extract from the PFRA flood map, obtained via myplan.ie, is shown in Figure 4-2.

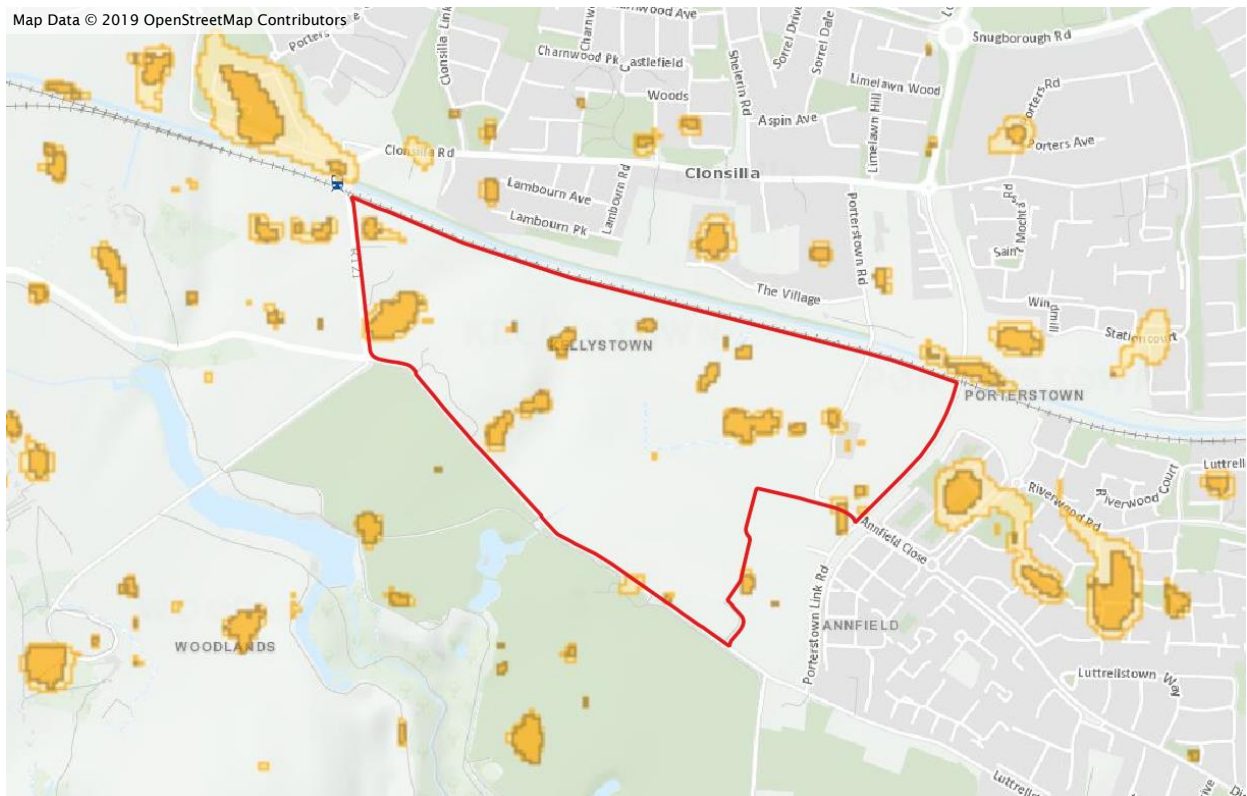


Figure 4-2 OPW PFRA Indicative Extents and Outcomes

4.3.2 [Greater Dublin Strategic Drainage Study](#)

The Greater Dublin Strategic Drainage Study (GSDSDS) was commissioned in 2001 to carry out a strategic analysis of the existing foul and surface water systems in the local authority areas of Dublin (including Fingal CC) and adjacent catchments. The objectives of the Study were to identify policies, strategies and projects for the development of a sustainable drainage system for the Greater Dublin region.

The GSDSDS report includes information relating to the areas surrounding the Plan Area:

- Developments to the south of Clonsilla are served by a storm water drain which discharges to a tributary of the River Liffey.

The location of the watercourse receiving storm discharge from the area is not stated and no further details relating to the Plan Area and its environs are covered.

4.3.3 [Internet / Media / Background Search](#)

A media search comprising internet media and archived newspaper articles found evidence of flooding occurring in the Clonsilla / Porterstown area in November 2014² and November 2002³. These events were caused by heavy rainfall and caused localised road flooding.

Reports include references to flooding along the Luttrellstown Road / Porterstown Road which was also reported by Fingal CC staff and local residents.

No evidence of flooding within the boundary of the Plan Area was found.

² <https://www.thejournal.ie/weather-flooding-dublin-area-1777455-Nov2014/> [accessed 21st October 2019]

³ <https://www.irishtimes.com/news/more-floods-feared-as-rain-set-to-continue-in-leinster-1.446825> [accessed 21st October 2019]

4.4 Walkover Survey

A walk over survey of the Plan Area and adjacent lands was conducted by McCloy Consulting Ltd. on 1st July 2019 and 8th August 2019 during which a photographic survey of the Plan Area and adjacent areas was undertaken; photos are included within Appendix B. The purpose of the inspections was to ground-truth desktop study outcomes and to verify data-gaps and identify the need for any further survey.

The Plan Area was noted to be generally undulating in topography comprising agricultural land with limited standalone residential development to the west. The majority of the Plan Area slopes towards an open land drain that runs from north to south through the eastern part of the Plan Area, as shown in Figure 4-3.

The open drain was observed to be dry during both visits, the second of which took place following periods of heavy rainfall. Local topography suggests the drain performs a local drainage function only and has a limited upstream catchment, therefore is not considered to be a watercourse. The open drain is culverted for agricultural access at the centre of the Plan Area and discharges through an arch culvert beneath of Luttrellstown Road.

A pond exists to the north east of the Plan Area that was noted as being lower than surrounding area, heavily overgrown with no evidence of inflow or outflow

Visual inspection of the open drain within the Plan Area was undertaken to identify outlets and connections. A Ø 500 mm culvert outlet is located on the eastern bank of the open drain at the south of the Plan Area, noted to be dry on all occasions of inspection, including after periods of heavy rainfall. No intermediate manholes upstream of the outlet were found in attempt to trace the culvert alignment.

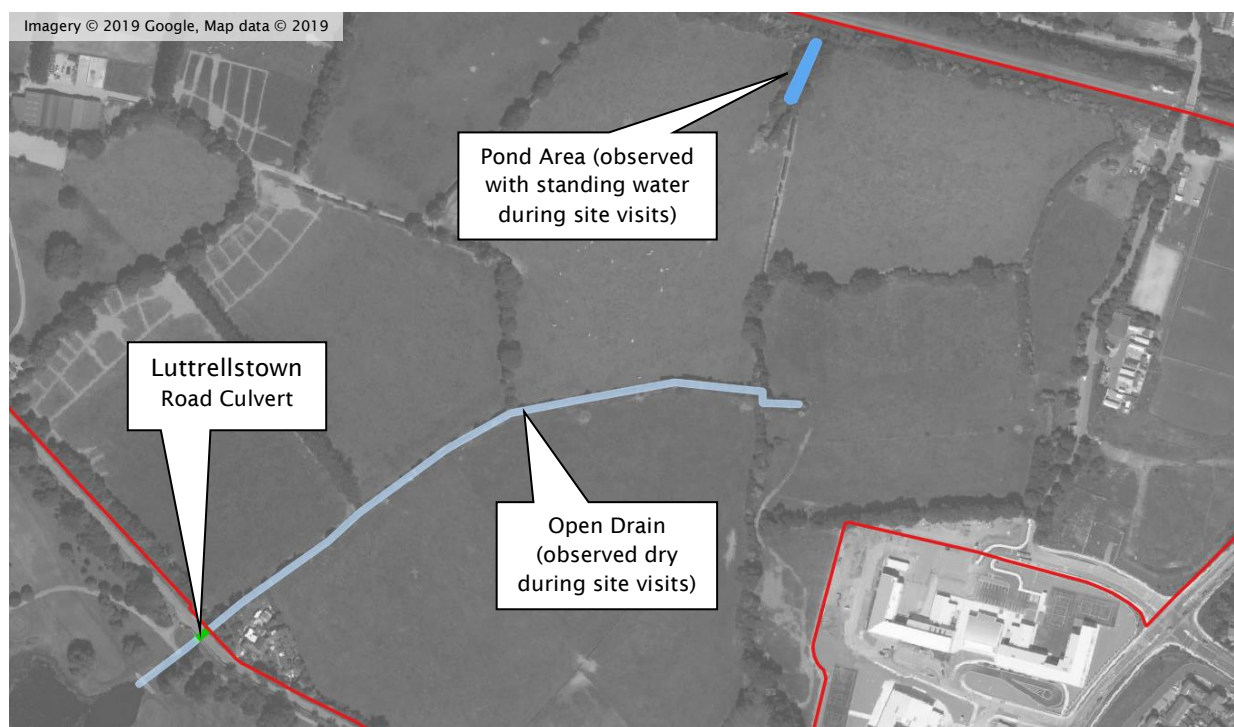


Figure 4-3: Identified Water Features

4.5 Drainage Data

4.5.1 Fingal CC – Water Services Drainage Records

Drainage records for the Plan Area and wider environs were gathered to identify potential linkages to or from open drains within the Plan Area. The surrounding area is served by a separated drainage system. Taking in charge (TIC) as built drawings were provided for the Annfield and Riverwood developments, including the Riverwood Storm Outfall that traverses the south east corner of the Plan Area, as shown in Figure 4-4.

Additional indicative data was provided for the remainder of the catchments to the east of the Plan Area indicating the Annfield, Riverwood and Fernleigh developments drain to the Riverwood Storm Outfall that and eventually discharges to an open drain immediately downstream of the Plan Area. The remainder of the sewer infrastructure within the eastern hydrological catchment is shown to drain easterly outside of the hydrological catchment by indicative asset data.

Direct flood risk from the Riverwood Storm Outfall is perceived as unlikely as the sewer is designed to serve a recently developed upstream storm network draining to it by smaller pipes which are more critical in terms of capacity. Therefore, any out of sewer flooding from developed lands east of the Plan area would be realised further up the network and may tend to flow overland onto the Plan Area.

No asset information relating to the Ø 500 mm culvert outlet found within the Plan Area was established within the records. It is presumed, in the absence of other information and given the absence of any flow from the outlet at the time of inspection, that the outlet is likely either redundant or associated with local field drainage or land drainage that would be rendered redundant by development of the lands.

Figure 4-4 indicates the surface water sewer network within the upstream catchment of the Plan Area.

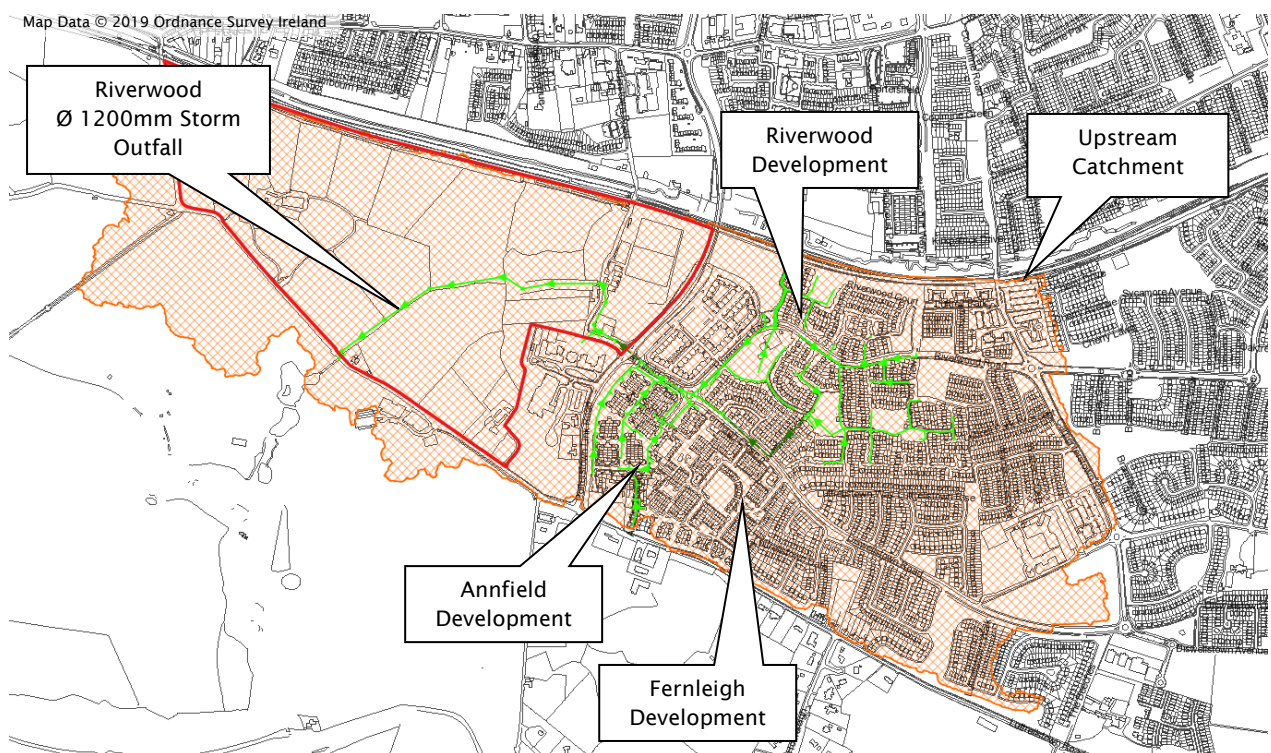


Figure 4-4 Surface Water Sewer Network

4.5.2 Surveyed Drainage Assets

Survey was undertaken for drainage assets within the Plan Area pertinent to the open drain to account for any constriction in flows and outlets to the open drain. In addition, manholes and pipe sizes for the Riverwood Storm Outfall were surveyed along a portion of the alignment to verify the TIC as built records, including the sewer outfall to the open drain downstream of the Plan Area.

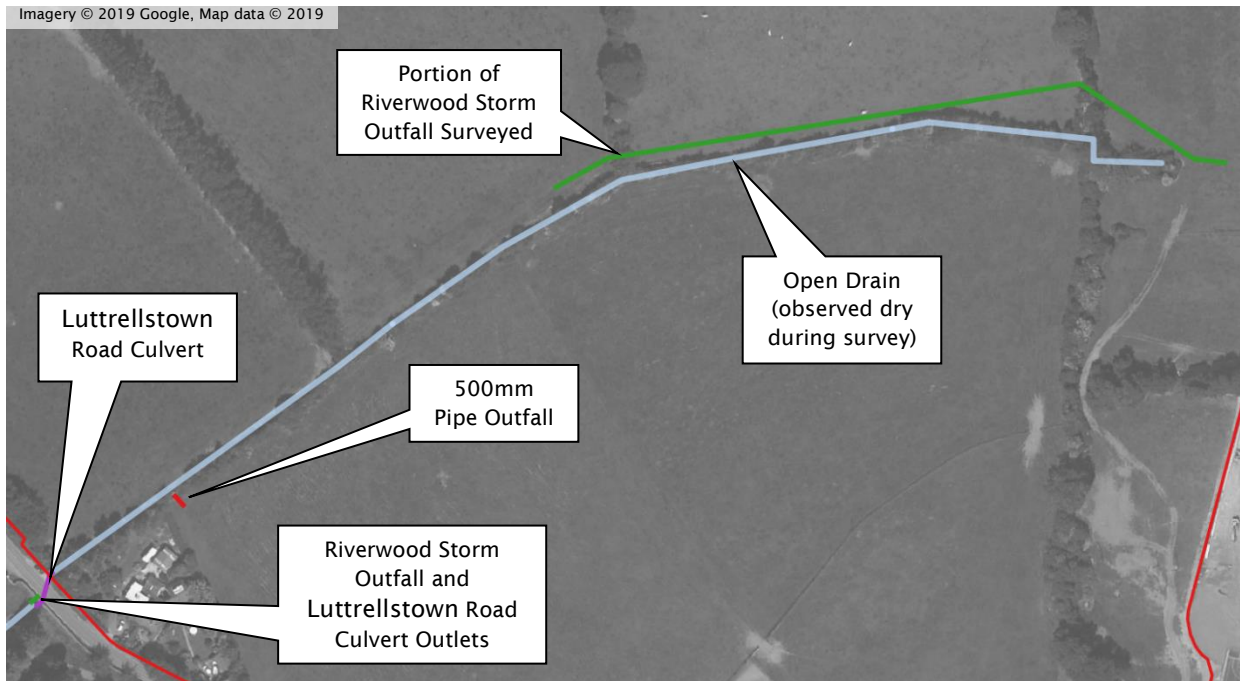


Figure 4-5 Surveyed Drainage Assets

4.6 Ground Conditions

Geological Survey of Ireland mapping were analysed to determine ground conditions within the Plan Area. No site investigation or infiltration testing was conducted within the Plan Area.

Geological mapping indicates that the Plan Area is predominantly underlain by a bedrock of limestone and shale with superficial deposits of till derived from limestone.

5 STAGE 2 – INITIAL FLOOD RISK ASSESSMENT

5.1 Preamble

Further to the Stage 1 assessment, the following Stage 2 assessment summarises the potential sources of flood risk that have a potential pathway to affect the Plan Area and identifies those sources of flooding that require further detailed analysis as part of a Stage 3 assessment.

5.2 Initial Assessment

The following is a record of the screening assessment of the Plan Area for potential flooding mechanisms requiring subsequent detailed assessment, based on the information obtained from the background information review and consultations.

Table 5.1 Possible Flooding Mechanisms

Source/Pathway		Significant / Assess Further?	Reason
Fluvial Flooding	Floodplain	No	There are no water features in the Plan Area perceived as watercourses with any fluvial function. OPW flood mapping indicates that there is no fluvial flooding at or on lands proximal to the Plan Area.
	Flood Defence / Failure	No	The Plan Area is undefended.
Coastal Flooding		No	The Plan Area lies at sufficient elevation relative to coastal flooding that it can be discounted.
Surface Water Flooding	Surface Water Flooding	Yes	Dublin Pluvial Study and OPW PFRA mapping indicates areas of potential surface water flooding on and adjacent to the Plan Area. An open drain that would convey surface water flows southerly westerly at the south east of the Plan Area.
	Culvert Blockage	Yes	An open drain is culverted at its downstream extent within the Plan Area.
Urban Drainage		Possible	The Plan Area is predominantly undeveloped. Developed lands to the east / upslope of the Plan Area are served by separated urban drainage. Surface water drainage from these areas discharges to a 1200 mm pipe that runs through the Plan Area.
Groundwater		No	Superficial geology within the Plan Area established from GSI tends to indicate that land cover is till derived from limestone. Groundwater subsoil permeability maps indicates low to very low permeability of soils within the Plan Area Topography on the Plan Area and wider environs is not characteristic of a relatively depressed 'bowl' where clear groundwater flooding would feasibly be experienced.

Source/Pathway	Significant / Assess Further?	Reason
Reservoirs / Canals / Artificial Sources	No	<p>A screening assessment based on OSI and EPA mapping relative to the topographic catchment draining toward the area confirms that there are no lakes, reservoirs, or other impoundments with potential to affect the Plan Area.</p> <p>The Royal Canal along the northern boundary is c. 5 m lower than the Plan Area and does not represent a risk of breached impoundment or overtopping.</p>

Those flood mechanisms screened as being potentially significant and requiring Stage 3 assessment have been assessed in further detail, the findings of which are detailed in the following sections.

6 STAGE 3 – DETAILED FLOOD RISK ASSESSMENT

6.1 Preamble

The Stage 2 assessment has determined that surface water flooding and culvert blockage have potential to be significant at the Plan Area.

No existing modelled or other predictive data is available to inform the assessment. In order to provide a more accurate and up-to-date (present day) assessment of flood risk in the vicinity of the area of interest, a location-specific detailed 1D-2D surface water model has been developed for the Plan Area using InfoWorks ICM software (version 9.5).

ICM solves full two-dimensional depth averaged shallow water equations to produce a virtual representation of flow paths, velocities, volumes and depths.

The following sections provide detail on the modelling methodology and the hydrological assessment.

6.2 Model Coverage

The area of assessment for the model has been determined using Geographical Information Systems (GIS) analysis of a LiDAR based terrain model, utilising the software to determine flow direction and accumulation for each cell to delineate the natural topographic catchment.

The outlet point for the model has been located sufficiently downstream from the Plan Area to ensure predicted water levels in the area of interest are not susceptible to any backwater effect as a result of the boundary condition, and to ensure that the backwater effect of the flow controls are included as they may have potential to influence flood levels at the Plan Area.

The hydrological catchment on and upgradient of the Plan Area is broadly limited to the south of the Royal Canal and extends east incorporating an area of c. 105 ha bounded by the Carpenterstown Road to the east and Luttrellstown Road to the south.

The topographic hydrological catchment was assessed in conjunction with the catchment of the surface water sewer network draining lands adjacent to and downstream of the Plan Area, to ensure that sewer flows (and any out of sewer flooding) is collected and represented within the model.

The surface water catchment was buffered by minimum 40 m and up to 400 m downslope of the Plan Area to enclose the entire contributing catchment and to ensure the model boundary was sited sufficiently downstream. The hydraulic model extent is displayed on the following Figure 6-1.

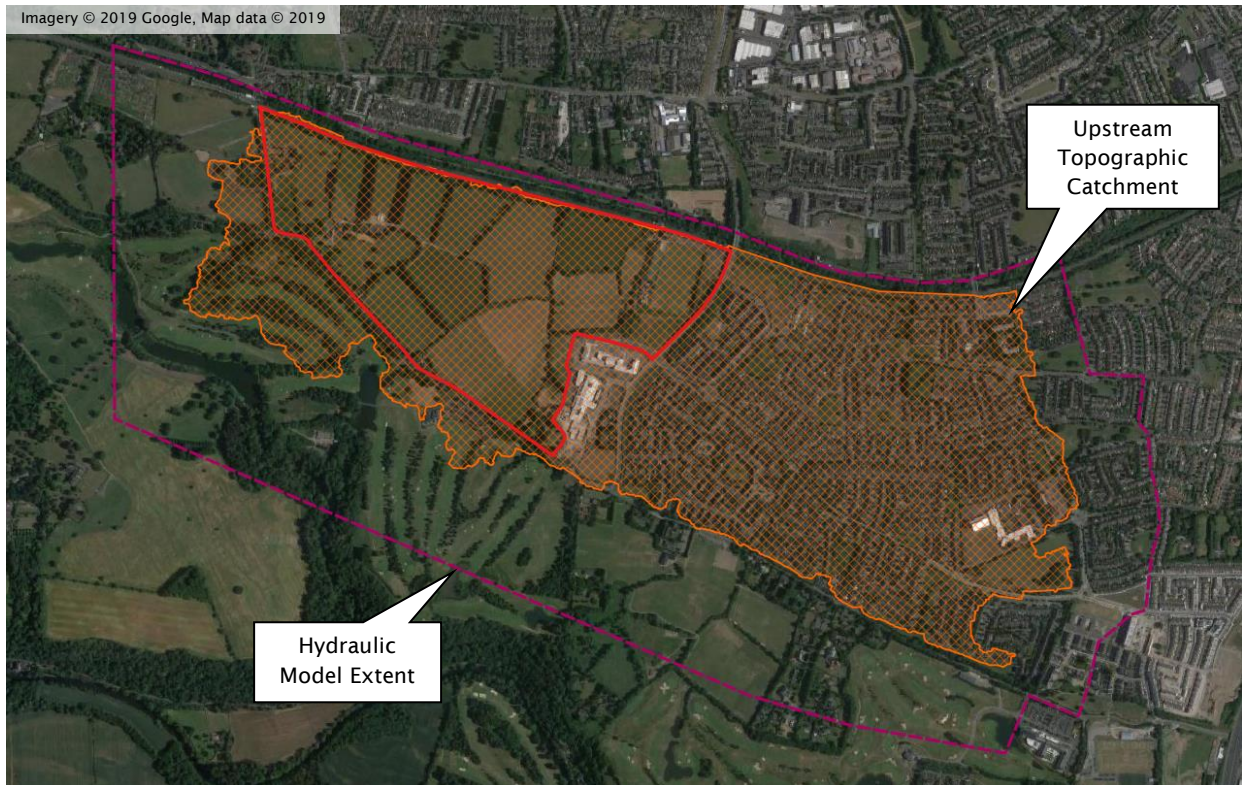


Figure 6-1 Model Extent

6.3 Model Hydrology (Rainfall Analysis)

Model hydrology is via the application of rainfall direct to the 2D surface. Rainfall has been derived from the OPW Flood Studies Update (FSU) Rainfall Depth Duration Frequency (DDF) module. Due to the small (<5km²) and ungauged nature of the catchment, the rainfall DDF module uses the nearest 2 km grid point for analysis. Rainfall is therefore calculated at Clonsilla Road / Luttrellstown Road junction approximately 300 m north of the Plan Area.

Rainfall profiles for the 1/3/6-hour storm durations for the 1% event have been calculated from the FSU Rainfall DDF module and converted from rainfall depth to intensity for use in the ICM model for the summer and winter rainfall profiles.

The catchment is approximately 50% urban, therefore in order to determine the most critical rainfall profile the 1% AEP return period was simulated for both the winter and summer profiles for all durations. Measurements of flood levels at key flow paths throughout the Plan Area indicate the summer profile results in higher flood depths and therefore is the most critical. The summer rainfall profile is more peaked than the winter profile and representative of the prevalence of intense convective storms during summer which is more critical for surface water flooding in this area.

The FSU methodology does not extend to allow estimation of 0.1% AEP rainfall directly. Rainfall for the 1/3/6-hour storm durations for the 0.1% AEP event were therefore estimated by plotting a range of total rainfall depths against the associated return periods up to the 0.4% AEP (250 year) event. The rainfall curves were plotted on a logarithmic scale and the 0.1% AEP total rainfall estimated from the trendline equation. Rainfall profiles for each storm duration were derived through scaling the total rainfall depth to the 1% AEP hyetograph.

6.3.1 Critical Duration Analysis

The critical duration rainfall was determined for each storm event probability from the analysis of model simulation results by measurement of flood levels at key flow paths / accumulations of flood waters throughout the Plan Area.

Additional analysis was conducted by measurement of total area inundated above 0.02 m within the model. As shown in following table, the critical duration for the model was assessed to be 1 hour for the 1% and 0.1% AEP storms.

Table 6.1 Critical Duration Analysis

Rainfall Probability	Inundation Extents (m ²) for Storm Duration		
	1 hr	3hr	6hr
1% AEP	889560	835770	794270
0.1% AEP	1195150	1080260	779560

The respective critical storm duration for each return period is used as a basis for all subsequent analysis and shown in Figure 6-2 below.

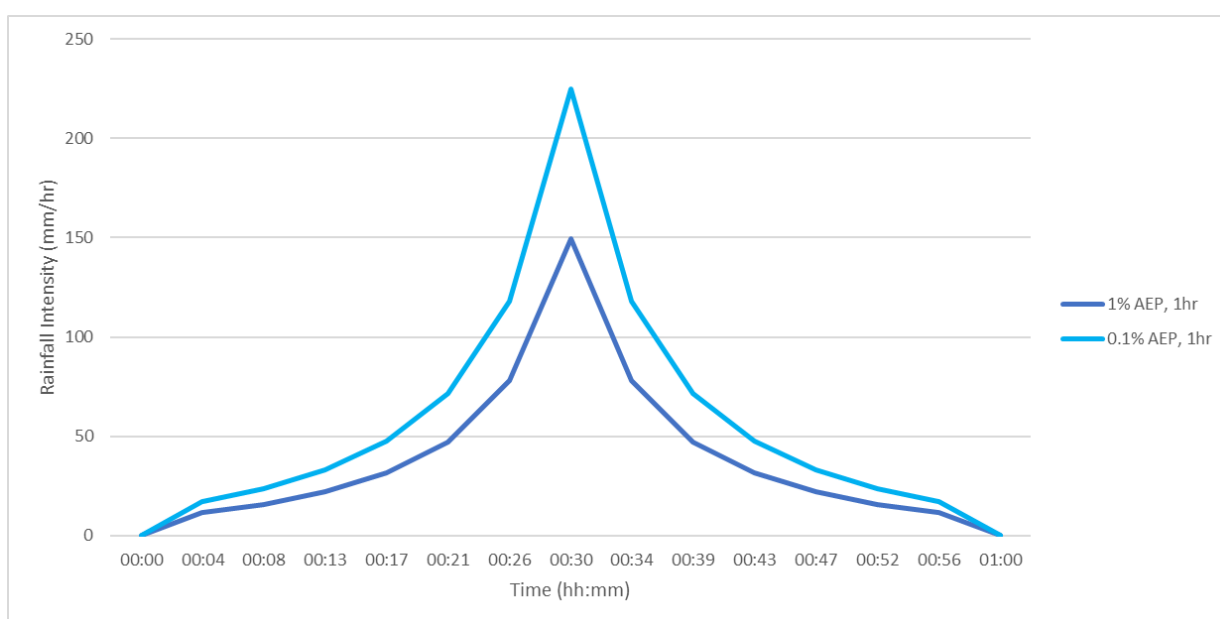


Figure 6-2 Critical Storm Durations for 1% and 0.1% AEP Storm Events

6.3.2 Climate Change

The effect of climate change has been applied to the critical duration storms for the 1% and 0.1% AEP events for both the Mid Range (+20%) and High End (+30%) future scenarios as set out in the OPW's Climate Change Sectoral Adaptation Plan – Flood Risk Management (2015-2019). The resulting hyetographs are shown in Figure 6-3 and Figure 6-4.

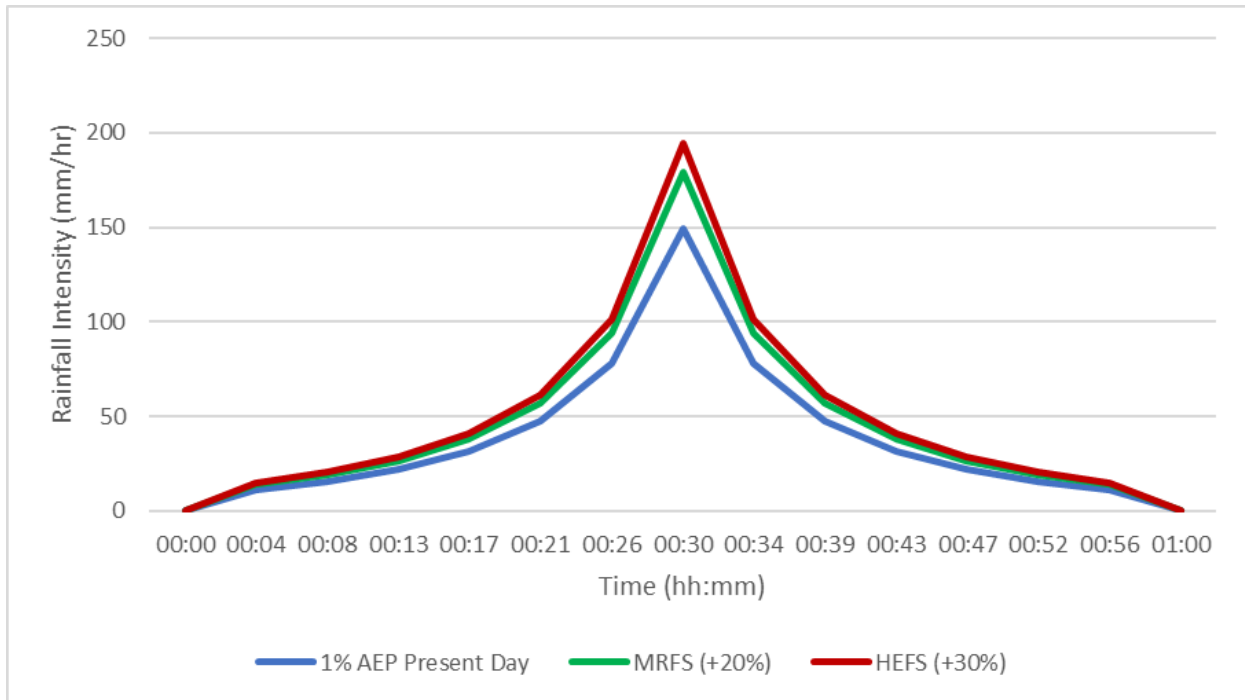


Figure 6-3 Present Day and Climate Change Rainfall – 1% AEP, 1 hour

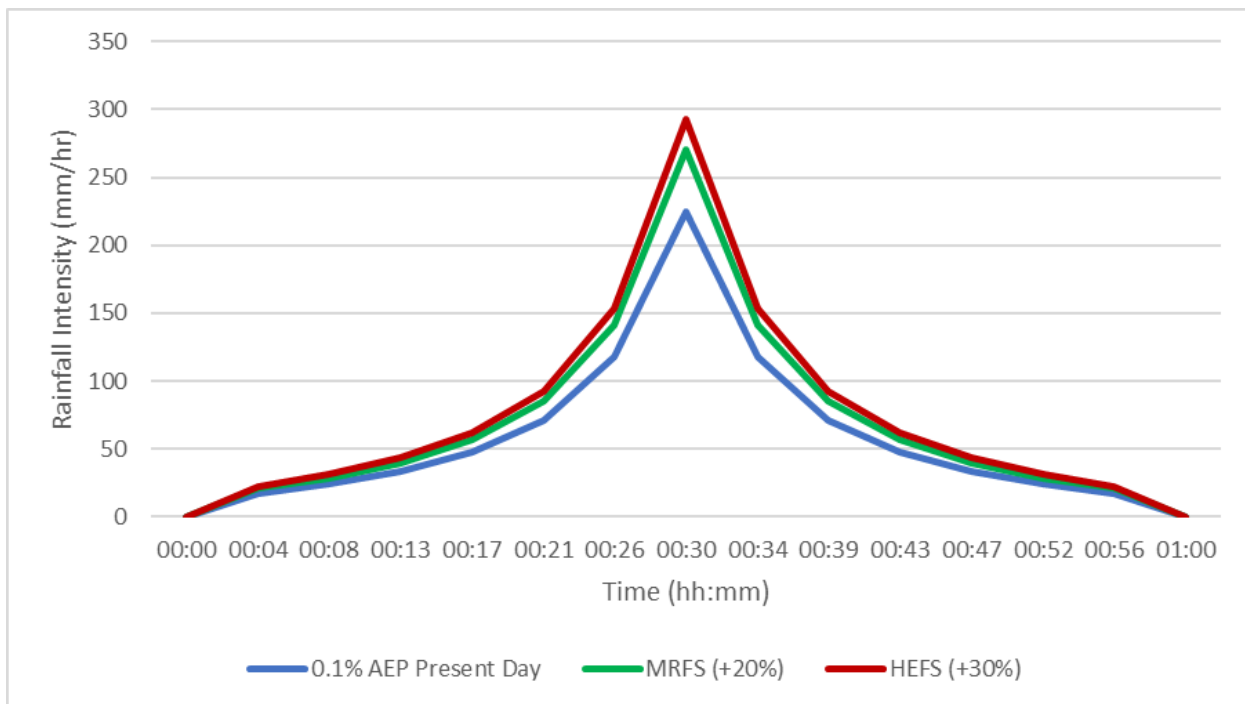


Figure 6-4 Present Day and Climate Change Rainfall – 0.1% AEP, 1 hour

6.4 Plan Area Specific Model Data

6.4.1 1-Dimensional Model Data

The drainage channels in the model area are not included as 1D elements and are included in the 2D model surface discussed subsequently.

Two conduits (with inlets and outlets linked to the 2D surface) were included within the model, as shown in the following Figure 6-5 and detailed in Table 6.2. Conduit details have been taken from the Plan Area specific survey and as built drawing information, verified by survey data.

6.4.1.1 Luttrellstown Road Culvert

Flows from the open drain leave the Plan Area via a 480 mm high x 770 mm wide arched culvert under the Luttrellstown Road. The inclusion of the culvert permits water accumulated in the open drain discharge downstream from the Plan Area.

6.4.1.2 Riverwood Storm Outfall

The Ø 1200 mm sewer approximately follows that of the south eastern open drain within the Plan Area. As discussed in Section 4.5.1, out of sewer flooding would be realised further up the network from the Riverwood Storm Outfall and flow overland onto the Plan Area. In addition, several data gaps remain in the upstream network. Therefore, the upstream contributing network has been rationalised to a portion of the sewer downstream at the Luttrellstown Road to its outlet in the open drain downstream from the Plan Area to represent flows discharging from the sewer to the receiving open drain downstream of the Plan Area that may influence flood levels at the Plan Area.

The peak flow in the sewer has been rationalised to a maximum discharge rate of full-bore capacity estimated by Colebrooke-White and applied as a continuous hydrograph upstream of the Luttrellstown Road.

The rationalisation ensured a precautionary approach, a sensibility check was undertaken to ensure the sewer discharge volume and losses within the upstream sewered area cumulatively do not exceed the volume of rainfall applied to those areas.



Figure 6-5 Modelled Conduits

Table 6.2 Conduit Register

Conduit	Shape	Material	Size (mm)	Upstream Invert Level (mOD)	Downstream Invert Level (mOD)	Manning's 'n' Roughness Value (Top / Bottom)
Luttrellstown Road Culvert	Arch	Concrete	480 x 770	53.44	53.21	0.013 / 0.020
Riverwood Storm Outfall	Circular	Concrete	1200	53.32	53.23	0.013 / 0.013

6.4.2 2-Dimensional Model Data

6.4.2.1 Topography

Topographic survey of the Plan Area has been made available from a 3rd party surveyor in addition to Ordnance Survey Ireland (OSI) 2 m LiDAR provided by FCC. A terrain model was generated to represent the topography of the area using a combination of the two data sources. The LiDAR has been augmented by topographic survey in the area of the main open drain at the south east of the Plan Area to ensure this key flow route is adequately represented.

6.4.2.2 Open Drains

The Plan Area has potential to be affected by flooding from the main open drain that serves lands within the immediate vicinity within the south eastern portion of the Plan Area and conveys flows out of the Plan Area via the Luttrellstown Road culvert. The main open drain was represented in the 2D domain.

A topographical and bathymetric survey was undertaken by a specialist survey contractor that included the south eastern open drain due to the importance of this key flow route for pluvial flows. The survey included discrete cross sections at a 60 m spacing that included top and bottom bank lines and channel inverts giving an accurate depiction of the entire drain.

Other minor hydraulically unconnected drains largely corresponding with field boundaries exist within the Plan Area were defined by the OSI 2 m LiDAR.

6.4.2.3 Roads

OSI Prime 2 mapping was provided by Fingal CC and used to delineate roads for representation in the model.

Roads were loaded as mesh zones and lowered by 0.125 m per best industry practice to delineate these important flow paths. Additionally, roads were loaded in as roughness zones

6.4.2.4 Buildings

OSI Prime 2 mapping has been provided by Fingal CC and used to delineate existing buildings for representation within the model.

While not intended to assess flood risk to buildings, it was pertinent to ensure that buildings are included in the model to ensure that the effect of obstructions to overland flooding and routing of surface water is assessed. In the absence of surveyed floor levels, building footprints have been raised 0.3 m per best industry practice.

Buildings have been assigned a porosity of 0.1 to allow water to flow through them.

6.4.2.5 Surface Roughness

Figure 6-6 summarises the Manning's N values applied to the model that includes both green areas and urban fabric.

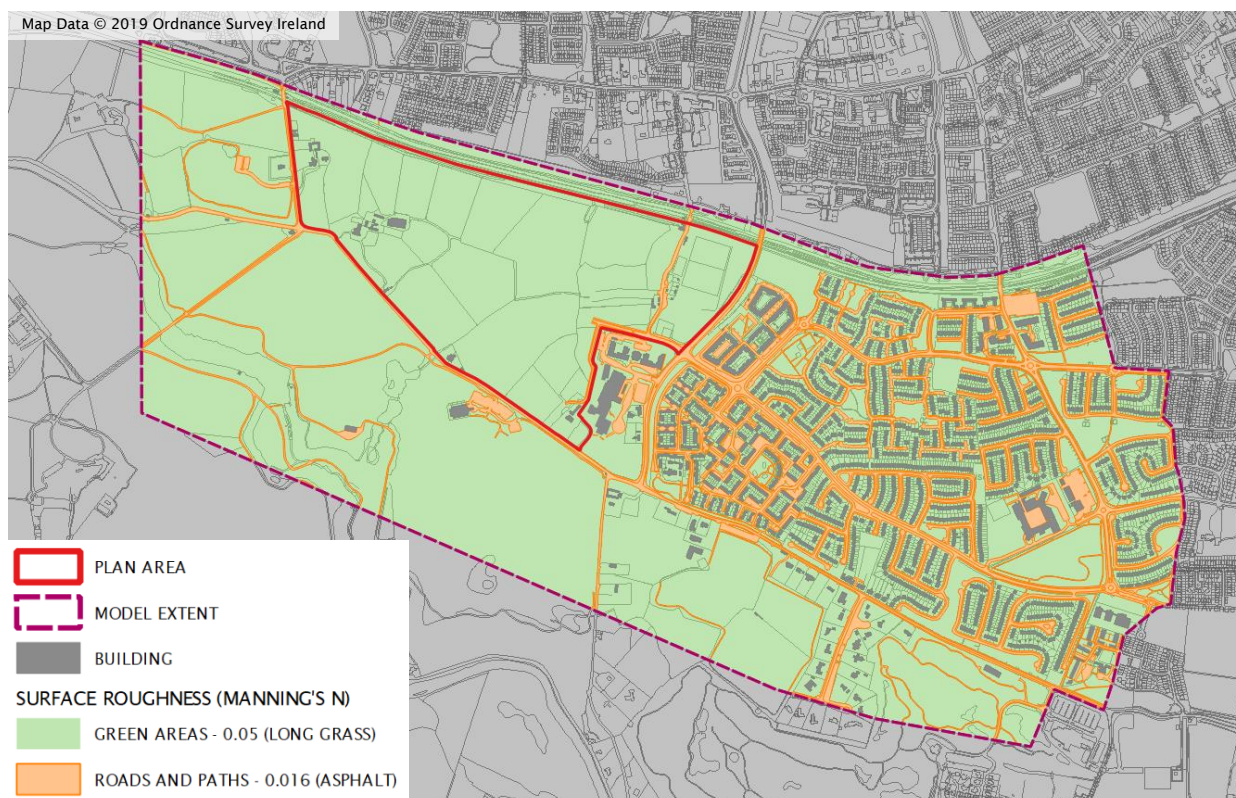


Figure 6-6 Surface Roughness

6.4.2.6 Surface Infiltration

Infiltration was applied to the model instead of using effective rainfall due to the varying surface types within the Plan Area and wider catchment which is the adopted methodology in the production of (England and Wales) Environment Agency surface water mapping, adopted as best practice in the absence of particular guidance for Ireland.

Permeable Areas

No site investigation was conducted for the Plan Area. GSI mapping indicated the Plan Area is underlain by Till derived from Limestone, indicating poorly drained soils.

Losses have been applied to permeable areas based upon the 2D Horton Infiltration model included within the InfoWorks ICM software. This model converts the direct rainfall applied to the mesh into a runoff volume which is determined by the parameters set for the surface. The Horton infiltration model was selected as appropriate as it continues to simulate infiltration in the absence of rainfall, i.e. after the event.

Horton infiltration parameters reflective of the underlying soil conditions applied to the model across the wider catchment are detailed in Table 6.3.

Table 6.3 Horton Parameters

Horton Initial (mm/hr)	Horton Limiting (mm/hr)	Horton Decay (1/hour)	Description
25.4	0.64	2	Dry clay soils with little vegetation

Impermeable Areas

A Constant Infiltration model where the maximum theoretical infiltration is given by the function of the infiltration loss coefficient was applied to roads, railway tracks, paths, other hardstanding areas and

building surfaces where the surface water sewerage network is not represented. The effective infiltration is determined by the available water volume in the surface.

A runoff coefficient of 95% was adopted for all roads and paths, 80% for railway tracks and 85% for buildings.

As no surface water sewerage is represented throughout the model a typical drainage removal rate of 12 mm/hr has been applied to roads, railways and buildings in line with (England and Wales) Environment Agency Flood Maps for Surface Water updated guidance⁴ adopted as best practice in the absence of particular guidance for Ireland, to account for losses to urban drainage systems.

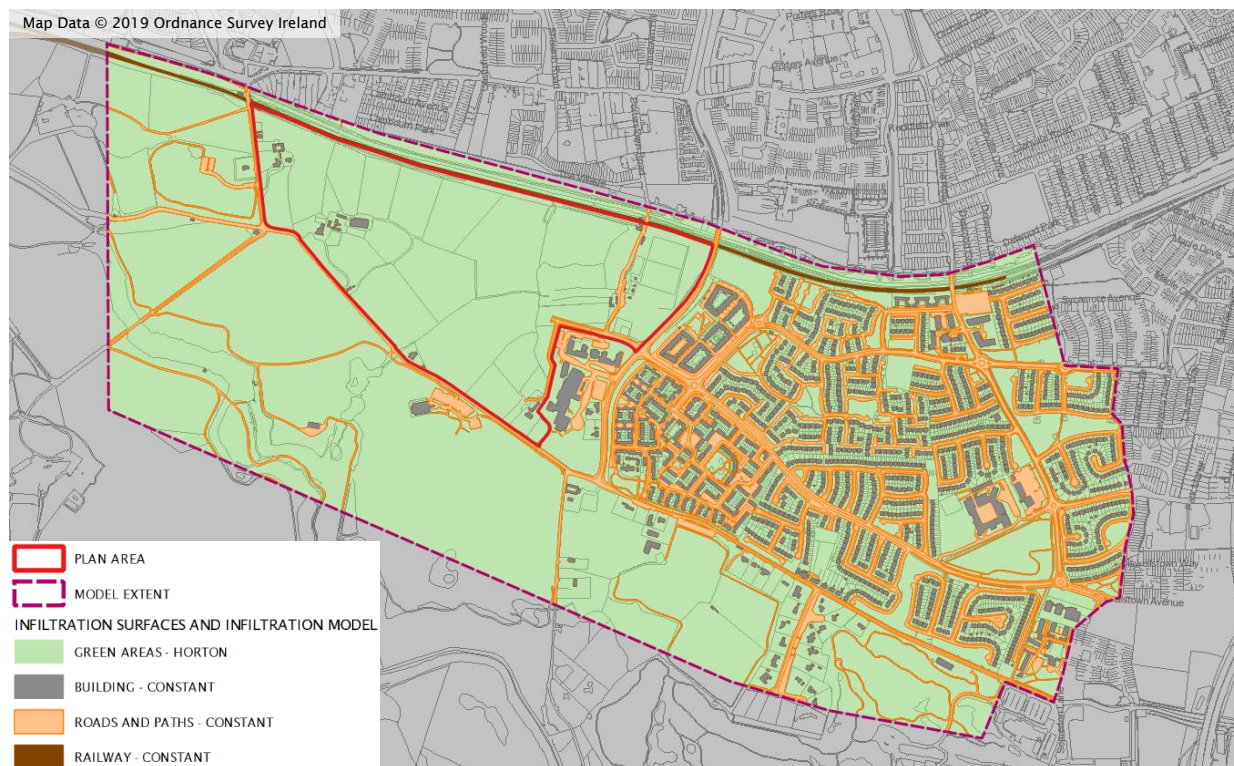


Figure 6-7 Surface Infiltration

6.5 Model Stability

A number of parameters were checked to assess the model stability:

- i. The mass balance is considered to give an indicator of model stability and relates to the flow entering and leaving the model. The mass balance values for the 1% and 0.1% AEP events are below 0.005%, which is well within acceptable tolerances.
- ii. A review of stage hydrographs was undertaken across the model to locate any significant spikes in graphs that would suggest issues with model stability. A review of graphs indicated that the model exhibited no abnormal stage variations that would tend to indicate a model instability.

A review of the above parameters indicates that the model is stable, allowing substantial confidence in model outputs.

6.6 Model Sensitivity

Model sensitivity analysis was carried out to assess the sensitivity of the simulation to changes in base parameters. The sensitivity testing makes comparisons to the base model and was carried out for the 1% AEP flood event.

⁴ Environment Agency (2013) What is the updated Flood Map for Surface Water? Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/297432/LIT_8988_0bf634.pdf Accessed on 25/10/2019.

6.6.1 Sensitivity to Roughness

The sensitivity of the modelled water levels to conduits and overland roughness was assessed by varying the standard values of Manning's n for the base model.

Increasing the roughness value of the 1D conduits by 20% causes no measurable increase in flood levels at the Plan Area. Increasing the roughness value of the 2D Zone by 20% causes an increase in flood level of 0.02 m. Results for the sensitivity testing show no significant differences within the model output – flow paths and flood extents remain largely the same.

The increase in water levels within the 2D zone are generally within acceptable limits. The model therefore does not exhibit a significant sensitivity to roughness variation and would not cause the ultimate finding of the model to be unreliable. Careful consideration has been given to conservatively specifying Manning's n values and there is therefore reasonable confidence in model results.

6.6.2 Sensitivity to 1D Loss Model

The infiltration / loss model to represent surface water sewer losses where no surface water drainage network is represented directly within the model is per normal industry practice by an approved EA methodology (in the absence of an Irish equivalent).

Water levels within the 2D Zone were analysed for sensitivity to the loss model to represent the 1D network. A 2 mm/hr decrease in rates to 10 mm/hr results in an increase of up to 0.007 m within the Plan Area. Subsequently, a 2 mm/hr increase in rates to 14 mm/hr results in a 0.006 m within the Plan Area.

The 1D loss model is per normal industry best practice. There is a limited amount of drained areas within the Plan Area to be represented by the loss model, therefore there is confidence that the model is suitably representative.

6.6.3 Sensitivity to Infiltration

The sensitivity of the model to infiltration elsewhere has been assessed by varying the infiltration parameters on surfaces where parameters have been estimated based on GSI mapping. Horton initial and Horton limiting parameters were varied by +/-20%.

Water levels within the 2D zone were analysed for sensitivity to infiltration. A 20% decrease in Horton infiltration parameters results in an increase of up to 0.02 m in water levels within the Plan Area. Subsequently, a 20% increase in Horton infiltration parameters results in a decrease of up to -0.02 m in water levels.

Horton values have been carefully specified to ensure representative values for the underlying ground conditions are adopted, and there is confidence that the model infiltration is suitably representative. Increases in flood levels due to changes in infiltration parameters are within acceptable limits.

6.6.4 Sensitivity to Rainfall

The design rainfall events were derived using best industry techniques and the most conservative storm durations were selected and there is therefore reasonable confidence in the results. In order to determine the effect of underestimation of rainfall on the model and what could be expected if an extreme event were to occur, the flows in the model have been increased by 30% in line with the OPWs Climate Change Sectoral Adaptation Plan – Flood Risk Management (2015-2019) High End Future Scenario. The hydrograph length / shape is unchanged and there is therefore an overall increase of mass within the model.

Increasing the design rainfall by 30% results in an increase in flood level within the Plan Area 2D Zone of up to 0.19 m. The highest increase in depths within the 2D zone correlate with the pond adjacent to the northern boundary of the Plan Area and the downstream portion of the open drain due to restrictions the ability of rainfall to flow away from these areas.

The model indicates a moderate sensitivity within the 2D zone to increases in rainfall which would not be unexpected with increases to rainfall.

6.6.5 [Sensitivity to Downstream Boundary Condition](#)

The downstream boundary of the 2D component of the model is sufficiently located downstream that there is up to a 24 m height difference to the south and 5 m height difference to the south west in favour of the Plan Area preventing any artificial influence on water levels at the Plan Area due to any uncertainty in the 2D downstream boundary condition.

The 2D downstream boundary is therefore considered sufficiently robust against any uncertainty in downstream boundary condition.

6.6.6 [Sensitivity to Culvert Blockage](#)

The effect of blockage in the downstream 480 mm x 770 mm arched culvert under the Luttrellstown Road on flood levels in the Plan Area was assessed by blocking the culvert by 50% of its capacity for the 1% AEP rainfall event.

Results indicated no significant increase in in-channel flood levels (<0.02 m) or on lands adjacent to the culvert inlet. The insignificant additional depth over base-conditions is as a result of the blockage backwater effect being limited by the Luttrellstown Road level. In the event of culvert blockage, floodwater would tend to overtop / weir over the road and flow towards Luttrellstown Castle Golf Course. The remainder of the Plan Area is unaffected by the effects of culvert blockage.

Figure 6-8 demonstrates no significant change in flood levels within the Plan Area as a result of culvert blockage.



Figure 6-8 1% AEP + 50% Culvert Blockage Surface Water Change in Depth

6.6.7 [Sensitivity Analysis Summary](#)

The results of the sensitivity analysis are generally within acceptable limits and where the model has shown a sensitivity to downstream boundary condition, a conservative approach has been taken.

The sensitivity analysis has demonstrated that the model can be deemed reliable.

6.7 Assumptions and Limitations of Modelling

The representation of any complex system by a model requires a number of assumptions to be made. In the case of the hydraulic model developed for the purposes of the study it is assumed that:

- The terrain model (based on LiDAR and topographical survey information) accurately represents the surface topography and associated flow paths.
- The design rainfall is an accurate representation of rainfall of a given return period.
- Inflows from the Ø500 mm culvert outlet to the open drain are excluded; that culvert is assumed to be redundant or have a limited local drainage function and so flows that may be carried in this drain are instead carried by overland flood routing, and as such the analysis is precautionary.
- Roughness does not vary with time.

The primary limitations of the study are noted as follows:

- The upstream contributing catchment to the Riverwood Storm Outfall has not been calculated in detail due to data gaps in the 1D network. A conservative approach to rationalise the maximum discharge rate estimated based on a full-bore capacity. A sensitivity check was undertaken to ensure that the sewer discharge volume and volume of losses within the upstream sewered area cumulatively do not exceed the volume of rainfall applied to those areas. Where the conservative approach is disproven then predicted water levels on the Plan Area, immediately upstream of the culvert may be unnecessarily conservative, but not to an extent that it materially changes the findings of this assessment.
- The model does not represent any additional out of catchment inflows to the open drain.
- The model does not represent any topographic features smaller than the minimum resolution of the underlying terrain model derived for the area.

6.8 Discussion of Results

6.8.1 Results Processing

Flooding less than 20 mm in depth was removed from model outputs in line with best practice for pluvial flood mapping. The results were processed using a similar methodology to the (England and Wales) Environment Agency Flood Maps for Surface Water updated guidance⁵, in the absence of a similar guidance document for such work in Ireland. The following filters were used on model outputs:

- Removed flood areas with a very low hazard rating below 0.575
- Removed areas of flooding with a total area of less than 100 m²
- Filled in isolated dry areas (within a larger flooded area) of less than 50 m²

6.8.2 Present Day Results

The modelling undertaken shows the Plan Area is affected by pluvial/overland flooding. The primary flood mechanism is direct rainfall falling onto the surface and routing towards / gathering in relative depressions.

The main surface water flow path is from lands within the north east of the Plan Area that tend in a southerly direction towards the open drain and a low point in the south-east corner adjacent to the Luttrellstown Road. In the west of the Plan Area water tends to gather in a localised depression bounded by the relatively raised Luttrellstown Road to the south and Clonsilla Road to the west.

The following Figure 6-9 provides an indication of the flood routing through the Plan Area to the open drain and south west corner.

⁵ Environment Agency (2013) What is the updated Flood Map for Surface Water? Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/297432/LIT_8988_0bf634.pdf Accessed on 24/10/2019.



Figure 6-9 1% AEP Event Flood Routing

Detailed flood mapping for the Plan Area in Appendix C provide overland surface water flood levels for the 1% and 0.1% AEP events pertinent to design considerations within the Plan Area.

6.8.3 Climate Change

As outlined previously, the hydraulic model has been simulated with and uplift in rainfall of 20% and 30% in line with the OPW's Mid Range and High End future climate change scenarios, respectively, to ascertain existing climate change flood levels and extents.

The effect of climate change results in further intensification of the flow paths. Flood maps for each return period including allowance for climate change showing the full extent of flooding and flood levels within the Plan Area and surrounding lands are included in Appendix C.

7 SUMMARY OF FINDINGS AND RECOMMENDATIONS

7.1 Summary of Model Findings

The detailed flood risk assessment has determined that surface water (pluvial) flooding in combination with the effect of existing adjacent urban drainage infrastructure has potential to affect the Plan Area for floods of magnitude (probability) relevant to flood protection standards set out in the OPW Guidelines and Fingal SFRA.

The most significant source of flooding to the Plan Area is that of pluvial flooding from direct rainfall onto the ground surface. The Plan Area is affected by surface water flooding during the 1% and 0.1% AEP rainfall events for the present day scenario. The effect of climate change would be anticipated to cause flood levels at and adjacent to the Plan Area to rise.

Predicted surface water flood levels are summarised as follows:

Table 7.1 Flood Level Summary

Event Probability	Open Drain Flood Levels (m OD)	Wider Plan Area Flood Levels (m OD)
1% AEP Present Day	59.90 - 54.97	61.92 - 54.97
1% AEP – MRFS (+20%)	59.94 - 55.03	61.94 - 55.03
1% AEP – HEFS (+30%)	59.95 - 55.05	61.94 - 55.05
0.1% AEP Present Day	59.98 - 55.09	61.96 - 55.09
0.1% AEP – MRFS (+20%)	60.02 - 55.14	61.99 - 55.14
0.1% AEP – HEFS (+30%)	60.05 - 55.16	62.00 - 55.16

No other significant flood mechanism exists at the Plan Area.

7.2 Development Land Use Zoning Compatibility

The land zoning objectives within the Fingal Development Plan for the Plan Area have been identified in section 2.5 as RA – Residential Area and OS – Open Space.

As the flooding mechanism within the Plan Area is pluvial / urban drainage, then no flood zones as defined by the OPW Guidelines or Fingal SFRA applies. Therefore, no plan-making justification test is required to establish the principle of suitability of the lands for development.

7.3 Recommendations

While no restriction to land use is directed by the OPW Guidelines or Fingal SFRA, there remains an onus on any planned development to:

- Ensure that the proposal is flood resilient.
- Ensure that the proposal causes no increased flood risk that would cause an adverse effect elsewhere.

Management of internal surface water runoff within the Plan Area (i.e. surface water from development) shall be managed in accordance with the Sustainable Drainage Strategy (SDS) component of the Surface Water Management Plan (SWMP), the outcomes of which are informed by this SFRA.

Measures designed to manage flood risk connected to existing pluvial flooding are set out within the following sections. Recommendations are intended to inform plan-making for the lands, and / or any subsequent Site-Specific Flood Risk Assessment (SSFRA) for a planning application.

Figure 7-1 indicates the areas of surface water runoff that are to be managed by the Sustainable Drainage Strategy of the SWMP and the areas of surface water flood risk that are to be managed by recommendations set out in this SFRA.

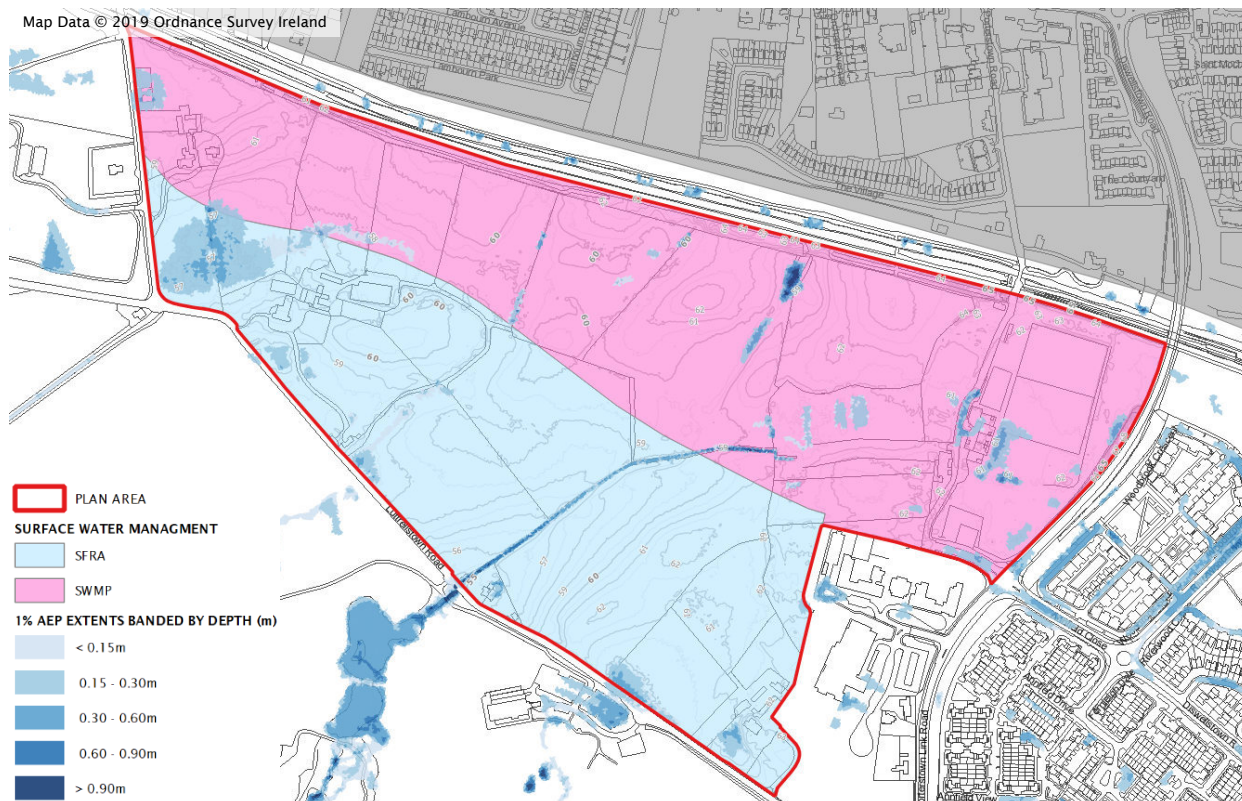


Figure 7-1 Surface Water Management

7.3.1 Design Levels

Guidance from the Fingal SFRA relevant to specifying of design levels is designed as follows:

- The minimum finished floor level (FFL) for highly vulnerable development should be above the 0.1% AEP event level plus suitable freeboard, whereby the recommended level of freeboard is 500 mm over and above the adjacent 0.1% AEP [*fluvial*] flood level.
- The minimum FFL for less vulnerable development should be above the 1% AEP event level plus suitable freeboard whereby the recommended level of freeboard is 500 mm over and above the adjacent 1% AEP [*fluvial*] flood level.

While the guidance states that it is to be applied to fluvial flood levels, it is considered appropriate and prudent to apply the freeboard requirements to the relevant return periods for pluvial flood levels.

Lands within the Plan Area are subject to a R1 (residential) zoning objective under the Fingal Development Plan which is classified as 'highly vulnerable'. Therefore, all residential dwellings and associated essential infrastructure shall be sited with a 500 mm freeboard relative to the adjacent 0.1% AEP surface water flood level as shown on flood mapping (Ref.: M02127-02_FL02) or as may be changed where development proposals include works to the drains that affects predicted flood levels.

Any 'less vulnerable' development, such as commercial development or local transport infrastructure, shall be sited with a 500 mm freeboard relative to the adjacent 1% AEP surface water flood level as shown on flood mapping (Ref.: M02127-02_FL01) or as may be changed where development proposals include works to the drains that affects predicted flood levels.

While no flood zoning applies to the Plan Area, it is recommended that water compatible development such as open, amenity space is considered for areas affected by surface water flooding.

The Fingal SFRA also states the following:

- A precautionary approach to climate change includes recommendations to ensure that levels of structures designed to protect against flooding (such as flood defences or raised floor levels) are sufficient to cope with the effects of climate change over the lifetime of the development.

Therefore, proposals for the Plan Area should be tested against future climate change as well as culvert blockage scenarios at the Development Management stage to ensure that finished floor levels of structures are able to withstand their effects over the design life of the proposed development.

As well as the above, any SSFRA should consider the potential impact of development on lands elsewhere, particularly where any development within the existing pluvial flood extents is proposed.

It is recommended that additional scenarios and impact of the development are based on detailed hydraulic modelling as part of a SSFRA.

7.3.2 Protection and Maintenance of Drain

It is recommended that the open drain (as mapped on Figure 4-3) within the Plan Area should be maintained and protected as an open channel on its present alignment or alternative diverted form as it serves as a drainage function to a wider area extending beyond the Plan Area. It is recommended that:

- A minimum 10 m wide riparian buffer strip each side of the channel should be provided to allow access for maintenance and encourage biodiversity.
- Ownership and maintenance obligations are established, and provision should be made by the relevant party for preventative inspection and maintenance of the channel and culverted sections.

Any proposal to realign, divert, increase the dimension of, or otherwise alter the drain or culvert should be subject to robust hydraulic modelling and a flood risk assessment to assess the effect of such a proposal on flood risk at the Plan Area and elsewhere.

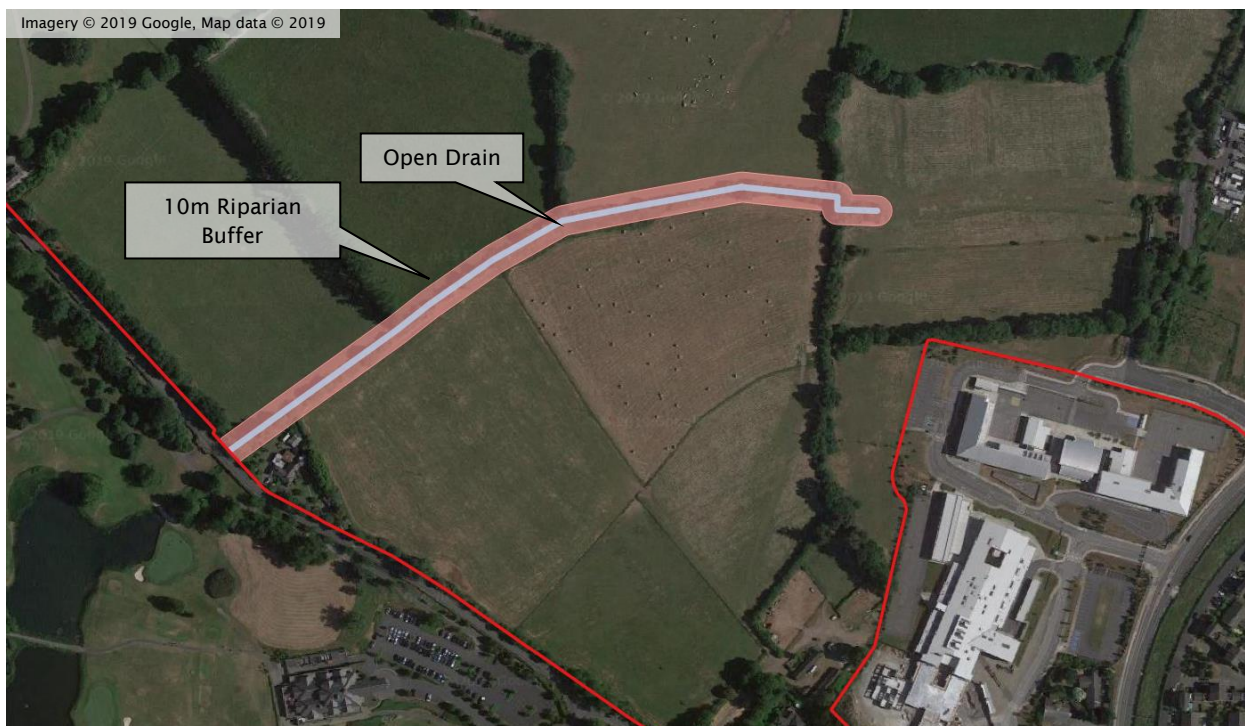
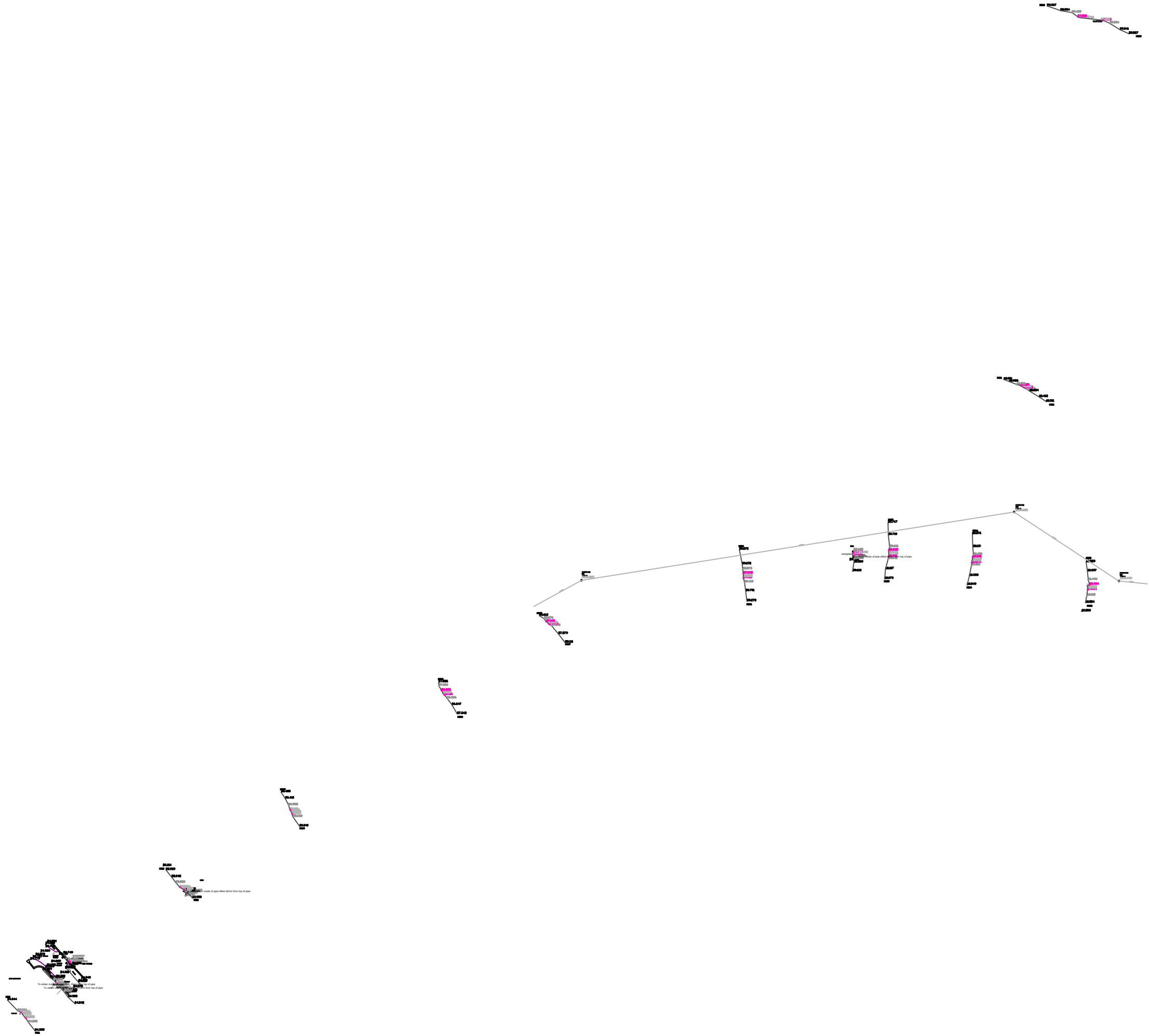


Figure 7-2: Open Drain Riparian Buffer

Appendix A

Topographical Survey



Appendix B

Plan Area Photographs

Photo Location 1:
View of Plan Area from Eastern Boundary



Photo Location 2:
View of Plan Area from Southern Boundary



Photo Location 3:
View of Plan Area from Northern Boundary



Photo Location 4:
View of Plan Area from Western Boundary



Photo Location 5:
View of 'Pond' location along Northern Boundary of the Plan Area



Photo Location 6:
View of Royal Canal along Northern Boundary of the Plan Area

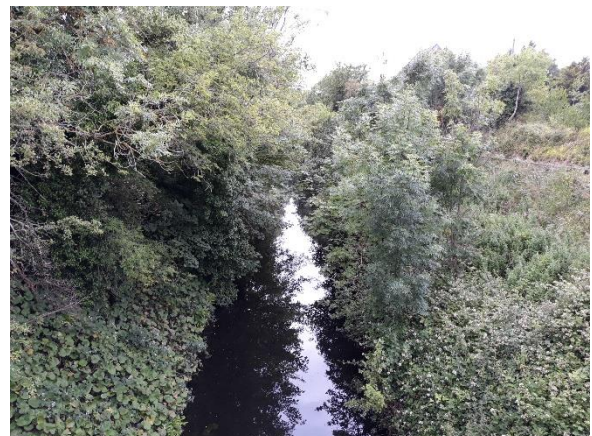


Photo Location 7:

View of Open Drain in Northern part of the Plan Area

**Photo Location 8:**

View of Open Drain in Southern part of the Plan Area

**Photo Location 9:**

View of 500 mm 'dry pipe' at Open Drain along Southern Boundary of the Plan Area

**Photo Location 10:**

View of Open Drain crossing beneath Luttrellstown Road

**Photo Location 11:**

View of Pipe beneath Luttrellstown Road within Luttrellstown Castle Golf Course

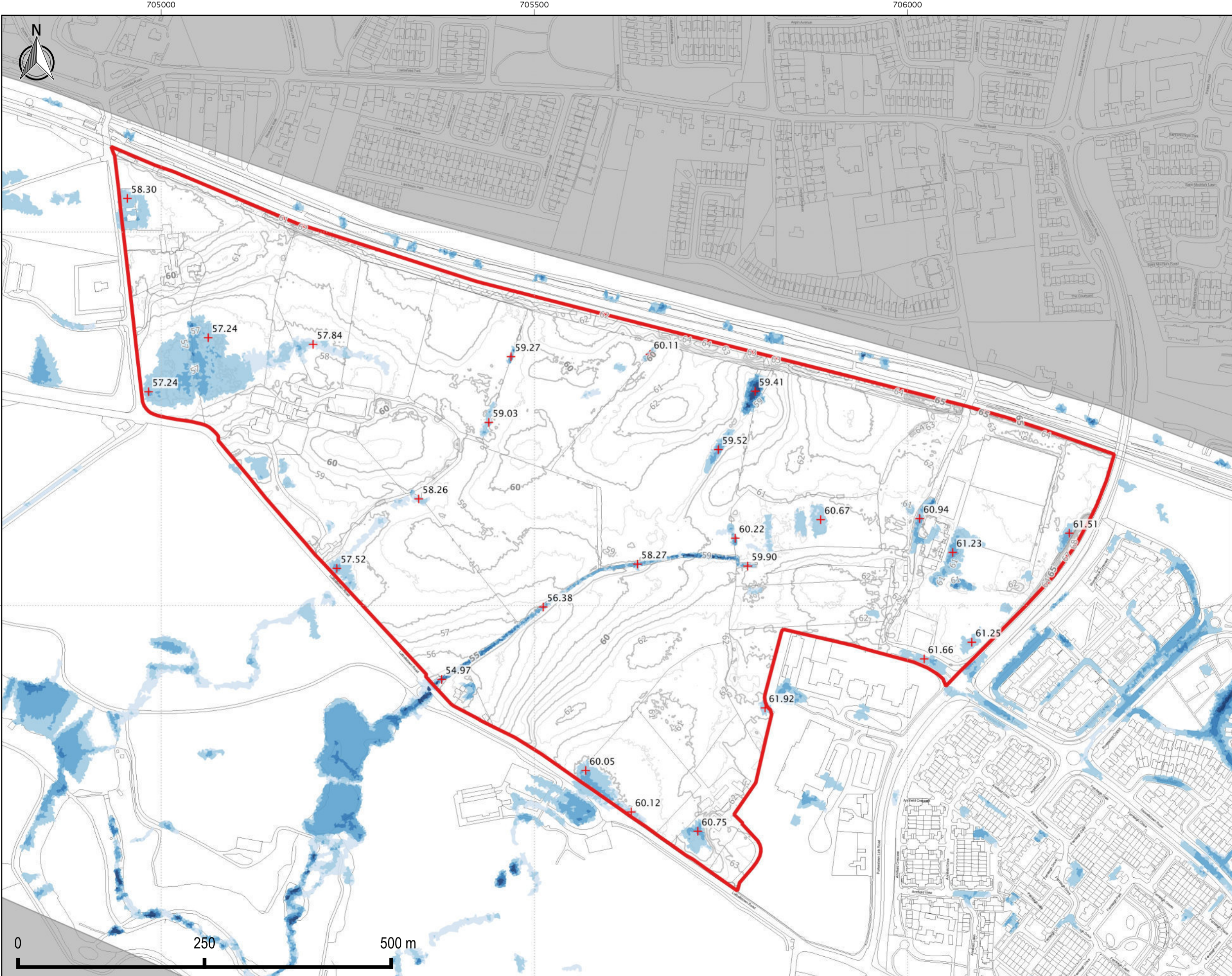
**Photo Location 12:**

View of Pond / Lake within Luttrellstown Castle Golf Course

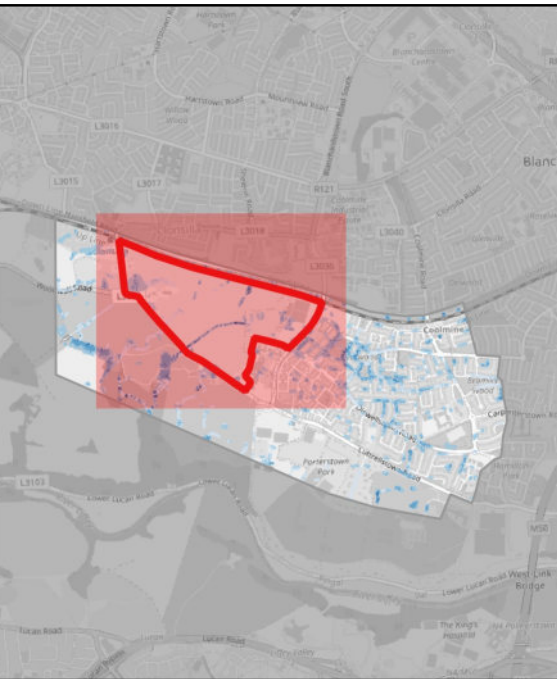


Appendix C

Flood Maps



MODEL OVERVIEW



LEGEND

- SFRA SITE AREA
- FLOOD LEVELS (m OD)
- FLOOD EXTENTS BANDED BY DEPTH (m)
 - < 0.15m
 - 0.15 - 0.30m
 - 0.30 - 0.60m
 - 0.60 - 0.90m
 - > 0.90m

- NOTES
1. ALL LEVELS INDICATED ARE TO ORDNANCE DATUM MALIN.
 2. ALL GRID COORDINATE INFORMATION IS TO IRISH GRID.
 3. FLOOD EXTENTS HAVE BEEN PROCESSED IN LINE WITH SURFACE WATER FLOOD MAPPING BEST PRATICE.



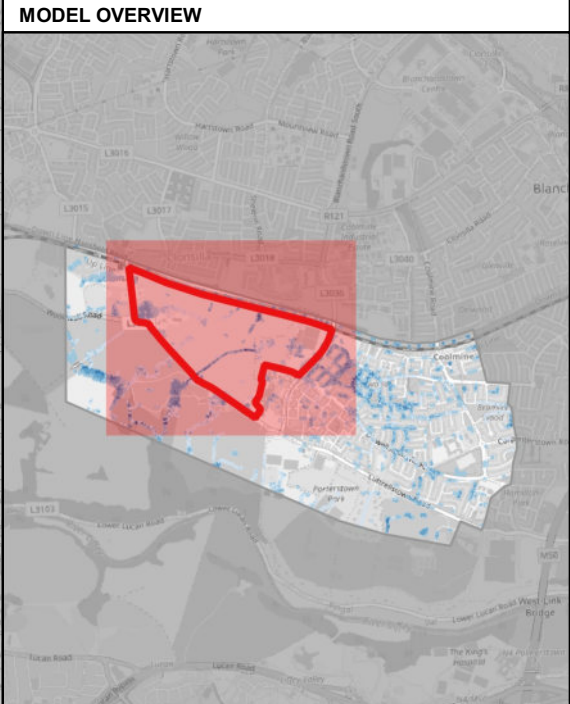
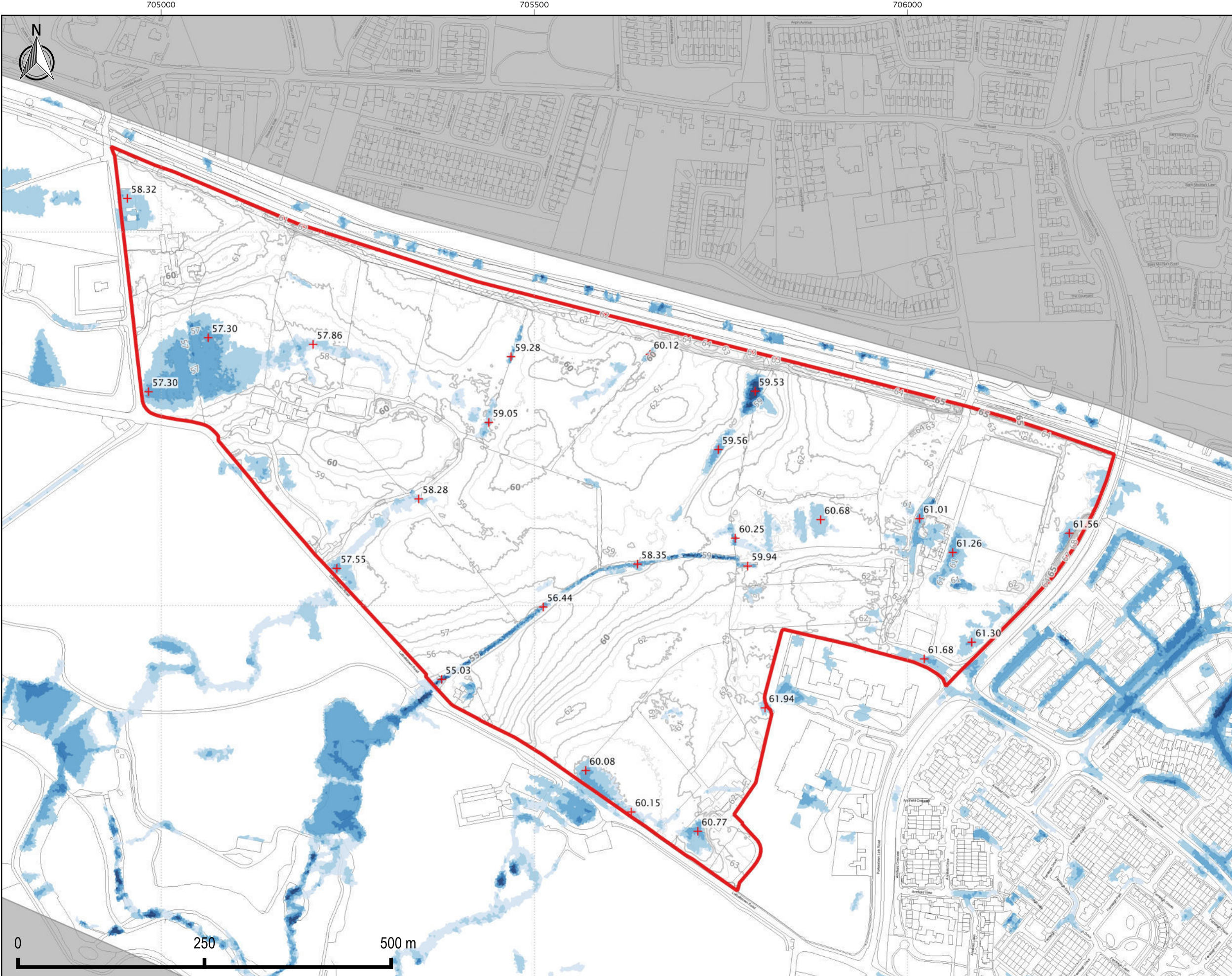
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PROJECT KELLYSTOWN, CLONSILLA, DUBLIN 15		HYDROLOGY SCENARIO PRESENT DAY		SCALE 1:5000	ORIGINAL SIZE A3
MAP TYPE FLOOD EXTENT / DEPTH MAPPING		GEOMETRY SCENARIO PRESENT DAY / UNDEFENDED		DRAWN BY MR	APPROVED DKS
SOURCE PLUVIAL	FLOOD EVENT 1% AEP	FIGURE NUMBER M02127-02_FIG_FL01		REVISION 2	DATE 14/08/2020

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BACKGROUND MAP CONTAINS OPENSTREETMAP DATA
© (2020) OSM CONTRIBUTORS, AND CONTAINS
ORDNANCE SURVEY IRELAND DATA © COPYRIGHT
(2020)



LEGEND

- SFRA SITE AREA
- + FLOOD LEVELS (m OD)

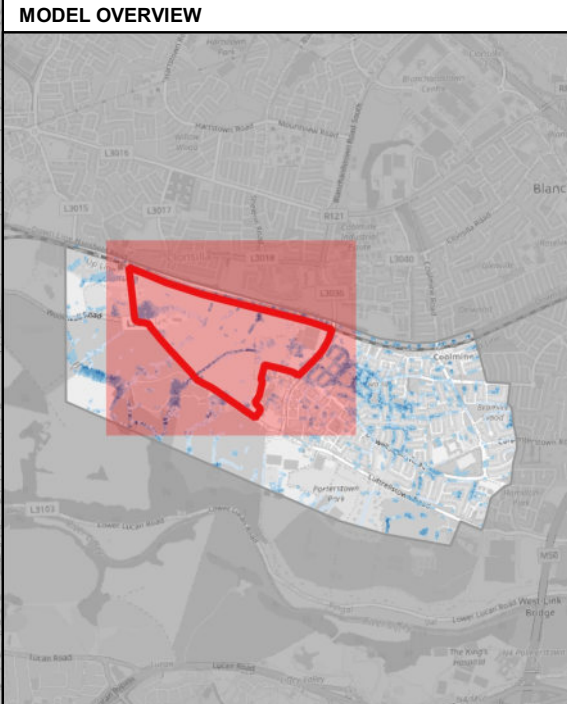
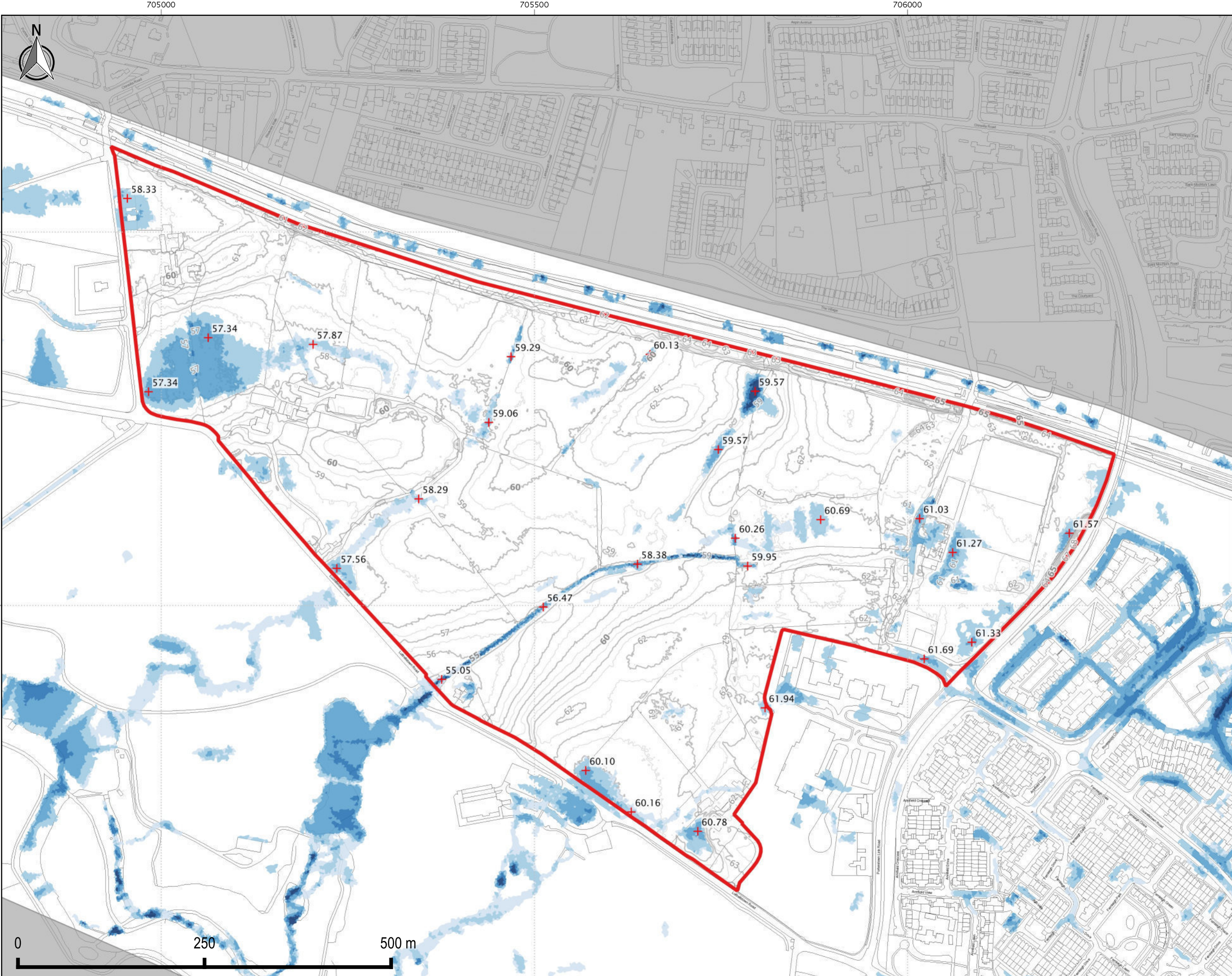
FLOOD EXTENTS BANDED BY DEPTH (m)

- < 0.15m
- 0.15 - 0.30m
- 0.30 - 0.60m
- 0.60 - 0.90m
- > 0.90m

NOTES

1. ALL LEVELS INDICATED ARE TO ORDNANCE DATUM MALIN.
2. ALL GRID COORDINATE INFORMATION IS TO IRISH GRID.
3. FLOOD EXTENTS HAVE BEEN PROCESSED IN LINE WITH SURFACE WATER FLOOD MAPPING BEST PRATICE.

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	<div>MAP TYPE</div> <div>FLOOD EXTENT / DEPTH MAPPING</div>		<div>GEOMETRY SCENARIO</div> <div>PRESENT DAY / UNDEFENDED</div>		<div>DRAWN BY</div> <div>MR</div>	<div>APPROVED</div> <div>DKS</div>
	<div>SOURCE</div> <div>PLUVIAL</div>	<div>FLOOD EVENT</div> <div>1% AEP + 20%CC</div>	<div>FIGURE NUMBER</div> <div>M02127-02_FIG_FL03</div>		<div>REVISION</div> <div>2</div>	<div>DATE</div> <div>14/08/2020</div>



LEGEND

- SFRA SITE AREA
- + FLOOD LEVELS (m OD)

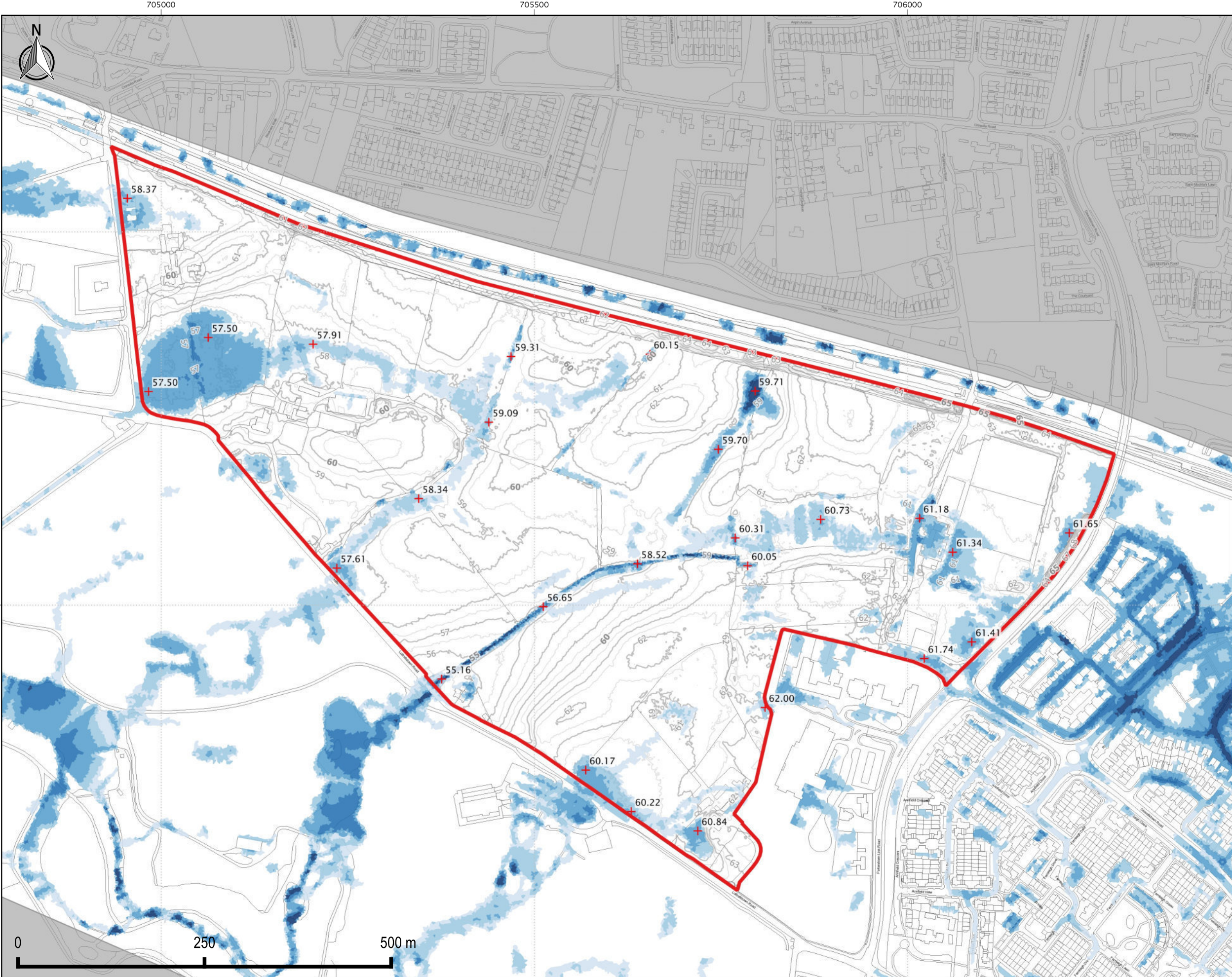
FLOOD EXTENTS Banded BY DEPTH (m)

- < 0.15m
- 0.15 - 0.30m
- 0.30 - 0.60m
- 0.60 - 0.90m
- > 0.90m

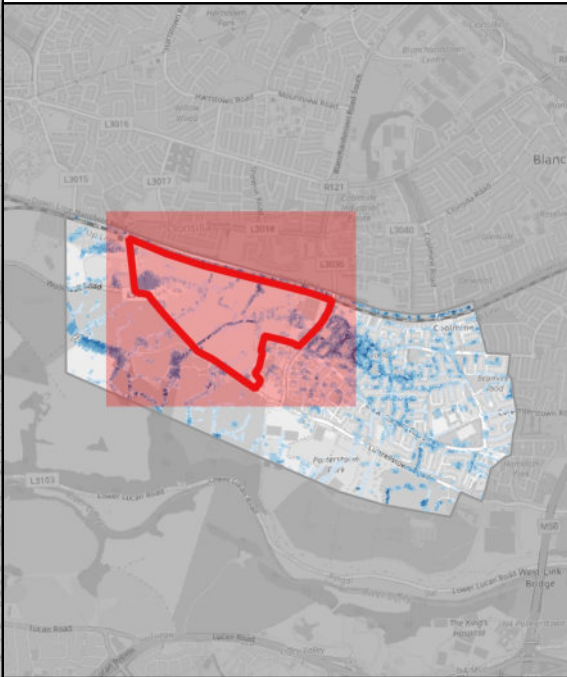
NOTES

1. ALL LEVELS INDICATED ARE TO ORDNANCE DATUM MALIN.
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3. FLOOD EXTENTS HAVE BEEN PROCESSED IN LINE WITH SURFACE WATER FLOOD MAPPING BEST PRATICE.

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	<div><div>MAP TYPE</div><div>FLOOD EXTENT / DEPTH MAPPING</div></div>		<div><div>GEOMETRY SCENARIO</div><div>PRESENT DAY / UNDEFENDED</div></div>		<div><div>DRAWN BY</div><div>MR</div></div>	<div><div>APPROVED</div><div>DKS</div></div>
	<div><div>SOURCE</div><div>PLUVIAL</div></div>	<div><div>FLOOD EVENT</div><div>1% AEP + 30%CC</div></div>	<div><div>FIGURE NUMBER</div><div>M02127-02_FIG_FL05</div></div>		<div><div>REVISION</div><div>2</div></div>	<div><div>DATE</div><div>14/08/2020</div></div>



MODEL OVERVIEW



LEGEND

- SFRA SITE AREA**
- FLOOD LEVELS (m OD)**
- FLOOD EXTENTS BANDED BY DEPTH (m)**
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 - FLOOD EXTENTS HAVE BEEN PROCESSED IN LINE WITH SURFACE WATER FLOOD MAPPING BEST PRACTICE.

Sustainable Drainage Strategy

Lands at Kellystown, Clonsilla, Dublin 15

M02127-02_DG02 | September 2020

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APPENDIX A PLAN AREA / SUDS CONCEPT MASTERPLAN

1 INTRODUCTION

1.1 Terms of Reference

This Sustainable Drainage Strategy (SDS) was commissioned by Fingal County Council (hereafter *Fingal CC*) to form a Surface Water Management Plan (SWMP) in conjunction with a Strategic Flood Risk Assessment (SFRA) for lands at Lands at Kellystown, Clonsilla, Dublin 15 (hereafter *Plan Area*).

1.2 Introduction

Sustainable Drainage Systems or SuDS is a way of managing rainfall that minimises the negative impacts on the quantity and quality of runoff whilst maximising the benefits of amenity and biodiversity for people and the environment as defined in The SuDS Manual C753 (2015)¹ published by CIRIA.

SuDS, if designed correctly, has the ability to deliver multiple benefits. The layout of SuDS should consider the inter-relationships with the following aspects of the Plan Area (all of which have delivery objectives which are compatible with delivery of wider planning objectives including:

- Biodiversity
- Parks, Open Space and Recreation
- Sustainable Water Management
- Archaeological and Architectural Heritage
- Landscape

The SDS outlines the preferred approach for the management of rainfall runoff within the development to ensure no increase in flood risk to any development at the Plan Area or elsewhere with delivery of wider water quality, amenity and biodiversity benefits.

1.3 Sustainable Drainage Strategy Objectives

The purpose of the SDS is to set out a framework for the delivery of a drainage system which will integrate multi-functional SuDS components within the Plan Area to manage water at or near the surface, providing high quality blue / green infrastructure which enhances and improves biodiversity and brings significant community benefits within developed areas.

The layouts and components as depicted within the SDS are not fixed and there is flexibility as to how the final layout will be defined. The proposed development should carefully consider the findings and recommendations of the SDS when developing outline and detailed layouts.

The SDS seeks to demonstrate that the objectives set out in Fingal Development Plan (2017 – 2023) and requirements set out in GDSDS (Volume 3) SuDS Requirements can be satisfied.

The Fingal Development Plan 2017-2013 sets out the following objectives which relate directly to the delivery of SuDS or where delivery of the objective can be (in part) facilitated through the provision of suitably designed and constructed SuDS.

- SW01, SW04, SW06, SW10
- CC01
- NH32, NH34, NH36,
- GI11, GI02, GI03, GI04, GI07, GI08

The SDS is in line with the requirements and criteria set out in the Greater Dublin Strategic Drainage Study (GDSDS) (2005) and the Greater Dublin Regional Code of Practice for Drainage Works (2012) and ensures that drainage from the Plan Area is managed sustainably.

¹ CIRIA (2015). The SuDS Manual C753. [online] Available at: https://www.ciria.org/Resources/Free_publications/SuDS_manual_C753.aspx [Accessed 20 May 2019]

As well as establishing water quantity and quality criteria, discussed later in this report, the GDSDS provides the following definitions:

- *SuDS involve a change in our way of managing urban run-off from solely looking at volume control to an integrated multi-disciplinary approach which addresses water quality, water quantity, amenity and habitat (Vol 3 p.132)*
- *SuDS minimise the impacts of urban runoff by capturing runoff as close to source as possible and then releasing it slowly (Vol 3 p.133)*

In addition, the SDS is prepared generally in accordance with industry guidance - The SuDS Manual C753 (published by CIRIA 2015) and the SuDS Design and Evaluation Guide (produced by McCloy Consulting and Robert Bray Associates 2017).

Requirements for climate change allowances are as per OPW 'General Map User Guidance Notes'².

² OPW (2019) General Map User Guidance Notes (2019) Available at: https://www.floodinfo.ie/map/general_map_user_guidance_notes/ [Accessed 18 June 2019]

2 PLAN AREA DETAILS

2.1 Plan Area Location

Refer to Section 2.1 of the SFRA.

2.2 Plan Area Description

Refer to Section 2.2 of the SFRA.

2.3 Proposed Development

Notwithstanding particular objectives of the Local Area Plan that this assessment is intended to inform, Zoning objectives contained within the Fingal Development Plan 2017 – 2023 are shown in Section 2.5 in the SFRA.

In line with zoning objectives, development proposals for the Plan Area will include the construction of residential properties, commercial areas, open space and associated infrastructure. The proposed development will lead to an increase to the extent of impermeable areas within the Plan Area, resulting in an increased rate and volume of runoff when compared to the existing scenario.

2.4 Geology and Hydrogeology

Geological Survey of Ireland mapping has been reviewed and the following noted:

- Geological mapping indicates that the Plan Area is predominantly underlain by a bedrock of limestone and shale with superficial deposits of till derived from limestone.
- A borehole is located approximately 450 m to the north of the Plan Area.
- The Plan Area is noted as having a high vulnerability for groundwater to be contaminated by human activities.
- Areas within the northern and southern extent of the Plan Area are situated within a locally important aquifer area where bedrock is moderately productive only in local zones. The central extent is situated within a poor aquifer area where bedrock is generally unproductive except for local zones.
- The Plan Area is situated within the Liffey and Dublin Bay WFD catchment.

No Site Investigation (SI) or infiltration testing has been conducted within the Plan Area.

2.5 Water Environment

Refer to Section 2.3 of the SFRA.

2.6 Drainage Infrastructure

Refer to Section 4.5.1 of the SFRA.

2.7 Existing Utilities

With exception of surface water sewers (discussed subsequently), no other utility records have been provided for the purposes of undertaking the SDS. Whilst the Plan Area is currently undeveloped, there is potential for presence of further utilities (including additional surface water) within the Plan Area.

For the purposes of the SDS, the conceptual layout does not give material consideration to exact location of existing utilities. Any existing utilities which cannot be relocated or abandoned will have to be considered prior to progressing outline / detailed design (including SuDS design) for the Plan Area.

2.8 Plan Area Constraints

Table 2-1 summarises the constraints / parameters which will inform the development of the SDS.

Table 2-1 Plan Area Constraints / Parameters

Attribute	Comments	Confidence in Info (L/M/H)	Comment / Influence on SuDS design
Flooding	Flood risk at the Plan Area is assessed in the SFRA.	H	Hydraulic model results, presented in the SFRA, have determined existing flow routes, informed modified flow routes and pluvial flow routes and extents should be considered at all stage of design.
Existing Drainage Infrastructure	<p>A 1200 mm diameter surface water sewer known as the 'Riverwood Storm Outfall' traverses the south eastern section of the Plan Area.</p> <p>An open drain runs from north to south through the eastern part of the Plan Area. The open drain is culverted for agricultural access at the centre of the Plan Area and discharges through an arch culvert beneath of Luttrellstown Road.</p>	M	<p>A detailed drainage strategy will be required to ensure that any 'off-site' drainage function served by existing assets within the Plan Area is preserved.</p> <p>A recommendation of the SFRA is to maintain and protect the open drain as an open channel on its present alignment or alternative diverted form as it serves as a drainage function to a wider area extending beyond the Plan Area.</p>
Utilities	Other utilities may be present – location unknown.	L	CAT scan / trial pits required – extent dependent on options taken to detailed design.
Topography	Based on topographical survey and LiDAR data, overall levels vary between 54 metres Ordnance Datum (m OD) to 64 m OD generally falling from north east to south west.	H	The topography will influence the existing and modified flow routes / management train.
Land use existing and proposed	<p>Used predominantly as agricultural land with residential dwellings to the west and sports pitches to the east.</p> <p>Proposals include the development of residential area, commercial units, open space and associated infrastructure</p>	H	SuDS components / design should be compatible with residential and commercial development design and landscape character.
Size of Plan Area	Plan Area is approximately 57 ha.	H	

Attribute	Comments	Confidence in Info (L/M/H)	Comment / Influence on SuDS design
Ground Contamination	No Site Investigation (SI) has been conducted within the Plan Area.	L	Ground Contamination issues are unknown. SI required – extent dependent on options taken to detailed design.
Infiltration potential	No Site Investigation (SI) or infiltration testing has been conducted within the Plan Area.	L	SI required – extent dependent on options taken to detailed design. Observations indicate that lands within the Plan Area are likely be suitable for infiltration.
Archaeological and Architectural Heritage	Ring Barrows ³ (circular enclosure) is located within the Plan Area which is designated as a recorded monument.	H	Will impact on implementation of SuDS features within a 20 m radius of the protected structure/recorded monument.
Local Authority requirements	Fingal CC has identified that it does not currently take in charge permeable pavement. Fingal CC Parks Department has indicated that SuDS should not take up greater than 10% of amenity space (to ensure that the space is useable for other purposes)	H	Where SuDS infrastructure is not taken in charge, these assets (if provided) would have to be managed by a maintenance company. Where SuDS requirement exceeds 10% of the amenity provision, the design is to consider that all lands in excess of 10% of the amenity space is only used for storage of excess runoff during extreme rainfall events. At all other times this space would serve the primary amenity function (therefore being multi-functional).

³ Fingal County Council. (2016). Appendix 2: Record of protected structures | Fingal County Council Online Consultation Portal. [online] Available at: <https://consult.fingal.ie/en/consultation/draft-fingal-development-plan-2017-%E2%80%932023-stage-2/chapter/appendix-2-record-protected> [Accessed 18 Nov 2019].

3 SuDS STRATEGY

The SDS outlines the preferred approach for the management of rainfall runoff within the development to ensure no increase in flood risk to any development within the Plan Area or elsewhere with delivery of wider water quality, amenity and biodiversity benefits.

The approach to the SDS is as per the guidance from the CIRIA SuDS Manual which is summarised as follows:

- Identify existing and modified flow routes.
- Identify suitable mechanism of surface water discharge for Plan Area drainage.
- Allocate a management train and appropriate number of subcatchments to provide the collection, treatment, storage, conveyance of runoff across the Plan Area.
- Identify a range of SuDS components which are in keeping with the proposed landscape character and other objectives for the Plan Area. At this stage, any definition of SuDS features for specific areas of the Plan Area should not be treated as 'fixed' aspects of the design.

3.1 Flow Route Analysis

3.1.1 Existing Flow Route Analysis

The natural hydrology and existing characteristics have been assessed through flow route analysis to determine how the Plan Area behaves naturally before development and are illustrated in Figure 3-1. There are a number of existing flow routes identified which enter / exit the Plan Area. The detailed SuDS design will have to consider how flows along these flow paths will be managed.

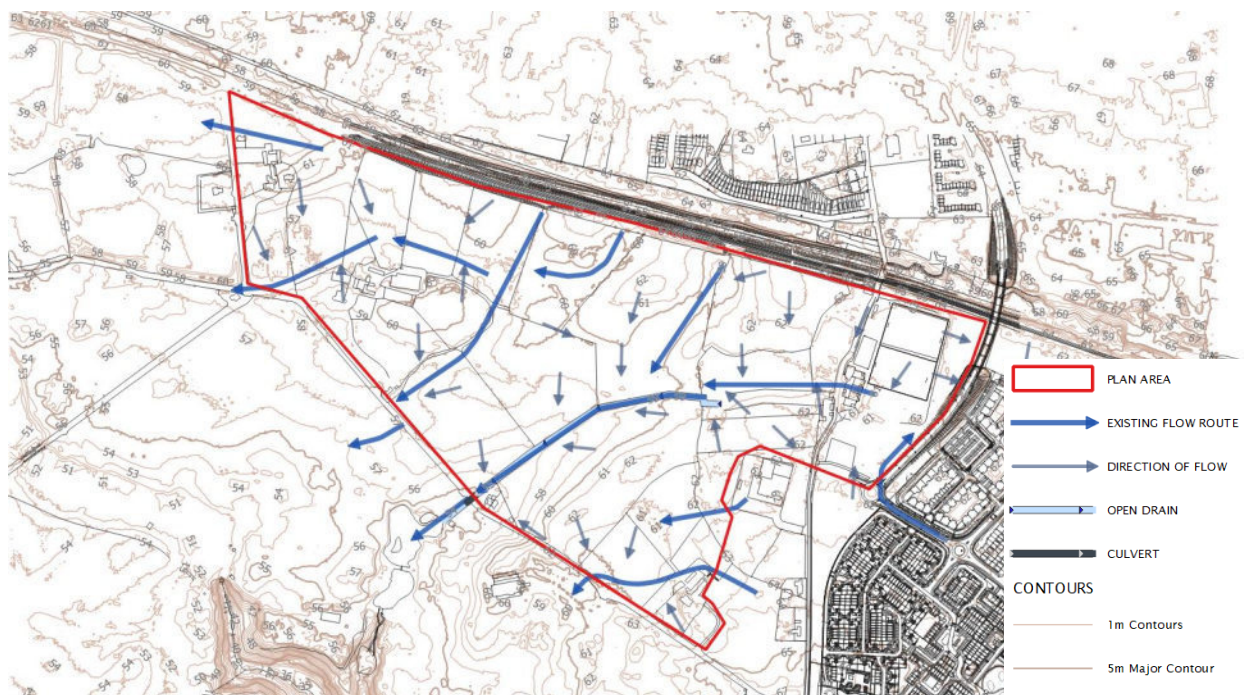


Figure 3-1 Existing Flow Route Analysis

3.1.2 Modified Flow Route Analysis

The modified flow route analysis is the basis for low flow conveyance, overflow arrangements and exceedance routes when design criteria are exceeded. The modified flow routes have been assessed in conjunction with the preliminary Plan Area layout and inform the concept SuDS design by suggesting a preferential flow path through the Plan Area.

As discussed elsewhere in this report, there is likely to be good infiltration potential at the Plan Area but no SI data is available at the time of writing. Therefore, two modified flow routes drawings are presented; Figure 3-2 based on infiltration and Figure 3-3 based on attenuation. Exceedance flow paths are also shown.

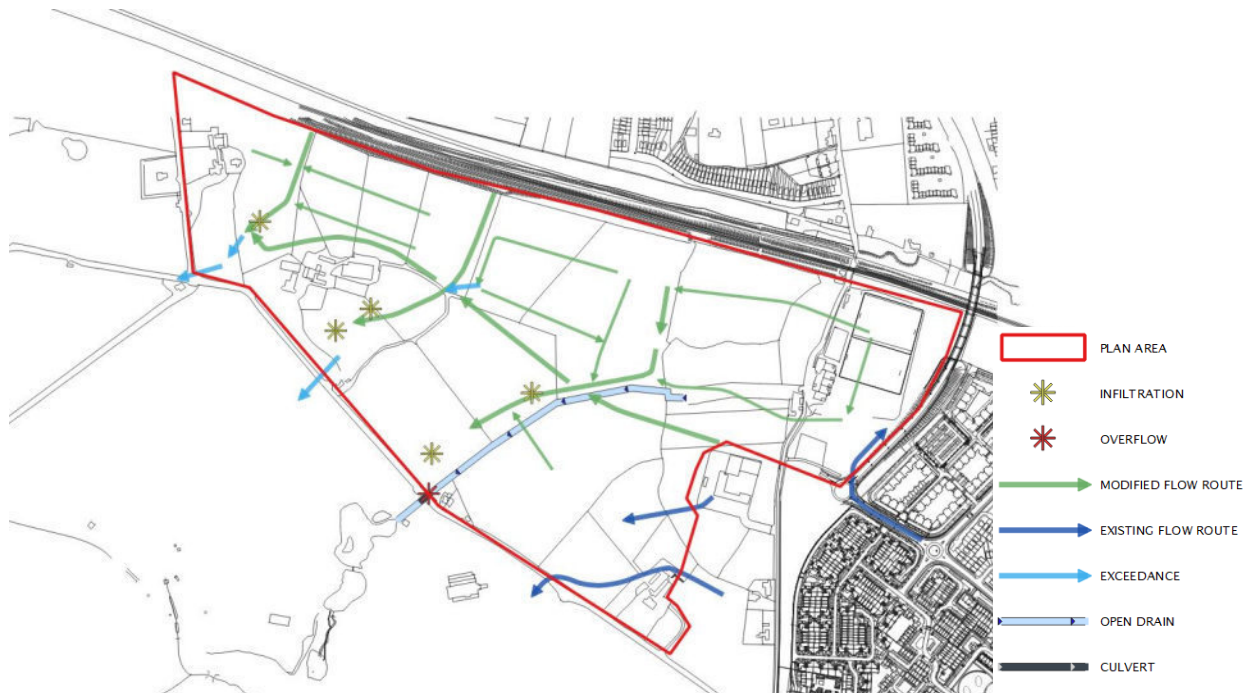


Figure 3-2 Modified Flow Route Analysis for Infiltration

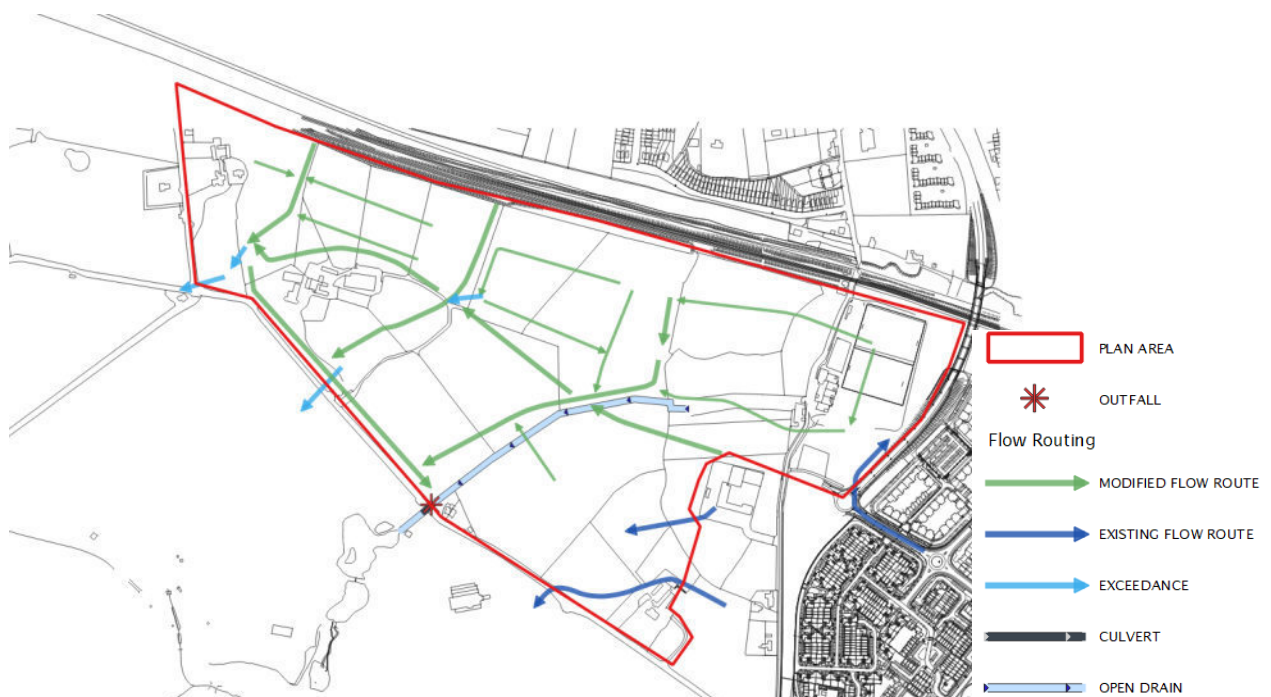


Figure 3-3 Modified Flow Route Analysis for Attenuation

3.2 Subcatchments

Figure 3-4 demonstrates how runoff from the Plan Area will be managed in subcatchments using natural overland conveyance. Flows will be conveyed from one subcatchment to the next along one or more management trains, following the modified flow routes.



Figure 3-4 Subcatchments

3.3 Drainage Hierarchy

The way that runoff is disposed from the Plan Area should adhere to the following hierarchy of discharge:

- i. Re-Use – Where opportunities arise for rainfall harvesting within proposed development plans, these should be maximised.
- ii. Infiltration – Infiltration could be utilised subject to outcome of SI.
- iii. Watercourse – There are no natural watercourses in the vicinity of the Plan Area. Existing open drains collect and convey flows and could be suitable for receiving runoff discharge.
- iv. Surface Water Sewer – A surface water sewer exists within the Plan Area.
- v. Combined Sewer – Not applicable.

Given that the viability of infiltration will be pending outcome of SI, the preferred discharge route from the Plan Area will be via infiltration with discharge to an open drain and / or surface water sewer only if ground conditions are not suitable.

3.4 Water Quantity

Sufficient attenuation is to be provided to ensure that there is no unpredictable flooding within the Plan Area, future buildings are protected and no increase in flood risk elsewhere. Flows can be temporarily stored at points of collection (source control), along the conveyance route and at the points of proposed storage.

The SDS identifies the potential for infiltration. Where infiltration is deemed suitable through SI, then sufficient storage will be provided to accommodate up to the 1% AEP rainfall runoff with allowance for climate change. In this scenario, discharge from Plan Area would only occur in the event of design horizon being exceeded.

Where infiltration is assessed through SI as not feasible then flows will be attenuated throughout the Plan Area and final flows attenuated to the rates prescribed in Table 3-1.

3.4.1 Climate Change

The future impacts of climate change on rainfall should be accounted for within the design of the drainage scheme.

Requirements for climate change allowances are as per OPW 'General Map User Guidance Notes' found through floodinfo.ie⁴ which recommended a 20% uplift in extreme rainfall depths for the Mid-Range Future Scenario (MRFS) and 30% for the High-End Future Scenario (HEFS).

In line with the current industry standard, the MRFS is applied for the climate change calculation in this report.

3.4.2 Controlled Flow Rates

The flow rates in the following table are based on the requirements of GDSDS and FCC for restriction of post-development runoff to greenfield rates. They provide guidance on the extent to which flows will be controlled from any proposed development within the Plan Area if infiltration is deemed not feasible / possible. The flow rates are calculated using Flood Studies Supplementary Report (FSSR) methodologies based on catchment specific characteristics; Soil WRAP Class 2 and SAAR of 765 mm.

Table 3-1 Attenuation Flow Rates

Return period	Attenuation Rate (l/s/ha) Greenfield Rate*	Attenuation Rate (l/s/ha) Qbar or 2 l/s/ha**
100% AEP (1 in 1 year)	1.76	2.06 (Qbar)
3.33% AEP (1 in 30 year)	3.40	2.06 (Qbar)
1% AEP (1 in 100 year)	4.05	2.06 (Qbar)
1% AEP (1 in 100 year) + 20% CC	4.86	2.06 (Qbar)
1% AEP (1 in 100 year) + 30% CC	5.27	2.06 (Qbar)

*Where volume is controlled to Greenfield volumes – flows attenuated to respective GF rate

**Volume not controlled – all return periods attenuated to Qbar or 2 l/s/ha whichever is the greater.

3.4.3 Storage of Runoff & Discharge Location

Runoff will be attenuated throughout the Plan Area within respective subcatchments. SuDS components for collection, storage and conveyance of flow will be selected on the basis of suitability for the development design and in consideration of relevant constraints.

Attenuation storage will be sized for the 1% AEP (with allowance for climate change) critical rainfall event. It is noted that while the Plan Area is likely to facilitate infiltration, due to a lack of SI data, indicative attenuation storage volumes in Table 3-2 do not include an allowance for infiltration.

⁴ OPW (2019) General Map User Guidance Notes (2019) Available at: https://www.floodinfo.ie/map/general_map_user_guidance_notes/ [Accessed 18 June 2019]

Table 3-2 Indicative Attenuation Storage Volumes

Return period	Indicative Attenuation Volume* (m ³ storage / m ² development)
100% AEP (1 in 1 year)	0.02
3.33% AEP (1 in 30 year)	0.05
1% AEP (1 in 100 year) + CC	0.09

* Attenuated to Qbar or 2 l/s/ha whichever is the greater – no allowance made for infiltration

On the basis of a positive discharge system, the final discharge from the proposed development will likely be to the open drain which flows through and discharges to the south of the Plan Area.

Where discharge is via infiltration flows will be discharged to ground at the respective infiltration locations. The storage volumes for infiltration features are likely to result in different storage volumes to those provided for guidance above.

3.4.4 [Designing for Exceedance](#)

Plan Area levels and landscaping should be designed to route exceedance flows away from buildings. Overland flow routes should be managed in a safe manner by utilising the drainage systems, roads and public spaces to convey and control floodwater during extreme events. Exceedance outflows from the Plan Area will be designed to mimic the existing flow patterns and ensure that there is no increased risk to others outside the Plan Area.

3.5 Water Quality

3.5.1 [Water Quality Requirements](#)

Proposals for the Plan Area are likely to comprise mixed use development and therefore considered to be low risk. Treatment requirements are summarised as follows:

- Roof only runoff – removal of solids
- Roads used for vehicular movement – 1-2 stages of treatment dependant on SuDS component selected
- Commercial / delivery areas – 2-3 stages of treatment dependant on SuDS component selected

Design of individual SuDS features for water quality treatment should comply criteria set out in the CIRIA SuDS Manual (respective chapter on SuDS component).

Where outcome from SI infiltration testing deem the existing ground conditions to have sufficient capacity for infiltration, groundwater risk screening as set out by the SuDS Manual (Chapter 26 Table 26.5, 26.6) should be undertaken to demonstrate manageable risk. If infiltration is deemed suitable or attenuation is proposed with positive discharge point from Plan Area, the 'simple index approach' is to be used to validate design for water quality treatment (as set out in Chapter 26). Application of treatment indices applied in the simple index approach will depend on whether the proposed system is attenuation or infiltration (using SuDS Manual 26.3 and 26.4 respectively).

Sufficient treatment is to be provided prior to flows being attenuated in any SuDS areas being promoted for biodiversity / amenity function.

3.5.2 [Construction Management](#)

A Management Plan will be required to outline how surface water runoff will be managed during construction and ensure appropriate mitigation is in place to minimise risk of flooding and pollution during construction.

3.6 Amenity

Amenity focuses on the usefulness and aesthetic elements of SuDS design associated with features 'at or near the surface' and considers both multi-functionality and visual quality.

The following are highlighted for consideration as part of the development of the SuDS design:

- SuDS should be 'legible', i.e. understandable in terms of their operation to people using the area as well as maintenance personnel.
- The visual character of the SuDS will enhance the development.
- Spaces and connecting routes are multi-functional and can be used when not providing a SuDS function for surface water management.
- The design shall ensure the proposed development is generally accessible to meet FCC objective GI03 and be safe 'by design'.
- Consideration should be given to information boarding to inform Plan Area users of the benefits of the SuDS scheme and also give guidance to the potential of temporary / permanent presence of surface water storage.

3.7 Biodiversity

Biodiversity must be considered in the design at catchment scale to create sympathetic blue / green infrastructure and at local scale to provide habitat and connectivity linkages within and around the proposed development.

The following are highlighted for consideration as part of the development of the SuDS design:

- Ensure water quality within the water environment by following the steps of the simple index approach as per CIRIA SuDS Manual guidance (Chapter 26, Box 26.2).
- Demonstrate ecological design and the creation of habitats within the SuDS corridor to meet objectives NH02, GI03 and GI25.
- Keep water at or near the surface as it flows through the SuDS management train towards to wider landscape to ensure habitat connectivity.
- Confirm management practices to enhance habitat development during maintenance.

3.8 SuDS Components

Table 3-3 summarises a comprehensive review of potential SuDS components relative to Plan Area characteristics. It is noted that at initial / concept stage, this is not an exhaustive list and further information relating to the area is likely to lead to refinement of the audit.

It is noted that the Plan Area is likely to be reasonably free draining therefore any SuDS components selected which incorporate permanent water (such as ponds and wetlands) may need to be lined to ensure that they appear and function as intended.

Table 3-3 SuDS Component Audit

SuDS Component	Description	Suitable?	Rationale
Green Roofs	Green roofs are areas of living vegetation, installed on the top of buildings.	Possible	Proposed roofs have potential for green / blue roof solutions. There is potential to integrate into roof structures as part of design to promote biodiversity as well as reducing runoff and attenuating peak flows. This would meet Objective SW06 and GI33 in the Fingal Development Plan 2017-2023 which encourages the use of Green Roofs on apartments and provides benefits for biodiversity. Use of green roofs may be influenced by required landscape character for the Plan Area, e.g. if apartments are proposed.
Infiltration systems	Infiltration systems allow surface water runoff to infiltrate and filter through to the sublayer layer before returning to the water table.	Possible	Based on the Soil WRAP class and Plan Area observations, discharge via infiltration could be suitable subject to SI infiltration testing. Due to lack of SI data, infiltration features have not been included in the concept drainage strategy but, in line with the drainage hierarchy, should be prioritised over discharge to surface water bodies / sewers where possible.
Filter strips	The hard edge from a pavement to a filter strip is generally defined by a kerb.	Yes	There is potential to incorporate filter strips into the development to collect and provide treatment surface water runoff.
Filter drains	Filter drains, also known as a French drain, is an open stone filled trench.	Possible	Final appearance (at surface) is unlikely to be in keeping with the proposed landscape character of the Plan Area.
Swales	Swales are shallow, flat bottomed vegetated channels which can collect, treat, convey and store runoff.	Yes	Swales could be suitable to convey flows between other SuDS features and connect green-space areas. This would meet Objective GI03, GI11, GI21, GI25 and NH02 in the Fingal Development Plan 2017-2023.
Bioretention systems / rain planters	Bioretention systems are shallow landscaped depressions used to reduce runoff rates, volumes and treat pollution through the use of engineered soils and vegetation.	Yes	There is potential to incorporate bioretention systems into the development to collect roof and road runoff to attenuate and treat the water as well as providing amenity / biodiversity benefits.

SuDS Component	Description	Suitable?	Rationale
Tree pits	Trees pits attenuate surface water runoff underneath by utilising the void within each tree's rooting zone.	Yes	Trees will form part of the proposed Plan Area layout; therefore, there is potential to incorporate tree pits within the SuDS design.
Permeable pavements	Permeable pavements allow rainwater to infiltrate through the surface and into the underlying structural layers where it is temporarily stored before infiltrating or discharged downstream.	Possible	New Roads and hardstanding areas will be provided as part of the development therefore there is scope to include permeable paving within the development which would support Objective SW04 in the Fingal Development Plan 2017-2013. County Council do not currently take in charge permeable paving. This requires consideration in terms of future ongoing maintenance consideration.
Rain harvesting	Rainwater harvesting (RWH) involves the collection of rainwater runoff for reuse.	Possible	Rainwater reuse could be utilised to reduce surface water runoff and reduce demand on potable water supply. It is unlikely to yield sufficient decreases in flow rates to satisfy the requirements of the drainage strategy but may be considered at the discretion of the client / developer but will not form part of the primary drainage strategy.
Attenuation storage tanks	Attenuation tanks are used to create below ground storage before infiltrating or controlled release or use.	Possible	<p>The relatively high discharge level will limit the potential for storage tanks (generally they require sufficient cover to facilitate structural loading).</p> <p>Removal of silt ingress to tanks is likely to pose a significant maintenance risk due to lack of direct accessibility.</p> <p>Objective DMS74 of the Fingal Development Plan 2017-2023 states that "underground tanks and storage systems will not be accepted under public open space, as part of a SuDS solution". In addition, preference should be given to above ground attenuation features to maximise benefits for water quality, amenity and biodiversity to support the Objectives outlined within the Development Plan.</p> <p>Below ground storage / tanks should only be used as a last resort where it has been demonstrated that other Green Infrastructure measures are not feasible. This assessment has found no reason why above ground surface water features would not be feasible.</p>

SuDS Component	Description	Suitable?	Rationale
Detention basins	Detention basins are landscaped depressions that are normally dry except during and immediately after rainfall events.	Yes	Detention basins could be utilised to attenuate flows, improve water quality, and reduce runoff rates prior to discharge. They can be used for recreation and public open space which would support Objectives GI03, GI11, GI21, GI25 and NH02 in the Fingal Development Plan 2017-2023 which encourages the provision of accessible parks, open spaces and recreational facilities alongside the sustainably managing water within the Plan Area.
Ponds & wetlands	Ponds and wetlands are features with a permanent pool of water that provide attenuation and treatment of surface water runoff.	Yes	<p>There is potential to utilise ponds and wetlands within the development which would specifically support Objectives SW01, NH02, GI21, GI25, GI31 and GI32 in the Fingal Development Plan 2017-2023 and form part of a park landscape.</p> <p>Ponds with a permanent water level are proposed for amenity / biodiversity reasons within the open green space / park areas and can be designed to also provide a water storage / treatment benefit.</p>

4 SUMMARY AND RECOMMENDATIONS

4.1 Summary

This Sustainable Drainage Strategy outlines the approach and criteria that should be followed when developing a SuDS design as part of any future proposals for the Plan Area. The report includes design considerations for managing quantity, quality, amenity and biodiversity as well as demonstrating flow routes and sub-catchments.

A concept SuDS layout, based on the sub-catchments, modified flow routes and SuDS component audit, has been incorporated in the overall proposed layout for the Plan Area. Surface water drainage proposals that were appropriate with and complemented the overall Plan Area layout and character were developed and agreed during a number of design team meetings hosted by Fingal CC.

The Plan Area proposed layout is included in Appendix A. The conceptual layout, including SuDS, will be developed through outline and detailed design in parallel with development and finalisation of the proposed development layouts.

In addition to general design criteria outlined in the SDS, the following Plan Area specific recommendations are made to guide and improve sustainable surface water drainage management.

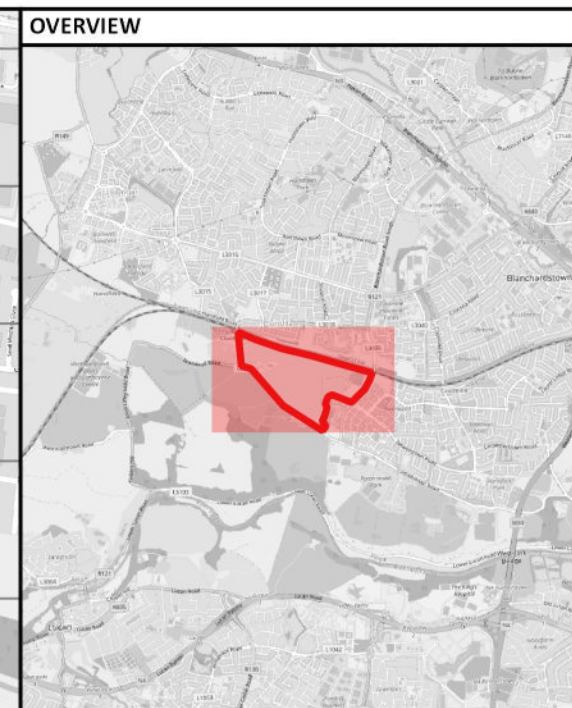
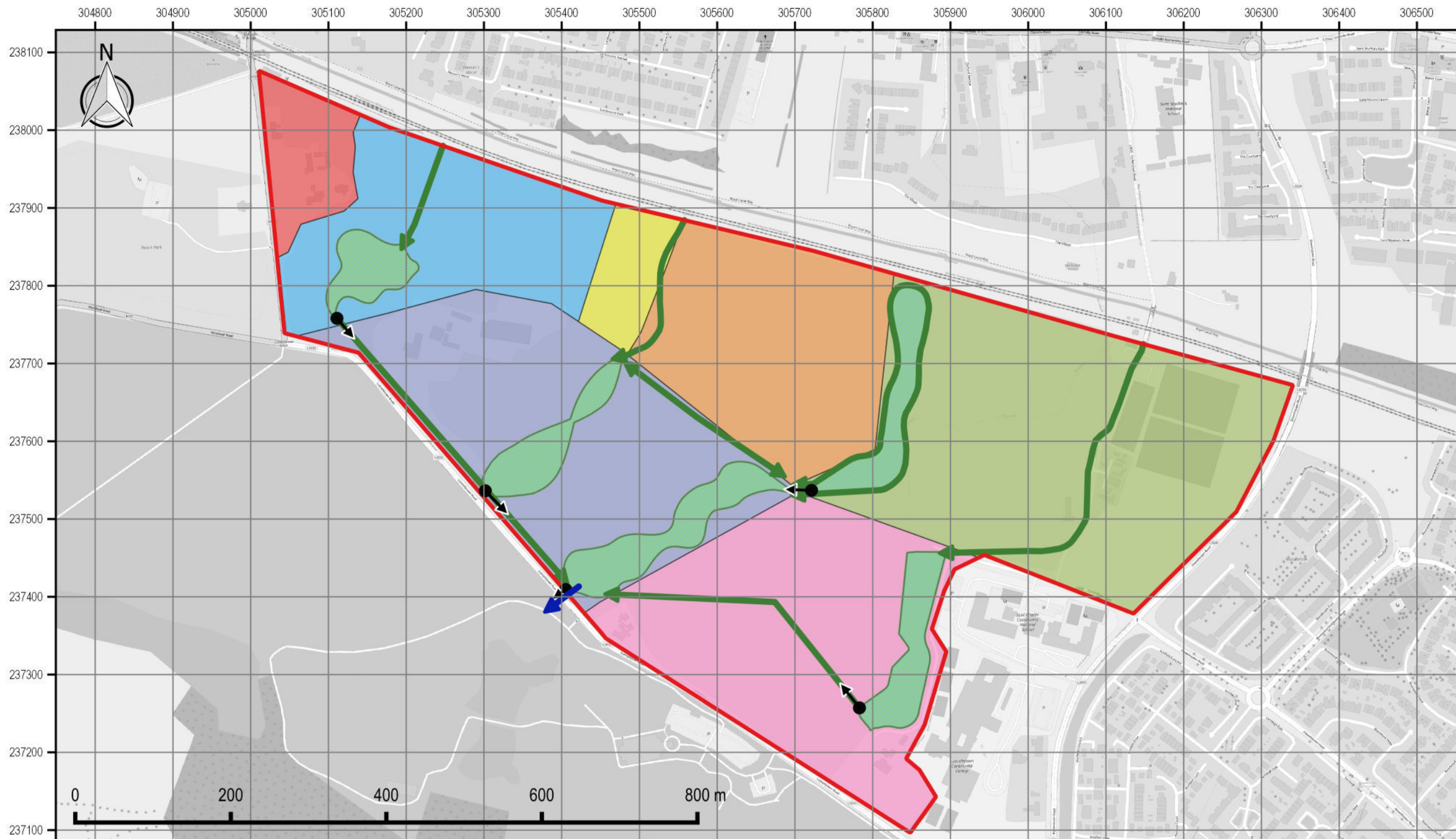
4.2 Recommendations

The following recommendations are made for the development of the SuDS / Sustainable Drainage Strategy for the Plan Area.

- The Plan Area has been identified as having potential for infiltration. Consideration has been given to the use of infiltration throughout the SDS. Where infiltration is not feasible, provision of attenuation storage with positive discharge outlet will be required.
- Fingal CC will be required to be satisfied through demonstration (SI and risk screening / assessment) that there is sufficient capacity within the Plan Area geology to infiltrate and that the risk to receiving groundwater can be suitably managed.
- Future proposed development layout designs to consider the existing flow route analysis and be undertaken in conjunction with the SuDS design to facilitate consideration of updated / amended modified flow routes.
- The SuDS / Sustainable Drainage Strategy will provide a management train through definition of subcatchments to maximise treatment and storage capacity.
- No SuDS features are to be located within 20 m of the protected structure / recorded monument.
- Application of greenfield runoff rate, dependent on adequate provision of 'long term storage / losses' to be agreed with Fingal CC.
- Final route of discharge from the proposed development to be proven and agreed as part of outline / detailed design process. The developed SuDS design should demonstrate that there is no increased flood risk to others, including residual risk from exceedance flow paths.
- Ownership and maintenance obligations for surface water drainage features should be established, and provision should be made by the relevant party for preventative inspection and maintenance.
- A construction management plan will be required to ensure appropriate mitigation is in place to minimise risk of flooding and pollution during construction.

Appendix A

Plan Area / SuDS Concept Masterplan



LEGEND


- PLAN AREA
- SUDS COMPONENTS
- CONTROL
- MODIFIED FLOW ROUTE
- EXCEEDANCE FLOW ROUTE

SUB-CATCHMENT

- A
- B
- C
- D
- E
- F
- G



Images show sample SuDS schemes using permeable surfaces, swales, tree pits, filter strips and basins to demonstrate potential landscape design and character of the Plan Area. SuDS components appropriate for proposed development to be decided at outline / detailed design stage.

<div><div><div>M^cCloy</div><div>Consulting</div></div><div></div></div> <div>Mossley Mill, Lower Ground (West), Carnmoney Road North, Newtownabbey BT36 5QA T: 028 9084 8694 E: info@mccloyconsulting.com w: www.mccloyconsulting.com</div>	DESCRIPTION KELLYTOWN SUDS CONCEPT MASTERPLAN				DRAWING COPYRIGHT MCCLOY CONSULTING LTD. ALL RIGHTS RESERVED. BACKGROUND MAP CONTAINS OS DATA © CROWN COPYRIGHT (2020)
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**Comhairle Contae
Fine Gall
Fingal County
Council**



Appendix 3

Strategic Environmental Assessment (SEA) Screening Report



Draft Kellystown Local Area Plan (LAP)

Strategic Environmental Assessment (SEA)
Screening Report (Public Display)

BSM

Est.
1968

**Brady Shipman
Martin**

**Built.
Environment.**

Environmental
Assessment
**Built
Environment**

Client:

Fingal County Council

Date:

17 September 2020

DOCUMENT CONTROL SHEET

6721_RP_01_Strategic Environmental Assessment (SEA) Screening Report (Public Display)

Project No. 6721
Client: Fingal County Council
Project Name: Draft Kellystown Local Area Plan (LAP)
Report Name: Strategic Environmental Assessment (SEA) Screening Report (Public Display)
Document No. RP_01
Issue No. 04
Date: 17/09/2020

This document has been issued and amended as follows:

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02	Draft - updated	30 Jul 2020	Rebecca Dunlea	Thomas Burns
03	Final (Notice to EAs)	31 Jul 2020	Rebecca Dunlea	Thomas Burns
04	Final (Public Display)	17 Sep 2020	Rebecca Dunlea	Thomas Burns



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1. Introduction

1.1 Background

Fingal County Council (FCC) has prepared the Draft Kellystown Local Area Plan (LAP). The LAP seeks to establish a land use strategy for the proper planning and sustainable development of the lands at Kellystown, Dublin 15.

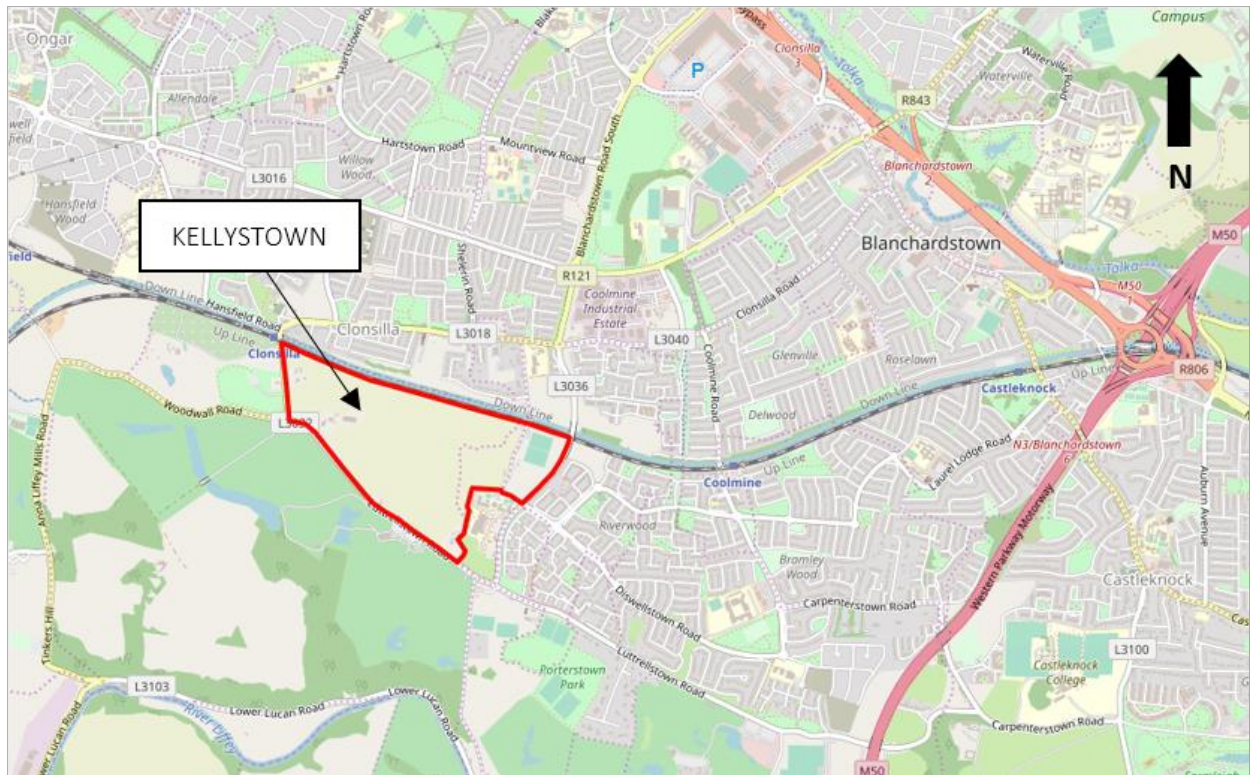
As set out in the following sections, this report constitutes a screening of the proposed Draft LAP for the requirement for Strategic Environmental Assessment (SEA) in accordance with the requirements of Article 14A of the Planning and Development Regulations 2001 (as amended) on the “*determination of need for environmental assessment of local area plan*”.

A ‘Notice Stage’ Screening for SEA was forward to the specified Environmental Authorities (as listed in Section 2.5 of this report) and submissions and observations received have been incorporated into the Draft LAP and this SEA Screening Report.

1.2 Kellystown

Kellystown is located circa (c.) 1.5km from Blanchardstown Town Centre, 1.8km from Blanchardstown Main Street and 9.8km from O’Connell Street, Dublin. The LAP lands are situated directly south of the Royal Canal and the Dublin-Maynooth railway line and between Porterstown Road and Diswellstown Road to the east and Clonsilla Road (R121) to the west. Luttrellstown Road, a country thoroughfare, frames the lands to the south. Diswellstown Road to the east offers an access point for vehicular and pedestrian traffic to cross the canal and railway line without traversing via a level crossing. The R121/Clonsilla Road, a well-trafficked route, defines the boundary of the lands to the west and is part of a network of roads linking Blanchardstown to Lucan, see Figure 1.1 below.

Figure 1.1: Location of Kellystown LAP Lands¹



¹ Environmental Protection Agency (EPA) website (2020): <https://gis.epa.ie/EPAMaps/default> (OpenStreet Maps)

2. Strategic Environmental Assessment (SEA)

2.1 Introduction

Strategic Environmental Assessment (SEA) is a process for evaluating, at the earliest possible stage, the likely environmental effects of implementing a Plan, in order to ensure that environmental considerations are addressed in an appropriate manner as part of the decision-making process, during the preparation of the plan and prior to its adoption.

SEA derives from European Directive 2001/42/EC (the SEA Directive) on the Assessment of the Effects of Certain Plans and Programmes on the Environment². This provides for the assessment of strategic environmental considerations at an early stage in the decision-making process.

Article 1 of the SEA Directive states that:

“The objective of this directive is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development, by ensuring that, in accordance with this directive, an environmental assessment is carried out of certain plans and programmes which are likely to have significant effects on the environment.”

This Directive was transposed into Irish law through:

- The European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004, (S.I. No. 435 of 2004) as amended by S.I. No. 200 of 2011; and
- The Planning and Development (Strategic Environmental Assessment) Regulations 2004, (S.I. No. 436 of 2004) as amended by S.I. No. 201 of 2011.

The former regulations, (S.I. No. 435 of 2004 as amended by S.I. No. 200 of 2011), relate to plans or programmes prepared for “agriculture, forestry, fisheries, energy, industry, transport, waste management, water management, telecommunications, tourism and town and country planning or land use”.³

The latter regulations (S.I. No. 436 of 2004 as amended by S.I. No. 201 of 2011) relate to SEA as it applies to plans or programmes where the context requires, “a development plan, a variation of a

² SEA DIRECTIVE 2001/42/EC: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32001L0042&from=EN>

³ See Section 9(1)(a)

*development plan, a local area plan (or an amendment thereto), regional planning guidelines or a planning scheme”.*⁴

The Draft LAP was screened for the requirement for SEA, taking account of the criteria set out in Schedule 2A of the SEA Regulations (S.I. No. 436 of 2004 as amended by S.I. No. 201 of 2011) which sets out the ‘*Criteria for determining whether a Plan is likely to have significant effects on the environment*’, to use to determine whether the Plan would be likely to have significant effects on the environment.

2.2 Determination for the Need for SEA

Article 3(4) of Directive 2001/42/EC requires that “*Member States shall determine whether plans and programmes, other than those referred to in Paragraph 2, which set the framework for future development consent of projects, are likely to have significant environmental effects.*” This process for deciding whether a particular plan, other than those for which SEA is mandatory, would be *likely to have significant environmental effects*, and therefore, would require SEA is known as ‘*Screening*’.

The criteria for determining (or Screening) whether a particular plan is *likely to have significant environmental effects* are set out in Annex II of the SEA Directive. These criteria are reproduced under Article 14 of S.I. No. 436 of 2004, as amended by S.I. No. 201 of 2011, and again in Schedule 2A of the Planning and Development Regulations 2001, as amended.

The Screening criteria are set out under two principal headings, each of which have a number of sub-criteria (refer to Section 5 of this report):

- Characteristics of a Plan; and
- Characteristics of the effects and of the area likely to be affected.

2.3 The Draft LAP and Screening for Requirement for SEA

The proposed Draft LAP was screened for the requirement for SEA in accordance with the requirements of:

- Directive 2001/42/EC (SEA Directive) and particularly Articles 3(3), 3(4) & 3(5) relate to ‘*Screening*’ for the requirement for SEA.

⁴ See Section 5(c)

- Planning and Development (Strategic Environmental Assessment) Regulations 2004, (S.I. No. 436 of 2004) as amended by S.I. No. 201 of 2011.
- Schedule 2A of the Planning and Development Regulations 2001, as amended, which sets out the “*Criteria for determining whether a plan or programme is likely to have significant effects on the environment*”.

This report constitutes the Screening of the proposed Draft LAP for the requirement for SEA in accordance with the above legislation that was issued for consultation with the Environmental Authorities outlined in S.I. No. 436 of 2004, as amended by S.I. No. 201 of 2011. The specified Environmental Authorities are listed in Section 2.5 of this report.

2.4 Appropriate Assessment and Relationship to Screening for SEA

The EU Habitats Directive (92/43/EEC) requires an ‘Appropriate Assessment’ (AA) to be carried out where a plan or project is *likely to have a significant impact* on a Natura 2000 Network. Natura 2000 Networks include Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

Stage 1 is to establish whether AA is required for the particular plan or project. Stage 1 is referred to as Screening for the requirement for AA and the purpose is to determine, on the basis of a preliminary assessment and objective criteria, whether a plan or project, alone and in combination with other plans or projects, could have significant effects on a Natura 2000 site in view of the site’s conservation objectives.

As set out in Department Circular Letter SEA 1/08 & NPWS 1/08⁵, Screening for AA is of relevance to screening for SEA in that “*where following screening, it is found that the draft plan or amendment may have an impact on the conservation status of a Natura 2000 site or that such an impact cannot be ruled out, adopting the precautionary approach:*

- *an Appropriate Assessment of the plan must be carried out; and*
- *in any case where a SEA would not otherwise be required, it must also be carried out.”*

Hence, where the Local Area Plan requires AA it shall also require Strategic Environmental Assessment (SEA).

⁵ Department of Environment, Heritage and Local Government (2008). *Circular Letter SEA 1/08 & NPWS 1/08*.

2.5 Consultation with Environmental Authorities

In accordance with Article 13A(4) (a) of S.I. No. 201 of 2011, Fingal County Council provided notice to the specified environmental authorities that implementation of the Draft LAP would not be likely to have significant effects on the environment and will seek submissions or observations prior to finalising the Screening for the Requirement for SEA. The specified environmental authorities are:

- i. *the Environmental Protection Agency (EPA);*
- ii. *the Minister for the Environment, Community and Local Government (now the Minister for Housing, Planning and Local Government);*
- iii. *where it appears to the planning authority that the plan or programme or modification of the plan or programme, might have significant effects on fisheries or the marine environment, the Minister for Agriculture, Marine and Food (now the Minister for Agriculture, Food and the Marine), and the Minister for Communications, Marine and Natural Resources (now the Minister for Communications, Climate Action and Environment);*
- iv. *where it appears to the competent authority that the plan or programme or amendment to a plan or programme, might have significant effects in relation to the architectural or archaeological heritage or to nature conservation, the Minister for Arts, Heritage and Gaeltacht Affairs; (now the Minister for Culture, Heritage and the Gaeltacht); and*
- v. *any adjoining planning authority whose area is contiguous to the area of a planning authority which prepared a draft plan, proposed variation, or local area plan.*

The planning authorities adjoining the area of Fingal County Council are Dublin City Council, South Dublin County Council, Kildare County Council and Meath County Council.

Submissions/observations were received from the following: (See Appendix A)

- Department of Communications, Climate Action and Environment (Waste Policy and Resources Efficiency Division).
- The Environmental Protection Agency (EPA).
- Meath County Council.

Table 2.1 below sets out how the points raised in the submissions/observations have been incorporated into the preparation of the Draft LAP and this SEA Screening Report

Table 2.1: Response of Draft Plan and SEA to Submissions received from Environmental Authorities (EA)

Environmental Authority	Comment	Response
Department of Communications, Climate Action and Environment (Waste Policy and Resources Efficiency Division)	The Waste Policy and Resources Efficiency Division (a division of the Department of Communications, Climate Action and Environment) advises consultation directly with their respective Regional Waste Management Planning Office regarding the development of the Final Plans.	Noted and acknowledged. Consultation will take place during the public consultation period.
Environmental Protection Agency	<p>Consultation noted. EPA sets out its role in relation to SEA and the SEA services and resources it makes available to plan-making and environmental assessment teams.</p> <p>Recommended Guidance & Resources</p> <ul style="list-style-type: none"> ■ <i>SEA of Local Authority Land Use Plans – EPA Recommendations and Resources.</i> ■ SEA pack. ■ SEA process guidance and checklists. ■ Inventory of spatial datasets relevant to SEA. ■ Topic specific SEA guidance including: <ul style="list-style-type: none"> - <i>Good practice note on Cumulative Effects Assessment.</i> - <i>Guidance on SEA Statements and Monitoring. Integrating climatic factors into SEA.</i> - <i>Developing and Assessing Alternatives in SEA.</i> - <i>Integrated Biodiversity Impact Assessment.</i> ■ Environmental Sensitivity Mapping (ESM) WebTool, www.enviromap.ie ■ EPA SEA Web GIS Tool ■ EPA WFD Application ■ EPA AA GeoTool <p>Proposed SEA Determination</p> <p>The EPA note the proposed determination regarding the need for SEA of the Plan, that SEA is not required.</p>	<p>Noted and acknowledged.</p> <p>Guidelines & resources will be considered within the assessment, where appropriate.</p> <p>These aspects will be considered and incorporated into the Draft LAP.</p>

Environmental Authority	Comment	Response
	<p>Sustainable Development FCC should ensure that the Plan is consistent with the need for proper planning and sustainable development. The Plan should align with key relevant higher level plans and programmes and is consistent with the relevant objectives and policy commitments of the NPF and the Eastern and Midlands RSES.</p> <p>State of the Environment Report <i>'State of the Environment Report - Ireland's Environment 2016'</i>. Consider the recommendations, key issues and challenges described within this report.</p> <p>Future amendments to the Plan Changes to the Plan, or modifications to the Plan, should be screened for potential for likely significant effects in accordance with the criteria set out in Schedule 2A of the SEA Regulations (S.I. No. 436 of 2004).</p> <p>Appropriate Assessment The Plan should comply with the requirements of the Habitats Directive where relevant.</p> <p>SEA Determination A copy of the determination should also be sent to the relevant environmental authorities consulted.</p>	
Meath County Council	<p>Consultation noted. MCC notes that the overall aims and objectives of the Draft LAP are consistent with that of the Fingal County Development Plan. The Plan does not require a detailed SEA.</p>	N/A

3. Planning Context

The Draft LAP has been guided by EU Directives, the National Planning Framework, Eastern Regional Spatial and Economic Strategy (RSES) and by the Fingal Development Plan 2017-2023 (including Variations to the Plan), in addition to various Government policy documents and guidelines. Variation No. 2 to Fingal Development Plan 2017-2023 (adopted June 2020) aligns the Development Plan with the National Planning Framework (NPF) and the Regional Spatial and Economic Strategy (RSES).

3.1 Fingal Development Plan 2017-2023

Fingal Development Plan 2017-2023, (including Variations to the Plan), sets out the Council's policies and objectives for the development of the County over the Plan period. It seeks to develop and improve, in a sustainable manner the social, economic, environmental and cultural assets of the County. The Draft LAP has had due regard to all relevant policies and objectives set out in the Development Plan.

The Core Strategy of the Plan requires local authorities to identify and reserve an appropriate amount of land in the right locations to meet the housing and population targets set out for the Region. LAPs prepared by Fingal County Council must be consistent with the allocations set out in the Core Strategy.

3.1.1 Fingal Development Plan: Metropolitan Area, and Key Town/Blanchardstown

Kellystown is located within the development boundary of Blanchardstown. Variation No. 2 of the Development Plan notes that Blanchardstown is classed as a Key Town and part of the Dublin City and Suburbs respectively in the Regional Spatial and Economic Strategy, (Table 2.2, page 18, Variation No. 2). Under the Total Residential Capacity provided under the Development Plan 2017-2023 (updated September 2019), Blanchardstown has capacity for 9,306 residential units on over 260ha of land (Table 2.7, page 22, Variation No. 2).

Variation No. 2 of the Development Plan recognises that Blanchardstown and Swords are the largest urban centres in Fingal and are classed as Key Towns. The towns function as part of the Dublin Metropolitan Area and will continue to perform the role of the County's primary development centres during the Plan period.

Blanchardstown, strategically located at the intersection of the N3 and M50 national roads, is the largest settlement centre in Fingal. Designated as a Level 2 'Major Town Centre' in the Retail Strategy

for the Greater Dublin Area (GDA), it is also one of the largest and most important retail centres in the State. In addition to Blanchardstown Town Centre, a number of large public sector employers are based in the area including FCC Offices, Connolly Hospital and the Institute of Technology Blanchardstown (ITB). The IDA has also been particularly successful in marketing Blanchardstown as a key location for foreign direct investment and a number of large Information and Communication Technology (ICT) and many pharmaceutical companies have long established operations in the area.

The Development Plan includes **Objective SS12** (page, 31, Variation No. 2) to:

“Promote the Key Town of Swords and the Metropolitan Area of Blanchardstown, respectively, as Fingal’s primary growth centres for residential development in line with the County’s Settlement Hierarchy.”

The Development Plan includes **Objective PM05** (page, 56) to:

“Develop a hierarchy of high quality vibrant and sustainable urban and village centres including the continued sustainable development and enhancement of:

- *Swords as the County Town of Fingal,*
- *Blanchardstown as a vibrant major town centre,*
- *Balbriggan as a large growth town,*
- *The network of town, village and district centres, and*
- *A range of local and neighbourhood centres.”*

Blanchardstown is detailed in Variation No. 2 of the Development Plan in *Section 4.2 Metropolitan Area* as the largest commercial and residential centre within the Metropolitan Area of Fingal, and a Level 2 ‘Major Town Centre’ in the Retail Strategy for the GDA.

Blanchardstown is conveniently located c. 7km from Dublin City centre; it is within easy reach of both Dublin Airport and the Port Tunnel. Blanchardstown, in addition to having strong links to the national rail network and the national road network (M2, M3 and M50) is well served by a bus and cycle network. Located in close proximity to the Liffey Valley Special Amenity Area Order (SAAO), the Phoenix Park and the Royal Canal as well as surrounding countryside. Blanchardstown enjoys a favourable environment in which to work and live.

The Development Plan sets out 18 No. Specific Objectives for Blanchardstown, including Objective BLANCHARDSTOWN 18 (page, 104), which requires the preparation of a number of Local Area Plans and Masterplans within Blanchardstown, including Kellystown LAP (ref.: Map Sheet 13, LAP 13C).

Objective BLANCHARDSTOWN 18

Prepare and / or implement the following Local Area Plans and Masterplans during the lifetime of this Plan:

- Cherryhound Local Area Plan (see Map Sheet 12, LAP 12.A)
- Kilmartin Local Area Plan (see Map Sheet 12, LAP 12.B)
- **Kellystown Local Area Plan (see Map Sheet 13, LAP 13.C)**
- Barnhill Local Area Plan (see Map Sheet 13, LAP 13.A)
- Navan Road Parkway Local Area Plan (see Map Sheet 13, LAP 13.B)
- Kilshane Masterplan (see Map Sheet 12, MP 12.A)
- Tyrrelstown Masterplan (see Maps Sheet 12, MP 12.B)
- Phoenix Park Masterplan (see Map Sheet 13: MP 13.A)
- Old School House Masterplan (Porterstown) (see Map Sheet 13, MP 13.B).

The Development Plan sets out a non-exhaustive list (page, 105) of the main elements to be included in Kellystown LAP.

- *“Provide for a programme for the phasing of construction of residential and commercial development in tandem with the delivery of transport, recreational, community and educational infrastructure.*
- *Facilitate the development of a new railway station on the existing Dublin-Maynooth line at Porterstown if required.*
- *Facilitate re-location of St. Mochta’s FC grounds to a new site north of the Luttrellstown Road. This new site will be in addition to a proposed 8 hectare public park.*
- *Provide pedestrian and cyclist access routes to the subject lands from the Riverwood / Carpenterstown area.*
- *Create a new neighbourhood public park of a minimum of 8 hectares. This park shall be linked to Porterstown Park, Luttrellstown Road and Beech Park by dedicated pedestrian and cyclist facilities.*
- *Protect the rural character and setting of Luttrellstown Road and enhance its use for pedestrians and cycling.*

- *Provide a study of the trees, hedgerows and other features of biodiversity value suitable for retention and a programme agreed with the Council's Biodiversity Officer as to how these features can be protected or improved and the biodiversity value of the Canal maintained or improved."*

3.1.2 Fingal Development Plan: Land Use Zoning

The LAP lands are indicated on **Sheet 13 Blanchardstown South** of the Fingal Development Plan 2017-2023, see Figure 3.1 below which provides an extract of Sheet 13 outlining Kellystown LAP lands (LAP 13.C).

Figure 3.1: Extract from the Development Plan Zoning Map Sheet 13 showing the area of Kellystown LAP (LAP 13.C)



Kellystown LAP lands extend to c. 56.4ha in total (0.4 occupied by roads) and for which the LAP will provide a statutory framework for the proper planning and sustainable development of the area which is subject to the following Land Use zoning Objectives:

- **'RA - Residential Area'** - *'provide for new residential communities subject to the provision of the necessary social and physical infrastructure'* The RA land use zoning extends to c. 30.2ha; and
- **'OS - Open Space'** - *where the land use zoning objective seeks to 'preserve and provide for open space and recreational amenities'*. The OS land use zoning extends to c. 25.8ha.

East of the LAP lands lies established 'RS - Residential' zoned lands and south-east of the land is zoned as 'CI - Community Infrastructure'. Lands to the south and west are zoned 'HA - High Amenity' and 'OS - Open Space'. Directly north of the LAP lands is a linear corridor comprising the Royal Canal and the Dublin - Maynooth railway line.

Due to the close proximity of the LAP lands to the Royal Canal, directly north, and the River Liffey, c. 700m to the south, the lands are designated a 'Highly Sensitive Landscape' and have a 'River Valley/Canal' Landscape Character Type.

3.1.3 Fingal Development Plan: Objectives for Kellystown LAP

Sheet 13 of the Development Plan includes a number of **Specific Objectives** of relevance to Kellystown LAP lands. A **Road Proposal** crosses the lands to connect the L3035 in the east to R121 along the western boundary of the lands, see Figure 3.1 above. The Road Proposal is identified in **Table 7.1 Road Schemes** of the Development Plan (page, 262) as the "Kellystown Road", and **Objective MT41** of the Development Plan (page, 261) seeks "to implement the Road Improvement Schemes indicated in Table 7.1". Fingal County Council has commissioned consultants to prepare an options assessment and preliminary design for this road proposal, which will be subject to separate appropriate environmental assessment and to a future public consultation prior to seeking consent.

The Development Plan also includes the following map based local objectives within Kellystown LAP area:

Local Objective 130: *Prepare a feasibility study on the location of a road bridge, crossing the Royal Canal and the Dublin-Maynooth railway, connecting north to the Ongar road. This location shall be determined in advance of, or part of, the adoption of the Local Area Plan for lands at Kellystown.*

Local Objective 137: *Preserve the existing pedestrian and vehicular right of way at the level crossing at Porterstown.*

Local Objective 144: *Protect the rural character and setting of the Luttrellstown Road and enhance its use for pedestrians and cyclists.*

Local Objective 146: *Provide for a burial ground of up to 4 hectares within the Kellystown area. This site is to be identified as part of, or in advance of, the adoption of Kellystown LAP.*

In relation to Objectives 130 and 137, Iarnród Éireann has recently commissioned consultants to prepare an options assessment and preliminary design for these projects and for electrification of the rail line.

In relation to Objective 146, Fingal County Council obtained planning consent for the graveyard and has contracted construction of Phase 1 of the development of the cemetery, which is currently on-going.

4. Kellystown Draft Local Area Plan (LAP)

4.1 Vision for the Draft LAP

The vision for Kellystown is intended to guide its long-term future growth through articulation of how the LAP lands will look, function and feel. The vision statement is based on community consultation (undertaken May-July 2019) and an analysis of the key opportunities and challenges for Kellystown.

The proposed Vision Statement for the area as set out in the Draft LAP states:

“The vision for Kellystown is to promote the development of a distinctive, sustainable, high quality new residential quarter, connected to the neighbouring suburbs of Clonsilla and Carpenterstown. Kellystown will provide a sustainable residential community, comprising a choice of high quality new homes, with a mix of dwelling types, size and tenure based around a new civic square that incorporates local services with new schools, public open space and access to high capacity public transport links.”

Kellystown will offer a good quality of life to its residents and balance the need for additional housing, with community, economic, cultural, educational and recreational facilities. The LAP seeks to create a place with a strong sense of community and to build on its existing identity by incorporating valuable existing elements of the built and natural environment. It is an objective of the LAP to develop new housing in tandem with infrastructural improvements including improved pedestrian and cycle connectivity, as well as enhanced public transport links.

4.2 The Draft Local Area Plan

The Draft LAP promotes best practice architectural solutions for the overall development and is a long-term strategy for the sustainable development of Kellystown, with a diversity and mix of uses to create a place where a balance is achieved between the natural and built environment.

Existing features, including treelines and hedgerows have been used to define the development areas, as has the underlying land use zoning and the proposed alignment of the Kellystown Link Road. The proposed phasing of the LAP also relates to the defined Development Areas.

The identified Development Areas are set out in the Sections below.

4.2.1 Eastern Development Area (DA1)

The Eastern Development Area (DA1) is approximately 14.9ha in area (gross) and is bounded by the Royal Canal to the north; Porterstown Link Road to the east; Luttrellstown Community College and

Scoil Choilm Community National School to the south, alongside the alignment of the proposed Kellystown Link Road; and Development Area 2 (DA2) to the west, with the boundary delineated by mature hedgerow. The entire Development Area is zoned *RA - Residential*.

The land currently accommodates St. Mochta's Football Club, St. Brigid's Halting Site, a small number of dwellings and agricultural/pasture land.

DA1 is been designed to accommodate a new high-quality residential quarter. The goal of the development area is to provide for a range of housing unit types, with a range of net densities of between c. 50-75 units/ha approximately, that would support a diverse and changing community.

4.2.2 Central Development Area (DA2)

The Central Development Area (DA2) is approximately 7.4ha in area (gross) and is located between the Kellystown Link Road and the railway line/Royal Canal, between the Eastern and Western Development Areas (DA1) & (DA3) respectively. The Development Area consists primarily of a single landholder and is currently characterised by high-end agricultural uses. Access to the land is currently achieved via Lutrellstown Road to the south. The entire development area is zoned *RA - Residential*.

DA2 will form the 'heart' of Kellystown and will provide a range of important amenities to support day-to-day life in the area, including a local centre, a primary and secondary school, a central open space/civic square as well as residential development, with a range of net densities of between c. 50-75 units/ha approximately. Access to the lands will be achieved from the proposed Kellystown Link Road.

An appropriately sized local centre is proposed to provide for everyday shopping facilities and other local facilitates and services (*e.g.* newsagent, doctor, pharmacy, hairdresser, *etc.*). It is anticipated that weekly shopping activities will be undertaken at the nearby Blanchardstown Shopping Centre or within the nearby centre of Clonsilla which provides for Level 4 retail provision.

4.2.3 Western Development Area (DA3)

The Western Development Area (DA3) is approximately 10.23ha in area (gross) and is located to the west of the LAP lands, bounded by the R121 to the west, the proposed Kellystown Link Road to the south, the railway/Royal Canal to the north and the Central Development Area (DA2) to the east. The Development Area consists of multiple landholdings, the largest being associated with Greenmount House. The lands are currently characterised by agricultural uses and dispersed rural style housing

fronting the R121. Access to the land is currently achieved via the R121. The development area is primarily zoned RA - *Residential* with limited OS - *Open Space* zoned lands included to the southwest corner (not proposed for development purposes).

DA3 is intended to accommodate a new high-quality residential quarter, with a range of net densities of between c. 50-75 units/ha approximately, given the proximity to Clonsilla Railway Station. The design approach will incorporate a strong urban form consisting of a series residential blocks, linked through an internal road network incorporating home zones with one access point onto the proposed Kellystown Link road.

4.2.4 Proposed Open Space Area

The southern portion of the LAP lands, located to the south of the proposed alignment of the Kellystown Link Road, are zoned 'OS' - *Open Space*. The lands are bounded to the east by Luttrellstown Community College and Scoil Choilm Community National School and to the south/east by Luttrellstown Road. The southern LAP lands are currently in agricultural use, and as well as containing a small number of dispersed dwellings, include protected structure No. 945 'The Gables' situated on Luttrellstown Road.

Table 4.1 below sets out the Development Areas characteristics for the Eastern, Central and Western Development Areas.

Table 4.1: Development Areas Identified in the Draft LAP

Development Area	Gross Area (Approximate hectares)	Density Range (Approximate Gross)	Approximate units	Community Infrastructure
Eastern (DA1)	14.9	38-57	571-857	Green routes
Central (DA2)	7.4	16-24	119-179	Primary & Secondary School Civic Square Local Centre Green Route Pedestrian Bridge
Western (DA3)	10.23	36-53	365-547	Green Route Open Space incorporating Ring Barrow
Total	32.53		1,055 - 1,583	

Figure 4.1: Kellystown Draft LAP Development Areas⁶

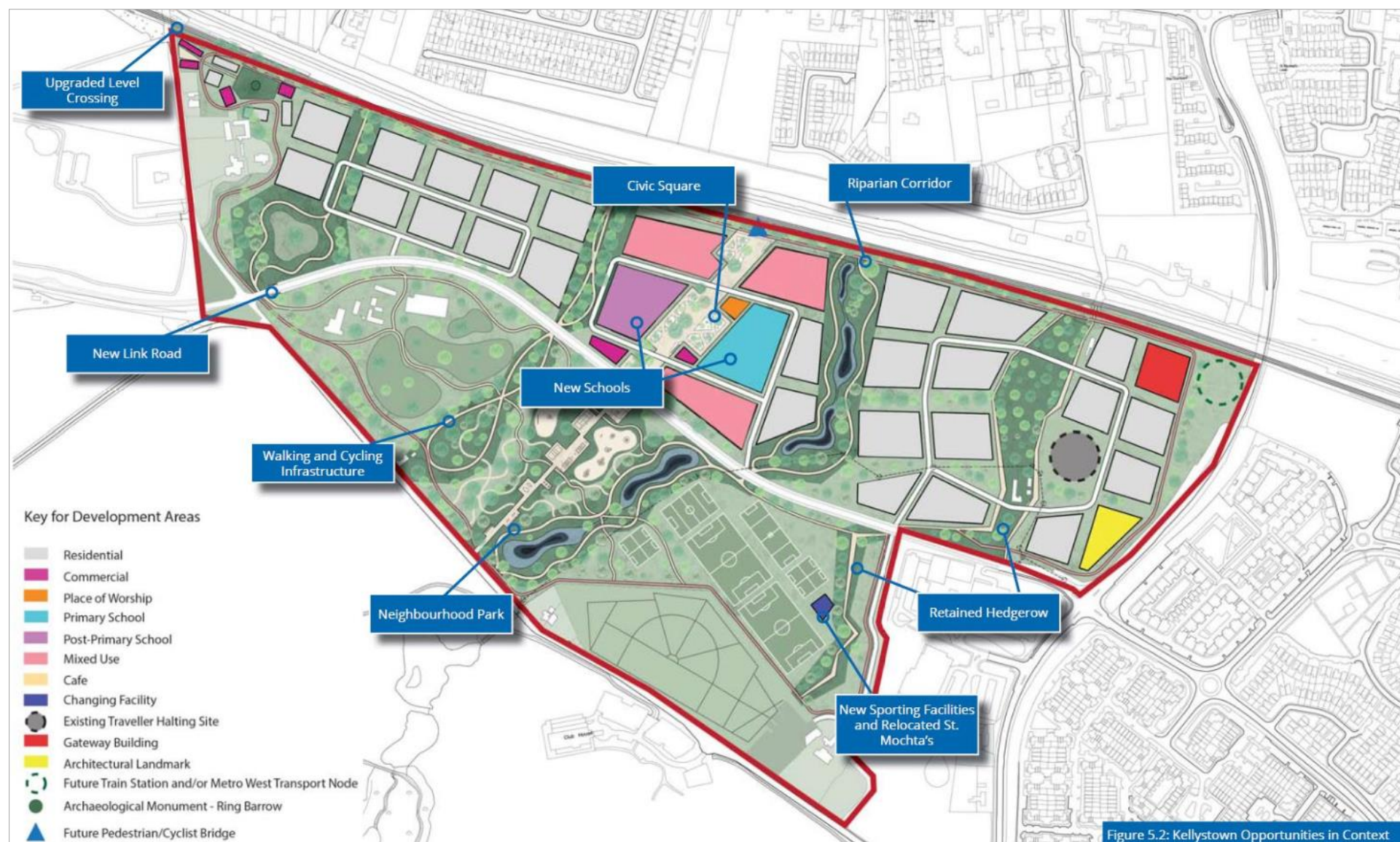


Figure 5.2: Kellystown Opportunities in Context

⁶ Fingal County Council (2020). *Kellystown Draft Local Area Plan*, Page 19

4.2.5 Other Facilities for the Draft LAP

4.2.5.1 Proposed New Educational Facilities

The Department of Education & Skills has confirmed that it requires sites to be set aside in Kellystown for both a new primary school and a new secondary school. It is anticipated that the primary school will cater to c. 400 pupils (with the ability to expand further), while the proposed secondary school will accommodate c. 1,000 pupils. The Draft LAP identifies that the new schools should be located within the Central Development Area (DA2) and should frame the proposed central open space. It is an objective of the LAP to promote the co-location of education, childcare and young adult learning.

4.2.5.2 Open Space & Recreational Amenity

The design framework for Kellystown has been informed by the large portion of land to the south of the LAP area which are zoned 'OS' - *Open Space*.

The Draft LAP proposes active open space in Kellystown in the form of St. Mochta's Football Club which will be relocated from its current grounds, as well as the provision of additional Multi- Use Games Areas (MUGAs) which will be located in the Open Space zoned lands to the south. The additional MUGAs will be available for the use of the schools and for the community.

It is an objective of the LAP to provide a Neighbourhood Public Park within the southern portion of the LAP lands. The park will be primarily passive in nature, with a focus on providing a space for people to socialise and gather as well as to walk, jog and experience nature. In contrast to the active open space provision, the neighbourhood park will facilitate more informal activities rather than formal sporting events. It is envisaged that the character of the park will be in keeping with the existing environment in this area, with the addition of walking trails, picnic spaces, and potential for a coffee shop and event spaces in close proximity to these amenities.

4.2.5.3 Permitted Burial Ground

The LAP lands also includes the site of the approved Kellystown cemetery located immediately north of Luttrellstown Road. The development site is located on the *Open Space* zoned land and is an objective of the Fingal Development Plan 2017-2023 with regard to the Kellystown LAP. The permitted cemetery will include 500 memorial plots and 500 niches in columbarium walls.

A carpark for 117 no. parking spaces will also be provided to serve this facility with access provided from an extension to the roadway serving Scoil Choilm Community National School. A key challenge for the LAP is to ensure permeability between the burial ground and the rest of the LAP lands.

4.3 Environmental Considerations

4.3.1 Landscape

The Draft LAP lands are located within the designated '*River Valleys/Canal*' Landscape Character Type as defined in the Development Plan. The Royal Canal Corridor, along with the Tolka and Liffey valleys are the main landscape features in this classification.

The Development Plan acknowledges that the canal and its corridor provide valuable habitat for fish and other species. In addition to its biodiversity value as a proposed Natural Heritage Area (pNHA), the contribution that the many bridges and other structures associated to the County's architectural heritage is also acknowledged. A total of 630 no. pNHAs were published on a non-statutory basis in 1995, but have not since been statutorily proposed or designated, however, these sites are acknowledged as being of significance for wildlife and habitats. The River Valley/Canal character type is categorised as having a high value in the Development Plan due to the visual and recreational qualities.

As a result, the entire LAP area is located within the '*Highly Sensitive Landscape*' designation. A Highly Sensitive Landscape is likely to be vulnerable to change whereas a landscape with a low sensitivity is likely to be less at risk from change.

4.3.2 Natural Heritage

Green Infrastructure Map 2 (Sheet 15 of the Fingal Development Plan) highlights the Royal Canal as an Annex I habit. Green Infrastructure Map 3 (Sheet 16 of the Fingal Development Plan) indicates there are no surface waterbodies running through the LAP lands. The Royal Canal is the closest surface waterbody, which is directly north of the lands but separated by the Dublin-Maynooth railway line.

The Draft LAP includes specific objectives in relation to green and blue infrastructure (refer to Objectives 8.1 to 8.14). Some of these include:

- Promote the conservation and enhancement of biodiversity having regard to the policies and objectives of the Fingal Development Plan, the Fingal Heritage Plan and the Fingal

Biodiversity Plan while allowing for appropriate development, access arrangements and recreational activity.

- Ensure that proposals for the riparian corridor running along the Royal Canal make adequate provision for the protection of biodiversity and sustainable water management.
- Protect existing trees and hedgerows within the LAP lands which are of amenity or biodiversity value as identified on the Biodiversity map.
- Conserve, protect and enhance existing trees and hedgerows within the LAP lands which form wildlife corridors and link habitats providing the stepping stones necessary for wildlife to flourish.
- Require all development proposals within 30m of the Canal Pond to be accompanied by an Ecological Impact Assessment⁷.
- A number of existing hedgerows/treelines, shown on Figure 8.5 Kellystown Biodiversity Map shall be retained, except where required to facilitate the construction of the Kellystown Link road.
- Where these hedgerows cannot be retained, or will be severed, a new hedgerow network composed of the same species shall be planted along roadways within future development proposals.

4.3.2.1 European Sites

The LAP lands and surrounding lands are not designated as a European site. The nearest European site to the study area – the Rye Water Valley/Carton Special Area of Conservation – is c. 5.2km upstream. There are three Special Areas of Conservation (SAC) and one Special Protection Area (SPA) within 15km of the LAP lands, see Table 4.2 below.

Table 4.2: European Site within 15km of the LAP Lands

Site Code	Site Name	Distance from the LAP lands (km)
Special Area of Conservation (SAC)		
001398	Rye Water Valley/Carton SAC	c. 5.2
001209	Glenasmole Valley SAC	c. 13.6

⁷ This shall be prepared by a qualified Ecologist and in line with Guidelines for Ecological Impact Assessment in the UK and Ireland, Terrestrial, Freshwater and Coastal (CIEEM 2nd ed. 2016).

Site Code	Site Name	Distance from the LAP lands (km)
000210	South Dublin Bay SAC	c. 14.1
Special Protection Area (SPA)		
004024	South Dublin Bay and River Tolka Estuary SPA	c. 12.4

4.3.2.2 Nationally Designated Sites

Nationally Designated Sites include Natural Heritage Areas (NHAs) which are legally protected areas that are considered important for their habitats or which holds species of plants and animals whose habitat needs protection, including geological/geomorphological sites in need of protection through NHA designation. Proposed Natural Heritage Areas (pNHAs) are also of significance for wildlife and habitats but have not yet been statutorily designated. However, under the Wildlife Amendment Act (2000) NHAs are legally protected from damage from the date they are formally proposed for designation⁸. The designation of these sites is the responsibility of the National Parks and Wildlife Service (NPWS).

The nearest pNHA to the LAP lands is the Royal Canal pNHA (Site Code: 002103), which is directly north of the lands but separated by the Dublin-Maynooth railway line. The River Liffey pNHA (Site Code: 000128) is located c. 260m directly south of the LAP lands.

4.3.3 Cultural Heritage

There are eight Protected Structures of architectural and historical interest within or adjoining the LAP boundary. These buildings and sites are included on the National Inventory of Architectural Heritage (NIAH) owing to their contribution to various categories of special interest such as architectural; historical; archaeological; artistic; cultural; scientific; social; or technical. The Protected Structures are as follows:

- RPS No. 698 - Keenan Bridge located at the Royal Canal/Porterstown Road. This is a late 18th century single-arched stone road bridge over the Royal Canal.
- RPS No. 699 - Keeper's Cottage, located on the Porterstown Road. This is a mid-19th century Rail Keeper's Cottage at rail crossing.
- RPS No. 700 - Former Clonsilla School located on Porterstown Road. This is a mid-19th century three-storey former school building.

⁸ NPWS (2020). *Protected Sites*: <https://www.npws.ie/protected-sites/nha>

- RPS No. 706 - Callaghan Bridge located at the Royal Canal/Clonsilla Road. This is a late 18th century single-arched stone road bridge extending over the Royal Canal at the Clonsilla Train Station.
- RPS No. 707 - Clonsilla Signal Box & Overbridge located at the Clonsilla Road/Clonsilla Train Station. A mid-19th century signal box and cast-iron pedestrian overbridge at Clonsilla Train Station. The station building itself was demolished and replaced by a modern structure.
- RPS No. 727 - Home Villa, located on Porterstown Road. This is a four-bay two-storey 19th century former presbytery.
- RPS No. 944a - Royal Canal. Late 18th century man-made canal, including the tow paths, the canal channel with its stone and earth banks, and the canal locks (10th, 11th and 12th Lock).
- RPS No. 945 - The Gables, located at Luttrellstown Road. As per the description contained within the Development Plan's Record of Protected Structures, this is a detached three-bay single-storey mid-19th century house with distinctive advanced gabled-fronted bays added in late 19th century.

The following Recorded Monument is located to the north-western corner of the LAP lands:

- DU013-018---- Barrow - Ring-barrow.

Luttrellstown Demesne plays an important role in the heritage of Kellystown. It is located directly south of the LAP area, on the southern side of the Luttrellstown Road. Luttrellstown Castle is protected under the Fingal Development Plan 2017-2023 (RPS No. 723).

Luttrellstown Demesne is also a designated Architectural Conservation Area (ACA) in the Development Plan.

4.3.4 Infrastructure

4.3.4.1 Traffic and Transportation

The Draft LAP seeks to provide future residents of Kellystown with a range of travel choices. The strategy is aligned with the key strategic proposals set out in the National Transport Authority (NTA's) *Greater Dublin Area Transport Strategy 2016-2035* and supports the delivery of the transport objectives of the Fingal Development Plan.

The movement and transport strategy for the Draft LAP seeks to improve transport linkages, make better use of the existing rail and bus network and encourage active travel in order to promote a more sustainable way of living. To achieve this central aim, the LAP is built upon the following opportunities:

- **Rail:** Maximise opportunities for travel by rail by promoting higher density developments in walking distance of Clonsilla station; delivering safe and attractive pedestrian and cycle routes to available train stations and establishing appropriate parking standards which discourage unnecessary car travel.
- **Bus:** Maximise opportunities for travel by bus by facilitating ease of access for buses through the site; and providing safe walking and cycling routes to high frequency services.
- **Walking and Cycling:** Maximise opportunities for travel by walking and cycling by promoting a mix of uses that reduces the need for travel by car; developing a network of permeable streets that priorities the needs of pedestrians and cyclists; reducing barriers to movement through the provision of crossings and bridges; and facilitating external walking and cycling connections to places of interest.

Kellystown LAP offers an opportunity to deliver a sustainable development providing future residents with a range of mobility choices and a reduced dependence on private car travel. The internal links of Kellystown LAP have been designed to maximise permeability for pedestrians and cyclists. Pedestrian and cyclist facilities are provided along the road network in addition to a series of interweaving greenways.

The majority of the LAP lands is undeveloped with the exception of the continuation of Diswellstown Road which gives access to Luttrellstown Community College and Scoil Choilm Community National School, and Old Porterstown Road, which connects the lands and St Mochta's Football Club to Clonsilla Village via the Porterstown level crossing.

The LAP lands are bounded by the Royal Canal and Dublin-Maynooth railway corridor to the north; Diswellstown Road to the east, Clonsilla Road (R121) to the west and Luttrellstown Road to the south.

The main vehicular link to the LAP lands will be the proposed Kellystown Link Road. There will be two access points, one from the existing junction Diswellstown Road/Diswellstown Extension Road and a second one from a new junction with the realignment of the Clonsilla Road (R121). Both junctions will be full movement traffic signalised junctions.

In terms of the wider network, Kellystown LAP is well connected to the National Network M50, N3 and N4.

It is an objective of the LAP to provide the required pedestrian and cyclist links to/from the LAP lands to these external destinations' points, including Clonsilla Village, Blanchardstown Centre, the train stations, external schools, parks and neighbourhood areas.

The Draft LAP includes specific objectives in relation to Movement and Transport (refer to Objectives 7.1 to 7.22).

4.3.4.1 Wastewater

The Irish Water Capital Investment Programme includes the Greater Dublin Drainage Project which seeks to provide a new regional wastewater treatment facility and the associated infrastructure to serve the growing population of the Dublin area.

In 2019, An Bord Pleanála granted permission to Irish Water for revisions to the approved scheme (granted permission in 2012) to upgrade the Ringsend Wastewater Treatment Plant (WwTP), which is currently operating at capacity. The approved upgrades to the Ringsend WwTP will allow the facility to increase its capacity from 1.64 million PE (population equivalent) to 2.4 million PE and will enable further population growth in the Dublin region, including at Kellystown. Irish Water plans to invest over €400 million in the staged upgrade of the plant, with the major phase of the works expected to be completed in 2020, with all works scheduled to be completed by 2025.

The Greater Dublin Drainage (GDD) Project is a long term scheme designed to provide the strategic drainage infrastructure required for the Greater Dublin Area (GDA) in the period up to 2050. It is currently estimated that construction of a new regional wastewater treatment plant in the Fingal area and orbital pipelines, stretching from Blanchardstown to Clonsilla, will be operational by 2026. The project also includes a new pumping station at Abbotstown and An Bord Pleanála granted planning permission for the GDD Project in November 2019.

Development within the Kellystown LAP area will be dependent on the progress of relevant improvement works and will be subject to the agreement of Irish Water. All foul infrastructure shall be designed and constructed in consultation with Irish Water.

The Draft LAP includes specific objectives in relation to wastewater (refer to Objectives 11.4 to 11.8).

4.3.4.2 Water Supply

The water supply for Kellystown and the surrounding area including Clonsilla and Carpenterstown area, is provided by the Leixlip Water Treatment Plan (WTP). The area in general is well served with trunk mains which have capacity to cater for additional future growth in the area.

The Draft LAP includes specific objectives in relation to water supply (refer to Objectives 11.1 and 11.3).

4.3.4.3 Water Quality / Surface Water Management

The Development Plan has as a central aim to promote the maintenance and improvement of the environmental and ecological quality of Fingal's watercourses and coastal waters pursuant to the requirements of the Water Framework Directive (WFD).

The LAP lands lies within the Liffey and Dublin Bay Catchment (09) and the Liffey sub-catchment (Liffey_SC_100). The River Liffey (IE_EA_09L012350) is c. 700m to the south and has an 'unassigned'⁹ water quality status for the 2013-2018 monitoring period.

The Royal Canal (IE_09_AWB_RCMLE) (Royal Canal Main Line (Liffey and Dublin Bay)) is the closest surface waterbody, which is directly north of the lands but separated by the Dublin-Maynooth railway line. The Royal Canal has a 'good' water quality status for the 2013-2018 monitoring period.

The Flood Risk Identification phase (Stage 1) includes a review of the existing information and the identification of any flooding or surface water management issues in the vicinity of the LAP lands that may warrant further investigation.

The OPW Preliminary Flood Risk Assessment (PFRA) mapping indicates that part of the Plan Area is: *'predicted to be partly affected by localised pluvial flooding (surface water); and, is not assessed as being at risk from fluvial or groundwater flooding.'*

No CFRAM mapping for the Plan Area is available.

The Greater Dublin Strategic Drainage Study (GDSDS) report, commissioned in 2001, includes information relating to the areas surrounding the Plan Area: *'developments to the south of Clonsilla are served by a storm water drain which discharges to a tributary of the River Liffey.'* However, the

⁹ Due to the lack of monitoring data within some waterbodies, it would not be satisfactory to base the status result on one monitoring location and therefore the EPA opted to use an "unassigned" category or "not completed" category.

location of the watercourse receiving the storm water discharge from the area is not stated and no further details relating to the Plan Area and its environs are covered.

The Initial Flood Risk Assessment (Stage 2) determined that surface water flooding and culvert blocking have potential to be significant at the Plan Area and therefore, require a Stage 3 detailed FRA.

The proposed Draft LAP includes a series of specific objectives to ensure protection of surface water, groundwater, sustainable drainage and flood risk management (refer to Objectives 11.9 to 11.25).

5. Screening for Requirement for SEA

5.1 Screening for Appropriate Assessment (AA)

A separate report has been prepared providing Information for Screening for AA and as noted at Section 2.4 of this report, a relationship exists between the outcome of Screening for AA and Screening for SEA.

Section 4.4.2 of this report, identified that the LAP lands are not subject to any European site designations. As set out in Table 4.2 of this report, four European sites (Natura 2000 network) are located within 15km of the Draft LAP lands.

The preliminary AA Screening Report has concluded that:

“Following review of the draft objectives of the LAP against the Conservation Objectives of the relevant European sites, it was concluded that there is no possibility that the implementation of the LAP could result in any likely significant effects on European sites on its own or in combination with other plans and programmes.”

Therefore, strategic environmental assessment (SEA) is not required for the Draft LAP because of a requirement for appropriate assessment (AA).

5.2 Flood Risk Assessment

A Strategic Flood Risk Assessment (SFRA) was undertaken to inform the preparation of the Draft LAP, in accordance with the requirements of the OPW *“The Planning System and Flood Risk Management Guidelines for Planning Authorities”*¹⁰. It was determined that the most significant source of flooding within the LAP lands is from potential pluvial flooding from direct rainfall.

The SFRA has determined that *‘surface water (pluvial) flooding in combination with the effect of existing adjacent urban drainage infrastructure has potential to affect the Plan lands for floods of magnitude (probability) relevant to flood protection standards set out in the OPW Guidelines and Fingal SFRA.’*

The Plan is affected by surface water flooding during the 1% and 0.1% AEP rainfall events for the present day scenario. The effect of climate change would also be anticipated to cause flood levels at and adjacent to the Plan Area to rise.

¹⁰ Department of Environment & Local Government. (2009).

The SFRA recommends ‘that the management of surface water runoff within the Plan Area shall be managed in accordance with the Sustainable Drainage Strategy (SuDS) component of the Surface Water Management Plan (SWMP).

The Draft LAP includes specific objectives in relation to flood risk management (refer to Objectives 11.16 to 11.21).

5.3 Screening for Strategic Environmental Assessment (SEA)

A screening assessment for likely significant effects has been carried in accordance with the requirements of the Planning and Development (Strategic Environmental Assessment) Regulations 2004 (S.I. No. 436 of 2004). In so doing the Screening of the Draft Kellystown Local Area Plan has taken account of the specified criteria for determining the likely significant environmental effects of implementing the Draft LAP as set out in Schedule 1 of SEA Regulations 2004, as amended (or Schedule 2A of the Planning and Development Regulations 2001, as amended).

The screening assessment is presented in the following with reference to the specified criteria.

5.3.1 Characteristics of the Plan or Programme having regard, in particular, to:

i. the degree to which the plan sets a framework for projects and other activities, either with regard to the location, nature, size and operating conditions, or by allocating resources;

The Draft Kellystown LAP sets out a development framework for the planned, co-ordinated and sustainable development of Kellystown LAP and for the conservation and enhancement of its natural and man-made environment. The Draft LAP provides guidance in the form of policies and objectives for the development of environmental, physical and social infrastructure in a modest and sustainable manner.

The Development Framework Plan and the LAP Objectives set out the relevant requirements for the development of lands and within the LAP generally.

Notably, the extent of population expansion is limited and this expansion has already been assessed as part of Fingal Development Plan 2017-2023, which was in itself subject to SEA.

Development as proposed in the Draft LAP is considered to be consistent with the policies and objectives of the Fingal Development Plan and the established and emerging profile of such development within Kellystown. As such the LAP provides no major divergence from the existing

i. the degree to which the plan sets a framework for projects and other activities, either with regard to the location, nature, size and operating conditions, or by allocating resources;

policy provided for by the Development Plan and instead provides greater detail as to the nature and extent of development envisioned for the LAP lands.

ii. the degree to which the plan or programme influences other plans, including those in a hierarchy;

The Draft LAP is prepared being wholly consistent with the Fingal Development Plan and higher level legislation, which has undergone full Strategic Environmental Assessment (SEA). The nature and extent of development proposed in the Draft LAP is as already established in the Development Plan and the primary purpose of the Draft LAP is to provide further detail and clarity with regard to the intentions of the Planning Authority to give effect to the objectives for Kellystown.

The Draft LAP is set within the context of Fingal County Development Plan 2017-2023 and will only influence future development within the Kellystown lands. It does not have a significant influence on additional plans in a hierarchy and it is considered that the plan will not have a significant environmental effect on any other plans.

iii. the relevance of the plan for the integration of environmental considerations in particular with a view to promoting sustainable development

The Draft Kellystown LAP is prepared in accordance with the provisions of the Planning and Development Act 2000 (as amended) and therefore, is related to the proper planning and sustainable development of the area. It is also prepared having regard to National, Regional and County level policy documents and in particular to the requirements of the Fingal County Development Plan 2017-2023.

The Fingal Development Plan, which underwent full Strategic Environmental Assessment (SEA), integrated environmental considerations into the Plan and concluded that the Plan is based on the principles of sustainable development. The Development Plan is underpinned by the principles of sustainable development, climate change adaptation, social inclusion and high quality design.

iii. the relevance of the plan for the integration of environmental considerations in particular with a view to promoting sustainable development

The Draft LAP does not in itself propose changes to environmental considerations and seeks to clarify and define intentions and process in relation to the development of the Kellystown lands in giving effect to the zoning of these lands and the objectives of the Development Plan.

The Draft Kellystown LAP sets out a strategy for the planned and sustainable development of Kellystown lands and for the protection, conservation and enhancement of its natural and man-made environment. The Draft LAP will guide future development by identifying Development Areas for particular uses and for providing a development framework for planning decisions within the lands.

iv. environmental problems relevant to the plan or programme;

The Draft LAP is consistent with the objectives of the Development Plan which has undergone full SEA. The Environmental Report, prepared for the Fingal Development Plan, concluded that the implementation of the Plan, including the various mitigation measures, would result, in general terms, in a neutral to positive impact on the environment as a whole.

Wastewater - The GDD is a regional wastewater project designed to serve the Greater Dublin Area by augmenting the Ringsend Wastewater Treatment Plant. The sewer will divert wastewater from the southern areas of Fingal to a new treatment plant at Clonsaugh (permitted ABP 2019, ref.: PL06F.301908). In 2019, An Bord Pleanála also granted permission to Irish Water for revisions to the approved scheme to upgrade the Ringsend Wastewater Treatment Plant which is operating at capacity, and is currently undergoing expansion and upgrades.

Climate change - In combating climate change, the LAP contains objectives for electric vehicles, heat pumps, promotion of efficiency and energy performance in buildings and the promotion of walking and cycling by providing for safe, attractive pedestrian and cycling routes.

Flooding – To address the risk of pluvial flooding in new developments in the LAP area, the Kellystown LAP *Surface Water Management Plan Part 2: Sustainable Drainage Systems (SuDS) Strategy* will be adopted. This will ensure a consistent approach to the management of flood risk and water quality within the LAP.

v. The relevance of the plan for the implementation of European Union legislation on the environment (e.g. plans linked to waste management or water protection)

Issues relating to legislation on the environment are provided for in the Fingal Development Plan 2017-2023. The Draft LAP is consistent with the policies and objectives of the Development Plan which itself was the subject of SEA. The Draft LAP is therefore guided and informed by the relevant European legislation on the environment including; waste management, water protection and climate policies and objectives as set out in the Fingal Development Plan 2017-2023.

The statutory planning and transportation policy context for the LAP is determined at the national, regional and local policy levels. In particular the planning context for the preparation of the Draft LAP emanates from the current Fingal Development Plan 2017-2023, which guides and informs the implementation of relevant European legislation on the environment including; waste management and water protection policies and objectives.

Therefore, issues relating to EU legislation on the environment are addressed in the Development Plan as outlined above and the Draft LAP will ensure the continued implementation of these objectives.

5.3.2 Characteristics of the Effects and of the Area to be Affected Having Regard, in particular to:

i. The probability, duration, frequency and reversibility of the effects;

The land subject to the Draft LAP is currently zoned for residential and open space uses under the Fingal Development Plan 2017-2023. The Draft LAP does not zone additional lands beyond the extent of that envisaged in the Development Plan. The LAP lands contain a significant portion of 'OS' zoned lands at 25.8 hectares, or approximately 45% of the overall LAP area.

The Draft LAP aims to promote proper planning and sustainable development of the LAP lands. Its extent is limited to the existing zoned lands and the objectives as set out in the Fingal Development Plan, and further expanded upon in the Draft LAP.

The LAP includes a site for a burial ground immediately north of Luttrellstown Road. The development site is located on the Open Space zoned land and is an objective of the Fingal Development Plan 2017-2023 with regard to Kellystown LAP. The impacts of this development have

i. The probability, duration, frequency and reversibility of the effects;

been considered by Fingal County Council and any mitigations or conditions considered or put in place.

While development will result in permanent change in identified Development Areas, it is not anticipated that adverse environmental effects will arise as a result of the implementation of the Draft LAP.

ii. The cumulative nature of the effects;

The Draft LAP forms part of the overall balanced, development strategy of Fingal County Council, as set out in the Fingal Development Plan 2017-2023. The Draft LAP is consistent with the policies and objectives of the overarching county-wide policy and as a result will not have a significant cumulative effect on the environment, when taken with other plans and strategies within the county.

Given the nature of permitted development in the area and the remainder of zoned lands in the vicinity it is considered that there are unlikely to be any cumulative effects.

Given that the Draft LAP will focus on the principles of planned, co-ordinated and sustainable development within a limited geographical area and for limited new development, where cumulative effects arise on the environment it is anticipated that they will be positive.

iii. The trans-boundary nature of the effects;

The Draft Kellystown LAP will have no international, national, regional or inter-county transboundary effects.

iv. The risks to human health or the environment (e.g. due to accidents);

No risks to human health or to the environment due to accidents or other considerations in the implementation of the LAP have been identified.

v. The magnitude and spatial extent of the effects (geographical area and size of the population likely to be affected);

The spatial extent of the Draft Kellystown LAP is c. 56.4ha in area however, the proposed approach includes three identified Development Areas:

1. Eastern Development Area: c. 14.9 hectares (gross)
2. Central Development Area: c. 7.4 hectares (gross)
3. Western Development Area: c. 10.23 hectares (gross)

The approximate number of units in Kellystown are calculated as follows:

- Eastern Development Area: 571 - 857no. units
- Central Development Area: 119 - 179 no. units
- Western Development Area: 365-547no. units.

Total units: between c. 1,055-1,583.

The southern portion of the LAP lands contain a significant portion of 'OS' zoned lands at 25.8 hectares, or approximately 45% of the overall LAP area.

In the RSES, Fingal is identified as being within the Dublin Region and partly within the Dublin Metropolitan Area Strategic Plan (MASP) area. Swords and Blanchardstown are the largest urban centres in Fingal. Kellystown is located within the development boundary of Blanchardstown. Blanchardstown is within the Dublin City and Suburbs boundary identified in the RSES.

In contrast to neighbouring areas, the population of Kellystown LAP area is modest, accommodating a small number of largely rural dispersed dwellings and no housing estates or apartment developments. Although it will take some time for the zoned area of Kellystown to be fully built out, it is stated that the ultimate population of the LAP lands is likely to reach (between approximately 3050 and 4,590 persons), which is well below the 5,000 population at which SEA would be a mandatory requirement. This increased population will create a different pattern of demand for community facilities than that of the current population.

The magnitude and spatial extent of the effects of the Draft LAP are very local to the area and its immediate hinterland. The strategic impacts of the proposed scale and extent of development have also been subject to SEA as part of the preparation of the Fingal Development Plan 2017- 2023.

vi. The value and vulnerability of the area likely to be affected due to:

a) special natural characteristics or cultural heritage

Existing development in Kellystown LAP area primarily comprises of undeveloped greenfield land currently in agricultural use: actively managed agriculture and pasture land. The remaining land comprises dispersed rural housing consisting of fine vernacular houses (Dollard House and its estate), as well as additional residential dwellings and traveller accommodation on Porterstown Road, Luttrellstown Road and Clonsilla Road. St. Mochta's Football Club is also located on Porterstown Road to the east and is included within the LAP boundary. The LAP lands are located within the designated 'River Valleys/Canal' landscape character type.

European Sites

The LAP lands and immediately adjacent to the Site are not subject to any European site. The nearest European sites to the study area is c. 5.2km away. There are three Special Areas of Conservation (SAC) and one Special Protection Area (SPA) within 15km of the LAP lands.

- Rye Water Valley/Carlton SAC
- Glenasmole Valley SAC
- South Dublin Bay SAC
- South Dublin Bay and River Tolka Estuary SPA.

Nationally Designated Sites

The nearest nationally designated site to the LAP lands is the Royal Canal pNHA (Site Code: 002103), which is directly north of the lands but separated by the Dublin-Maynooth railway line. The River Liffey pNHA (Site Code: 000128) is c. 260m directly south of the LAP lands.

The finding of the Preliminary Screening for Appropriate Assessment (AA) for the Draft Kellystown LAP is that the implementation of the Plan will not have any effect on European sites either on its own or in combination with other plans and programmes.

Flooding and Surface Water Drainage

The SFRA has determined that *'surface water (pluvial) flooding in combination with the effect of existing adjacent urban drainage infrastructure has potential to affect the Plan lands for floods of magnitude (probability) relevant to flood protection standards set out in the OPW Guidelines and Fingal SFRA.'*

It is noted that the proposed Draft LAP incorporates the following objectives:

vi. The value and vulnerability of the area likely to be affected due to:

Objective 11.9 - All new development within the Kellystown LAP catchment must incorporate Sustainable urban Drainage Systems (SuDS) measures in line with the recommendations of the Surface Water Management Plan to suit individual site layouts and local ground conditions. Design of SuDS Systems should be in accordance with the Greater Dublin Strategic Drainage Study (GDSDS) and the CIRIA SUDS Manual. It will be the responsibility of the developer to ensure SuDS measures are incorporated.

Objective 11.20 - Future developments within Kellystown LAP should be designed and constructed in accordance with the “Precautionary Principle” detailed in the guidelines. It is recommended that the flood zoning within the LAP is based on the High-End Future Scenario (HEFS) for climate change.

To address any potential risk of pluvial flooding effecting new developments in the Plan Area, the Kellystown LAP Surface Water Management Plan Part 2: Sustainable Drainage Systems (SuDS) Strategy will be adopted. This will ensure a consistent approach to the management of flood risk and water quality within the LAP.

Heritage

There are eight Protected Structures of architectural and historical interest within or adjoining the LAP boundary. The Protected Structures are as follows:

- RPS No. 698 - Keenan Bridge
- RPS No. 699 - Keeper’s Cottage
- RPS No. 700 - Former Clonsilla School
- RPS No. 706 - Callaghan Bridge
- RPS No. 707 - Clonsilla Signal Box & Overbridge
- RPS No. 727 - Home Villa
- RPS No. 944a - Royal Canal
- RPS No. 945 - The Gables, located at Luttrellstown Road.

The following Recorded Monument is located to the north-western corner of the LAP lands:

- DU013-018---- Barrow - Ring-barrow.

Luttrellstown Demesne plays an important role in the heritage of Kellystown, located outside of the LAP area. Luttrellstown Castle is protected under the Fingal Development Plan 2017-2023 (RPS No. 723). Luttrellstown Demesne is also a designated Architectural Conservation Area (ACA) in the Development Plan.

vi. The value and vulnerability of the area likely to be affected due to:

The Draft LAP identifies the important cultural heritage features within and adjacent to the LAP lands and ensures that proposed development or public realm interventions are approached in a sensitive and appropriate manner. It is noted that the proposed Draft LAP incorporates the following objective:

Objective 10.16 - *Preserve, protect and enhance the natural, built, cultural and historical heritage of Kellystown to promote the attractiveness of the LAP lands to visitors.*

b) exceeded environmental quality standards or limit values,

The Greater Dublin Drainage (GDD) Project is a long-term scheme designed to provide the strategic drainage infrastructure required for the Greater Dublin Area (GDA) in the period up to 2050. It is currently estimated that construction of a new regional wastewater treatment plant in the Fingal area and orbital pipelines, stretching from Blanchardstown to Clonsaugh, will be operational by 2026.

This is acknowledged in the proposed Draft LAP and the Draft Plan includes objectives supporting the delivery of the planned infrastructure. The Draft LAP outlines that new development only be permitted where it can be clearly demonstrated that there is adequate capacity in the wastewater disposal infrastructure in accordance with applicable requirements and standards, including urban wastewater treatment disposal standards.

It is not anticipated that any other environmental quality standards or limit values will be exceeded. All sites identified for development in the Draft LAP, which is consistent with the Development Plan, will be subject to a statutory planning process which will ensure that no environmental quality standards or limit values are exceeded.

c) Intensive land-use,

While the overall objective is to facilitate the development of some existing greenfield lands to residential development areas, this is fully consistent with the requirements and zonings of the Fingal Development Plan, which has been subject to full SEA. No additional development is proposed in the Draft LAP.

viii. The effects on areas or landscapes which have a recognised national, European Union or international protection status

The Development Plan recognises the importance of sites with national and European designations, and sets out policies and objectives for their protection. The Draft LAP accords fully with those objectives. It is not anticipated that the implementation of the Draft Plan would have any significant adverse impacts on areas of recognised national, European or international protection status.

There are no designated sites, Special Areas of Conservation (SAC) for flora and fauna, Special Protection Areas (SPA) for birds or Natural Heritage Areas (NHA) within the Draft LAP lands. There is a protected structure (The Gables) and a recorded monument (Ring Barrow) identified within the LAP lands.

6. Recommendation on Requirement for SEA

Taking account of the relevant criteria in Schedule 2A of the Planning and Development Regulations 2001, as amended, the implementation of the Draft Kellystown Local Area Plan will not be likely to have significant environmental effects and therefore, strategic environmental assessment is not required. Any potential localised environmental effects arising as a result of specific development carried out within the LAP lands can be appropriately and adequately addressed through the assessment of individual planning applications and within the provisions of the normal planning and sustainable development process.

7. References

- Council Directive 2001/42/EC of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment.
- Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora. (The EU Habitats Directive).
- DCCAE (2019). *Climate Action Plan 2019, To Tackle Climate Breakdown*. Department of Communications, Climate Action & Environment.
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Appendix A

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Hi Enda,

Please see below reply on behalf of the Waste Policy & Resource Efficiency division:

In respect of waste in the within documentation we would be obliged if the local authority would

consult directly with their respective Regional Waste Management Planning Office regarding the development of the Final Plans.

Kind regards,

Rosemary

Rosemary Gaul, CO
Waste Policy & Resource Efficiency

Roinn Cumarsáide, Gníomhaithe ar son na hAeráide & Comhshaoil
Department of Communications, Climate Action & Environment

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SDG 12 – Responsible Consumption and Production

Please forward an acknowledgement of receipt to CorporateSupport.Unit@DCCAE.gov.ie at your earliest convenience.

Regards,
Enda Brady,
Corporate Support Unit,
Department of Communications, Climate Action and Environment.
01 678 2308

Senior Executive Officer
Planning and Strategic Infrastructure Department
Fingal County Council
County Hall
Main Street
Swords
Co. Dublin
K67 X8Y2

10th August 2020

Our Ref: 200707.1

Re. SEA Screening Report for draft Kellystown Local Area Plan

Dear Ms Cadogan,

We acknowledge your notice, dated 31st July 2020, in relation to the draft Kellystown Local Area Plan (the 'Plan') and associated Strategic Environmental Assessment (SEA) screening.

The EPA is one of five statutory environmental authorities under the SEA Regulations. In our role as an SEA environmental authority, we focus on promoting the full and transparent integration of the findings of the Environmental Assessment into the Plan and advocating that the key environmental challenges for Ireland are addressed as relevant and appropriate to the plan. Our functions as an SEA environmental authority do not include approving or enforcing SEAs or plans.

As a priority, we focus our efforts on reviewing and commenting on key sector plans. For land use plans at county and local level, we provide a 'self-service approach' via our guidance document '[SEA of Local Authority Land Use Plans – EPA Recommendations and Resources](#)'. This document is updated regularly and sets out our key recommendations for integrating environmental considerations into Local Authority land use plans. In finalising your SEA screening determination, we suggest that you take this guidance document into account and incorporate the relevant recommendations as relevant and appropriate to the Plan.

Proposed SEA Determination

We note your proposed determination regarding the need for SEA of the Plan, that SEA is not required.

Guidance on the SEA process, including an SEA pack and checklist available on our website at www.epa.ie/monitoringassessment/assessment/sea/. We recommend that you take the available guidance into account in finalising your SEA Screening Determination and incorporate the relevant recommendations as relevant and appropriate to the Plan.

Sustainable Development

In proposing and in implementing the Plan, Fingal County Council should ensure that the Plan is consistent with the need for proper planning and sustainable development. Adequate and appropriate critical service infrastructure should be in place, or required to be put in place, to service any development proposed and authorised during the lifetime of the Plan.

In considering the Plan, Fingal County Council should take into account the need to align with national commitments on climate change mitigation and adaptation, as well as incorporating any relevant recommendations in sectoral, regional and local climate adaptation plans.

Fingal County Council should also ensure that the Plan aligns with key relevant higher-level plans and programmes and is consistent with the relevant objectives and policy commitments of the National Planning Framework and the Eastern and Midlands Regional Spatial and Economic Strategy.

State of the Environment Report – Ireland’s Environment 2016

In preparing the Plan and associated SEA screening, the recommendations, key issues and challenges described in our most recent State of the Environment Report [Ireland’s Environment – An Assessment 2016](#) (EPA, 2016) should be considered, as relevant and appropriate to the Plan.

Available Guidance & Resources

Our website contains various SEA resources and guidance, including:

- SEA process guidance and checklists
- Inventory of spatial datasets relevant to SEA
- topic specific SEA guidance (including *Good practice note on Cumulative Effects Assessment* (EPA, 2020), *Guidance on SEA Statements and Monitoring* (EPA, 2020), *Integrating climatic factors into SEA* (EPA, 2019), *Developing and Assessing Alternatives in SEA* (EPA, 2015), and *Integrated Biodiversity Impact Assessment* (EPA, 2012))

You can access these resources at: www.epa.ie/monitoringassessment/assessment/sea/

Environmental Sensitivity Mapping (ESM) WebTool

This new tool was launched recently by the EPA. It is a new decision support tool to assist SEA and planning processes in Ireland. It is available at www.enviromap.ie. The tool brings together over 100 datasets and allows users to create plan-specific

environmental sensitivity maps. These maps can help planners examine environmental considerations, anticipate potential land-use conflicts, and help identify suitable development locations while also protecting the environment.

EPA SEA WebGIS Tool

Our SEA WebGIS Tool, available through the EDEN portal (https://gis.epa.ie/EIS_SEA/), allows public authorities to produce an indicative report on key aspects of the environment in a specific geographic area. It is intended to assist in SEA screening and scoping exercises.

EPA WFD Application

Our WFD Application provides access to water quality and catchment data from the national WFD monitoring programme. The Application is accessed through EDEN <https://wfd.edenireland.ie/> and is available to public agencies. Publicly available data can be accessed via the www.catchments.ie website.

Future amendments to the Plan

Where changes to the Plan are made prior to finalisation, or where modifications to the Plan are proposed following its adoption, these should be screened for potential for likely significant effects in accordance with the criteria set out in Schedule 2A of the SEA Regulations (S.I. No. 436 of 2004).

Appropriate Assessment

You should ensure that the Plan complies with the requirements of the Habitats Directive where relevant. Where Appropriate Assessment is required, the key findings and recommendations should be incorporated into the SEA and the Plan.

EPA AA GeoTool

Our AA GeoTool application has been developed in partnership with the NPWS. It allows users to select a location, specify a search area and gather available information for each European Site within the area. It is available at: <http://www.epa.ie/terminalfour/ApproAssess/index.jsp>

Environmental Authorities

Under the SEA Regulations, prior to making your SEA determination you should also consult with:

- The Minister for Housing, Planning and Local Government,
- The Minister for Agriculture, Food and the Marine, and the Minister for Communications, Climate Action and Environment, where it appears to you as the competent authority that the plan or programme, or modification to a plan or programme, might have significant effects on fisheries or the marine environment,
- The Minister for Culture, Heritage and the Gaeltacht where it appears to you as the competent authority that the plan or programme, or modification to a plan or programme, might have significant effects in relation to the architectural or archaeological heritage or to nature conservation, and

- any adjoining planning authority whose area is contiguous to the area of a planning authority which prepared a draft plan, proposed variation or local area plan.

SEA Determination

As soon as practicable after making your determination as to whether SEA is required or not, you should make a copy of your decision, including, as appropriate, the reasons for not requiring an environmental assessment, available for public inspection in your offices and on your website. You should also send a copy of your determination to the relevant environmental authorities consulted.

If you have any queries or need further information in relation to this submission, please contact me directly. I would be grateful if you could send an email confirming receipt of this submission to: sea@epa.ie.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Cian O'Mahony'.

Cian O'Mahony
SEA Section
Office of Evidence and Assessment

Comhairle Chontae na Mí

Roinn Pleanáil,
Meallna Mainstreach, Bótharna Mainstreach
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Forward Planning Section

Patricia Cadogan
Senior Executive Planner
Fingal County Council,
Grove Road,
Blanchardstown,
Dublin 15.

August 25th, 2020

Re: SEA Screening Report for Kellystown Draft LAP

Dear Ms. Cadogan,

Meath County Council acknowledges receipt of your correspondence in relation to the above. Having reviewed the the SEA Screening Report prepared by Brady Shipman Martin Consultants, Meath County Council notes that the overall aims and objectives of the Draft Local Area Plan are consistent with that of the Fingal Development Plan, and therefore the plan does not require a detailed assessment through SEA.

In this context Meath County Council wishes to advise that the Council has no comments to make in this regard.

Yours sincerely,

Alan Russell

Alan Russell,
A/ Senior Executive Planner,
Planning Department.

Appendix 4

Appropriate Assessment (AA) Screening

Appropriate Assessment (AA) Screening Determination



Draft Kellystown Local Area Plan

Information for Screening for Appropriate Assessment

BSM

Est.
1968

**Brady Shipman
Martin**

**Built.
Environment.**

Environmental Assessment **Built Environment**

Client:

Fingal County Council

Date:

14 September 2020

DOCUMENT CONTROL SHEET

6721_RP_02_Information for Screening for Appropriate Assessment

Project No. 6721
Client: Fingal County Council
Project Name: Draft Kellystown Local Area Plan
Report Name: Information for Screening for Appropriate Assessment
Document No. RP_02
Issue No. 03
Date: 14/09/2020

This document has been issued and amended as follows:

Issue	Status	Date	Prepared	Checked
01	Draft	18 Aug 2020	MH	MH
02	Final Draft	10 Sep 2020	MH	MH
03	Final for Issue	14 Sep 2020	MH	MH



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1 Introduction and Background

Fingal County Council (FCC) is preparing the Draft Kellystown Local Area Plan (LAP). The LAP seeks to establish a land use strategy for the proper planning and sustainable development of lands at Kellystown, Dublin 15.

Brady Shipman Martin was appointed by FCC to undertake a screening exercise for Appropriate Assessment (AA). This will determine the effects, if any, on European sites, of the Draft Local Area Plan. This document constitutes an Appropriate Assessment Screening Report prepared for this purpose.

European sites are also known as Natura 2000 Sites (Special Areas of Conservation (SAC) and Special Protection Areas (SPA), and are designated for nature conservation. The requirements for an Appropriate Assessment are set out under *Article 6 of the EU Habitats Directive (92/43/EEC)*, transposed into Irish law through the *European Union (Birds and Natural Habitats) Regulations 2011-2015* and the *Planning and Development Act, 2000* (as amended).

A comprehensive desk study review and a site visit were undertaken and the potential impacts on European sites, both as a result of the proposed Draft Plan and in-combination with other plans and projects, are appraised in this report.

The work was carried out by Senior Ecologist Matthew Hague BSc MSc Adv. Dip. Plan. & Env. Law CEnv MCIEEM. Matthew is a highly experienced and qualified ecologist, with a master's degree in Ecosystem Conservation and Landscape Management. He has over 18 years of experience in ecological and environmental consultancy, across a wide range of sectors. He has prepared numerous reports for AA Screening as well as Natura Impact Statements, for plans and projects of all scales, from small residential developments to nationally important infrastructure projects.

Matthew is a Chartered Environmentalist (CEnv) and a full member of the Chartered Institute of Ecology and Environmental Management (MCIEEM). Matthew has also completed an Advanced Diploma in Planning and Environmental Law, at King's Inns.

2 Methodology

2.1 Baseline data collection and field visit

A desk-based assessment was undertaken in June, July and August 2020 of the site at Kellystown and the wider area. This focused on habitats and species that are listed as Qualifying Interests (QI) (in the case of SACs) and Special Conservation Interests (SCI) (in the case of SPAs) in the designations for European sites. A site survey was also undertaken, on 19th August 2019. During the survey an assessment of habitat suitability for bird species with links to European sites was undertaken, in order to appraise the potential for *ex-situ* effects on European sites.

In addition to this survey, which was undertaken for the purpose of preparing this report, a comprehensive suite of ecological surveys was undertaken at the site, including habitat, flora and hedgerow surveys, as well as invasive species, mammal, breeding bird and bat surveys, by specialist ecologists Minogue & Associates. A detailed Biodiversity Report has been prepared based on these surveys and accompanies the Draft Local Area Plan.

This report takes the following guidance documents into account:

- *Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities* (Department of Environment, Heritage and Local Government, 2010 revision);
- *Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities*. Circular NPWS 1/10 & PSSP 2/10;
- *Assessment of Plans and Projects Significantly Affecting European sites: Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC* (European Commission Environment Directorate-General, 2001);

- *Managing Natura 2000 sites: The Provisions of Article 6 of the Habitats Directive 92/43/EEC*. Guidance issued by the European Commission (21st November 2018).

Information was collated from the organisations and websites listed below:

- Data on European sites and rare and protected plant and animal species contained in the following databases:
 - The National Parks and Wildlife Service (NPWS) of the Department of Culture, Heritage and the Gaeltacht (www.NPWS.ie);
 - The National Biodiversity Data Centre (NDBC) (www.biodiversityireland.ie);
 - BirdWatch Ireland (www.birdwatchireland.ie);
 - Bat Conservation Ireland (www.batconservationireland.org).
- Information on land-use zoning from the online mapping of the Department of the Environment, Community and Local Government (<http://www.myplan.ie/en/index.html>);
- Recent and historical OSi mapping and aerial photography, including www.geohive.ie;
- Photographs taken at the site;
- Information on local watercourses from www.catchments.ie;
- Information on water quality in the area (www.epa.ie);
- Information on soils, geology and hydrogeology in the area (www.gsi.ie);
- Information on the Status of EU Protected Habitats and Species in Ireland (Article 17 report) (NPWS, August 2019);
- Third National Biodiversity Plan 2017 – 2021 (Department of Culture, Heritage and the Gaeltacht, 2017);
- Fingal Development Plan 2017 – 2023, including the accompanying Appropriate Assessment documentation (Natura Impact Report).

The report has regard to the following legislative instruments:

- Planning and Development, Act 2000, as amended;
- European Commission (EC) Habitats Directive 92/43/EEC;
- European Commission (EC) Birds Directive 2009/147/EC;
- European Communities (Birds and Natural Habitats) Regulations 2011-2015.

The report takes full account of the details of the Draft Local Area Plan and a detailed examination of all relevant elements was undertaken. This includes the following documents, among others:

- Biodiversity Report (Minogue & Associates, 2020);
- Strategic Flood Risk Assessment (McCloy Consulting, 2020);
- Sustainable Drainage Strategy (McCloy Consulting, 2020);
- Strategic Environmental Assessment Screening Report (Brady Shipman Martin, 2020).

Given the amount of information available, including from Fingal County Council, NPWS and other sources, it has been possible to gather adequate information on the site and the adjacent area (in particular, the European sites), in order to make an informed, sound judgement as to the potential impacts of the proposed LAP on the qualifying interests of the European sites.

3 Screening for Appropriate Assessment

3.1 Background

The first part of the Appropriate Assessment process is the Screening phase. Screening identifies the likely effects of the proposed Plan on European sites that could arise, either alone or in combination with other plans or projects, and considers whether these impacts are likely to have a significant effect on the European site in view of the site's conservation objectives.

In accordance with sections 177U and 177V of the Planning and Development Act 2000, as amended, the AA screening test must be applied, as follows:

- [...]to assess, in view of best scientific knowledge, if that Land use plan or proposed development, individually or in combination with another plan or project is likely to have a significant effect on the European site;
- An appropriate assessment is required if it cannot be excluded, on the basis of objective information, that the development, individually or in combination with other plans or projects, will have a significant effect on a European site.

Following Screening therefore, if there is a possibility of there being a significant effect on a European site, this will generate the need for an appropriate assessment for the purposes of Article 6(3) of the Habitats Directive. This means that if the conclusions at the end of the screening exercise are that significant effects on any European sites, as a result of the proposed development (in this case the Local Area Plan), either alone or in combination with other plans and projects, are likely, uncertain or unknown, then an Appropriate Assessment must be carried out. This is in accordance with established precedent and case law.

3.2 Potential zone of influence

For the risk of a significant effect to occur there must be a 'source', such as a construction site; a 'receptor', such as a designated site for nature conservation; and a pathway between the source and the receptor, such as a watercourse that links the construction site to the designated site. Although there may be a risk of an impact it may not necessarily occur, and if it does occur, it may not be significant.

Identification of a potential effect means that there is a possibility of ecological or environmental damage occurring, with the level and significance of the impact depending upon the nature and exposure to the potential effect and the characteristics of the receptor.

There are no set recommended distances for projects to consider European sites as being relevant for assessment. Rather, for a project NPWS (2010) recommends that '*Any Natura 2000 sites within the likely zone of impact of the plan or project*' should be appraised. For projects '*the distance should be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in combination effects*'.

In the case of plans, such as the Draft Kellystown LAP, the guidance states that '*A distance of 15km is currently recommended in the case of plans, and derives from UK guidance (Scott Wilson et al. 2006)*¹.

In addition, the guidance states that '*Natura 2000 sites that are more than 15km from the plan or project area depending on the likely impacts of the plan or project, and the sensitivities of the ecological receptors, bearing in mind the precautionary principle. In the case of sites with water dependent habitats or species, and a plan or project that could affect water quality or quantity, for example, it may be necessary to consider the full extent of the upstream and/or downstream catchment.*'

¹ Scott Wilson, Levett-Therivel Sustainability Consultants, Treweek Environmental Consultants and Land Use Consultants. 2006. Appropriate Assessment of plans.

Therefore, in some instances where there are hydrological connections a whole river catchment or a groundwater aquifer may need to be included. Similarly where bird flight paths are involved the impact may be on an SPA more than 15 km away. Taking the guidance into account, as a starting point a search was carried out for all European sites within 15km of the site at Kellystown. This search was then extended in order to ensure that all European sites with any potential links to the LAP area were accounted for in the study.

3.3 Study area and surrounding environment

3.3.1 Site location and European sites

Kellystown is located circa 1.5km from Blanchardstown Town Centre, 1.8km from Blanchardstown Main Street and 9.8km from O'Connell Street, Dublin. The LAP lands are situated directly south of the Royal Canal and the Dublin-Maynooth railway line and between Diswellstown Road to the east and Clonsilla Road (R121) to the west. The tree-lined Luttrellstown Road, frames the lands to the south. Diswellstown Road to the east offers an access point for vehicular and pedestrian traffic to cross the canal and railway line without traversing via a level crossing. The R121/Clonsilla Road, a well-trafficked route, defines the boundary of the lands to the west and is part of a network of roads linking Blanchardstown to Lucan.

The site is located in the Liffey sub-catchment of the Liffey and Dublin Bay catchment. There are no watercourses within the LAP lands themselves². The nearest watercourse, other than the Royal Canal, is the River Liffey to the south, and a tributary to the Liffey that flows the Luttrellstown Golf Course to the south.

The location of the LAP lands is shown in **Figure 1**.

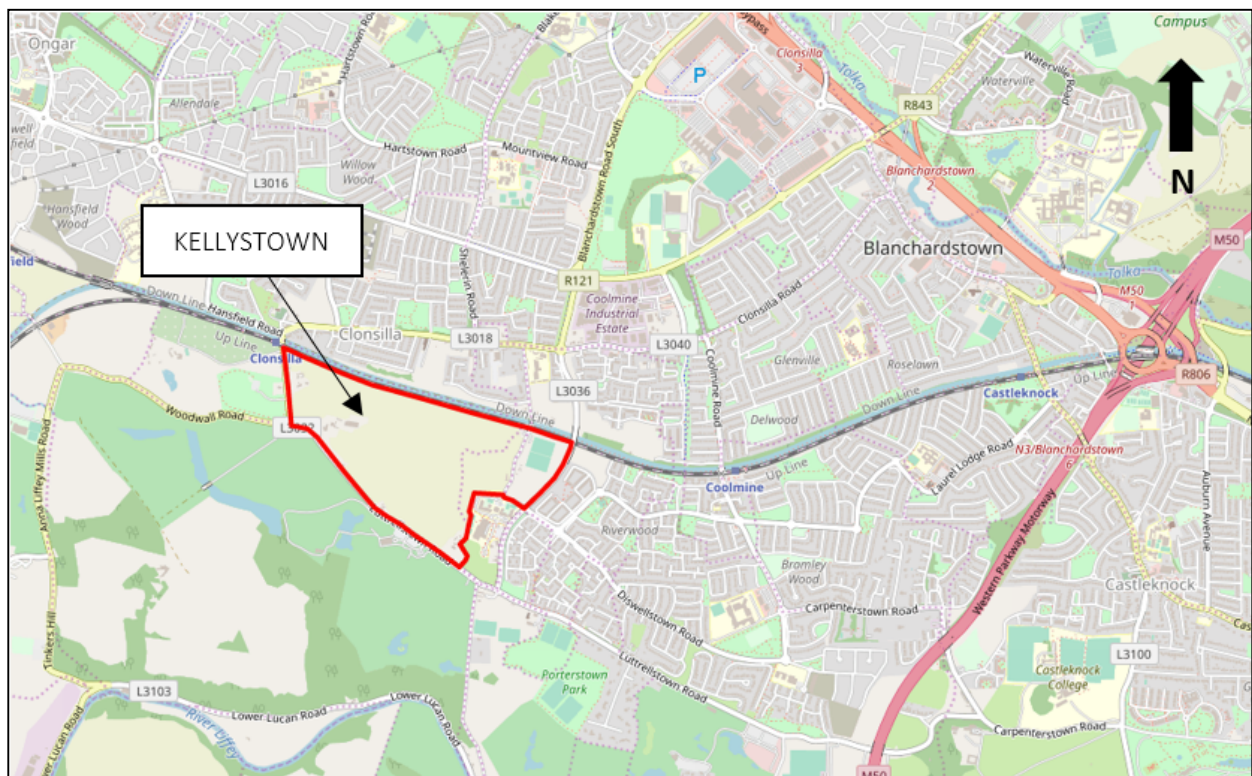


Figure 1: Location of the Kellystown LAP lands³

There are 4 European sites located within a 15km radius of the proposed development (see **Figure 2**). These are:

² <https://gis.epa.ie/EPAMaps/>

³ Environmental Protection Agency (EPA) website: <https://gis.epa.ie/EPAMaps/default> (OpenStreet Maps)

- **Special Areas of Conservation (SAC)**
 - Rye Water Valley/Carton SAC (site code 001398), c.5.2km to the west;
 - Glenasmole Valley SAC (site code 001209), c.13.6km to the south;
 - South Dublin Bay SAC (site code 000210), c.14.1 to the south east;
- **Special Protection Areas (SPA)**
 - South Dublin Bay and River Tolka Estuary SPA (site code 004024), c.12.4km to the east;

Beyond the 15km zone, there are a number of additional European sites:

- North Dublin Bay SAC (site code 000206), c.15.4km to the east;
- Wicklow Mountains (site code 002122), c.15.8km to the south;
- Malahide Estuary SAC (site code 000205), c.16.8km to the north east;
- Baldoyle Bay SAC (site code 000199), c.18.3km to the north east;
- Rogerstown Estuary SAC (site code 000208), c.19.7km to the north east;
- Howth Head SAC (site code 000202), c.21.0km to the east;
- Rockabill to Dalkey Island SAC (site code 003000), c.21.6km to the east;
- Red Bog, Kildare SAC (site code 000397), c.21.6km to the south west;
- Knocksink Wood SAC (site code 000725), c.22.7 to the south east;
- Ireland's Eye SAC (site code 002193), c.23.0km to the east;
- North Bull Island SPA (site code 004006), c.15.5km to the east;
- Broadmeadow/Swords Estuary (Malahide Estuary) SPA (site code 004025), c.16.9km to the north east;
- Wicklow Mountains SPA (site code 004040), c.17.3km to the south;
- Baldoyle Bay SPA (site code 004016), c.18.5km to the north east;
- Rogerstown Estuary SPA (site codes 004015), c.20.4km to the north east;
- Poulaphouca Reservoir SPA (site code 004063), c.22.4km to the south west;
- Ireland's Eye SPA (site code 004117), c.22.8km to the east;
- Howth Head Coast SPA (site code 004113), c.23.8km to the east;
- Dalkey Islands SPA (site code 004172), c.24.0km to the south east.

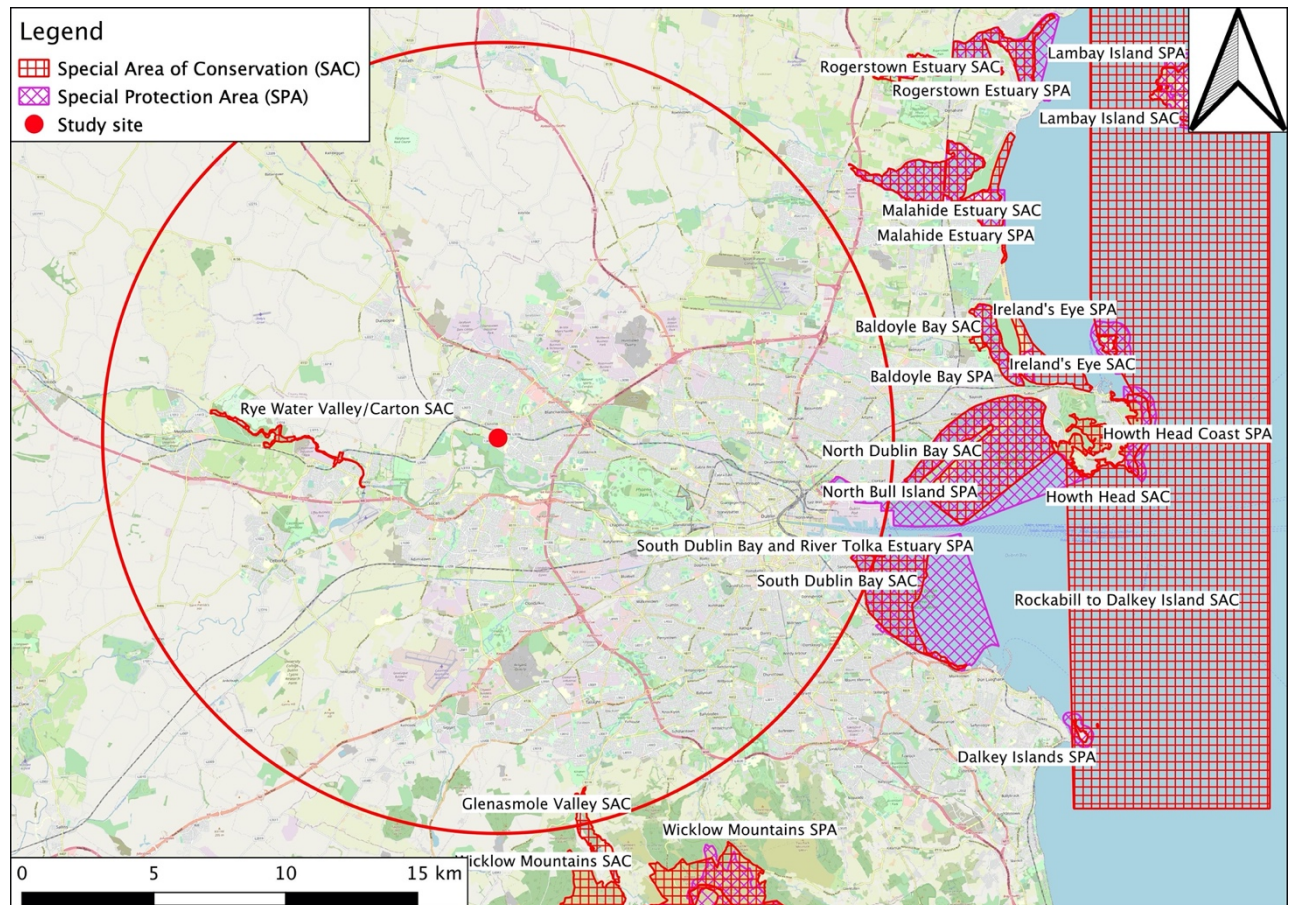


Figure 2: Kellystown LAP lands, including a 15km buffer, with European sites shown (Source: OpenStreetMap)

3.3.2 Other designated areas (other than European sites)

The nearest site designated for nature conservation, not otherwise designated as a European site, is the Royal Canal proposed Natural Heritage Area (pNHA site code 002103, which is located immediately to the north of the LAP lands (to the north of the Dublin-Maynooth railway line). The Liffey Valley pNHA (site code 000128) is located approximately 200m to the south of Luttrellstown Road (the road forms the southern boundary of the LAP lands). The Grand Canal pNHA (site code 002104) is approximately 5km to the south of the LAP lands.

These are included in this report in order to address their potential to act as supporting sites for the European sites.

4 Kellystown Draft Local Area Plan

4.1 Vision for the Draft LAP

The vision and development strategy for Kellystown is intended to guide its long-term future growth through articulation of how the LAP lands will look, function and feel. The vision statement is based on community consultation (undertaken May-July 2019) and an analysis of the key opportunities and challenges for Kellystown.

The proposed Vision Statement for the area as set out in the Draft LAP states:

“The vision for Kellystown is to promote the development of a distinctive, sustainable, high quality new residential quarter, connected to the neighbouring suburbs of Clonsilla and Carpenterstown. Kellystown will provide a sustainable residential community, comprising a choice of high quality new homes, with a mix of dwelling types, size and tenure based around a new civic square that incorporates local services with new schools, public open space and access to high capacity public transport links.

Kellystown will offer a good quality of life to its residents and balance the need for additional housing, with community, economic, cultural, educational and recreational facilities. The Draft LAP seeks to create a place with a strong sense of community and to build on its existing identity by incorporating valuable existing elements of the built and natural environment.

4.2 The Draft LAP

The Draft LAP promotes best practice architectural solutions for the overall development of Kellystown and is a long-term strategy for the sustainable development of the LAP lands with a diversity and mix of uses to create a place where a balance is achieved between the natural and built environment.

Existing features, including treelines and hedgerows have been used to define the development areas, as has the zoning of the lands and the proposed alignment of the Kellystown Link road. The proposed phasing of the LAP also relates to the defined development areas. The identified Development Areas are set out in the Sections below and are shown in Figure 3.

4.2.1 Eastern Development Area (DA1)

The Eastern Development Area (DA1) is approximately 14.9ha (gross) in size and is bounded by the Royal Canal to the north; Diswellstown Road to the east; Luttrellstown Education Campus to the south (Scoil Choilm Community National School and Luttrellstown Community College) as well as the alignment of the proposed Kellystown Link Road; and Development Area 2 (DA2) to the west, with the boundary delineated by a mature hedgerow. The entire development area is zoned *RA - Residential*.

The land currently accommodates St. Mochta’s Football Club, St. Brigid’s Halting Site, a small number of dwellings and agricultural / pasture land.

DA1 is been designed to accommodate a new high-quality residential quarter. The goal of the development area is to provide for a range of housing unit types, with a range of net densities of between c.50-c.75 units/ha approximately, that would support a diverse and changing community.

4.2.2 Central Development Area (DA2)

The Central Development Area (DA2) is approximately 7.4ha (gross) in size and is bounded by DA1 and DA3 to the east and west respectively. The northern boundary is defined by the Dublin-Maynooth railway line/Royal Canal corridor and the southern boundary by the alignment of the Kellystown Link Road. The lands are currently managed for agricultural purposes. The entire development area is zoned *RA - Residential*.

DA2 will form the ‘heart’ of Kellystown and will provide a range of important amenities to support day-to-day life in the area, including a local centre, a primary and secondary school, a central open space/civic square as well as residential development, with a range of net densities of between c.50-c.75 units/ha approximately. Access to the lands will be achieved from the proposed Kellystown Link Road.

An appropriately sized local centre is proposed to provide for everyday shopping facilities and other local services (e.g. newsagent, doctor, pharmacy, hairdresser, etc.). It is anticipated that weekly shopping activities will be undertaken at the nearby Blanchardstown Shopping Centre or within the nearby centre of Clonsilla which provides for Level 4 retail provision.

4.2.3 Western Development Area (DA3)

The Western Development Area (DA3) is approximately 10.23ha (gross) in size and is bounded by the R121 to the west, the Dublin-Maynooth Railway Line / Royal Canal corridor to the north, DA2 to the east and by the proposed alignment of the Kellystown Link road to the south. The lands are located adjacent to Clonsilla Railway Station and the associated railway crossing. Currently, the lands accommodate a number of dispersed dwellings including Greenmount House. The majority of the development area is zoned RA - *Residential*, with a small element of OS – *Open Space* to the south west corner (excluded for development purposes).

DA3 is intended to accommodate a new high-quality residential quarter, with a range of net densities of between c.50-c.75 units/Ha approximately. The design approach will incorporate a strong urban form consisting of a series residential blocks, linked through an internal road network incorporating home zones with one access point onto the proposed Kellystown Link road.

4.2.4 Proposed Open Space Area

The southern portion of the LAP lands, located to the south of the proposed alignment of the Kellystown Link Road, are zoned ‘OS’ - Open Space. The lands are bounded to the east by Luttrellstown Community College and Scoil Choilm Community National School and to the south/east by Luttrellstown Road. The southern LAP lands are currently in agricultural use, and as well as containing a small number of dispersed dwellings, include protected structure No. 945 ‘The Gables’ situated on Luttrellstown Road.

Table 1 below sets out the Development Areas characteristics for the Eastern, Central and Western Development Area.

Table 1: Development Areas Identified in the Draft LAP

Development Area	Gross Area (hectares)	Density Range (Gross)	Approximate units	Community Infrastructure
Eastern (DA1)	14.9	38-57	571-857	Green routes
Central (DA2)	7.4	16-24	119-179	Primary & Secondary School Civic Square Local Centre Green Route Pedestrian Bridge
Western (DA3)	10.23	36-53	365-547	Green Route Open Space incorporating Ring Barrow
Total	32.53		1,055-1,583	

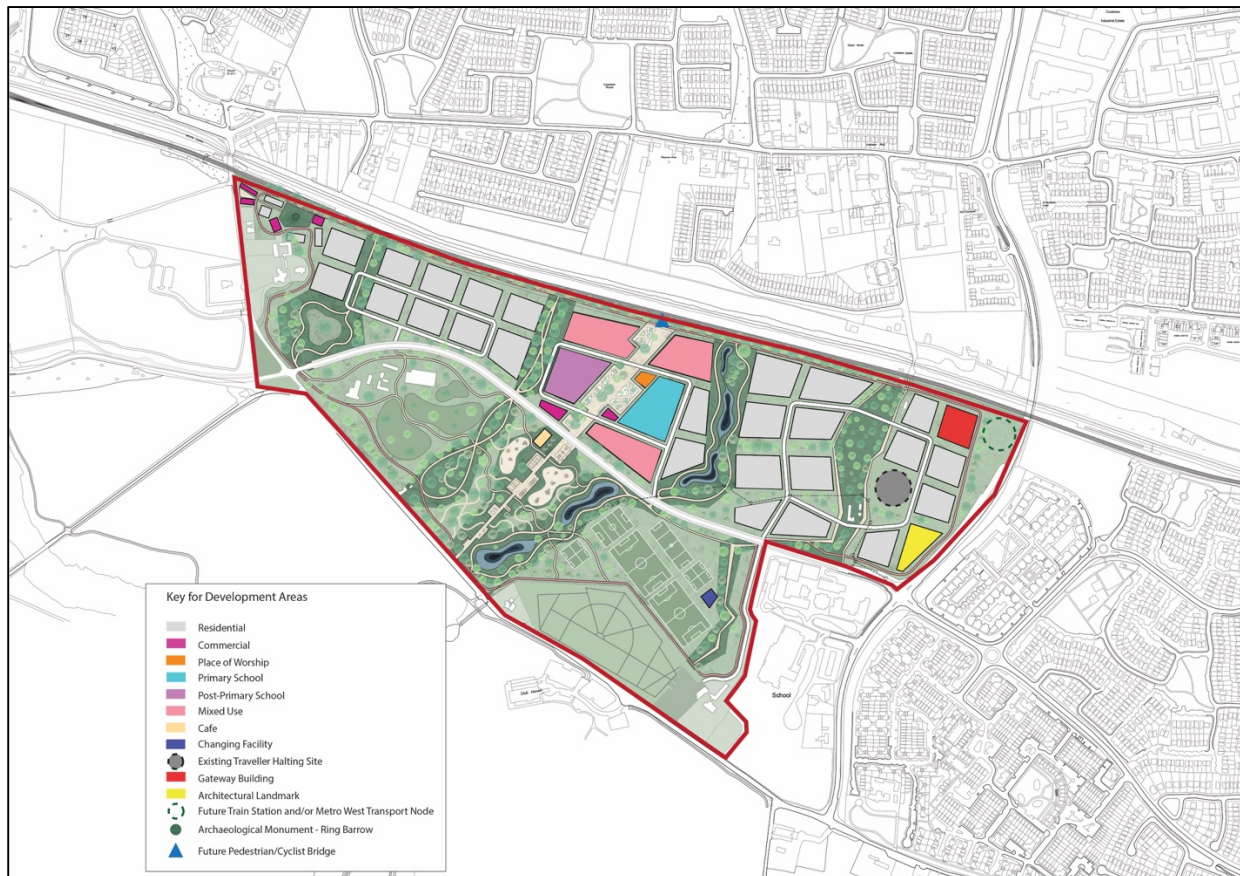


Figure 3: Kellystown Draft LAP Development Areas⁴

The Draft LAP contains a number of objectives (Objectives 8.1 – 8.14) that are intended to ensure the delivery of significant green and blue infrastructure within the Draft LAP area.

These Objectives (for Example, Objective 8.1: *Promote the conservation and enhancement of biodiversity having regard to the policies and objectives of the Fingal Development Plan, the Fingal Heritage Plan and the Fingal Biodiversity Plan while allowing for appropriate development, access arrangements and recreational activity*) will ensure that key existing features of high biodiversity value, such as the mature tree lines, hedgerows and the riparian corridor along the Royal Canal are protected and enhanced in so far as is practicable throughout the delivery of the Draft LAP development objectives.

5 Potential impacts from the proposed Local Area Plan, including in-combination effects

5.1 European sites and habitats with links to European sites

The Kellystown LAP lands are not under any wildlife or conservation designation. Furthermore, no rare, threatened or legally protected plant species, as listed in the *Irish Red Data Book 1 – Vascular Plants* (Curtis & McGough, 1988), the *Flora Protection Order*, 2015 or the *EU Habitats Directive*, are known to occur within the site. None were found during the course of the surveys undertaken in the preparation of this report or by Minogue & Associates.

According to the Biodiversity Report (included at Appendix 1 of the Draft LAP), a number of the hedgerows and other features have local ecological value, however no features of any ecological significance in the context of

⁴ Fingal County Council (2020). *Kellystown Draft Local Area Plan*, Figure 5.2, Page 19

European sites are present within the LAP lands. No evidence of any habitats or species with links to European sites was recorded in the desk study or during any of the field surveys undertaken and no 'reservoir' type habitats (habitats which have the potential to support Qualifying Interest/Special Conservation Interest species in any European site) are present.

There will be no loss of any habitat or species listed as a Qualifying Interest or Special Conservation Interest of any designated site as a consequence of the implementation of any elements of the Draft LAP. The lands within the Kellystown site do not in any way act as an important *ex-situ* site for any European site (SPA) SCIs.

5.1.1 Surface and ground water

Other than minor ditches there are no watercourses within the Draft LAP lands. There is, nevertheless, a potential water pathway, between the Draft LAP lands area and coastal European sites associated with Dublin Bay (the nearest of which, South Dublin Bay and River Tolka Estuary SPA, is over 12km to the east). There is also a potential groundwater pathway between the Draft LAP lands and the European sites should indirect discharges (i.e. spillages to ground) occur. The potential pathway is via the Royal Canal along the northern boundary of the site and the River Liffey, which is located to the south. There is however no pathway between the Draft LAP lands and the nearest European site (Rye Water Valley/Carton SAC). This site is over 5km to the west and entirely unconnected.

Despite the presence of these theoretical indirect pathways, the risk of contamination of any watercourses or groundwater by LAP-related development is extremely low, and even in the event of a pollution incident occurring during the implementation of the Draft LAP that would be significant enough to impact upon surface/ground water quality locally, it is reasonable to assume that **this would not be perceptible in the offshore European sites**, for the following reasons:

- The distance to the European sites – the nearest designated site in Dublin Bay (South Dublin Bay and River Tolka Estuary SPA) is over 12km (straight-line distance to the east), and any pollution entering the local surface water drainage network from any construction site associated with the Draft LAP area would be so diluted as to be entirely undetectable by the time the water enters the sea;
- The fact that a significant level of dilution and mixing of surface and sea water would occur in any event. Upon reaching the sea any pollutants would be even further diluted and dissipated by the receiving waters;
- There is no conceivable pathway between the Draft LAP lands at Kellystown and any other European sites, such as the Rye Water Valley/Carton SAC.

It is clear that there is no possibility of any significant effects on European sites via surface or ground water, arising out of the implementation of the Draft LAP. Regardless, the Draft LAP includes a series of specific objectives to ensure protection of surface and ground water as well as flood risk management (refer to Objectives 11.9 to 11.25).

As confirmed in the Draft LAP, any development arising will be designed in accordance with the principles of Sustainable Drainage Systems (SuDS) as embodied in the recommendations of the Greater Dublin Strategic Drainage Study (GSDSDS). The GSDSDS addresses the issue of sustainability by requiring designs to comply with a set of drainage criteria which aim to minimize the impact of urbanization, by replicating the run-off characteristics of the greenfield site. The criteria provide a consistent approach to addressing the increase in both rate and volume of run-off, as well as ensuring the environment is protected from any pollution from roads and buildings.

SuDS are a requirement of Fingal County Council (including under Objective SW04 of the Fingal County Development Plan 2017-2023) and under the GSDSDS and the Regional Code of Practice for Drainage Works. Additionally these systems are recommended under the 2009 guidelines published by the OPW, '*The Planning System and Flood Risk Management*'.

SuDS are an environmentally effective approach to managing surface water on developed lands. This most closely reflects natural catchment behaviour where rainfall either infiltrates through the soil or runs off slowly over the ground surface to the nearest watercourse. This is an important element of climate change mitigation and will act to future-proof communities against adverse weather effects.

SuDS offer a comprehensive approach to the management of water on a site, to delay and reduce run-off through infiltration, transpiration, evapotranspiration and re-use, whilst also providing improvements to water quality, amenity and biodiversity. Shallow surface based systems to manage surface water are encouraged in favour of underground infrastructure such as pipes and culverts. In tandem with this, runoff control measures favoured include surface based systems such as weirs and orifices rather than proprietary systems contained underground in manholes. Runoff from green areas should never be permitted to enter closed sewer networks, and groundwater infiltration must be favoured over discharge to open surface water (ditches, streams).

A Surface Water Management Plan comprising of both a Flood Risk Assessment and a Sustainable Drainage Strategy has been developed for Kellystown, prepared by McCloy Consulting Engineers on behalf of Fingal County Council (please refer to Appendix 2 to the Draft LAP), and identifies various measures that may be employed throughout the development taking into account the existing surface water infrastructure in place across the site. These SuDS measures must be incorporated into the development in line with appropriate sustainable drainage practices and include for limiting runoff rates and providing site, source and regional controls. Such measures must be developed in conjunction with approved landscape and open space plans and must align with the taking in charge requirements of the local authority.

There is no possibility of the implementation of the Draft LAP objectives adversely impacting on the conservation objectives of any of the QIs or SCIs of any European sites in, or associated with, Dublin Bay as a result of surface water run-off or discharges to groundwater.

5.1.2 Foul water

The Draft LAP includes specific objectives in relation to wastewater (refer to Objectives 11.4 to 11.8).

Development of the LAP lands will be dependent on the progress of relevant improvement works and will be subject to the agreement of Irish Water. All foul infrastructure shall be designed and constructed in consultation with Irish Water.

In April 2019, An Bord Pleanála granted permission to Irish Water for revisions to the approved scheme (granted permission in 2012) to upgrade the Ringsend Treatment Plant, which is currently operating at capacity. The upgrade permitted will include the use of Aerobic Granular Sludge (AGS) technology as well as the omission of the previously approved long sea outfall tunnel, which would have deposited treated material 9km out to sea. The approved upgrades to the treatment plant will allow it to increase its capacity from 1.64 million PE (population equivalent) to 2.4 million PE and will enable further population growth in the Dublin region, including at Kellystown. Irish Water plans to invest over €400 million in the staged upgrade of the plant, with the major phase of the works expected to be completed in 2020, with all works scheduled to be completed by 2025.

The Greater Dublin Drainage (GDD) Project is a long term scheme designed to provide the strategic drainage infrastructure required for the Greater Dublin Area (GDA) in the period up to 2050. It is currently estimated that construction of a new regional wastewater treatment plant in the Fingal area and orbital pipelines, stretching from Blanchardstown to Clonsilla, will be operational by 2026. The project also includes a new pumping station at Abbotstown and An Bord Pleanála granted planning permission for the GDD Project in November 2019.

The Draft LAP Lands at Kellystown will be served in the long term by both the Ringsend Treatment Plant and the GDD. However, it is important to note that development will only be permitted where there is adequate treatment capacity. Development will be dependent on the progress of relevant improvement works and will be subject to the agreement of Irish Water. All foul infrastructure shall be designed and constructed in consultation with Irish Water.

In particular, Objective 11.7 of the Draft LAP (*Permit new development only where it can be clearly demonstrated that there is adequate capacity in the wastewater disposal infrastructure in accordance with applicable requirements and standards, including urban wastewater treatment disposal standards*) will ensure that there is no possibility of the implementation of the Draft LAP objectives adversely impacting on the conservation objectives of any of the QIs or SCIs of any European sites in, or associated with, Dublin Bay (currently categorized as “unpolluted” according to the EPA database⁵) as a result of foul water discharges.

There is no possibility of any other potential direct, indirect or secondary impacts on any European site as a result of the implementation of the Draft LAP objectives. For example there will be no land-take from any European site and there will be no resource requirements such as water abstraction.

There will be no loss, fragmentation, disruption, disturbance or other change to any element of any European site as a result of the implementation of any of the Draft LAP objectives, and no interference with the key relationships that define the structure or function of any European site.

Details of the potential impacts of the implementation of the Draft LAP on European sites are presented in Table 2.

⁵ <https://gis.epa.ie/EPAMaps/>

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Table 2 lists relevant European sites and outlines their Qualifying Interests/Special Conservation Interests and Conservation Objectives*

European Site	Reasons for designation (information correct as of 17 th August 2020) (*denotes a priority habitat)	Source – Pathway – Receptor link
Rye Water Valley/Carton SAC (site code 001398), c.5.2km to the west	<p>7220 Petrifying springs with tufa formation (Cratoneurion)* Species 1016 Desmoulin's Whorl Snail (<i>Vertigo moulinsiana</i>) 1014 Narrow-mouthed Whorl Snail (<i>Vertigo angustior</i>)</p> <p>According to this SAC's site Generic Conservation Objectives document (Version 7, dated 7th April 2020), for each of the listed QIs, the Conservation Objectives are to maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.</p>	There is no hydrological link or any other pathway between the Draft LAP lands at Kellystown and this SAC. It is over 5km distant and is completely unconnected. Furthermore there will be no loss of habitat or species, fragmentation or disturbance to the qualifying interests of this SAC as a result of the implementation of any of the objectives of the Draft LAP.
Glenasmole Valley SAC (site code 001209), c.13.6km to the south	<p>6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) 6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) 7220 Petrifying springs with tufa formation (Cratoneurion)</p> <p>According to this SAC's site Generic Conservation Objectives document (Version 7, dated 7th April 2020), for each of the listed QIs, the Conservation Objectives are to maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.</p>	There is no hydrological link or any other pathway between the Draft LAP lands at Kellystown and this SAC. It is over 13km distant and is completely unconnected. Furthermore there will be no loss of habitat or species, fragmentation or disturbance to the qualifying interests of this SAC as a result of the implementation of any of the objectives of the Draft LAP.
South Dublin Bay SAC (site code 000210), c.14.1km to the south east	<p>1140 Mudflats and sandflats not covered by seawater at low tide</p> <p>The following habitats are listed as Qualifying Interests on the NPWS website, but are not included in the Conservation Objectives document:</p> <p>(1210 Annual vegetation of drift lines 1310 Salicornia and other annuals colonising mud and sand 2110 Embryonic shifting dunes)</p>	<p>No significant effects on water quality, and therefore on the site's QIs, are predicted.</p> <p>Surface/ground water arising during the implementation of the objectives of the Draft LAP could potentially contain pollutants (foul water, silt, hydrocarbons and other chemicals). Such contaminated water could potentially discharge to the ground or the local surface water drainage network and from there, eventually, to the sea.</p> <p>There would be no significant effects on the conservation objectives of the European site should this occur, given the nature and location of the Draft LAP lands at Kellystown and the policies and objectives set out in the Draft LAP. Even in the event of a pollution incident significant enough to</p>

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European Site	Reasons for designation (information correct as of 17 th August 2020) (*denotes a priority habitat)	Source – Pathway – Receptor link
	<p>According to this SAC's site Conservation Objectives document (Version 1, dated 22nd August 2013), for the listed QI, the Conservation Objective is to maintain the favourable conservation condition of the Annex I habitat for which the SAC has been selected.</p>	<p>impact upon surface/ground water quality locally, it is reasonable to assume that this would not be perceptible in South Dublin Bay SAC.</p> <p>This is due to the significant separation between the Draft LAP area and the European site – it is over 14km (straight line distance) from the SAC. In addition, significant dilution and mixing of surface and sea water would occur.</p> <p>There will be no loss of habitat or species, or disturbance to the qualifying interests of this site as a result of the implementation of the objectives of the Draft LAP.</p> <p>No operational impacts on this European site related to foul water management are envisaged as a result of the implementation of the objectives of the Draft LAP.</p>
<p>North Dublin Bay SAC (site code 000206), c.15.4km to the east</p>	<p>1140 Mudflats and sandflats not covered by seawater at low tide 1210 Annual vegetation of drift lines 1310 Salicornia and other annuals colonising mud and sand 1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) 1410 Mediterranean salt meadows (<i>Juncetalia maritimi</i>) 2110 Embryonic shifting dunes 2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)* 2190 Humid dune slacks 1395 Petalwort (<i>Petalophyllum ralfsii</i>)</p> <p>According to this SAC's site Conservation Objectives document (Version 1, dated 06th November 2013), for each of the listed QIs, the Conservation Objective is to maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.</p>	<p>No significant effects on water quality, and therefore on the site's QIs, are predicted.</p> <p>Surface/ground water arising during the implementation of the objectives of the Draft LAP could potentially contain pollutants (foul water, silt, hydrocarbons and other chemicals). Such contaminated water could potentially discharge to the ground or the local surface water drainage network and from there, eventually, to the sea.</p> <p>There would be no significant effects on the conservation objectives of the European site should this occur, given the nature and location of the Draft LAP lands at Kellystown and the policies and objectives set out in the Draft LAP. Even in the event of a pollution incident significant enough to impact upon surface/ground water quality locally, it is reasonable to assume that this would not be perceptible in North Dublin Bay SAC.</p> <p>This is due to the significant separation between the Draft LAP area and the European site – it is over 15km (straight line distance) from the SAC. In addition, significant dilution and mixing of surface and sea water would occur.</p> <p>There will be no loss of habitat or species, or disturbance to the qualifying interests of this site as a result of the implementation of the objectives of the Draft LAP.</p> <p>No operational impacts on this European site related to foul water management are envisaged as a result of the implementation of the objectives of the Draft LAP.</p>
<p>Wicklow Mountains SAC (site code 002122), c.15.8km to the south</p>	<p>3110 Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) 3160 Natural dystrophic lakes and ponds 4010 Northern Atlantic wet heaths with <i>Erica tetralix</i> 4030 European dry heaths 4060 Alpine and Boreal heaths</p>	<p>There is no hydrological link or any other pathway between the Draft LAP lands at Kellystown and this SAC. It is almost 16km distant and is completely unconnected. Furthermore there will be no loss of habitat or species, fragmentation or disturbance to the qualifying interests of this SAC as a result of the implementation of any of the objectives of the Draft LAP.</p>

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European Site	Reasons for designation (information correct as of 17 th August 2020) (*denotes a priority habitat)	Source – Pathway – Receptor link
	<p>6130 Calaminarian grasslands of the <i>Violetalia calaminariae</i></p> <p>6230 Species-rich <i>Nardus</i> grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe)*</p> <p>7130 Blanket bogs (* if active bog)</p> <p>8110 Siliceous scree of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i>)</p> <p>8210 Calcareous rocky slopes with chasmophytic vegetation</p> <p>8220 Siliceous rocky slopes with chasmophytic vegetation</p> <p>91A0 Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles</p> <p>1355 Otter (<i>Lutra lutra</i>)</p> <p>According to this SAC's site Conservation Objectives document (Version 1, dated 31st July 2017), for each of the listed QIs, the Conservation Objective is to maintain or restore the favourable conservation condition of the Annex I habitat(s) for which the SAC has been selected.</p>	
Malahide Estuary SAC (site code 000205), c.16.8km to the north east	<p>1140 Mudflats and sandflats not covered by seawater at low tide</p> <p>1310 <i>Salicornia</i> and other annuals colonising mud and sand</p> <p>1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>)</p> <p>1410 Mediterranean salt meadows (<i>Juncetalia maritimi</i>)</p> <p>2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)</p> <p>2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)*</p> <p>According to this SAC's site Conservation Objectives document (Version 1, dated 27th May 2013), for each of the listed QIs, the Conservation Objective is to maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.</p>	There is no hydrological link or any other pathway between the Draft LAP lands at Kellystown and this SAC. It is almost 17km distant and is completely unconnected. Furthermore there will be no loss of habitat or species, fragmentation or disturbance to the qualifying interests of this SAC as a result of the implementation of any of the objectives of the Draft LAP.
Baldoyle Bay SAC (site code 000199), c.18.3km to the north east	<p>1140 Mudflats and sandflats not covered by seawater at low tide</p> <p>1310 <i>Salicornia</i> and other annuals colonising mud and sand</p> <p>1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>)</p> <p>1410 Mediterranean salt meadows (<i>Juncetalia maritimi</i>)</p>	There is no hydrological link or any other pathway between the Draft LAP lands at Kellystown and this SAC. It is over 18km distant and is completely unconnected. Furthermore there will be no loss of habitat or species, fragmentation or disturbance to the qualifying interests of this SAC as a result of the implementation of any of the objectives of the Draft LAP.

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European Site	Reasons for designation (information correct as of 17 th August 2020) (*denotes a priority habitat)	Source – Pathway – Receptor link
	According to this SAC's site Conservation Objectives document (Version 1, dated 19 th November 2012), for each of the listed QIs, the Conservation Objective is to maintain the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.	
Rogerstown Estuary SAC (site code 000208), c.19.7km to the north east	<p>1130 Estuaries 1140 Mudflats and sandflats not covered by seawater at low tide 1310 Salicornia and other annuals colonising mud and sand 1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) 1410 Mediterranean salt meadows (<i>Juncetalia maritimi</i>) 2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)*</p> <p>According to this SAC's site Conservation Objectives document (Version 1, dated 14th August 2013), for each of the listed QIs, the Conservation Objective is to maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.</p>	There is no hydrological link or any other pathway between the Draft LAP lands at Kellystown and this SAC. It is almost 20km distant and is completely unconnected. Furthermore there will be no loss of habitat or species, fragmentation or disturbance to the qualifying interests of this SAC as a result of the implementation of any of the objectives of the Draft LAP.
Howth Head SAC (site code 000202), c.21.0km to the east	<p>1230 Vegetated sea cliffs of the Atlantic and Baltic coasts 4030 European dry heaths</p> <p>According to this SAC's site Conservation Objectives document (Version 1, dated 06th December 2016), for each of the listed QIs, the Conservation Objective is to maintain the favourable conservation condition of the Annex I habitats for which the SAC has been selected.</p>	There is no hydrological link or any other pathway between the Draft LAP lands at Kellystown and this SAC. It is approximately 21km distant and is completely unconnected. Furthermore there will be no loss of habitat or species, fragmentation or disturbance to the qualifying interests of this SAC as a result of the implementation of any of the objectives of the Draft LAP.
Rockabill to Dalkey Island SAC (site code 003000), c.21.6km to the east;	<p>1170 Reefs 1351 Harbour porpoise (<i>Phocoena phocoena</i>)</p> <p>According to this SAC's site Conservation Objectives document (Version 1, dated 07th May 2013), for each of the listed QIs, the Conservation Objective is to maintain the favourable conservation</p>	<p>No significant effects on water quality, and therefore on the site's QIs, are predicted.</p> <p>Surface/ground water arising during the implementation of the objectives of the Draft LAP could potentially contain pollutants (foul water, silt, hydrocarbons and other chemicals). Such contaminated water could potentially discharge to the ground or the local surface water drainage network and from there, eventually, to the sea.</p>

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European Site	Reasons for designation (information correct as of 17 th August 2020) (*denotes a priority habitat)	Source – Pathway – Receptor link
	condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.	<p>There would be no significant effects on the conservation objectives of the European site should this occur, given the nature and location of the Draft LAP lands at Kellystown and the policies and objectives set out in the Draft LAP. Even in the event of a pollution incident significant enough to impact upon surface/ground water quality locally, it is reasonable to assume that this would not be perceptible in Rockabill to Dalkey Island SAC.</p> <p>This is due to the significant separation between the Draft LAP area and the European site – it is over 21km (straight line distance) from the SAC. In addition, significant dilution and mixing of surface and sea water would occur.</p> <p>There will be no loss of habitat or species, or disturbance to the qualifying interests of this site as a result of the implementation of the objectives of the Draft LAP.</p> <p>No operational impacts on this European site related to foul water management are envisaged as a result of the implementation of the objectives of the Draft LAP.</p>
Red Bog, Kildare SAC (site code 000397), c.21.6km to the south west	<p>7140 Transition mires and quaking bogs</p> <p>According to this SAC's site Conservation Objectives document (Version 1, dated 17th July 2019), for the listed QI, the Conservation Objective is to maintain the favourable conservation condition of the Annex I habitat for which the SAC has been selected.</p>	There is no hydrological link or any other pathway between the Draft LAP lands at Kellystown and this SAC. It is almost 22km distant and is completely unconnected. Furthermore there will be no loss of habitat or species, fragmentation or disturbance to the qualifying interests of this SAC as a result of the implementation of any of the objectives of the Draft LAP.
Knocksink Wood SAC (site code 000725), c.22.7km to the south east	<p>7220 Petrifying springs with tufa formation (Cratoneurion)* 91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae)*</p> <p>According to this SAC's site Generic Conservation Objectives document (Version 7, dated 7th April 2020), for each of the listed QIs, the Conservation Objectives are to maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.</p>	There is no hydrological link or any other pathway between the Draft LAP lands at Kellystown and this SAC. It is almost 23km distant and is completely unconnected. Furthermore there will be no loss of habitat or species, fragmentation or disturbance to the qualifying interests of this SAC as a result of the implementation of any of the objectives of the Draft LAP.
Ireland's Eye SAC (site code 002193), c.23km to the east	<p>1220 Perennial vegetation of stony banks 1230 Vegetated sea cliffs of the Atlantic and Baltic coasts</p> <p>According to this SAC's site Conservation Objectives document (Version 1, dated 27th January 2017), for each of the listed QIs, the Conservation Objective is to maintain the favourable conservation</p>	There is no hydrological link or any other pathway between the Draft LAP lands at Kellystown and this SAC. It is approximately 23km distant and is completely unconnected. Furthermore there will be no loss of habitat or species, fragmentation or disturbance to the qualifying interests of this SAC as a result of the implementation of any of the objectives of the Draft LAP.

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European Site	Reasons for designation (information correct as of 17 th August 2020) (*denotes a priority habitat)	Source – Pathway – Receptor link
	condition of the Annex I habitat(s) for which the SAC has been selected.	
South Dublin Bay and River Tolka Estuary SPA (site code 004024), c.12.4km to the east	<p>A144 Sanderling (<i>Calidris alba</i>) A157 Bar-tailed Godwit (<i>Limosa lapponica</i>) A149 Dunlin (<i>Calidris alpina</i>) A162 Redshank (<i>Tringa totanus</i>) A179 Black-headed Gull (<i>Chroicocephalus ridibundus</i>) A143 Knot (<i>Calidris canutus</i>) A192 Roseate Tern (<i>Sterna dougallii</i>) A046 Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) A141 Grey Plover (<i>Pluvialis squatarola</i>) A130 Oystercatcher (<i>Haematopus ostralegus</i>) A194 Arctic Tern (<i>Sterna paradisaea</i>) A193 Common Tern (<i>Sterna hirundo</i>) A137 Ringed Plover (<i>Charadrius hiaticula</i>) Wetlands</p> <p>According to this SPA's site Conservation Objectives document (Version 1, dated 9th March 2015), for each of the listed SCIs, the Conservation Objective is to maintain the favourable conservation condition of the species and wetland habitat for which the SPA has been selected.</p>	<p>No significant effects on water quality, and therefore on the site's SCIs, are predicted.</p> <p>Surface/ground water arising during the implementation of the objectives of the Draft LAP could potentially contain pollutants (foul water, silt, hydrocarbons and other chemicals). Such contaminated water could potentially discharge to the ground or the local surface water drainage network and from there, eventually, to the sea.</p> <p>There would be no significant effects on the conservation objectives of the European site should this occur, given the nature and location of the Draft LAP lands at Kellystown and the policies and objectives set out in the Draft LAP. Even in the event of a pollution incident significant enough to impact upon surface/ground water quality locally, it is reasonable to assume that this would not be perceptible in South Dublin Bay and River Tolka Estuary SPA.</p> <p>This is due to the significant separation between the Draft LAP area and the European site – it is over 14km (straight line distance) from the SPA. In addition, significant dilution and mixing of surface and sea water would occur.</p> <p>There will be no loss of wetland habitat or species, or disturbance to the special conservation interests of this site as a result of the implementation of the objectives of the Draft LAP.</p> <p>No operational impacts on this European site related to foul water management are envisaged as a result of the implementation of the objectives of the Draft LAP.</p>
North Bull Island SPA (site code 004006), c.15.5km to the east	<p>A160 Curlew (<i>Numenius arquata</i>) A149 Dunlin (<i>Calidris alpina</i>) A157 Bar-tailed Godwit (<i>Limosa lapponica</i>) A162 Redshank (<i>Tringa totanus</i>) A179 Black-headed Gull (<i>Chroicocephalus ridibundus</i>) A144 Sanderling (<i>Calidris alba</i>) A156 Black-tailed Godwit (<i>Limosa limosa</i>) A143 Knot (<i>Calidris canutus</i>) A169 Turnstone (<i>Arenaria interpres</i>) A054 Pintail (<i>Anas acuta</i>) A046 Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) A048 Shelduck (<i>Tadorna tadorna</i>)</p>	<p>No significant effects on water quality, and therefore on the site's SCIs, are predicted.</p> <p>Surface/ground water arising during the implementation of the objectives of the Draft LAP could potentially contain pollutants (foul water, silt, hydrocarbons and other chemicals). Such contaminated water could potentially discharge to the ground or the local surface water drainage network and from there, eventually, to the sea.</p> <p>There would be no significant effects on the conservation objectives of the European site should this occur, given the nature and location of the Draft LAP lands at Kellystown and the policies and objectives set out in the Draft LAP. Even in the event of a pollution incident significant enough to impact upon surface/ground water quality locally, it is reasonable to assume that this would not be perceptible in North Bull Island SPA.</p>

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European Site	Reasons for designation (information correct as of 17 th August 2020) (*denotes a priority habitat)	Source – Pathway – Receptor link
	<p>A052 Teal (<i>Anas crecca</i>) A141 Grey Plover (<i>Pluvialis squatarola</i>) A056 Shoveler (<i>Anas clypeata</i>) A130 Oystercatcher (<i>Haematopus ostralegus</i>) A140 Golden Plover (<i>Pluvialis apricaria</i>) Wetlands</p> <p>According to this SPA's site Conservation Objectives document (Version 1, dated 9th March 2015), for each of the listed SCIs, the Conservation Objective is to maintain the favourable conservation condition of the species and wetland habitat for which the SPA has been selected.</p>	<p>This is due to the significant separation between the Draft LAP area and the European site – it is over 15km (straight line distance) from the SPA. In addition, significant dilution and mixing of surface and sea water would occur.</p> <p>There will be no loss of wetland habitat or species, or disturbance to the special conservation interests of this site as a result of the implementation of the objectives of the Draft LAP.</p> <p>No operational impacts on this European site related to foul water management are envisaged as a result of the implementation of the objectives of the Draft LAP.</p>
Broadmeadow/Swords Estuary (Malahide Estuary) SPA (site code 004025), c.16.9km to the north east	<p>A048 Shelduck (<i>Tadorna tadorna</i>) A054 Pintail (<i>Anas acuta</i>) A067 Goldeneye (<i>Bucephala clangula</i>) A130 Oystercatcher (<i>Haematopus ostralegus</i>) A162 Redshank (<i>Tringa totanus</i>) A143 Knot (<i>Calidris canutus</i>) A157 Bar-tailed Godwit (<i>Limosa lapponica</i>) A156 Black-tailed Godwit (<i>Limosa limosa</i>) A140 Golden Plover (<i>Pluvialis apricaria</i>) A046 Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) A149 Dunlin (<i>Calidris alpina</i>) A141 Grey Plover (<i>Pluvialis squatarola</i>) A069 Red-breasted Merganser (<i>Mergus serrator</i>) A005 Great Crested Grebe (<i>Podiceps cristatus</i>) A999 Wetlands</p> <p>According to this SPA's site Conservation Objectives document (Version 1, dated 16th August 2013), for each of the listed SCIs, the Conservation Objective is to maintain the favourable conservation condition of the species and wetland habitat for which the SPA has been selected.</p>	<p>There is no hydrological link or any other pathway between the Draft LAP lands at Kellystown and this SPA. It is almost 17km distant and is completely unconnected. Furthermore there will be no loss of species, fragmentation or disturbance to the special conservation interests of this SPA as a result of the implementation of any of the objectives of the Draft LAP.</p>
Wicklow Mountains SPA (site code 004040), c.17.3km to the south	<p>A098 Merlin (<i>Falco columbarius</i>) A103 Peregrine (<i>Falco peregrinus</i>)</p>	<p>There is no hydrological link or any other pathway between the Draft LAP lands at Kellystown and this SPA. It is over 17km distant and is completely unconnected. Furthermore there will be no loss</p>

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Information for Screening for Appropriate Assessment

European Site	Reasons for designation (information correct as of 17 th August 2020) (*denotes a priority habitat)	Source – Pathway – Receptor link
	According to this SPA's site Generic Conservation Objectives document (Version 7, dated 7 th April 2020), for each of the listed SCIs, the Conservation Objectives are to maintain or restore the favourable conservation condition of the species for which the SPA has been selected.	of species, fragmentation or disturbance to the special conservation interests of this SPA as a result of the implementation of any of the objectives of the Draft LAP.
Baldoyle Bay SPA (site code 004016), c.18.5km to the north east	<p>A137 Ringed Plover (<i>Charadrius hiaticula</i>) A048 Shelduck (<i>Tadorna tadorna</i>) A140 Golden Plover (<i>Pluvialis apricaria</i>) A157 Bar-tailed Godwit (<i>Limosa lapponica</i>) A141 Grey Plover (<i>Pluvialis squatarola</i>) A046 Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) A999 Wetlands</p> <p>According to this SPA's site Conservation Objectives document (Version 1, dated 27th February 2013), for each of the listed SCIs, the Conservation Objective is to maintain the favourable conservation condition of the species and wetland habitat for which the SPA has been selected.</p>	There is no hydrological link or any other pathway between the Draft LAP lands at Kellystown and this SPA. It is approximately 18.5km distant and is completely unconnected. Furthermore there will be no loss of species, fragmentation or disturbance to the special conservation interests of this SPA as a result of the implementation of any of the objectives of the Draft LAP.
Rogerstown Estuary SPA (site code 004015), c.20.4km to the north east	<p>A046 Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) A141 Grey Plover (<i>Pluvialis squatarola</i>) A043 Greylag Goose (<i>Anser anser</i>) A143 Knot (<i>Calidris canutus</i>) A137 Ringed Plover (<i>Charadrius hiaticula</i>) A130 Oystercatcher (<i>Haematopus ostralegus</i>) A048 Shelduck (<i>Tadorna tadorna</i>) A056 Shoveler (<i>Anas clypeata</i>) A149 Dunlin (<i>Calidris alpina</i>) A162 Redshank (<i>Tringa totanus</i>) A156 Black-tailed Godwit (<i>Limosa limosa</i>) Wetlands</p> <p>According to this SPA's site Conservation Objectives document (dated 20th May 2013), for each of the listed SCIs, the Conservation Objective is to maintain the favourable conservation condition of the species and wetland habitat for which the SPA has been selected.</p>	There is no hydrological link or any other pathway between the Draft LAP lands at Kellystown and this SPA. It is over 20km distant and is completely unconnected. Furthermore there will be no loss of species, fragmentation or disturbance to the special conservation interests of this SPA as a result of the implementation of any of the objectives of the Draft LAP.

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European Site	Reasons for designation (information correct as of 17 th August 2020) (*denotes a priority habitat)	Source – Pathway – Receptor link
Poulaphouca Reservoir SPA (site code 004063), c.22.4km to the south west	<p>A043 Greylag goose (<i>Anser anser</i>) A183 Lesser black-backed gull (<i>Larus fuscus</i>)</p> <p>According to this SPA's site Generic Conservation Objectives document (Version 7, dated 7th April 2020), for the listed SCI, the Conservation Objective is to maintain or restore the favourable conservation condition of the species for which the SPA has been selected.</p>	There is no hydrological link or any other pathway between the Draft LAP lands at Kellystown and this SPA. It is over 22km distant and is completely unconnected. Furthermore there will be no loss of species, fragmentation or disturbance to the special conservation interests of this SPA as a result of the implementation of any of the objectives of the Draft LAP.
Ireland's Eye SPA (site code 004117), c.22.8km to the east	<p>A017 Cormorant (<i>Phalacrocorax carbo</i>) A184 Herring Gull (<i>Larus argentatus</i>) A188 Kittiwake (<i>Rissa tridactyla</i>) A199 Guillemot (<i>Uria aalge</i>) A200 Razorbill (<i>Alca torda</i>)</p> <p>According to this SPA's site Generic Conservation Objectives document (Version 7, dated 7th April 2020), for each of the listed SCIs, the Conservation Objectives are to maintain or restore the favourable conservation condition of the species for which the SPA has been selected.</p>	There is no hydrological link or any other pathway between the Draft LAP lands at Kellystown and this SPA. It is almost 23km distant and is completely unconnected. Furthermore there will be no loss of species, fragmentation or disturbance to the special conservation interests of this SPA as a result of the implementation of any of the objectives of the Draft LAP.
Howth Head SPA (site code 004113), c.23.8km to the east	<p>A188 Kittiwake (<i>Rissa tridactyla</i>)</p> <p>According to this SPA's site Generic Conservation Objectives document (Version 7, dated 7th April 2020), for the listed SCI, the Conservation Objective is to maintain or restore the favourable conservation condition of the species for which the SPA has been selected.</p>	There is no hydrological link or any other pathway between the Draft LAP lands at Kellystown and this SPA. It is almost 24km distant and is completely unconnected. Furthermore there will be no loss of species, fragmentation or disturbance to the special conservation interests of this SPA as a result of the implementation of any of the objectives of the Draft LAP.
Dalkey Islands SPA (site code 004172), c.24.0km to the south east	<p>A194 Arctic Tern (<i>Sterna paradisaea</i>) A193 Common Tern (<i>Sterna hirundo</i>) A192 Roseate Tern (<i>Sterna dougallii</i>)</p> <p>According to this SPA's site Generic Conservation Objectives document (Version 7, dated 7th April 2020), for each of the listed SCIs, the Conservation Objectives are to maintain or restore the favourable conservation condition of the species for which the SPA has been selected.</p>	There is no hydrological link or any other pathway between the Draft LAP lands at Kellystown and this SPA. It is approximately 24km distant and is completely unconnected. Furthermore there will be no loss of species, fragmentation or disturbance to the special conservation interests of this SPA as a result of the implementation of any of the objectives of the Draft LAP.

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Information for Screening for Appropriate Assessment

*For completeness, this table includes all sites within 25km of the site, however, as confirmed in Section 5.1, only the sites associated with Dublin Bay are linked in any way to the proposed development site. None of the other listed sites, and no sites further afield, are remotely linked to the Kellystown site, by virtue of distance, lack of a pathway and the reasons for their designation.



5.2 Summary of potential impacts of the Draft LAP

There will be no loss of any habitat or species listed as a QI or SCI of any designated site as a consequence of the implementation of the Draft LAP. There is, therefore, no potential for the effects of habitat loss or fragmentation to occur.

In addition there is no possibility of any impacts on water, via either surface or foul water, as a result of the implementation of the objectives of the Draft LAP.

There will also be no significant effects on any European sites as a result of:

- Land-take;
- Resource requirements such as water abstraction;
- Impacts to habitat structure;
- Mortality to species (such as roadkill);
- Noise pollution/vibration impacts;
- Light pollution;
- Air pollution.

6 Other issues

No invasive alien plant species (*i.e.* those species listed on Schedule 3 of the *Birds and Habitats Regulations, 2011-2015*, such as Japanese knotweed or giant hogweed) were identified on site.

Additionally, for the reasons outlined in this report for the European sites, no impacts on any other designated sites including proposed Natural Heritage Areas, will occur.

7 Mitigation specific to European sites

In relation to European sites, there will be no impacts as a result of the implementation of the Draft LAP.

Therefore no mitigation is necessary or proposed for the protection of European sites or which is intended to avoid or reduce impacts on any European sites. Accordingly, this screening assessment is consistent with the judgment of the European Court in Case C-323/17, *People Over Wind & Sweetman v Coillte* (Judgment of the Court (Seventh Chamber) of 12 April 2018) and the recent case-law of the High Court, including *Heather Hill Management Company CLG v An Bord Pleanála* [2019] IEHC 450 and *Sweetman v An Bord Pleanála* [2020] IEHC 39.

As noted in Section 5.1.2, the operational Surface water management for the Draft LAP will comply with the 'Greater Dublin Strategic Drainage Study (GDSDS) Regional Drainage Policies Technical Document – Volume 2, New Developments, 2005' and it is proposed to use a sustainable urban drainage system (SuDS) approach to storm water management throughout the overall site. However, the High Court has held that compliance with SuDS is not a mitigation measure intended to avoid or reduce the impact on European sites: see *Eoin Kelly v An Bord Pleanála* [2019] IEHC 84.

Notwithstanding this, any future development arising will be subject to Appropriate Assessment Screening in its own right and adequately addressed through the assessment of individual planning applications and within the provisions of the normal planning and sustainable development process.

8 In-combination effects

It is a requirement of the Part XAB of the *Planning and Development Act 2000* that when considering whether a plan or project will have a significant effect on a European site the assessment must take into account in-combination effects with other current or reasonably foreseeable plans and projects. If there are identified effects arising from the plan or project even if they are perceived as minor and not likely to have a significant effect on the integrity of a European site alone, then these effects must be considered ‘in-combination’ with the effects arising from other plans and projects.

The Draft LAP has been guided by EU Directives, the National Planning Framework, Eastern Regional Spatial and Economic Strategy (RSES) and by the Fingal Development Plan 2017-2023 (including Variations to the Plan), in addition to various Government policy documents and guidelines. Variation No. 2 to Fingal Development Plan 2017-2023 (adopted June 2020) aligns the Development Plan with the National Planning Framework (NPF) and the Regional Spatial and Economic Strategy (RSES).

Fingal Development Plan 2017-2023, (including Variations to the Plan), sets out the Council’s policies and objectives for the development of the County over the Plan period. It seeks to develop and improve, in a sustainable manner the social, economic, environmental and cultural assets of the County. The Draft LAP has had due regard to all relevant policies and objectives set out in the Development Plan.

Sheet 13 of the Development Plan includes a number of **Specific Objectives** of relevance to Kellystown LAP lands. A **Road Proposal** crosses the lands to connect the L3035 in the east to R121 along the western boundary of the lands, see Figure 3.1 above. The Road Proposal is identified in **Table 7.1 Road Schemes** of the Development Plan (page, 262) as the “*Kellystown Road*”, and **Objective MT41** of the Development Plan (page, 261) seeks “*to implement the Road Improvement Schemes indicated in Table 7.1*”. Fingal County Council has commissioned consultants to prepare an options assessment and preliminary design for this road proposal, which will be subject to separate appropriate environmental assessment and to a future public consultation prior to seeking consent.

The Development Plan also includes the following map based local objectives within Kellystown LAP area:

Local Objective 130: *Prepare a feasibility study on the location of a road bridge, crossing the Royal Canal and the Dublin-Maynooth railway, connecting north to the Ongar road. This location shall be determined in advance of, or part of, the adoption of the Local Area Plan for lands at Kellystown.*

Local Objective 137: *Preserve the existing pedestrian and vehicular right of way at the level crossing at Porterstown.*

Local Objective 144: *Protect the rural character and setting of the Luttrellstown Road and enhance its use for pedestrians and cyclists.*

Local Objective 146: *Provide for a burial ground of up to 4 hectares within the Kellystown area. This site is to be identified as part of, or in advance of, the adoption of Kellystown LAP.*

In relation to Objectives 130 and 137, Iarnród Éireann has recently commissioned consultants to prepare an options assessment and preliminary design for these projects and for electrification of the rail line.

In relation to Objective 146, Fingal County Council obtained planning consent for the graveyard and has contracted construction of Phase 1 of the development of the cemetery, which is currently on-going.

The Draft LAP is in full compliance with all of the relevant policies and objectives of the Fingal Development Plan, as varied. The Development Plan was itself subject to Appropriate Assessment. No developments are proposed within the immediate vicinity of the site that would, in combination with the Draft LAP in this report, give rise to significant effects.

Running concurrently with, but separate to, the preparation of the Draft Kellystown LAP, Fingal County Council is proposing to develop a new road scheme (the Kellystown Road Scheme). The proposed road will run from the Diswellstown Road Extension to the proposed Ongar Barnhill Distributor Road, and the eastern portion of the road will run through the Kellystown Draft LAP lands.

The road scheme is to be delivered under Part 8⁶ of the Planning and Development Regulations 2001-2020 and is currently at Route Selection Stage – a Preferred Route has been selected. A report (*Information for Screening for Appropriate Assessment*) has been prepared by Brady Shipman Martin to accompany the Route Selection Report for the Kellystown Road Scheme (itself prepared by Clifton Scannell Emerson (Final Draft version, 3rd issue, dated 31st January 2019)). The report assessed each of the route options, including the Preferred Route, in terms of their potential to have any significant effects on any European sites. The conclusion of the AA Screening report for the Kellystown Road Scheme was that *the proposed Kellystown Road Development, individually or in combination with another plan or project, is not likely to have a significant effect on European sites under Article 6 of the Habitats Directive (92/43/EEC) in light of their conservation objectives. The Proposed Development of the Kellystown Road Scheme does not require an Appropriate Assessment and the preparation of a Natura Impact Statement.*

Due to the location of the Kellystown site and based on the studies undertaken in relation to both the Draft Kellystown LAP and the proposed Kellystown Road Scheme, it is reasonable to conclude that there will be no in-combination effects arising out of the implementation of the Draft LAP and the development of the proposed road scheme.

On the basis of objective information it can be excluded that the implementation of the Draft LAP, individually or in-combination with other plans or projects, will have a significant effect on a European site.

9 Screening conclusion

Following review of the draft objectives of the LAP against the Conservation Objectives of the relevant European sites, it is concluded that there is no possibility that the implementation of the LAP could result in any likely significant effects on European sites on its own or in combination with other plans and programmes.

In view of best scientific knowledge therefore, this report concludes that the Draft LAP, individually or in combination with another plan or project, is not likely to have a significant effect on European sites under Article 6 of the Habitats Directive (92/43/EEC) in light of their conservation objectives. The Draft LAP does not require an Appropriate Assessment and the preparation of a Natura Impact Report.

⁶ Provisions with respect to certain development by or on behalf of local authorities

Appendix I: Background

The European⁷ network is a Europe-wide network of ecologically important sites (SPAs and cSACs – also known as ‘European Sites’ or ‘Natura 2000 sites’) that have been designated for protection under either the EU Birds Directive (Council Directive 79/409/EEC on the Conservation of Wild Birds) or the EU Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna).

The main aim of the Habitats Directive is “to contribute towards ensuring biodiversity through the conservation of natural habitats of wild fauna and flora in the European territory of the Member States to which the treaty applies”. Any actions taken must be designed to “maintain or restore, at a favourable conservation status, natural habitats and species of wild fauna and flora of Community interest”. Under Article 6 of the Habitats Directive, an assessment is required where a plan or project may give rise to significant effects upon a European site.

In addition, it is a matter of law that candidate SACs (cSACs) and Sites of Community Importance (SCI) are considered in this process;

Article 6 (paragraphs (3) and (4)) of the Habitats Directive states that:

(3) Any plan or project not directly connected with or necessary to the management of the site but likely to have significant effect thereon, either individually or in combination with other plans or projects, shall be subject to Appropriate Assessment of its implications for the site in view of the site’s conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.

(4) If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.

Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest”

The requirements of the Habitats Directive are transposed into Irish law by means of the *European Communities (Birds and Natural Habitats) Regulations 2011-2015* (hereafter referred to as the *Birds and Habitats Regulations*) and by the *Planning and Development Act 2000*, as amended.

In Ireland, the statutory agency responsible for the designated areas is NPWS.

Stages in the assessment

European Commission guidance (2001)⁸ sets out the principles on how to undertake decision making in applying the Habitats Directive. The requirements of the Habitats Directive comprise four distinct stages:

Stage 1: Screening is the process which initially identifies the likely significant effects upon a European site of a project or plan, either alone or in combination with other projects or plans, and considers whether these impacts may be significant. It is important to note that the burden of evidence is to show, on the basis of objective information, that there will be no significant effect; if the effect may be significant, or is not known, that would trigger the need for an Appropriate Assessment. There is European Court of Justice case law to the

⁷ The EU Habitats Directive, Article 3.1, states “A Coherent European ecological network of Special Areas of Conservation and Special Protection Areas pursuant to Directive 79/409/EEC shall be set up under the title European”

⁸ European Commission (2001) *Assessment of Plans and Projects Significantly Affecting European Sites: Methodological Guidance on the Provisions of Article 6 (3) and (4) of the Habitats Directive 92/43/EEC*

effect that unless the likelihood of a significant effect can be ruled out on the basis of objective information, then an Appropriate Assessment must be made.

Stage 2: Appropriate Assessment is the detailed consideration of the impact on the integrity of the European site of the project or plan, either alone or in combination with other projects or plans, with respect to the site's conservation objectives and its structure and function. This is to determine with scientific certainty whether or not there will be adverse effects on the integrity of the site in light of its conservation objectives. This stage also includes the development of mitigation measures to avoid or reduce any possible impacts.

Stage 3: Assessment of alternative solutions is the process which examines alternative ways of achieving the objectives of the project or plan that would avoid impacts on the integrity of the European site, should avoidance or mitigation measures be unable to cancel out adverse effects.

Stage 4: Assessment where no alternative solutions exist and where adverse impacts remain. At Stage 4 an assessment is made with regard to whether or not the development is necessary for imperative reasons of overriding public interest (IROPI) and, if so, of the compensatory measures needed to maintain the overall coherence of the European network.

Conservation Objectives of European sites

The conservation objectives for a European Site are intended to represent the aims of the Habitats and Birds Directives in relation to that site. To this end, habitats and species of European Community importance should be maintained or restored to 'favourable conservation status' (FCS), as defined in Article 1 of the Habitats Directive below:

The conservation status of a natural habitat will be taken as 'favourable' when:

- Its natural range and the area it covers within that range are stable or increasing;
- The specific structure and functions which are necessary for its long term maintenance exist and are likely to continue to exist for the foreseeable future;
- Conservation status of typical species is favourable as defined in Article 1(i).

The conservation status of a species will be taken as favourable 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;
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future;
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Guidance from the European Commission⁹ indicates that the Habitats Directive intends FCS to be applied at the level of an individual site, as well as to habitats and species across their European range. Therefore, in order to properly express the aims of the Habitats Directive for an individual site, the conservation objectives for a site are essentially to maintain (or restore) the habitats and species of the site at (or to) FCS.

The European Commission guidance recommends that screening should fulfil the following steps:

1. Determine whether the plan (or policy) is directly connected with or necessary for the management of European sites;
2. Describe the plan and describe and characterise any other plans or projects which, in combination, have the potential for having significant effects on European sites;
3. Identify the potential effects on European sites;

Assess the likely significance of any effects on European sites.

⁹ Managing European sites: the provisions of Article 6 of the Habitats Directive 92/43/EEC. (European Commission 2000)

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Appropriate Assessment (AA) Screening Determination

Planning and Development Regulations 2001 (as amended)

Pursuant to the *Planning and Development Act 2000* (as amended) and the *Planning and Development Regulations 2001* (as amended), Fingal County Council has prepared a Draft Local Area Plan (LAP) for Kellystown. The Draft LAP seeks to establish a land use strategy for the proper planning and sustainable development of the lands at Kellystown, Dublin 15.

This Appropriate Assessment Screening Determination of the Draft LAP has been prepared as per the requirements of Regulation 42(1) of the *European Communities (Birds and Natural Habitats) Regulations 2011-2015*. It has been informed by the contents of an AA Screening report (the *Draft Kellystown Local Area Plan – Information for Screening for Appropriate Assessment*). The AA Screening report was written by Brady Shipman Martin on behalf of Fingal County Council.

The AA Screening Report comprises an appraisal of the Draft LAP and its potential to impact on European sites as well as an appraisal of whether the implementation of the Draft LAP is likely to have a significant effect on any European sites.

The Draft LAP study area and surrounding environment are described in Section 3.3 of the AA Screening Report and Section 4 describes the Draft LAP itself. Section 5, including Table 2, appraises the potential impacts of the Draft LAP in the context of the European sites within the zone of influence of the Draft LAP area.

In addition, the AA Screening Report, at Section 8, examines the potential for other plans and/or projects to act in combination with the Draft LAP and to have a significant effect on European sites within the zone of influence of the Draft LAP area. The appraisal concluded that there are no other plans or projects that will act in combination with the Draft LAP to have a significant effect on European sites.

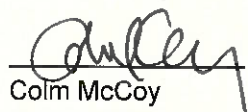
The AA Screening Report concludes the following:

"Following review of the draft objectives of the LAP against the Conservation Objectives of the relevant European sites, it is concluded that there is no possibility that the implementation of the LAP could result in any likely significant effects on European sites on its own or in combination with other plans and programmes.

In view of best scientific knowledge therefore, this report concludes that the Draft LAP, individually or in combination with another plan or project, is not likely to have a significant effect on European sites under Article 6 of the Habitats Directive (92/43/EEC) in light of their conservation objectives. The Draft LAP does not require an Appropriate Assessment and the preparation of a Natura Impact Report."

Fingal County Council, having examined both the Draft LAP and the AA Screening Report, agrees with the conclusions presented in the AA Screening Report. In light of best scientific knowledge and in

the absence of mitigation measures Fingal County Council is satisfied that the Draft LAP is not likely to have a significant effect on any European sites, either alone or in combination with other plans or projects. Therefore a Stage 2 Appropriate Assessment is not required.


Colm McCoy
Senior Planner

17th September 2020

Appendix 5

Traffic Modelling Assessment



Appendix 5

Kellystown LAP - Modelling Assessment Results

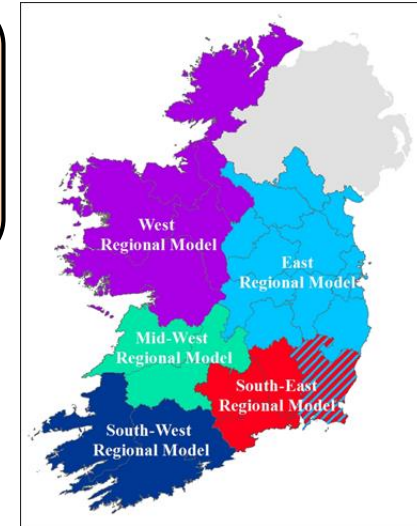
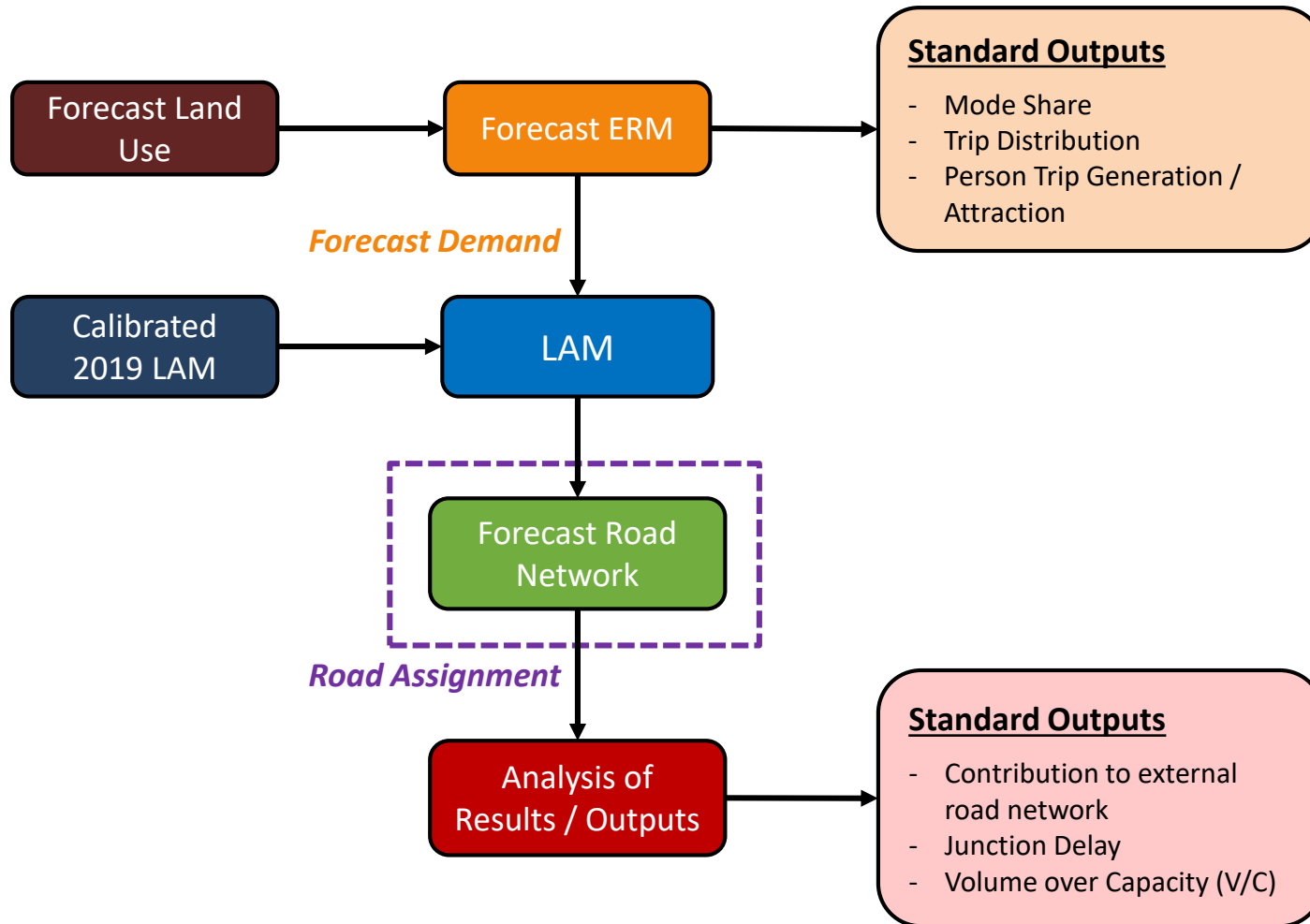
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Glossary

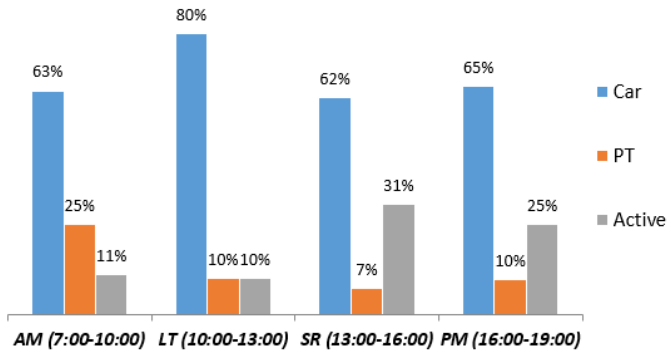
- AM: ante meridiem peak period (07:00 – 10:00)
- LT: Lunch time period (10:00 – 13:00)
- SR: School Run (13:00 – 16:00)
- PM: Post meridiem peak period (16:00 – 19:00)
- V/C: Volume over Capacity at Junctions
- Active mode: Walking and Cycling
- Origin: trips leaving Kellystown
- Trip Generation: indicates how many trips the new development at Kellystown will generate
- Trip Distribution: indicates where the trips from Kellystown go, i.e. which areas/towns
- Mode Share: Indicates the percentage of trips by car, public transport or active modes

Modelling Methodology



ERM - Mode Share

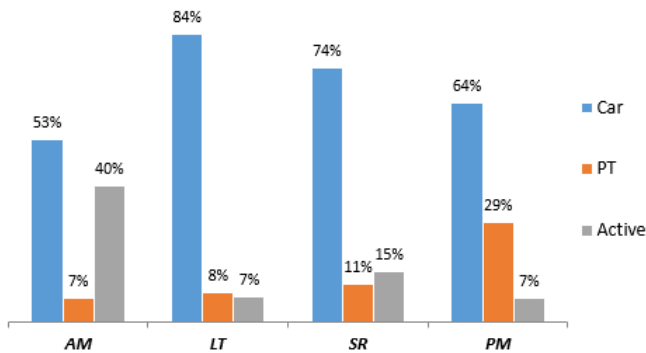
Origin Mode Share



Demand

Time Period	Car	PT	Active	Total
AM (7:00-10:00)	1,793	717	319	2,829
LT (10:00-13:00)	1,026	132	129	1,287
SR (13:00-16:00)	1,716	203	868	2,787
PM (16:00-19:00)	1,075	164	421	1,661

Destination Mode Share



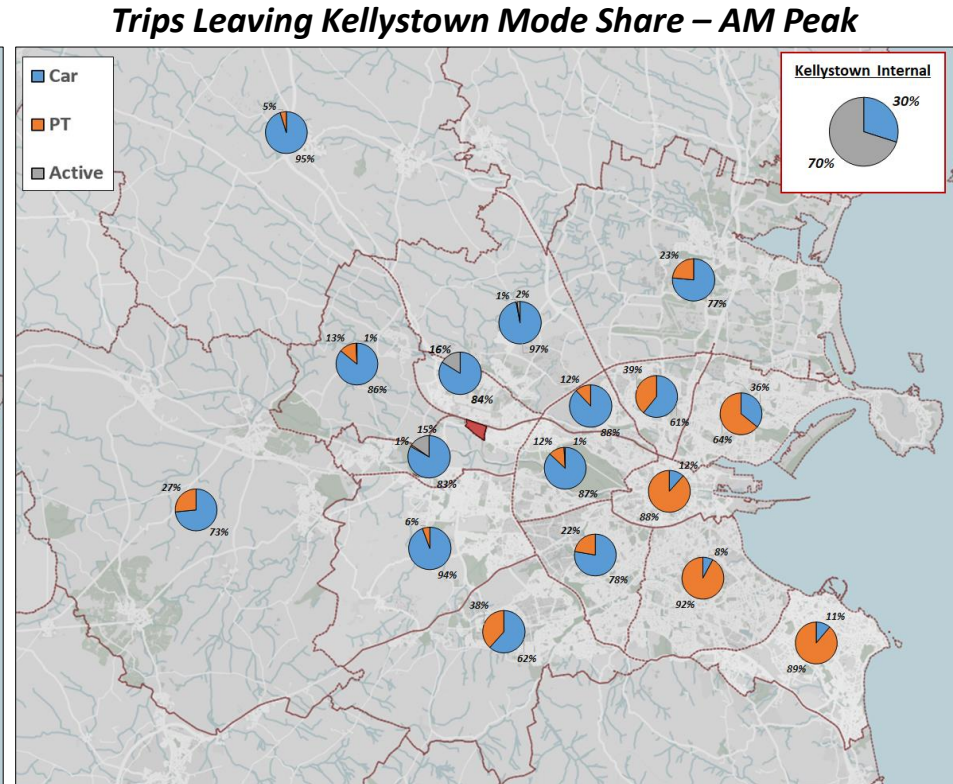
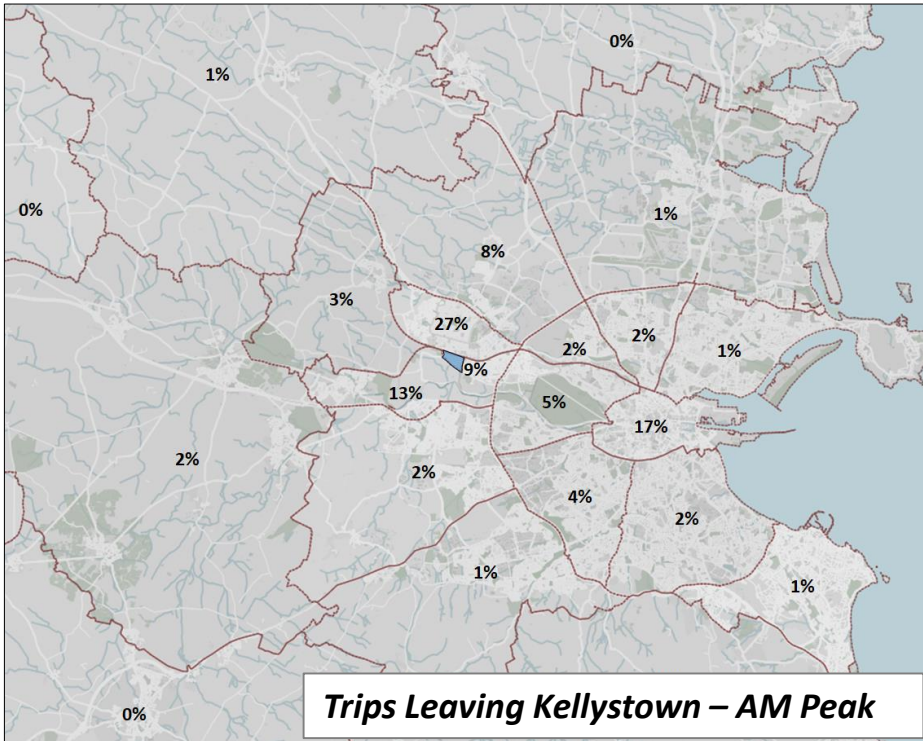
Demand

Time Period	Car	PT	Active	Total
AM	1,756	229	1,312	3,297
LT	507	51	45	603
SR	1,208	180	237	1,625
PM	972	444	104	1,520

- The Kellystown development will generate approx. 2,800 person trips in the AM peak period (07:00 – 10:00);
- The car mode share is 63%, which equates to approx. 625 car trips exiting Kellystown in the AM peak hour (08:00 – 09:00);
- 25% of trips leaving Kellystown in the AM peak are using PT – predominantly the upgraded DART Expansion Network travelling towards the city centre;
- The Active (Walking & Cycling) mode share is relatively high in the AM and SR (School Run 13:00 – 16:00) time periods reflecting children and parents travelling to school;
- Active mode share is also relatively high for trips leaving Kellystown in the PM peak (25%). Trip Distribution Analysis indicates that approx. 61% of all trips leaving Kellystown in the PM are travelling locally to areas such as Clonsilla, Coolmine and Blanchardstown for shopping, visiting friends etc.

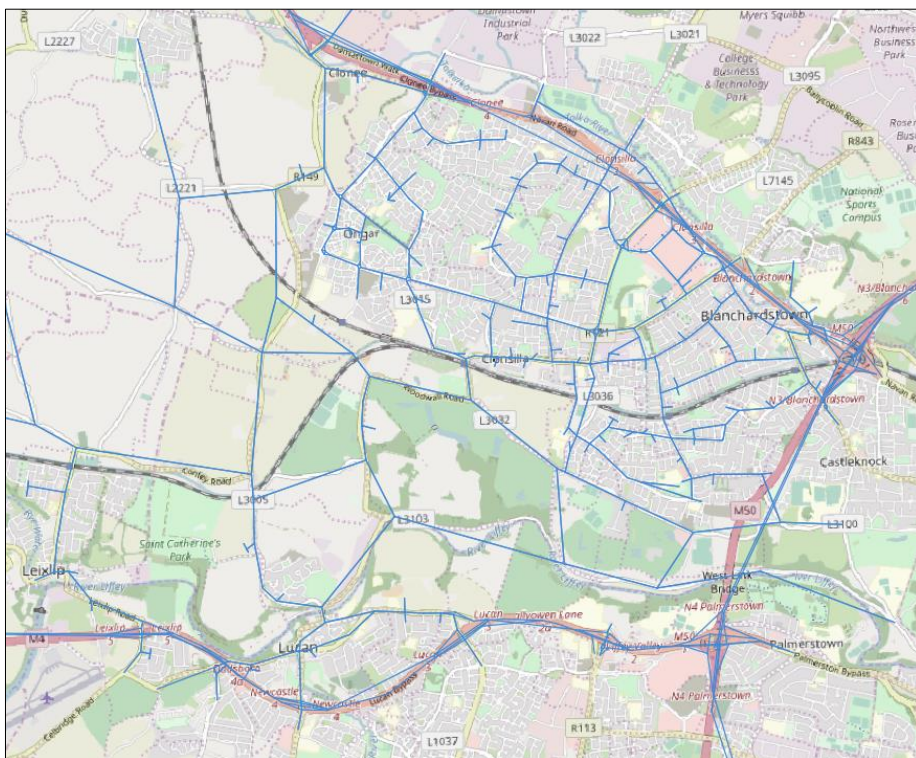
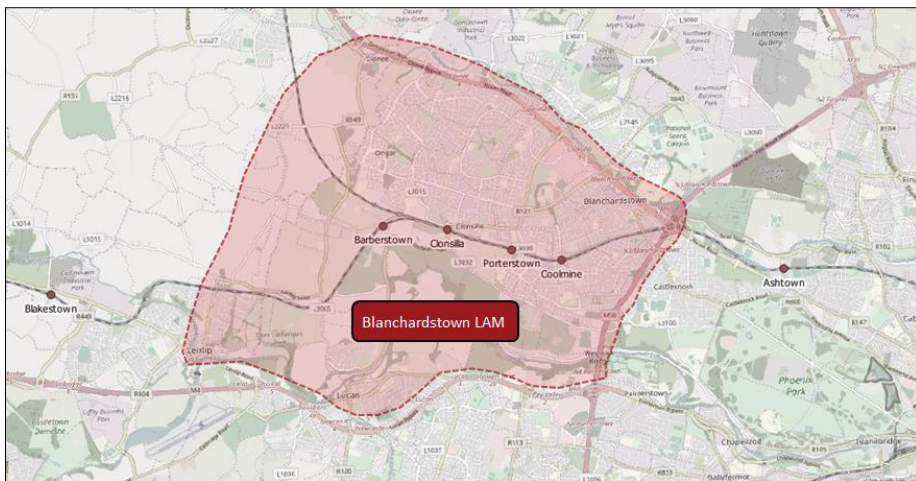
**Note: ERM Zone includes Luttrellstown Community College and Scoil Choilm Community National School*

ERM - Trip Distribution



- 52% of trips leaving Kellystown in the AM Peak travel within the N3/N4/M50 boundary area;
- 9% of trips remain within the Kellystown development – local school trips;
- High walk and cycle (Active) mode share for internal trips – children and parents travelling to school;
- 17% of trips (~480) travelling towards Dublin City Centre in the AM Peak;
- Of these trips, 88% are undertaken using PT – primarily using the upgraded DART Expansion Network;
- Local trips to areas such as Coolmine, Clonsilla and Blanchardstown are predominantly undertaken by car.

Calibrated Local Area Model

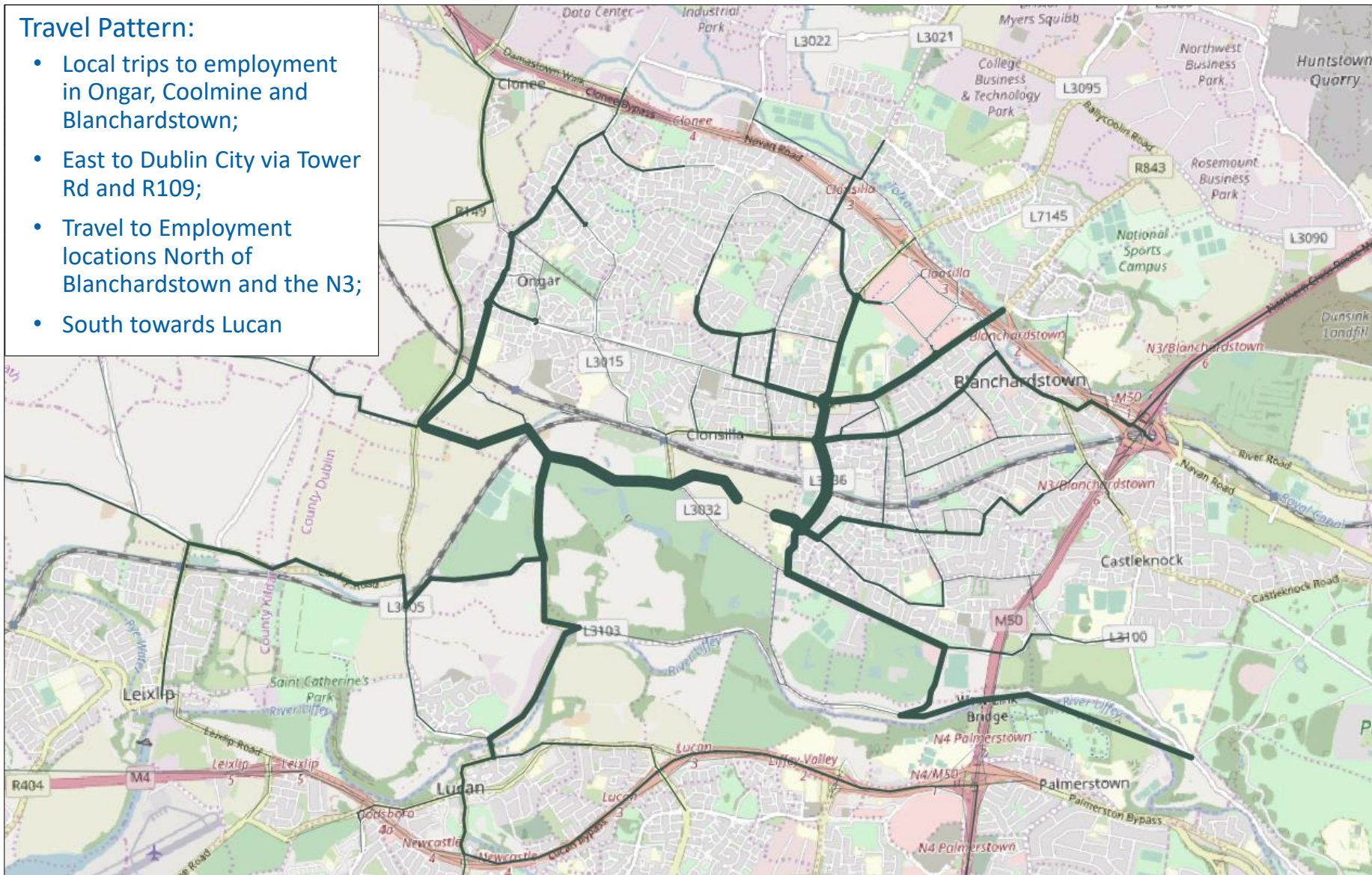


- Developed from the ERM as part of the Maynooth Line Transport Study;
- Updated Network and Zonal detail to provide an accurate representation of the model area;
- Calibrated and Validated to 2019 traffic count data for the AM (08:00 – 09:00) and PM (17:00 – 18:00) peak hours in-line with TII Guidance;
- Provides a robust representation of vehicular traffic on the road network within the model area;
- Used to test the impact of the future development at Kellystown on the local road network, focusing on:
 - Contribution to overall link flows;
 - Volume over Capacity at key junctions; and
 - Change in Delay at Key junctions when compared to a 'No Development' scenario

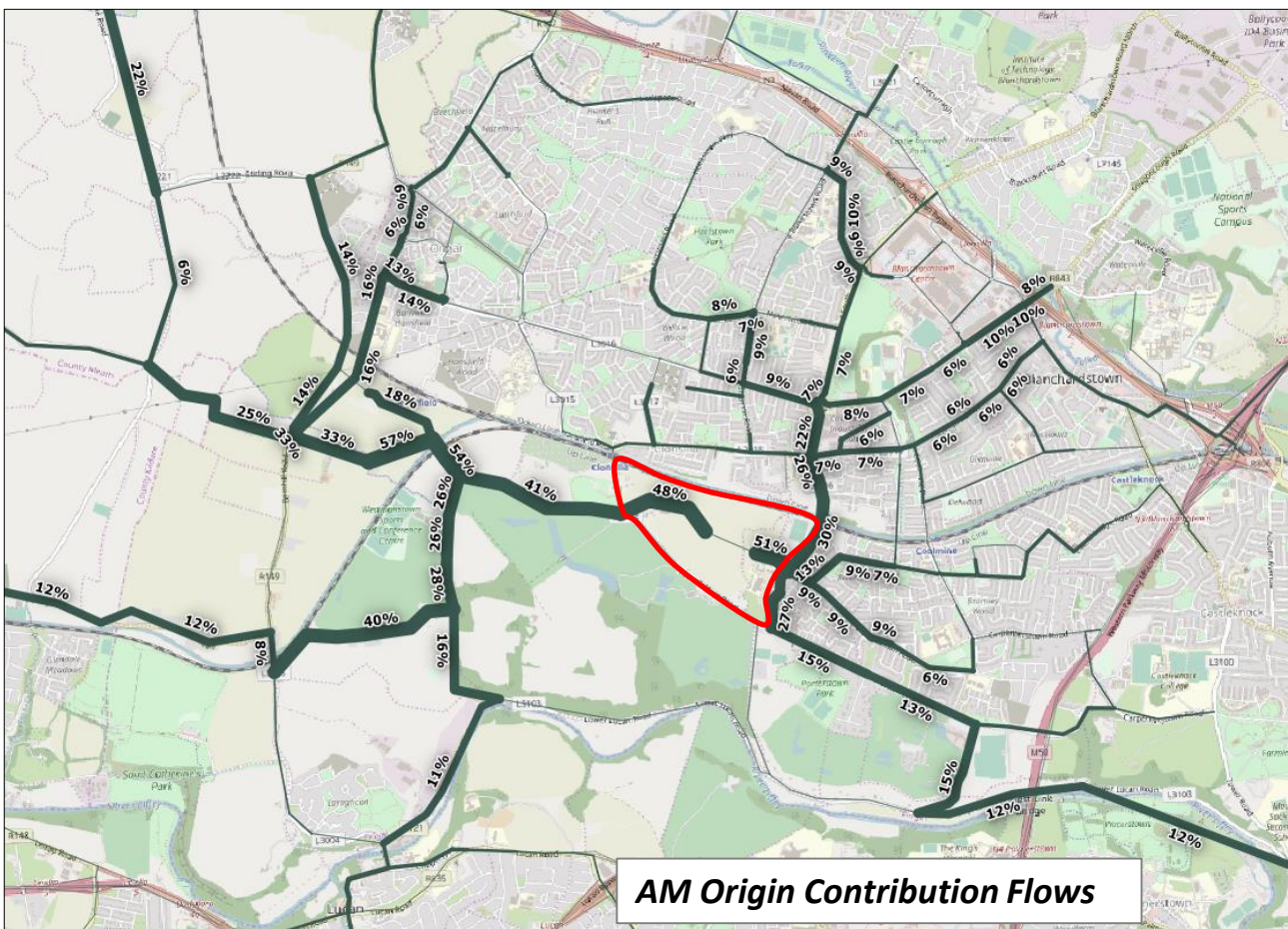
AM Origin Vehicle Flows

Travel Pattern:

- Local trips to employment in Ongar, Coolmine and Blanchardstown;
- East to Dublin City via Tower Rd and R109;
- Travel to Employment locations North of Blanchardstown and the N3;
- South towards Lucan



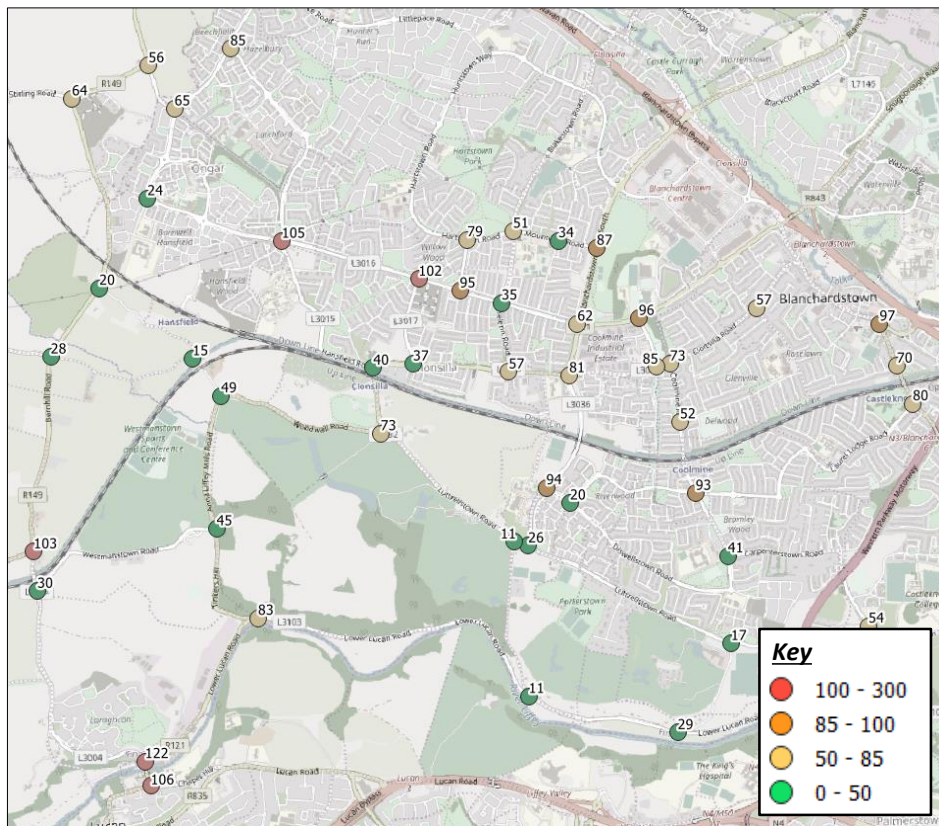
AM Origin Contribution Flows



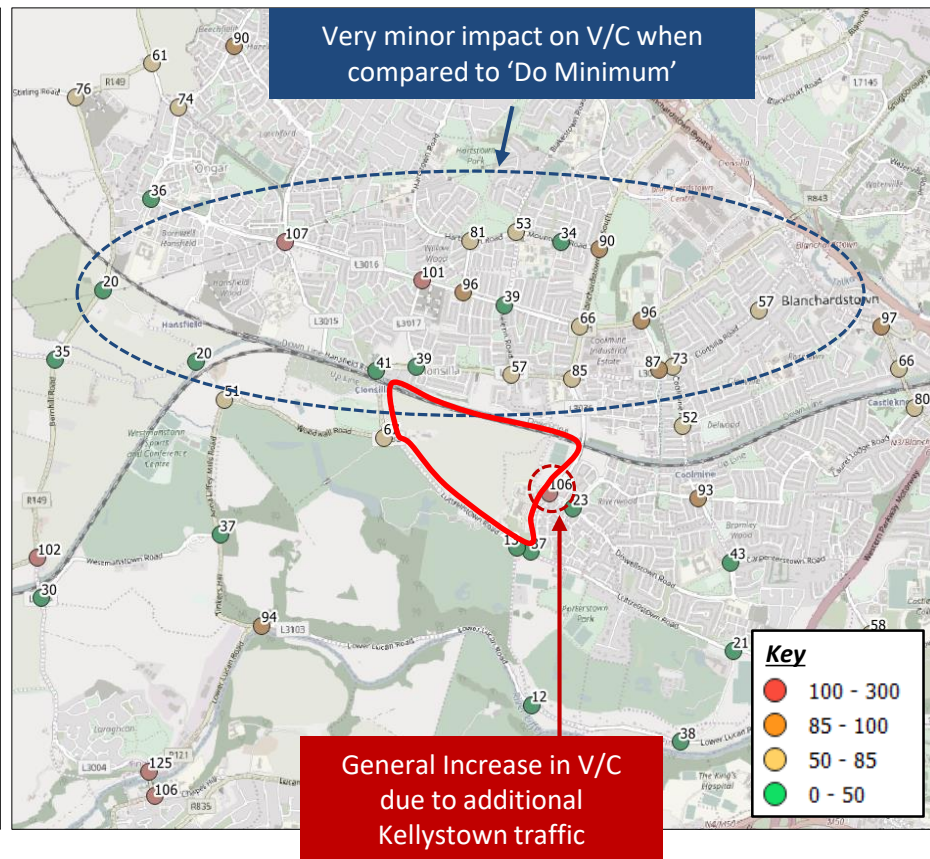
- Represents % of overall traffic on each link that has originated in Kellystown;
- Highest contribution on local roads such as the Diswellstown Rd, the R121 and Blanchardstown Rd South;
- Traffic originating at Kellystown has a very minor contribution (<5%) to overall traffic on the main strategic national roads in the area i.e. the N3, N4 and M50
- Indicates that Kellystown should have the highest impact on local junctions in close proximity to the development;
- Junctions North of Lucan are already quite heavily congested in the AM peak. Kellystown will contribute approx. 11% of flows entering these junctions on the Lower Lucan Rd.

Max Turn V/C – Kellystown Vs Do Min

Do Minimum (AM) – Maximum V/C



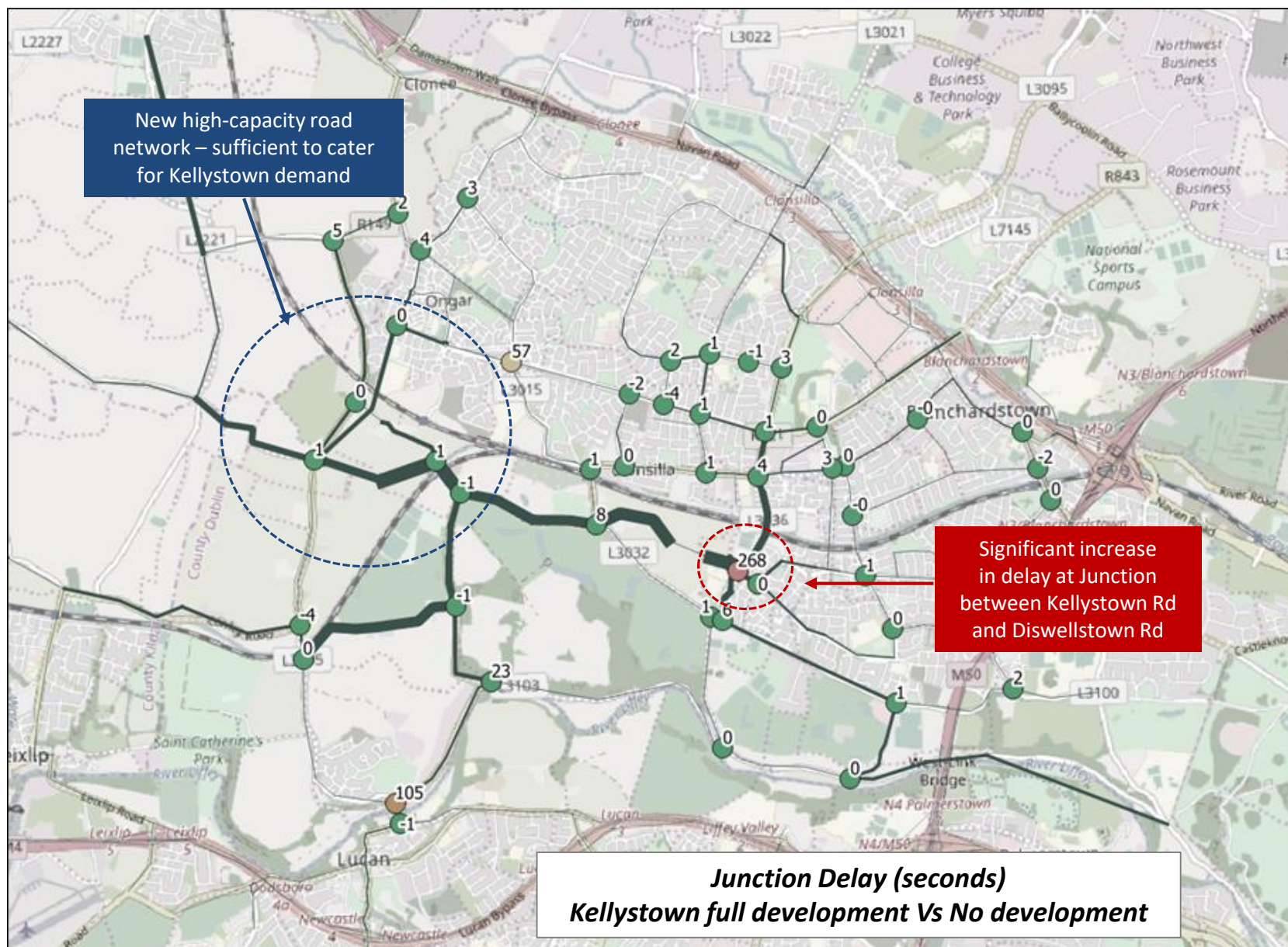
Kellystown (AM) – Maximum V/C



Turning Movements with V/C > 85%

Time Period	V/C (%)	Do Min	Kellystown
AM	>85%	6%	9%
PM	>85%	5%	7%

Junction Delay – Kellystown Vs Do Min

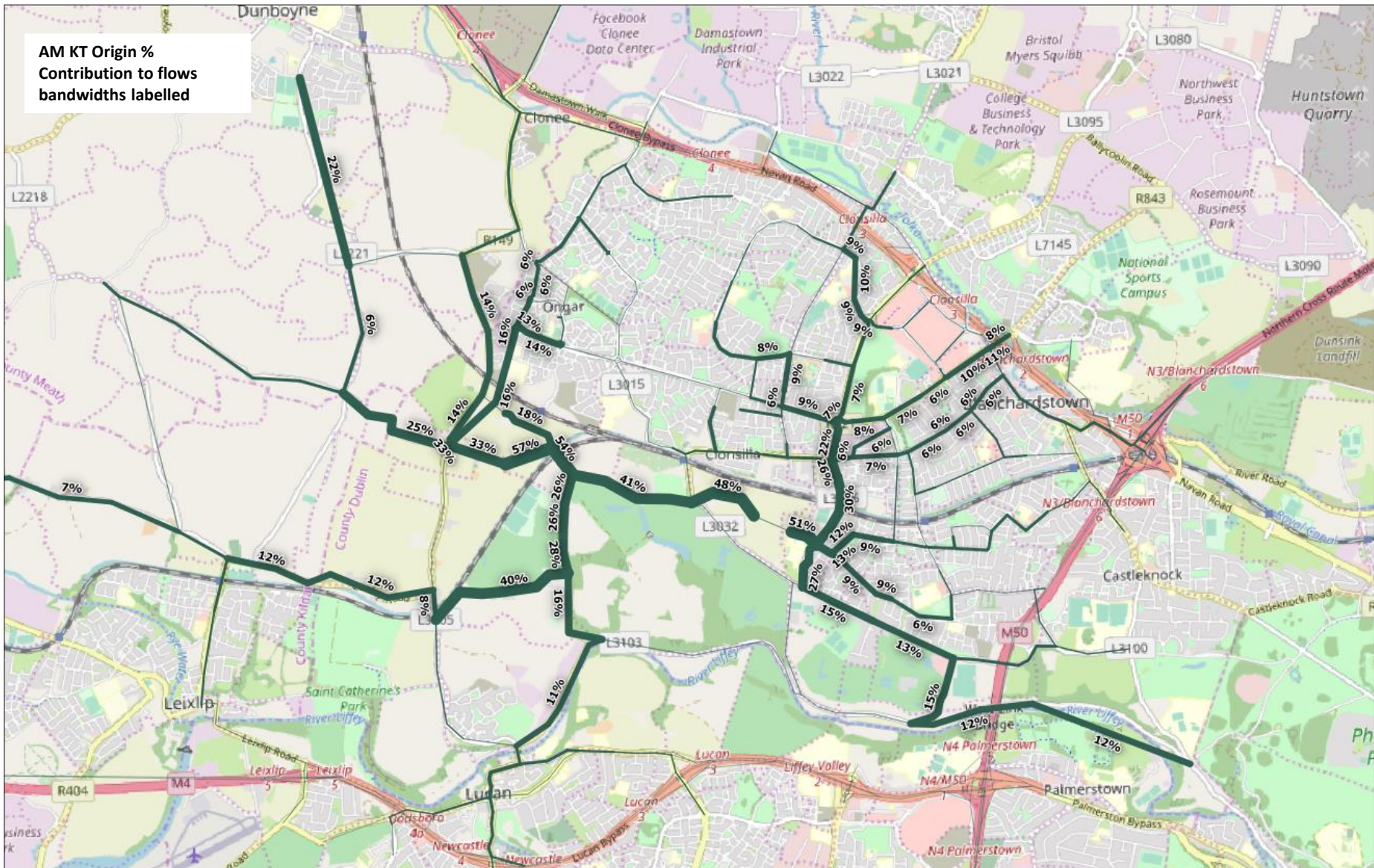


Results Charts:

- % Contribution
- SLA (Selected Link Analysis)
- Delay with % Contribution

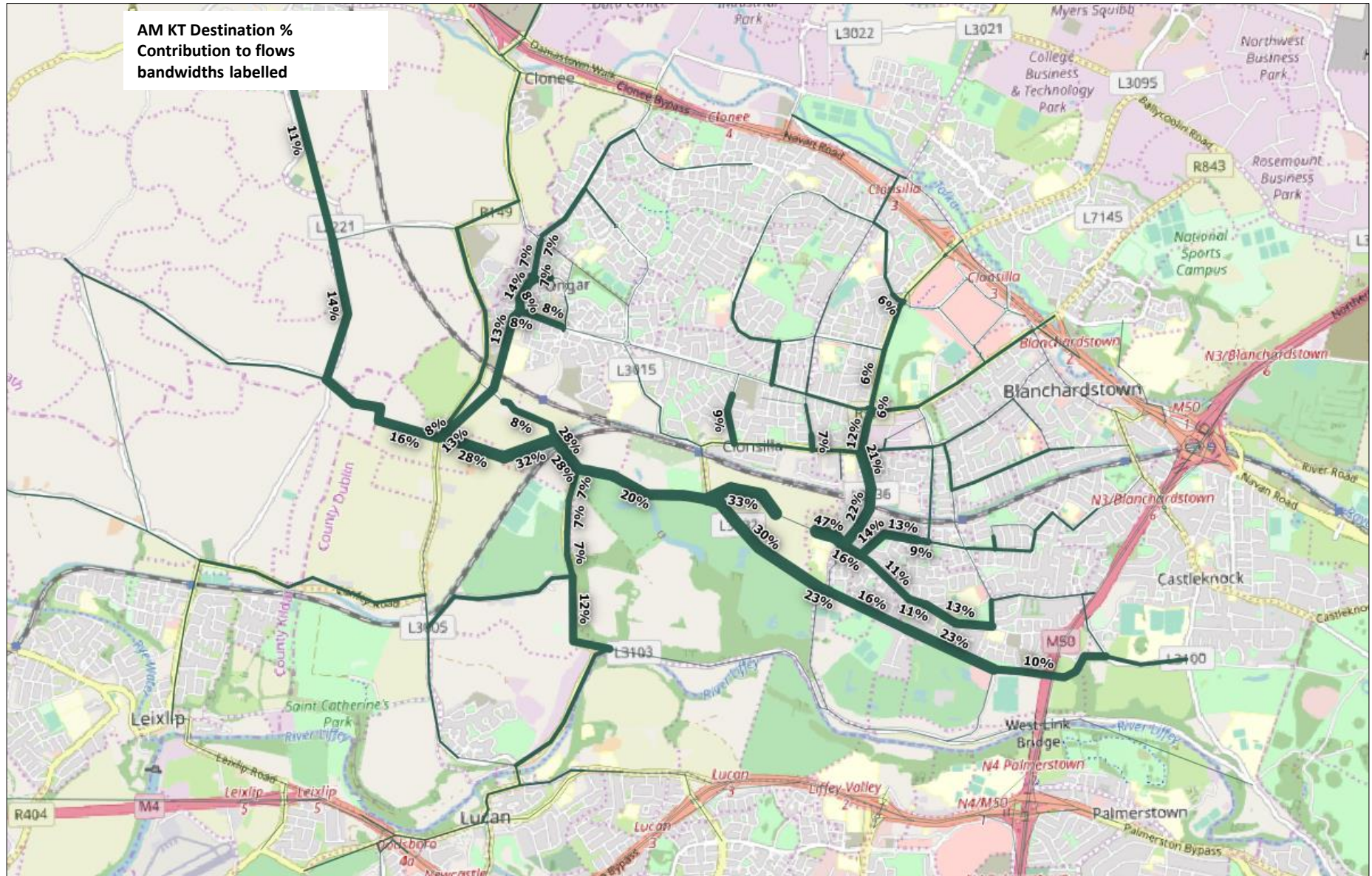
% Contribution

- values less than 5% not labelled



- values less than 5% not labelled

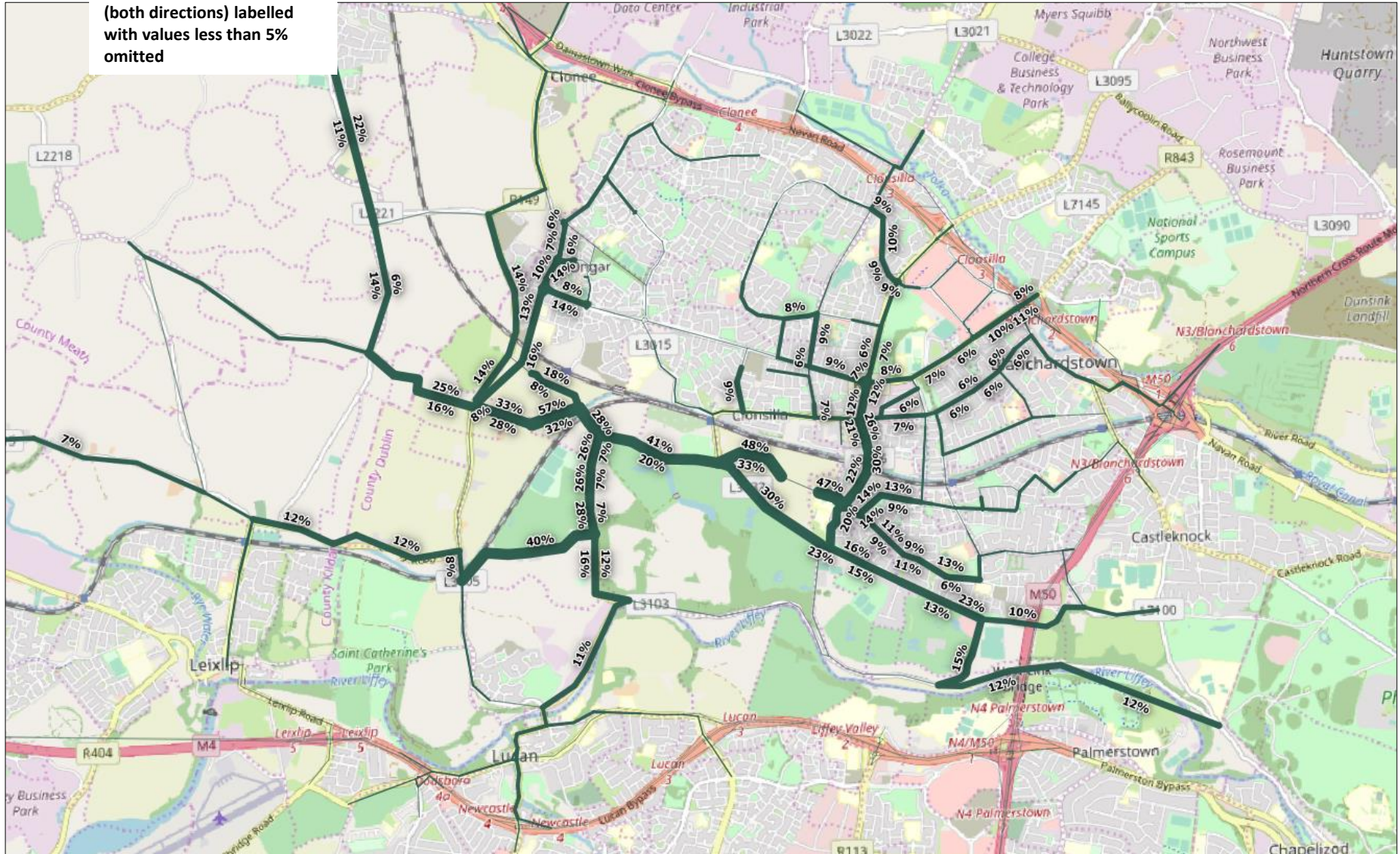
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% Contribution

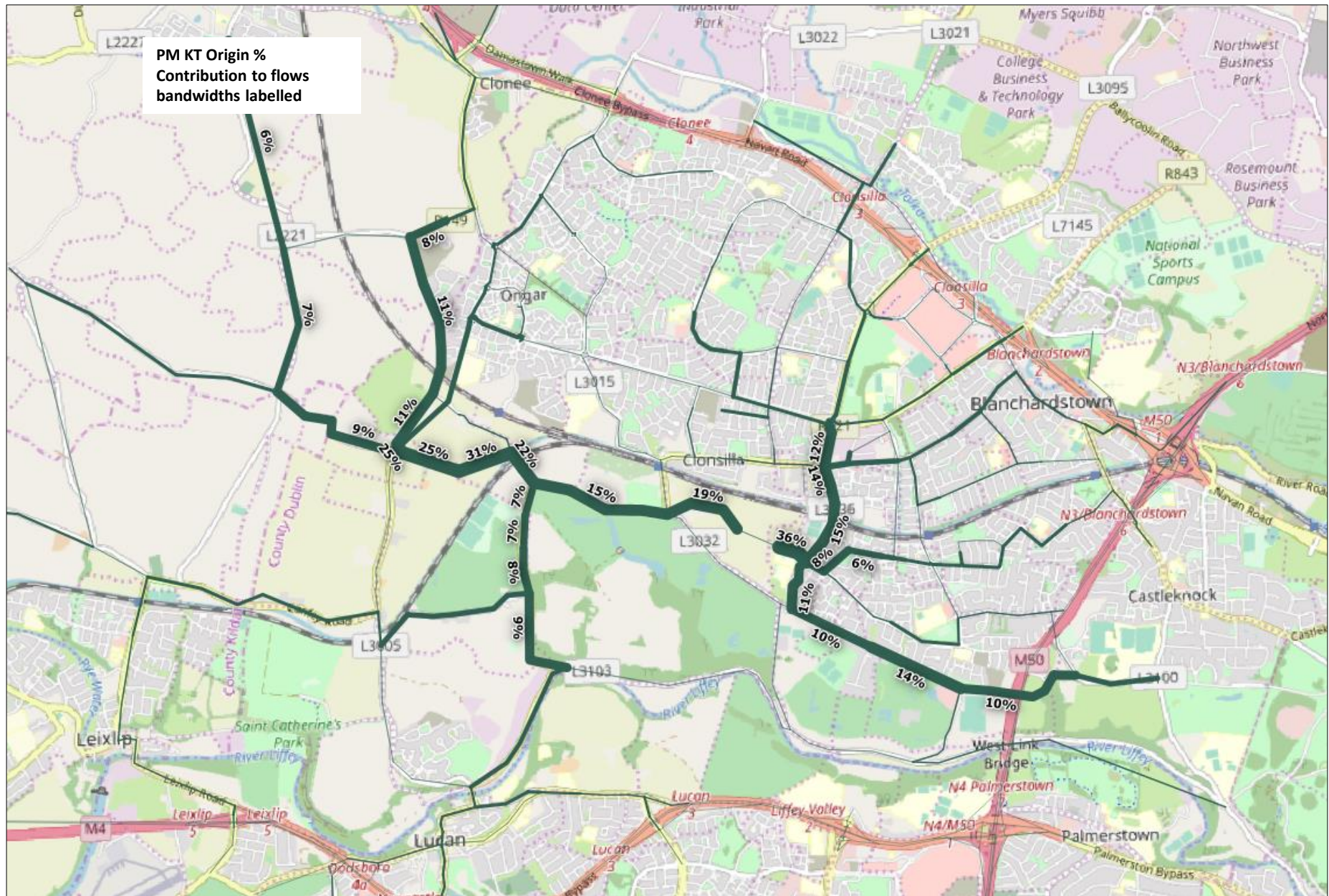
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**AM KT_% Total Contribution
(both directions) labelled
with values less than 5%
omitted**



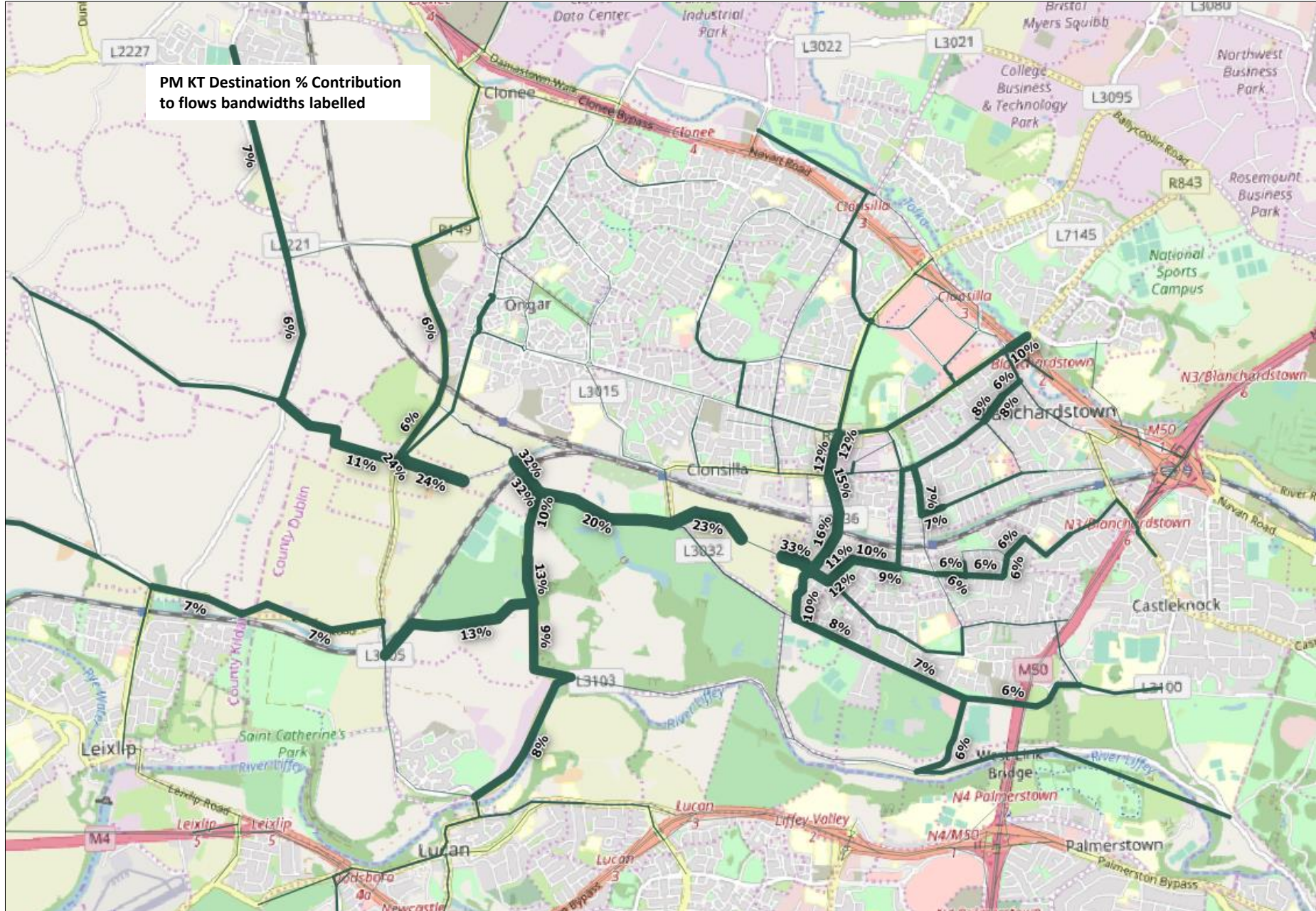
% Contribution

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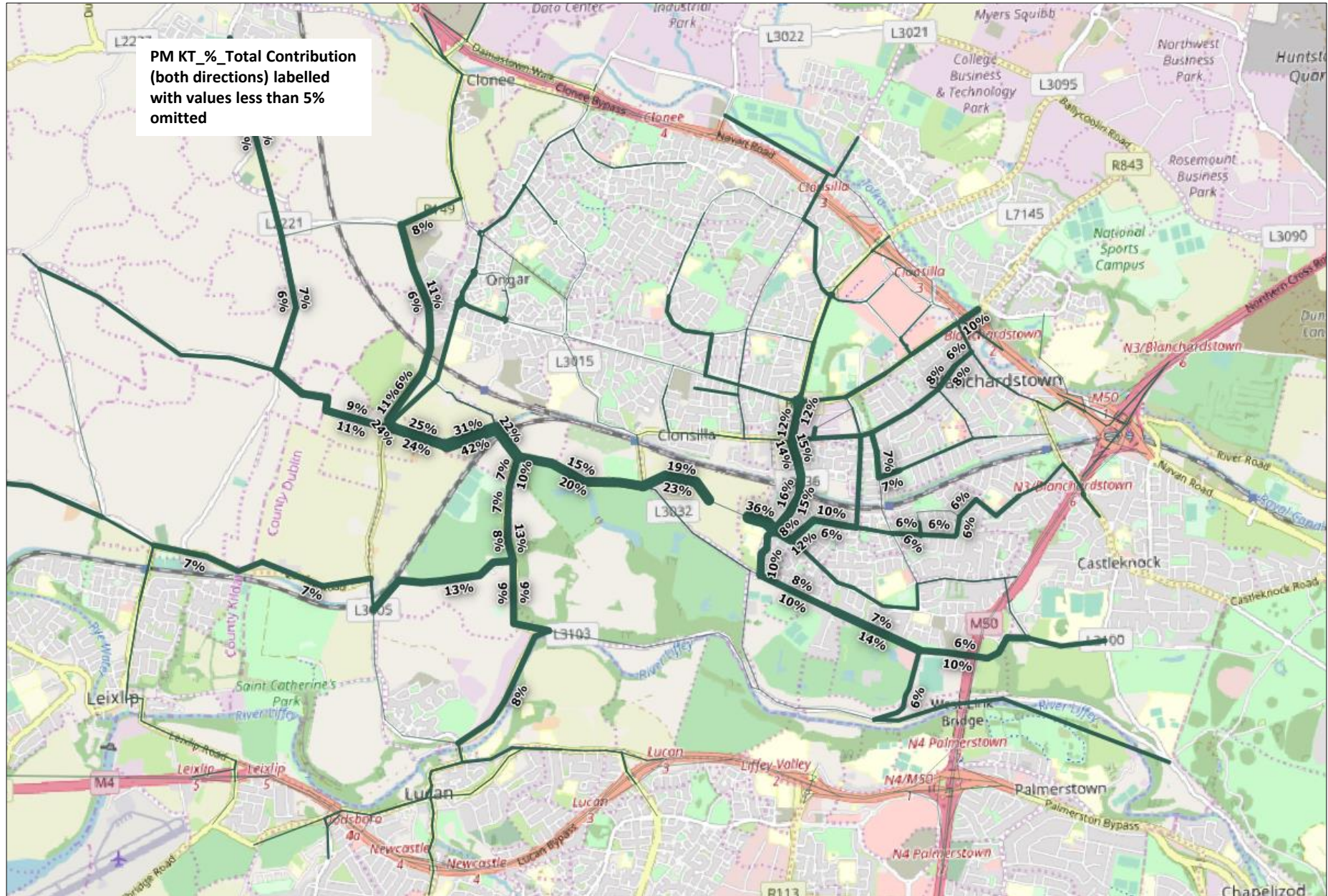
% Contribution

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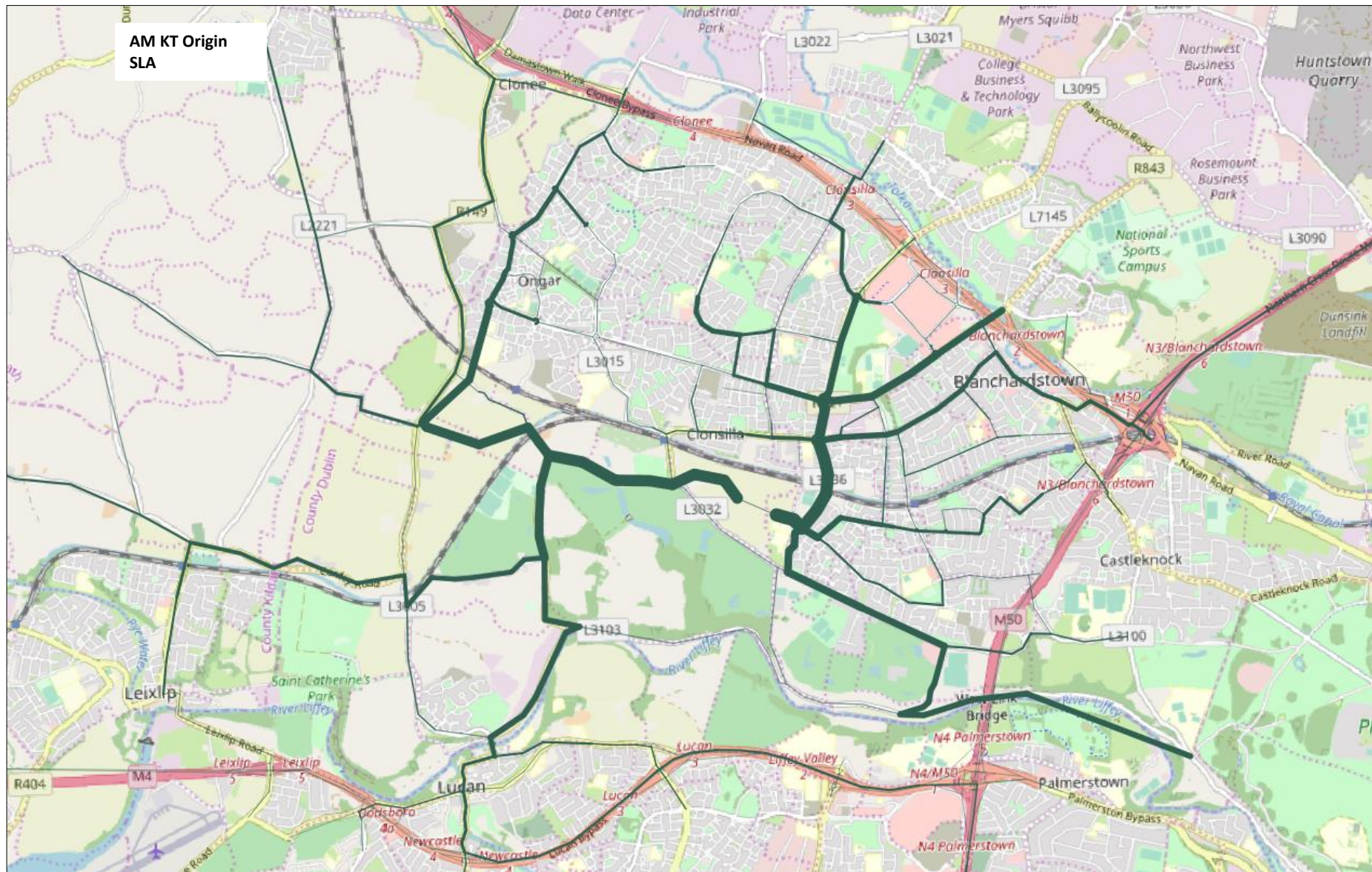


% Contribution

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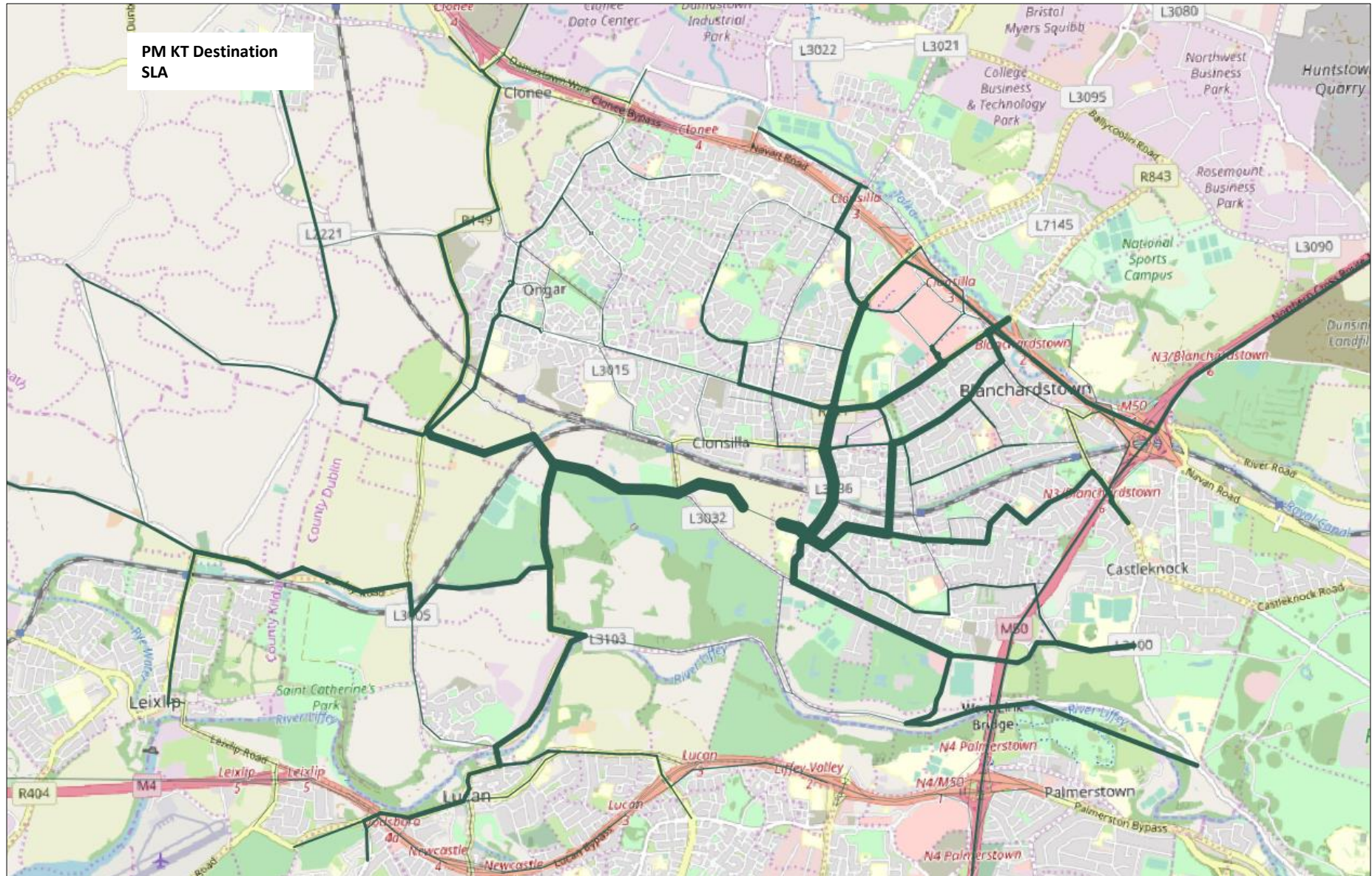


SLA (Selected Link Analysis)

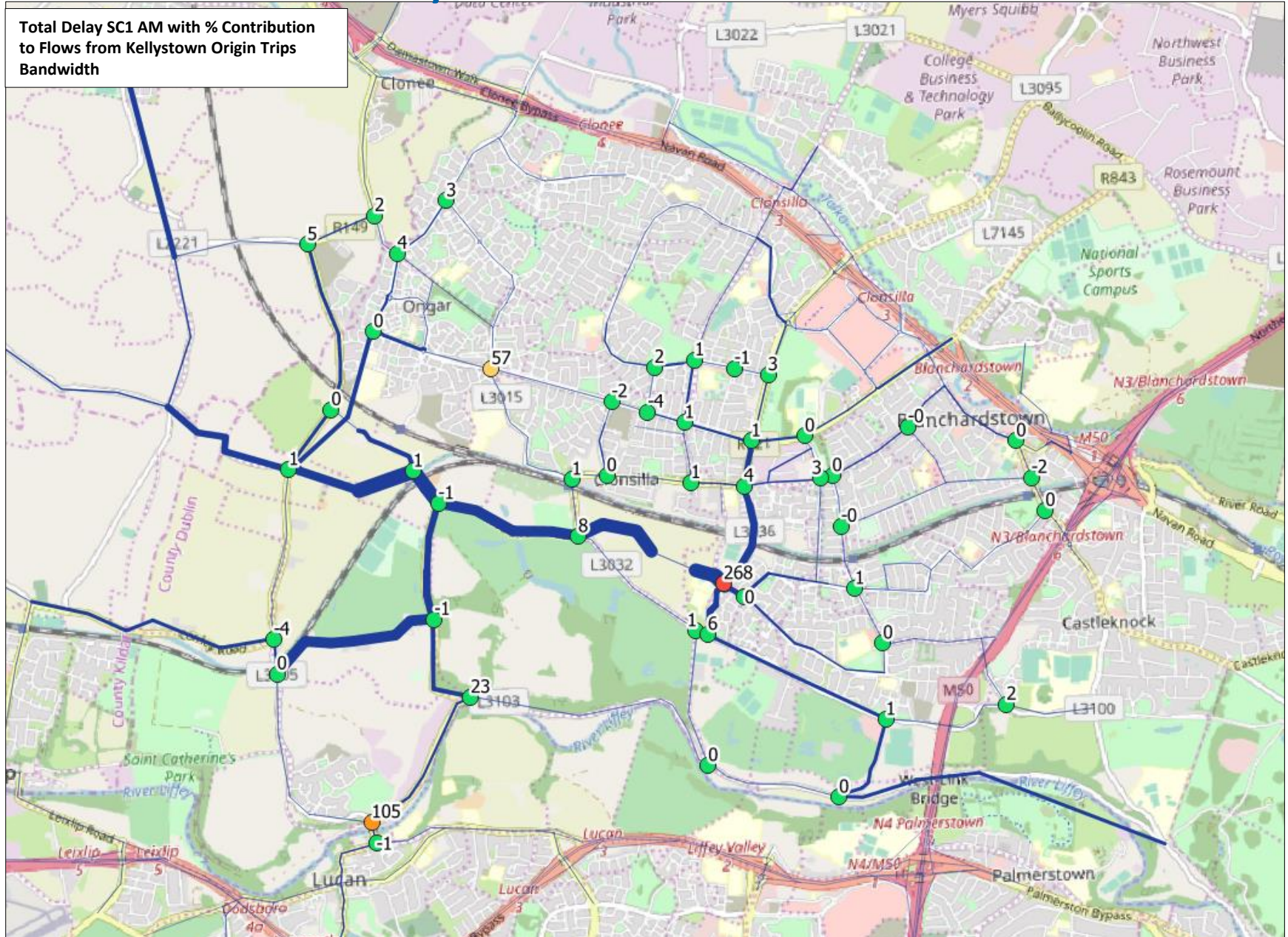


SLA (Selected Link Analysis)

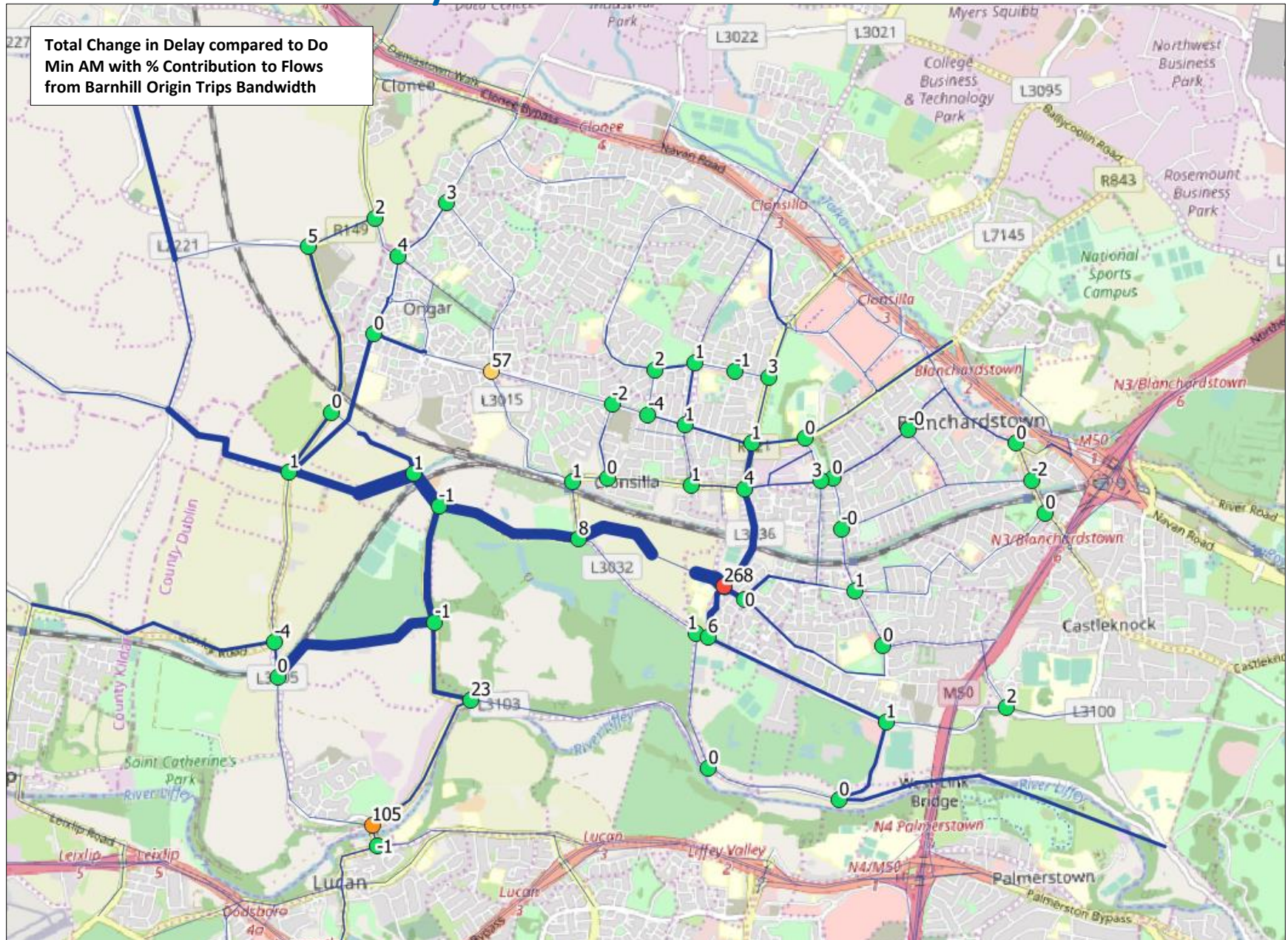
PM KT Destination
SLA



Delay with % Contribution



Delay with % Contribution



Delay with % Contribution

