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Site Specific Flood Risk Assessment

Whitechurch Road – Rathfarnham, County Dublin



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February 2022

Notice

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1.0 INTRODUCTION

A Site-Specific Flood Risk Assessment was undertaken for the proposed development following the guidelines given in The Planning System and Flood Risk Management document published by the Office of Public Works (OPW) and the Department of the Environment Heritage and Local Government (DEHLG) in 2009. The following items detail the subject report structure, objectives, general qualifications and conditions of use.

Dungrey Limited intends to apply for planning permission for a residential development on an overall site of approx. 0.58 ha on lands at "Silveracre" Whitechurch Road, Rathfarnham, Dublin 14, D14 W2K8. The proposed development shall provide for (a) the demolition of two existing habitable structures on site including a bungalow (Silveracre), an existing cottage (No. 6 Whitechurch Road) and a row of several derelict structures/ cottages located along the eastern boundary of the site, the extent of proposed demolition is 433 sq.m (b) the construction of 22 no. 4 bed 4 storey units ranging in size from 197 sq.m to 214 sq.m, all with associated private balcony/terrace areas.

Whitechurch Road bounds the site to the West, Loreto High School is located to the North, and residential units to the East and South. Vehicular and pedestrian access is proposed via a new entrance on Whitechurch Road. The proposed development shall provide for 44 no. car parking spaces, a new single storey bicycle storage shed (approx. 34sq.m) and provision of bin storage to be provided at the front curtilage of the dwelling for all terraced units, all boundary treatments, all site services and all associated site development and landscaping works.

1.1 TERMS OF REFERENCE

POGA Consulting Engineers were engaged by Dungrey Limited to carry out a Flood Risk Assessment (FRA) on a site located at Whitechurch Road, Rathfarnham, County Dublin.

The National Catchment Flood Risk Assessment and Management (CFRAM) Programme was developed to meet the requirements of the EU Floods Directive (2007/60/EC), as well as to deliver on core components of the 2004 National Flood Policy. Pilot CFRAM studies have been undertaken since 2006 in the Dodder and Tolka catchments, the LEE Catchment, the Suir Catchment and in the Fingal area. In 2011 the Preliminary Flood Risk Assessment (PFRA) mapping was published containing the Areas for Further Assessment (AFA) and studies were commissioned at the scale of the River Basin Districts. The Eastern Catchment Flood Risk Assessment and Management (ECFRAM) study commenced in June 2011 and was finished in 2016.

In 2016, South Dublin County Council (SDCC) prepared a Strategic Flood Risk Assessment (SFRA) as part of the County Development Plan for 2016 – 2022. The SFRA enables the South Dublin County Council to apply the sequential approach, allocate appropriate sites for development and identify how flood risk can be reduced as part of the development plan process.

These documents have been heavily referenced when producing this report.

1.2 FLOOD RISK ASSESSMENT OBJECTIVES

A Site-Specific Flood Risk Assessment (FRA) is undertaken to assess all types of flood risk for a new development. This requires identification of the sources of flood risk, the effects of climate change on the flood risk, the impact of the proposed development, the effectiveness of flood mitigation and management measures, and the residual risks that remain.

The FRA endeavours to identify the potential risks from sources including coastal, fluvial, pluvial flooding from public sewers and groundwater. It also quantifies the risks to the subject site from these sources into the following categories; very low, low, medium, high, and very high.

1.3 GENERAL QUALIFICATIONS AND CONDITIONS OF USE

The subject report is intended to be an accurate and unbiased account of the site flooding risks. It has been compiled based on information received from the following sources:

- Strategic Flood Risk Assessment (SFRA) document completed by South Dublin County Council as part of the SDCC Development Plan 2016 – 2022.
- ‘Floodmaps.ie’ – The national flood hazard mapping website operated by the Office of Public Works (OPW), where information about past flood events is recorded and made.
- Preliminary Flood Risk Assessment (PRFA) flood maps from the CFRAM Programme.
- ‘Floodinfo.ie’ – The new interactive website operated by the Office of Public Works (OPW), where printable maps of the communities included in the “Areas for Further Assessment” are made available.
- ‘Gis.epa.ie’ – The new interactive website operated by Environmental Protection Agency (EPA).
- ‘Gsi.ie’ – Geological Survey Ireland (GSI) is the national earth science knowledge centre operated by the Department of Communications, Climate Action and Environment.
- Internet based search into local flooding.

This report is based on the above information and prepared for the purpose of making a submission to the local authority on this particular site only. The risk categorised above are based on the judgement and experience for the Engineer carrying out the assessment, and may be based on information or documentation supplied by others.

Moreover, the report is intended for the sole use of Dungerey Limited and their elected agents and advisors and, further, solely for the purpose for which it was originally commissioned. It may not be assigned or copied to third parties or relied upon by third parties.

1.4 REPORT STRUCTURE

An overview of the subject development location, topography, existing watercourses and existing drainage are described in Section 2 of this report. The flood risk assessment and proposed mitigation measures are identified in Section 3. Lastly, conclusions are given in Section 4.

2.0 REVIEW OF THE SITE

A description of the subject site topography, location and geology is provided in this section, as well as information about existing drainage networks and watercourses that occur in the surrounding areas.

2.1 SITE DESCRIPTION

The subject site is located off Whitechurch Road and is approximately 0.58 Ha in size. The site is zoned residential under the current South Dublin County Council (SDCC) Development Plan. On the site there is a mix of derelict and in use dwellings. The proposal is for a new housing development comprising 22 units in the form of semi-detached and terraced units, landscaped areas and a large public open space. All associated site development works and services provision, as described in the statutory notices.



Fig 1 – Site location map (Extract from www.google.com)

A topographical survey of the site reveals that the site slopes from Northeast to Southwest with a fall of 1.4m over 60m, resulting in an approximate slope of 1:42. There are no significant surface features or outcrops.

A review of records from in the Geological Survey of Ireland website show that the subsoil within the site is geologically Dark limestone and shale (Calp), classified as part of the Lucan Formation. The formation comprises dark-grey to black limestones in a layer of 300-800mm

thick. The associated groundwater vulnerability is classified “Low” as shown on Figure 3 below.

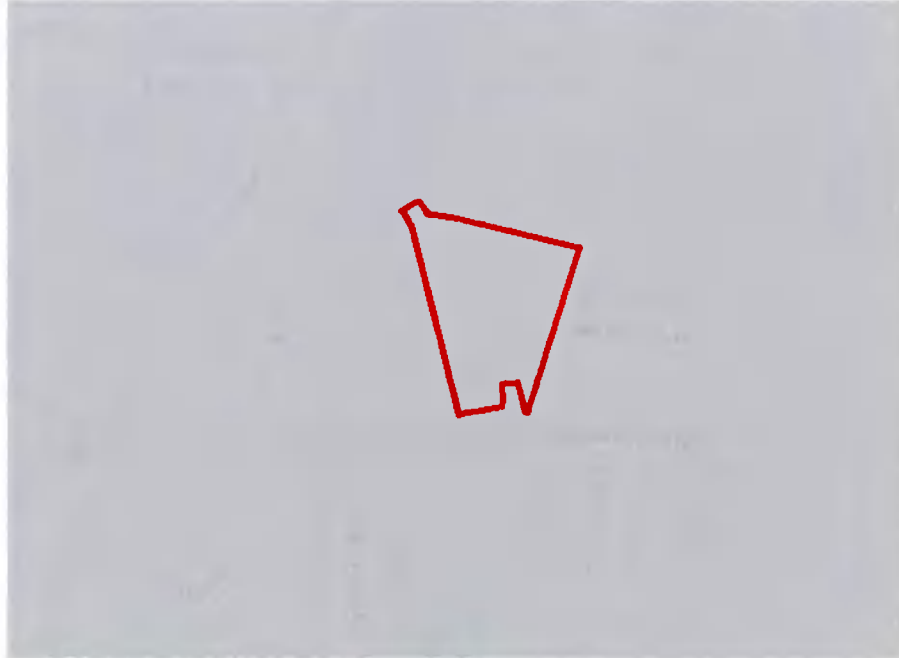


Fig 2 – Geological Survey (Extract from www.gsi.ie)

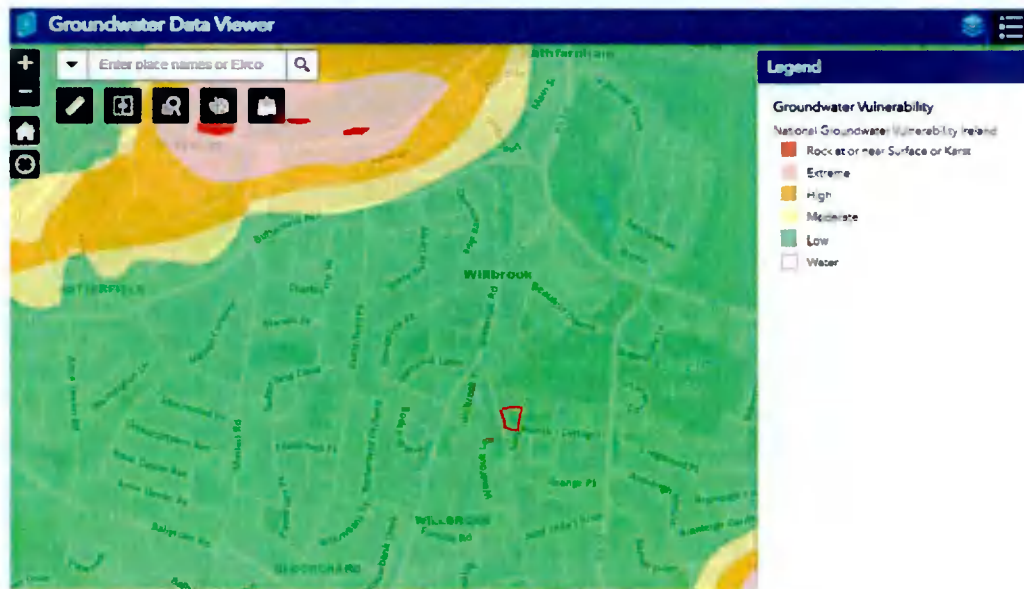


Fig 3 - Groundwater Vulnerability (Extract from www.gsi.ie)

Depth to rock	Hydrogeological Requirements for Vulnerability Categories				
	Diffuse recharge			Point Recharge	Unsaturation Zone
	high permeability (sand/gravel)	Moderate permeability (sandy subsoil)	low permeability (clayey subsoil, clay, peat)	(shallow holes, losing streams)	(sand & gravel aquifers only)
0-3 m	Extreme	Extreme	Extreme	Extreme (30 m radius)	Extreme
3-5 m	High	High	High	N/A	High
5-10 m	High	High	Moderate	N/A	High
>10 m	High	Moderate	Low	N/A	High

i N/A - not applicable
 ii A base point of contamination is assumed to be 1-3 m below ground surface.
 iii Permeability classification refers to the engineering behaviour as described by BS 5930.
 iv Outcrop and shallow subsoil (i.e. generally <1.0 m) areas are shown as a sub-category of extreme vulnerability.
 (amended from Deakin and Daly (1999) and DELG EPA GSI (1999))

Fig 4 - Depth to rock versus Vulnerability Categories (Extract from www.gsi.ie)

2.2 EXISTING SITE DRAINAGE

This section outlines the existing drainage networks in the vicinity of the subject site.

2.1.1 Surface Water

The subject site slopes towards Whitechurch Road along the western site. It is proposed to attenuate the surface water runoff from the site in an attenuation system located under the green open space area. It is proposed to outfall the surface water runoff from the site into the Whitechurch Stream located directly across the road from the site to the west of Whitechurch Road. The attenuation system comprises a Stormtech attenuation tank with a detention basin located above the tanks to accommodate the 30-100 year storm, please refer to Drawings 21029-102 & 105 for details. It is proposed to limit the surface water runoff from the Greenfield run off rate. The rate (Qbar) for the site calculated as 1.24 l/s, please refer to Engineer's Planning Report for calculations.

It is also proposed to include Sustainable Urban Drainage (SUDS) features such as; swales, infiltration trenches, rainwater butts, and permeable paving systems to provide storage during rain events. These will offer a level of treatment to the run-off and reduce peak storm water discharge. A drawing describing the storm water strategy with supporting calculations will be included in the planning submission.



Fig 5 – Proposed Drainage Layout

2.1.2 Wastewater

It is proposed to outfall the wastewater from the subject site into the existing $\text{\O}225\text{mm}$ foul sewer, located at Whitechurch Road. The proposed wastewater network flows, via gravity, towards the western site boundary. A new connection to the existing network will be formed, as per the Irish Water Code of Practice.

2.3 EXISTING WATERCOURSES

The Whitechurch Stream is located adjacent to Whitechurch Road, to the West of the subject site. The stream flows North and joins the Owendoher River at the junction of Whitechurch Road and Ballyboden Road (R115), approximately 150m to the Northwest of the site. The Owendoher River is a tributary of the River Dodder which outfalls into Dublin Bay. Please refer to Figure 6 which shows the site location.

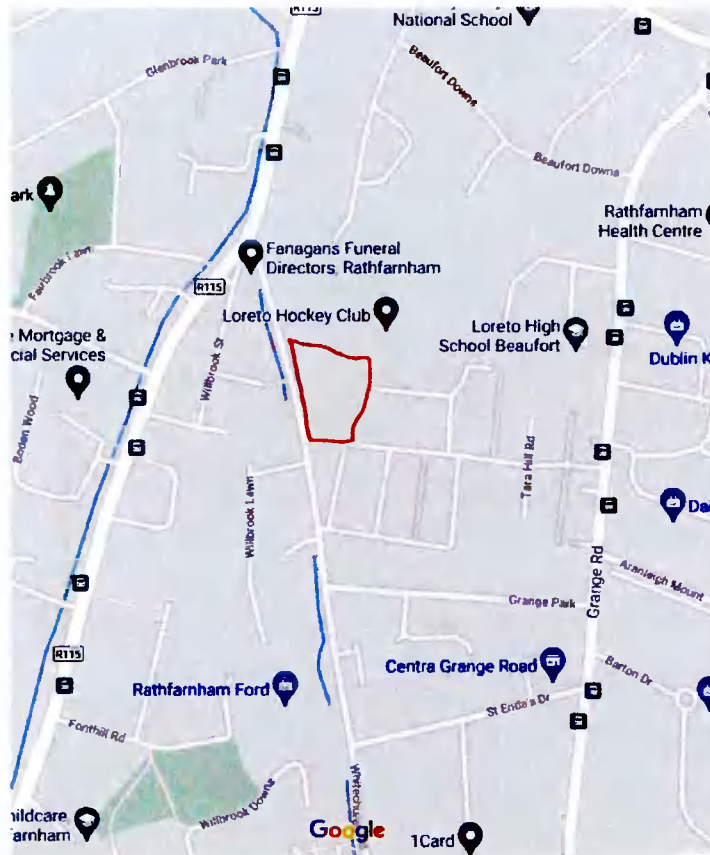


Fig 6– Surrounding watercourses Rathfarnham (Google.ie)

3.0 FLOOD RISK ASSESSMENT

According to the SFRA document, there are two main courses of flooding: inland and coastal. Inland flooding is caused by prolonged and/or intense rainfall. This results in fluvial, pluvial or ground water flooding acting independently or in combination. Coastal flooding which is caused by high sea levels resulting in the sea overflowing onto the land. High sea levels can be caused by high tides, storm surges and wave action acting independently or in combination.

In addition, the OPW Guidelines state that flood risk is a combination of the likelihood of flooding and the potential consequences arising. It also defines the likelihood of flooding as the percentage probability of a flood of a given magnitude as occurring or being exceeded on average once in 100 years, i.e., it has 1 in 100 (1%) chance of occurring in any one year. Figure 7 displays flood event probabilities used in flood risk management.

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

Fig 7 – Flood Event Probabilities (Extract from Finglas County Council SFRA)

Every developer is obliged to carry out the sequential approach for a proposed development, as per shown in Figure 8. If the proposed development is situated in a Flood Zone C, the justification test is not required. If the site is located in Flood Zones A or B the need for a Justification Test depends on the vulnerability of the proposed development. For all cases, it is still required that flood risks are assessed and a surface water management strategy is provided.

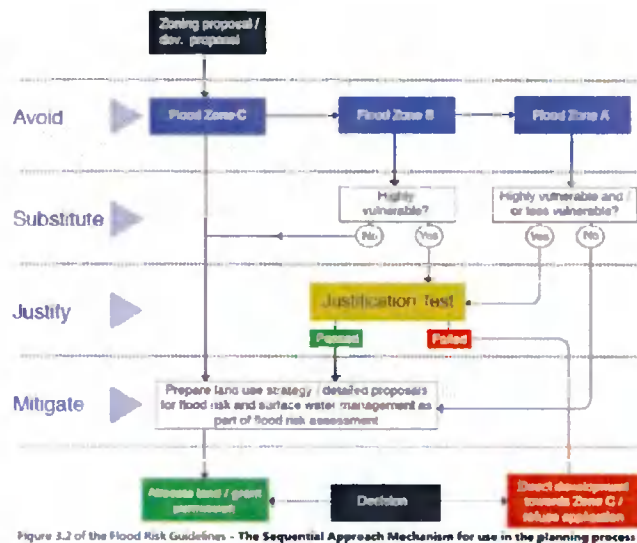


Fig 8 – Sequential Approach

This section identifies the vulnerability class of the development in regards to its use and geographical location. It reviews historic and predictive flood information in order to assess the potential flood risks, to define in which Flood Zone the subject site is located and to identify necessary mitigation measures.

3.1 VULNERABILITY REGARDING USE OF LAND

Table 3.1 of the Guidelines categorises buildings, irrespective of location, based on end use. This is independent of particular risk factors associated with the site. Highly vulnerable developments include dwellings and schools/crèches; it is clear that this development does not lie within this category.

3.2 VULNERABILITY REGARDING GEOGRAPHICAL LOCATION

The geographical location of a site affects its vulnerability to flood sources. These sources are wide-ranging as shown in Figure 9.

The OPW document sets out geographical areas within which the likelihood of flooding is within a particular range and this may be used as a key tool in flood risk appraisal for river and coastal flooding:

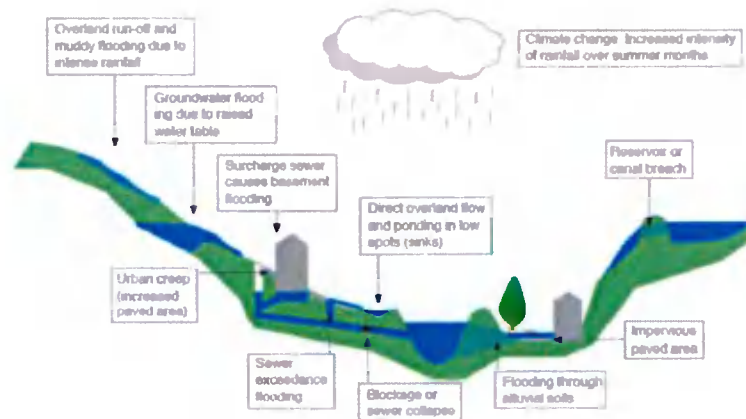


Fig 9 - Potential Sources of flooding

Flood Zone A includes lands where the probability of flooding from coastal or river flooding is highest i.e., greater than 1% or 1 in 100 for stream/river flooding and greater than greater than 0.5% or 1 in 200 for coastal flooding.

Flood Zone B includes lands where the probability of flooding from coastal or river flooding is moderate i.e., between 0.1% or 1 in 1000 and 0.5% or 1 in 200 for coastal and between 0.1% or 1 in 1000 and 1% or 1 in 100 for stream/river flooding.

Flood Zone C where the probability of flooding from rivers and the sea is low (less than 0.1% or 1 in 1000 for both river and coastal flooding). Flood Zone C covers all areas of the plan which are not in zones A or B.

It is necessary to consider that the flood zones are indicative of coastal and river flooding only. They should not, on their own, be used to suggest that any areas are free from flood risk, since they do not include the effects of other forms of flooding such as from pluvial and groundwater flooding. However, they can be used to gain an appreciation into whether the site is at particular risk of a serious flood event and whether the site is suitable for vulnerable housing development.

3.2.1 Fluvial Flooding

Fluvial or river flooding occurs when the capacity of a watercourse is exceeded or the channel is blocked or restricted, and excess water spills out from the channel onto adjacent low-lying area.

Historic flooding information was collected from OPW National Flood Hazard Mapping for the subject development and its immediate surroundings, refer to Figure 10. No historic flooding has been recorded in the immediate vicinity of the site, however there has been some recorded flood events in the surrounding areas. See Appendix A for the historic flood report.

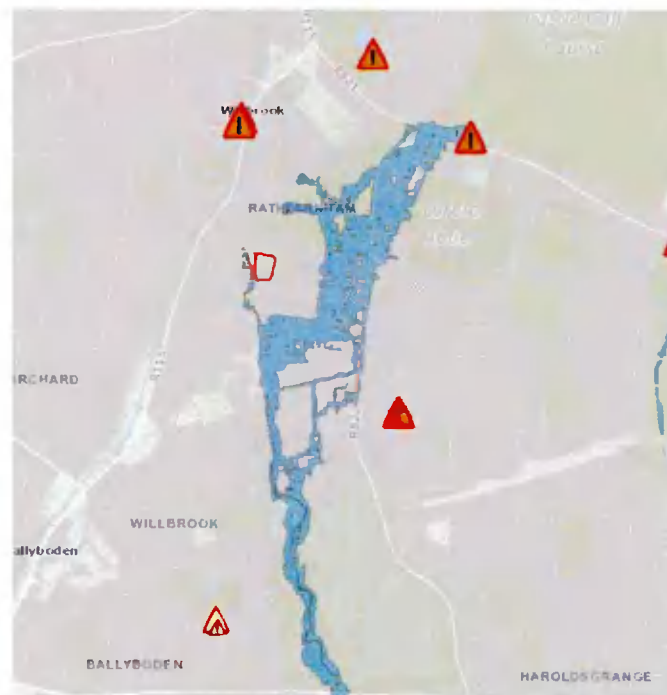


Fig 10 – Recorded Flood Events (Extract from www.floodinfo.ie)

The first recorded flood event occurred in 1986 at the junction of the Whitechurch Stream and the Owendoher River approximately 150m to the Northwest of the site. This flooding occurred due to Hurricane Charlie. The subject site is located 3m above the 0.1% water level (1 in 1000 year flood event), at the node point OS-3150, please refer to Appendix B for the site specific flood mapping.

The second recorded event was at 94 Barton Drive in 1994. This was due to a blocked surface water main, please refer to Appendix A for details. The subject site is located over 500m to the Northwest of this recorded event.

On behalf of the Office of Public Works, RPS Consulting Engineers produced a fluvial flood map for the area surrounding the subject site. This forms part of the Dodder Catchment Flood Risk Assessment and Management Study. The mapping shows that there would be flooding along Whitechurch Road adjacent to the subject site during the 1:1000 year flood event (0.1% AEP). The mapping provided node points with water levels along the Whitechurch River. Node OS-3202 is located at the proposed site entrance onto Whitechurch Road. The node has a predicted level of 52.32mAOD in the 0.1% AEP. The lowest proposed finished floor level and the lowest road level, are 1.0m and 0.7m above this node point, respectively.

RPS Consulting Engineers completed a Strategic Flood Risk Assessment for the SDCC County Development Plan 2016-2022. Table 6.1 of the FRA states that “developments should demonstrate that finished floor levels are designed for the 1% AEP (1 in 100 year) flood level plus an allowance for climate change and a minimum freeboard of 300mm”. We have conservatively set the lowest finished floor level on the site, 53.275m, to be positioned 500mm above the 1 in 100 year storm level at the attenuation pond, please refer to Drawing 21029-102 for details.

Having reviewed the historic flooding information and the predicted flood water levels along the adjacent Whitechurch Road, it is our opinion that the site can be categorised as Flood Zone C, due to the elevation of the site above the flood levels. Therefore the risk of fluvial flooding on this site is low.

3.2.2 Coastal

Coastal flooding is caused by higher sea levels than normal, largely as a result of storm surges, resulting in the sea overflowing onto the land. Coastal flooding is influenced by the following factors which can work in tandem:

- High tide level
- Low barometer pressure made worse by high winds
- Wave action dependent on wind speeds and direction, local topography and exposure.

The subject site is located 7km inland from a coastline. Therefore, there are no PRFA maps for this area to show Coastal Flood Extents. This confirms the subject site is situated in Flood Zone C in regards to Coastal Flooding.

Given the distance to the coast and the elevation of the site (53m AOD) it is the opinion of POGA Consulting Engineers that the risk of coastal flooding is extremely low. Furthermore, because subject site is located in Flood Zone C for both Fluvial and Coastal Flooding it is possible to affirm Justification Test is not required for the proposed development.

3.2.3 Pluvial

Pluvial or overland flow occurs when the amount of rainfall exceeds the infiltration capacity of the ground to absorb it. This excess water flows overland ponding in natural hollows. There is no flood mapping available for the area surrounding the subject site. Therefore, the lands are located outside the 1% AEP Pluvial Flood Extent.

An increase in impermeable area could potentially intensify the surface water run-off from the site and, consequently, the flood risk to neighbouring properties. Mitigation measures have been proposed therefore, following the policies and guidelines of the Greater Dublin Strategic Drainage Study (GSDSDS). River Quality Protection and River Regime Protection criteria have been satisfied by providing the required interception and treatment volumes within the swale area, infiltration trench and permeable paving areas. The remaining storm run-off volume will be attenuated in a Stormtech attenuation system and open detention basin which limit the discharge to greenfield run-off rates as described in Section 2.2.1.

The post development residual risk from pluvial flooding therefore, is deemed to be very low.

3.2.4 Flooding from public sewers

Flooding resulting when flow entering a drainage system exceeds its discharge capacity and the system becomes blocked and/or cannot discharge due to a high-water level in the receiving watercourse or outfall. There are no recorded instances of similar flooding within or directly adjacent to the site by the Local Authorities.

Additionally, it is proposed to design against flooding within the site itself by the provision of oversize pipes to reduce the likelihood of blockage and facilitate flow in the event of a partial blockage. A minimum pipe size of 225mm will be adopted for both foul and surface water. As with all underground infrastructures, some periodic maintenance is required.

In our opinion the residual risk of flooding from public sewers therefore is deemed to be very low.

3.2.5 Groundwater

Groundwater flooding occurs when the level of water stored in the ground rises as a result of prolonged rainfall to meet the ground surface and flows out over it. Groundwater flooding tends to be very local and results from interactions of site-specific factors such as tidal variations.

Geological information was compiled from the Geological Survey Ireland website as presented in Section 2.1 of this report. This shows that groundwater recharge is low. There is no history of groundwater flooding in the area according to the OPW National Flood Hazard Mapping. The hydro-geological conditions together with all other available information indicated that the conditions do not exist for groundwater flooding in the subject area.

Taking all this information in consideration, we would consider the risk of Groundwater flooding is very low.

4.0 CONCLUSIONS

All sources and predictive maps indicate that the development is classed as Zone C in accordance with the Guidelines on the Planning System and Flood Risk Management 2009. Additionally, historic information was reviewed in relation to pluvial, fluvial, coastal and groundwater in the subject lands, and no significant flood events in the immediate vicinity of the subject site were recorded. Based on the information available it is our opinion that this site is suitable for development and we would consider the site has an overall low risk of flooding.

Report prepared by;

A handwritten signature in blue ink, appearing to read "Noel Mahon".

Noel Mahon
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APPENDICES

5.1 APPENDIX A

Past flood events

Barton Drive 1994

DRAINAGE.

OUR.REF.POBFLD
YOUR.REF.
4-2-94

RE: FLOODING ON 3-2-94

THE MAJOR AREAS OF FLOODING ARE LISTED BELOW WITH THE CAUSES , IF KNOWN.

KNOCKLYON GREEN
6-8-10-12

HOUSE AND GARDEN FLOODING. F/S MAIN
SURCHARGING BACK THROUGH DRAIN.

pumping

KNOCKLYON CLOSE
13-15

GARAGE AND GARDEN FLOODING. F/S MAIN
SURCHARGING BACK THROUGH DRAINS.

pumping.

WHITEHALL RD
39 43

GARDEN FLOODING . F/S MAIN SURCHARGING
BACK THROUGH DRAIN.

pumping .

SHELTON DRIVE
34

GARDEN FLOODING . F/S MAIN SURCHARGING BACK
THROUGH DRAIN.

GLENDOWN CRESCENT
29

S/W GARDEN FLOODING . PODDLE STREAM
OVERFLOW DUE TO BLOCKED SCREENS.

MUCKROSS AVE
61-63-65

S/W GARDEN FLOODING . S/W MAIN BLOCKAGE.

WHITEBARN RD
41

GARDEN FLOODING . F/S MAIN SURCHARGING BACK
THROUGH DRAIN.

DELANEYS PUB

ROAD FLOODING DUE TO INADEQUATE DRAINAGE.

SPAWELL HOUSE

GARDEN FLOODING DUE TO OLD CITY WATER
COURSE BURSTING ITS BANKS.

BARTON DR
94

S/W HOUSE AND GARDEN FLOODING. S/W MAIN
BLOCKED.

BEAUFORT DOWNS
20

S/W GARDEN FLOODING . SUPPLY TO RATHFARNHAM
CASTLE LAKE BLOCKED.

WOODSIDE DR
3

S/W GARDEN FLOODING. ?

GREENVIEW DUNDRUM

S/W HOUSE FLOODING . ?

ARTONA HOUSE
CHURCHTOWN

S/W HOUSE FLOODING . BLOCKED RD GULLIES .

WHITEHALL GDS
6-8-10-12

F/S GARDEN FLOODING . SURCHARGING BACK
FROM F/S MAIN.

DALETREE RD
353

SW GARDEN FLOODING . DUE TO DEVELOPMENT
WORKS AT BALLYCULLEN RD.

BERWICK HOUSE
WHITEHALL RD

SW HOUSE FLOODING . ?

GORTH MHUIRE

ROAD FLOODING . PARTIALLY COLLAPSED
CULVERT.

PINE VALLEY EST

ROAD FLOODING . BLOCKED SW MAINS.

BIGGER RD.

F/S GARDEN FLOODING.

BODEN VILLAS .

REAR GARDEN FLOODING DUE TO STREAM OVERFLOW .

NO 10 WHITECHURCH COURT .

COURSE . REAR GARDEN FLOODING DUE TO RUN OFF FROM GOLF

Meadow Pt F/s min choke.

Llewlyn ? S/W

Ballinkeer Ave S/W

107 - 109 Whitehall Rd. S/W.

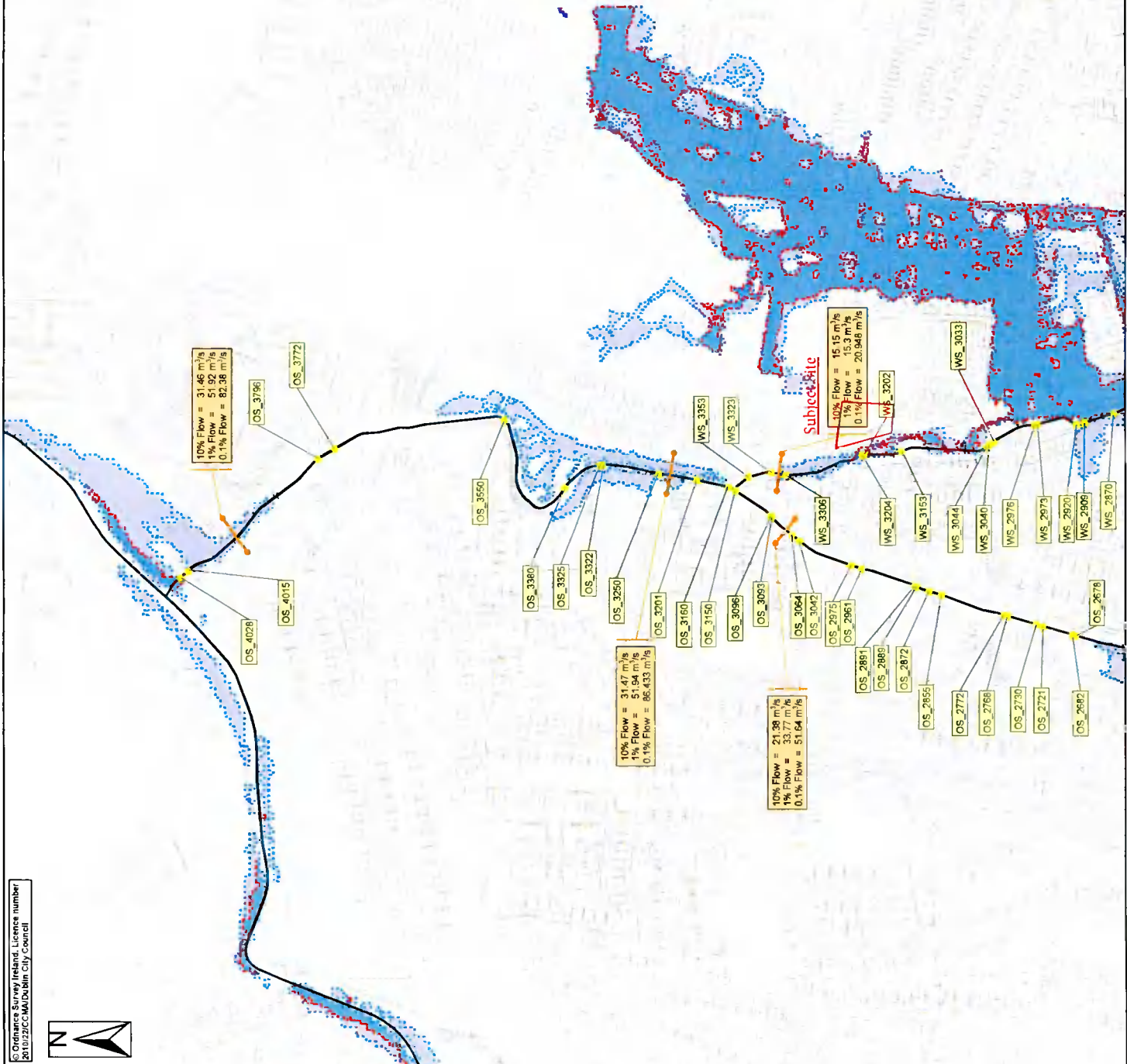
87 Carrigwan, S/W

Cr Docton Rd. S/W.

5.2 APPENDIX B

Owendoher & Whitechurch Flood Extent Map

By RPS Consulting Engineers



Node Label	Water Level (mOD) per AEP	VL 10%	VL 1%	VL 0.1%
OS_2678	54.92	55.23	55.84	56.84
OS_2682	54.90	55.30	55.90	56.90
OS_2721	54.63	55.06	55.57	56.57
OS_2730	54.64	55.03	55.53	56.53
OS_2768	54.36	54.73	55.21	56.21
OS_2772	54.33	54.71	55.18	56.18
OS_2855	53.22	53.59	54.07	54.07
OS_2872	53.17	53.54	54.02	54.02
OS_2889	53.10	53.49	53.97	53.97
OS_2891	53.09	53.47	53.95	53.95
OS_2961	52.32	52.68	53.14	53.14
OS_2976	52.17	52.51	52.92	52.92
OS_3042	51.02	51.24	51.58	51.58
OS_3064	50.90	51.13	51.48	51.48
OS_3083	50.03	50.39	50.83	50.83
OS_3096	50.00	50.37	50.82	50.82
OS_3160	49.13	49.70	50.49	50.49
OS_3160	49.12	49.50	50.00	50.00
OS_3201	49.48	50.45	51.90	51.90
OS_3201	49.44	50.42	51.82	51.82
OS_3222	47.49	48.05	48.64	48.64
OS_3226	47.49	48.02	48.61	48.61
OS_3280	45.84	46.38	46.80	46.80
OS_3560	43.83	44.31	44.95	44.95
OS_3772	42.28	43.06	44.07	44.07
OS_3796	39.77	40.24	40.80	40.80
OS_4065	38.13	38.62	39.28	39.28
OS_4028	38.08	38.57	39.21	39.21
WS_2970	57.82	57.83	57.82	57.82
WS_2969	57.38	57.39	57.70	57.70
WS_2920	56.80	56.81	57.12	57.12
WS_2973	56.34	56.35	56.74	56.74
WS_2976	56.28	56.29	56.63	56.63
WS_3003	54.82	54.83	55.08	55.08
WS_3044	54.72	54.74	55.97	55.97
WS_3044	54.72	54.73	55.56	55.56
WS_3163	52.86	52.87	53.14	53.14
WS_3202	52.01	52.02	52.30	52.30
WS_3204	51.94	51.95	52.21	52.21
WS_3306	50.59	50.56	50.85	50.85
WS_3323	50.09	50.06	50.29	50.29
WS_3353	48.38	48.70	48.91	48.91

Legend:

- 10% AEP Flood Extent (1 in 10 chance in any given year)
- 1% AEP Flood Extent (1 in 100 chance in any given year)
- 0.1% AEP Flood Extent (1 in 1000 chance in any given year)
- Defended Area
- High Confidence (<20m) (10% AEP)
- Medium Confidence (<40m) (10% AEP)
- Low Confidence (>40m) (10% and 0.1% AEP)
- High Confidence (<20m) (1% AEP)
- Medium Confidence (<40m) (1% AEP)
- Low Confidence (>40m) (1% AEP)
- River Centreline
- Node Point
- Node Label (refer to table)
- Flow reporting location
- Peak flow during design flood extent

USER NOTE:
 USERS OF THESE MAPS SHOULD REFER TO THE DETAILED DESCRIPTION OF THEIR DERIVATION. LIMITATIONS IN ACCURACY AND GUIDANCE AND CONDITIONS OF USE APPLY. THESE MAPS ARE NOT TO BE USED FOR ANY PURPOSE THAT SHOULD NOT BE USED FOR ANY PURPOSE.

Client: South Dublin County Council

Project: DODDER CATCHMENT FLOOD RISK ASSESSMENT AND MANAGEMENT STUDY

Map: PRESENT DAY OWENDOEHER & WHITECHURCH

Map Type: FLOOD EXTENT

Source: FLUVIAL FLOODING

Map Area: URBAN ARI

Scale: CURRENT

Drawn By: A.J.S. Date: 28 November 2010

Checked By: A.J. Date: 28 November 2010

Approved By: A.G.B. Date: 28 November 2010

Figure No: OSWS/EXT/JUA/CURS/103

Map Sheet: Page 3 of 3

Drawing Scale: 1:5,000

Per Scale: 1" @ A3

RPS Consulting Engineers
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 74 BOUCHER ROAD, FAX: 028 9066 8286
 BELFAST BT11 6RZ, www.rpsgroup.com/ireland

Location Plan:



5.3 APPENDIX C

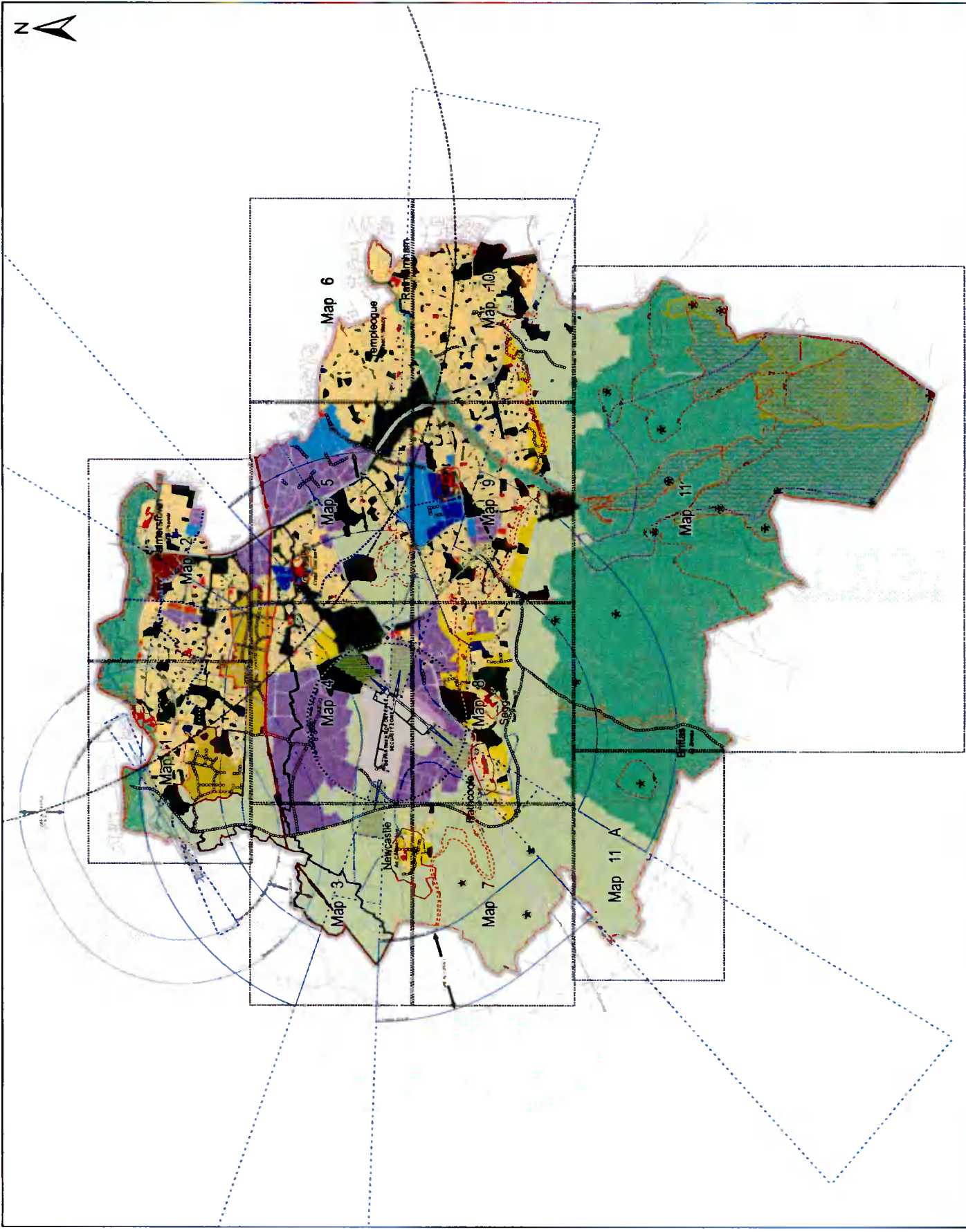
SDCC Development Plan 2016-2022

Index Map

South Dublin County Council
Development Plan
2016 - 2022

Use Zoning Objectives

- Zone A: To provide for the highest quality residential development in accordance with approved area plans.
- Zone B: To provide for medium density residential development in accordance with approved area plans.
- Zone C: To provide for high density residential development in accordance with approved area plans.
- Zone D: To provide for medium density residential development in accordance with approved area plans.
- Zone E: To provide for high density residential development in accordance with approved area plans.
- Zone F: To provide for medium density residential development in accordance with approved area plans.
- Zone G: To provide for high density residential development in accordance with approved area plans.
- Zone H: To provide for medium density residential development in accordance with approved area plans.
- Zone I: To provide for high density residential development in accordance with approved area plans.
- Zone J: To provide for medium density residential development in accordance with approved area plans.
- Zone K: To provide for high density residential development in accordance with approved area plans.
- Zone L: To provide for medium density residential development in accordance with approved area plans.
- Zone M: To provide for high density residential development in accordance with approved area plans.
- Zone N: To provide for medium density residential development in accordance with approved area plans.
- Zone O: To provide for high density residential development in accordance with approved area plans.
- Zone P: To provide for medium density residential development in accordance with approved area plans.
- Zone Q: To provide for high density residential development in accordance with approved area plans.
- Zone R: To provide for medium density residential development in accordance with approved area plans.
- Zone S: To provide for high density residential development in accordance with approved area plans.
- Zone T: To provide for medium density residential development in accordance with approved area plans.
- Zone U: To provide for high density residential development in accordance with approved area plans.
- Zone V: To provide for medium density residential development in accordance with approved area plans.
- Zone W: To provide for high density residential development in accordance with approved area plans.
- Zone X: To provide for medium density residential development in accordance with approved area plans.
- Zone Y: To provide for high density residential development in accordance with approved area plans.
- Zone Z: To provide for medium density residential development in accordance with approved area plans.



Legend

- Proposed Proposals
- Current Zone
- Church Boundary
- EEC Planning District Boundaries
- Areas of Architectural Interest
- Designated Areas for Protection
- Subsidence Hazardous Capabilities
- Proposed National Transport Area (PNTA)
- Special Protection Areas (SPA)
- Other Water Supply Area (Waters) Class 10B (SUDC)
- Special Areas of Conservation (SAC)

Transport

- Proposed
- Proposed - Long Term
- Proposed - Short Term
- Proposed - 6 Year
- Proposed - 12 Year
- Proposed - 18 Year
- Proposed - 24 Year
- Proposed - 30 Year
- Proposed - 36 Year
- Proposed - 42 Year
- Proposed - 48 Year
- Proposed - 54 Year
- Proposed - 60 Year
- Proposed - 66 Year
- Proposed - 72 Year
- Proposed - 78 Year
- Proposed - 84 Year
- Proposed - 90 Year
- Proposed - 96 Year
- Proposed - 102 Year
- Proposed - 108 Year
- Proposed - 114 Year
- Proposed - 120 Year

Aviation Security Requirements

- Aviation Security Boundary
- Aviation Security Zone
- Aviation Security Zone - Class A
- Aviation Security Zone - Class B
- Aviation Security Zone - Class C
- Aviation Security Zone - Class D
- Aviation Security Zone - Class E
- Aviation Security Zone - Class F
- Aviation Security Zone - Class G
- Aviation Security Zone - Class H
- Aviation Security Zone - Class I
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- Aviation Security Zone - Class W
- Aviation Security Zone - Class X
- Aviation Security Zone - Class Y
- Aviation Security Zone - Class Z

Map

The map is the property of the Council and is not to be used for any other purpose without the written consent of the Council. The Council is not responsible for any errors or omissions on this map. The Council is not responsible for any damage or loss of any kind resulting from the use of this map.

SCALE 1:30,000

Land Use Planning and Transportation Department
Laura Lohmeyer
Assistant Director
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