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Project Title: Drive Thru Coffee Unit, Lucan Retail Park, Lucan Road, Co. Dublin

Report Title: Stage 1/2 Flood Risk Assessment Report

Report Ref: 21192-LDE-ZZ-ZZ-RP-SC-0001_FRA

Project Ref: 21192

Client: New Ireland Assurance Company PLC

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Contents:

1.0 Introduction:

This flood risk assessment has been conducted at the request of New Ireland Assurance Company PLC. The flood risk assessment has been conducted in line with OPW Publication "The Planning System and Flood Risk Management Guidelines for Planning Authorities".

The scope of works is generally the development of a brownfield site into a coffee pod unit with a drive thru feature. The proposed site is situated within the carpark of Lucan Retail Park south of the Lucan Road and north of the N4 National Primary Road.

2.0 Stage 1 – Flood Risk Identification:

2.1 Site Location:

The site is located along the Lucan Road as shown on map below (See Figure 1 & 2).

Figure 1: Site Location Map

Figure 2: Site Aerial Plan

2.2 Previous Flooding Occurrences:

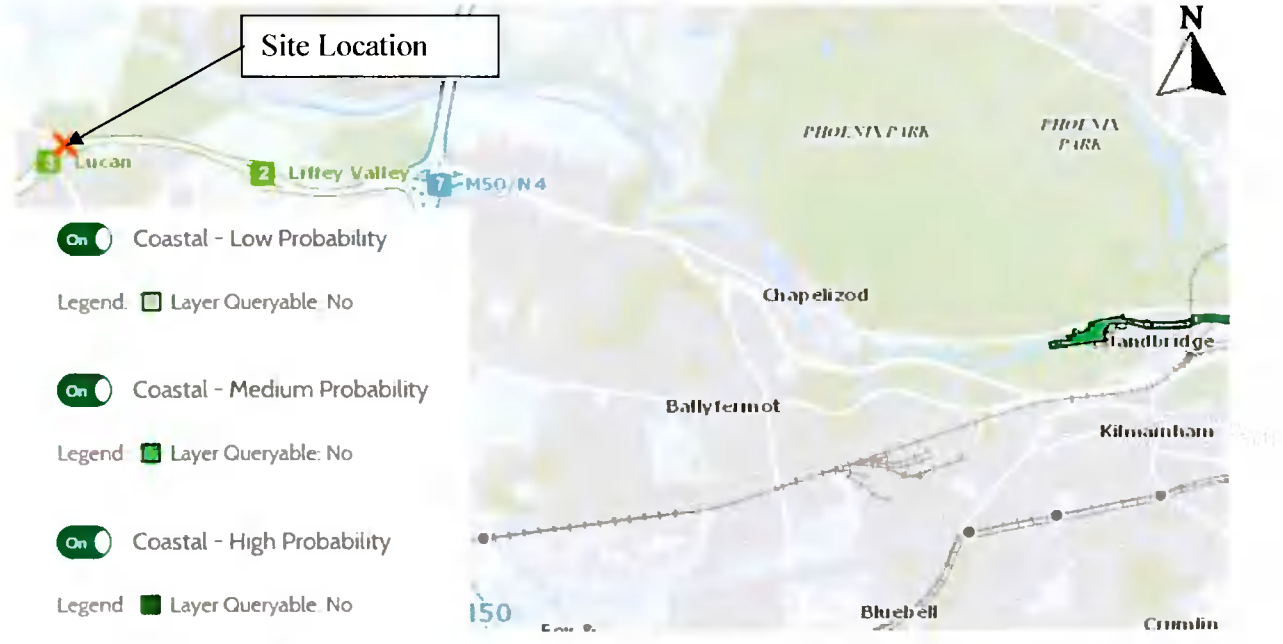
Inspection of OPW records indicates that there has been a previous flood event further up the Lucan Road towards St. Edmonsbury. There has not been much data recorded for this flood bar that part of Lucan Road flooded. The flood event was approximately 350m from the subject site. The subject site is at an approximate elevation of 50m, whereas the flood event location is at an approximate elevation of 48m. Considering both the distance from the subject site as well as the change in elevation between the sit and flood location it can assumed that the subject site would not be affected by a similar flood event.

Figure 3: Map Extract from OPW Flood Maps Website (floodinfo.ie ,2021)

2.3 Likelihood of Flooding:

2.3.1 Tidal/Costal Flooding

The maps obtained from the floodinfo.ie indicate that areas in the vicinity of the site are not predicted to flood during in 0.1% Annual Exceedance Probability (AEP). The site is located 7.4km away from the nearest Coastal flood area along the Liffey and 17 km away from where the Liffey meets the coast (See Figure 3).



Low Probability flood events have an indicative 1-in-a-1000 chance of occurring or being exceeded in any given year. This is also referred to as an Annual Exceedance Probability (AEP) of 0.1%.

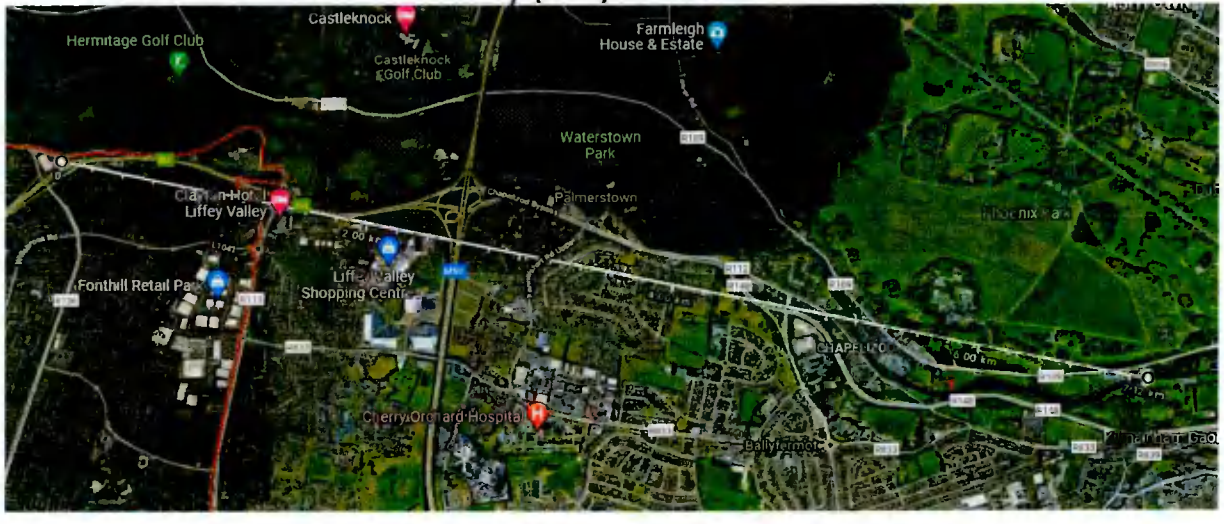


Figure 4: Map of Costal Flood Extents (floodinfo.ie, 2021)

2.3.2 Fluvial Flooding

The maps obtained from the floodinfo.ie indicate that areas in the vicinity of the site are not predicted to flood during in 0.1% Annual Exceedance Probability (AEP). The site is located 265m away from the nearest water course (See Figure 4).

Figure 5: Map of Fluvial Flood Extents (Extract from floodinfo.ie)

2.3.3 Pluvial Flooding

Inspection of the maps from Floodinfo.ie and MyPlan.ie resulted in no pluvial flooding data being found, however, there has been no past flood events due to pluvial flooding in the near vicinity of the site and this would suggest that pluvial flooding will not affect the site.

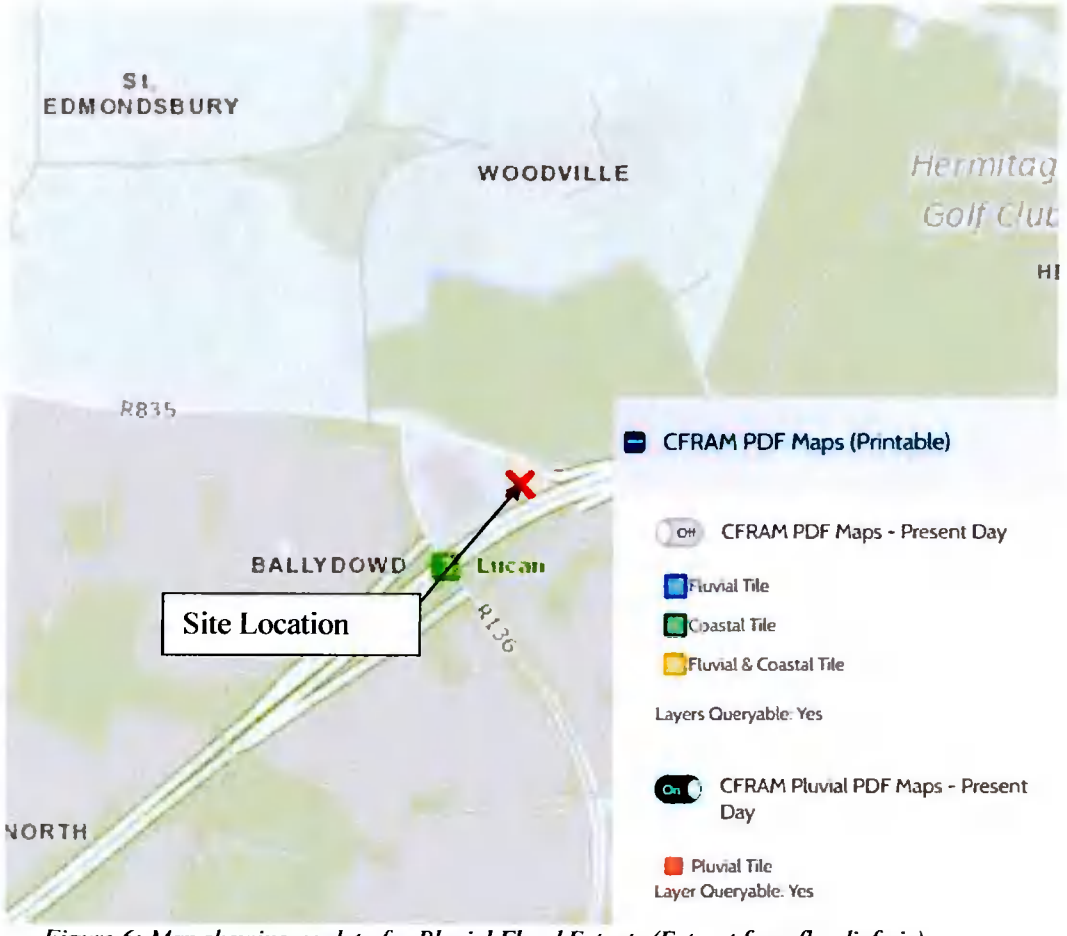
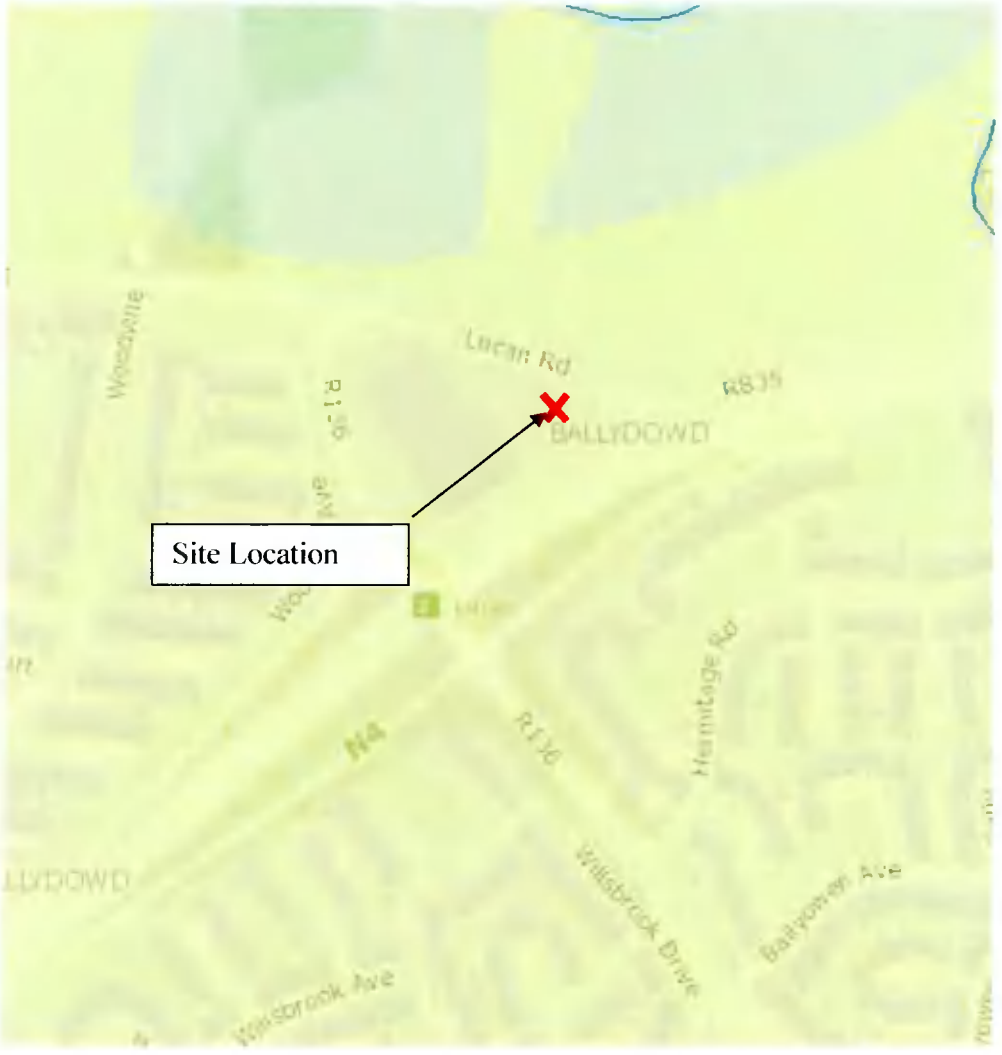


Figure 6: Map showing no data for Pluvial Flood Extents (Extract from floodinfo.ie)

2.3.4 Groundwater Flooding

Inspection of the mapping contained with the GSI groundwater data viewer portal indicates that the site location does not contain any karst landforms or surface water features. The site is not within any groundwater protection zones and is classed as an area of moderate vulnerability. Groundwater recharge is indicated as an average of 68mm/year with only locally important aquifers of moderate productivity recorded. Soils are classed as made ground with subsoils also classed as made ground with low permeability. The rock group is stated as Dinantian pure unbeddedd Limestone.

On the basis of there being no recorded history of groundwater flooding previously the likelihood of groundwater flooding at this location is considered to be low.



Groundwater Recharge	
Average Recharge (mm/yr)	68
Hydrogeological Setting	3.m
Hydrogeological Setting Description	M Vul: Made ground
Recharge Coefficient (%)	20.00
Effective Rainfall	337.600
Recharge (pre cap) mm/yr	68
Recharge Cap Apply	Y
Maximum Recharge Capacity (mm/yr)	
Groundwater Vulnerability	M
Groundwater Vulnerability description	Moderate
Soil Drainage	MADE
Subsoil Type	Made
Subsoil description	Made ground
Subsoil Permeability	L
Subsoil Permeability Description	Low
Karst	
Sinking Stream	
Gravel Aquifer Category	
Gravel Aquifer Description	
Bedrock Aquifer Category	Ll
Bedrock Aquifer Description	Locally Important Aquifer - Bedrock which is Moderately Productive only in Local Zones
Rock Unit Group	Dinantian Pure Unbedded Limestones
County	DUBLIN

Figure 7: Selected data extraction from GSI Groundwater Map Viewer (gsi.ie, 2021)

3.0 Stage 2 – Initial Flood Risk Assessment:

3.1 Existing Site Topography & Flood Alleviation Measures:

The existing site is a brownfield site currently being used as a carpark for Lucan Retail Park. Generally, the site falls from the east boundary down to the western side of the boundary at a gradient of roughly 1/31. There are currently a number of gullies and cutoff drains located throughout the carpark to avoid ponding.

3.2 Proposed Development of Site & Flood Alleviation Measures:

The proposed development of the site involves the construction of a single storey drive thru coffee shop pavilion within the existing car park of the Lucan Retail Park, Lucan Road, Ballydowd, Lucan, Co. Dublin. The building will have a total floor space of 170.45m^2 and would operate for the sale and consumption of food and beverages. The development will include the reconfiguration of a section of the existing carpark, to remove 45 spaces so as to make way for the proposed building, vehicle circulation route and collection point. The existing car parking will be reduced from 285 spaces to 240 spaces. It is proposed to provide a stormwater attenuation system to serve the entire site and to limit the outflow from the site to 2 litres/second. The proposed topography of the site will reflect that of the natural topography and will aid in

draining the site towards the existing gullies as well as new proposed gullies along the drive thru driveway. The proposed finished floor level of the new structure will be positioned level with the surrounding paving which will be a minimum of 100-150mm above the hardstanding roadways. It is also proposed to have the drive thru roadway formed at a crossfall of 1/40 falling towards the north and east boundary's along with a line of gullies to avoid ponding anywhere on the drive thru roadway. The elevational positioning of the new development relative to the surrounding paving and associated drainage features provides a robust means of repelling, containing and controlling runoff in the event of overland flooding or similar type events in the vicinity of the proposed development.

4.0 Stage 3 – Detailed Risk Assessment:

It is noted from stages 1 and 2 that the proposed development's likelihood of flooding is low, which implies that it is not subject to any significant flood risk. Therefore stage 3 is deemed not applicable as per the OPW Publication "The Planning System and Flood Risk Management Guidelines for Planning Authorities technical Appendices Document".

5.0 Conclusions:

The proposed development of a coffee pod unit would be deemed as a **less vulnerable development** in its vulnerability classification. Review of all available flood data for the site and the surrounding area indicates the likelihood of floodwater entering to be extremely low. The site is therefore classified as a **Flood Zone C** and therefore has a low probability of experiencing a flood. Applying the matrix of vulnerability from the OPW Guidelines for Planning Authorities indicates that the site is therefore appropriate for the proposed development without further justification or flood alleviation measures

There are no recorded flood events that have had an effect on the site in question or within the surrounding area of the site.

It is therefore our opinion that the risk of flooding at this site and the risk of flooding due to the development of this site in flood events is minimal.

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Date:23rd November 2021

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Senior Engineer

For Lohan & Donnelly Civil & Structural Consulting Engineers