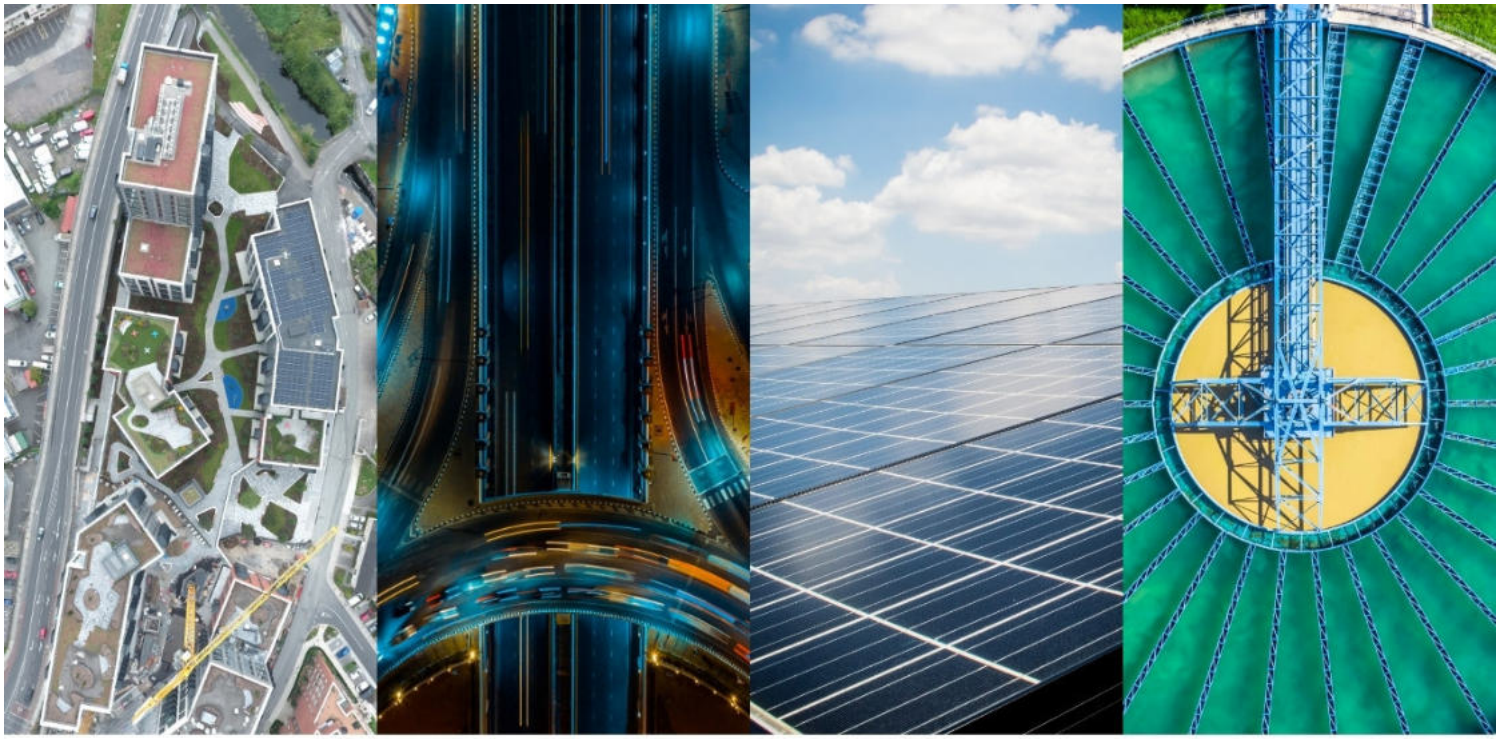
St Edmundsbury Campus Development

Flood Risk Assessment Report

20 April 2026

St Patrick's Mental Health Services



Formerly JB Barry & Partners who became part of Egis in 2023.

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1 INTRODUCTION

1.1 General

J. B. Barry and Partners Limited was commissioned by St. Patricks Mental Health Services to undertake a site-specific Flood Risk Assessment (FRA) to support a Planning Application for a proposed new mental health hospital at Saint Edmundstown Hospital, Lucan, Co. Dublin. The aim of the FRA is to identify, quantify and communicate to decision makers and other stakeholders the risk of flooding associated with the proposed development.

The FRA has been carried out in accordance with 'The Planning System and Flood Risk Management Guidelines' (hereafter referred to as the FRM Guidelines) published in November 2009 jointly by the then Department of the Environment, Heritage and Local Government, DEHLG, (now the Department of the Environment, Community and Local Government, DECLG) and the Office of Public Works (OPW).

The proposed development site is located along the Lucan Road approximately 1km north east of Lucan centre as shown in Figure 1-1 below.

FIGURE 1-1: LOCATION OF PROPOSED DEVELOPMENT (SOURCE: GOOGLE MAPS, ANNOTATION BY J.B. BARRY & PARTNERS)

1.2 Proposed Development

The proposed development comprises the demolition of an existing single storey 52 no. bed psychiatric ward (c. 1,633.00 sq m), located to the south-west of St. Edmundsbury House (RPS 003), and the construction of a single storey 14 no. bedroom in-patient adolescent mental health facility (c. 1,857.10 sq m) in its place, with façade remediation where the former building connected to St. Edmundsbury House; The demolition of 1 no. storey existing shed (c. 17.90 sq m) to the north-west of St. Edmundsbury House and replacement with 1 no. ESB substation unit building (c. 23.60 sq m). The proposed development includes a new 200 no. bed adult inpatient facility ranging from one to two storeys in height and a total floor area of c. 16,283.20sq m, with screened plant at roof level. It will be located within the existing walled garden area (RPS 012) and will incorporate the historic walls and bell tower structures (RPS 013.) The facility will be arranged as a single continuous block comprising 7 no. In-patient wards. The form of the building will create 10 no. new internal courtyards at ground floor & 2 no. terraces at first floor (c. 3696.00 sqm in total); with c. 62lin.m of the north garden wall to be demolished and this stone reincorporated into the proposed hospital structures.

The proposed development also includes for the alteration, refurbishment and conversion of the existing structures within the historic farmyard enclosure (RPS 008), including: coach house building (c. 312.95 sq m) to provide a new consultancy suite (c. 599.50 sq m), including c. 71.5 sq m café; Alteration, conversion and refurbishment of existing barn (c. 183.65 sq m) to form a maintenance facility building and associated offices (c. 374.00 sqm); The demolition of an existing contemporary shed within the historic farm yard (c. 163.75 sq m) and construction of a new single storey energy centre building (c. 114.50 sq m), within the historic farmyard enclosure. In total, c. 210.80 sq m of structures are required to be demolished within the walled garden and farmyard enclosure areas to facilitate the proposed development.

The proposed development also includes the removal and relocation of the existing southern boundary wall to Lucan Road (c. 190lin.m) (Regional Road Number Ref. R835) set back from the existing boundary to facilitate the future junction improvement works to the Lucan Road and Chapel Hill Junction. The junction upgrade works do not form part of this application and will be carried out by South Dublin County Council. The proposed development also comprises the demolition of the existing 2 no. Dean Clinic buildings (single storey and single storey with dormer level) at the existing entrance to the site via the Lucan Road (c. 221.15 sq m and c. 60 sq m respectively) to facilitate the construction of revised access arrangements and widening of the access to the Lucan Road.

The new mental health facility will provide adult and adolescent in-patient service rooms; Adult and adolescent day services rooms; Patient care services rooms; Patient pharmacy; Laboratories; Staff and patient canteen facilities; Consultant and hospital administration accommodation; Staff welfare facilities; Reconfigured and additional new car and cycle parking facilities (with revised total of 214 no. car parking spaces, 2 no. bus parking spaces and 160 no. secure cycle parking spaces); Signage and wayfinding.

The proposed development also includes private and secure patient gardens (c. 9,982 sq m); Plant and associated tanks; Public lighting; All piped infrastructure and ducting and redirection works; Tree removal, including tree removal within the Proposed Liffey Valley Natural Heritage Area (pNHA - 000128); Redirection and undergrounding of existing overhead power lines from the Lucan East 38KV Substation to the existing hospital facility; Controlled access barriers; 2 no. Secure cycle parking stores total c. 107.10 sq m; EV charging facilities; 2 no. Attenuation tanks; Rainwater harvesting tanks; PVs; SUDs including extensive green roof provision; Boundary treatments, including new boundary treatments and the repair and refurbishment of existing stone boundary walls; Waste marshalling compound storage area; Changes in level and retaining walls; Internal roads and paths, including vehicle set down areas; Site clearance works; Services provision and related ducting, piping and cabling; and all associated site development and excavation works above and below ground. Upon completion, the mental health facility will cumulatively provide 214 no. inpatient beds across the campus, including existing and proposed inpatient beds.

2 FLOOD RISK ASSESSMENT METHODOLOGY

2.1 Methodology

The methodology used for the flood risk assessment for the proposed development is based on 'The Planning System and Flood Risk Management, Guidelines for Planning Authorities' (2009)'. The FRM Guidelines require the planning system at national, regional and local levels to:

- Avoid development in areas at risk of flooding, particularly floodplains, unless there are proven wider sustainability grounds that justify appropriate development;
- Adopt a sequential approach to flood risk management when assessing the location for new development based on avoidance, reduction and then mitigation of flood risk; and
- Incorporate flood risk assessment into the process of making decisions on planning applications and planning appeals.

The sequential approach (see Figure 3.1 of the FRM Guidelines below) in flood risk management requires the following three steps to identify the necessity for the justification test for a development:

- Step 1: Identification of the Flood Zone at the proposed development site (Section 2.23 of the FRM Guidelines);
- Step 2: Identification of the vulnerability of the type of the proposed development (Table 3.1 of the FRM Guidelines); and
- Step 3: Using the matrix of vulnerability versus Flood Zone (Table 3.2 of the FRM Guidelines), identify the necessity for the justification test for the proposed development.

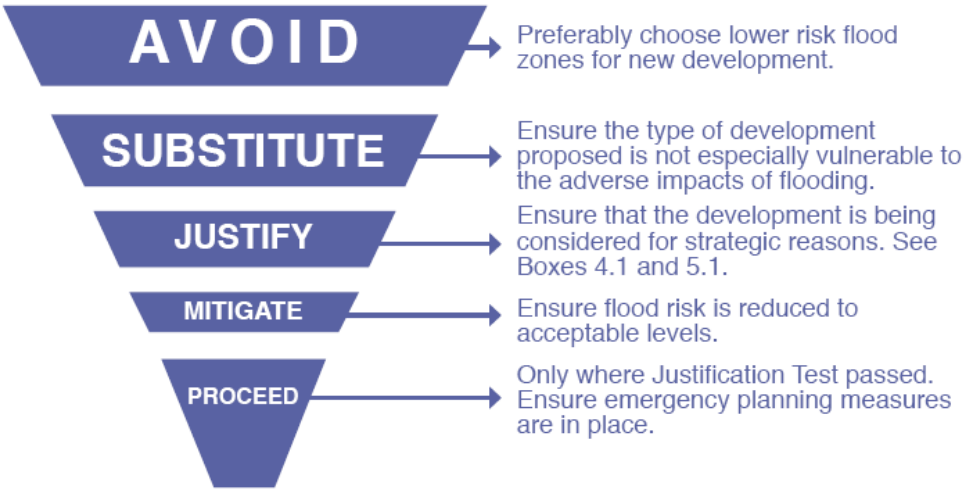

Fig. 3.1: Sequential approach principles in flood risk management

While Figure 3.1 of The FRM Guidelines sets out the broad philosophy underpinning the sequential approach in the flood risk management, Figure 3.2 of the Guidelines (shown below) describes the mechanism of the sequential approach for use in the planning process.

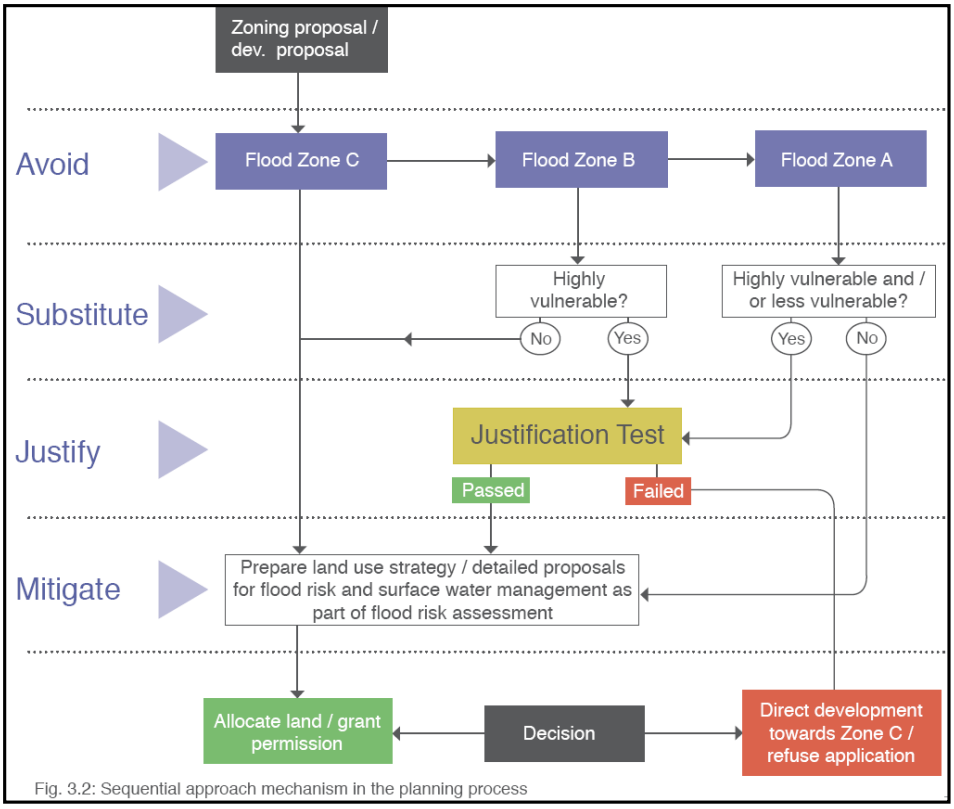

Fig. 3.2: Sequential approach mechanism in the planning process

According to the FRM Guidelines, Flood Zones are graphical areas within which the likelihood of flooding is in a particular range. They are a key tool in flood risk management within the planning process as well as in flood warning and emergency planning. There are three Flood Zones, namely,

- **Flood Zone A** – where the probability of flooding from rivers and the sea is highest (greater than 1% AEP or 1 in 100 year for river flooding or 0.5% or 1 in 200 for coastal flooding);
- **Flood Zone B** – where the probability of flooding from rivers and the sea is moderate (between 0.1% AEP or 1 in 1000 year and 1% AEP or 1 in 100 year for river flooding and between 0.1% AEP or 1 in 1000 year and 0.5% AEP or 1 in 200 year for coastal flooding); and
- **Flood Zone C** – where the probability of flooding from rivers and the sea is low (less than 0.1% AEP or 1 in 1000 for both river and coastal flooding).

Flood Zones A, B and C are based on the current assessment of the 1% AEP and the 0.1% AEP fluvial events and the 0.5% AEP and 0.1% AEP tidal events, without the inclusion of climate change factors. Table 3.1 of the FRM Guidelines (see below) shows the classification of the vulnerability to flooding of different types of development.

Vulnerability class	Land uses and types of development which include*:
Highly vulnerable development (including essential infrastructure)	Garda, ambulance and fire stations and command centres required to be operational during flooding; Hospitals; Emergency access and egress points; Schools; Dwelling houses, student halls of residence and hostels; Residential institutions such as residential care homes, children's homes and social services homes; Caravans and mobile home parks; Dwelling houses designed, constructed or adapted for the elderly or, other people with impaired mobility; and Essential infrastructure, such as primary transport and utilities distribution, including electricity generating power stations and sub-stations, water and sewage treatment, and potential significant sources of pollution (SEVESO sites, IPPC sites, etc.) in the event of flooding.
Less vulnerable development	Buildings used for: retail, leisure, warehousing, commercial, industrial and non-residential institutions; Land and buildings used for holiday or short-let caravans and camping, subject to specific warning and evacuation plans; Land and buildings used for agriculture and forestry; Waste treatment (except landfill and hazardous waste); Mineral working and processing; and Local transport infrastructure.
Water-compatible development	Flood control infrastructure; Docks, marinas and wharves; Navigation facilities; Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location; Water-based recreation and tourism (excluding sleeping accommodation); Lifeguard and coastguard stations; Amenity open space, outdoor sports and recreation and essential facilities such as changing rooms; and Essential ancillary sleeping or residential accommodation for staff required by uses in this category (subject to a specific warning and evacuation plan).
*Uses not listed here should be considered on their own merits	

Table 3.1 Classification of vulnerability of different types of development

Table 3.2 of the FRM Guidelines (shown below) identifies the types of development that would be appropriate for each Flood Zone and those that would be required to meet the Justification Test. Since the development is a hospital, the proposed development shall be considered 'Highly vulnerable development'. Table 3.2 presents the required actions for each flood zone.

	Flood Zone A	Flood Zone B	Flood Zone C
Highly vulnerable development (including essential infrastructure)	Justification Test	Justification Test	Appropriate
Less vulnerable development	Justification Test	Appropriate	Appropriate
Water-compatible development	Appropriate	Appropriate	Appropriate

Table 3.2: Matrix of vulnerability versus flood zone to illustrate appropriate development and that required to meet the Justification Test.

The FRM Guidelines (Chapter 2) outlines the following three stages of flood risk assessment:

Stage 1: Flood risk identification – to identify whether there may be any flooding or surface water management issues relating to the proposed development site that may warrant further investigations.

Stage 2: Initial flood risk assessment – to confirm sources of flooding that may affect the proposed development site, to appraise the adequacy of existing information and to determine what surveys and modelling approach is appropriate to match the spatial resolution required and complexity of the flood risk issues. This stage involves the review of existing studies and hydraulic modelling to assess flood risk and to assist with the development of FRM measures.

Stage 3: Detailed flood risk assessment – to assess flood risk issues in sufficient detail and to provide a quantitative appraisal of potential flood risk to a proposed or existing development, of its potential impacts on flood risk elsewhere and of the effectiveness of any proposed mitigation measures. This will typically involve use of an existing or construction of a hydraulic model across a wide enough area to appreciate the catchment wide impacts and hydrological process involved.

2.2 Data Collection

Data required for the flood risk assessment was obtained from various sources, as described below.

- *The historic flood data was obtained from the National Flood Hazard Mapping website www.floodmaps.ie,*
- *The Subsoil, Aquifer vulnerability and groundwater flooding data was obtained from the Geological Survey of Ireland website www.gsi.ie,*
- *National CFRAM Study,*
- *South Dublin County Development Plan 2022 – 2028,*
- *Strategic Flood Risk Assessment to the South Dublin County Development Plan 2022 – 2028.*

3 EXISTING HYDROLOGICAL ENVIRONMENT

3.1 Salient Hydrological Features

The River Liffey flows in a north-easterly direction approximately 150m to the west of the proposed development site. The River Liffey continues flowing through Dublin City until it discharges into Dublin Bay. *Figure 3-1* below illustrates the main hydrological features associated with the site.

FIGURE 3-1: HYDROLOGICAL FEATURES OF THE AREA (SOURCE: EPA, ANNOTATION BY J.B. BARRY & PARTNERS)

3.2 Existing Geology and Hydrogeology of the Area

The Geological Survey of Ireland (GSI) website provides information on their public online mapping service at www.gsi.ie on subsoil type and aquifer vulnerability. The maps presented in *Figure 3-2* and *Figure 3-3* depict the subsoil type and aquifer vulnerability for the proposed development site. The GSI subsoil mapping (*Figure 3-2*) indicates that both well drained and poorly drained mineral are the dominant ground conditions for the site.

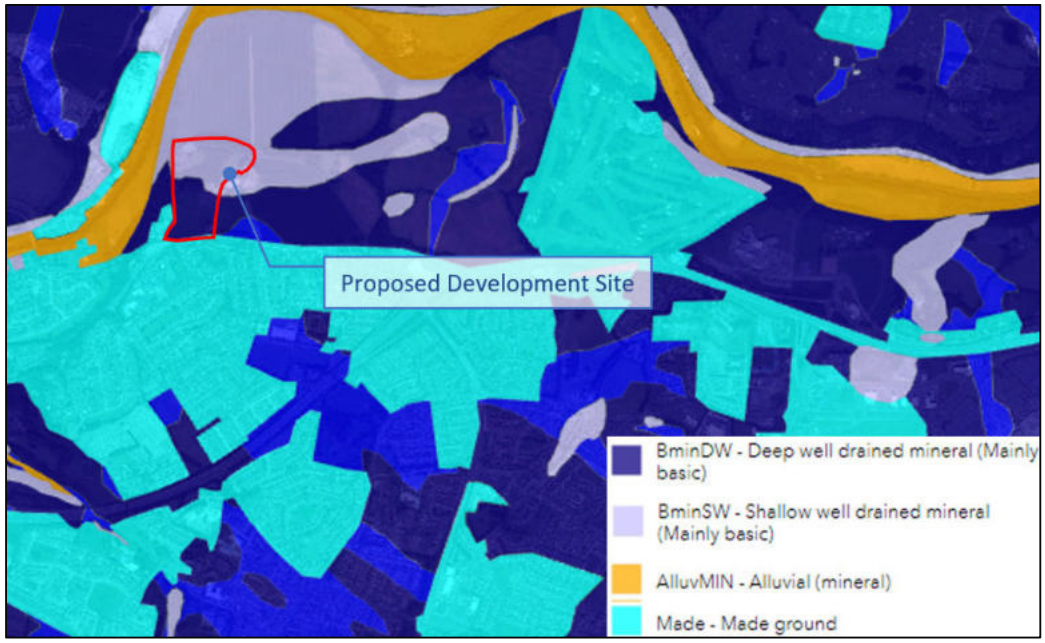

FIGURE 3-2: GSI SUBSOIL MAPPING (SOURCE: WWW.GSI.IE, ANNOTATION BY J.B. BARRY & PARTNERS)

Furthermore, the interactive web-mapping site classifies the aquifer vulnerability in this region as having a vulnerability rating ranging from extreme to rock at or near surface (*Figure 3-3*). The GSI state that "Vulnerability is a term used to represent the intrinsic geological and hydrogeological characteristics that determine the ease with which groundwater may be contaminated by human activities". The GSI further describes that the vulnerability of groundwater depends on:

- The time of travel of infiltrating water (and contaminants);
- The relative quantity of contaminants that can reach the groundwater; and
- The contaminant attenuation capacity of the geological materials through which the water and contaminants infiltrate

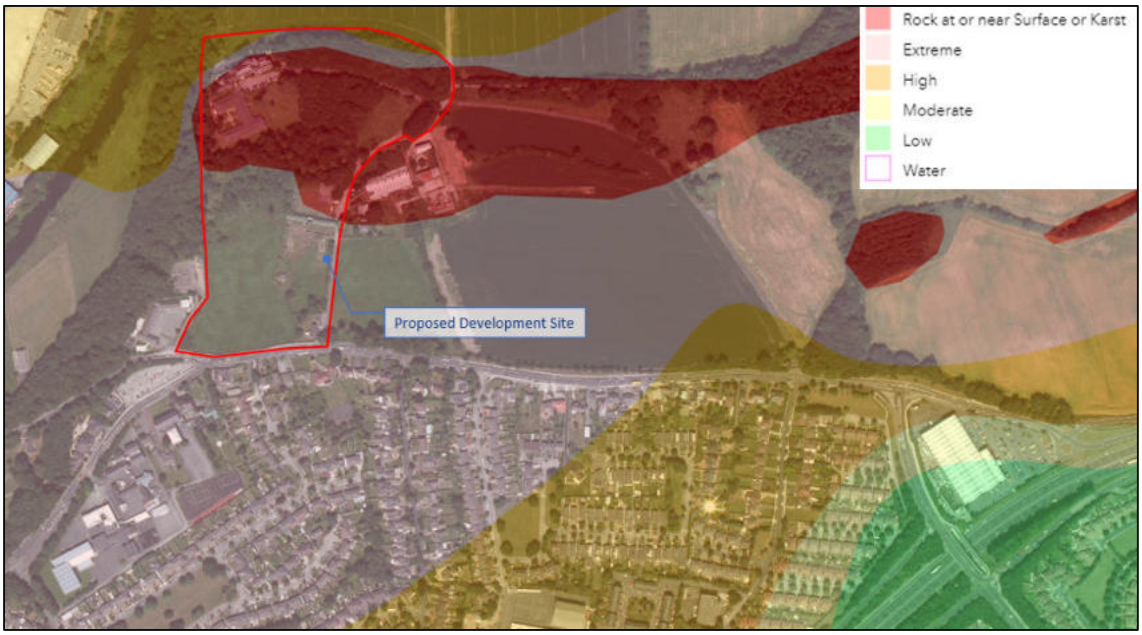

FIGURE 3-3: GSI AQUIFER VULNERABILITY MAPPING (SOURCE: WWW.GSI.IE, ANNOTATION BY J.B. BARRY & PARTNERS)

3.3 Flood Regime of the Area

The National Flood Hazard Mapping Website *www.floodinfo.ie* does not show any records of historic floods occurring at the proposed development site. The nearest record of historic flooding events occurred in 2005 approximately 500m to the east of the site on Lucan Road. There has also been instances of recurring flooding to the north of the site at Strawberry Beds. *Figure 3-4* below shows these nearby flooding events.

FIGURE 3-4: LOCATION OF HISTORIC FLOODING IN THE VICINITY OF THE PROPOSED SITE *(SOURCE: WWW.FLOODINFO.IE ANNOTATION BY J.B. BARRY & PARTNERS)*

3.4 Existing Flood Studies

3.4.1 GSI Groundwater Flood Maps

In response to the serious flooding of winter 2015/16 the GSI was commissioned to undertake a study of groundwater related flooding, with particular emphasis on limestone and karst regions. In June 2020 the GSI published its findings and published flood risk maps. Historic groundwater flood maps were produced which show maximum observed flood extents for locations of recurrent groundwater flooding, as well as predictive groundwater flood maps which present probabilistic groundwater flood events with flood extents predicted for a range of AEP's.

The GSI groundwater flood maps were examined as part of this study and it was determined that there have been no historic nor predictive groundwater related flood risks in the vicinity of the area.

3.4.2 CFRAM Study

The OPW, as lead agency for flood risk management in Ireland, is producing Flood Risk Management Plans (FRMP), in line with National Flood Policy and the requirements of the EU Floods Directive. Draft FRMP's are currently being produced by the OPW under the CFRAM Study. The Draft FRMP's make use of the information provided through the flood maps that have previously been produced under the CFRAM Programme and previous parallel projects. The Draft FRMP's set out a range of proposed measures and actions to manage and reduce flood risk within the catchments and coastal reaches covered by each Draft Plan, focusing on the 300 areas of potentially significant flood risk around Ireland that were identified under the PFRA. The Flood Maps associated with the FRMP's are currently being finalised and are made available online to view when the Draft Plans are published for consultation.

Figure 3-5 below is an extract from the Fluvial Flood Extent Map concerning the proposed development site. This map is included in Appendix 1. Observation of *Figure 3-5* demonstrates that the site lies outside of the 0.1% fluvial flood extent and is therefore located in **Flood Zone C**.

This extract also provides the flood level of the River Liffey near to the proposed development site during the fluvial flood events. At Node 09LIFF01765, approximately 200m to the west of the site, water levels during the 1% AEP and 0.1% AEP flood events are +18.96mOD +19.41mOD respectively.

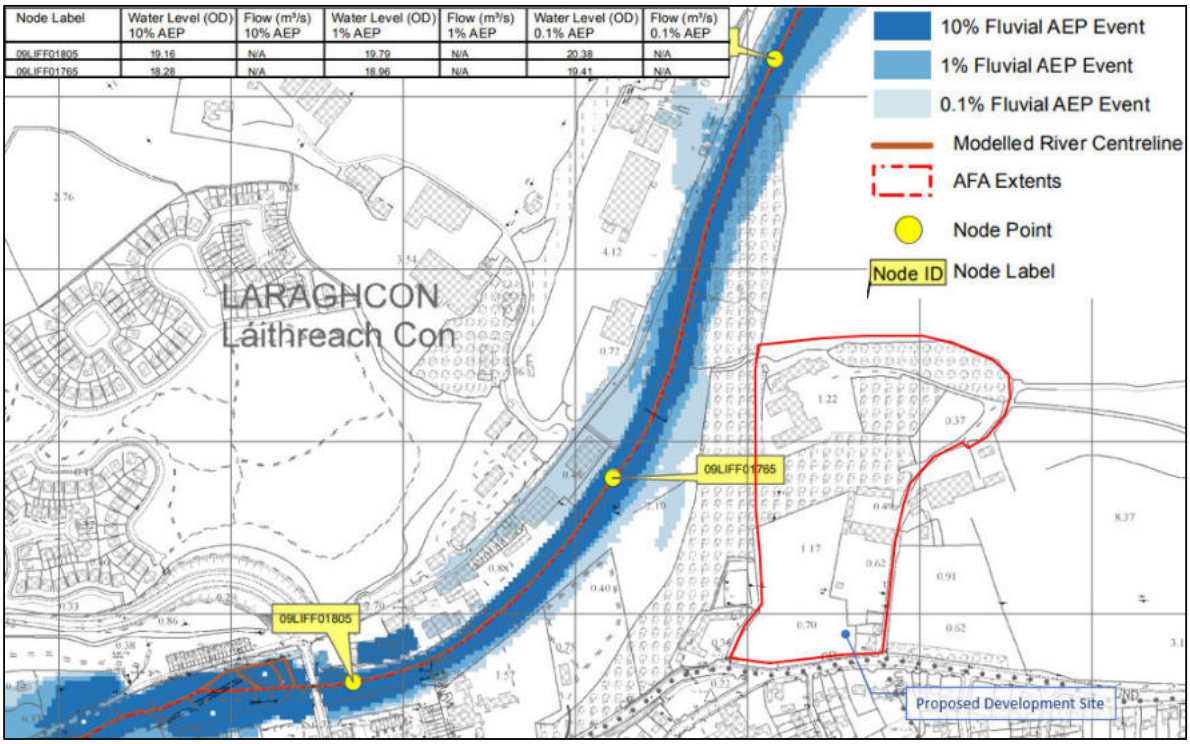

FIGURE 3-5: EXTRACT FROM THE EASTERN CFRAMS CURRENT SCENARIO FLUVIAL FLOOD EXTENT MAP

3.4.3 South Dublin County Council Strategic Flood Risk Assessment

The South Dublin County Council (SDCC) Strategic Flood Risk Assessment (SFRA) was developed as part of the South Dublin County Development Plan 2022-2028. The SFRA provides an area-wide assessment of all types of significant flood risk to inform strategic land use planning decisions. The SFRA enables SDCC to allocate appropriate sites for development and identify how flood risk can be reduced as part of the development plan process.

As part of the SFRA flood zone maps were generated for the area. *Figure 3-6* shows an extract from the South Dublin County Council SFRA Flood Zone Map below in the vicinity of the proposed development. The full map is included in Appendix 2. From this figure it can be seen that the proposed development site lies outside of Flood Zones A, and B and can therefore be considered to lie within **Flood Zone C**. The SDCC SFRA map is consistent with the CFRAMS map.

It can be seen that a small portion to the north of the site is located within a Riparian Corridor. The South Dublin SFRA states that riparian corridors protect watercourses and their natural processes including: ecological, biogeochemical, hydromorphological and flood resilience in the face of climate change. These zones act as the interface between rivers and adjoining lands and are key to managing flood risk within catchments of all sizes. Maintaining and enhancing Riparian Corridors creates "room for the river" and the benefits that entails including reducing risk to persons and property from flooding.

In an effort to minimise hydromorphological impacts on riparian corridors, no development will take place in this area.

Figure 3-7 shows an extract from the South Dublin County Council SFRA Pluvial Flood Map below in the vicinity of the proposed development. The full map is included in Appendix 2. From this figure it can be seen that the proposed development site lies outside areas of pluvial flood risk.

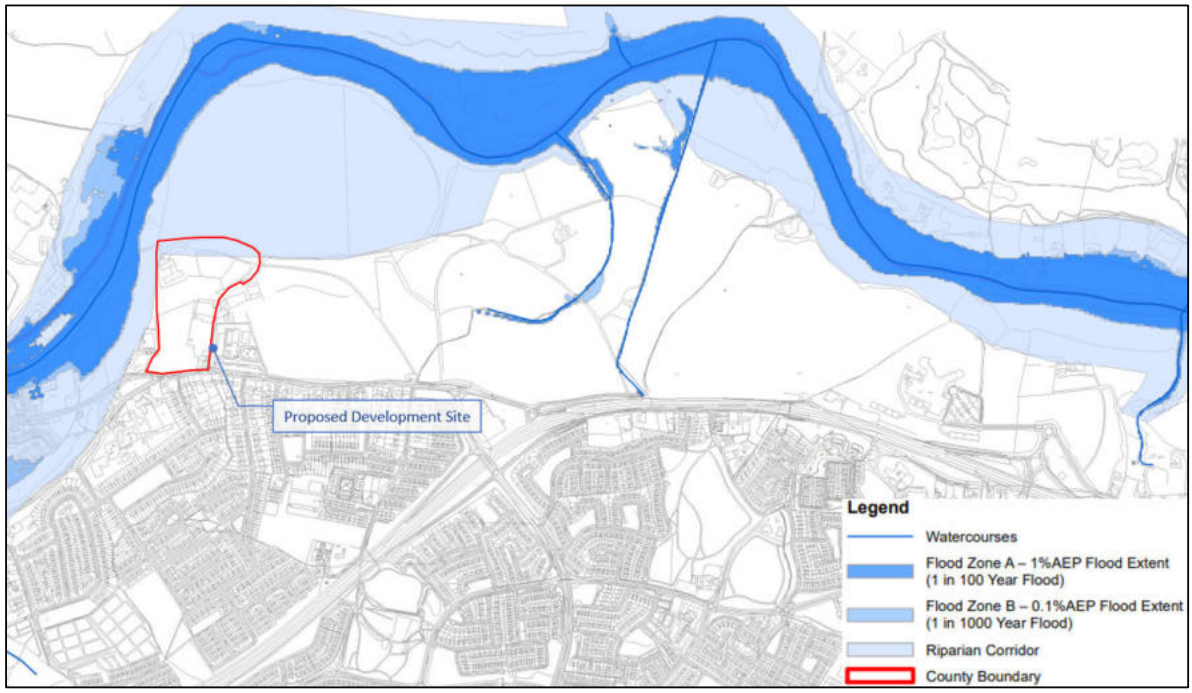

FIGURE 3-6: EXTRACT FROM THE SOUTH DUBLIN COUNTY COUNCIL SFRA FLOOD EXTENT MAP

4 FLOOD RISK ASSESSMENT

4.1 Introduction

As outlined in Section 2 of this report the FRM guidelines identifies three stages of Flood Risk Assessment namely;

- Stage 1: Flood Risk Identification
- Stage 2: Initial Flood Risk Assessment
- Stage 3: Detailed Flood Risk Assessment

4.2 Flood Risk Identification

According to the FRM Guidelines, flood risk identification is the process for deciding whether a plan or project requires further investigation. This is a desk based exercise based on existing information. All the existing information is described in Section 3 and the identification of flood risk from each of the five sources of flooding (coastal, fluvial (river), groundwater, pluvial (rainfall) and from artificial drainage systems) is considered.

4.2.1.1 Coastal Flood Risk

The development site is not located near the coast, hence coastal flooding is not deemed significant.

4.2.1.2 Fluvial Flood Risk

The CFRAM Map in Appendix 1 and South Dublin Co Co SFRA in Appendix 2 indicates that the proposed development site is located outside of the 0.1% AEP flood extent and is therefore located within fluvial Flood Zone C. The OPW Summary Local Area Report shows no indication of previous fluvial related flooding at the proposed site.

4.2.1.3 Groundwater Flood Risk

The GSI groundwater flood map shows no risk of groundwater flooding at the site. The aquifer vulnerability map (refer to Figure 3.3) classifies the site as having an 'extreme vulnerability' which indicates a high-water table and hence a risk of groundwater related flooding. Despite this there is no historical evidence of groundwater flooding at the site. There is no indication on the maps of any springs or wells on this site. Groundwater risk is therefore not considered to be significant.

4.2.1.4 Pluvial Flood Risk

The OPW Summary Local Area Report also shows no indication of previous pluvial related flooding at the site. During extreme rainfall events the application of SuDS principles will ensure surface water is managed adequately and sustainably discharged to the drainage network. With these mitigation measures in place pluvial flood risk is not considered to be significant.

4.2.1.5 Artificial Drainage Systems Flood Risk

No artificial drainage systems have been identified at the proposed site, and consequently artificial drainage systems flood risk is not relevant.

4.3 Initial Flood Risk Assessment

The Flood Risk Identification in Section 4.2 above has identified that there is a very low flood risk to the site. Under the sequential approach identified in the FRM Guidelines, a three step approach is required to confirm the appropriateness of the development in terms of flood risk.

Step 1: Identification of the Flood Zone at the proposed development site

Using the Flood Zone criteria from the FRM Guidelines and as defined in Section 2 previously, the flood zones for each of the sites were determined.

- **Flood Zone A** – where the probability of flooding from rivers and the sea is highest (greater than 1% or 1 in 100 year for river flooding or 0.5% or 1 in 200 for coastal flooding);
- **Flood Zone B** – where the probability of flooding from rivers and the sea is moderate (between 0.1% or 1 in 1000 year and 1% or 1 in 100 year for river flooding and between 0.1% or 1 in 1000 year and 0.5% or 1 in 200 year for coastal flooding); and
- **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).

As discussed in Section 4.2 above, the proposed development site lies within **Flood Zone C** – where risk of flooding is lowest.

Step 2: Identification of the vulnerability of the type of the proposed development (Table 3.1 of the FRM Guidelines)

The different types of proposed infrastructure are then assigned a vulnerability classification according to the definitions in 'Table 3.1 – Classification of vulnerability of different types of development' of the FRM Guidelines.

As described in Section 1.2 above, the proposed development is classified as 'highly vulnerable development'.

Step 3: Using the matrix of vulnerability versus Flood Zone (Table 3.2 of the FRM Guidelines), identify the necessity for the justification test for the proposed development

The proposed development site is located in Flood Zone C and is categorised as Less Vulnerable Development. Table 3.2 of the FRM guidelines and Figure 3.2 – Sequential approach mechanism in the planning process (FRM guidelines) stipulates that a justification test (Detailed Flood Risk Assessment) is not required for such a development and is deemed appropriate development for the flood zone categories. *Figure 4-1* below highlights the matrix of vulnerability versus flood zone.

	Flood Zone A	Flood Zone B	Flood Zone C
Highly vulnerable development (including essential infrastructure)	Justification Test	Justification Test	Appropriate
Less vulnerable development	Justification Test	Appropriate	Appropriate
Water-compatible development	Appropriate	Appropriate	Appropriate

Table 3.2: Matrix of vulnerability versus flood zone to illustrate appropriate development and that required to meet the Justification Test.

FIGURE 4-1: MATRIX OF VULNERABILITY VERSUS FLOOD ZONE TO ILLUSTRATE APPROPRIATE DEVELOPMENT

5 CONCLUSIONS

5.1 Summary of Results

A flood risk assessment for the proposed mental health hospital development at St Edmundsbury Hospital in Lucan, Co. Dublin has been undertaken in accordance with the methodology recommended in the FRM Guidelines. The following is a summary of the flood risk assessment:

- The proposed development consists of a new mental health hospital.
- The River Liffey flows in a north easterly direction to the west of the site.
- The CFRAMS flood maps and South Dublin County Council Strategic Flood Risk Assessment indicates that the site lies within Flood Zone C where the risk of flooding is lowest.
- The GSI groundwater flood maps indicate there have been no records of previous groundwater flooding at the site nor are there any groundwater flooding related risks at the site.
- The national flooding website *www.floodinfo.ie* does not have any record of historic flooding at the site.
- The type of development is defined as 'highly Vulnerable Development'. Using the sequential approach mechanism, it is assessed that a justification test is not required, and the proposed development is deemed suitable.

5.2 Impact of the proposed development on the existing flood regime of the area

As the proposed development will not take place in a flood zone, there will be no loss of flood plain and resulting increase in flood levels in the vicinity of the development