



JBA
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**Block B4
Greenogue/Aerodrome
Business Park**

Flood Risk Assessment

September 2016

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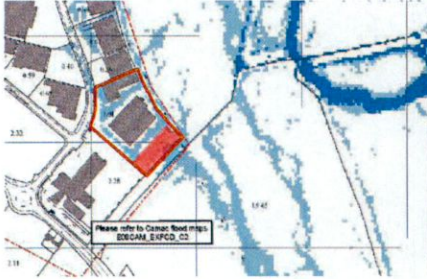


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Abbreviations

1D	One Dimensional (modelling)
2D	Two Dimensional (modelling)
AEP	Annual Exceedance Probability
AFA	Area for Further Assessment
BF	Baseflow
C1	Benchmarking system using GPS
CFRAM	Catchment Flood Risk Assessment and Management
CFRAMS	Catchment-Based Flood Risk Assessment and Management Study
CWI	Catchment Wetness Index
DoEHLG	Department of the Environment, Heritage and Local Government
EC	European Community
FARL	FEH index of flood attenuation due to reservoirs and lakes
FRA	Flood Risk Assessment
FSR	Flood Studies Report
FSU	Flood Studies Update
GSDSDS	Greater Dublin Strategic Drainage Strategy
IH	Institute of Hydrology
IoH	Institute of Hydrology
ISIS	Hydrology and hydraulic modelling software
LiDAR	Light Detection And Ranging
mOD	Meters above Ordnance Datum
MSL	Mean sea level
OPW	Office of Public Works
PFRA	Preliminary Flood Risk Assessment
QBAR	Mean Annual Maximum Flood
RFI	Request for Further Information
RR	Rainfall-Runoff
SAAR	Standard Average Annual Rainfall (mm)
SFRA	Strategic Flood Risk Assessment
SPR	Standard percentage runoff
Tp	Time to Peak
TUFLOW	Two-dimensional Unsteady FLOW (a hydraulic model)

Flood Risk Summary Sheet

Site Name	Block B4
Site Location	Greenogue Business Park
Site Description	Brownfield industrial site
Proposed Development	New warehousing block proposed totalling 3,484m ² , 1.55m high. The new block will comprise of; 8no separate units, 2,764m ² warehousing overall, 581m ² & 139m ² ancillary integrated office accommodation & staff facilities overall respectively, Ancillary car parking, services, utilities, landscaping, paving & site development works.
Land Use Vulnerability	Less vulnerable (industrial).
Flood Zones	<p>The development is located within Flood Zone B and C from fluvial flooding. Extract of the Eastern CFRAM Draft Flood Mapping (E09CAM_EXFCD_C3_SH05) and subsequent detailed modelling under this FRA confirms this conclusion and an investigation of the site specific mitigation measures and their impacts has been undertaken.</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Draft CFRAM Mapping</p>  </div> <div style="text-align: center;"> <p>JBA Mapping (existing scenario)</p>  </div> </div>
Mitigation	<p>The proposed development maintains finished floor levels (FFLs) similar to Block B3 at 95.00mOD Malin. Minimising the risk to occupants a protective clay/earth bund is proposed along the southern and eastern boundary of the site that is raised to 95.9mOD Malin which is 300mm greater than the 0.1% AEP flood level of 95.58mOD Malin. The bund diverts overland flows from the Camac around the site. Appropriate surface water design ensures pluvial risk is managed. Safe access and egress from the property is maintained by a clear access route into Flood Zone C. The mitigation measures have been modelled and confirm that there is no significant increase in flood risk to adjacent sites.</p> <p>Modelling result from mitigation modelling</p> 
Summary	In line with the Planning Guidelines the detailed FRA has applied various mitigation measures and appropriately manages risk. As a result it is concluded that the site is in compliance with the core principles of the Planning System and Flood Risk Management Guidelines and has been subject to a commensurate assessment of risk.

1 Overview

Under *The Planning System and Flood Risk Management Guidelines for Planning Authorities* (DoEHLG & OPW, 2009) proposed development must undergo a Flood Risk Assessment to ensure sustainability and effective management of flood risk. This requires a review of all available flood information and assessment of Flood Zones for the development site.

1.1 Terms of Reference and Scope

JBA Consulting was appointed by Kavanagh Burke to conduct a flood risk assessment for a proposed development to expand existing services in Block B, Greenogue Business Park, Rathcoole, County Dublin.

Recommendations for development have been provided in the context of the OPW / DoEHLG planning guidance, "The Planning System and Flood Risk Management ". A review of the likely effects of climate change, and the long term impacts this may have on any development has also been undertaken.

1.2 Development Proposal

The proposed development is a 1.89ha (approx.) site within the mature Greenogue Business Park. There are currently two existing buildings on the site with a new warehousing block (B4) proposed totalling 3,484m², 1.55m high. The new Block B4 will comprise of;

- 8no separate units;
- 2,764m² warehousing overall;
- 581m² & 139m² ancillary integrated office accommodation & staff facilities overall respectively;
- Ancillary car parking, services, utilities, landscaping, paving & site development works.

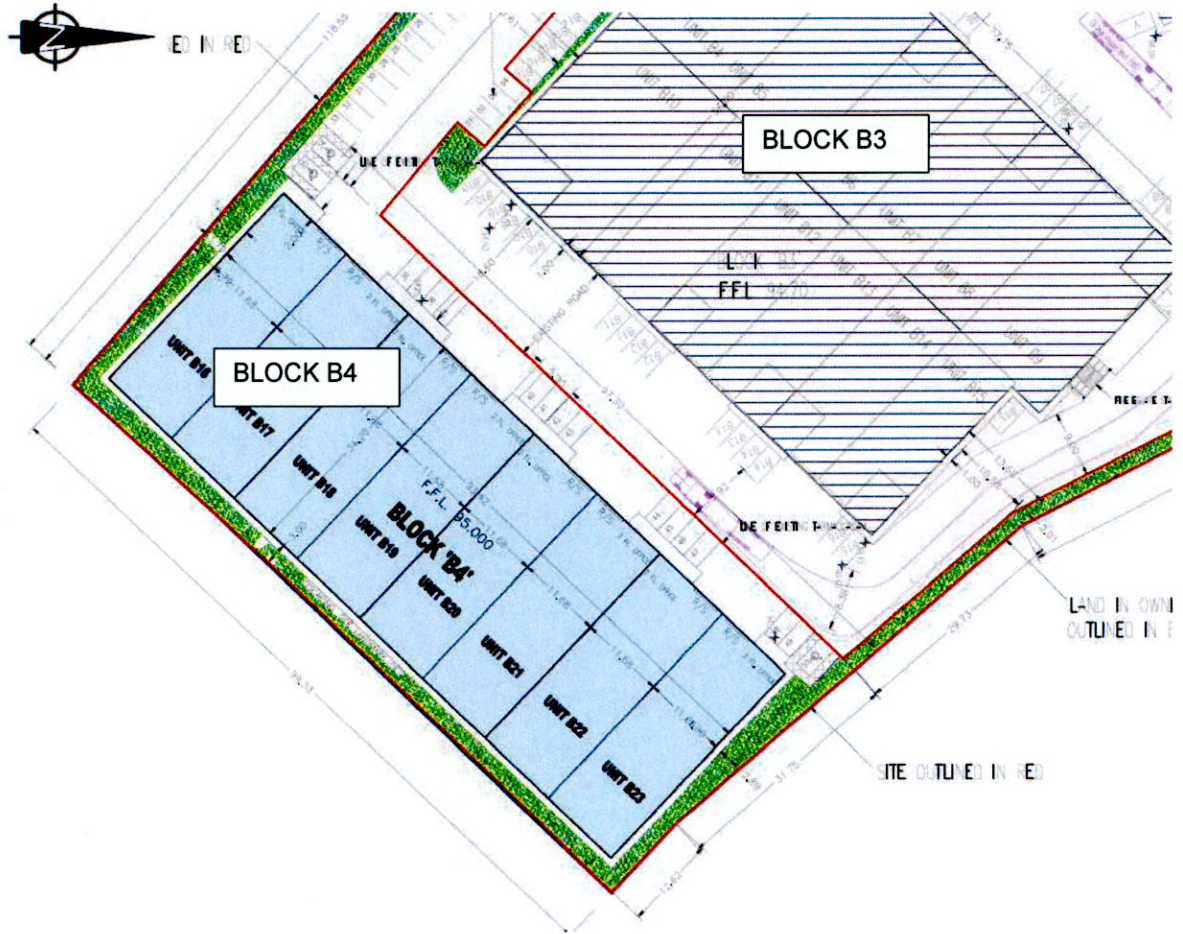
A planning application was previously approved on the site by a former applicant (SD07A/0367) which included 3no. blocks of multiple units, 2no. of which were constructed. However, the block subject to this application was not constructed. The current applicant now wishes to construct Block B4 and complete the site works which include the warehouse block and roads/landscaping etc.

The proposed site layout is provided in Figure 1-1, over the page and in Appendix A.

1.3 Report Structure

Section 2 of this report gives an overview of the study location and associated watercourses. Section 3 contains background information and an initial assessment of flood risk. The detailed FRA (modelling & hydrology) is provided in Section 4. Site-specific mitigation measures are explained in Section 5 while conclusions are highlighted in Section 6. An overview of the technical approaches to Flood Risk Assessment (FRA) is included in Appendix B.

Figure 1-1 Proposed Site Layout - Block B4



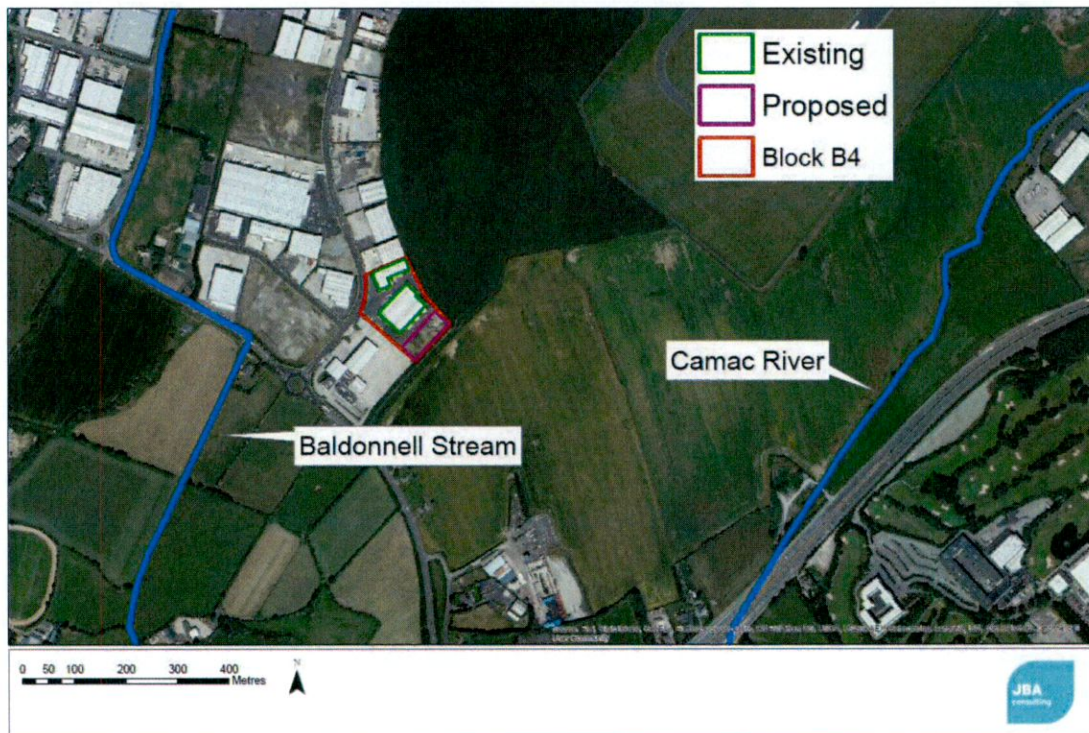
2 Site Background

2.1 Location

The proposed development site is situated in Block B4 in Greenogue/Aerodrome Business Park. Rathcoole is nearly 2km south east of the site and Newcastle is approximately 1km to the west of the site. Casement Air Base is located over 300m to east of the site.

The site is located in the south eastern section of the Business Park, which is zoned for enterprise and employment use. The site is currently in use, with two existing buildings on the site. The location of the site and local mapping is presented in Figure 2-1 below.

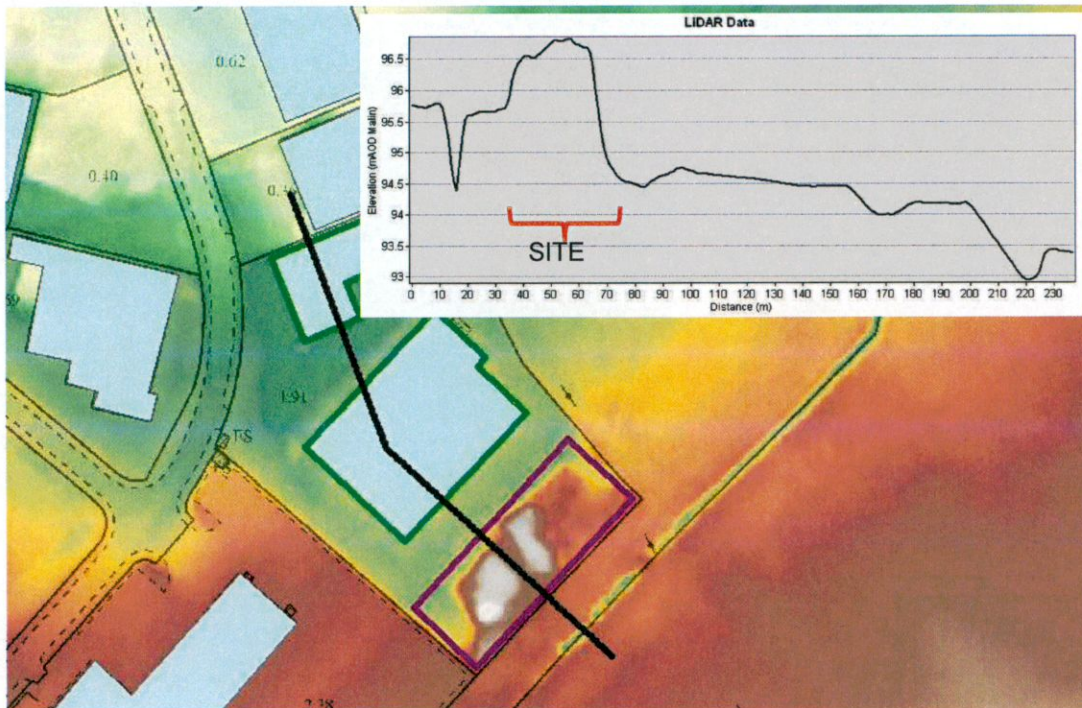
Figure 2-1: Site Location (Source: OpenStreetMap, 2015 and Bing Maps, 2015)



2.2 Local & Site Topography

The 1.89ha site is gently sloping in a south - north direction. Highest levels are in the south eastern part of the site and are typically around 94-95m AOD Malin. The site is elevated in the south eastern part of the site but this is possibly due to earthen mounds that were in place when the LiDAR was flown.

Figure 2-2 Cross Section through site north - south orientation (LiDAR Data)

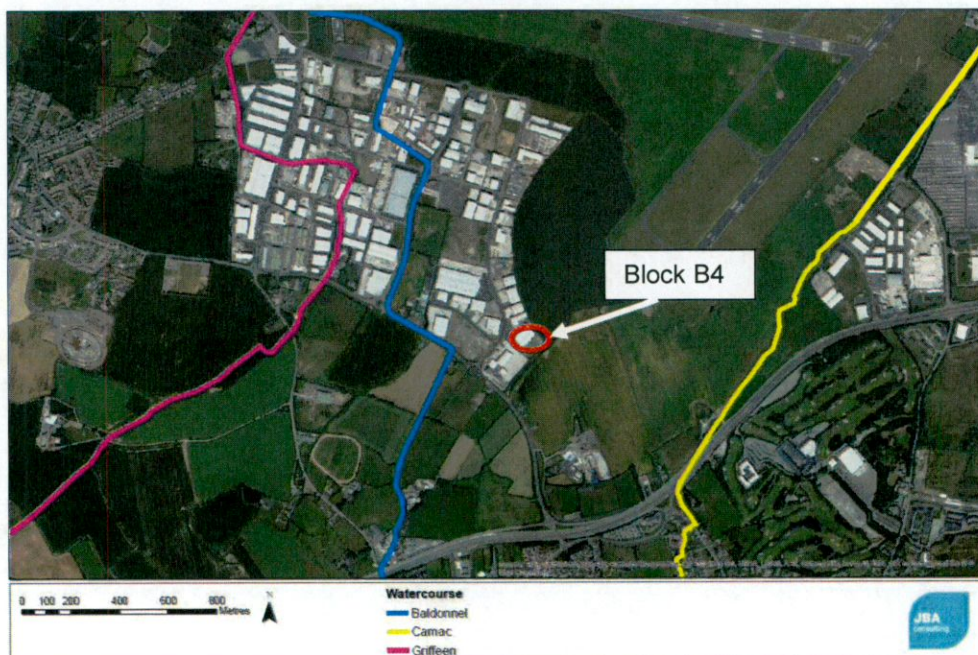


2.3 Watercourses

Figure 2-3 outlines the watercourses in the vicinity of the Business Park. There are two local watercourses nearby; the Baldonnell Stream and the Camac. The Baldonnell Stream flows in a northerly direction through the Business Park and is 300m to the east of the proposed site. The watercourse then flows past Peamount United Football Club before passing under the main road towards Ballybane where it subsequently joins the Griffeen River. The Baldonnell Stream passes through numerous culverts within the business park and the channel has been significantly altered by the local development.

The Camac River is located approximately 800m to the east of the site. The Camac flows in a north easterly direction adjacent to the eastern boundary of Casement Air Base.

Figure 2-3: Watercourses in Greenogue Business Park.



3 Flood Risk Identification

To continue the FRA process, an assessment of the potential and scale of flood risk at the site is conducted using existing and historical information. This identifies any sources of potential flood risk to the site and reviews historic flood information. The findings from the flood risk identification stage of the assessment are provided in the following sections. Further detail on the Planning Guidelines and technical concepts is provided in Appendix B.

3.1 Flood History

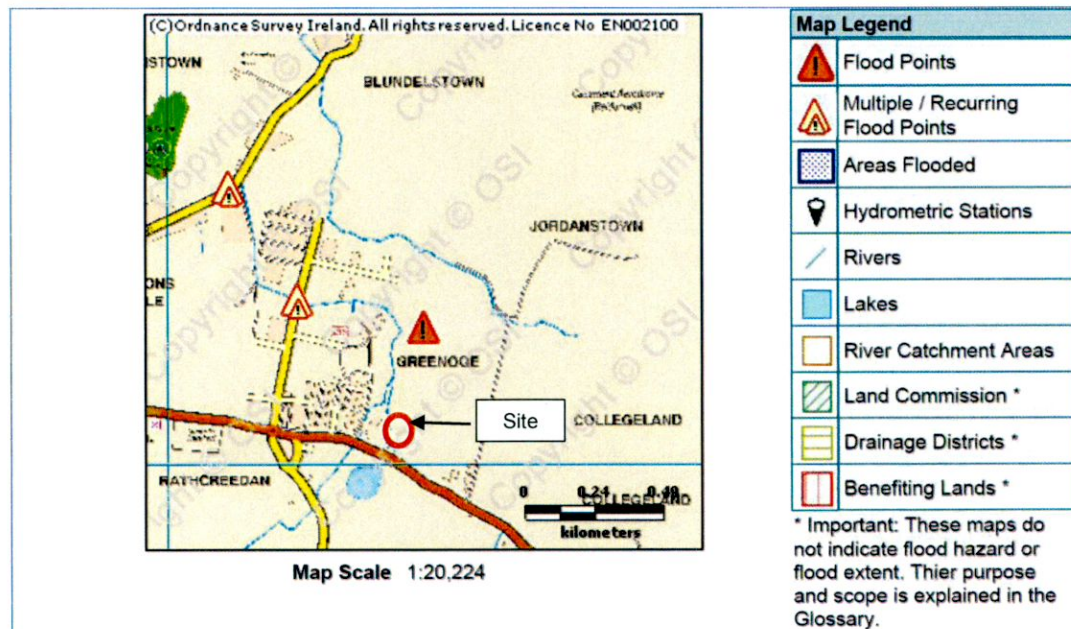
A number of sources of flood information were reviewed to establish any recorded flood history at, or near the site. This includes the OPW's website, www.floodmaps.ie and general internet searches.

3.1.1 Floodmaps.ie

The OPW host a National Flood hazard mapping website, www.floodmaps.ie, which highlights areas at risk of flooding through the collection of recorded data and observed flood events.

There are no records of flooding on the site according to the website.

Figure 3-1: Floodmaps.ie Summary Map



There are three flood points present to the west and south east of the site but these do not impact upon the proposed site. The nearest flood point relates to flooding within the Business Park on the 24th of October 2011. This event did not affect Block B4.

3.1.2 Internet Searches

An internet search was conducted to gather information about whether or not the site was affected by flooding previously. While there were no results for flooding affecting the site itself there was reports of flooding in the areas as mentioned in Section 3.1.1.

3.2 Predictive Flooding

The Business Park has been subject to two predicative flood mapping or modelling suites:

1. OPW Eastern CFRAM Study modelling and mapping (published in draft format only).
2. OPW Preliminary Flood Risk Analysis (PFRA).

The level of detail presented by each method varies according to the quality of the information used and the approaches involved. The CFRAMS is the most detailed assessment of flood extent and supersedes the fluvial and tidal flood outlines presented by the OPW PFRA study.

3.2.1 OPW PFRA

The OPW PFRA mapping does not highlight any risk of flooding to the site. The tributary flowing close to the site was not modelled. The PFRA was a high level analysis of major watercourses which meant smaller tributaries may not have been modelled such as the case here.

3.2.2 OPW Eastern Catchment Flood Risk Assessment and Management Study (Eastern CFRAMS)

The primary source of data with which to identify flood risk is the Eastern Catchment Flood Risk Assessment and Management Study (Eastern CFRAM). The Eastern CFRAM study commenced in June 2011 and is expected to conclude at the end of 2016. The study involves detailed hydraulic modelling of rivers and their tributaries.

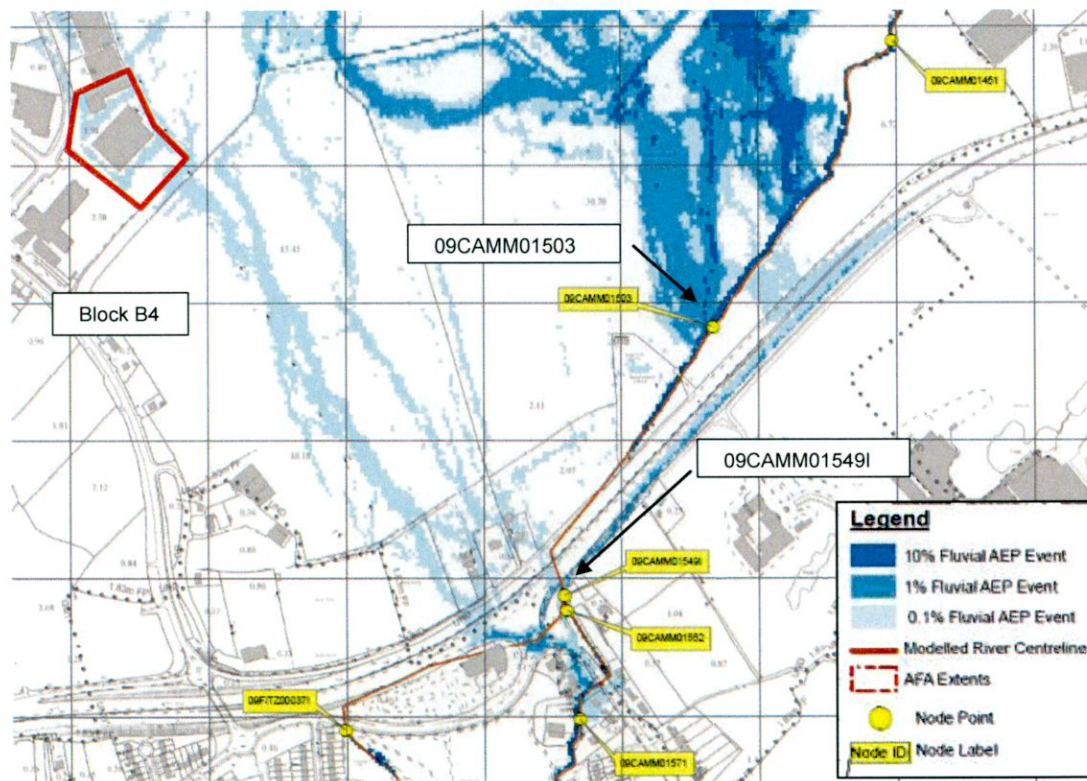
Site inspection during the flood risk review stage of the CFRAM recognised that the PFRA was incorrect in this area as the tributaries were not modelled correctly. It recommended that the watercourses identified be modelled to assess the "potential damage due to flood risk to commercial properties" within the Business Park. This inspection noted that the watercourses within the park contained culverts and was heavily modified.

The Baldonnell Stream and the Camac River were modelled under the CFRAMS. Draft flood maps for the 10%, 1% and 0.1% AEP are publicly available through the CFRAMS website and are displayed below.

Table 3-1 Relevant Water Level results extracted from draft Eastern CRAMS

ECFRAM Model Results ¹	10% AEP (mOD Malin)	1% AEP (mOD Malin)	0.1% AEP (mOD Malin)
09CAMM01549I	105.14	105.47	105.88
09CAMM01503	101.37	101.49	101.56

Figure 3-2: Extract from Eastern CFRAMS Draft Flood Mapping (SH05 E09CAM_EXFCD_C3_SH05)

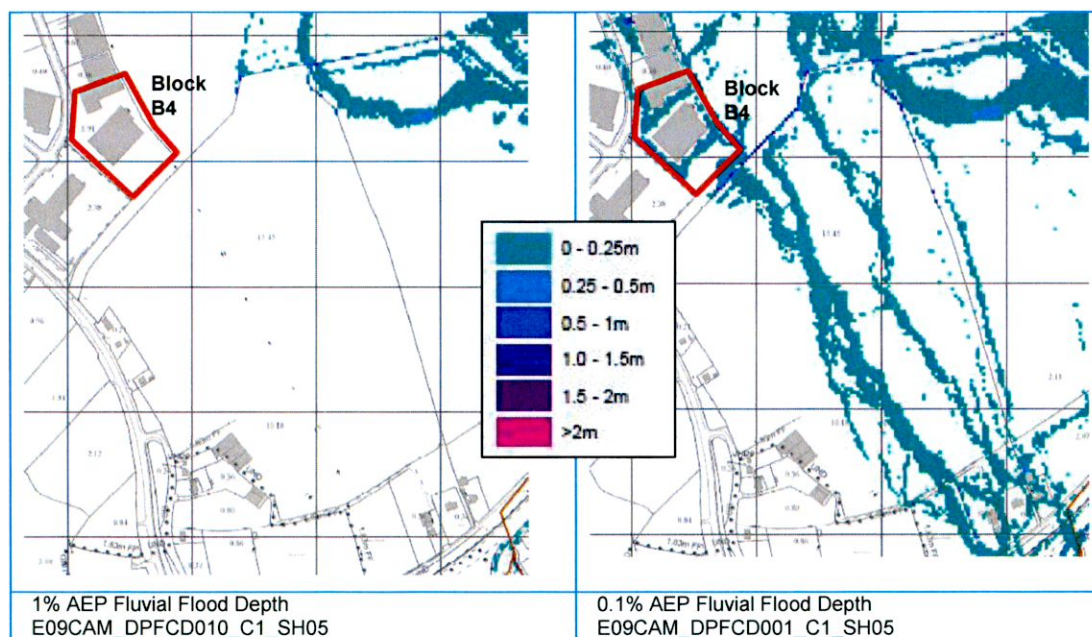


¹ Model results were taken from SECFRAM.
2016s4115 - Kavanagh Burke - Greenogue Block B4 FRA v2.0.docx

From interpreting Table 3-1, Figure 3-2 and Figure 3-3 (below), it is possible to compare predicted (in channel) flood levels, flood extents and flood depths. From this the following comments are noted:

- Block B4 is impacted by the 0.1% AEP event to a shallow depth of <250mm;
- Flooding is approaching the site from the south east (Camac only);
- Flooding is topographically driven by the 10m elevation loss between the subject site and the (up-slope) lands surrounding the Camac;
- Block B4 is not affected by Griffeen or Baldonnel streams.

Figure 3-3 Extracts from Eastern CFRAMS Draft Flood Depth Mapping; 1% & 0.1% AEP



3.2.3 Draft South Dublin County Council Strategic Flood Risk Assessment (SFRA) 2016-2021

The Draft SFRA for the South Dublin County Development Plan (2016-2021) assists SDCC in making strategic land-use planning decisions by providing information about flood risk within the County. The assessment is based on the draft Eastern CFRAM Study flood mapping discussed above and therefore the results are the same.

3.3 Summary of Flood Sources/Mechanism

The sections below summarise the main sources of flooding that affect Block B4.

3.3.1 Fluvial Flooding

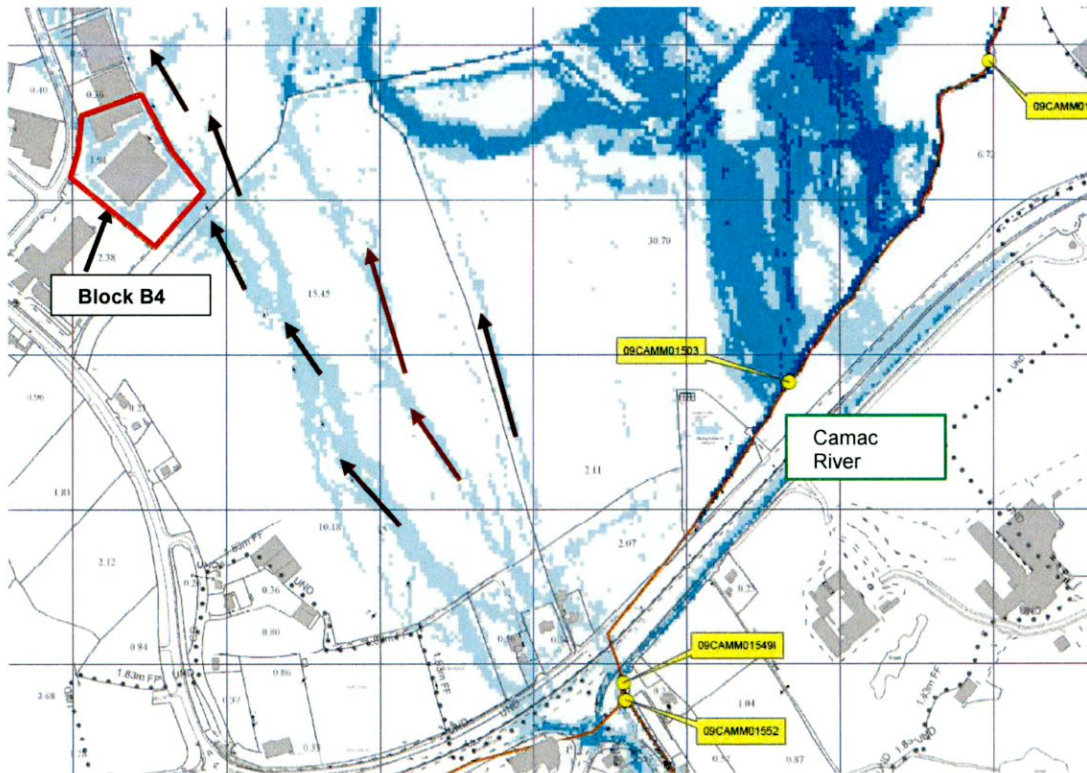
Fluvial flooding is the dominant source of potential risk and approximately 50% of Block B4 is in Flood Zone B (moderate risk of flooding), as predicted by the draft Eastern CFRAM flood mapping.

3.3.1.1 Flooding Mechanism

It is anticipated that the site is predominantly influenced by one watercourse;

- Cross catchment flows from the River Camac that enter Greenogue/Aerodrome Business Park from the east and flow through the park in a north westerly direction and combine with the Baldonnel Stream, see Figure 3-4.
- Considering Block B4 itself, the overland flow is shallow and is clearly being conveyed and not stored, flood depths are less than 250mm and flow in a north westerly direction.
- There is no flooding on the site for the 1% AEP (100 year event or Flood Zone A). Flooding across the site is triggered for an event with an AEP <1% (greater 1 in 100 years), this places the site in Flood Zone B.

Figure 3-4 Flood Mechanism Schematic (CFRAM background map)



3.3.1.2 JBA comment on draft Eastern CFRAM mapping

The Eastern CFRAM maps are currently under draft status and have been produced in accordance with the requirements of the S.I. No 122 of 2010, as amended, that transposed the EU 2007 Floods Directive (Directive 2007/60/EC) into Irish law. The Office of Public Works (OPW) in accordance with these Statutory Instruments is conducting a public consultation that is currently ongoing, the result of which may result in changes to the mapping prior to final release.

Having reviewed the Eastern CFRAM flood mapping, hydraulics and hydrology reports it is not clear as to the exact volume of cross catchment flow passing from River Camac towards and through the Greenogue/Aerodrome Business Parks. However, given the relatively homogenous catchment and general slope direction (10m elevation drop from River Camac/N7 located 700m to south east) it does not seem unreasonable that such an overland flow route could potentially occur.

3.3.1.3 Fluvial Summary

The flooding in this corner of Greenogue/Aerodrome Business Park is a result of shallow overland flows that are topographically driven from the higher elevation lands to the south east of the site. The management of risk is therefore related to pragmatic design and ensuring that mitigation methods do not increase risk to others.

To develop mitigation measures for Block B4 it will therefore necessary to create a hydraulic model to represent overland flow from the Camac River and investigate the potential impacts of development to the site. This also assists in understanding and building on the draft Eastern CFRAM model results. Sections 4 and 5 of the report provide further analysis and comment.

3.3.2 Pluvial/Surface Water

Pluvial or surface water flooding is the result of rainfall-generated flows that arise before run-off can enter a watercourse or sewer. The OPW PFRA mapping does not indicate any potential pluvial flood risk on the site, however the poor design of a surface water system or the inappropriate design of road, ground and finished floor levels can influence the specific surface water flood risk to a site.

To manage the potential generation of surface water runoff by the proposed development careful consideration has been given to the overall site design. A suitable surface water drainage system

is proposed by the civil engineering consultants Kavanagh Burke. Details are provided within the planning application documents. The system will intercept the surface water collected on site and attenuate to Greenfield runoff rate. The system ensures there is no increase in either surface water flow or attenuation tank volume. This runoff will then be discharged to the existing public system. This is discussed further in Section 5.

3.3.3 Groundwater

Groundwater flooding results from high sub-surface water levels that impact upper levels of the soil strata and overland areas that are usually dry. The PFRA mapping does not indicate any risk of groundwater flooding which is confirmed by the lack of groundwater features near the site. Therefore, risk of flooding due to groundwater has been screened out at this stage.

4 Flood Risk Assessment

Following on from the data collection and risk identification, this section will assess the likelihood of flooding at the site in more detail using a hydraulic model. This will provide clarification of the anticipated Flood Zone extents, updating the information provided by the Eastern CFRAM.

The information will then be used to configure the site layout and implement mitigation measures that ensure flood risk is effectively managed. To assist the process two development scenarios will be assessed by the hydraulic model:

1. Pre-Development i.e. the flood risk to the existing greenfield site.
2. Post-Development i.e. the flood risk after the construction of the proposed development and implementation of site based mitigation measures.

The following sections will detail the process of flow estimation, hydraulic modelling and present the results.

4.1 Hydrology

4.1.1 Camac

The cross catchment flow for the Camac was not explicitly derived using hydrological methods but rather the CFRAM flood extents were replicated by applying a hydrograph to the area to the East of the Business Park. The hydrograph was calibrated to a peak of 0.41m³/s which resulted in a flood extent on the eastern side of Greenogue which was in line with the output of the CFRAM process. The same process was applied for deriving the 0.1% AEP event flood map which is described in Section 4.2.2.

4.2 Hydraulic Modelling

4.2.1 Hydraulic Modelling Overview

The hydraulic modelling for this study was completed using a combination of two software packages: ISIS by Halcrow and TUFLOW by BMT-WBM. When both software packages are used in conjunction with each other, they form what is termed a 'linked-model'. A linked-model allows flow in the river channel and structures to be represented using 1D modelling equations (ISIS) and allows any out-of-bank volumes to be represented by 2D routing equations (TUFLOW). The Baldonnel Stream model is an ISIS-TUFLOW model and the modelling results were obtained by using ISIS v3.7 linked to TUFLOW 2013-12-AD-iDP.

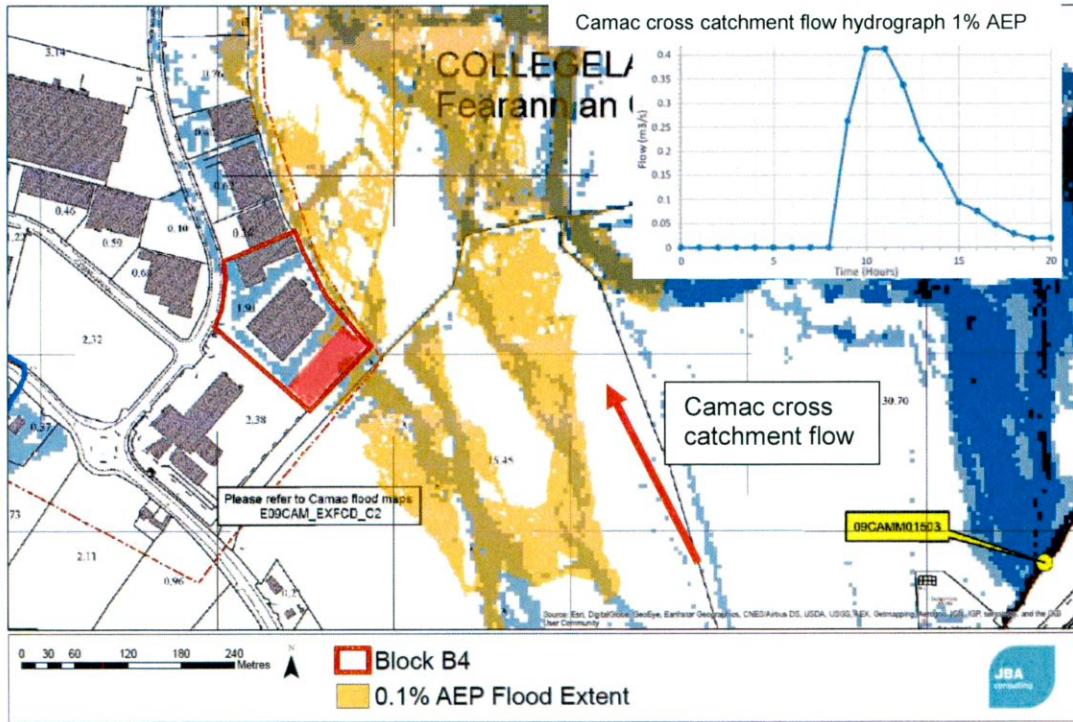
The hydraulic modelling was carried out in the following stages:

- A 2D (TUFLOW) model grid enclosing the study area was created.
- The Camac overland flows were represented in the 2D hydraulic model.
- Design simulations were run to derive the 'existing risk' flood extents.
- The hydraulic model was then altered to account for the proposed development. This involved 'stamping' the 2D domain with proposed finished floor levels and allowing for proposed mitigation measures.
- The modified hydraulic model was then re-run to test 'post-development' flood impacts.

4.2.2 Results

A representation of the existing 0.1% AEP flood extent is shown overlaid with OPW CFRAM outlines below in Figure 4-1. The flood extent is comparable to that presented by the draft Eastern CFRAM mapping and demonstrates the model is fit for purpose and can be used to test mitigation scenarios (see Section 5). The discrepancies in the flood extent are likely due to JBA use of 1m LiDAR been used in the JBA model and a 2m cell size, which is higher resolution than that used in the CFRAM. Therefore, the flow routes are more detailed in the JBA model. Also the CFRAM mapping does not represent the maximum flood extent.

Figure 4-1: Existing 0.1% AEP Flood Risk JBA and CFRAM mapping comparison



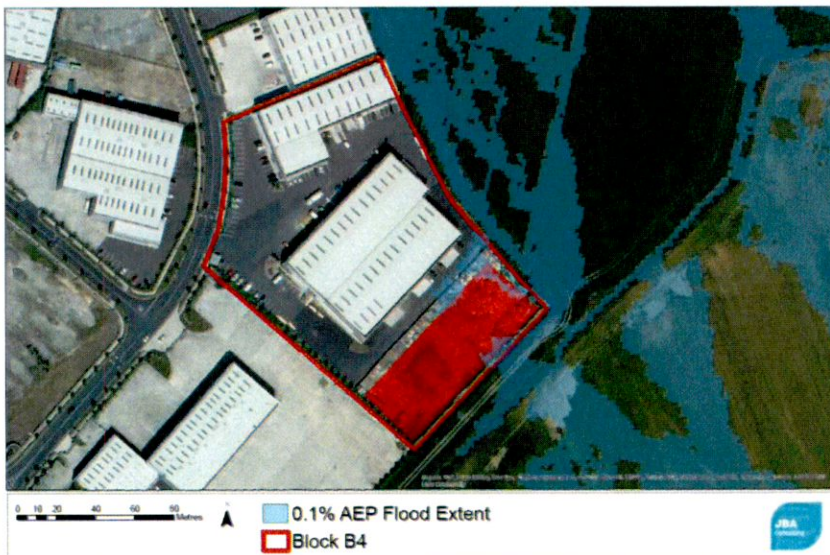
4.3 Summary

The modelling completed within this study has clarified the initial interpretation of the CFRAM results described in Section 3.3.1. Furthermore, it allows the opportunity for scenario testing to investigate mitigation options for the proposed development.

The modelling confirms that the key flood risk to Block B4 is from the cross catchment flows from the River Camac at the 0.1% AEP. The flood flow is typically conveyed rather than stored, as such it is possible to amend/maintain flow routes without negative consequences when considering mitigation solutions. Figure 4-2 shows the flood risk within the site. Flood depths on the site are less than 50mm.

Overland flows through the business park are shallow in nature and can therefore be managed by appropriate site design. Mitigation measures are discussed in more detail under the next section.

Figure 4-2: Final 0.1% AEP flood risk map, Block B4



5 Flood Risk Mitigation

5.1 Site Layout, Landscaping and Finished Floor Levels

The proposed development maintains finished floor levels (FFLs) similar to Block B3 at 95.00mOD Malin. Minimising the risk to occupants a protective clay/earth bund is proposed along the southern and eastern boundary of the site that is raised to 95.9mOD Malin which is 300mm greater than the 0.1% AEP flood level of 95.60mOD Malin. The bund diverts overland flows from the Camac around the site.

Figure 5-1 Summary Mitigation Measures

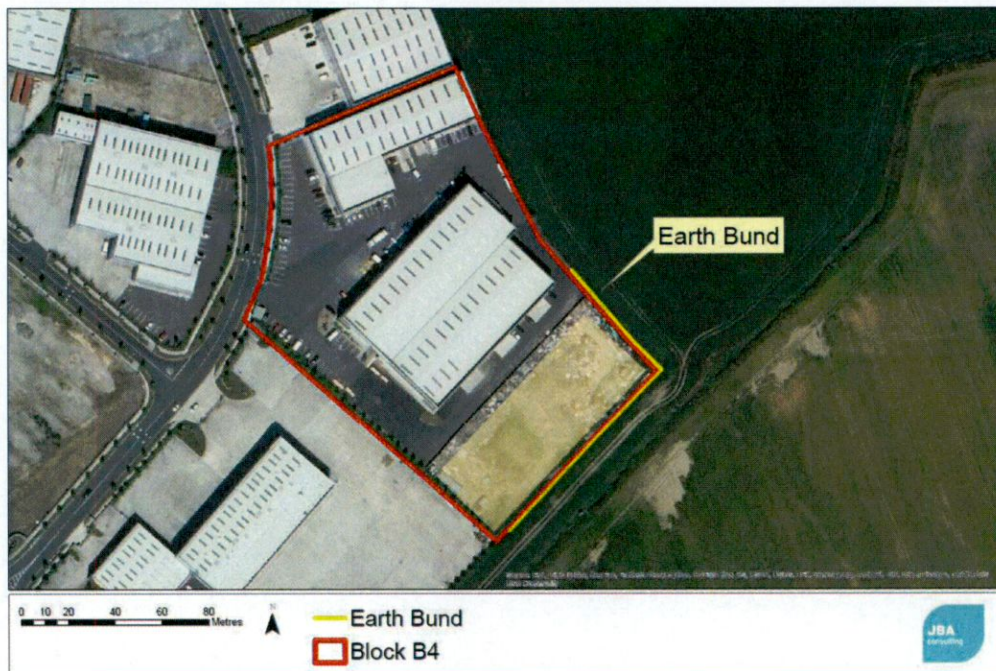


Figure 5-2 shows the post development model scenario with the earthen bund in place.

Figure 5-2: Post development 1% AEP event

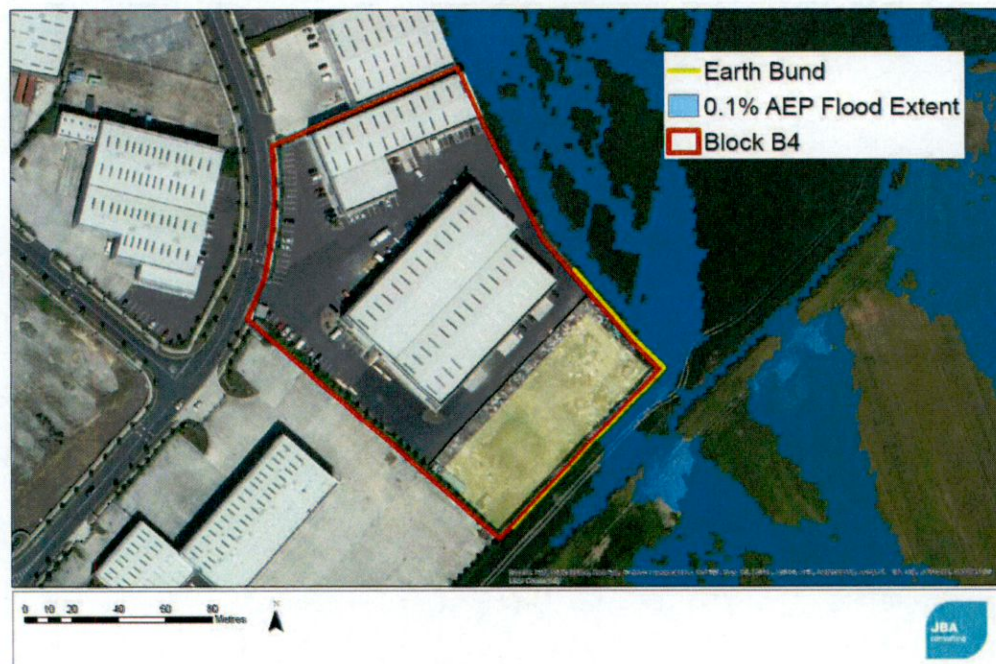
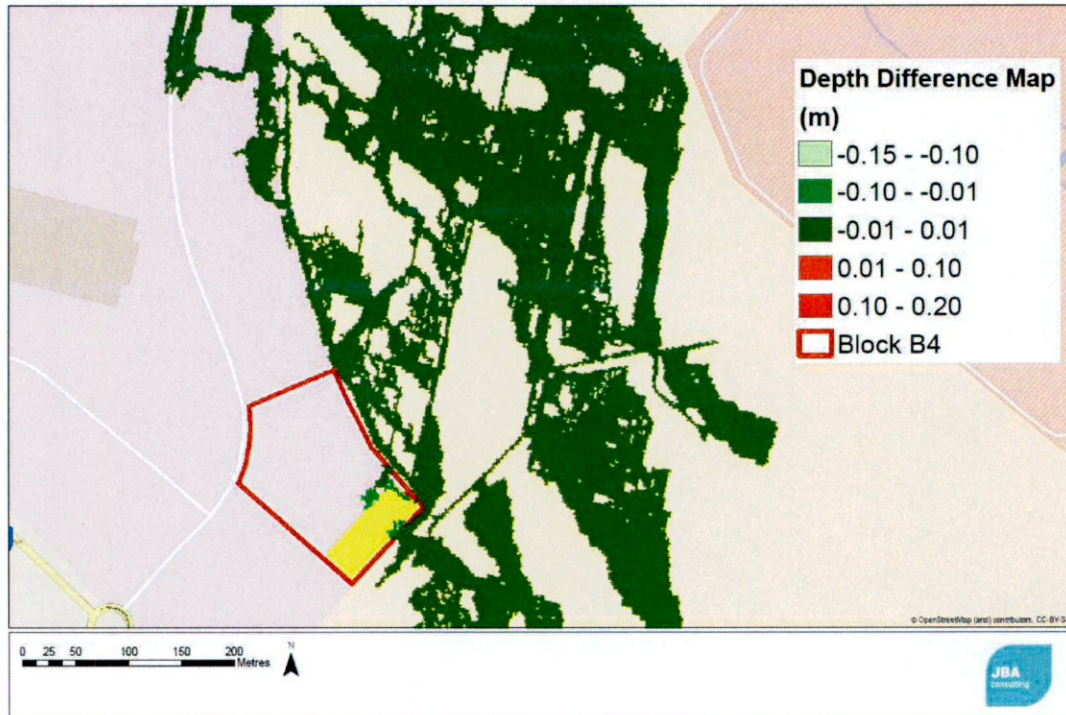


Figure 5-3 shows the depth difference between the pre and post development of Block B4 in place. This shows that there is no significant increase in depths or water levels as a result of the mitigation measures recommended in this FRA for Block B4. This is to be expected as the flood risk on the site is shallow in depth and flow is conveyed around the site.

Figure 5-3: Depth Difference pre and post



5.2 Access and Egress

The primary access route to the proposed development is located in Flood Zone C, in an area of higher ground to the west.

5.3 Drainage Design

The proposed drainage system complies with the GSDSDS and details have been provided by Kavanagh Burke Consulting Engineers and are summarised below:

- Surface water runoff from all impervious areas will be collected through RWP's/gully traps and road gullies and subsequently routed to the proposed on site surface water attenuation facility prior to discharge to the main drainage network within the Business Park. The impervious areas on site are the building roof area and some ancillary car parking areas.
- The "Stormtech" underground surface water attenuation system has been chosen as it is acceptable to the Local Authority plus it is a SuDS compliant solution to rainfall attenuation. Both surface water quantity and quality control are dealt with. The system incorporates an isolator row whereby the water firstly enters this row which is wrapped in a pervious geotextile prior to flowing through to the other adjacent chambers. If need be this isolator row can be jet washed by specialist water jets and the wash water extracted to a tanker unit for disposal. However additional defences will be placed upstream dealing with debris and hydrocarbons as noted below.
- The storage volume will incorporate a silt trap and petrol interceptor upstream to avoid pollutants and debris entering the system.
- The surface water system design has been carried out in accordance with the Greater Dublin Strategic Drainage Study guidelines and SuDS requirements. The flow from site will be controlled by a flow control device. The attenuation system is designed to cater for a) interception storage, b) attenuation storage and c) flood storage, i.e. the runoff from the 1 in 100 year event.

- It is proposed that the surface water will discharge from site by gravity flow to an adjacent surface water manhole within the business park.
- An existing surface water attenuation tank is in place for the built development. The system is designed as per guidelines at the time of construction. The new separate attenuation system is designed in accordance with current design guidelines and regulations. While the proposed system will discharge its restricted flow to the existing attenuation tank, the existing flow control device will be adjusted accordingly. A separate drainage report compiled by Kavanagh Burke Consulting Engineers is also submitted as part of the planning application.

5.4 Residual Risk

Residual risks are the risks remaining after all risk avoidance, substitution and mitigation measures have been taken. Residual flood risk to the site are summarised in the table below along with the proposed mitigation action (Figure 5-1 also refers).

Table 5-1 Residual Risks and Mitigation Measures

Residual Risk	Mitigation Measure
Blockage of the Camac Culverts.	Unlikely to impact Block B4 and flow is diverted around the site.
Climate Change impacts - increased water levels.	Climate change is tackled by raising the earth bund to 300mm above the 0.1% AEP level.

5.5 The Development and Impact on Flood Risk

The measures described in the previous paragraphs ensure that flood risk to the site is appropriately managed and that there are no negative impacts on surrounding sites.

6 Conclusion

JBA Consulting has undertaken a Stage 3 Detailed Flood Risk Assessment for the proposed Block B4 within the Greenogue/Aerodrome Business Park. The assessment has focussed on verifying and improving the level of detailed modelling and mapping, compared to that undertaken by the Eastern CFRAM draft deliverables. The FRA has subsequently demonstrated that the proposed design can appropriately manage flood risk.

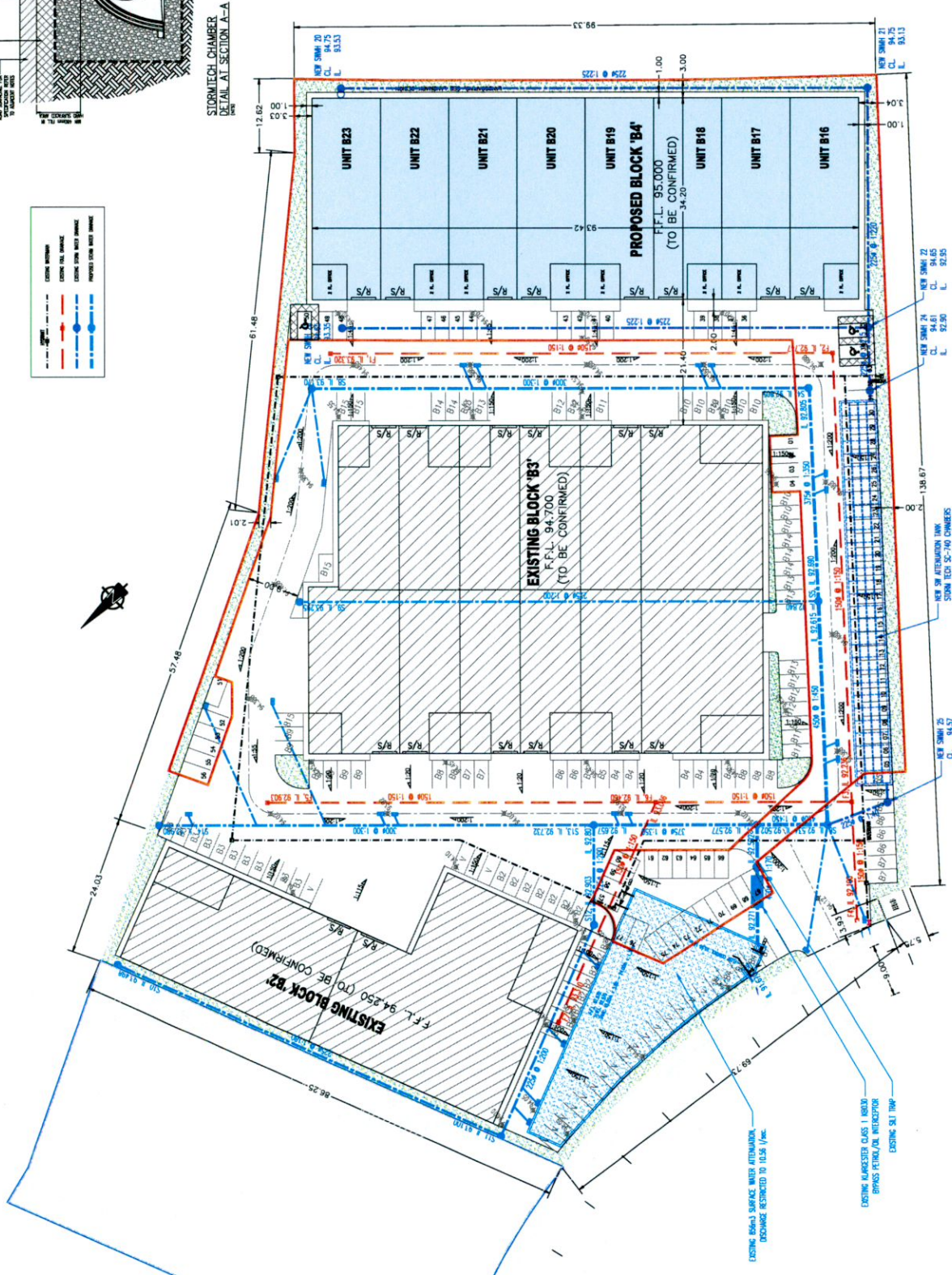
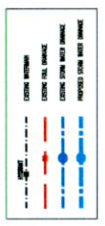
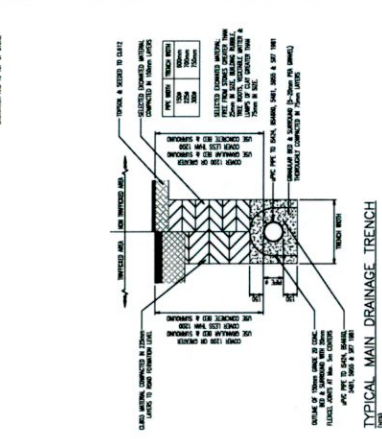
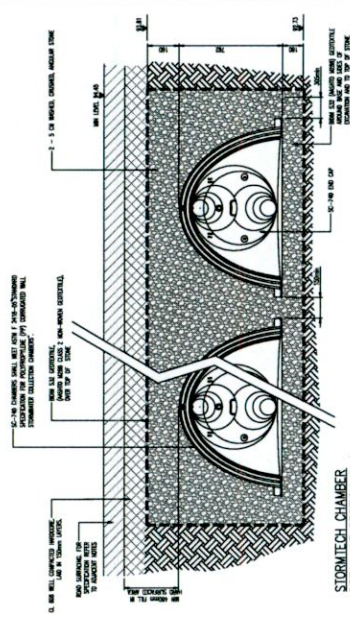
Results of the pre-development model scenario indicate that the risk to Block B4 is from cross catchment flow from the River Camac. Flows are shallow and predominantly linked to conveyance rather than storage. Mitigation is achieved by installing a clay/earth bund around the site set to a level of the 0.1% AEP flood level plus 300mm freeboard. Surface water flood risk is mitigated by appropriate FFLs and design of the surface water system. Safe access and egress from the property is maintained by a clear access route into Flood Zone C.

In line with the Planning Guidelines the detailed FRA appropriately manages risk and as a result it is concluded that the site is in compliance with the core principles of the Planning System and Flood Risk Management Guidelines.



Appendices

A Proposed Site Layout



BLOCK 24, SITE B
 AERODROME BUSINESS PARK
 COLLEENARD BARROD, Co. DUBLIN
 DRAINAGE AND WATERMAIN LAYOUT

DE LA SALLE LIMITED
KAVANAGH BURKE
 CONSULTING ENGINEERS

D1119-3 03 P2

B Understanding Flood Risk

Flood risk is generally accepted to be a combination of the likelihood (or probability) of flooding and the potential consequences arising. Flood risk can be expressed in terms of the following relationship:

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

B.1 Probability of Flooding

The likelihood or probability of a flood event (whether tidal or fluvial) is classified by its Annual Exceedance Probability (AEP) or return period (in years). A 1% AEP flood has a 1 in 100 chance of occurring in any given year.

In this report, flood frequency will primarily be expressed in terms of AEP, which is the inverse of the return period, as shown in the table below and explained above. This can be helpful when presenting results to members of the public who may associate the concept of return period with a regular occurrence rather than an average recurrence interval, and is the terminology which will be used throughout this report.

Table: Conversion between return periods and annual exceedance probabilities

Return period (years)	Annual exceedance probability (%)
2	50
10	10
50	2
100	1
200	0.5
1000	0.1

B.2 Flood Zones

Flood Zones are geographical areas illustrating the probability of flooding. For the purposes of the Planning Guidelines, there are 3 types or levels of flood zones, A, B and C.

Zone	Description
Flood Zone A	Where the probability of flooding is highest; greater than 1% (1 in 100) from river flooding or 0.5% (1 in 200) for coastal/tidal flooding.
Flood Zone B	Moderate probability of flooding; between 1% and 0.1% from rivers and between 0.5% and 0.1% from coastal/tidal.
Flood Zone C	Lowest probability of flooding; less than 0.1% from both rivers and coastal/tidal.

It is important to note that the definition of the flood zones is based on an undefended scenario and does not take into account the presence of flood protection structures such as flood walls or embankments. This is to allow for the fact that there is a residual risk of flooding behind the defences due to overtopping or breach and that there may be no guarantee that the defences will be maintained in perpetuity.

Indicative Flood Zones (OPW & DoEHLG 2009)



B.3 Consequence of Flooding

Consequences of flooding depend on the hazards caused by flooding (depth of water, speed of flow, rate of onset, duration, wave-action effects, water quality) and the vulnerability of receptors (type of development, nature, e.g. age-structure, of the population, presence and reliability of mitigation measures etc.).

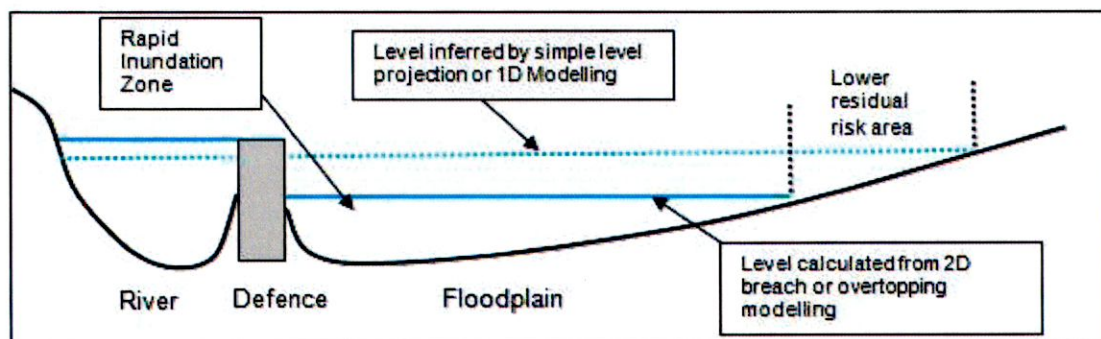
The 'Planning System and Flood Risk Management' provides three vulnerability categories, based on the type of development, which are detailed in Table 3.1 of the Guidelines, and are summarised as:

- **Highly vulnerable**, including residential properties, essential infrastructure and emergency service facilities;
- **Less vulnerable**, such as retail and commercial and local transport infrastructure;
- **Water compatible**, including open space, outdoor recreation and associated essential infrastructure, such as changing rooms.

The proposed sports hall development is considered a less vulnerable development, and with flood resilient design could even be considered water compatible.

B.4 Residual Risk

The presence of flood defences, by their very nature, hinder the movement of flood water across the floodplain and prevent flooding unless river levels rise above the defence crest level or a breach occurs. This is known as residual risk.





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**Block B4, Greenogue
Business Park, Rathcoole,
Co. Dublin**

Screening for Appropriate Assessment

September 2016

**Kavanagh Burke Consulting Engineers
Unit G3
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Revision History

Revision Ref / Date Issued	Amendments	Issued to
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Contract

This report describes work commissioned by Patrick Kavanagh of Kavanagh Burke Consulting Engineers. Niamh Sweeney and Anne Murray of JBA Consulting carried out this work.

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Purpose

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Abbreviations

AEP	Annual Exceedance Probability
CFRAM	Catchment Flood Risk Assessment and Management
CIRIA	Company providing research and training in the construction industry
DoEHLG	Department of the Environment, Heritage and Local Government
EC	European Community
EPA	Environmental Protection Agency
FRA	Flood Risk Assessment
mOD	Meters above Ordnance Datum
OPW	Office of Public Works
PFRA	Preliminary Flood Risk Assessment
SAC	Special Area of Conservation, protected under the EU Habitats Directive
SPA	Special Protection Area for birds, protected under the EU Habitats Directive
WFD	Water Framework Directive

1 Introduction

1.1 Background

JBA consulting were appointed by Kavanagh Burke Consulting Engineers to carry out an Appropriate Assessment Screening report for the construction of a new warehousing block for the general storage and distribution of products, ancillary offices, staff facilities, carparking and associated site works in Greenogue Business Park, Rathcoole, Co. Dublin.

1.2 Legislative Context

Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna and Flora, known as the 'Habitats Directive' - provides legal protection for habitats and species of European importance. Article 2 of the Directive requires the maintenance or restoration of habitats and species of European Community interest, at a favourable conservation status. Articles 3 - 9 provide the legislative means to protect habitats and species of Community interest through the establishment and conservation of an EU-wide network of sites known as Natura 2000 sites. Natura 2000 sites are Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Conservation of Wild Birds Directive (79 / 409 / EEC).

Articles 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans or projects affecting Natura 2000 sites. Article 6(3) establishes the requirement for Appropriate Assessment:

"Any plan or project not directly connected with or necessary to the management of the site but likely to have a 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."

Article 6(4) deals with the steps that should be taken when it is determined, as a result of Appropriate Assessment, that a plan/project will adversely affect a European site. Issues dealing with alternative solutions, imperative reasons of overriding public interest and compensatory measures need to be addressed in this case.

Article 6(4) states:

"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 a social or economic nature, the Member States 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 Articles 6(3) and 6(4) of the Habitats Directive have been transposed into Irish legislation by means of the Habitats Regulations, 1997 (S.I. No. 94 of 1997) and the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 / 2011).

1.3 Appropriate Assessment Process

Guidance on the Appropriate Assessment (AA) process was produced by the European Commission in 2002, which was subsequently developed into guidance specifically for Ireland by the Department of Environment, Heritage and Local Government (DEHLG) (2009). These guidance documents identify a staged approach to conducting an AA, as shown Figure 1.1.

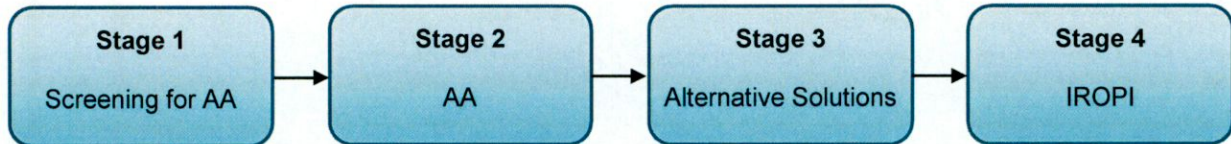


Figure 1.1: The Appropriate Assessment Process (from: Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities, DEHLG, 2009).

1.3.1 Stage 1 - Screening for AA

The initial, screening stage of the Appropriate Assessment is to determine:

- a. whether the proposed plan or project is directly connected with or necessary for the management of the European designated site for nature conservation
- b. if it is likely to have a significant adverse effect on the European designated site, either individually or in combination with other plans or projects

For those sites where potential adverse impacts are identified, either alone or in combination with other plans or projects, further assessment is necessary to determine if the proposals will have an adverse impact on the integrity of a European designated site, in view of the sites conservation objectives (i.e. the process proceeds to Stage 2).

1.3.2 Stage 2 - AA

This stage requires a more in-depth evaluation of the plan or project, and the potential direct and indirect impacts of them on the integrity and interest features of the European designated site(s), alone and in-combination with other plans and projects, taking into account the site's structure, function and conservation objectives. Where required, mitigation or avoidance measures will be suggested.

The competent authority can only agree to the plan or project after having ascertained that it will not adversely affect the integrity of the site(s) concerned. If this cannot be determined, and where mitigation cannot be achieved, then alternative solutions will need to be considered (i.e. the process proceeds to Stage 3).

1.3.3 Stage 3 - Alternative Solutions

Where adverse impacts on the integrity of Natura 2000 sites are identified, and mitigation cannot be satisfactorily implemented, alternative ways of achieving the objectives of the plan or project that avoid adverse impacts need to be considered. If none can be found, the process proceeds to Stage 4.

1.3.4 Stage 4 - IROPI

Where adverse impacts of a plan or project on the integrity of Natura 2000 sites are identified and no alternative solutions exist, the plan will only be allowed to progress if imperative reasons of overriding public interest can be demonstrated. In this case compensatory measures will be required.

The process only proceeds through each of the four stages for certain plans or projects. For example, for a plan or project, not connected with management of a site, but where no likely significant impacts are identified, the process stops at stage 1. Throughout the process, the precautionary principle must be applied, so that any uncertainties do not result in adverse impacts on a site.

This report is for Stage 1 Screening for Appropriate Assessment.

1.4 Methodology

The Screening for Appropriate Assessment has been carried out with reference to the following documents:

- Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92 / 43 / EEC (European Communities, 2002);
- Managing Natura 2000 sites: the provisions of Article 6 of the 'Habitats Directive' 92 / 43 / EC (European Communities, 2000);
- Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities (Dept. Environment Heritage and Local Government, December 2009);
- Guidelines for Ecological Impact Assessment in the UK and Ireland - Terrestrial, Freshwater and Coastal (Chartered Institute of Ecology and Environmental Management, 2016).

1.4.1 Desktop Study and site visit

The data sources below were consulted for the desktop study;

- NPWS website (www.npws.ie);
- EPA website (www.envision.ie);
- National Biodiversity Data Centre (<http://www.biodiversityireland.ie/>)
- Water Framework Directive Ireland (www.wfdireland.ie)
- EPlanning (www.eplanning.ie)

2 Project Description

2.1 Site Description

The proposed development site is situated in Block B4 in Greenogue Business Park. Rathcoole is nearly 2km south east of the site and Newcastle is approximately 1km to the west of the site. Casement Air Base is located over 300m to east of the site. The site is located in the south eastern section of Greenogue Business Park, which is zoned for enterprise and employment use. The site is currently in use, with two existing buildings on the site. The location of the site and local mapping is presented in Figure 2-1.

The Baldonnell stream joins the Griffeen river to the north of the business park. The Griffeen River generally flows in a northerly direction from its source in until it meets the River Liffey at Lucan village. The Griffeen river is considered to be in Bad Status under the Water Framework Directive. The Water Framework Directive (WFD) objective is to restore the Griffeen river by 2027.

The source of the Camac river is a small lake adjacent to Saggart Hill, which is located approximately 6km to the south of Greenogue Business Park. The Camac River is located approximately 800m to the east of the site and flows in a north-easterly direction for approximately 15km through the suburbs of Dublin City, until it joins the River Liffey adjacent to Dublin Heuston railway station. The Camac river is of Moderate Status under the WFD and the objective is to restore the Camac river by 2027.

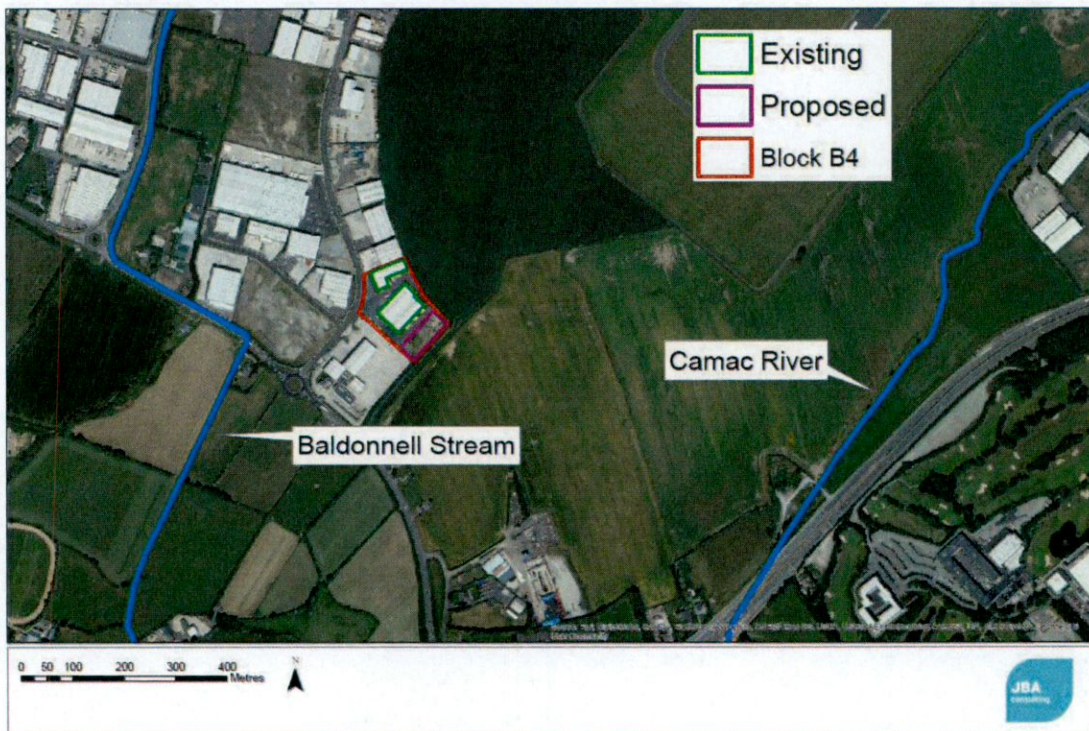


Figure 2-1: Site Location (Source: OpenStreetMap, 2015 and Bing Maps, 2015)

2.2 Proposed Development

The proposed development is a 1.89ha (approx.) site within Greenogue Business Park. There are currently two existing buildings on the site. The new block will comprise of a Warehousing Block B4 (11.55m high) divided into 8 No. units totalling 3,484m² including 720m² ancillary offices/staff facilities on 2 floors and 2,764m² warehousing area. The development will also include the completion of ancillary carparking adjacent to the subject block and throughout the overall site, services, utilities, landscaping (including new flood mitigation berm to the northeast & southeast of the subject block), drainage works including additional surface water attenuation system plus all site development works. The site layout plan is detailed in Appendix A.

A planning application was previously approved on the site by a former applicant (SD07A/0367) which included 3 no. blocks of multiple units, 2 no. that were constructed. However, the block subject to this application was not constructed. The current applicant now wishes to construct Block B4 and complete the site works which, include the warehouse block and roads/landscaping.

The site drainage plans for the site are detailed in Appendix B. Foul drainage from the proposed staff facilities will be connected to the foul sewer network on site. This network subsequently discharges to the existing pipe network within the greater Greenogue Business Park.

As this is a "finish out" build there is an existing surface water drainage system on site including an underground surface water drainage tank. This existing pipe network will be utilised for draining the road and associated carparking spaces in front of the subject units. Existing interceptors will therefore remain providing silt and hydrocarbon removal prior to discharge off-site to the surface water drainage system within the Business Park. A new surface water attenuation system will be provided which will only receive clean uncontaminated surface water runoff from the roof of the subject block. From this new attenuation system, the water will discharge to the existing attenuation tank and ultimately off-site to the surface water network within the Business Park. Appropriate flow control devices will be provided in accordance with current guidelines and regulations.

3 Description of Natura 2000 sites

The DEHLG (2009) guidance identifies that Screening for Appropriate Assessment of a plan or project should consider the following Natura 2000 sites:

- Any Natura 2000 sites within or adjacent to the plan or project area.
- Any Natura 2000 sites within the likely zone of impact of the plan or project. This is dependent on the nature and scale of the plan, with 15km generally recommended for plans, but potentially much less for projects.
- Any Natura 2000 sites that are more than 15km from the plan or project area, but may potentially be impacted upon, for example, through a hydrological connection.

There are no Natura 2000 sites located within or adjacent to the proposed project at Greenogue Business Park. The only Natura 2000 site located within 15km of the project is the Ryewater Valley/Carton Special Area of Conservation (SAC). This SAC lies approximately 3km upstream of the site and of the Grifeen's confluence with the River Liffey and therefore is not considered to be within the zone of impact of this project (Fig 2.2).

The proposed project is hydrologically connected to the North Dublin Bay and South Dublin Bay SACs, however this is over a very large distance. The River Liffey flows for approximately 20km and 7km, downstream of its confluence with the Grifeen and Camac Rivers, before it enters Dublin Bay.

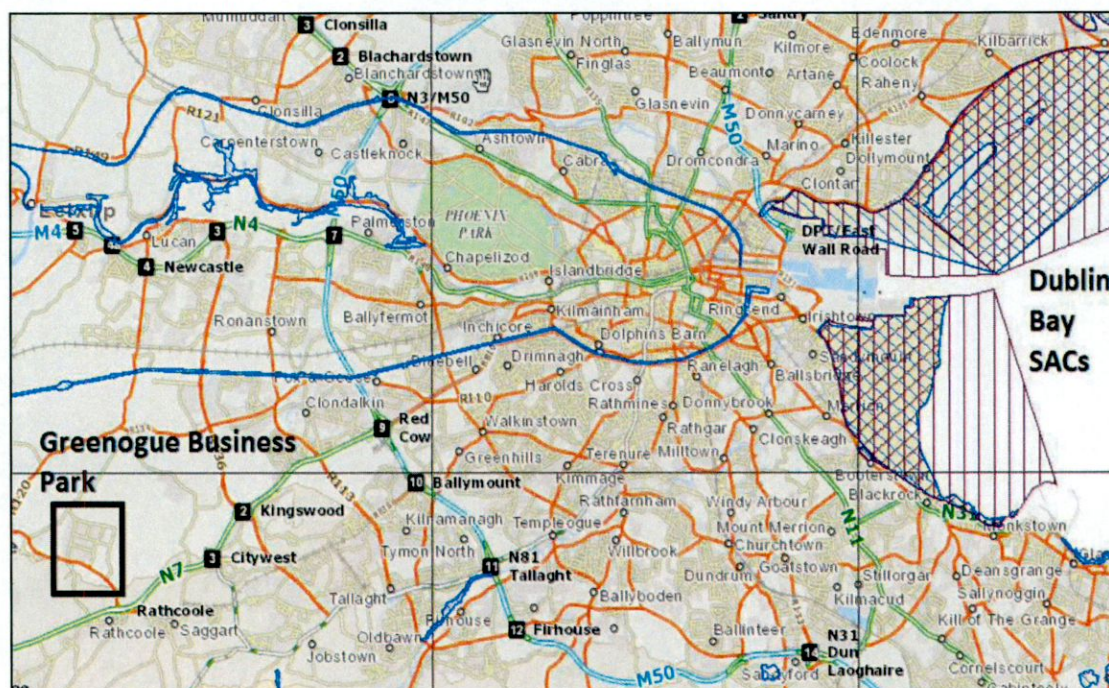


Figure 3-2: Site Location in relation to the Natura 2000 Sites

3.1 North Dublin Bay SAC (Site Code 000206)

The site synopsis for the North Dublin Bay SAC is summarised below;

This site covers the inner part of north Dublin Bay, the seaward boundary extending from the Bull Wall lighthouse across to the Martello Tower at Howth Head. The North Bull Island is the focal point of this site. North Bull Island is a sandy spit which formed after the building of the South Wall and Bull Wall in the 18th and 19th centuries. It now extends for about 5 km in length and is up to 1 km wide in places. A well-developed and dynamic dune system stretches along the seaward side of the island. The site is a Special Area of Conservation (SAC) selected for containing the following habitats and/or species listed on Annex I/II of the E.U. Habitats Directive; Tidal Mudflats and Sandflats, Annual Vegetation of Drift Lines, Salicornia Mud, Atlantic Salt Meadows, Mediterranean Salt Meadows, Embryonic Shifting Dunes, Marram Dunes (White Dunes), Fixed

Dunes (Grey Dunes), Humid Dune Slacks and Petalwort (*Petalophyllum ralfsii*). This site is important for rare plant species and of international importance for waterfowl. The tip of the North Bull Island is a traditional nesting site for Little Tern. A well-known population of Irish Hare is also resident on the island. (NPWS, 2015)

3.1.1 Qualifying Interests

The qualifying interests of North Dublin Bay SAC are listed below in Table 3.1. Further detail on these and their conservation objectives are available on the NPWS website.

Table 3.1. Qualifying Interests of North Dublin Bay SAC.

Code	Qualifying Interest
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>)
1395	Petalwort <i>Petalophyllum ralfsii</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)
2910	Humid dune slacks

3.1.2 Threats and Pressures

The threats and pressures impacting the North Dublin Bay SAC are detailed in Table 3.2, as listed on the NPWS website. This SAC is vulnerable to the spread of Sea Buckthorn (*Hippophae rhamnoides*) and Common Cordgrass (*Spartina anglica*). Common Cordgrass is frequent at Bull Island, occurring within a mosaic of *Salicornia* flats. It is widely distributed among the Mediterranean salt meadows (MSM). The area of MSM is restricted by the site of St. Anne's golf course. There is also erosion of the northern tip of Bull Island.

Table 3.2. Threats and Pressures of North Dublin Bay SAC.

Code	Threat/ Pressure	Impact
E01	Urbanised area/ human habitation	High
G02.01	Golf course	High
F02.03.01	Bait digging/collection	Medium
F02.03	Leisure fishing	Low
G01.02	Walking, horseriding and non-motorised vehicles	High
E03	Discharges	High
G01.01	Nautical sports	Medium
I01	Invasive non-native species	Low
A04	Grazing	Medium
E02	Industrial/commercial areas	High

3.2 South Dublin Bay SAC (Site Code 000210)

The site synopsis for the South Dublin Bay SAC is summarised below;

This intertidal site lies south of the River Liffey in Co. Dublin, and extends from the South Wall to the west pier at Dun Laoghaire. At their widest, the intertidal flats extend for almost 3 km. The seaward boundary is marked by the low tide mark, while the landward boundary is now almost entirely artificially embanked. Several permanent channels exist, the largest being Cockle Lake. The sediments are predominantly sands but grade to sandy muds near the shore at Merrion Gates.

A small sandy beach occurs at Merrion Gates, while some bedrock shore occurs near Dun Laoghaire. A number of small streams and drains flow into the site. The site also supports part of the important wintering waterfowl populations of Dublin Bay. The site regularly has an internationally population of Brent geese (*Branta bernicila hortae*), plus nationally important numbers of at least a further 6 species, including Bar-tailed godwit (*Limosa lapponica*). It is a regular autumn roosting ground for significant numbers of Terns, including *S. dougallii*. The SAC site has the largest stand of Dward Eelgrass (*Zostera noltii*) on the east coast of Ireland (NPWS, 2015).

3.2.1 Qualifying Interests

The qualifying interest of South Dublin Bay SAC is 'Mudflats and sandflats not covered by seawater at low tide', code 1140. The main conservation objectives for this habitat are to maintain or increase the habitat area, maintain and conserve the community extent and structure of Dward Eelgrass, and conserve the community of fine sands with the marine bivalve mollusc *Angulus tenuis*.

3.2.2 Threats and Pressures

The threats and pressures listed in Table 3.3 below are those impacting the South Dublin Bay SAC, as detailed on the NPWS website.

Table 3.3. Threats and Pressures of South Dublin Bay SAC.

Code	Threat/ Pressure	Impact
K.02.02	Accumulation of organic material	High
E02	Industrial or commercial areas	High
F02.03.01	Urbanised areas/human habitation	High
F02.03.01	Bait digging / collection	Medium
G01.02	Walking, horseriding and non-motorised vehicles	High
K02.03	Eutrophication (natural)	Medium
D01.02	Roads/motorways	High
E03	Discharges	High
J02.01.02	Reclamation of land from sea, estuary or marsh	High
G01.01	Nautical sports	Medium

3.2.3 Potential Impacts on Natura 2000 sites

The potential impacts that the proposed project may have on the North Dublin Bay and South Dublin Bay SACs are in relation to water quality, as the project is hydrologically connected to the Natura 2000 sites. The potential impacts during construction will be managed by ensuring that appropriate best practice control measures for construction are in place. Also given the distance of the proposed project from the Natura 2000 sites (over 20km), no significant impacts are anticipated. Due to the fact that there will be no trade emissions from the site once operational and the site's surface water drainage will pass through silt and petrol interceptors, no significant impacts are anticipated.

4 Screening Assessment

4.1 Introduction

This section identifies the potential impacts which may arise as result of the proposed project at Greenogue Business Park. It then goes on to identify how these impacts could potentially impact on the special conservation interests of the North Dublin Bay and South Dublin Bay SACs. The significance of potential impacts is also assessed, with any potential in-combination effects also identified.

4.1.1 Assessment Criteria

4.1.2 Description of the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the Natura 2000 site

The main pathways for impacts between the proposed project and the Natura 2000 Sites are during operation and relate to surface and groundwater quality and also disturbance during construction. However, these are unlikely to give rise to impacts on the Natura 2000 sites.

4.1.3 Description of likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the Natura 2000 site

Project Elements	Comment
Size and scale	The new block on the site will comprise of a warehouse block divided into 8 No. units totalling 3,484m ² including 720m ² ancillary offices/staff facilities on 2 floors and 2,764m ² warehousing area. The development will also include the completion of ancillary carparking adjacent to the subject block and throughout the overall site, services, utilities, landscaping (including new flood mitigation berm to the northeast & southeast of the subject block), drainage works including additional surface water attenuation system plus all site development works.
Land-take	There is no land-take for this project.
Distance from Natura 2000 site or key features of the site	The proposed site is located greater than 20km from the North Dublin Bay and South Dublin Bay SACs.
Resource requirements (water abstraction etc.)	None
Emissions (disposal to land, water or air)	<p>Temporary Impacts: The construction works shall follow CIRA best practice guidelines:</p> <ul style="list-style-type: none"> • C532 Control of water pollution from construction sites: guidance for consultants and contractors; • SP156 Control of water pollution from construction sites – guide to good practice; • C515 Groundwater control – design and practice. <p>Permanent Impacts: Foul drainage from the proposed staff facilities will be connected to the foul sewer network on site. This network subsequently discharges to the existing pipe network within the greater Greenogue Business Park.</p> <p>There is an existing surface water drainage system on site, including an underground surface water drainage take. This existing pipe network will be utilised for draining the road and associated carparking spaces in front of the subject units (Appendix B). Existing interceptors will therefore remain providing silt and hydrocarbon removal prior to discharge off-site to the surface water drainage system within the Business Park. A new surface water attenuation system will be provided which will only receive clean uncontaminated surface water runoff from the roof of the subject block. From this new attenuation system, the water will discharge to the existing attenuation tank and ultimately off-site to the surface water network within the Business Park. Appropriate flow control devices will be provided in accordance with current guidelines and regulations.</p>

Excavation requirements	All topsoil will be removed from the areas to be developed. This is expected to result in a site clearance of 300 to 400mm of soil. 900mm wide x 300mm deep strip foundations formed at a depth of 900 below ground level will be excavated for all load bearing walls. Pad foundations will be provided for every structural steel column forming the main frame. These pad foundations will be approximately 2m long x 1.5m wide x 0.5m deep formed with top of foundation min 450mm below ground level. During preliminary site investigations ground water was not encountered at 1.5m deep.
Transportation requirements	<p>Temporary Impacts: Construction site traffic during development will increase traffic to the area, however this will be controlled by the Traffic Management Plan. Any increase will be minimal and all access to the site will be on pre-existing roads.</p> <p>Permanent Impacts: The increase in traffic to the area will not be significant and all access to the site will be on pre-existing roads.</p>
Duration of construction, operation, decommissioning etc.	<p>Duration of construction: ca. 6 months</p> <p>Duration of operation: Permanent</p>
Other	None

4.1.4 Description of likely changes to the Natura 2000 Sites

Potential Impact	Comment
Reduction of habitat area	There will be no loss of habitat from the Natura 2000 sites.
Disturbance to key species	<p>Temporary Impacts: None</p> <p>Permanent Impacts: No disturbance to key species of the SAC is anticipated during operation of the project.</p>
Habitat or species fragmentation	No habitat or species fragmentation is likely as the project poses no restrictions to habitats or species of the SAC or SPA.
Reduction in species density	None anticipated.
Changes in key indicators of conservation value (water quality etc.)	<p>Temporary Impacts on Water Quality: None anticipated - CIRA best practice working methods shall be followed for water quality controls to ensure no significant impact;</p> <ul style="list-style-type: none"> • C532 Control of water pollution from construction sites: guidance for consultants and contractors; • SP156 Control of water pollution from construction sites – guide to good practice; • C515 Groundwater control – design and practice. <p>Permanent Impacts: The foul water from the staff facilities will be discharged to the foul sewerage system of Greenogue Business Park. The site will be serviced by a surface water drainage system (Appendix B), which is currently existing and is fitted with interceptors that will provide silt and hydrocarbon removal prior to discharge off site to the surface water drainage within Greenogue Business Park. A new surface water attenuation system will be provided which will only receive clean uncontaminated surface water runoff from the roof of the subject block. From this new attenuation system, the water will discharge to the existing attenuation tank and ultimately off site to the surface water network within the Business Park. Appropriate flow control devices will be provided in accordance with current guidelines and regulations.</p>
Climate change	N/A

4.1.5 Description of likely impacts on the Natura 2000 site as a whole

Impact	Comments
Interference with the key relationships that define the structure of the site	None
Interference with key relationships that define the function of the site	None

Provide indicators of significance as a result of the identification of effects set out above in terms of:

Impact	Indicators
Loss (Estimated percentage of lost area of habitat)	SAC: No loss
Fragmentation	None anticipated.
Disruption & disturbance	None anticipated.
Change to key elements of the site (e.g. water quality etc.)	None anticipated.

4.2 Assessment of Likely Effects

The assessment of whether the project is likely to have an effect on a Natura 2000 site is based on an impact assessment using available information and data, including that outlined above and the data sources listed in section 1.4.1.

4.2.1 Cumulative Effects

SD15A/0185 - Site 645 & 646, Jordanstown Drive, Greenogue Business Park, Rathcoole, Co. Dublin.

Permission: Granted

Decision Date: 20/08/2015

Applicant: Sandymark Investments PLC, Greenogue Business Park

Description: Extension of existing warehouse unit and ancillary offices (1.9 Ha. combined site area). The existing warehousing unit comprises 2,727sq.m warehousing, 122sq.m ancillary offices (granted under planning application Reg.Ref. SD06A/0115. The proposed adjoined integrated extension (15.9 high to match the existing building) consists of demolition of existing 122sq.m two storey ancillary office for use of ground floor area as 61sq.m warehousing, provision of 1175sq.m integrated offices & 392sq.m staff facilities on three floors, provision of 403sq.m storage area on second floor, 6,959sq.m warehouse area at ground floor level plus 120sq.m 5m high separate plantroom building located to rear of warehouse with integrated workshop and staff facilities, 8m high water holding tank, ancillary carparking, HGV marshalling/loading/unloading yard, new site entrance/exits, services, utilities, landscaping, paving & all site development works.

SD15A/0074 - 518B, Grants Crescent, Greenogue Business Park, Rathcoole, Co. Dublin.

Permission: Granted

Decision Date: 11/12/2015

Applicant: Blacktrench Recycling & Recovery Ltd., Greenogue Business Park

Description: Waste Handling/Materials Storage/Transfer Building 561sq.m & 12m high plus ancillary site works on the site of the existing waste handling facility.

SD15A/0274 - Site 665, Greenogue Business Park, Rathcoole, Co. Dublin

Permission: Granted

Decision Date: 28/01/2016

Applicant: Sandymark Investments PLC, Greenogue Business Park

Description: Construction of a warehouse unit and ancillary offices (2.2ha. site area) fronting Newcastle-Rathcoole Road (R120) consisting of 9,080sq.m warehouse unit (max 17m high), 54sq.m of ancillary staff facilities within warehouse area, 816sq.m ancillary offices/staff facilities on three floors (max 11.75m high) to front of the unit plus ancillary carparking, HGV marshalling/loading/unloading yard with ancillary HGV parking, services, utilities, landscaping, paving and all site development works, 2 new site entrances/exits from proposed estate access road as granted under planning permission reg. ref. SD15A/0019 & SD08A/0276 incorporating altered cul-de-sac turnabout arrangement to this access road as part of this application.

The proposed project is located within Greenogue Business Park on a pre-existing site. The main potential impacts identified are on surface or ground water - however these are addressed through design measures. Therefore, given the proposed design measures and the distance from the Natura 2000 sites, there are no projects in the vicinity of Greenogue Business Park, in combination with the proposed project, have the potential to cause significant impacts on the Natura 2000 sites listed above.

4.3 Conclusion

Following initial screening, and based upon best scientific judgement it is concluded that there will be no significant impacts on the following Natura 2000 sites:

- North Dublin Bay SAC (Site Code 000206); and
- South Dublin Bay SAC (Site Code 000210).

References

Department of Environment, Heritage and Local Government (2009) *Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities*.

NPWS (2015) *National Parks and Wildlife Service*. [ONLINE] Available at:<http://www.npws.ie/>. [Accessed 04 September 15].

Appendix A

A Site Plan, Block B Site Layout Plan

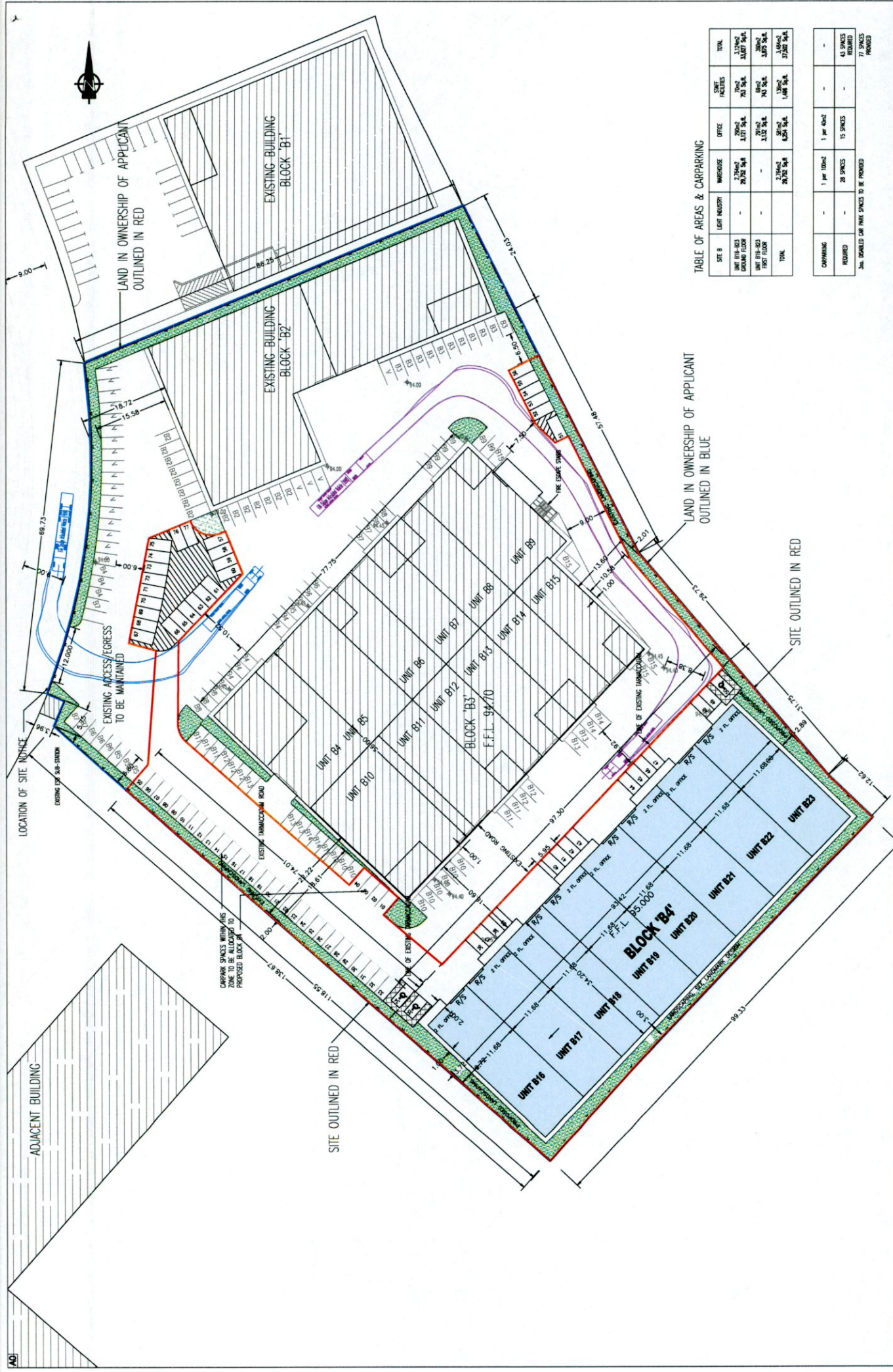


TABLE OF AREAS & CARPARKING

SITE B	LEAF INDUSTRY	WAREHOUSE	OFFICE	OFFICE FACILITIES	TOTAL
LAND AREA	2,784.0	28,720.0	3,177.0	374.0	33,955.0
GROUND FLOOR	-	-	-	-	33,955.0
LAND AREA	2,784.0	28,720.0	3,177.0	374.0	33,955.0
GROUND FLOOR	-	-	-	-	33,955.0
FIRST FLOOR	-	-	-	-	33,955.0
TOTAL	2,784.0	28,720.0	3,177.0	374.0	33,955.0

CARPARKING	1 per 100sqm	1 per 40sqm	-	-
REQUIRED	28 SPACES	15 SPACES	-	43 SPACES
PROVIDED	-	-	-	71 SPACES

SEE RECORDED CAR PARK SPACES TO BE PROVIDED

KAVANAGH BURKE
CONSULTING ENGINEERS

SITE B - BLOCK B4
AERODROME BUSINESS PARK
RATHCOOLE CO. DUBLIN

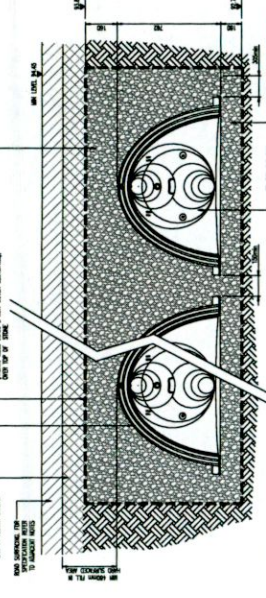
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PLANNING

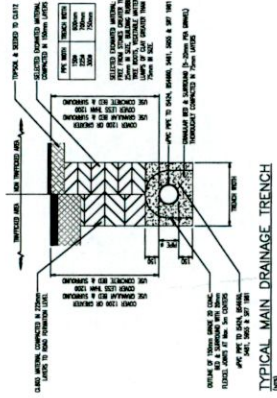
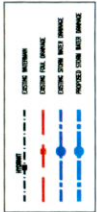
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CHECKED: [Name]
APPROVED: [Name]

Appendix B
B Site Drainage Plan

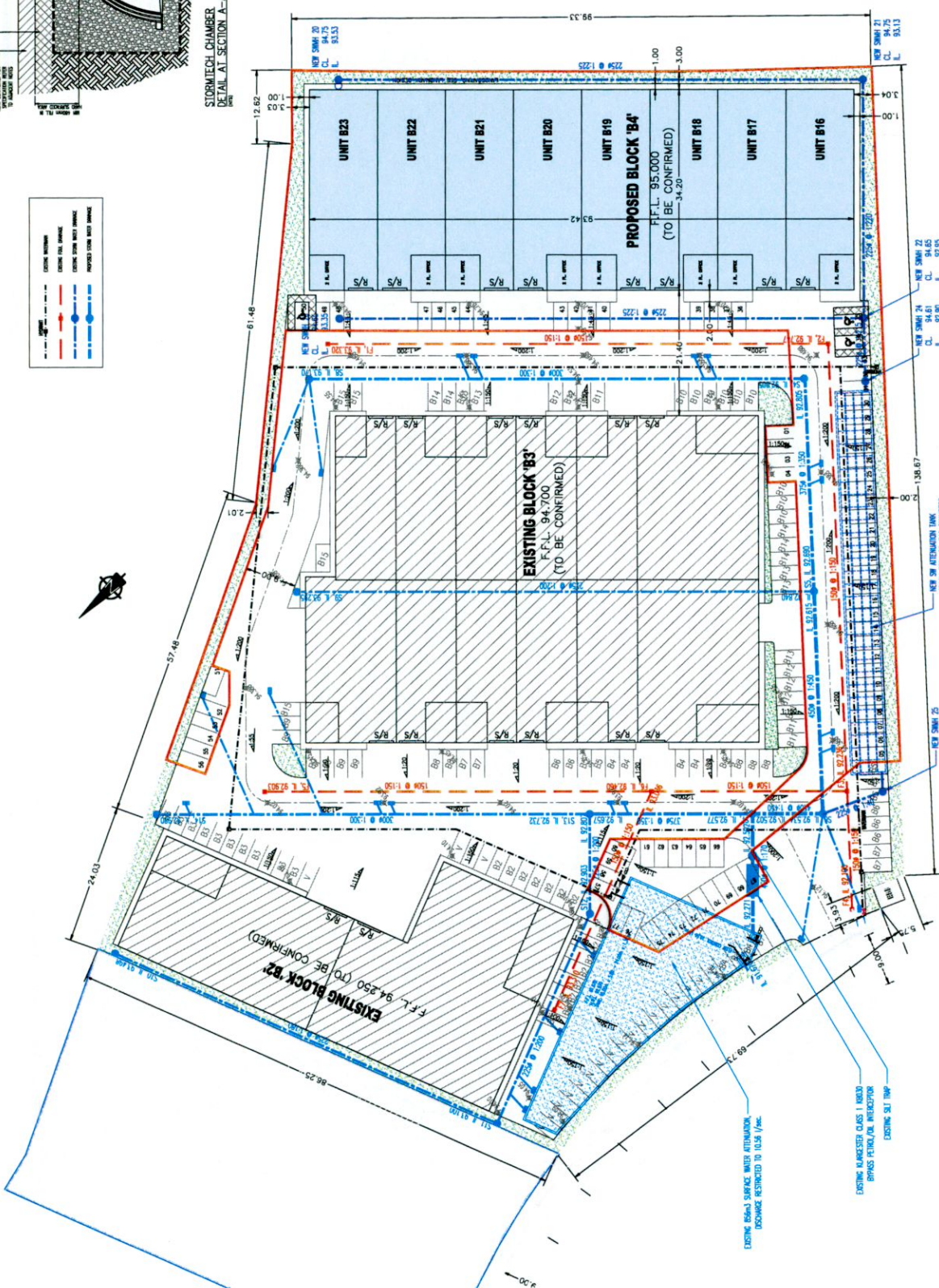
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STORMTECH CHAMBER
DETAIL AT SECTION A-A



TYPICAL MAIN DRAINAGE TRENCH



NEW SW ATTENUATION BANK
SUDW TECH SC-70 CHANNELS
LENGTH 100M
BASE LEVEL: 92.73
HIGH WATER LEVEL: 93.80

NEW SWM 25
CL. 94.57
FLOW CONTROL DRENCH
0=2.8/SEC

EXISTING MANHOLE CLASS 1 LINED
BYPASS PERMANENT INTERCEPTOR
EXISTING SUT TWP

PLANNING BLOCK BA, SITE B SITE B AGROROME BUSINESS PARK, COLLINGWOOD ROAD, CO. DUBLIN	
DRAINAGE AND WATERMAIN LAYOUT DE J. J. SAULS LIMITED KAVANAGH BURKE CONSULTING ENGINEERS 100, WINDMILL LANE, DUBLIN 15, IRELAND TEL: 01-454 4000 FAX: 01-454 4001 WWW: WWW.KAVANAGHBURKE.COM	
DATE: 10/10/2023 DRAWN BY: J. SAULS CHECKED BY: J. SAULS PROJECT NO.: 23001	SHEET NO.: 03 OF 03