

PROPOSED DEVELOPMENT SITE

STOCKHOLE LANE, CO DUBLIN

SITE SPECIFIC FLOOD RISK ASSESSMENT



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## 1 Introduction

IE Consulting was requested by Hayes Higgins Partnership, on behalf of Fingal County Council, to undertake a Site Specific Flood Risk Assessment (SSFRA) for proposed development site on lands at Stockhole Lane, Co. Dublin. It is proposed to construct a seven unit housing development and all associated ancillary works at the site.

The purpose of this SSFRA is to assess the potential flood risk to the proposed development site and to assess the impact that development of the site may or may not have on the hydrological regime of the area.

A hydrological engineer from IE Consulting undertook a survey of the site area and surrounding catchment on the 25<sup>th</sup> January 2019.

Quoted ground levels or estimated flood levels relate to ordinance datum (Malin) unless stated otherwise.

This flood risk assessment study has been undertaken in consideration of the following guidance document:-

*'The Planning System and Flood Risk Management – Guidelines for Planning Authorities' DOEHLG 2009.*

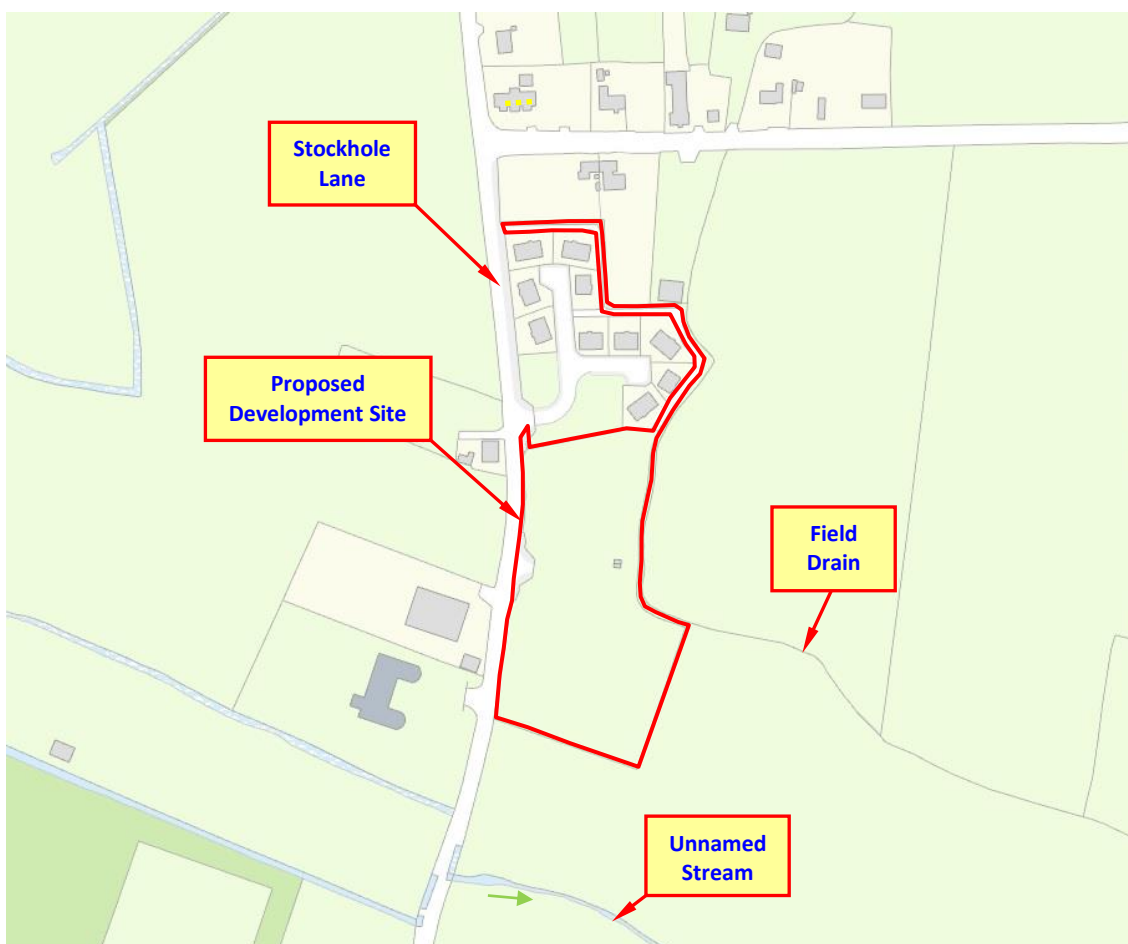
## 2 Proposed Site Description

### 2.1 General

The proposed development site is located on lands at Stockhole Lane, approximately 1.8 km south of Swords, Co. Dublin.

The site is bounded to the north by existing residential properties, to the east and south by agricultural lands and to the west by Stockhole Lane. The total area of the proposed development site is approximately 1.33 hectares.

The location of the proposed development site is illustrated on *Figure 1* below and shown on *Drawing Number IE1800-001-A* in *Appendix A*.



**Figure 1 - Site Location**

## **2.2 Existing Topography Levels at Site**

The proposed development site slopes moderately from south-west to north-east at an average gradient of approximately 0.86% (1 in 116).

Existing ground elevations range from approximately 48.53mOD (Malin) in the south-west area of the site to 45.180mOD (Malin) in the north-east area of the site.

## **2.3 Local Hydrology, Landuse & Existing Drainage**

The most significant hydrological feature in the vicinity of the proposed development site is an Unnamed Stream watercourse that flows in a west to east direction, approximately 80m beyond the southern site boundary. The catchment area of the watercourse was delineated and found to be approximately **3.184km<sup>2</sup>** to a point 350m downstream of the proposed development site boundary. An assessment of the catchment area indicates that the catchment is predominantly rural in nature with urban development accounting for approximately 4.4% of the total catchment area.

A field drain is also mapped adjacent to the eastern boundary of the site.

### 3 Initial Flood Risk Assessment

The flood risk assessment for the proposed development site is undertaken in three principal stages, these being 'Step 1 – Screening', 'Step 2 – Scoping' and 'Step 3 – Assessing'.

#### 3.1 Possible Flooding Mechanisms

Table 1 below summarises the possible flooding mechanisms in consideration of the proposed development site:-

Source/Pathway	Significant?	Comment/Reason
Tidal/Coastal	No	The site is not located in a tidally influenced area.
Fluvial	Yes	There is an Unnamed Stream watercourse located approximately 80m beyond the southern site boundary. There is a field drain adjacent to the eastern boundary of the site.
Pluvial (urban drainage)	Possible	There is urban drainage and water supply infrastructure in the vicinity of the site.
Pluvial (overland flow)	No	The site is not surrounded by elevated lands and does not provide an important surface water discharge point to adjacent lands.
Blockage	Possible	There are two culverts located along the Unnamed Stream watercourse beyond the southern boundary of the site.
Groundwater	No	There are no significant springs or groundwater discharges mapped or recorded in the immediate vicinity of the site.

**Table 1**

The primary potential flood risk to the proposed development site can be attributed to an extreme fluvial flood event in the Unnamed Stream watercourse located approximately 80m beyond the southern boundary of the site and / or the occurrence of a fluvial flood event in the field drain adjacent to the eastern boundary of the site. Secondary, or residual, flood risk can be attributed to a surcharge/failure of the urban drainage/water supply infrastructure in the vicinity of the site and to a potential surcharge in the culverts located along the Unnamed Stream watercourse.

In accordance with 'The Planning System and Flood Risk Management – Guidelines for Planning Authorities - DOEHLG 2009' these potential flood risks are analysed in the subsequent 'Screening Assessment' and "Scoping Assessment" section of this study report.



## 4 Screening Assessment

The purpose of the screening assessment is to establish the level of flooding risk that may or may not exist for a particular site and to collate and assess existing current or historical information and data which may indicate the level or extent of any flood risk.

If there is a potential flood risk issue then the flood risk assessment procedure should move to 'Step 2 – Scoping Assessment' or if no potential flood risk is identified from the screening stage then the overall flood risk assessment can end at 'Step 1'.

The following information and data was collated as part of the flood risk screening assessment for the proposed development site:-

### 4.1 OPW/EPA/Local Authority Hydrometric Data

Existing sources of OPW, EPA and local authority hydrometric data were investigated. As illustrated in Figure 2 below, this assessment has determined that there are two hydrometric gauging stations located on separate watercourses in the general downstream area of the proposed development site.

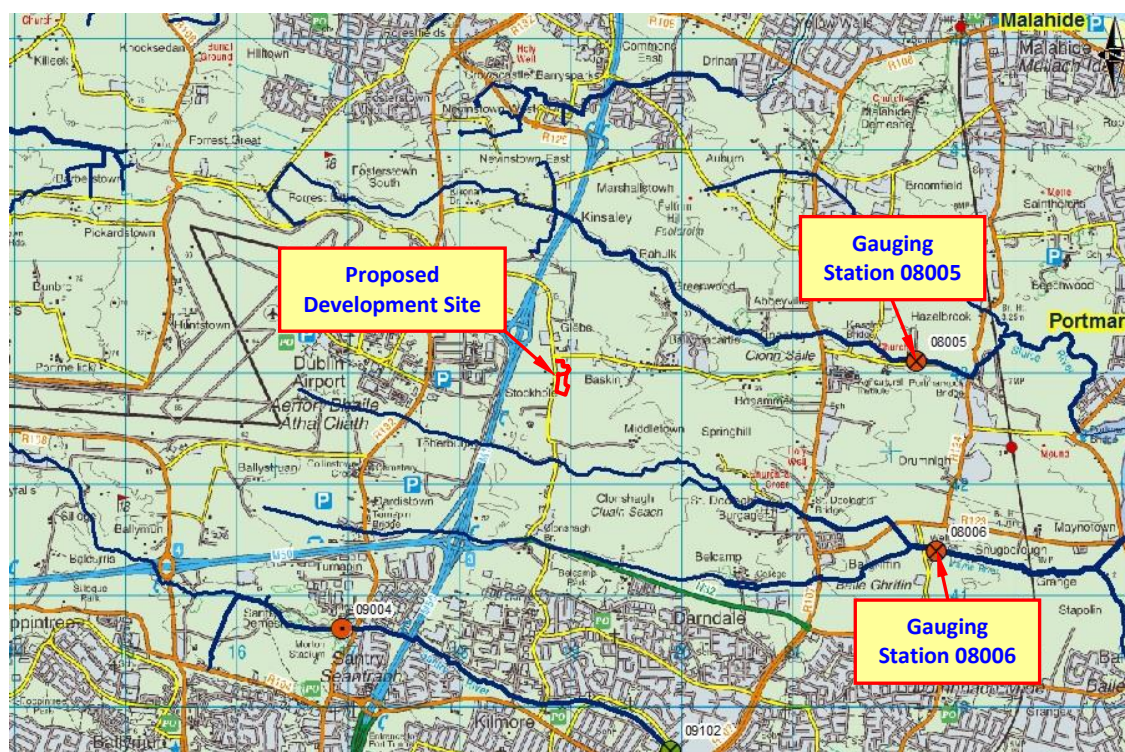


Figure 2 – Hydrometric Stations

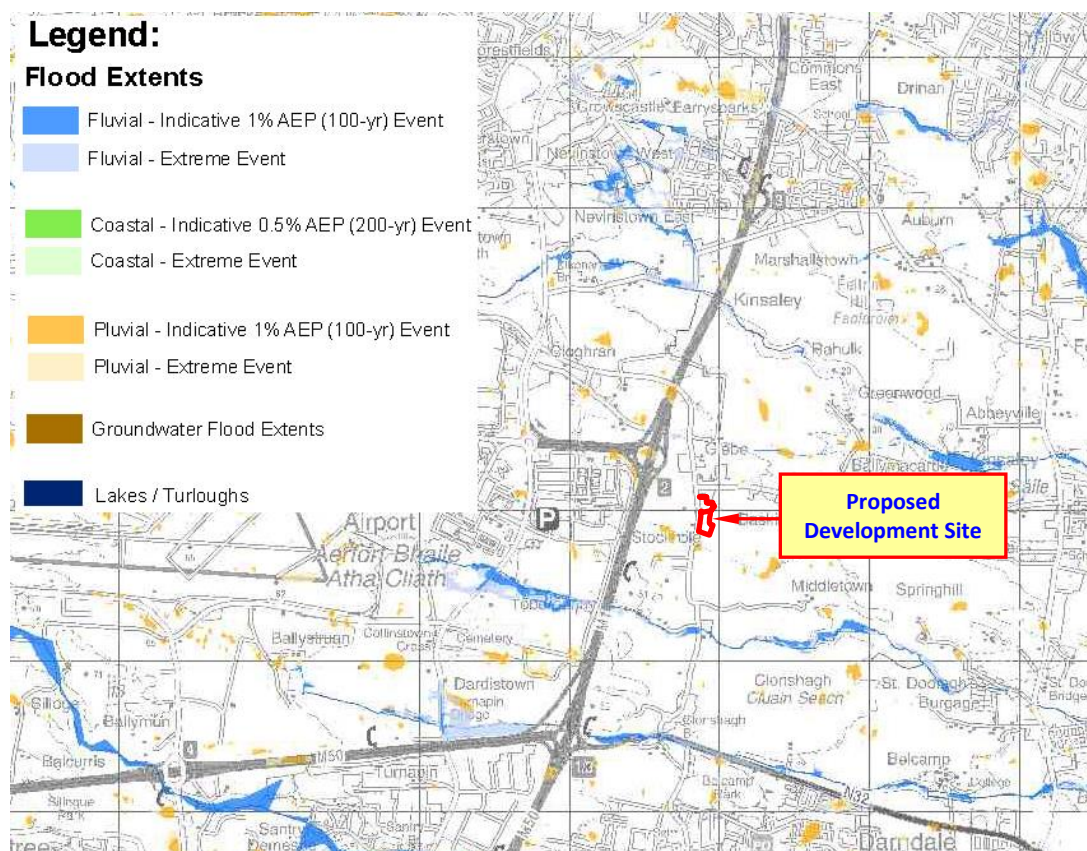


Gauging Station 08005 (Hazelbrook) and Gauging Station 08006 (Wellfield Bridge) are not listed in the Register of Hydrometric Stations of Ireland. No data is readily available for the above mentioned hydrometric stations but any data recorded would have been incorporated into the Fingal East Meath FRAM study (Section 4.6 below).

#### 4.2 OPW PFRA Indicative Flood Mapping

Preliminary Flood Risk Assessment (PFRA) Mapping for Ireland was produced by the OPW in 2011. OPW PFRA flood map number 2019/MAP/256/A illustrates indicative flood zones within this area of Co Dublin.

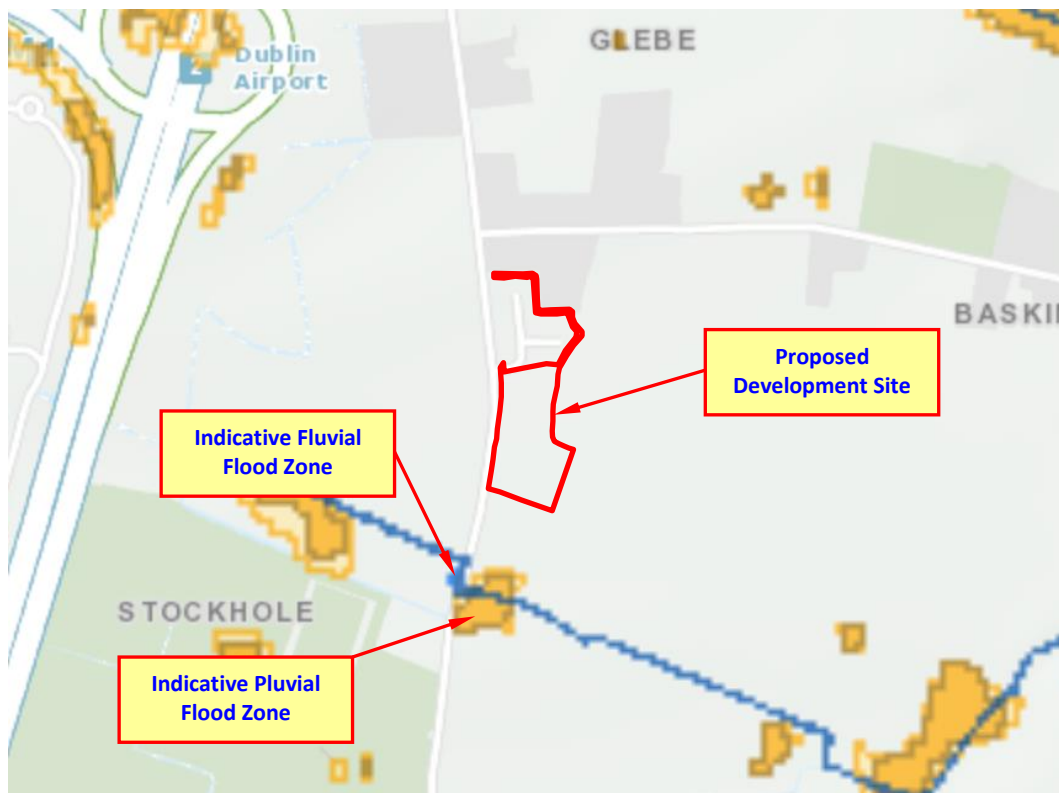
Figure 3 below illustrates an extract from the above indicative flood map in the vicinity of the proposed development site.



**Figure 3 – PFRA Mapping**

The PFRA indicative flood mapping does not indicate any mapped indicative fluvial, pluvial or coastal flood zones within or in the immediate vicinity of the site boundary.

Figure 4 below illustrates the PFRA indicative flood zones from Figure 3 overlaid onto higher resolution background mapping.

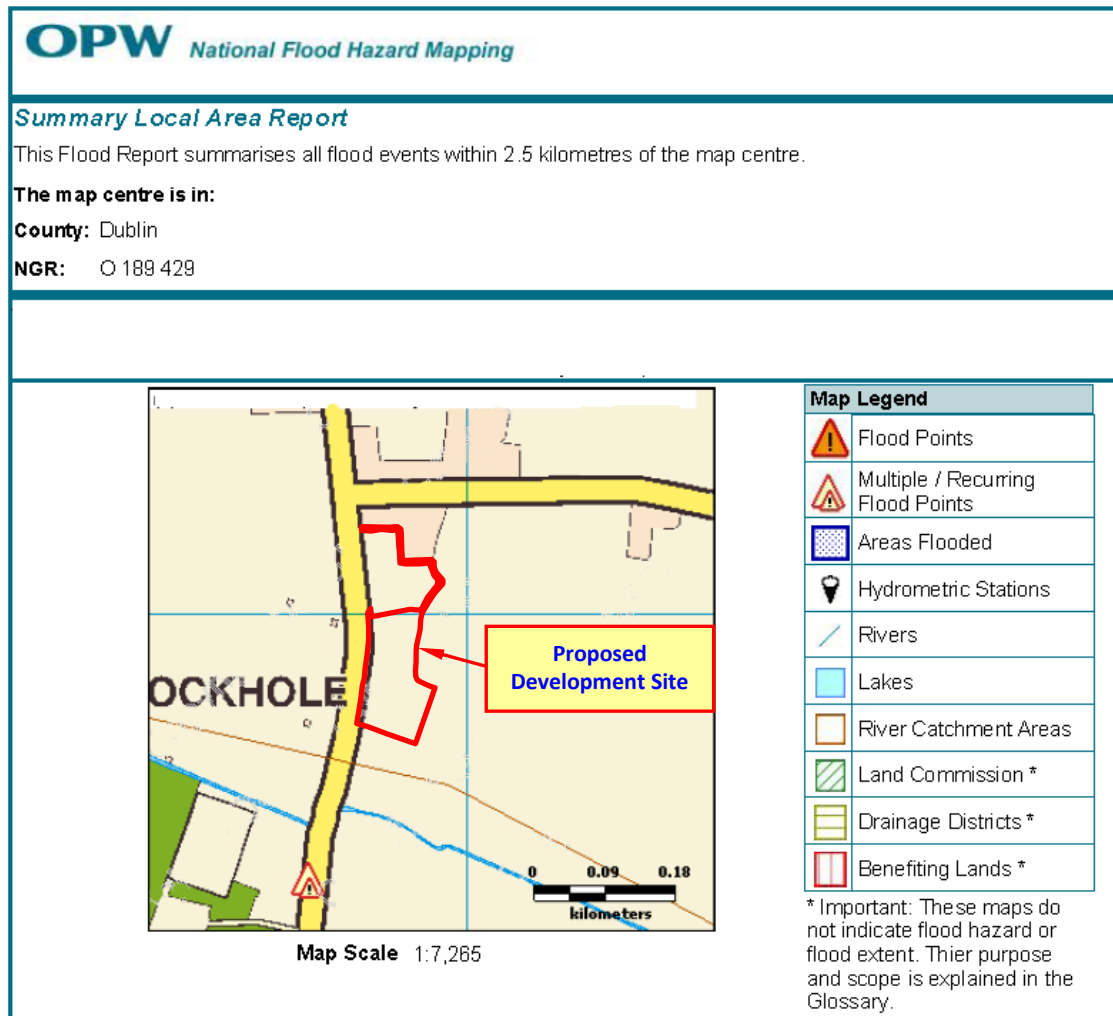


**Figure 4 – PFRA Mapping**

It should be noted that the extent of flooding illustrated on these maps was developed using a low resolution digital terrain model (DTM) and illustrated flood extents are intended to be indicative only. The flood extents mapped on the PFRA maps are not intended to be used on a site specific basis.

#### **4.3 OPW Flood Maps Website**

The OPW Flood Maps Website ([www.floods.ie](http://www.floods.ie)) was consulted in relation to available historical or anecdotal information on any flooding incidences or occurrences in the vicinity of the proposed development site. Figure 5 below illustrates mapping from the Flood Maps website in the vicinity of the site.



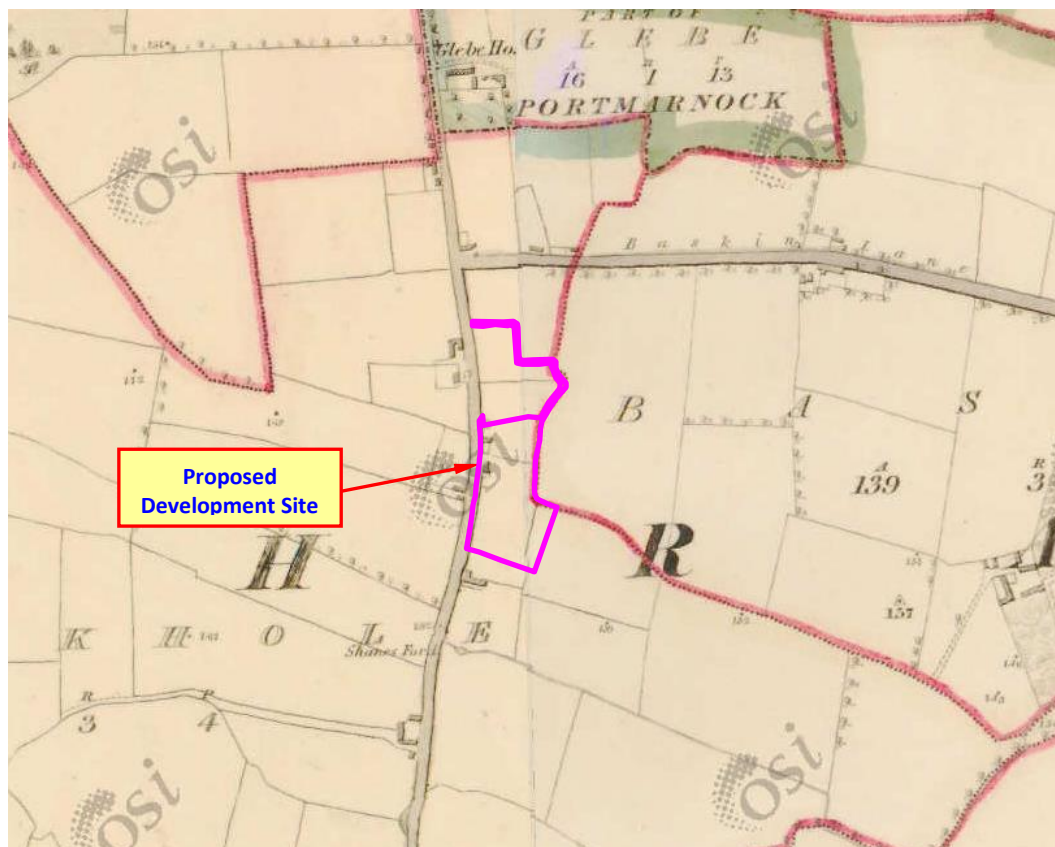
**Figure 5 – OPW Flood Maps**

Figure 5 above indicates one recorded instance of flooding south of the proposed development site.

With reference to the Area Engineer's report dated 04/04/2005 - Flooding is reported to frequently occur on Stockhole Lane road at this location. Some remedial works were carried out in 2004. This flooding instance is not reported to have had any impact on the area of the proposed development site.

#### **4.4 Ordnance Survey Historic Mapping**

Available historic mapping for the area was consulted, as this can provide evidence of historical flooding incidences or occurrences. The maps that were consulted were the historical 6-inch maps (pre-1900), and the historic 25-inch map series. *Figures 6 and Figure 7* below show the historic mapping for the area of the proposed development site.

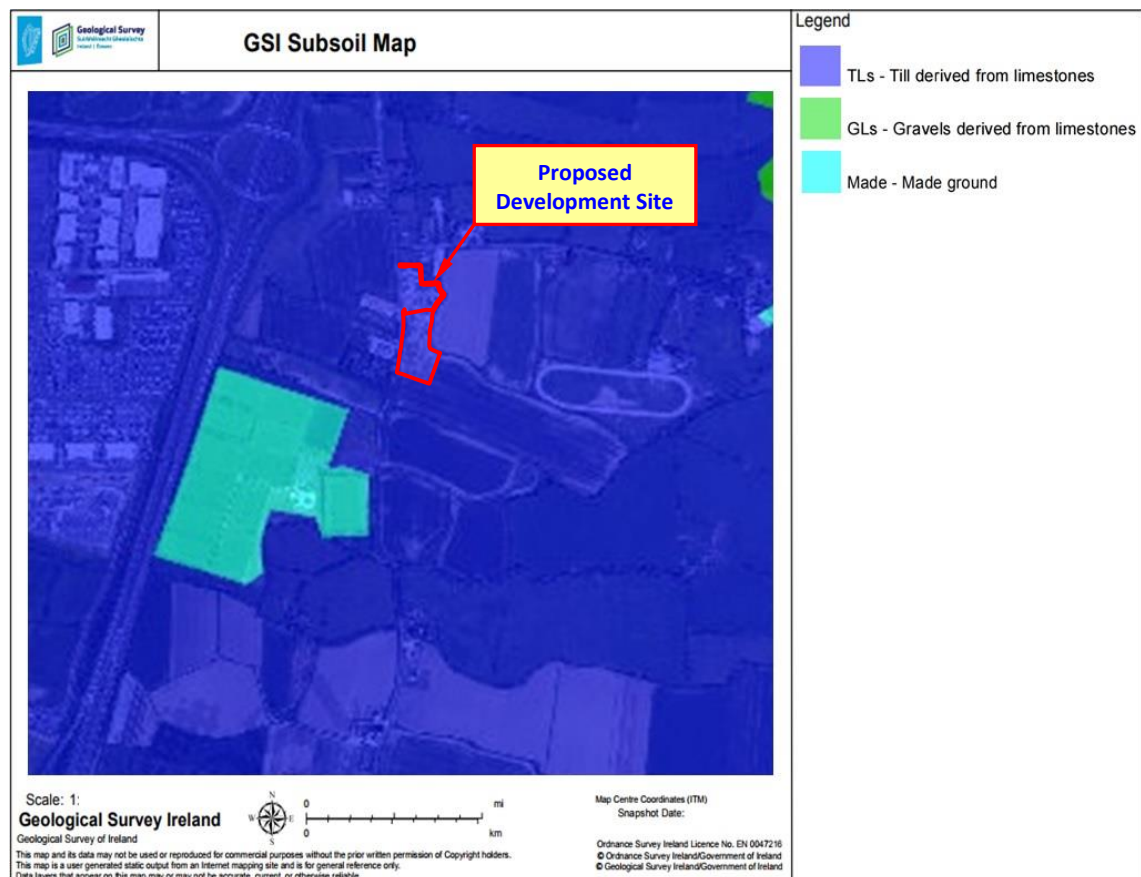




The historic 6 inch and 25 inch mapping does not indicate any historical or anecdotal instances of flooding within or adjacent to the boundary of the proposed development site.

#### 4.5 Geological Survey of Ireland Mapping

The alluvial deposit maps of the Geological Survey of Ireland (GSI) were consulted to assess the extent of any alluvial deposits in the vicinity of the proposed development site. Alluvial deposits can be an indicator of areas that have been subject to flooding in the recent geological past. *Figure 8* below illustrates the sub-soils mapping for the general area of the site.



**Figure 8 – GSI Subsoil Mapping**

*Figure 8* above indicates that the proposed development site is entirely underlain by Till derived from limestones. No areas of Alluvium deposits are mapped within or in the vicinity of the site.

#### 4.6 Fingal East Meath FRAM Study

The Fingal East Meath Region Flood Risk & Management Study (FRAMS) has been undertaken on behalf of the OPW and the final version of the flood maps were issued in December 2017. Flood risk extent and depth maps for further assessment areas in the vicinity of Stockhole Lane and Dublin Airport have also been produced. FEM FRAMS flood map numbers MAY/HPW/EXT/CURS/001 and SLU/HPW/EXT/CURS/002 illustrate predictive extreme fluvial flood extent zones associated with the Unnamed Stream watercourse in the vicinity of the proposed development site.

Figure 9 below (extracted from FEM FRAMS flood maps MAY/HPW/EXT/CURS/001 and SLU/HPW/EXT/CURS/002), illustrates the predicted extreme 10% AEP (1 in 10 year), 1% AEP (1 in 100 year) and 0.1% AEP (1 in 1000 year) fluvial flood extents in the vicinity of the proposed development site.

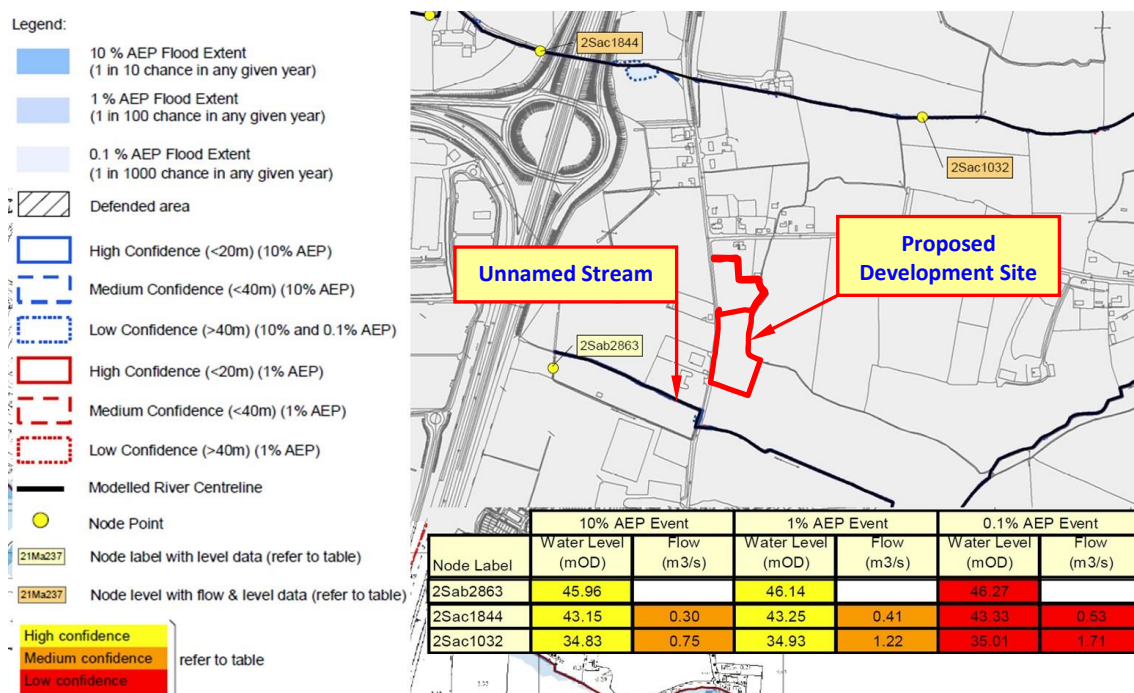


Figure 9 – FEM FRAMS Fluvial Flood Maps

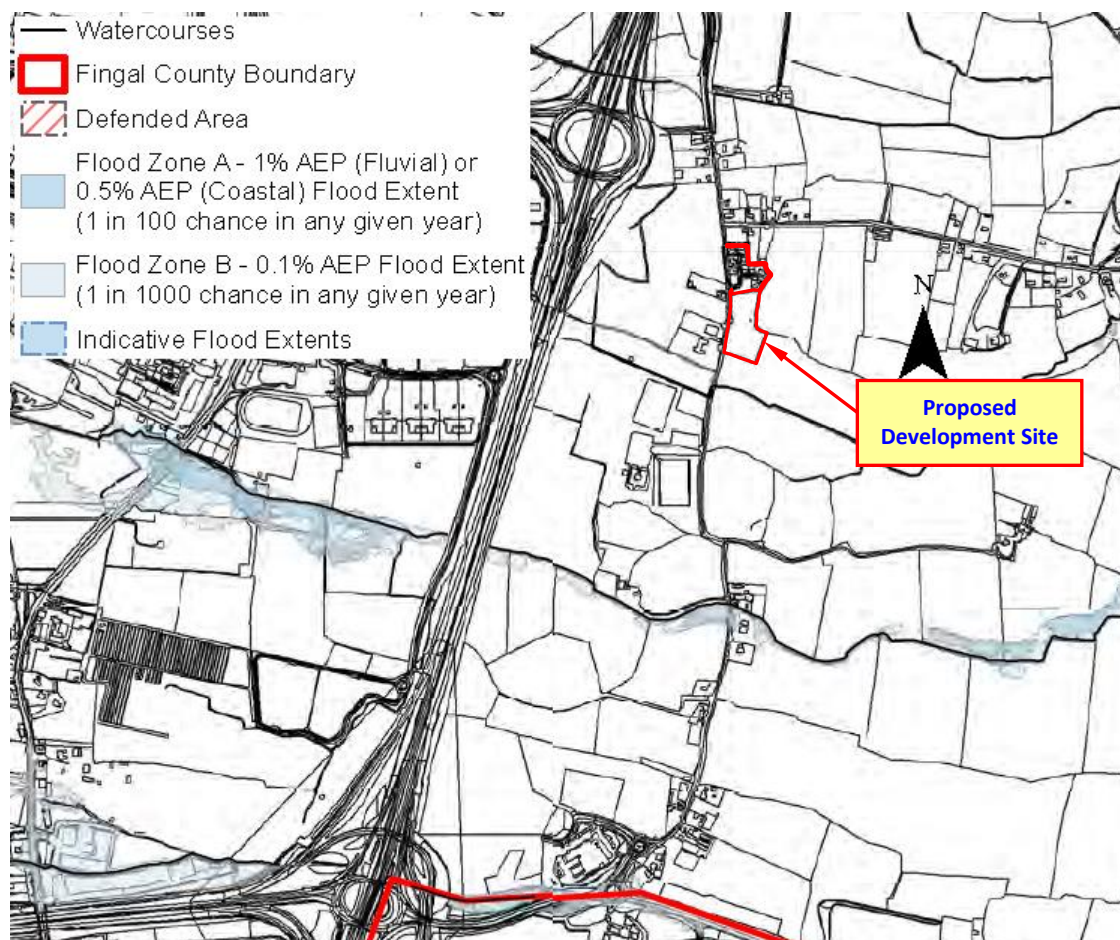
Figure 9 above indicates that the area of the proposed development site would not be directly impacted by a 10% AEP (1 in 10 year), 1% AEP (1 in 100 year) or 0.1% AEP (1 in 1000 year) fluvial flood event in the Unnamed Stream watercourse.

The FEM FRAM flood maps are predictive flood maps, in that they provide predicted flood extent and depth information for a 'design' flood event that has an estimated probability of occurrence (e.g., the 1% AEP event), rather than information for floods that have occurred in the past.

#### 4.7 Fingal Development Plan 2017-2023 - SFRA

As part of the Fingal Development Plan, a Strategic Flood Risk Assessment was prepared in accordance with the Guidelines for Planning Authorities 'The Planning System and Flood Risk Management'. The flood risk mapping produced as part of this assessment was collated from a number of sources and illustrates the delineation of Flood Zones 'A' and 'B' in the vicinity of the proposed development site.

Figure 10 below illustrates the flood zone delineation mapping for the area of the proposed development site produced as part of this SFRA.



**Figure 10 –Fingal SFRA Mapping**



*Figure 10* above indicates that the area of the proposed development site does not fall within a delineated Flood Zone A or Flood Zone B.

## 5 Scoping Assessment

The purpose of the scoping stage is to identify possible flood risks and to implement the necessary level of detail and assessment to assess these possible risks, and to ensure these can be adequately addressed in the flood risk assessment. The scoping exercise should also identify that sufficient quantitative information is already available to complete a flood risk assessment appropriate to the scale and nature of the development proposed.

The above screening assessment indicates that the primary flood risk to the proposed development site can be attributed to a potential fluvial flooding from an Unnamed Stream watercourse located approximately 80m beyond the southern boundary of the proposed development site. Secondary flood risk can be attributed to a potential surcharge/failure of the urban drainage/water supply infrastructure located within the vicinity of the site and from a potential surcharge in both culverts located south of the site boundary along the Unnamed Stream watercourse.

An inspection and assessment of the field drain adjacent to the eastern boundary of the site was undertaken by a hydrological engineer from IE Consulting. The field drain has a very minor contributing catchment area comprising of surrounding agricultural lands. The field drain slopes in both a northerly and south-easterly direction away from the site, following the existing topography of the land. Therefore the field drain does not pose a fluvial flood risk to the site and subsequently will not be assessed any further.

In consideration of the information collated as part of the screening exercise, and the availability of other information and data specific to the proposed development site, it is considered that sufficient quantitative information to complete an appropriate flood risk assessment can be derived from the information collated as part of the screening exercise alone.

The specific flood risk to and from the proposed development site is assessed in the subsequent 'Assessing Flood Risk' stage of this study report.

## 6 Assessing Flood Risk

The following sections present an analysis and assessment of the potential flood risk to the proposed development site and an assessment of the impact that development of the site may or may not have on the hydrological regime of the area.

### 6.1 Assessment of Fluvial Flood Risk

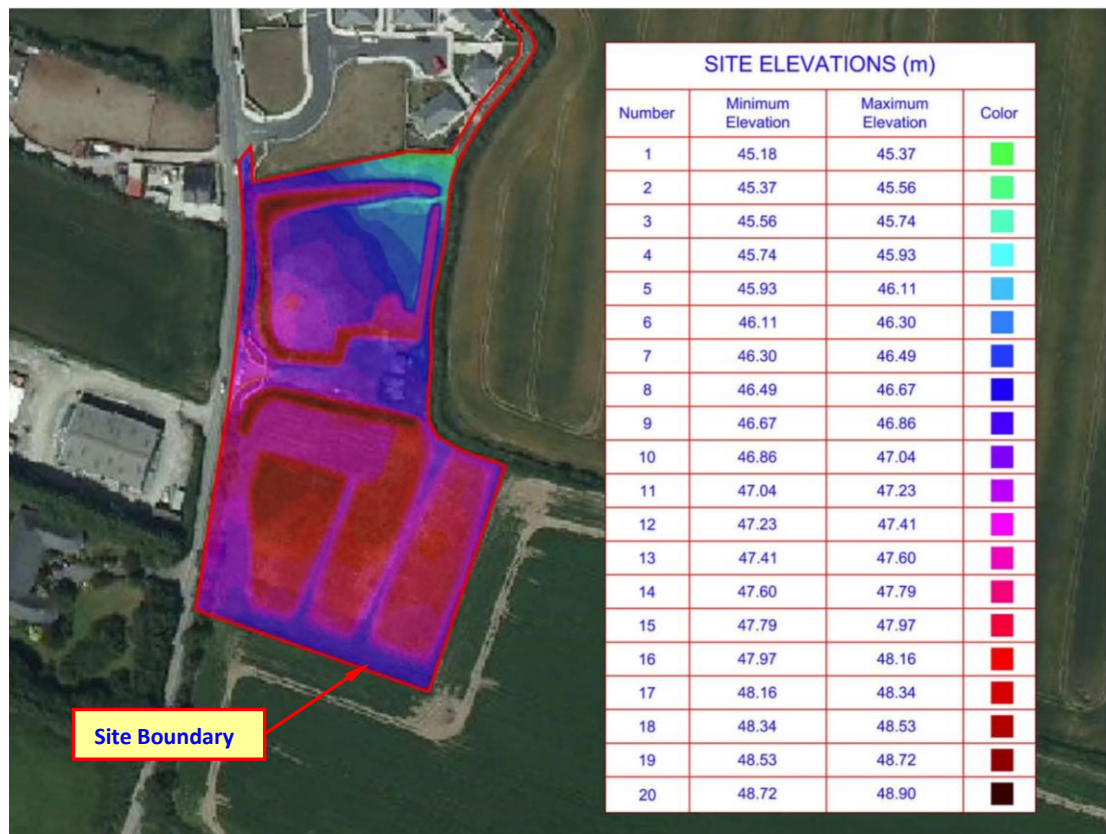
The OPW PFRA map (*Figure 4* above) indicates an area of indicative pluvial flooding beyond the southern boundary of the site. This flood zone is more likely to be a fluvial flood zone due to its close proximity to the watercourse and in consideration of the existing topography at this particular location. The PFRA flood maps are indicative maps only and were developed using a low-resolution DTM suitable for a regional spatial analysis as opposed to a site specific analysis. It is therefore required to undertake a more accurate and site specific assessment and analysis of flood risk at the area of the proposed development site. During the site visit on the 25<sup>th</sup> of January 2019, a hydrological engineer from IE Consulting observed that the proposed development site is significantly elevated above the Unnamed Stream watercourse and that the surrounding topography within the vicinity of the watercourse falls away from the site. The following sections assess the potential fluvial flood risk to the site.

#### 6.1.1 Topographical Survey & Contour Mapping

In order to assist in the assessment of any potential flooding in the general area of the proposed development site, topographical survey information was utilised to develop a Digital Terrain Model (DTM) of the proposed development site area. Development of a DTM allows the analysis of levels and the prediction of overland flow-paths in the vicinity of the proposed development site. The contour mapping and DTM developed for the area is illustrated in *Figure 11 and Figure 12* below.



**Figure 11 – Contour Mapping**



**Figure 12 – Topographical Survey Derived DTM**

### 6.1.2 Fluvial Flood Analysis

Topographical survey information for the proposed development site indicates that the lowest topographical elevation along the southern boundary of the site nearest to the Unnamed Stream watercourse is approximately 46.67m OD. As illustrated in *Figure 13* below, the bank level of the Unnamed Stream is approximately 45.30m OD, therefore the lowest topographical elevation within the site along the southern boundary nearest the watercourse is elevated approximately 1.37m above the bank of the Unnamed Stream. Consequently any surcharging of flood waters of out of channel exceedence within the Unnamed Stream watercourse is unlikely to directly impact the proposed development site due to the significant elevation difference.

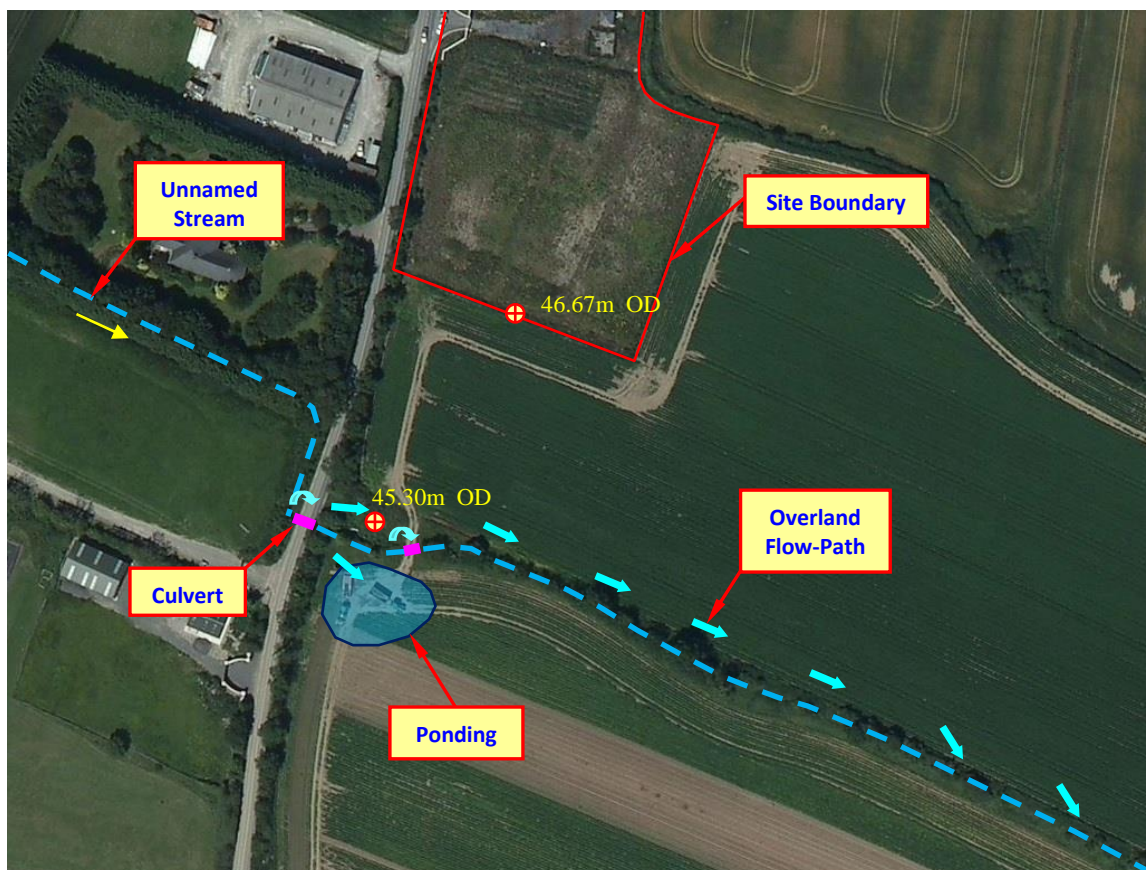


**Figure 13 – Elevation Difference - Bank vs Site**

The flooding regime and overland conveyance flow paths of the Unnamed Stream watercourse in the vicinity of the site were also assessed and examined. The purpose of this assessment was to obtain a better understanding of the potential fluvial flood mechanisms at and in the vicinity of the watercourse and to assess the potential for flooding in the area to impact or not the area proposed development site and the surrounding lands.



In the event of a surcharge or channel exceedence in the Unnamed Stream watercourse it is anticipated that flood waters would overtop both banks and spill out onto the surrounding farm land both south and north of the watercourse. Flood waters south of the watercourse are predicted to pond within a localised depression while flood waters north of the watercourse are predicted to flow in an easterly direction parallel to the watercourse, re-joining the channel further downstream as illustrated in *Figure 14* below.



**Figure 14 – Surcharge Unnamed Stream – Overland Flow-Paths**

The proposed development site does not fall within a mapped fluvial flood zone as per the Fingal FRAMS flood map (*Figure 9*) and the PFRA map (*Figure 4*). It should also be noted that the GSI subsoils map (*Figure 8*) does not indicate any alluvium deposits within the boundary of the site. Alluvium deposits are commonly associated with areas of flood inundation. Similarly, the OPW Floodmaps.ie map (*Figure 5*) and the historical maps (*Figures 6-7*) do not show any recorded, historical or anecdotal flood zones within the immediate vicinity of the proposed development site.

With reference to *Figure 9* above, the Fingal FRAMS flood extent map (MAY/HPW/EXT/CURS/001), displays one node point (2Sab2863) associated with the Unnamed Stream which is located approximately 325m upstream of the site boundary. The 1 in 1000 year (0.1% AEP) predicted fluvial flood level is 46.27m OD. The lowest elevation along the southern boundary of the site nearest the Unnamed Stream is 46.67m OD. Therefore the proposed development site is 0.4m above the predicted 1 in 1000 year fluvial flood level.

In addition the proposed finish floor levels (F.F.L) of the proposed dwellings range from 46.40m OD to 47.20m OD, which are between 0.13m and 0.93m above the predicted 1 in 1000 year (0.1% AEP) fluvial flood level in the Unnamed Stream, taken from node point (2Sab2863) located 325m upstream.

The proposed development site is therefore not at risk of direct fluvial flooding from the Unnamed Stream or from pluvial flooding, therefore development of the site would not result in an adverse impact to the hydrological regime of the area.

## **6.2 Assessment of Secondary Flood Risk**

### **Pluvial - Urban Drainage/Water Supply Infrastructure**

Secondary and residual flood risk can be attributed to a potential surcharge of the urban drainage network and /or damage to the water supply infrastructure in the general vicinity of the site. A water supply and drainage infrastructure map were obtained from Fingal County Council and Hayes Higgins Partnership respectively, extracts of which are illustrated in *Figure 15 and Figure 16* below. The following infrastructure has been identified in the vicinity of the proposed development site:

- 610mm diameter water-main adjacent to the western boundary of the site.
- 90mm diameter water-main located within the eastern boundary of the site.
- 100mm diameter rising-main located within the western boundary of the site.
- 80mm diameter rising-main located within the eastern boundary of the site.
- Foul sewer adjacent to the western boundary of the site.
- Surface water sewer within the western boundary of the site.





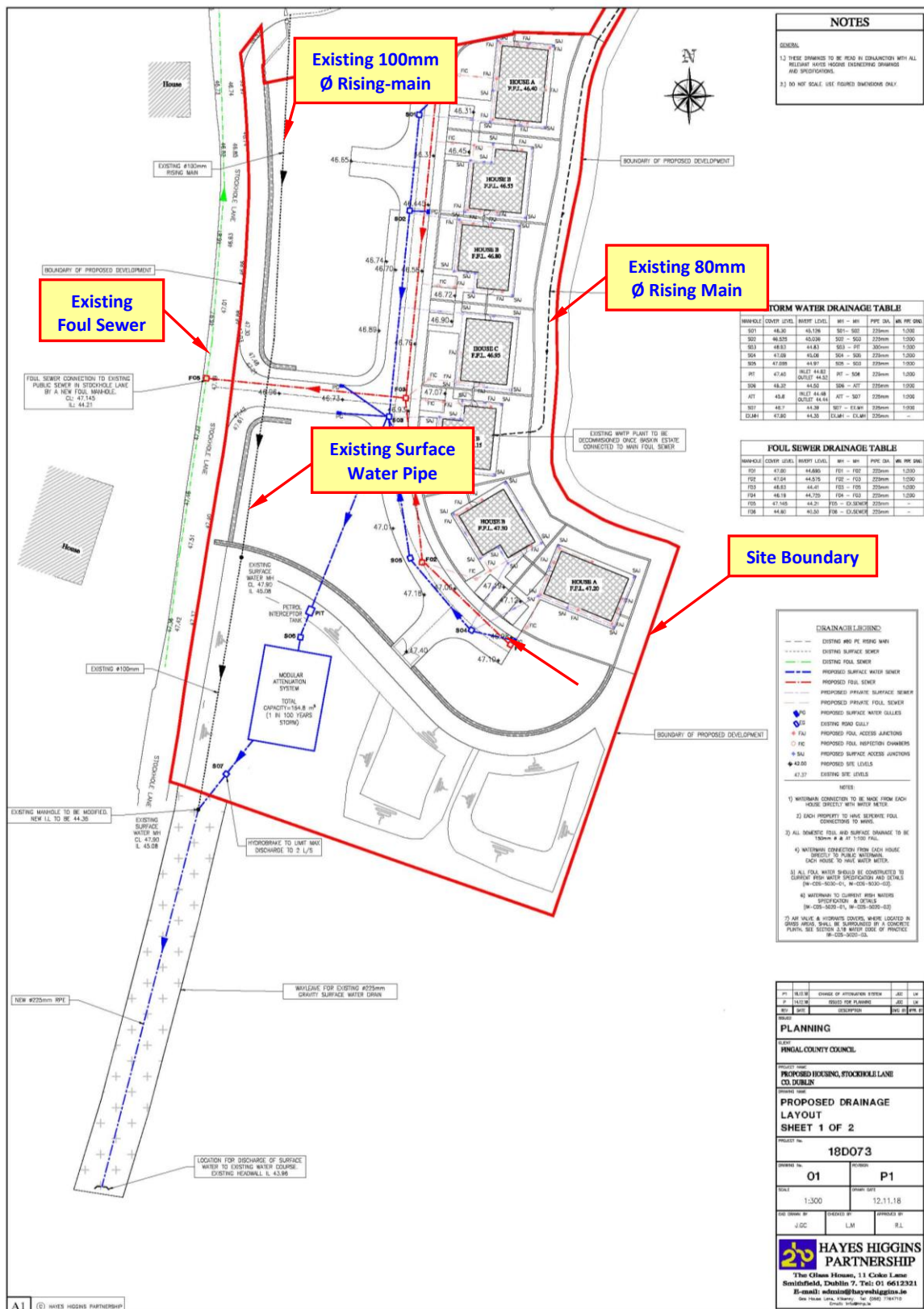


Figure 16 – Urban Drainage Records

It is anticipated that any potential pluvial flooding due to failure of the 610mm diameter water-main or a surcharge in the foul sewer would likely cause flood waters to spill out on to Stockhole Lane and flow in both a northern and southern direction, initially parallel to the site and eventually away from the site. Stockhole Lane road has a steep gradient both north and south of the site, the crest of the road is located adjacent to the proposed entrance to the site, therefore ponding is not expected at either the entrance or anywhere along the boundary, as illustrated in *Figure 17* below.

In the event of a surcharge in the surface water network within the site boundary, flood water is expected to spill out of the manholes within the site and flow over land in a southerly direction. Based on the existing topography of the site flood water is predicted to flow along the western boundary toward the Unnamed Stream. Significant ponding is not anticipated to occur within the southern boundary.

In relation to the 80 diameter rising main and the 90mm diameter water-main present within the eastern boundary, it is anticipated that flood water would spill out onto the site and split in two, before flowing in a north-easterly direction toward an existing low point within the site and in a south-easterly direction, toward the eastern boundary. Flood water is anticipated to spill over in to the field drain present along the eastern boundary of the site and eventually flow away from the site. Some ponding is expected near the north-eastern corner of the site due to the existing low point. However an adequate surface water drainage system within the proposed hard standing areas of the development site will mitigate against the potential pluvial flood risk to the site.

In relation to the 80mm diameter rising main present on site within the eastern boundary, this main is set to be decommissioned and so will not pose a flood risk to the site in the further.



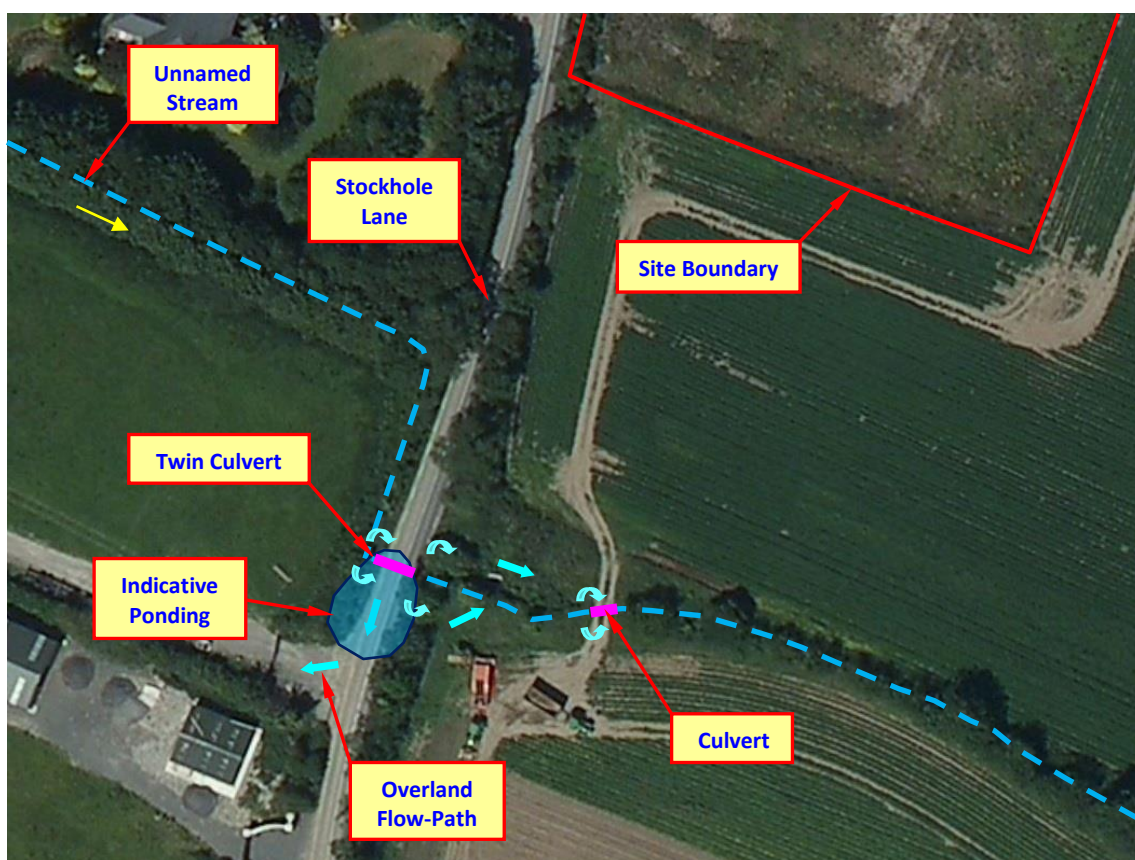
**Figure 17 –Overland Flow Paths**



### Surcharge/Blockage – Twin Culvert

Secondary flood risk can also be attributed to a potential surcharge due to a potential blockage in the twin culvert located on the Unnamed Stream beyond the southern boundary of the site. In the event the culvert becomes blocked and begins to surcharge flood waters would initially surcharge/back up along the Unnamed Stream, overtop both banks and potentially spill out onto Stockhole Lane road. Due to an existing low point on the road within the vicinity of the culvert, flood waters would initially pond within the roadway, with some minor water flowing to the west. If the water level continues to rise flood water would overtop the minor earth bank along the surrounding the farmland and culvert , before flowing in an easterly direction further into the land located to the south of the site boundary, parallel to the watercourse. Flood waters are then predicted to re-join the channel downstream, as illustrated in *Figure 18* below.

In addition, there is a second culvert located approximately 30m downstream of the twin culverts, however any surcharging flood waters from a potential blockage in this culvert would not be significant. The culvert would simply be overtopped and the flood water would re-join the watercourse downstream, as illustrated in *Figure 18* below.



***Figure 18 – Surcharging Culverts- Overland Flow-Paths***

It is therefore not anticipated that blockage or surcharge of any of the two culverts will result in a significantly increased flood risk to the proposed development site.

In summary, the secondary, or residual, pluvial flood risk to the proposed development site is considered to be **LOW**

## 7 Proposed Development in the Context of the Guidelines

In the context of the *'Planning System and Flood Risk Management Guidelines, DOEHLG, 2009'* three flood zones are designated in consideration of flood risk to a particular development site.

*Flood Zone 'A'* – where the probability of flooding from rivers and watercourses is the highest (greater than 1% or 1 in 100 year for river and watercourse flooding and 0.5% or 1 on 200 for coastal or tidal flooding).

*Flood Zone 'B'* – where the probability of flooding from rivers and watercourses is moderate (between 0.1% or 1 in 1000 year for river and watercourse flooding and 0.5% or 1 on 200 for coastal or tidal flooding).

*Flood Zone 'C'* – where the probability of flooding from rivers and watercourses is low or negligible (less than 0.1% of 1 in 1000 year for both river and watercourse and coastal flooding). *Flood Zone 'C'* covers all areas that are not in *Zones 'A'* or *'B'*.

The *'Planning System and Flood Risk Management Guidelines'* list the planning implications for each flood zone, as summarised below:-

**Zone A – High Probability of Flooding.** Most types of development would not be considered in this zone. Development in this zone should be only be considered in exceptional circumstances, such as in city and town centres, or in the case of essential infrastructure that cannot be located elsewhere, and where the *'Planning System and Flood Risk Management Guidelines'* justification test has been applied. Only water-compatible development, such as docks and marinas, dockside activities that require a waterside location, amenity open space and outdoor sports and recreation would be considered appropriate in this zone.

**Zone B – Moderate Probability of Flooding.** Highly vulnerable development such as hospitals, residential care homes, Garda, fire and ambulance stations, dwelling houses, strategic transport and essential utilities infrastructure would generally be considered inappropriate in this zone, unless the requirements of the justification test can be met. Less vulnerable development such as retail, commercial and industrial uses and recreational facilities might be considered appropriate in this zone. In general however, less vulnerable development should only be considered in this zone if adequate lands or sites are not available in *Zone 'C'* and subject to a flood risk assessment to the appropriate level of detail to demonstrate that flood risk to the development can be adequately managed and that development in this zone will not adversely affect adjacent lands and properties.



**Zone C – Low to Negligible Probability of Flooding.** Development in this zone is appropriate from a flood risk perspective. Developments in this zone are generally not considered at risk of fluvial flooding and would not adversely affect adjacent lands and properties from a flood risk perspective.

In the context of the *'Planning System and Flood Risk Management Guidelines, DOEHLG, 2009'* this Site Specific Flood Risk Assessment indicates a LOW fluvial and pluvial flood risk to the proposed development site. The proposed development site therefore falls within Flood Zone 'C'.

In accordance with the *'Planning System & Flood Risk Management Guidelines, DOEGLG, 2009'* the development as proposed is not subject to the requirements of the Justification Test.

## 8 Summary Conclusions

In consideration of the findings of this site specific flood risk assessment and analysis the following conclusions are made in respect of the proposed development site:-

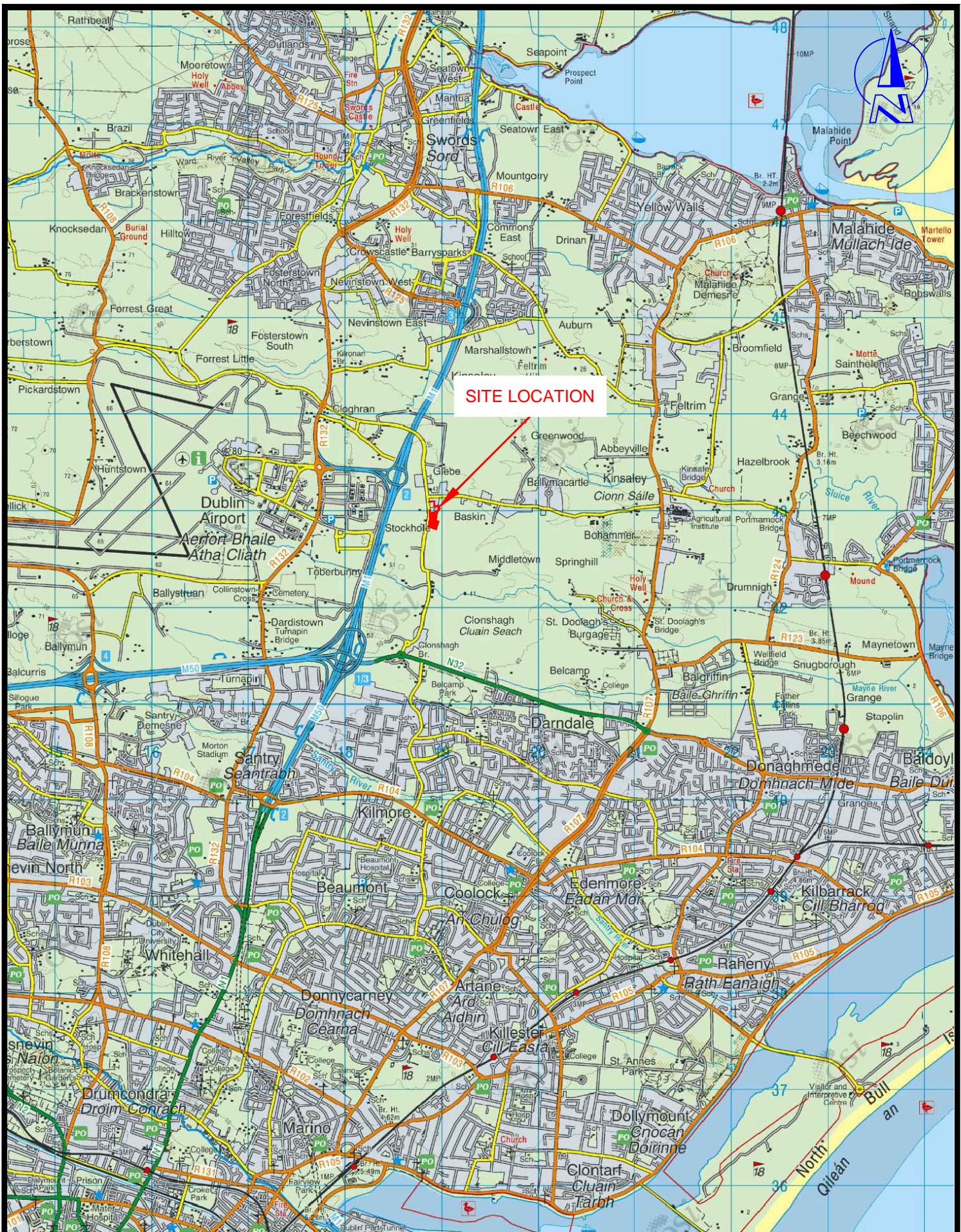
- *A Site Specific Flood Risk (SSFRA) assessment, appropriate to the type and scale of development proposed, and in accordance with 'The Planning System and Flood Risk Management Guidelines – DoEHLG-2009' has been undertaken.*
- *The proposed development site has been screened, scoped and assessed for flood risk in accordance with the above guidelines.*
- *The primary flood risk to the proposed development site can be attributed to a fluvial flood event in the Unnamed Stream watercourse approximately 80m beyond the southern boundary of the site. The site is not at risk of groundwater flooding.*
- *The lowest topographical elevation along the southern boundary of the site nearest to the Unnamed Stream watercourse is approximately 46.67m OD. The left overbank level of the Unnamed Stream watercourse is approximately 45.30m OD, therefore the lowest topographical elevation within the site along the southern boundary nearest the watercourse is elevated approximately 1.37m above the bank of the Unnamed Stream. In addition the site boundary nearest the stream is elevated 0.4m above the predicted 1 in 1000 year (0.1% AEP) fluvial flood level, referencing node point (2Sab2863) of the Fingal FRAMS map, which is located approximately 325m upstream of the site boundary.*
- *Consequently any surcharging of flood waters of out of channel exceedence within the Unnamed Stream watercourse is unlikely to directly impact the proposed development site due to the significant elevation difference.*
- *The final Fingal FRAMS map (MAY/HPW/EXT/CURS/001), indicates no flooding on the site. The GSI subsoil map illustrates no alluvium deposits with the boundary of the site and the OPW flood map and historical maps indicate no flooding within the immediate vicinity of the site.*
- *The proposed finish floor levels of the dwellings range between 0.13-0.93m above the 1 in 1000 year (0.1% AEP) fluvial flood level in the Unnamed Stream, taken from node point (2Sab2863) located approximately 325m upstream and so the proposed development will not obstruct important flow paths, or increase flood risk elsewhere.*

- *Secondary flood risk to the proposed development site can be attributed to a potential surcharge/failure of the urban drainage/water supply infrastructure in the vicinity of the site. In the event of a surcharge in the drainage network or damage to the water-mains it is predicted that flood waters would spill out onto Stockhole Lane and flow away from the site in both a northerly and southerly direction as per the gradient of the existing road. Surcharging of infrastructure within the boundary is anticipated to generate pluvial flow and minor ponding in the north-western corner, at a low point in the site, before flood waters would spill into the adjacent field drain to the east and flow away from the site.*
- *Secondary flood risk can also be attributed to a potential surcharge in the culverts located south of the site boundary along the Unnamed Stream. In the event of a surcharge, flood water is anticipated to back-up along the channel, before overtopping the culverts and flowing onto the surrounding farm land and eventually re-joining the channel downstream, surcharging of the culverts does not pose a flood risk to the site. This SSFRA has determined that the potential secondary flood risk to the area of the proposed development site is **LOW**.*
- *In consideration of the findings of this Site Specific Flood Risk Assessment, and in the context of the 'Planning System and Flood Risk Management Guidelines, DOEHLG, 2009' this assessment has determined that the proposed development site falls within Flood Zone 'C', therefore the development as proposed is not subject to the requirements of the Justification Test.*
- *Overall, the flood risk to the proposed development site is considered to be LOW. In consideration of the findings of this Site Specific Flood Risk Assessment, it is considered that the development as proposed would not result in an adverse impact to the hydrological regime of the area or increase flood risk elsewhere and therefore the development is appropriate from a flood risk perspective.*

## ***APPENDIX A***

***Drawing number - IE1800-001-A***





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<u>Project Title:</u>		Proposed Development - Flood Risk Assessment				
<u>Project Address:</u>		Stockhole Lane, Co. Dublin				
<u>Client:</u>		Fingal CoCo, c/o Hayes Higgins Partnership				
<u>Drg. Title:</u>		Site Location Map				
<u>Dwg. Scale:</u>	<u>Date:</u>	<u>Dwg. No:</u>	<u>Job No:</u>	<u>Revision:</u>	<u>Dwg. By:</u>	
1:50,000	28/01/19	IE1800-001	IE1800	A	LM	



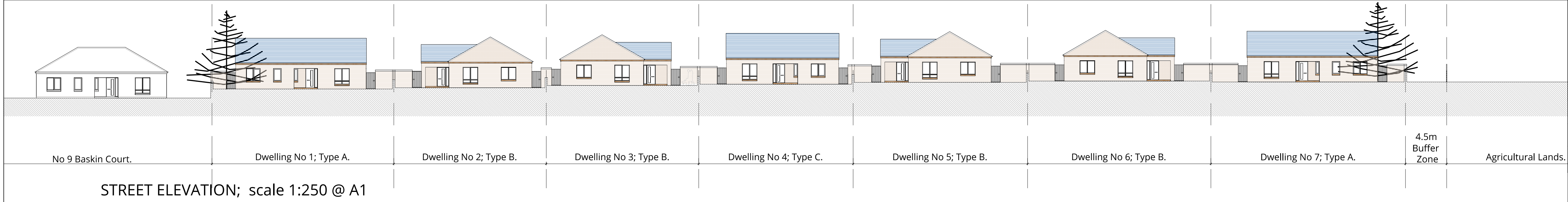
## ***APPENDIX B***

### ***Proposed Site Layout***





SITE LAYOUT; scale 1:250 @ A1



STREET ELEVATION; scale 1:250 @ A1

Comhairle Contae Fhine Gall Fingal County Council		
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CLIENT	HOUSING DEPARTMENT	
PROJECT TITLE	PROPOSED HOUSING STOCKHOLE LANE	
PROJECT STAGE	PRE-PLANNING	
DRAWING TITLE	SITE LAYOUT & STREET ELEVATION	
PROJECT ARCHITECT	FGM	
DRAWN	FGM	CHECKED
SCALE	AS SHOWN	DATE DECEMBER 2018
DRAWING NUMBER	16-126-PP-03	REV