Horganlynch

Consulting Engineers

HRA Planning
Chartered Town Planning Consultants DAC
3 Hartstonge Street
Limerick V94 F2PW

Attention: Mary Hughes

Date: 03.03.2022

Our Ref: **CL03L001**

Dear Mary,

Re: Development Site at Tulla Road, Ennis – Flood Impact Assessment

I refer to the above and outline below our Flood Impact Assessment of the site.

1.0 Introduction

On instructions from Mary Hughes of HRA Planning, Horganlynch Consulting Engineers carried out a desk top assessment of a site located on the Tulla Road, Ennis, Co. Clare. This assessment considered the impact that recent spoil filling at the site may have had on the flooding on the site and the surrounding area. The subject site measures circa 3,000 m2 in area and is located north east of Ennis Town Centre – see figure 1.

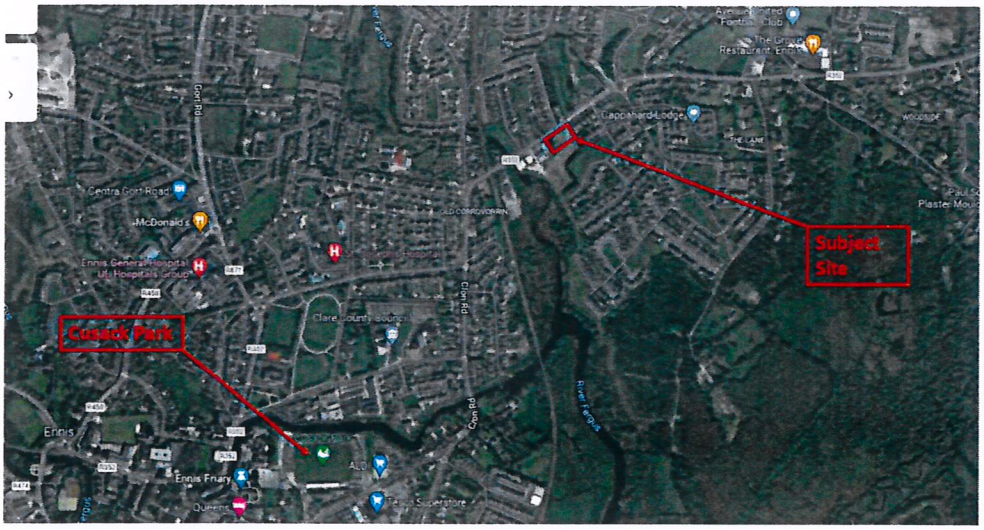

Figure 1 - Site Location

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QUALITY ISO 9001:2015 NSAI Certified

2.0 Background

The lands related to this report were reputably filled with imported material as part of the Certified Drainage Scheme between 2013 and 2015. Furthermore, the lands were used as a temporary compound for the improvements works to the water supply scheme and therefore necessitated the importation of engineered fill to enable use of the site.
It is the understanding of this report that initial filling of the site may have occurred between 1997 and 2005. Such filling has resulted in a significant difference in site levels between the subject site and the adjoining lands to the east and west of the site.

3.0 Basis of Assessment

The following information has been consulted as a basis for the assessment of the site:

a. Site Layout Drawing from Planning application 1997 - see Appendix A (assumed pre-existing site levels)
b. Site Layout Drawing No. P18-250C-RAU-XX-XX-DR-A-1100 by Reddy Architecture + Urbanism – See Appendix B (assumed existing site levels)
c. OPW Flood Extent Maps:
    - Map No. S27ENS_EXFCD_F1_09 Fluvial Flooding Existing Scenario (2016)
    - Map No. S27ENS_EXCCD_F1_09 Coastal Flooding Existing Scenario (2016)

4.0 Findings

Based on a review of the documentation identified in Section 2, the following are the findings of this assessment:

a. Pre-existing site levels –

    A review of the Site Layout drawing from the Planning Application 1997 (Appendix A) has noted that the spot levels on the site vary from circa 3.12m to the south east corner of the site to circa 3.02m to the north of the site. It is the understanding of this report that these said levels may be reflective of the pre-existing levels of the site (prior to filling)

b. Present site levels –

    A review of the Site Layout drawing No. P18-250C-RAU-XX-XX-DR-A-1100 (Appendix B) has noted that the spot levels on the site vary from circa 4.2m to the south of the site to circa 5.0m to the north of the site. It is the understanding of this report that these said levels reflect the existing levels of the site (post filling)

c. Flood levels (2016) –

Reports and flood maps from the Shannon CFRAM Study were reviewed as part of the Study for this report (Floodinfo.ie). Copies of the flood extent maps relevant to the scope of this report are included in Appendix C.

The flood extent maps were produced for various flood events of a given probability of occurrence. These are the 10%, 1% and 0.1% annual exceedance probability (AEP) events for fluvial flooding (which are equivalent to the 1 in 10, 1 in 100 and 1 in 1,000-year flood events respectively) and the 10%, 0.5% and 0.1% annual exceedance probability (AEP) events for coastal flooding (which are equivalent to the 1 in 10, 1 in 200 and 1 in 1,000-year flood events respectively).

The flood extent maps give predicted flood levels for the flood events at various nodes along the river channels.

The subject site lies north of Node 01FEM00220u and south of Node 01FEM01031 as shown in Figure 2 below.

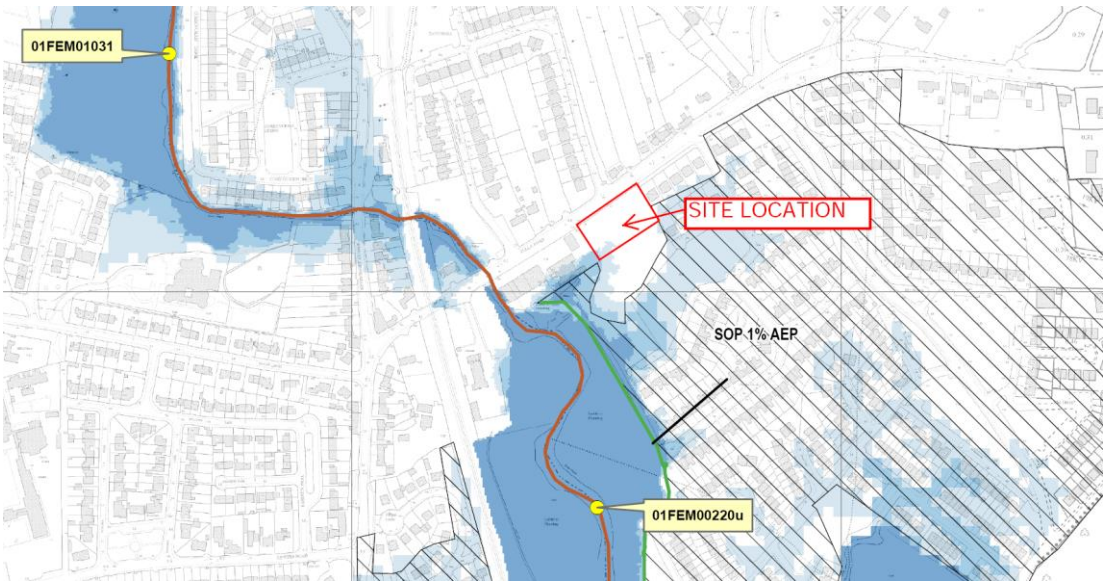


Figure 2 – Adjoining Nodal points

The Node 01FEM00220u is closer to the site and is therefore deemed to be more relevant and data for this node has been used for this assessment.

The predicted flood levels for the current scenario at node 01FEM00220u Fluvial Flooding & Coastal Flooding are shown in tables 1 & 2 below. There was no data available for the mid-range future scenario (MRFS) which makes allowance for climate change in accordance with OPW guidance.

	Predicted flood Levels		
Probability	**10% AEP**	**1% AEP**	**0.5% AEP**
Current Scenario	2.63	2.97	3.15
Mid-Range Future Scenario	No data	No data	No data

Table 1 – Predicted Fluvial Flood Levels at Node 0FEM00220u

	Predicted flood Levels		
Probability	**10% AEP**	**0.5% AEP**	**0.1% AEP**
Current Scenario	2.54	2.91	2.99
Mid-Range Future Scenario	No data	No data	No data

Table 2 – Predicted Coastal Flood Levels at Node 0FEM00220u

Further review of the Floodinfo.ie website noted that there were no flood events recording in the immediate vicinity of the site – see Figure 3

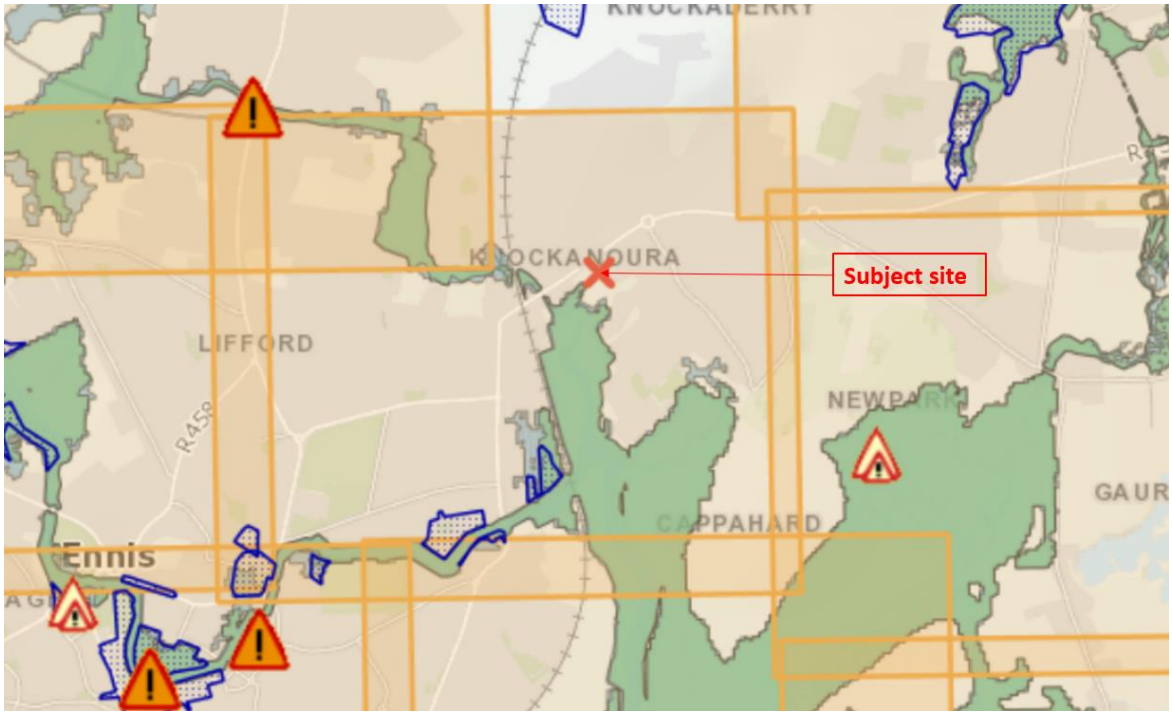


Figure 3 - Past Flood Events

5.0 Conclusion –

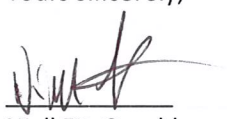
Based on the above findings, it is evident that the pre-existing levels of the site were either at or above the predicted flood levels for both fluvial and coastal flooding for all annual exceedance probability events.
In terms of fluvial flooding, the highest predicted flood level is 2.97m for the 1% (1:100) exceedance event, this being the fluvial event normally considered in flood risk assessment.
In terms of coastal flooding, the highest predicted flood level is 2.91m for the 0.5% (1:200) exceedance event, this being the coastal event normally considered in flood risk assessment.

Based on the Planning Application 1997 (Appendix A), the assumed lowest pre-existing site level noted is 3.02m, this being to the north of the site. Levels elsewhere are higher than this.

Given that the pre-existing levels of the site appear to have been at or above the predicted flood levels identified in the 2016 flood maps and also the fact no flood events have been identified in close proximity to the site, it is the opinion of this report that any filling that has occurred on the site since 1997 (considered to be the pre-existing status of the site) will have had little to no impact on the site or surrounding areas in terms of flooding.

This opinion is based on the findings of the documentation identified in Section 2 of this report and on the assumption that the predicted flood levels identified in the 2016 flood maps were relevant in 1997.

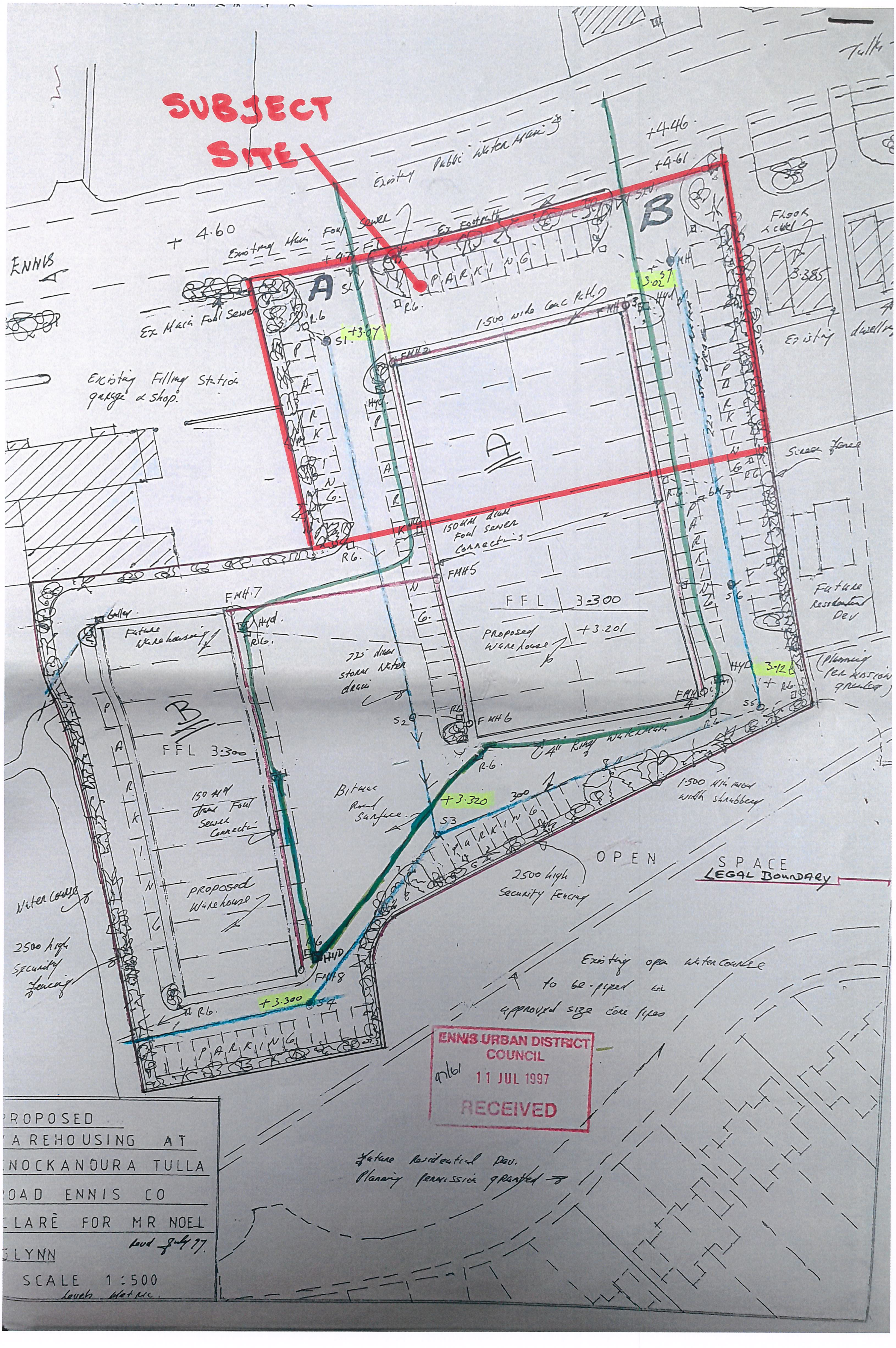
Yours sincerely,



Niall FitzGerald
Horganlynch

APPENDIX A -

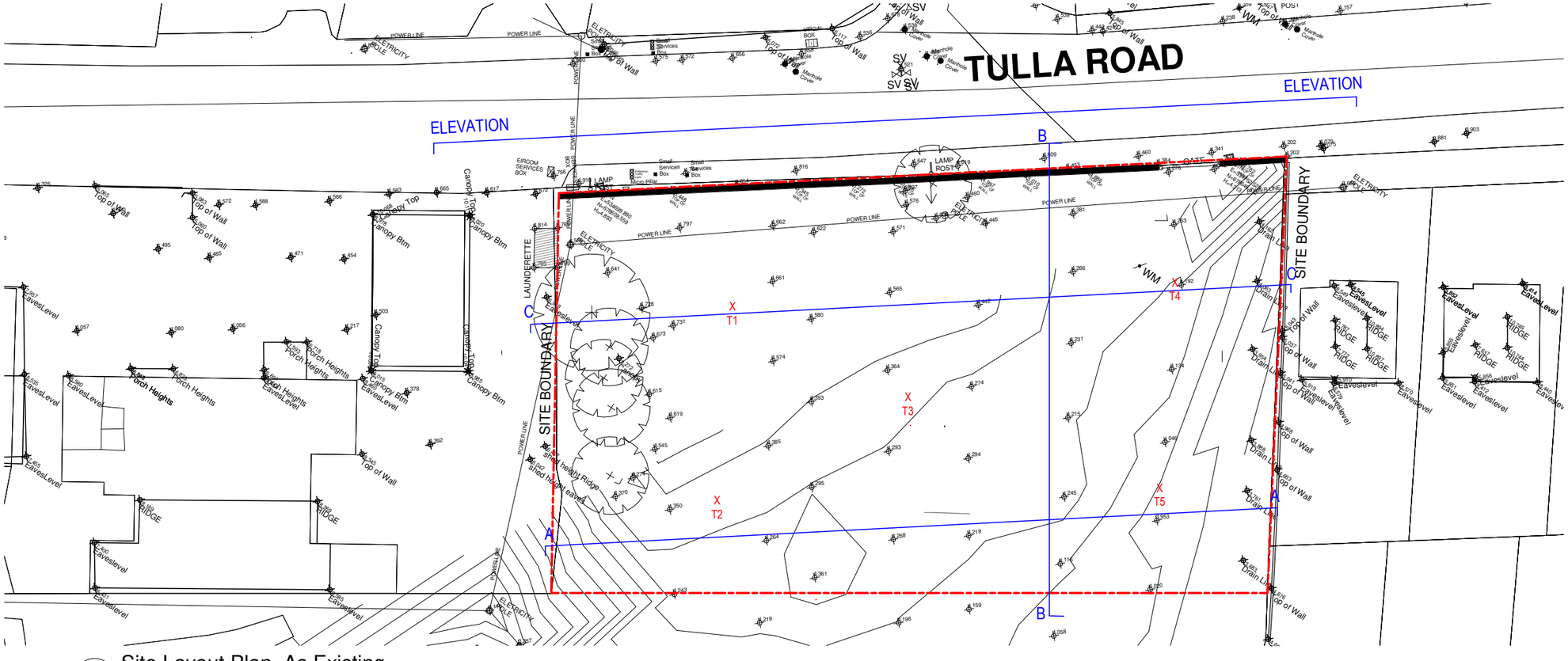
SITE LAYOUT DRAWING FROM PLANNING APPLICATION 1997 (ASSUMED PRE-EXISTING SITE LEVELS)



SUBJECT SITE
A
B
PARKING
FFL 3.300
Proposed Warehouse
FFL 3.300
Proposed Warehouse
OPEN SPACE
LEGAL BOUNDARY
ENNIS URBAN DISTRICT COUNCIL
11 JUL 1997
RECEIVED
PROPOSED
WAREHOUSING AT
KNOCKANOURA TULLA
ROAD ENNIS CO
CLARE FOR MR NOEL
GLYNN
SCALE 1:500

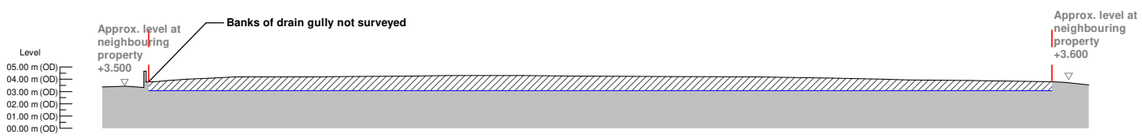
APPENDIX B-

SITE LAYOUT DRAWING NO. P18-250C-RAU-XX-XX-DR-A-1100 BY REDDY ARCHITECTURE + URBANISM
(ASSUMED EXISTING SITE LEVELS)



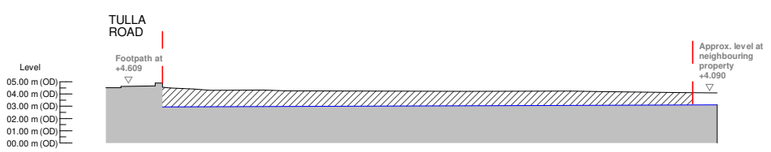
01 Site Layout Plan, As Existing

1 : 500



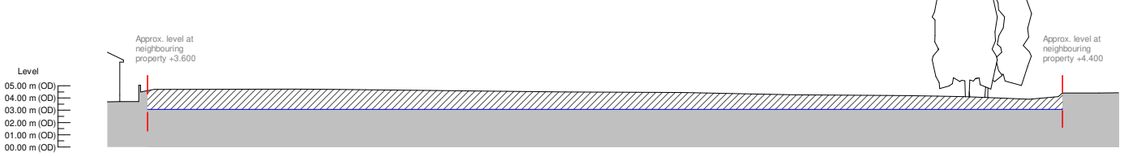
02 Section AA

1 : 500



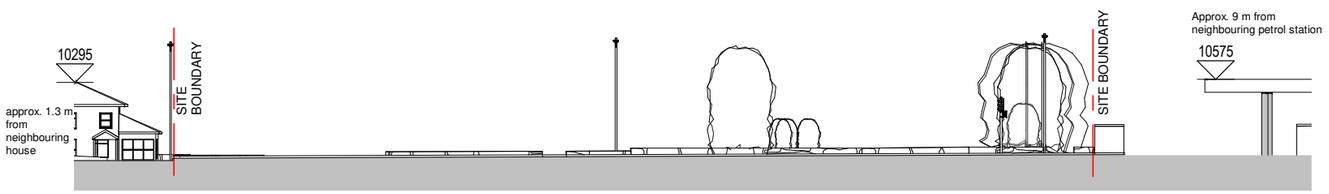
03 Section BB

1 : 500



04 Section CC

1 : 500



05 Elevation From Tulla Rd.

1 : 500

Notes:

DO NOT SCALE FROM THIS DRAWING. USE FIGURED DIMENSIONS IN ALL CASES. VERIFY DIMENSIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE ARCHITECTS IMMEDIATELY. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE ARCHITECTS SPECIFICATION.

Drawing Notes:

ALL LEVELS ON SITE ARE ESTIMATED BASED OF SURVEY

ALL LEVELS OF NEIGHBOURING PROPERTY ARE ESTIMATED.

KEY:

REFER TO TRIAL HOLE ASSESMENT FOR DETAILS OF FILL

ESTIMATED LEVEL OF FILL, REFER TO TRIAL HOLE ASSESSMENT

X T1 TRIAL HOLE REFERENCE

N

REV	DATE	DRN	Description
P03	2022.03.02	HA	Issued for Planning
P02	2021.12.16	HA	Issued for Planning
P01	2021.12.07	HA	Issued for Planning

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Cork, T12 P088

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W: www.reddyarchitecture.com
E: info@reddyarchitecture.com

Client Details:
Valley Healthcare Fund

Project Details:
Tulla Road, Ennis, Co. Clare

Drawing Title:
Site Plan and Section

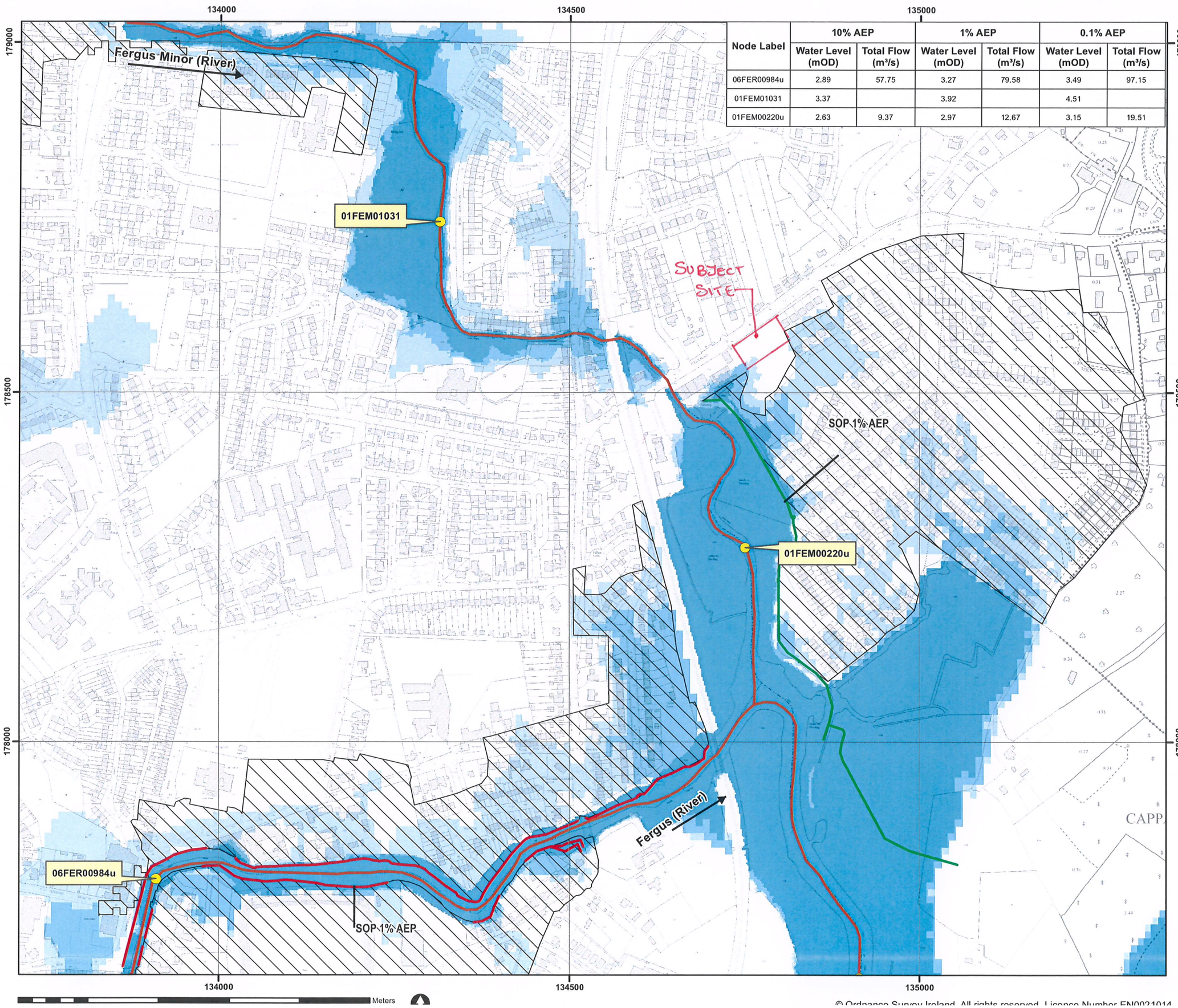
Job No	Date	Scale@A3
P18-250C	07/12/2021	1 : 500
Status: S2 - Issued for Planning		Drawn By: HA
Purpose: 3.0 Planning		Checked By: P O'Brien
Drawing Number: P18-250C-RAU-XX-XX-DR-A-1100		Revision: P03

A3 Landscape

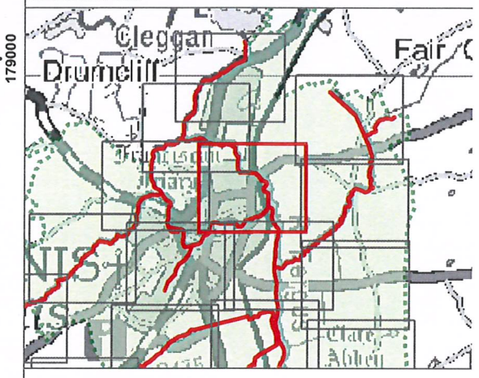
APPENDIX C –

FLOOD EXTENT MAPS 2016

Node Label	10% AEP		1% AEP		0.1% AEP	
	Water Level (mOD)	Total Flow (m^3/s)	Water Level (mOD)	Total Flow (m^3/s)	Water Level (mOD)	Total Flow (m^3/s)
06FER00984u	2.89	57.75	3.27	79.58	3.49	97.15
01FEM01031	3.37		3.92		4.51	
01FEM00220u	2.63	9.37	2.97	12.67	3.15	19.51



Location Plan:



Legend:

- Nodes
- Model Reach
- AFA Boundary
- Flood Defence: Wall
- Flood Defence: Embankment
- Defended Area

10% AEP Fluvial Flood Extent
(1 in 10 chance in any given year)

1% AEP Fluvial Flood Extent
(1 in 100 chance in any given year)

0.1% AEP Fluvial Flood Extent
(1 in 1000 chance in any given year)

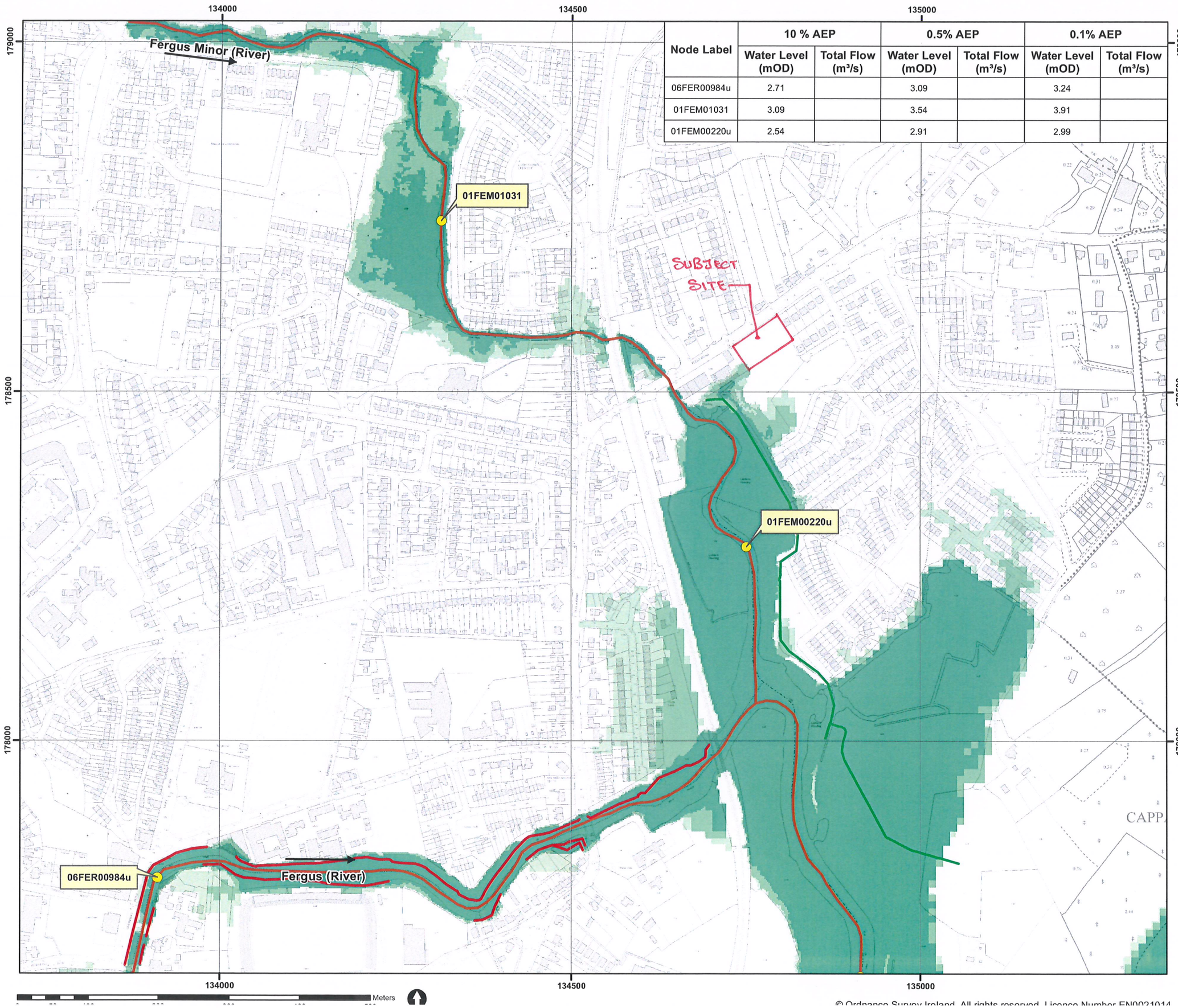
IMPORTANT USER NOTE:
THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP.

The Office of Public Works
Jonathan Swift Street
Trim
Co. Meath
C15 NX36

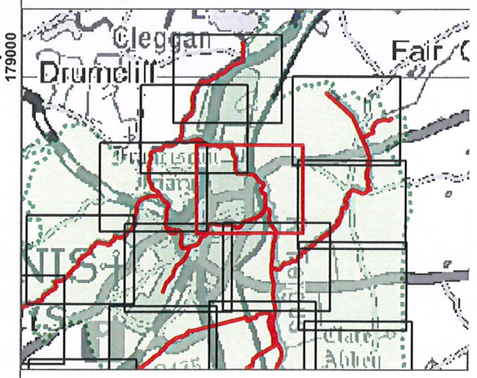
Merrion House
Merrion Road
Dublin 4
D04 R2C5

Project:	SHANNON CFRAM STUDY
Map Type:	EXTENT
Source:	FLUVIAL
Area:	ENNIS
Scenario:	EXISTING
Drawn by: GH	Date: JUNE 2016
Checked by: AC	Date: JUNE 2016
Reviewed by: MC	Date: JUNE 2016
Approved by: PS	Date: JUNE 2016
Map Number:	S27ENS_EXFCD_F1_09
Sheet: 9 of 22	Revision: 0

Node Label	10 % AEP		0.5% AEP		0.1% AEP	
	Water Level (mOD)	Total Flow (m^3/s)	Water Level (mOD)	Total Flow (m^3/s)	Water Level (mOD)	Total Flow (m^3/s)
06FER00984u	2.71		3.09		3.24	
01FEM01031	3.09		3.54		3.91	
01FEM00220u	2.54		2.91		2.99	



Location Plan:



Legend:

- Nodes
- Model Reach
- AFA Boundary
- Flood Defence: Wall
- Flood Defence: Embankment
- Defended Area

10% AEP Coastal Flood Extent
(1 in 10 chance in any given year)

0.5% AEP Coastal Flood Extent
(1 in 200 chance in any given year)

0.1% AEP Coastal Flood Extent
(1 in 1000 chance in any given year)

IMPORTANT USER NOTE:
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C15 NX36

Merrion House
Merrion Road
Dublin 4
D04 R2C5

Project:		SHANNON CFRAM STUDY
Map Type:		EXTENT
Source:		COASTAL-TIDAL
Area:		ENNIS
Scenario:		EXISTING
Drawn by:	EF	Date: JUNE 2016
Checked by:	AC	Date: JUNE 2016
Reviewed by:	PT	Date: JUNE 2016
Approved by:	PT	Date: JUNE 2016
Map Number:		S27ENS_EXCCD_F1_09
Sheet: 9 of 22		Revision: 0