From:	Duncan, Brian (DfI)
To:	Fearon, Ciaran
Subject:	Content Manager DfI Container : IN1-20-10926 : Planning Management DfI - Devt. Management - Planning Applications - Newry, Mourne & Down DC - 2 Infill detached houses & detached garages - approximately 55m NW of 5 Upper Fathom Road, Fathom Lower, Newry, BT35 8NY - LA07/2020/0982/F
Date:	07 December 2020 09:27:00
Attachments:	Planning Management DfI - Devt. Management - Planning Applications - Newry, Mourne & Down DC - 2 Infill detached houses & ~ LA07 2020 0982 F.tr5

------< Content Manager Record Information >------

Record Number: IN1-20-10926
Title: Planning Management DfI - Devt. Management - Planning Applications - Newry, Mourne & Down DC - 2 Infill detached houses & detached garages - approximately 55m NW of 5 Upper Fathom Road, Fathom Lower, Newry, BT35 8NY - LA07/2020/0982/F

Department for Infrastructure
An Roinn Bonneagair
www.infrastructure-ni.gov.uk

DfI Rivers Planning Advisory Modelling Unit

Newry, Mourne & Down District Council
Planning Office
O'Hagan House
Monaghan Row
Newry
BT35 8DL

44 Seagoe Industrial Estate
CRAIGAVON
Co. Armagh
BT63 5QE
Tel: 028 3839 9118

Your Ref: LA07/2020/0982/F
Our Ref: IN1-20-10926

FAO

Date: 24th August 2020

Dear Sir,

Re: Proposed erection of 2 No. Rural infill detached dwelling houses and detached garages, rural entrance pillars and gates, additional landscaping and associated site works at lands at approximately 55 metres North West of No.5 Upper Fathom Road, Fathom Lower, Newry, BT35 8NY.

With reference to your consultation dated 4th August 2020, from a drainage and flood risk aspect my comments are as follows:-

A Drainage Assessment is required (See FLD 3 below).

There are no watercourses which are designated under the terms of the Drainage (Northern Ireland) Order 1973, within the bounds of the site. The site may be affected by undesignated watercourses of which we have no record.

DfI Rivers Planning Advisory Modelling Unit having considered the proposal in line with the current Revised Planning Policy Statement 15 "Planning and Flood Risk" dated September 2014. Planning Advisory comments below on Flood Risk as a result of this proposal are:

FLD1 - Development in Fluvial and Coastal Flood Plains – Not applicable to this site.

FLD2 - Protection of Flood Defence and Drainage Infrastructure – Not applicable to this site.

FLD3 - Development and Surface Water – For this application DfI Rivers advises that in accordance with the Revised PPS 15, Planning and Flood Risk, FLD 3, Development and Surface Water (Pluvial) Flood Risk outside Flood Plains, a **drainage assessment is required** as the following threshold has been exceeded:

- It is a change of use involving new buildings and or hard surfacing exceeding 1000 square metres

The Revised Policy PPS 15 FLD 3 states that the Drainage Assessment demonstrates that adequate measures will effectively mitigate flood risk. In carrying out the drainage assessment (refer to Annex D of the Revised PPS 15: Assessing Flood Risk and Drainage Impact) the applicant should acquire from the relevant authority evidence that the proposed storm water run-off from the site can be safely discharged**.** The Drainage Assessment will have to demonstrate how the development will limit/restrict the surface water discharge from the site to **Pre-development** run-off rates.

In order to comply with NI Water Sewer for adaption, please supply within the Drainage Assessment:
a) evidence of any attenuation calculations to show that the system will not flood any part of the site in a 1 in 30 year designed event whilst retaining a 300mm free-board within the manholes network and
b) carry out checks and show that during exceedence of the 1 in 30 year pipe design for up to a 1 in 100 year return period, that the properties will not flood and the flow path and location of surplus storage on site.

If the proposal is to discharge into a watercourse then an application should be made to the local DfI Rivers office for consent to discharge storm water under Schedule 6 of the Drainage (NI) Order 1973. **Any Schedule 6 agreement should be included within the Drainage Assessment to confirm DfI Rivers local area office is in agreement to this proposed arrangement.**

If it is proposed to discharge storm water into an NI Water system then a Pre-Development Enquiry should be made and if a simple solution cannot be identified then a Network Capacity

Check should be carried out. **Correspondence with both authorities should be included in the drainage assessment regardless of outcome.**

Consideration should be given to the use of SuDs as the preferred drainage solution and the surface water discharge from the site limited to **Pre-development** run-off rates.

FLD4 - Artificial Modification of watercourses – Not applicable to this site.

FLD5 - Development in Proximity to Reservoirs – Not applicable to this site**.**

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Under the terms of Schedule 6 of the Drainage (NI) Order 1973, any proposals either temporary or permanent, in connection with the development which involves interference with any watercourses such as culverting, bridging, diversion, building adjacent to or discharging storm water etc requires the written consent of DfI Rivers. This should be obtained from the Eastern Regional Office at Ravarnet House, Altona Road, Largymore, Lisburn BT27 5QB.

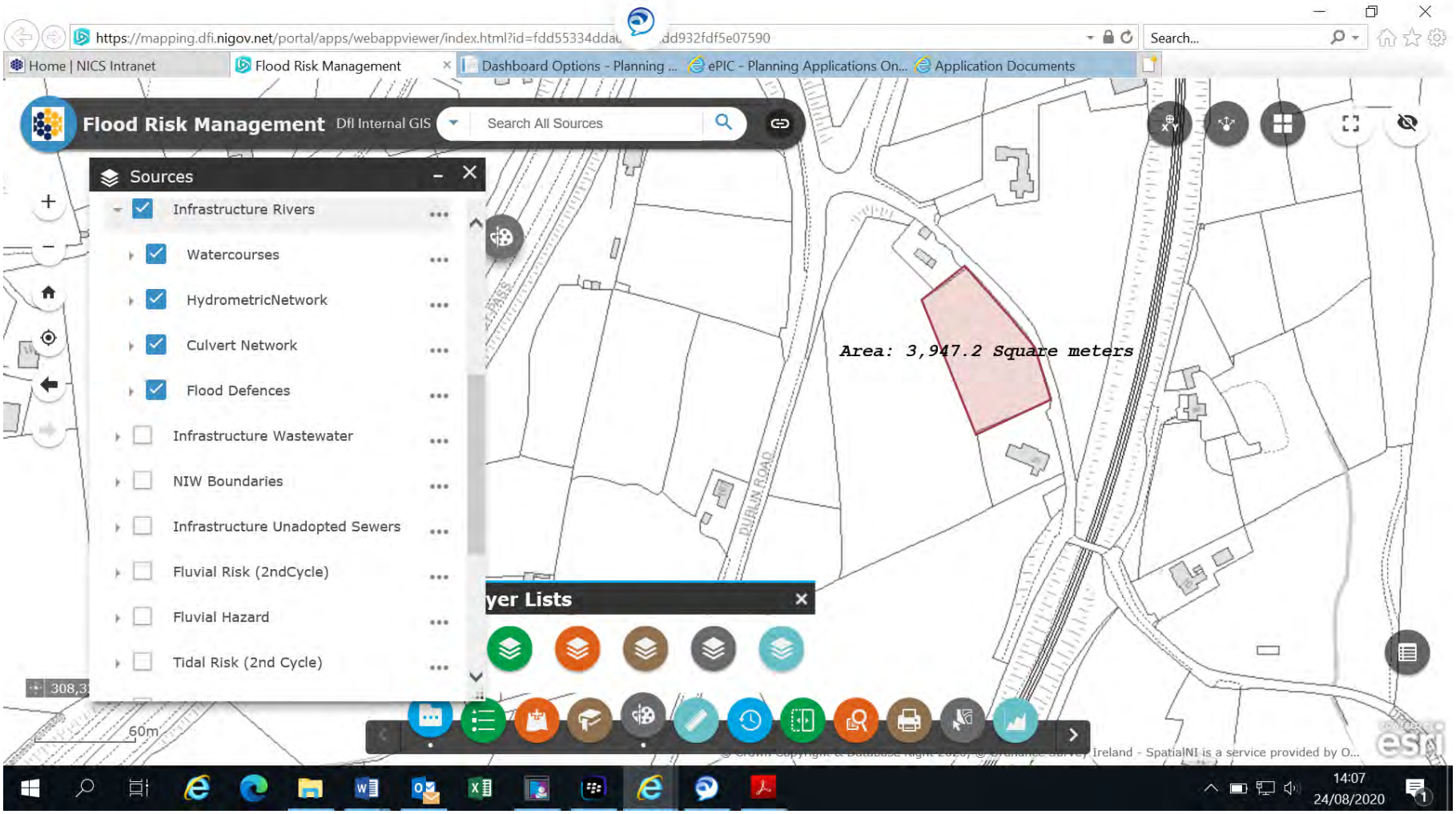
Planning Informatives

In addition to the foregoing points DfI Rivers would recommend that planning informatives as follows should be included in any planning decisions.

Informative Numbers E01, E02, E03, E06.

Please quote our reference number above on any future correspondence.

Ciaran Fearon
Planning Advisory Modelling Unit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Home | NICS Intranet
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Dashboard Options - Planning ...
ePIC - Planning Applications On...
Application Documents
Flood Risk Management
DfI Internal GIS
Search All Sources
Sources
Infrastructure Rivers
Watercourses
HydrometricNetwork
Culvert Network
Flood Defences
Infrastructure Wastewater
NIW Boundaries
Infrastructure Unadopted Sewers
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Fluvial Hazard
Tidal Risk (2nd Cycle)
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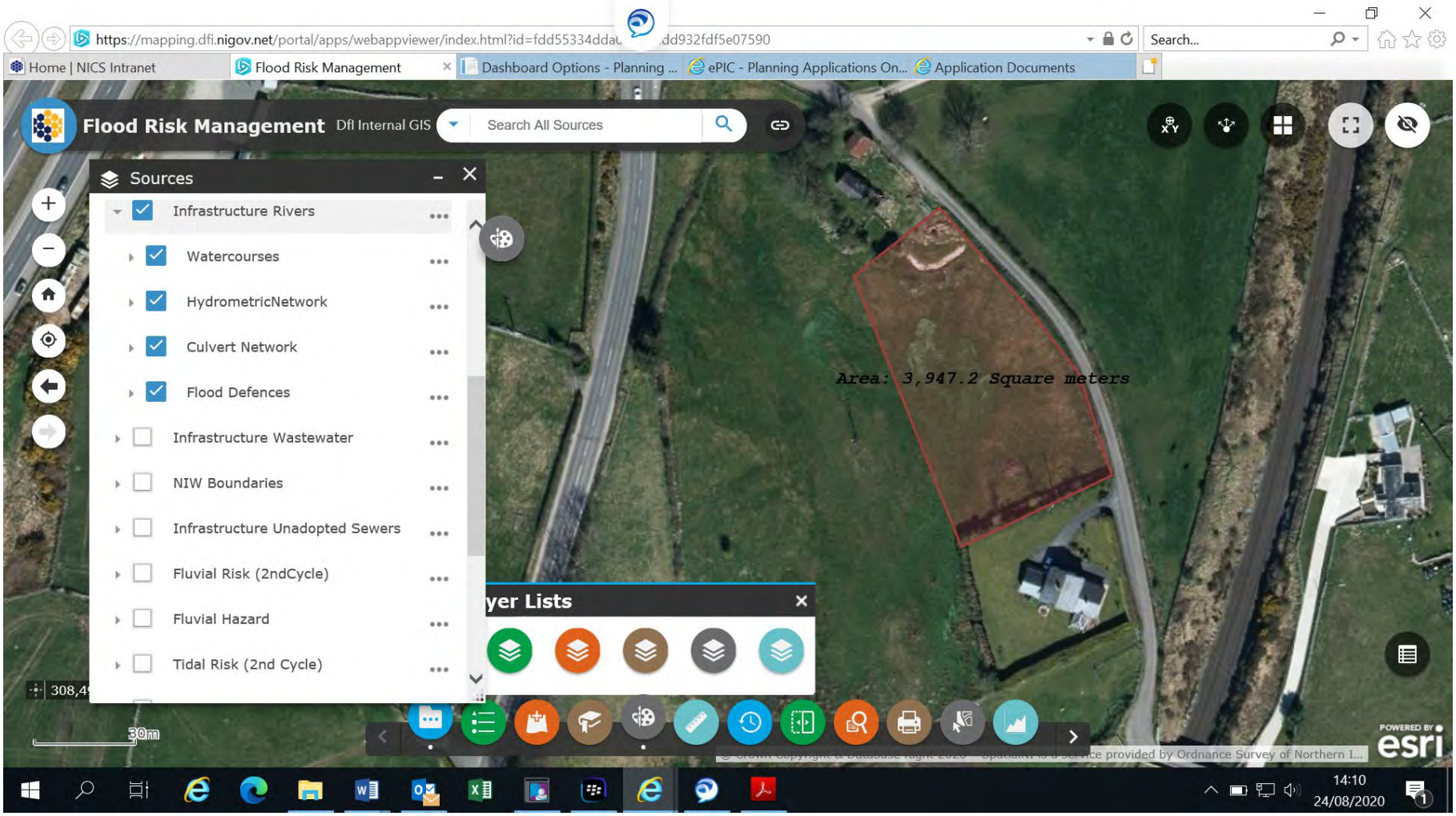
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Dashboard Options - Planning ...
ePIC - Planning Applications On...
Application Documents
Flood Risk Management
Dfl Internal GIS
Search All Sources
Sources
Infrastructure Rivers
Watercourses
HydrometricNetwork
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Flood Defences
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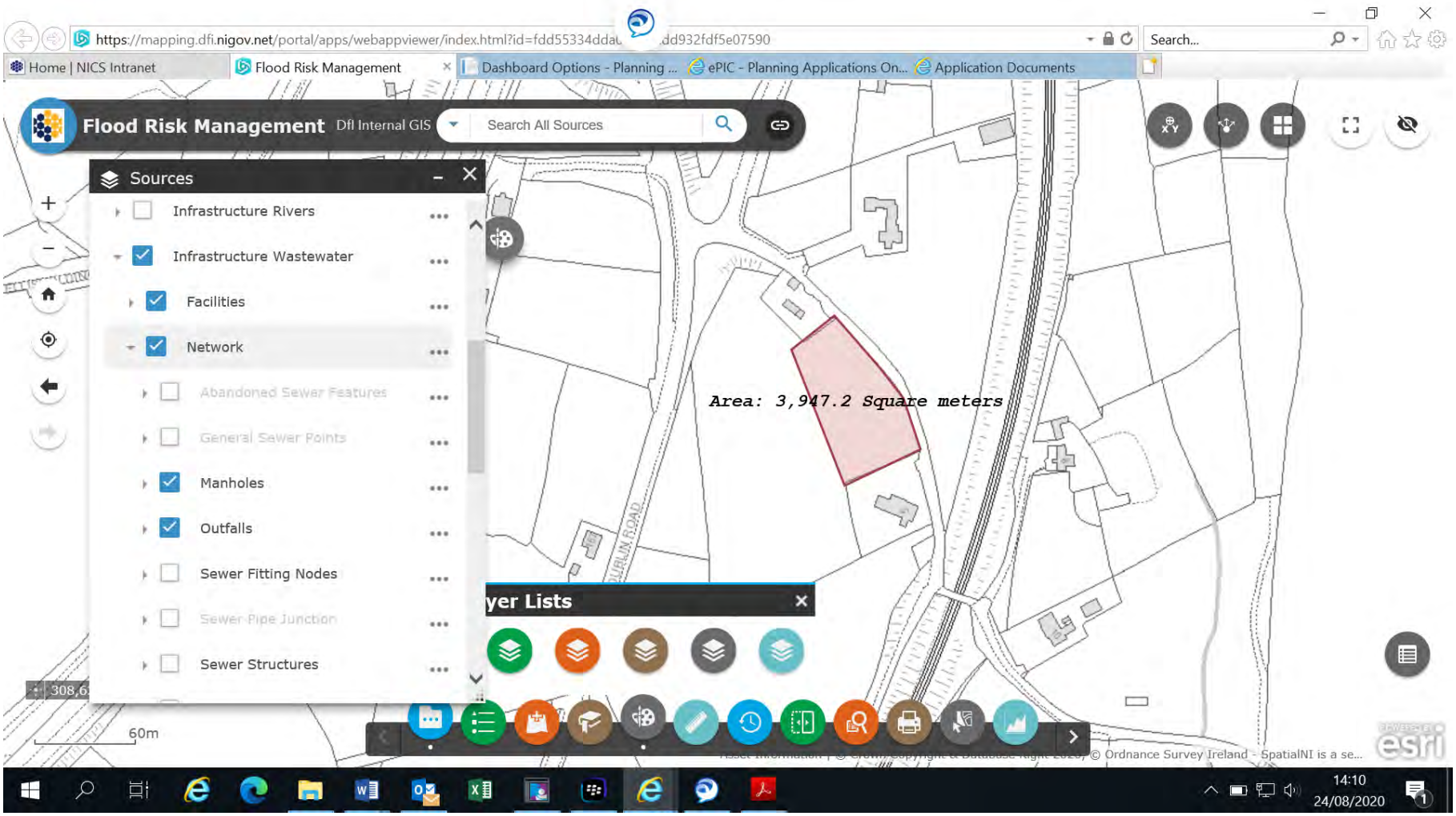
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Home | NICS Intranet
Flood Risk Management
Dashboard Options - Planning ...
ePIC - Planning Applications On...
Application Documents
Flood Risk Management
DfI Internal GIS
Search All Sources
Sources
Infrastructure Rivers
Infrastructure Wastewater
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General Sewer Points
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Sewer Fitting Nodes
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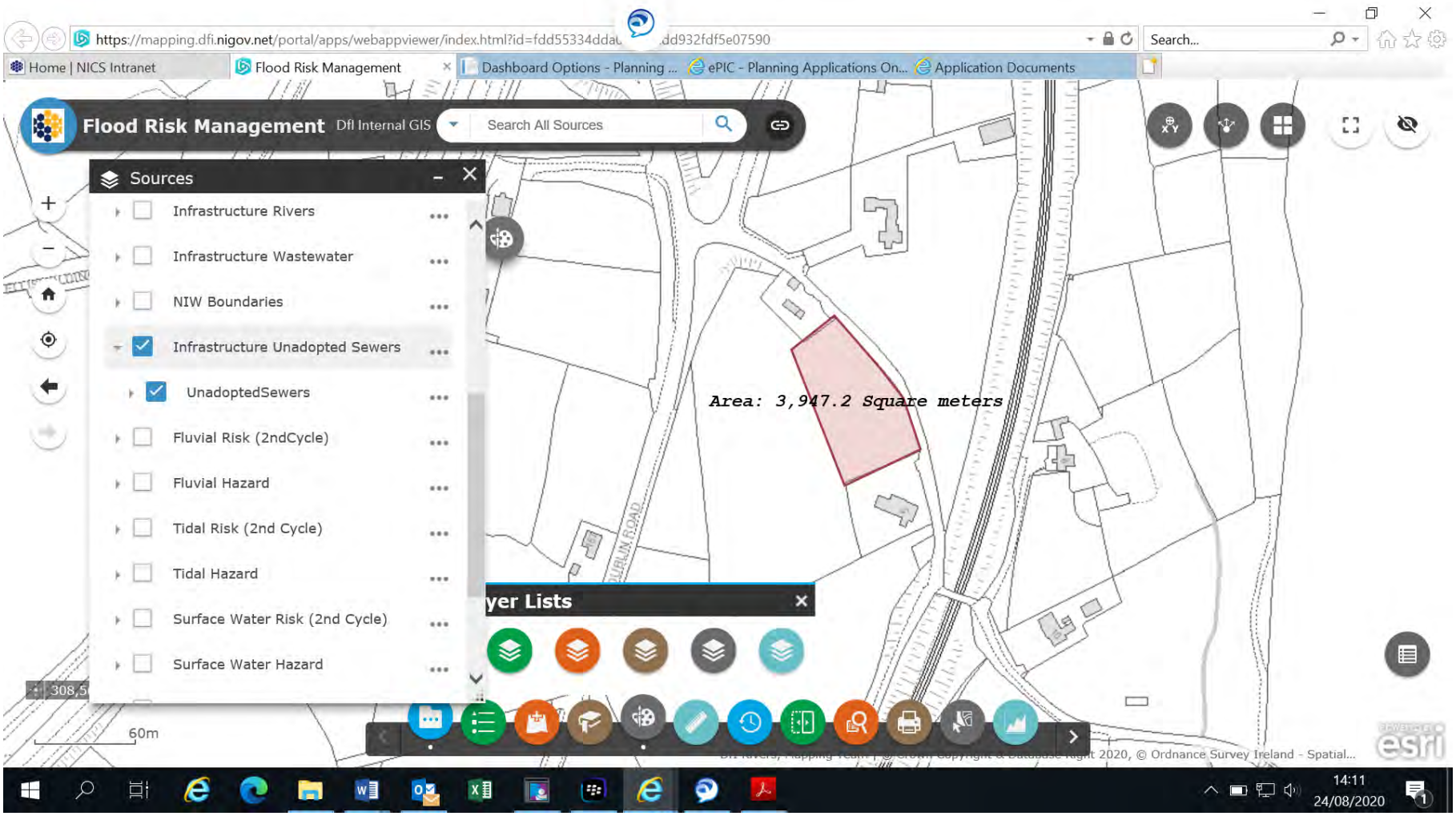
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Dashboard Options - Planning ...
ePIC - Planning Applications On...
Application Documents
Flood Risk Management
DfI Internal GIS
Search All Sources
Sources
Infrastructure Rivers
Infrastructure Wastewater
NIW Boundaries
Infrastructure Unadopted Sewers
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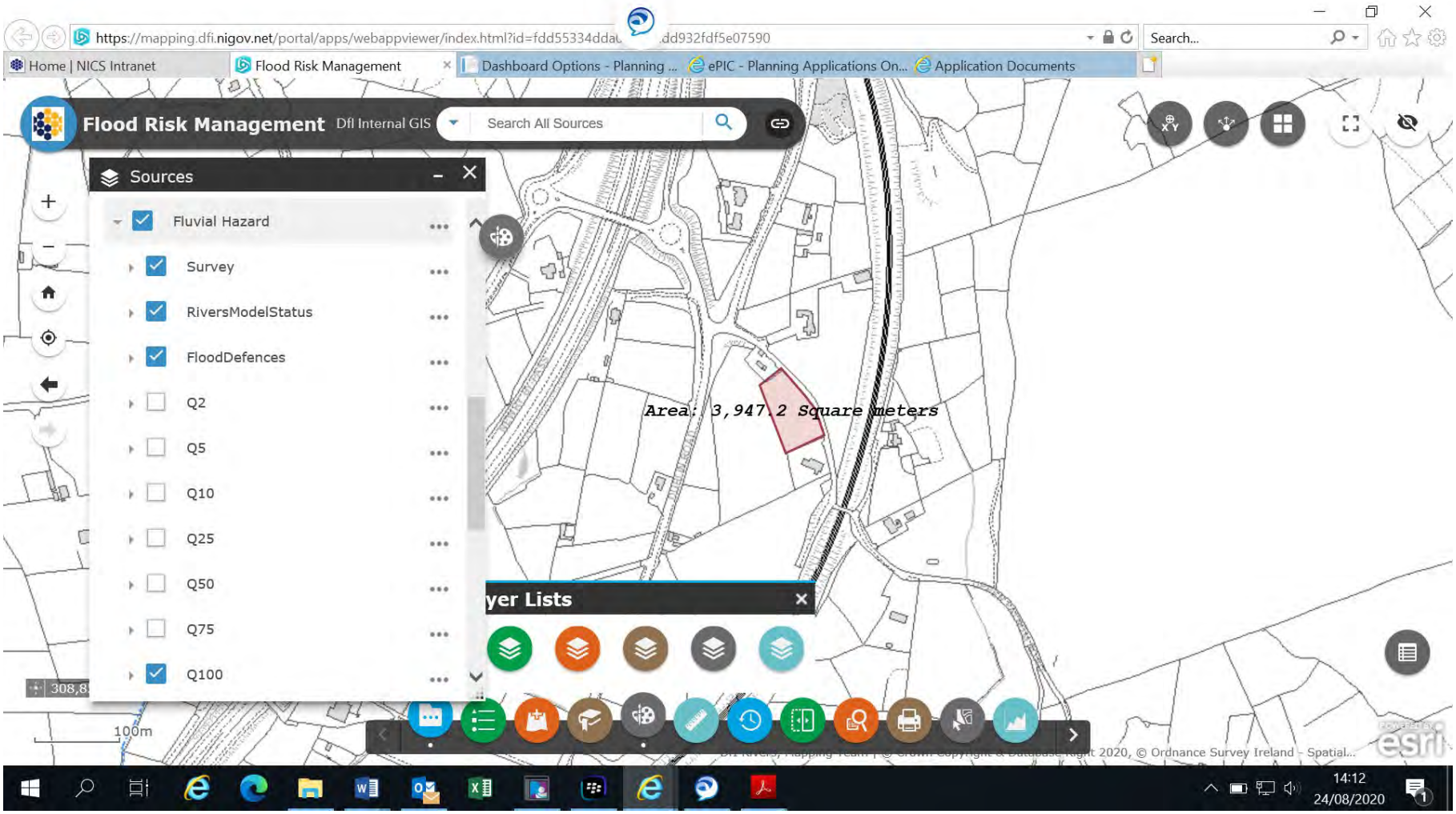
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Home | NICS Intranet
Flood Risk Management
Dashboard Options - Planning ...
ePIC - Planning Applications On...
Application Documents
Flood Risk Management
DfI Internal GIS
Search All Sources
Sources
Fluvial Hazard
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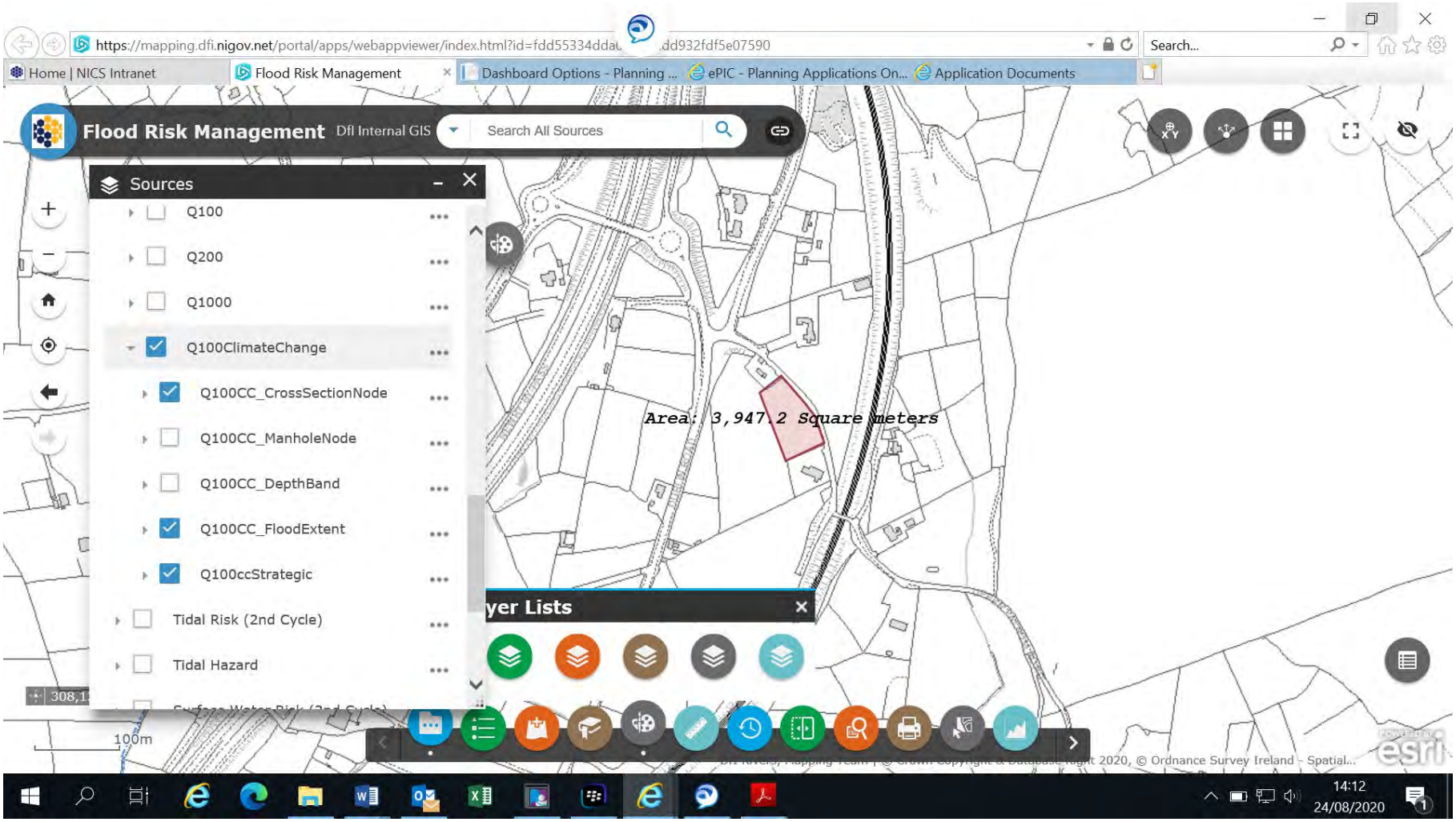
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Flood Risk Management
Dashboard Options - Planning ...
ePIC - Planning Applications On...
Application Documents
Flood Risk Management
DfI Internal GIS
Search All Sources
Sources
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Q200
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Q100CC_ManholeNode
Q100CC_DepthBand
Q100CC_FloodExtent
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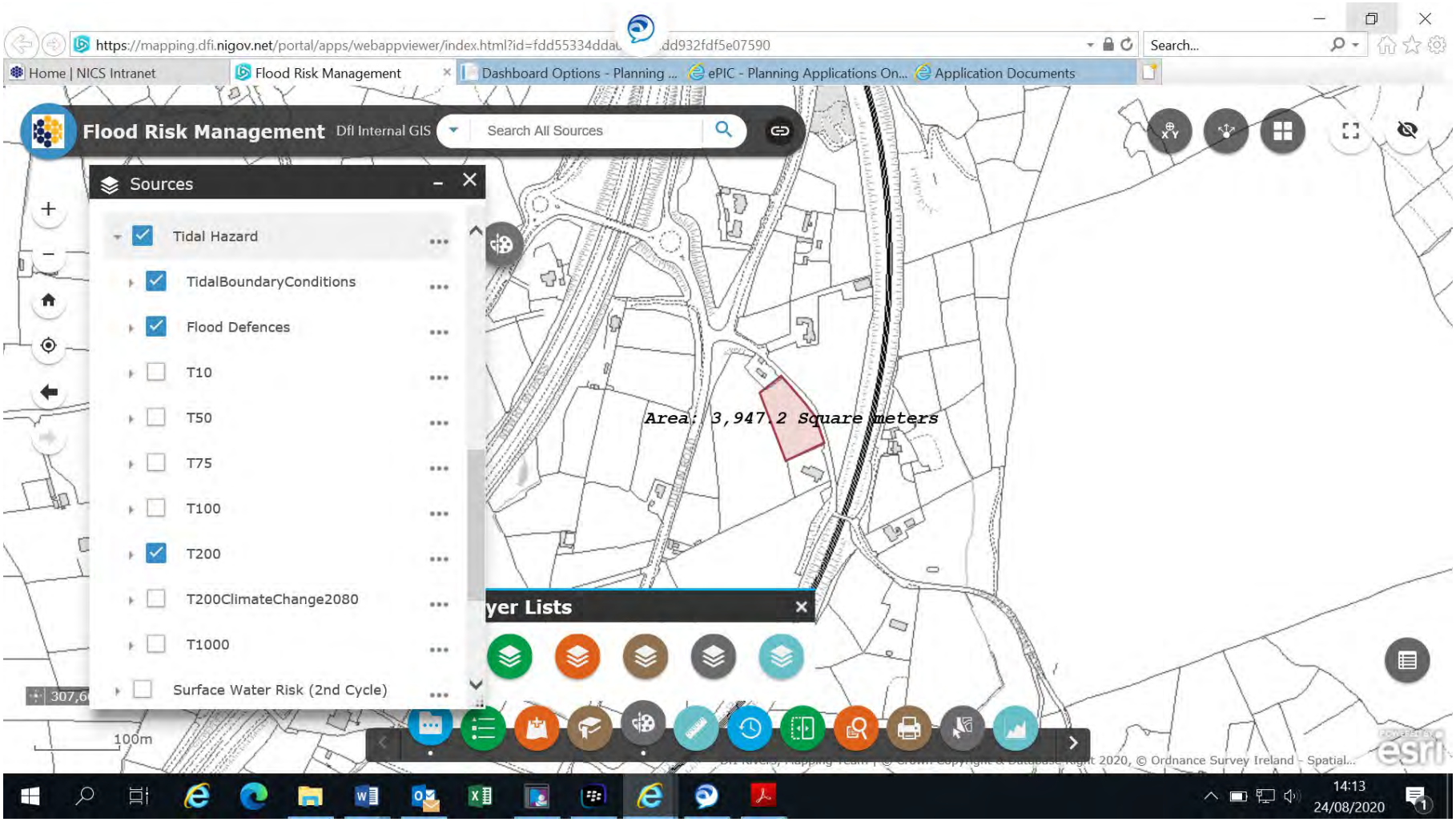
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Flood Risk Management
Dashboard Options - Planning ...
ePIC - Planning Applications On...
Application Documents
Flood Risk Management
DfI Internal GIS
Search All Sources
Sources
Tidal Hazard
TidalBoundaryConditions
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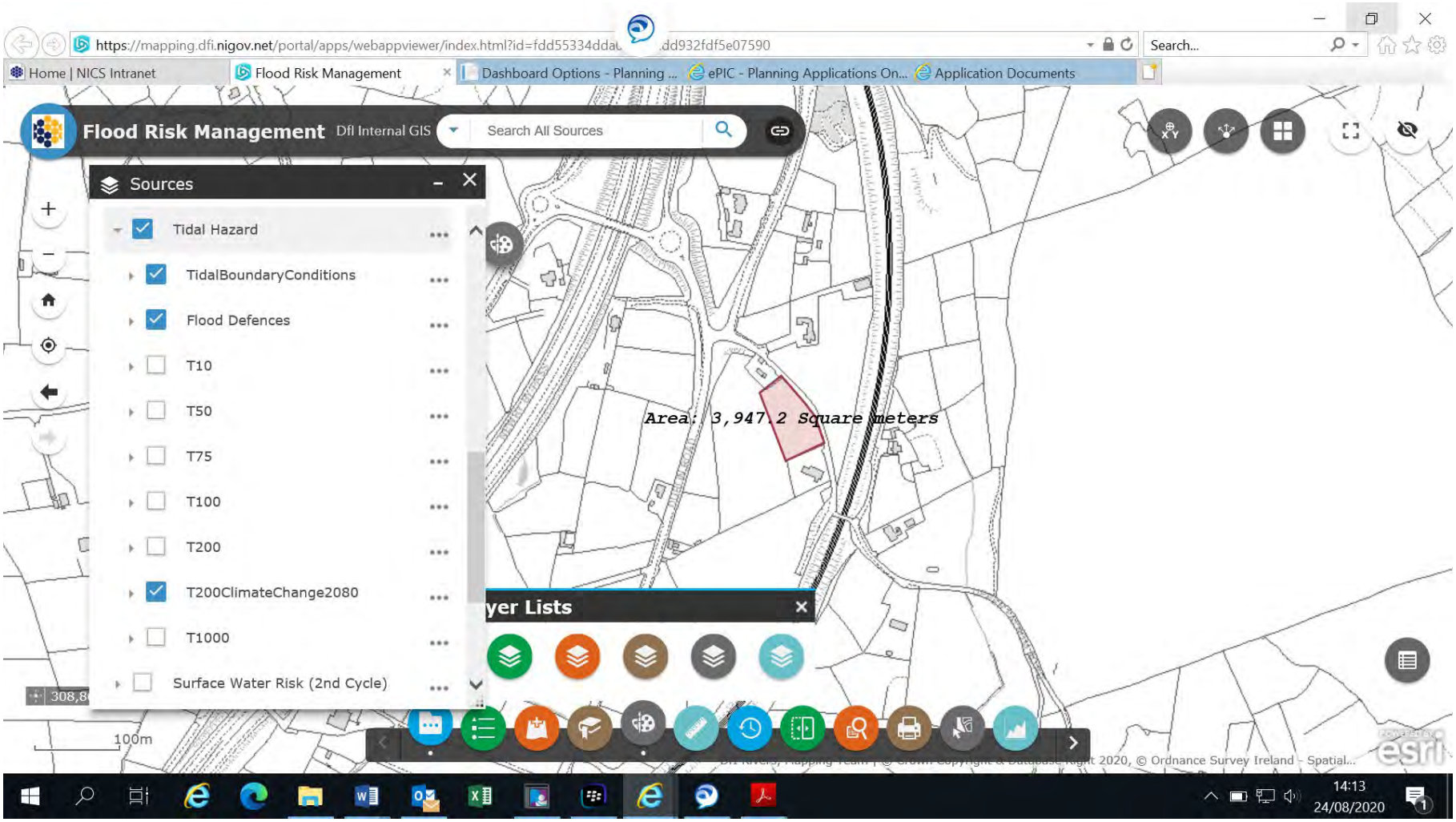
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Dashboard Options - Planning ...
ePIC - Planning Applications On...
Application Documents
Flood Risk Management
DfI Internal GIS
Search All Sources
Sources
Tidal Hazard
TidalBoundaryConditions
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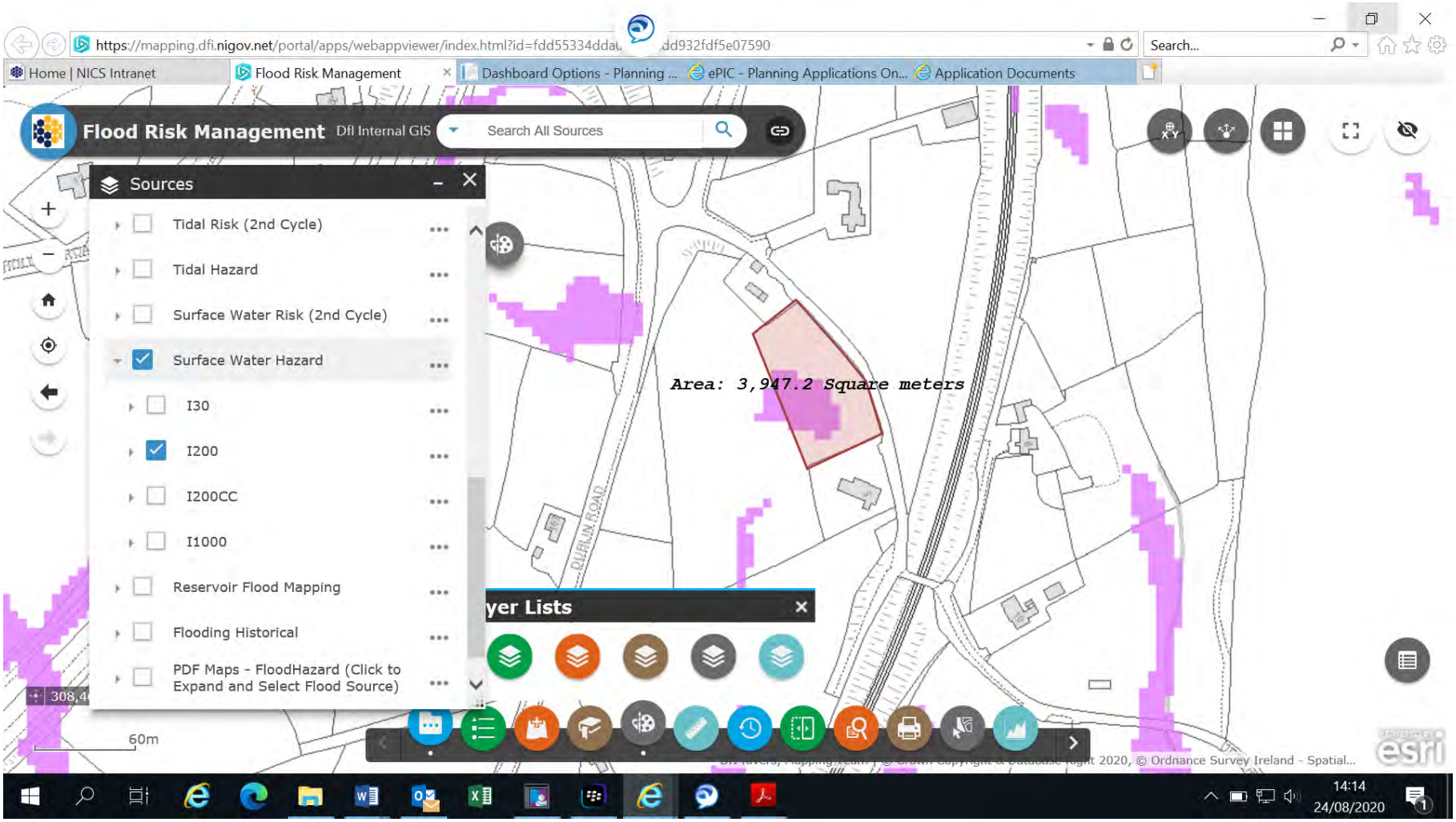
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Reservoir Flood Mapping
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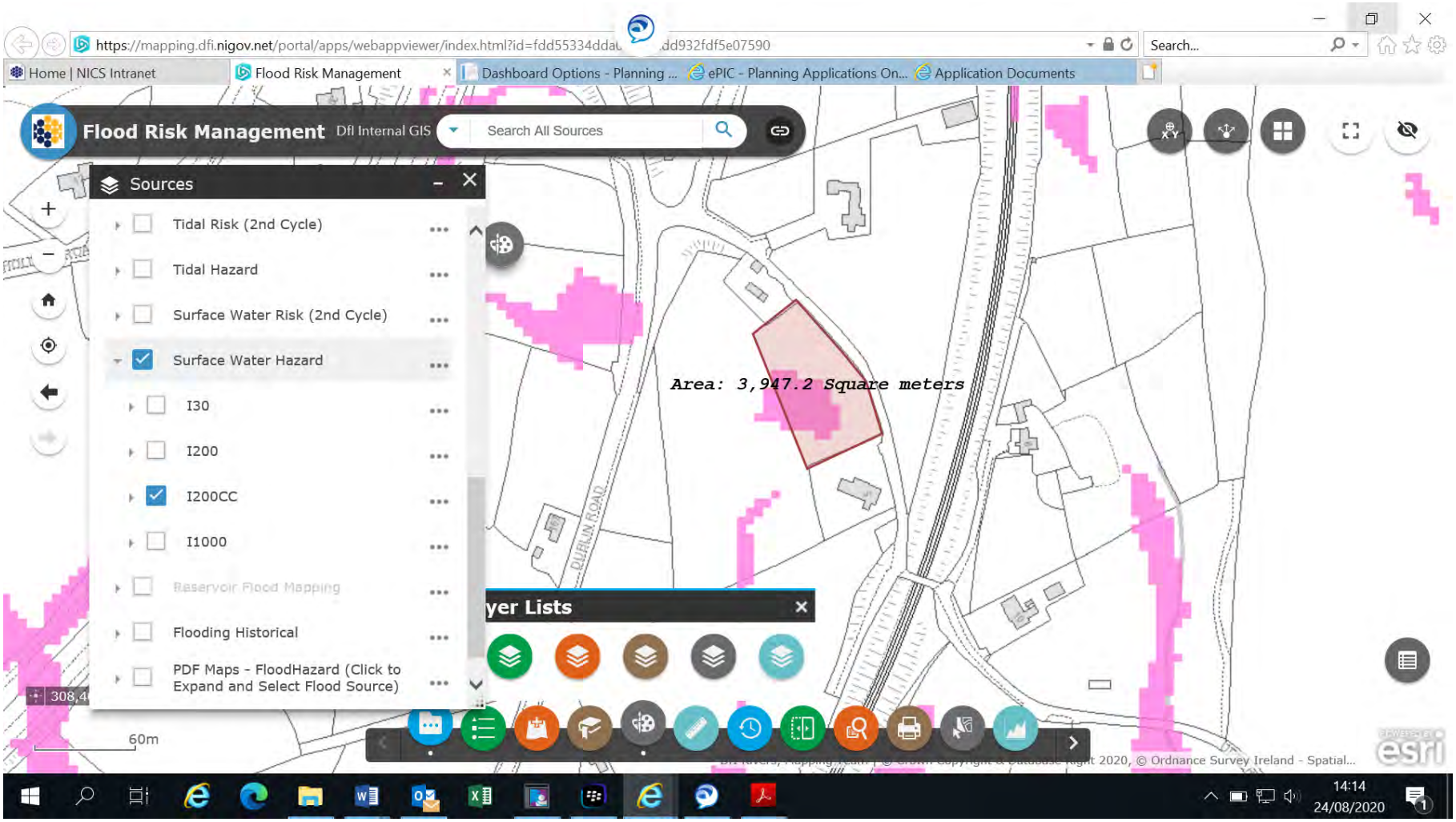
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Sources
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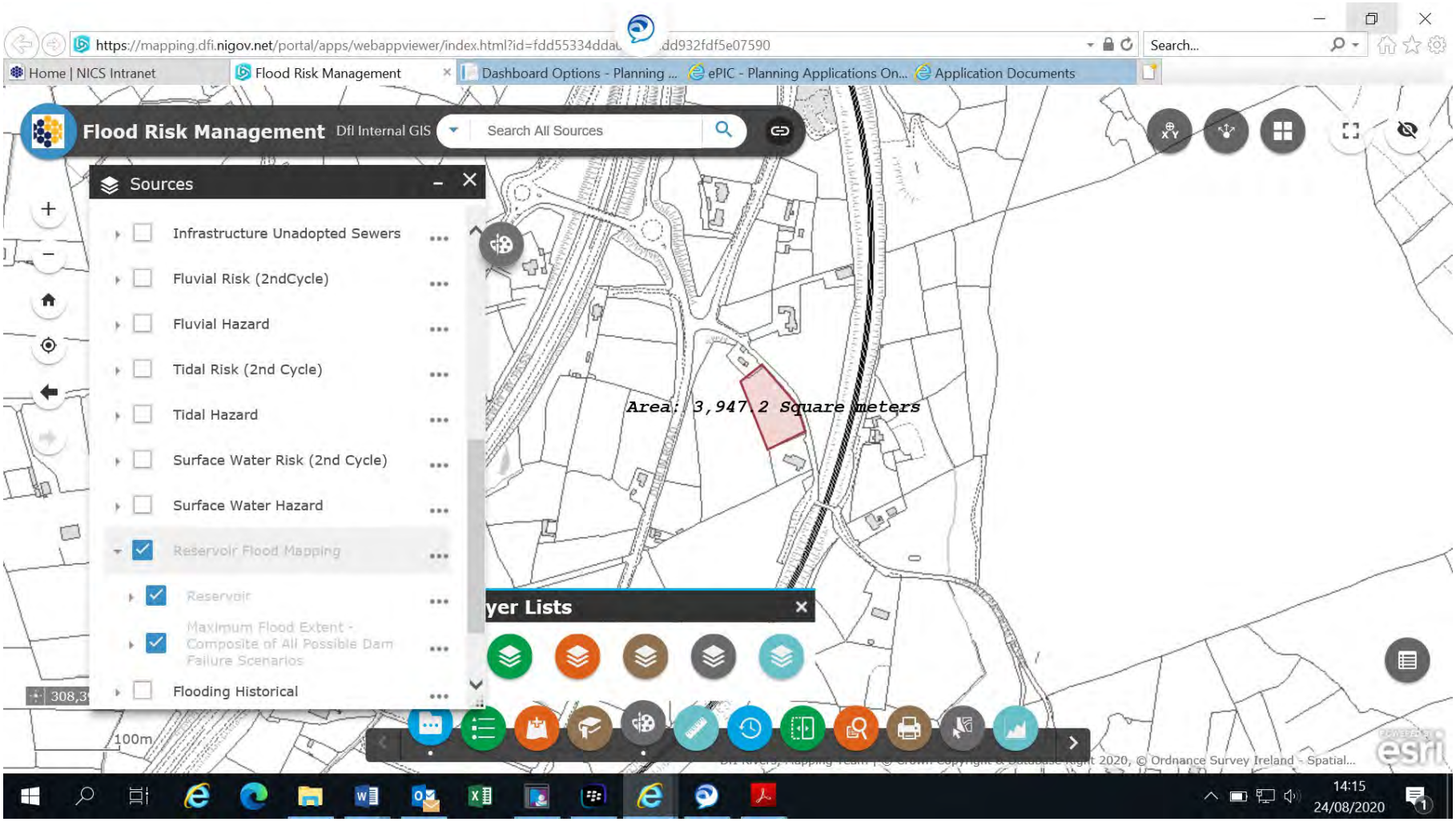
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Sources
Infrastructure Unadopted Sewers
Fluvial Risk (2ndCycle)
Fluvial Hazard
Tidal Risk (2nd Cycle)
Tidal Hazard
Surface Water Risk (2nd Cycle)
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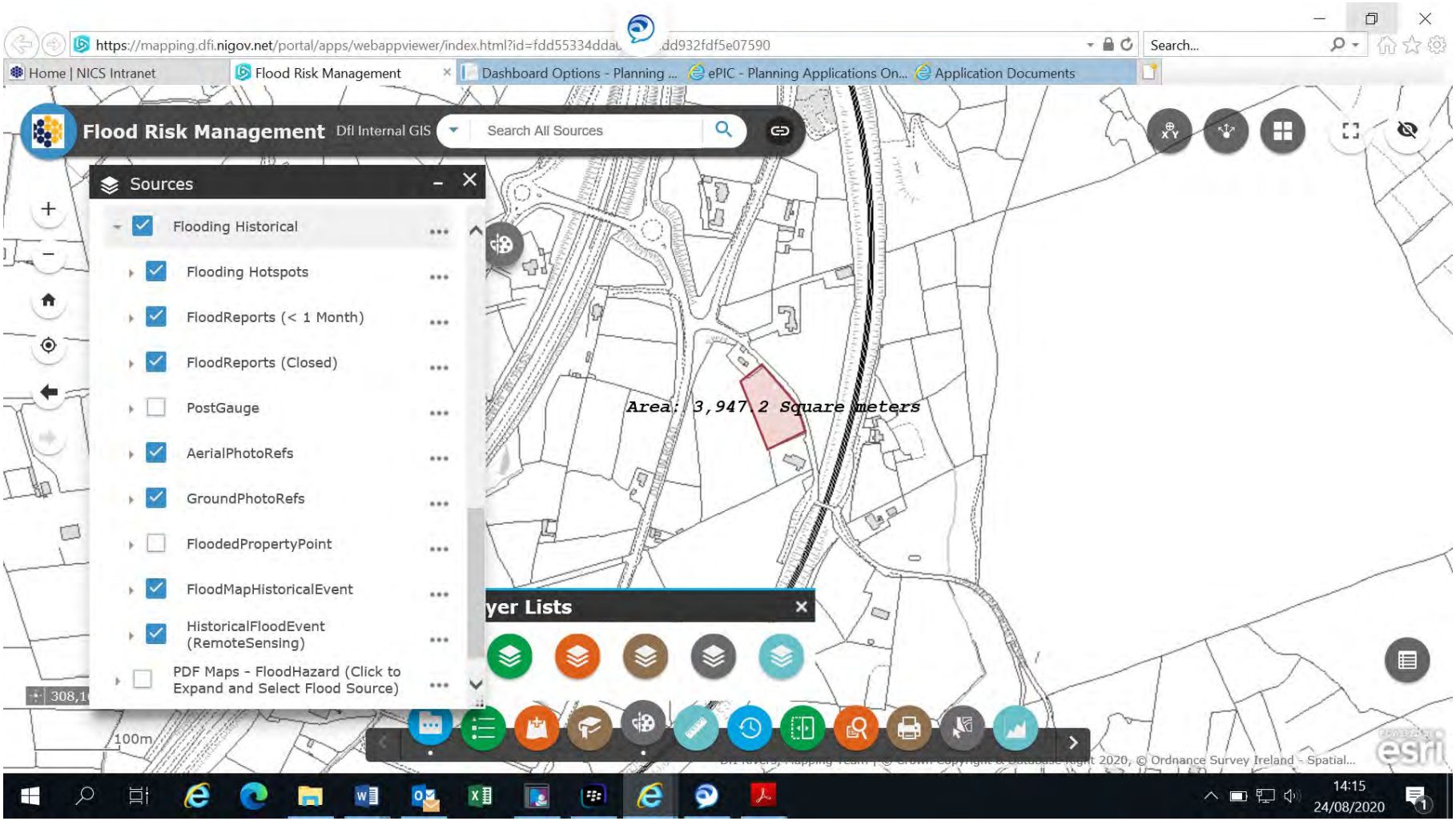
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Home | NICS Intranet
Flood Risk Management
Dashboard Options - Planning ...
ePIC - Planning Applications On...
Application Documents
Flood Risk Management
DfI Internal GIS
Search All Sources
Sources
Flooding Historical
Flooding Hotspots
FloodReports (< 1 Month)
FloodReports (Closed)
PostGauge
AerialPhotoRefs
GroundPhotoRefs
FloodedPropertyPoint
FloodMapHistoricalEvent
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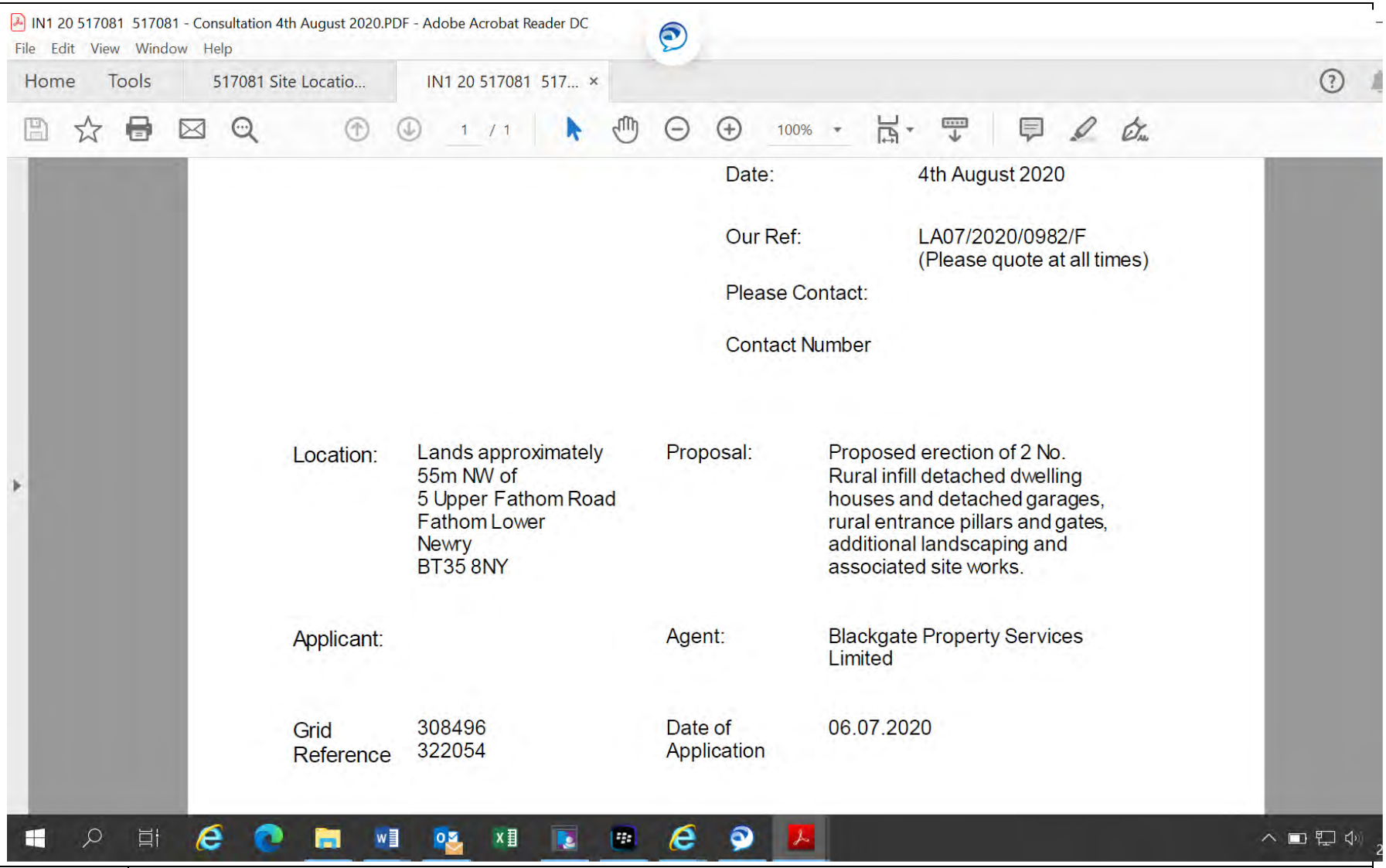
Site Checklist

Snip from Planning consultation **Showing Location** **Planning ref** **Grid ref**	

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Date: 4th August 2020

Our Ref: LA07/2020/0982/F
(Please quote at all times)

Please Contact:

Contact Number

Location:	Lands approximately 55m NW of 5 Upper Fathom Road Fathom Lower Newry BT35 8NY	Proposal:	Proposed erection of 2 No. Rural infill detached dwelling houses and detached garages, rural entrance pillars and gates, additional landscaping and associated site works.
Applicant:		Agent:	Blackgate Property Services Limited
Grid Reference	308496 322054	Date of Application	06.07.2020

HPRM No:	IN1-20-10926
Planning Ref	LA07/2020/0982/F

Past consultation / Sch 6 / Advice			
Assessed by	Ciaran Fearon	**Date**	24/08/2020

Site Details

Watercourse?	~~Designated / Undesignated /~~ None	WatercourseName
Describe existing site	Greenfield ~~/ Brownfield~~	
Describe site proposals	**Proposed erection of 2 No. Rural infill detached dwelling houses and detached garages, rural entrance pillars and gates, additional landscaping and associated site works**	
Site photos taken?	No	
Area of site (ha)	0.39 ha	
Area of additional Hardstanding (m^2)	Circa 2000m2	

PPS 15 consideration

FLD 1

Does Site lie within Strategic Floodplain?	~~Fluvial~~	~~Coastal~~	~~Partially?~~
Is floodplain modelled?	~~Yes~~	No	Q100 Level =
Is better definition of Floodplain required? (D6 Planning Policy Statement 15)	~~Yes~~	No	
Is the Strategic Flood Map accurate in your opinion and why?	~~Yes~~	No	
Does the site lie behind a flood/sea defence?	~~Yes~~	No	Condition / grade / freeboard
Is there a historical flood map?	~~Yes~~	No	
Is there a historical flood photo?	~~Yes~~	No	
Any recorded flood call outs in vicinity?	~~Yes~~	No	

Any anecdotal flooding EG FROM OBJECTOR'S LETTER	~~Yes~~	No	
Any flood wrack?	~~Yes~~	No	
Request FRA?	~~Yes~~	No	

FLD 1 - comments

FLD 2

Is watercourse open or culverted	~~open~~	~~culverted~~	
Is watercourse designated?	~~Yes~~	~~No~~	
Is maintenance strip available?	~~Yes~~	~~No~~	~~Drawing No reference?~~
Is maintenance strip accessible?	~~Yes~~	~~No~~	
Is maintenance strip level with w/c?	~~Yes~~	~~No~~	~~Cross section required?~~

FLD 2 - comments

FLD 3

Request Drainage Assessment (as per PPS 15 Annex D).	Yes ~~/ No~~	~~Over 1ha~~	~~Over 10 houses~~	Over 1000m^2 additional hardstanding	
		~~Evidence of a history of surface water flooding~~			
		~~Surface water runoff may adversely impact upon other development~~			
overland flow affects site (D17 Planning Policy Statement 15)		~~Yes~~	No	N/A	
OLF affects another site (D17 Planning Policy Statement 15)		~~Yes~~	No		
tide locking		~~Yes~~	No		

mill race/sluices	~~Yes~~	No	
hollow site	Yes	~~No~~	Pluvial flooding in centre of site
culverts / manholes on site (exceedance esp if they block or undersized D2 Planning Policy Statement 150	~~Yes~~	No	
small minor open watercourse (catchment<3km2)	~~Yes~~	No	
groundwater if proposal is underground	~~Yes~~	No	
any proposed approved infilling may slip into open w/c or compromise future w/c maintenance	~~Yes~~	No	
grille	~~Yes~~	No	
is maintenance access to grille and / or culverted w/c available? If not a flood risk arises (6.32 Planning Policy Statement 15)	~~Yes~~	~~No~~	
open watercourse maintenance strip available?(6.32 Planning Policy Statement 15)	~~Yes~~	~~No~~	
watermain	~~Yes~~	No	
lake, lagoon or pond	~~Yes~~	No	
DfI Rivers gauging station affected?	~~Yes~~	No	
is site affected by pluvial (purple)	Yes	~~No~~	
will any Infilling impede natural overland flow paths?	~~Yes~~	No	
any proposed building over culverts (6.33 Planning Policy Statement 15)?	~~Yes~~	No	

FLD 3 - comments

FLD 4

Any proposed culverting , artificial modification	~~Yes~~	No	

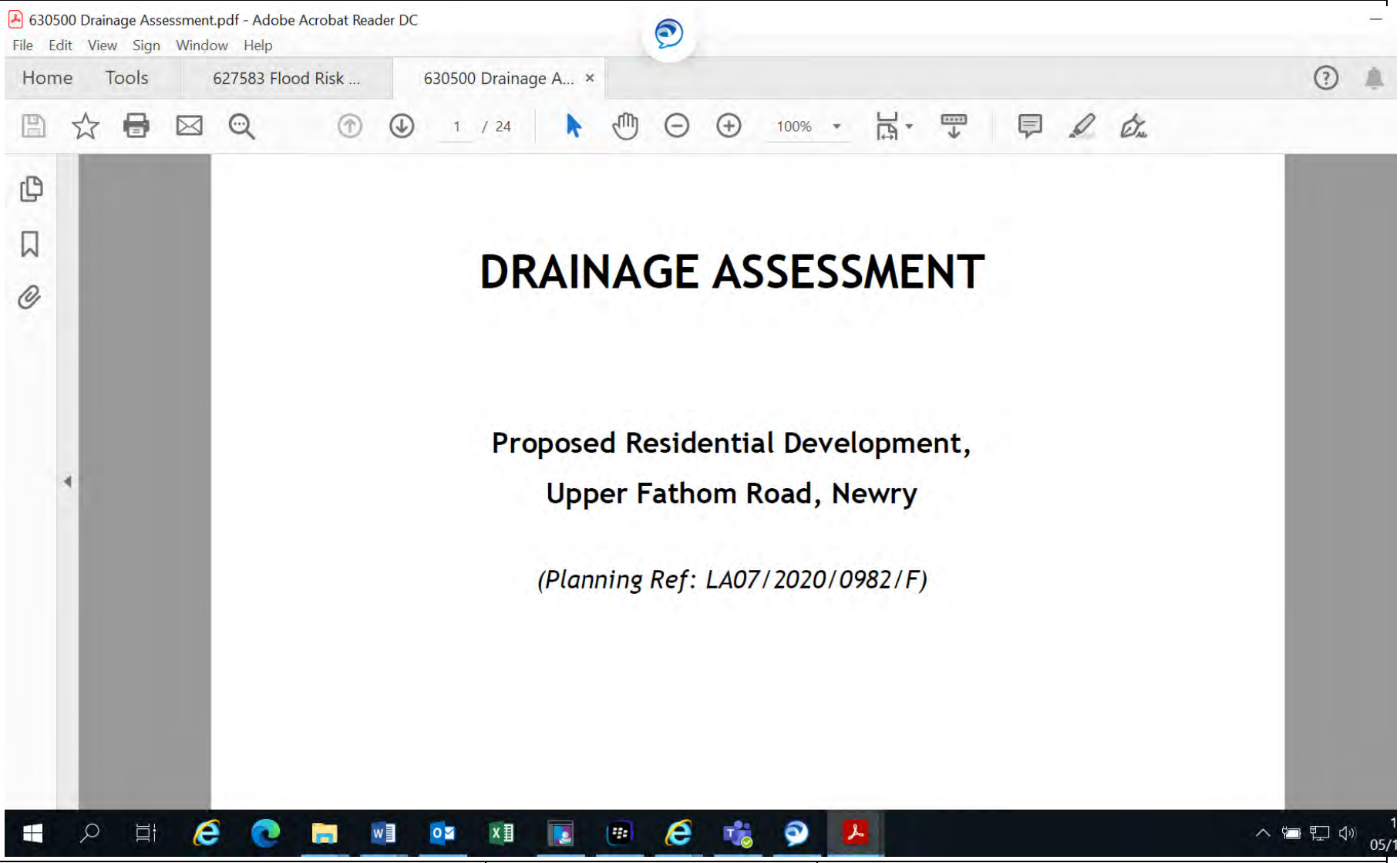
FLD 4 - comments

FLD 5

Is site within reservoir inundation?	~~Yes~~	No	
Does reservoir have condition assurance?			

FLD 5 - comments

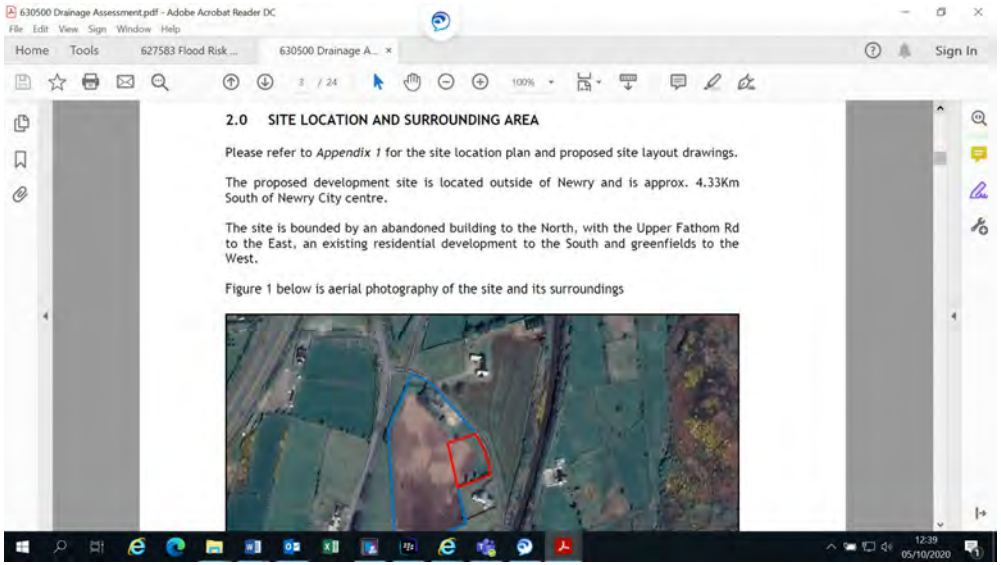
DRAINAGE ASSESSMENT CHECKLIST

DA title - Screen shot of Title Page			
Revision	0	**Report Date**	14/09/2020

No.			
Planning Ref	LA07/2020/0982/F	**TRIM Ref**	IN1-20-10926
Assessed by	Ciaran Fearon	**Date**	05/10/2020

Include any relevant screen shots from the report in the respective sections below.

PPS 15 Annex D, Paragraph D3 - Sources of flood risk to be considered in a DA. **A Drainage Assessment should consider the flood risk mainly from pluvial flooding where the proposed development is located beyond the fluvial and / or coastal flood plain or a reservoir flood inundation area. It should then identify measures that can be adopted to control and mitigate the risk of flooding to the development or elsewhere as a result of it and include for the safe disposal of surface water runoff from the site.**			
PPS 15 Annex D, Paragraph D17 - What information should be in a Drainage Assessment	**COMMENTS (Delete as appropriate)**		
D17.01 - A location plan as detailed under paragraph D6 i.e. A location plan to a suitable scale, which clearly illustrates geographical features and identifies the catchment, watercourses in the vicinity and the built development;	**Satisfactory**	~~**Unsatisfactory**~~	~~**Not provided**~~
DfI Rivers comments:			
D17.02 - A site plan as detailed under paragraph D7 i.e. A site plan (and where appropriate, cross sections) showing pre- development and post-development levels related to Ordnance Datum Belfast, existing structures, development proposals, watercourses in or bounding the site, internal site drainage and drainage outfalls;	**Satisfactory**	~~**Unsatisfactory**~~	~~**Not provided**~~
DfI Rivers comments:			
D17.03 - Confirmation as to whether the proposed development is to be located on previously developed land (that may have minimal impact on the existing drainage network);	**Greenfield**	~~**Brownfield**~~	~~**Not provided**~~
DfI Rivers comments:			

			
D17.04 - Indication as to whether the local area has past flooding problems, which may limit site discharge to the local drainage and watercourses to pre- development run-off rates;	**Satisfactory**	~~**Unsatisfactory**~~	~~**Not provided**~~
DfI Rivers comments: ***Note that the DA should consider historical flooding, and if there is no previous history of flooding, this should be stated clearly in the DA.*** No recorded history od flooding.			
D17.05 - Identification of likely overland flow paths including depth, velocities, timing and sequence of inundation;	**Satisfactory**	~~**Unsatisfactory**~~	~~**Not provided**~~
DfI Rivers comments: OLF to the site? OLF from the site? Attenuation to 1 in 100 year storm.			
D17.06 - An assessment of hydraulic capacity and structural integrity of all drains and sewers within or bounding the site, which may result in	~~**Satisfactory**~~	~~**Unsatisfactory**~~	~~**Not provided**~~

out of sewer flooding. The methodologies for assessment must be clearly identified;			
DfI Rivers comments: D2 FOOTNOTE 21 Infrastructure failure should also be considered as a potential source of flooding, which may occur as a result of a blockage or collapse within a watermain, culvert or sewer system.	~~Modelling Report?~~ ~~Catchment size?~~ ~~Flow used/return period?~~ ~~Culvert(capacity/invert/condition)?~~ ~~Mannings?~~ ~~Structures?~~ ~~Upstream/Downstream controls?~~ ~~Blockage?~~ ~~Sensitivity analysis (flow/mannings/controls/blockage. . .)~~		
D 17.07 - Data on historical flood events accompanied by supporting information as detailed in paragraph D6 i.e. Data on historical flooding events, including photographs and media reports, supported by information on rainfall, flood return periods and the probability of storm surge occurrences, where appropriate. Evidence on trends in flood occurrences and changes in the local environment since the last event is particularly valuable;	**Satisfactory**	**Unsatisfactory**	**Not provided**
DfI Rivers comments: **No recorded history of flooding**			
D17.08 - The likely impact of any displaced water or increased run-off from the development site should be estimated and the consequences for neighbouring or other locations assessed.	**Satisfactory**	**Unsatisfactory**	**Not provided**
DfI Rivers comments:	Full bore discharge? Greenfield Runoff?		**No – 2.7 l/s** **Yes**

	Pre-development runoff? Discharge rate limited by NIW? Any downstream drainage deficiencies?		**Yes – greenfield** **N/A –** **No**
D17 a - Drainage Assessment Flood Control Measures - Have internal drainage design, on site SuDS solutions (including ongoing maintenance) and exceedence been properly considered?	**Satisfactory**	**~~Unsatisfactory~~**	**~~Not provided~~**
DfI Rivers comments:	Is stormwater attenuated? Type of attenuation system? Site Area? Area of Hardstanding? Limited Discharge rate? Volume of storage? Storm return/Duration? 1 in 30 year calcs? 1 in 100 year calcs? Exceedance (within site/leaves site/effects)? Adoption? Maintenance? Drawing showing space for attenuation? Internal Drainage Design – Compliant with NI SfA and discharge consent.	**Yes** **Over sized pipes** **0.27 ha** **Circa 1500m2** **Yes – 2.7 l/s** **43.44 m3** **Yes** **Yes** **Attenuation to 1 in 100 year** **No** **No – private** **Yes** **Yes**	
D17 b - Flood Mitigation Measures - Has adequate consideration been given to:	**Satisfactory**	**~~Unsatisfactory~~**	**~~Not provided~~**

1. **Site design and layout to include infilling, ground re-profiling, raising of finished floor levels (FFL) and landscaping.** 2. **Flood resistance and resilience construction, (Annex E) where raising the building is not possible.** 3. **Ground water control and waterproofing for basement areas.**			
DfI Rivers comments: Raised FFL? Sewers for Adoption standard? Grille Blockage?			
D17 c - Safety Procedures - Has adequate consideration been given to safe emergency access and egress routes to safe areas?	**Satisfactory**	**Unsatisfactory**	**Not provided**
DfI Rivers comments:			
D18 - Consent to discharge - Has consent to discharge been obtained from NI Water or DfI Rivers?	**DfI Rivers Sch 6 Approval**	**NIW Article 161 approval**	**Swales and soakaways**
DfI Rivers comments: Sch 6 application lodged, but no confirmation of approval.	**HPRM record number x x x** **Page xxx of the DA**	**Page xxx of the DA**	**Page xxx of the DA**

Department for Infrastructure
An Roinn Bonneagair
www.infrastructure-ni.gov.uk

DfI Rivers Planning Advisory Modelling Unit

44 Seagoe Industrial Estate
CRAIGAVON
Co. Armagh
BT63 5QE
Tel: 028 3839 9118

Newry, Mourne & Down District Council
Planning Office
O'Hagan House
Monaghan Row
Newry
BT35 8DL

Your Ref: LA07/2020/0982/F
Our Ref: IN1-20-10926

FAO

Date: 5th October 2020

Dear Sir,

Re: Proposed erection of 2 No. Rural infill detached dwelling houses and detached garages, rural entrance pillars and gates, additional landscaping and associated site works at lands at approximately 55 metres North West of No.5 Upper Fathom Road, Fathom Lower, Newry, BT35 8NY.

With reference to your consultation dated 17th September 2020, from a drainage and flood risk aspect my comments are as follows:-

DfI Rivers PAMU acknowledge receipt of the Drainage Assessment from Sheehy Consulting dated 14th September 2020.

There are no watercourses which are designated under the terms of the Drainage (Northern Ireland) Order 1973, within the bounds of the site. The site may be affected by undesignated watercourses of which we have no record.

DfI Rivers Planning Advisory Modelling Unit having considered the proposal in line with the current Revised Planning Policy Statement 15 "Planning and Flood Risk" dated September 2014. Planning Advisory comments below on Flood Risk as a result of this proposal are:

FLD1 - Development in Fluvial and Coastal Flood Plains – Not applicable to this site.

FLD2 - Protection of Flood Defence and Drainage Infrastructure – Not applicable to this site.

FLD3 - Development and Surface Water – DfI Rivers has reviewed the Drainage Assessment by Sheehy Consulting, and our comments are as follows:-

Department for Infrastructure
An Roinn Bonneagair
www.infrastructure-ni.gov.uk

DfI Rivers PAMU note that the Schedule 6 application, made under the terms of the Drainage (Northern Ireland) Order 1973, has not yet been approved. The applicant is requested to provide this upon receipt.

DfI Rivers, while not being responsible for the preparation of the Drainage Assessment, accepts its logic and has no reason to disagree with its conclusions.

It should be brought to the attention of the applicant that the responsibility for justifying the Drainage Assessment and implementation of the proposed flood risk measures (as laid out in the assessment) rests with the developer and his/her professional advisors (refer to section 5.1 of Revised Planning Policy Statement 15).

Condition – The Local Planning Authority is requested to insert a condition to ensure that all the flood management and mitigation measures proposed, are completed in full.

Reason – To safeguard against flood risk to the development and elsewhere.

FLD4 - Artificial Modification of watercourses – Not applicable to this site.

FLD5 - Development in Proximity to Reservoirs – Not applicable to this site**.**

Under the terms of Schedule 6 of the Drainage (NI) Order 1973, any proposals either temporary or permanent, in connection with the development which involves interference with any watercourses such as culverting, bridging, diversion, building adjacent to or discharging storm water etc requires the written consent of DfI Rivers. This should be obtained from the Eastern Regional Office at Ravarnet House, Altona Road, Largymore, Lisburn BT27 5QB.

Planning Informatives

In addition to the foregoing points DfI Rivers would recommend that planning informatives as follows should be included in any planning decisions.

Informative Numbers E01, E02, E03, E06.

Please quote our reference number above on any future correspondence.

Ciaran Fearon
Planning Advisory Modelling Unit

186 Ballymaguire Road, Stewartstown,
Co. Tyrone, BT71 5NN
Tel: 028 8673 5951
www.sheehyconsulting.co.uk
info@sheehyconsulting.co.uk

SHEEHY CONSULTING

DRAINAGE ASSESSMENT

Proposed Residential Development,

Upper Fathom Road, Newry

(Planning Ref: LA07/2020/0982/F)

Project Ref: 20-1283
Issued By:
Date: 14.09.20
Rev:

Prepared by:

Chartered Engineer

Date: 14th September 2020

1.0 INTRODUCTION

Sheehy Consulting was appointed by Blackgate Property Services to carry out a Drainage Assessment (DA), in line with Planning Policy Statement 15 (PPS 15) "Planning and Flood Risk".

The planning application is for the proposed erection of 2 No. rural infill detached dwelling houses and detached garages, with proposed landscaping and associated site works on lands approximately 55 metres North West of No.5 Upper Fathom Road, Newry.

The site was visited on the 19th August 2020 by
Chartered Engineer.

2.0 SITE LOCATION AND SURROUNDING AREA

Please refer to *Appendix 1* for the site location plan and proposed site layout drawings.

The proposed development site is located outside of Newry and is approx. 4.33Km South of Newry City centre.

The site is bounded by an abandoned building to the North, with the Upper Fathom Rd to the East, an existing residential development to the South and greenfields to the West.

Figure 1 below is aerial photography of the site and its surroundings

Figure 1: Aerial Photography of Site

Figure 2.0 below shows aerial photography of the proposed site and the arrows indicate the approximate location and direction of the photographs that were taken on site.

Figure 2.0: Location & Direction of on-site Photographs

Figure 2.1: Photograph of site from Upper Fathom Road

Figure 2.2: Photograph of site from Upper Fathom Road

3.0 SURVEY INFORMATION

The topography of the existing site is that it falls from the East to the West with a 2.68m change in elevation from 129.43m in the East to 126.75m in the West.

The closest, designated watercourse is located approx. 690m South of the southern site boundary and is the Killen Branch Drain (Watercourse Number: MW4543).

There is also an undesignated watercourse approx. 45m to the south of the southern site boundary and at the edge of the other lands owned be the developer.

Figure 3 below is an extract from the Rivers Agency Designated Watercourse Mapping showing the designated watercourses in proximity to the site.

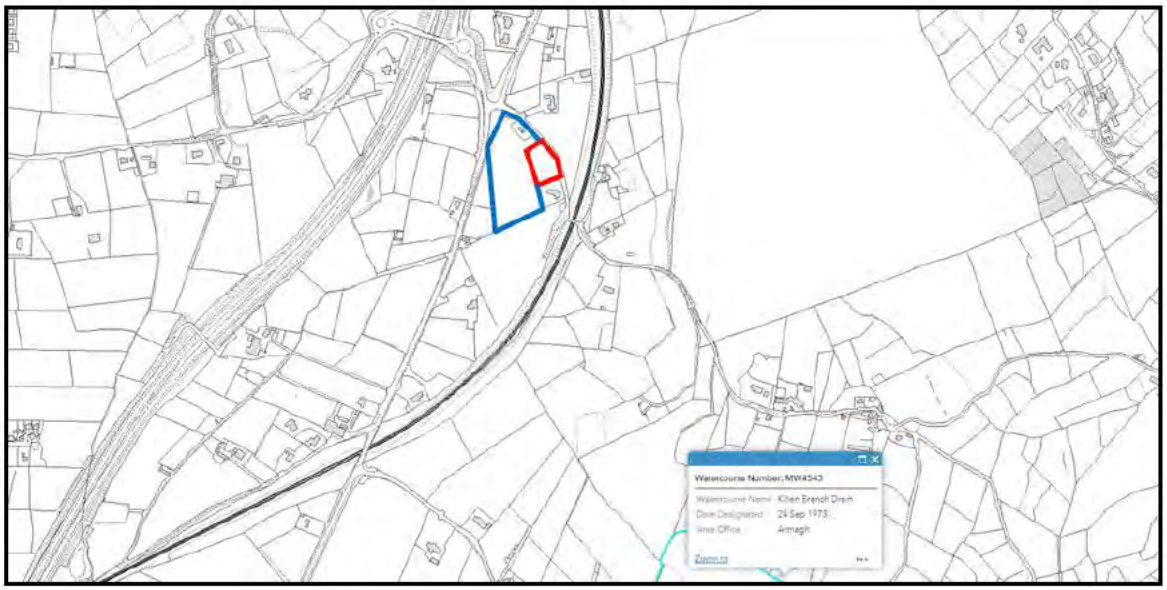


Figure 3: Designated Watercourse Mapping

4.0 RIVERS AGENCY FLOOD MAPS

Please refer to *Appendix 2* for copies of the Flood Maps corresponding to this site.

The Flood Map (NI) - Rivers & Sea has been developed by Rivers Agency in co-operation with the Department of the Environment (DOE). The primary aim of the Flood Map is to provide an illustration of the areas throughout Northern Ireland that are estimated to be at risk of flooding from rivers and the sea.

The Map is designed to:

- Help us and others to plan and manage our work to reduce flood risk.
- To encourage people living and working in areas prone to flooding to find out more and take appropriate action.
- Inform anyone who wants to apply for planning permission if flooding is likely to be an important consideration.

However, due to the inherent uncertainties in the flood modelling techniques and data used to produce this national snapshot of our flood prone areas, it is not sufficiently accurate to determine the flood risk to individual properties or specific point locations. It is also important to note that the map does not illustrate flooding from other notable sources such as surface water and overflowing sewers.

In this case, the Rivers Agency Flood Maps demonstrate that the proposed development site is affected by pluvial flooding, but is not affected by fluvial flooding.

5.0 ASSESSMENT OF FLOOD RISK

The following potential sources of flooding have been identified as possible for this site:

- Watercourse Flooding
- Surface Water Flooding
- Flooding from existing infrastructure
- Groundwater flooding
- Flooding during the Construction Stage

Watercourse (Fluvial) Flooding

The Rivers Agency Flood Map in *Appendix 2* indicates that this site is not at risk of fluvial flooding.

Surface Water (Pluvial) Flooding

The Rivers Agency Flood Maps in *Appendix 2* indicates that some parts of this site are at risk from pluvial flooding. This potential flood risk will be eliminated upon development of this site as a dedicated storm water drainage system will be installed which will be suitably sized to serve the site in accordance with NI Water Sewers for Adoption.

Flooding from Existing Infrastructure

There is no evidence of any live drainage infrastructure within the site boundary which could pose a flood risk.

Groundwater Flooding

The existing site has no recorded instances of Groundwater flooding. The development proposal will not undermine the existing ground levels; therefore, there will be no impact upon the underlying hydrogeology. The risk of flooding on the site from groundwater is considered to be negligible.

Flooding during the construction phase

During the construction phase of the scheme, dirty runoff water should be contained on the site and treated before disposal to adjacent watercourse or sewer. It is the responsibility of the contractor to ensure there is no unpermitted runoff from the site. A range of suitable pollution prevention measures should also be implemented such as the installation of silt fences, straw bale check dams and sediment ponds.

6.0 DISCHARGE CONSENT

As part of the requirements for PPS 15 a safe discharge of storm water has to be identified for the proposed development.

A Schedule 6 application has been sent to DFI Rivers seeking permission to discharge storm water runoff generated by the proposed development to the undesignated open watercourse to the south of the site.

We await DFI River's Schedule 6 response and a copy will be forwarded to Planning once received.

6.1 Storm Water Flow Rate

In order to achieve a reduced rate of discharge a Hydro-Brake Manhole and associated Hydro-Brake will be constructed at the downstream end of the drainage network. This is a mechanical flow control device which is designed and manufactured using site specific parameters, such as inflow and head of pressure, and restricts the outflow to the permitted discharge rate.

Table 1 below summarises how the permitted discharge rate has been derived

Contributing Site Area (Ha)	Greenfield Runoff Rate (L/sec/Ha)	Reduced Discharge Rate (L/sec)
0.27	10.00	2.70

Table 1: Green-field Runoff Rate

Please refer to *Appendix 3* for general hydro-brake details

6.2 Storm Water Attenuation

The preliminary drainage design ensures that during a 1 in 100 year return period storm the system will contain the volume of water generated and will not increase the discharge rate greater than 2.70l/s during this event by utilising the designed storage capacity of 43.439m^3.

These results are summarised in the table below.

Discharge Rate (l/s)	1 in 100yr Storage (m^3)
2.70	43.439

Table 2: Drainage Calculations Summary

Please refer to the Micro-Drainage Calculation Sheets, within *Appendix 4*, and the Conceptual Drainage Layout drawing, accompanying this report, for further detail on the proposed attenuation, including the Hydro-Brake manhole details etc.

7.0 CONCLUSIONS

The brief of Sheehy Consulting was to provide an independent drainage assessment of the proposed development site, in accordance with Planning Policy Statement 15 (PPS 15) "Planning and Flood Risk".

Policy FLD 1

This site is indicated as not affected by the 1 in 100 year fluvial flood plain as shown on the Rivers Agency Fluvial Flood Map in *Appendix 2* of this report.

Policy FLD 2

The site does not impede the operational effectiveness of any flood defence or drainage infrastructure nor hinder access to enable their maintenance.

Policy FLD 3

Parts of the site are potentially at risk of pluvial flooding, however this risk will be eliminated upon development of the site as the area will be served by a dedicated storm water drainage system which will be suitably sized to serve the site in accordance with NI Water Sewers for Adoption.

Policy FLD 4

There is no proposal to modify the route of an existing watercourse or culvert as part of this planning application.

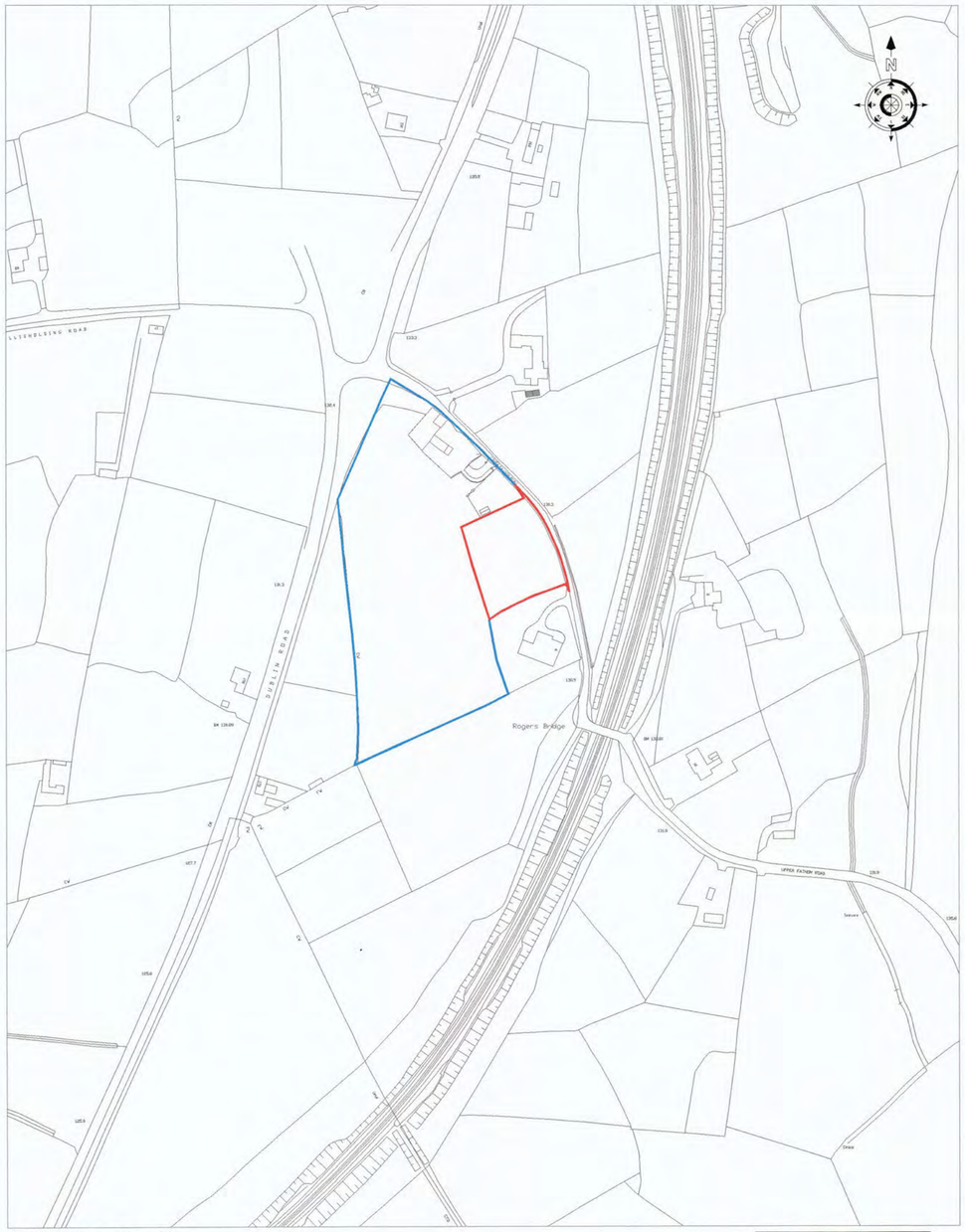
Policy FLD 5

The proposed development site is not situated within the inundation zone of an existing reservoir.

APPENDIX 1

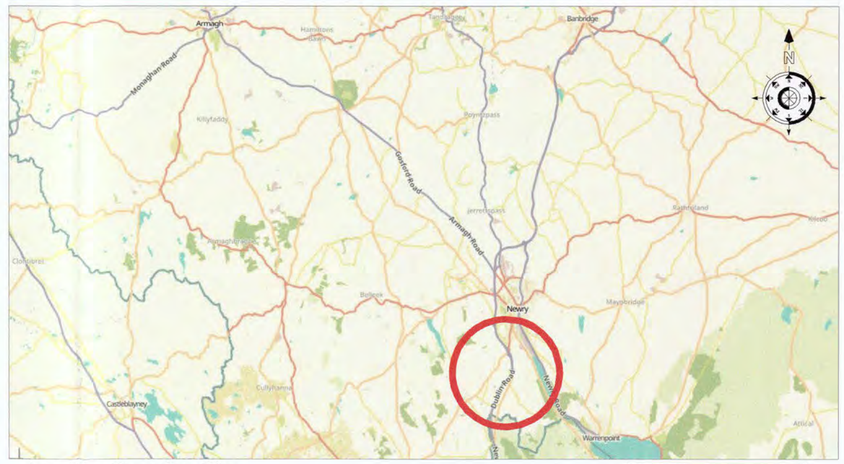
SITE LOCATION MAP & SITE PLAN

Site Location Map, Location Overview Map, and Area Zoning Map.



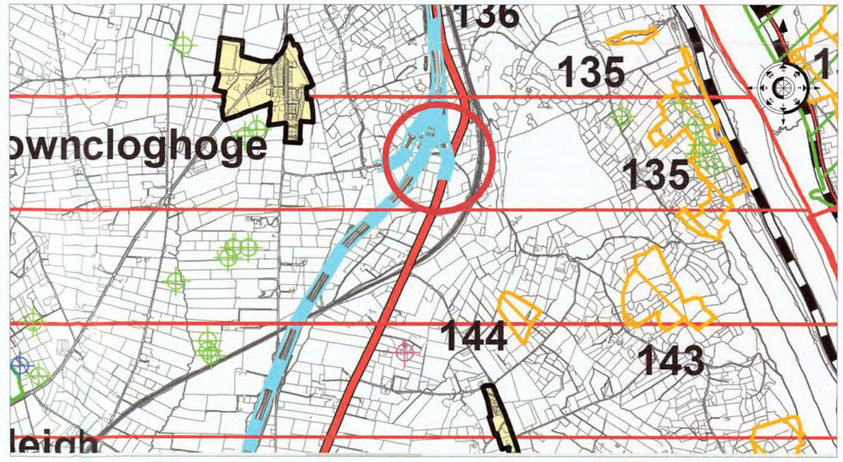
Site Location Map
Scale 1:2500

KEY
Proposed Site
Adjoining Land Ownership



Location Overview Map
For Illustration Purposes Only

KEY
Location of Proposed Site



Area Zoning Map
For Illustration Purposes Only

KEY
Location of Proposed Site

Notes:

Rev.	Revision	By	Date

Client
Mr Noel McKevitt

Project
Planning Drawings

Job Description
Proposed Erection of 2 No. Rural Infill Detached Dwelling Houses, Detached Garages, Rural Entrance Pillars and Gates Additional Landscaping and Associated Site Works Located on Lands Adjacent to and Approximately 55m North West of No.5 Upper Fathom Road, Fathom Lower (main Portion), Newry, Co. Armagh, N.Ireland, BT35 8NY.

Title
Site Location Map, Location Overview Map, and Area Zoning Map.

Drawn By	Checked By	Date	Scale
PB	BMK	03 | Jul | 2020	As Indicated

BLACKGATE
PROPERTY SERVICES LTD
Mourne House
3 Downshire Close, Carneyhough,
Newry, Down, BT34 1FD
Tel: +44 (0) 2830 250 135
info@blackgatepropertyservices.com
www.blackgatepropertyservices.com

FILE REF	DRAWING No	REVISION
BGPS - 19 - 346	PL-01	

Proposed Site Layout Plan and Boundary Treatment Details

Access Requirements:

Visibility Splays:
Visibility Splays must be retained in perpetuity
The area within the visibility splays shall be cleared to provide a level surface no higher than 250mm above the level of the adjoining carraigeway and shall be retained and kept clear thereafter.

Hedges:
Any hedges/walls/fences/trees/shrubs/etc. (of any height) located in front of the visibility splays shall be removed.

Fence/Wall:
The line of any new fence or wall must be positioned behind the visibility splays. It is recommended that any new trees or shrubs be planted at least one metre back from the visibility splays to allow for future growth and some species will require additional setback.

Drainage:
Drainage shall be provided where necessary to prevent water from the access flowing onto the public road. Similarly the existing road drainage must be accommodated where appropriate and measures must be taken to prevent road surface water flowing onto the access.
Open drains or outlets in the road verge shall be piped to satisfaction of D.R.D. Roads Service.

Landscaping Key:

Hardstanding Area	(Proposed) T1 - Oak (Sessile) 2000-2500mm high
Grassed Area	(Proposed)T2 - Oak (Sessile) 2000-2500mm high
Gravel Area	(Proposed) T3 - Beech 2000-2500mm high
	Proposed Hedgerows to be planted
	Low Level Decorative Shrubs to be planted

Proposed Site Layout Plan
Scale 1:500

Proposed Entrance Gate Detail
Scale 1:100

Proposed Boundary Railing Detail
Scale 1:100

Proposed Boundary Fence Detail
Scale 1:100

Notes:

Comhairle Ceantar an Iúir
Mhurn agus an Dúin
Newry, Mourne and Down
District Council
6 JUL 2020
LA07/20/0982

Rev.	Revision	By	Date

Client
Mr Noel McKevitt

Project
Planning Drawings

Job Description
Proposed Erection of 2 No. Rural Infill Detached Dwelling Houses, Detached Garages, Rural Entrance Pillars and Gates Additional Landscaping and Associated Site Works Located on Lands Adjacent to and Approximately 55m North West of No.5 Upper Fathom Road, Fathom Lower (main Portion), Newry, Co. Armagh, N.Ireland, BT35 8NY.

Title
Proposed Site Layout Plan and Site Boundary Treatment Details

Drawn By	Checked By	Date	Scale
PB	BMK	03 | Jul | 2020	As Indicated

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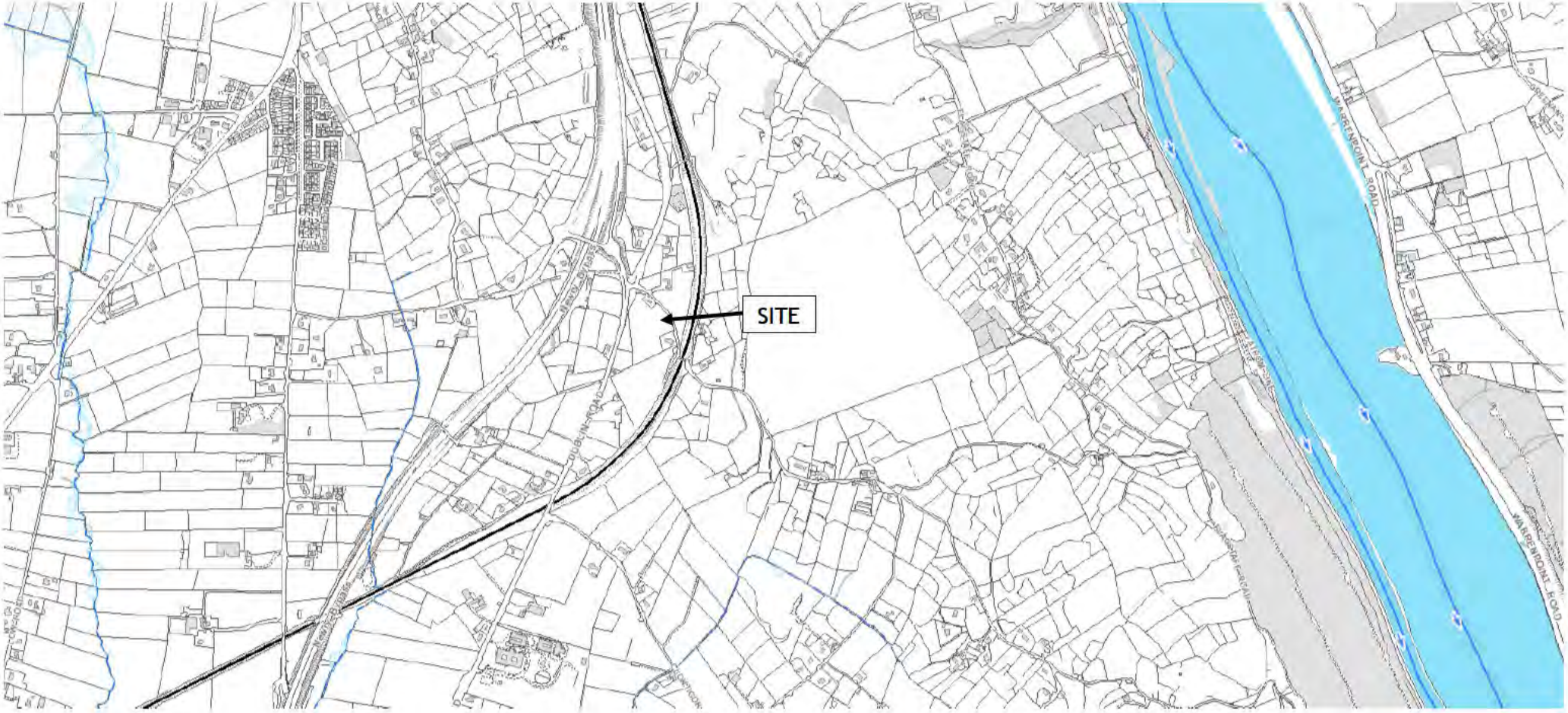
FILE REF	DRAWING No	REVISION
BGPS - 19 - 346	PL-03	

APPENDIX 2

RIVERS AGENCY FLOOD MAPS



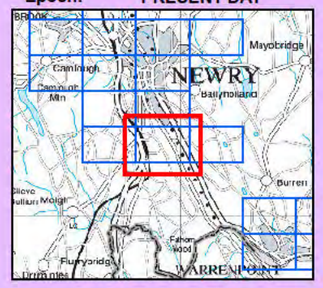
FLUVIAL FLOOD MAPPING DFI RIVERS FLOOD MAPPING 28.08.20

Surface Water Depth

Medium Probability

0.5% chance that a flood of this magnitude or greater will occur in any given year.

Map Type: FLOOD HAZARD
Source: SURFACE WATER
Epoch: PRESENT DAY



Scale 1:10,000 when plotted at A3

*** Surface Water Hazard Data**

- Depth < 0.3m
- Depth 0.3m - 1.0m
- Depth > 1.0m

* Estimated using strategic flood models and therefore should only be used to identify general areas prone to flooding and not to determine the hazard to individual properties.

308000 310400 324000 322400

LISDRUMLISKA
EDENCRIEVE
CHANCELLORS ROAD
PATRICIAN PARK
KILVARRAGH
DRUMALANE (MAIN PORTION)
CLOGHOGE HEIGHTS
DUBLIN ROAD
CARRIVE VALE
HILLHEAD ROAD
CLOGHOGE (DETACHED PORTION)
RAMPART ROAD
BALLYMACRAD WAY
OAKLANDS
GREENWOOD DRIVE
WARREN HILL
COMMONS
COMMONS HALL ROAD
CHAPEL ROAD
CARRIVEMACLONE
FORKHILL ROAD
Newry Bypass
CLOGHOGE (MAIN PORTION)
BROGIES ROAD
FATHOM LINE
FATHOM LOWER (DETACHED PORTION)
OLD WARRENPOINT ROAD
WARRENPOINT ROAD
GREENAN ROAD
FOREST VILLAS
MULLAVAT ROAD
GREENAN
RAGGERAFF ROAD
BARRACRIC ROAD
ELLISHOLDING
MOUNTAIN ROAD
FATHOM LOWER (MAIN PORTION)
AGHNAMORRA ROAD
NEWTOWN
ELLISHOLDING ROAD
UPPER FATHOM ROAD
FATHOM UPPER

N W E S

0 100 200 400 600 800 1,000 Metres

1:10,000

Compiled and published by Dept. of Agriculture & Rural Development, Rivers Agency, Hydebank, 4 Hospital Road, Belfast, Northern Ireland, BT8 8JP.

Coordinate System: Irish Grid.
Coordinates in metres.
Heights in metres above MSL Belfast.

Users of this map should refer to the guidance and conditions of use available at the Rivers Agency website.

RIVERS Agency

Map Sheet : 26615
Drawing Number : PDM_26615
Publication Date: 18 June 2014

APPENDIX 3

GENERAL HYDROBRAKE DETAILS

Hydro-Brake® Vortex Flow Control

Reduce Storage Needs by Controlling Flow.

Product Profile

The Hydro-Brake® Vortex Flow Control is a versatile, self-activating device with a unique geometry designed to harness the energy of vortex flow.

The Hydro-Brake® is used to maximize savings on new construction projects by minimizing stormwater detention volumes. Also an economical retrofit solution, the Hydro-Brake® can be installed in over-discharging ponds and catch basins to restrict the outflow without requiring the construction of additional detention volumes.

With large openings that guard against blockages and an installation base upwards of 25,000 units, the Hydro-Brake® is a trusted and proven solution used to reduce the rate of stormwater runoff.

Applications

- Outlet flow control for stormwater detention
- Outlet flow control for dams and flood reservoirs
- Reduction of runoff volume from sites
- "Blue roof" stormwater detention schemes
- Erosion control and energy dissipation

Advantages

- Reduced stormwater storage volumes by up to 40%
- Up to 50% savings in project storage costs
- Self-activating with no moving parts or power requirements
- Available in wall-mounted or floor-mounted geometries
- Area of opening is 3-6 times larger than the equivalent orifice
- Virtually maintenance free
- Proven performance with over 25,000 installations worldwide

How it Works

The Hydro-Brake® operates on simple fluid hydraulics. Flow enters the volute tangentially through the inlet. Under low flow conditions, the Hydro-Brake® acts as a large orifice and water passes directly from the inlet to the outlet (Fig.1a).

As flow increases and reaches the Flush-Flo™ point, high peripheral velocities initiate the throttling action. As head increases, the valve approaches the Switch-Flo™ and Kick-Flo™ points and an air-filled core starts to form in the volute. As head continues to increase, the air core fully stabilizes and the valve discharge is throttled to that of a smaller orifice (Fig.1b).

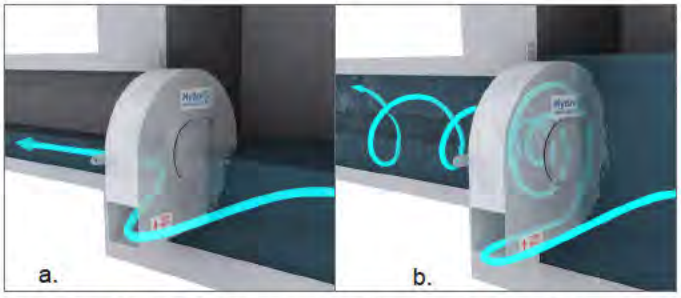


Fig.1 The Hydro-Brake® operates like (a) a large orifice under low flow conditions, and (b) a small orifice under higher flow / higher head conditions when a vortex air core forms within the device and throttles the flow.

The Hydro-Brake® Vortex Flow Control optimizes flow control to allow for higher discharge rates at lower heads than conventional flow control options. The head/discharge curves shown below illustrate the behavior of a Hydro-Brake® Vortex Flow Control compared to an orifice (Fig.2).

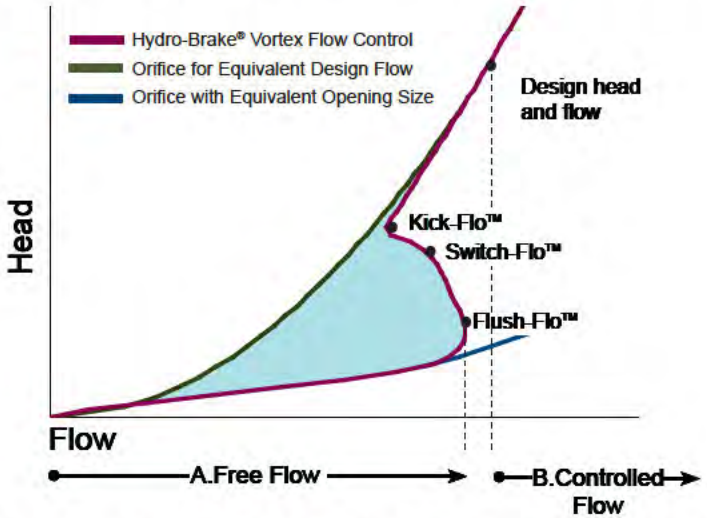


Fig.2 The characteristic of the Hydro-Brake® vs. an equivalent orifice.

Hydro-Brake® Vortex Flow Control

Sizing & Design

Three series of Hydro-Brake® Vortex Flow Controls are available to suit various applications and design constraints. Refer to the Hydro-Brake® Design Chart for typical sizing guidelines (Table 1).

Table 1. Hydro-Brake® Vortex Flow Control design chart.

Series	S Series	V Series	C Series
Typical Geometry			
Models	SH STH SXH SMH SMXH	SV SXV SMV	C CX CH
Typical Applications	• Flow control at the inlet of the storm drain system • Outlet flow control for stormwater detention systems	• **Erosion control & energy dissipation** • **Roof runoff control for "Blue Roof" detention schemes**	• Outlet flow control for flood dams and levees • Outlet flow control for stormwater detention systems
Typical Mount Style	**Wall Mount**	**Downspout/Roof Mount Floor Mount Pipe Mount**	**Floor Mount**
Typical Diameter Range*	**2 - 16 in (5 - 41 cm)**	**2 - 16 in (5 - 41 cm)**	**3 - 20 in (7.5 - 51 cm)**
Typical Flow Range**	**0.05 - 5.6 cfs (1 - 157 L/s)**	**0.05 - 6.0 cfs (1 - 174 L/s)**	**0.18 - 14.3 cfs (5.3 - 405 L/s)**

*Listed diameter ranges are typical guidelines only. Hydro-Brake® Vortex Flow Controls can be manufactured to any specified diameter up to 6'.
**Flow ranges listed are for 4' - 6.5' of head.
Contact Hydro International for site-specific sizing and design requirements.

Optional Design Accessories

Pivoting Bypass Door

For maintenance access to the outlet pipe.

Curved Backplate

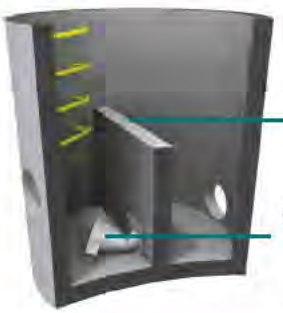
To allow for flush-mounting to the wall of a round manhole.

Vortex Suppressor Pipe

To eliminate air core for emergency bypass.

Typical Chamber Configurations

Wall Mounted SXH Model for Catch Basin Inlet Control



Large Storm Bypass Weir

Floor Mounted CH Model for Small Storm Flow Control

Pipe Mounted SXV Model for Energy & Velocity Dissipation

Hydro International, 94 Hutchins Drive, Portland, ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212
Email: stormwaterinquiry@hydro-int.com Web: www.hydro-int.com

Stormwater Solutions
Turning Water Around...®
SSHB1609

APPENDIX 4

MICRO DRAINAGE CALCULATION SHEETS

Sheehy Consulting		Page 1
186 Ballymaguire Road Stewartstown Co. Tyrone BT71 5NN	20-1283 Upper Fathom Rd Newry	
Date 14.09.20 File 20-1283 CONCEPTUAL DRAI...	Designed by Checked by	
XP Solutions	Network 2015.2	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - Scotland and Ireland

Return Period (years)	2	Add Flow / Climate Change (%)	10
M5-60 (mm)	17.700	Minimum Backdrop Height (m)	0.200
Ratio R	0.297	Maximum Backdrop Height (m)	1.500
Maximum Rainfall (mm/hr)	75	Min Design Depth for Optimisation (m)	1.200
Maximum Time of Concentration (mins)	30	Min Vel for Auto Design only (m/s)	1.00
Foul Sewage (l/s/ha)	0.000	Min Slope for Optimisation (1:X)	500
Volumetric Runoff Coeff.	0.750		

Designed with Level Inverts

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.000	20.852	0.070	300.0	0.029	5.00	0.0	0.600	o	300	
2.000	19.307	0.064	300.0	0.031	5.00	0.0	0.600	o	300	
1.001	27.409	0.091	300.0	0.035	0.00	0.0	0.600	oo	300	
1.002	31.385	0.105	300.0	0.000	0.00	0.0	0.600	oo	300	
1.003	4.394	0.022	200.0	0.000	0.00	0.0	0.600	o	200	
1.004	53.760	0.269	200.0	0.000	0.00	0.0	0.600	o	200	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	53.80	5.39	125.666	0.029	0.0	0.0	0.4	0.90	63.8	4.6
2.000	53.91	5.36	125.661	0.031	0.0	0.0	0.5	0.90	63.8	5.0
1.001	51.91	5.89	125.596	0.095	0.0	0.0	1.3	0.90	127.6	14.7
1.002	49.93	6.47	125.505	0.095	0.0	0.0	1.3	0.90	127.6	14.7
1.003	49.65	6.56	125.401	0.095	0.0	0.0	1.3	0.85	26.8	14.7
1.004	46.54	7.61	125.379	0.095	0.0	0.0	1.3	0.85	26.8	14.7

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.004	S6	126.080	125.110	125.110	1200	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	10.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Storage Structures	0
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	2	Cv (Summer)	0.750
Region	Scotland and Ireland	Cv (Winter)	0.840
M5-60 (mm)	17.700	Storm Duration (mins)	30
Ratio R	0.297		

Online Controls for Storm

Hydro-Brake Optimum® Manhole: S4, DS/PN: 1.003, Volume (m³): 10.0

Unit Reference	MD-SHE-0078-2700-1000-2700
Design Head (m)	1.000
Design Flow (l/s)	2.7
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Diameter (mm)	78
Invert Level (m)	125.401
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	2.7
Flush-Flo™	0.300	2.7
Kick-Flo®	0.618	2.2
Mean Flow over Head Range	-	2.3

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake Optimum® as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.2	1.200	2.9	3.000	4.5	7.000	6.7
0.200	2.6	1.400	3.1	3.500	4.8	7.500	6.9
0.300	2.7	1.600	3.3	4.000	5.1	8.000	7.1
0.400	2.6	1.800	3.5	4.500	5.4	8.500	7.3
0.500	2.5	2.000	3.7	5.000	5.7	9.000	7.5
0.600	2.2	2.200	3.9	5.500	5.9	9.500	7.7
0.800	2.4	2.400	4.0	6.000	6.2		
1.000	2.7	2.600	4.2	6.500	6.4		

Volume Summary (Static)

Length Calculations based on True Length

Pipe Number	USMH Name	Manhole Volume (m³)	Pipe Volume (m³)	Storage Structure Volume (m³)	Total Volume (m³)
1.000	S1	5.939	1.326	0.000	7.265
2.000	S7	4.680	1.216	0.000	5.896
1.001	S2	7.254	3.536	0.000	10.790
1.002	S3	6.401	4.098	0.000	10.498
1.003	S4	5.877	0.081	0.000	5.958
1.004	S5	1.381	1.651	0.000	3.032
Total		31.531	11.908	0.000	43.439

2 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	10.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	0
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model		FSR	Ratio R 0.297
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	17.700	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	2, 30, 100
Climate Change (%)	0, 10, 10

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	S1	15 Winter	2	+0%	30/60 Winter				125.725
2.000	S7	15 Winter	2	+0%	30/60 Winter				125.723
1.001	S2	60 Winter	2	+0%	30/60 Winter				125.675
1.002	S3	60 Winter	2	+0%	30/30 Summer				125.674
1.003	S4	60 Winter	2	+0%	2/15 Summer				125.672
1.004	S5	60 Winter	2	+0%					125.421

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	S1	-0.241	0.000	0.08		4.7	OK	
2.000	S7	-0.238	0.000	0.09		5.0	OK	
1.001	S2	-0.221	0.000	0.07		8.3	OK	
1.002	S3	-0.132	0.000	0.06		6.7	OK	
1.003	S4	0.071	0.000	0.13		2.6	SURCHARGED	
1.004	S5	-0.158	0.000	0.10		2.6	OK	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	10.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	0
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model		FSR	Ratio R 0.297
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	17.700	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	2, 30, 100
Climate Change (%)	0, 10, 10

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	S1	60 Winter	30	+10%	30/60 Winter				125.970
2.000	S7	60 Winter	30	+10%	30/60 Winter				125.970
1.001	S2	60 Winter	30	+10%	30/60 Winter				125.969
1.002	S3	60 Winter	30	+10%	30/30 Summer				125.967
1.003	S4	60 Winter	30	+10%	2/15 Summer				125.966
1.004	S5	15 Winter	30	+10%					125.422

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	S1	0.004	0.000	0.09		5.0	SURCHARGED	
2.000	S7	0.009	0.000	0.10		5.4	SURCHARGED	
1.001	S2	0.072	0.000	0.12		14.2	SURCHARGED	
1.002	S3	0.162	0.000	0.07		8.7	SURCHARGED	
1.003	S4	0.365	0.000	0.14		2.7	SURCHARGED	
1.004	S5	-0.157	0.000	0.10		2.7	OK	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	10.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	0
Number of Online Controls	1	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model		FSR	Ratio R 0.297
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	17.700	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	2, 30, 100
Climate Change (%)	0, 10, 10

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	S1	120 Winter	100	+10%	30/60 Winter				126.365
2.000	S7	120 Winter	100	+10%	30/60 Winter				126.365
1.001	S2	120 Winter	100	+10%	30/60 Winter				126.364
1.002	S3	120 Winter	100	+10%	30/30 Summer				126.362
1.003	S4	120 Winter	100	+10%	2/15 Summer				126.361
1.004	S5	120 Winter	100	+10%					125.422

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	S1	0.399	0.000	0.07		3.6	SURCHARGED	
2.000	S7	0.404	0.000	0.07		3.9	SURCHARGED	
1.001	S2	0.467	0.000	0.08		9.6	SURCHARGED	
1.002	S3	0.557	0.000	0.05		6.2	SURCHARGED	
1.003	S4	0.760	0.000	0.14		2.7	SURCHARGED	
1.004	S5	-0.157	0.000	0.10		2.7	OK	

From:	Duncan, Brian (DfI)
To:	Clarke, David (DfI)
Subject:	Content Manager DfI Container : IN1-20-10926 : Planning Management DfI - Devt. Management - Planning Applications - Newry, Mourne & Down DC - 2 Infill detached houses & detached garages - approximately 55m NW of 5 Upper Fathom Road, Fathom Lower, Newry, B
Date:	05 August 2021 13:53:00
Attachments:	t0R3CBB8.tr5

------< Content Manager Record Information >------

Record Number: IN1-20-10926

Title: Planning Management DfI - Devt. Management - Planning Applications - Newry, Mourne & Down DC - 2 Infill detached houses & detached garages - approximately 55m NW of 5 Upper Fathom Road, Fathom Lower, Newry, BT35 8NY - LA07/2020/0982/F

From:	/O=NIGOV/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2208347 on behalf of Duncan, Brian (DfI)
To:	Fearon, Ciaran
Subject:	HPE Records Manager DfI Container : IN1-20-10926 : Planning Management DfI - Devt. Management - Planning Applications - Newry, Mourne & Down DC - Proposed erection of 2 Rural infill detached dwelling houses and detached garages - Lands approximately 55...
Date:	21 September 2020 14:49:00
Attachments:	Planning Management DfI - Devt. Management - Planning Applications - Newry, Mourne & Down DC - Proposed erection of 2 Rural infill ~ LA07 2020 0982 F.tr5

------< HPE Records Manager record Information >------

Record Number : IN1-20-10926
Title : Planning Management DfI - Devt. Management - Planning Applications - Newry, Mourne & Down DC - Proposed erection of 2 Rural infill detached dwelling houses and detached garages - Lands approximately 55 metres North West of No.5 Upper Fathom Road, Fathom Lower, Newry, BT35 8NY - LA07/2020/0982/F

From:	/O=NIGOV/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=2208347 on behalf of Duncan, Brian (DfI)
To:	Fearon, Ciaran
Subject:	HPE Records Manager DfI Container : IN1-20-10926 : Planning Management DfI - Devt. Management - Planning Applications - Newry, Mourne & Down DC - Proposed erection of 2 Rural infill detached dwelling houses and detached garages - Lands approximately 55...
Date:	12 August 2020 10:41:00
Attachments:	Planning Management DfI - Devt. Management - Planning Applications - Newry, Mourne & Down DC - Proposed erection of 2 Rural infill ~ LA07 2020 0982 F.tr5

------< HPE Records Manager record Information >------

Record Number : IN1-20-10926
Title : Planning Management DfI - Devt. Management - Planning Applications - Newry, Mourne & Down DC - Proposed erection of 2 Rural infill detached dwelling houses and detached garages - Lands approximately 55 metres North West of No.5 Upper Fathom Road, Fathom Lower, Newry, BT35 8NY - LA07/2020/0982/F

Proposed Site Layout Plan and Boundary Treatment Details

Access Requirements:

Visibility Splays:
Visibility Splays must be retained in perpetuity
The area within the visibility splays shall be cleared to provide a level surface no higher than 250mm above the level of the adjoining carraigeway and shall be retained and kept clear thereafter.

Hedges:
Any hedges/walls/fences/trees/shrubs/etc. (of any height) located in front of the visibility splays shall be removed.

Fence/Wall:
The line of any new fence or wall must be positioned behind the visibility splays. It is recommended that any new trees or shrubs be planted at least one metre back from the visibility splays to allow for future growth and some species will require additional setback.

Drainage:
Drainage shall be provided where necessary to prevent water from the access flowing onto the public road. Similarly the existing road drainage must be accommodated where appropriate and measures must be taken to prevent road surface water flowing onto the access.
Open drains or outlets in the road verge shall be piped to satisfaction of D.R.D. Roads Service.

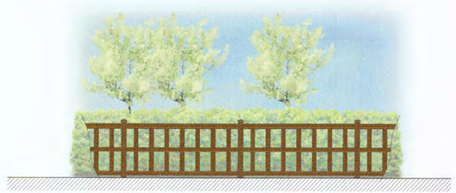
Landscaping Key:

Hardstanding Area	(Proposed) T1 - Oak (Sessile) 2000-2500mm high
Grassed Area	(Proposed)T2 - Oak (Sessile) 2000-2500mm high
Gravel Area	(Proposed) T3 - Beech 2000-2500mm high
	Proposed Hedgerows to be planted
	Low Level Decorative Shrubs to be planted

Proposed Site Layout Plan
Scale 1:500

Proposed Entrance Gate Detail
Scale 1:100

Proposed Boundary Railing Detail
Scale 1:100



Proposed Boundary Fence Detail
Scale 1:100

Notes:

Rev.	Revision	By	Date

Client
Mr Noel McKevitt

Project
Planning Drawings

Job Description
Proposed Erection of 2 No. Rural Infill Detached Dwelling Houses, Detached Garages, Rural Entrance Pillars and Gates Additional Landscaping and Associated Site Works Located on Lands Adjacent to and Approximately 55m North West of No.5 Upper Fathom Road, Fathom Lower (main Portion), Newry, Co. Armagh, N.Ireland, BT35 8NY.

Title
Proposed Site Layout Plan and Site Boundary Treatment Details

Drawn By	Checked By	Date	Scale
PB	BMK	03 | Jul | 2020	As Indicated

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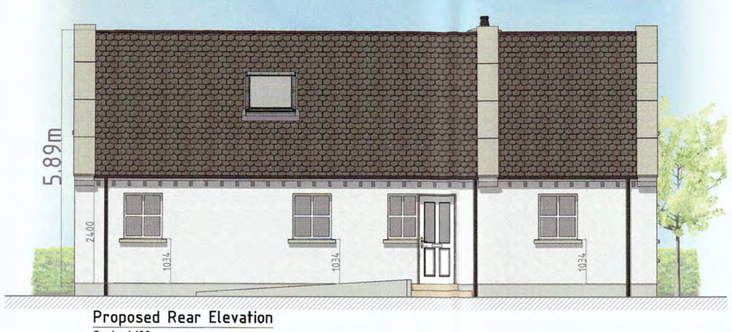
www.blackgatepropertyservices.com

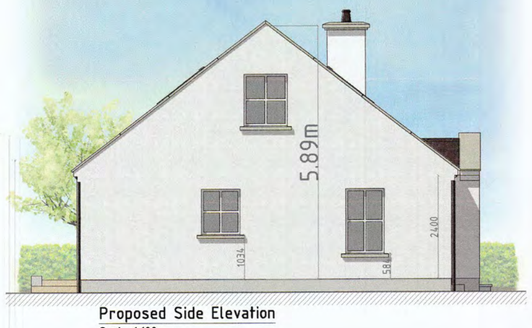
FILE REF	DRAWING No	REVISION
BGPS - 19 - 346	PL-03	

Proposed Dwellings and Detached Garages

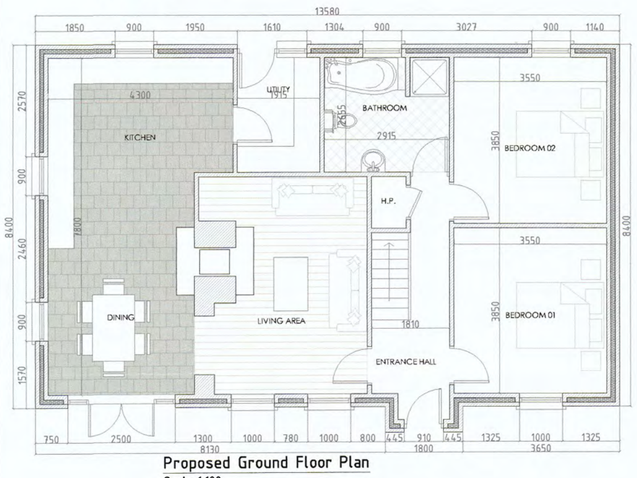
Proposed Front Elevation
Scale 1:100



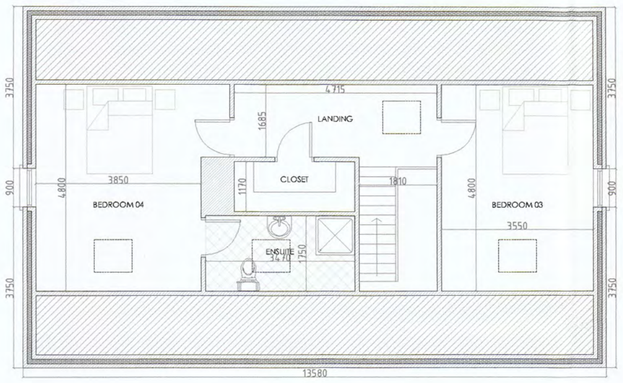
Proposed Rear Elevation
Scale 1:100



Proposed Side Elevation
Scale 1:100



Proposed Ground Floor Plan
Scale 1:100



Proposed First Floor Plan
Scale 1:100

Dwelling Specification:

Area: Ground Floor = 101.96m²
First Floor = 62.33m²

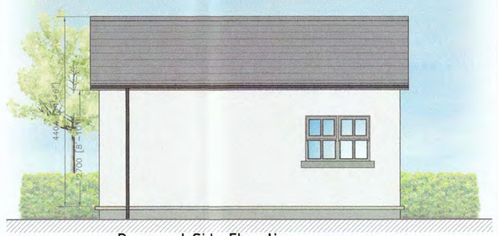
Ridge Height: 5.89m from FFL

Finished Floor Level: 132.77m

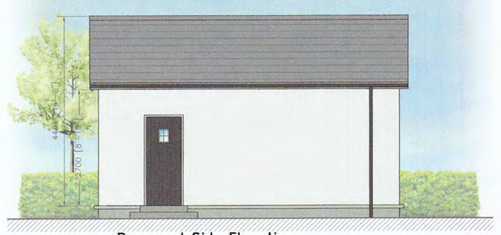
Finishes:
- Smooth plaster finish painted white with Blue/Black slates or similar finish to roof.
- Slate gray coated frames to windows and doors.
- Black uPvc rainwater goods.

Proposed Side Elevation
Scale 1:100

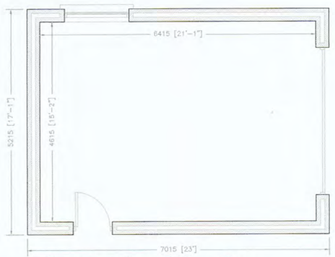
Proposed Concept Image



Proposed Side Elevation
Scale 1:100



Proposed Side Elevation
Scale 1:100



Proposed Ground Floor Plan
Scale 1:100

Garage Specification:

Area: Ground Floor = 101.96m²

Ridge Height: 5.89m from FFL

Finished Floor Level: 132.62m

Finishes:
- Smooth plaster finish painted white with Blue/Black slates or similar finish to roof.
- Slate gray coated frames to windows and doors.
- Black uPvc rainwater goods.

Proposed Rear Elevation
Scale 1:100

Proposed Front Elevation
Scale 1:100

Rev.	Revision	By	Date

Client
Mr Noel McKevitt

Project
Planning Drawings

Job Description
Proposed Erection of 2 No. Rural Infill Detached Dwelling Houses, Detached Garages, Rural Entrance Pillars and Gates Additional Landscaping and Associated Site Works Located on Lands Adjacent to and Approximately 89m South East of No.5 Upper Fathom Road, Fathom Lower (main Portion), Newry, Co. Armagh, N.Ireland, BT35 8NY.

Title
Proposed Dwelling Plans, Elevations and Specification, Proposed Garage Plan, Elevation and Specification and Proposed Concept Image

Drawn By	Checked By	Date	Scale
PB	BMK	03 | Jul | 2020	As Indicated

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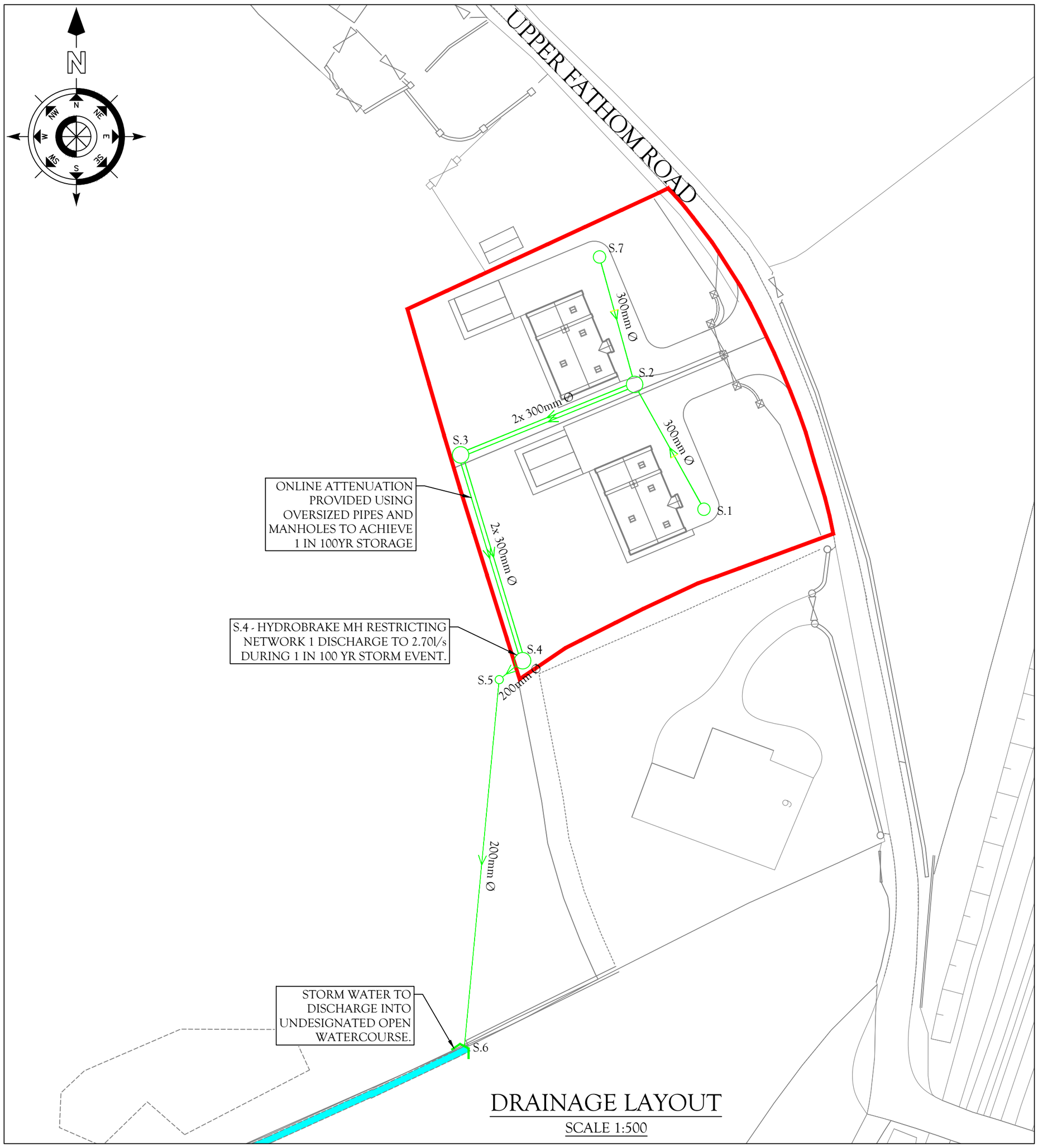
FILE REF	DRAWING No	REVISION
BGPS - 19 - 346	PL-04	



DRAINAGE LAYOUT

SCALE 1:500

LEGEND:

- PROPOSED STORM SEWER
- PROPOSED STORM MANHOLE
- PROPOSED HEADWALL
- CAMLOUGH MINOR RIVER
- 5M DFI RIVERS MAINTENANCE STRIP
- SITE BOUNDARY

NOTES:

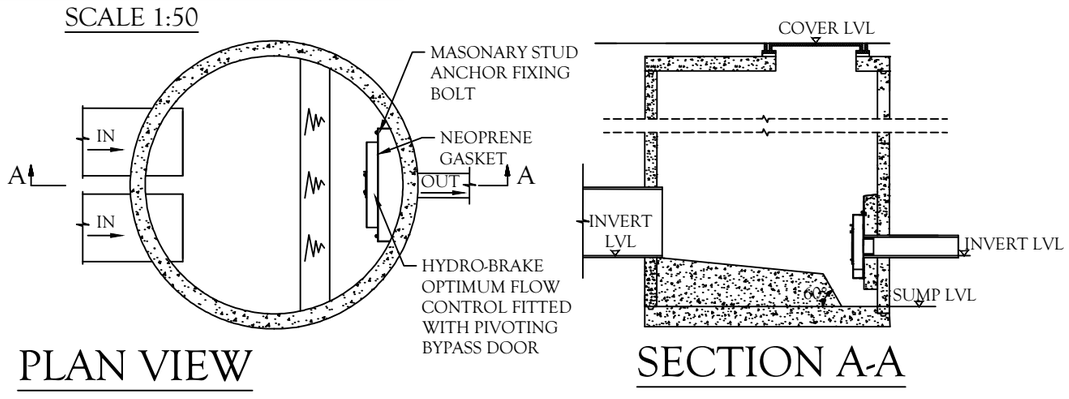
1. DRAINAGE DESIGNS SUBJECT TO CHANGE UNTIL ARTICLE 161 APPROVAL IS GRANTED BY NI WATER.
2. CLASS E BEDDING TO ALL PIPES WITH COVER GREATER THAN 1.2M UNDER ROAD AND 0.9M UNDER OTHER AREAS
3. CONCRETE BED AND SURROUND TO PIPES WITH COVER LESS THAN 1.2M UNDER ROADS AND 0.9M UNDER OTHER AREAS
4. ALL WORK IS TO BE CARRIED OUT TO SEWERS FOR ADOPTION NORTHERN IRELAND EDITION 1
5. LADDERS ARE REQUIRED IN MANHOLES WHERE THE DEPTH FROM COVER LEVEL EXCEEDS 2.5M.
6. ALL EXISTING INVERT LEVELS TO BE CONFIRMED BY THE DEVELOPER ON SITE.

ATTENUATION STORAGE VOLUMES:

PIPE VOLUMES	= 11.908m³
MANHOLE VOLUMES	= 31.531m³
TOTAL STORAGE (1in100yr)	= **43.439m³**

HYDROBRAKE MH DETAIL

SCALE 1:50



PLAN VIEW

SECTION A-A

MANHOLE DIAMETERS (unless noted otherwise)	
NOMINAL DIA. OF LARGEST PIPE IN MANHOLE (mm)	MIN. NOMINAL INTERNAL DIA. OF MANHOLE (mm)
LESS THAN 375	1200
375 - 450	1350
500 - 700	1500
750 - 900	1800
GREATER THAN 900	PIPE DIA. + 900

OVERSIZED MANHOLE DIAMETERS	
S.1	1800
S.2	2400
S.3	2400
S.4	2400
S.7	1800

HYDROBRAKE DETAILS			
MH NO.	HYDROBRAKE MODEL NO.	DESIGN HEAD (m)	DESIGN FLOW (l/s)
S.4	SHE-0078-2700-1000-2700	1.00	2.70

AMENDMENTS	REV	DATE	BY	APPR

SHEEHY CONSULTING

Consulting Civil & Structural Engineers, Project Managers
Environmental Engineers, CDM Co-ordinators & Traffic Engineers

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STATUS: PLANNING

CLIENT: MR NOEL McKEVITT

ARCHITECT: BLACKGATE PROPERTY SERVICES LTD

PROJECT: PROP. RESIDENTIAL DEVELOPMENT, UPPER FATHOM RD, NEWRY

TITLE: CONCEPTUAL DRAINAGE LAYOUT

SCALE:	DATE:		
AS SHOWN @ A2	SEPT 2020		
DRAWN BY: MG	CHECKED BY: MC	APPROVED BY: RGS	
PROJECT No.: 20-1283	DRAWING No.: C-01	REV. No.:	