

Proposed development for

Glenallen Ltd

Strangford Road,
Downpatrick

Drwg No: 3045-050-04-005~LP

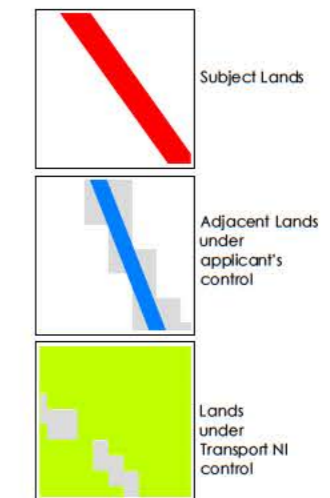
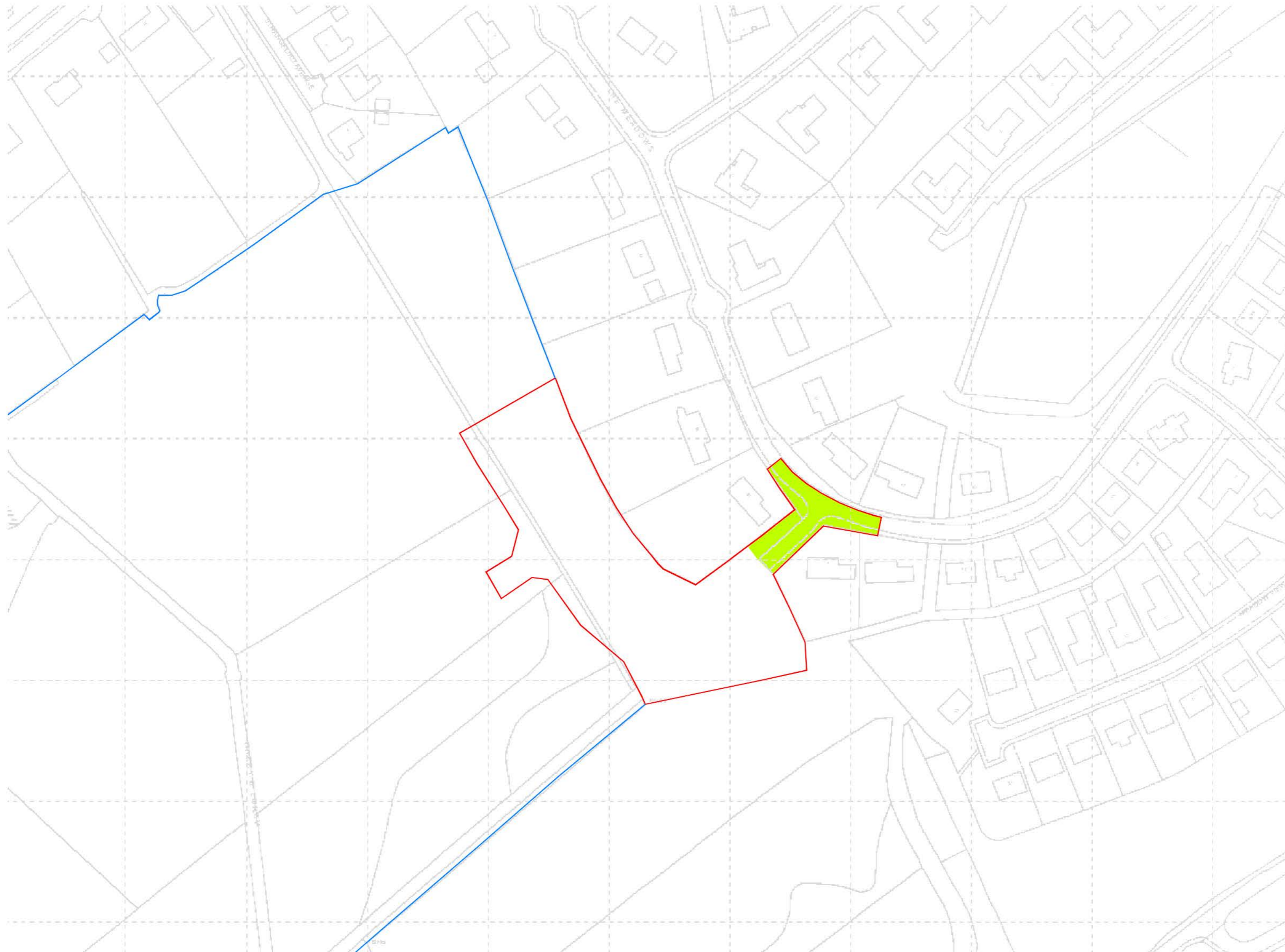
May 2015

Drawn by: ■

Scale 1:1250



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Appendix B: Preliminary Design of Attenuation System

Project: Dwellings, The Meadows, Strangford Road, Downpatrick

Geographical Data

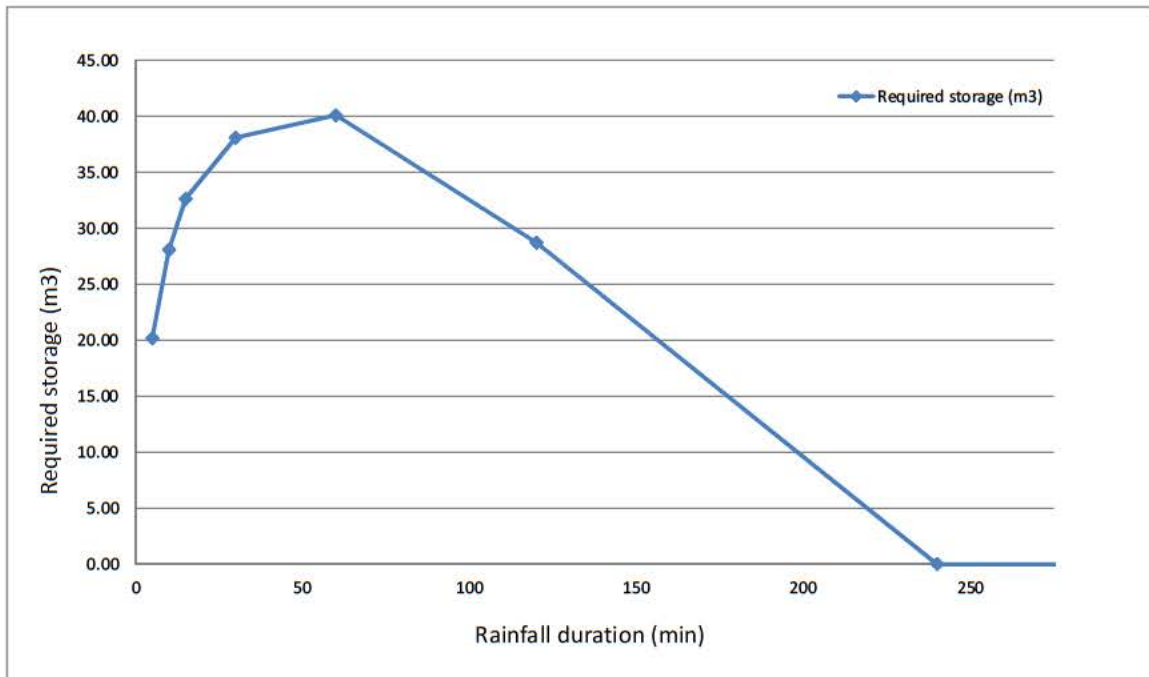
60 min depth of 5 yr return period 'R' (mm) = 15
 M5-60 to M5-2d rainfall ratio 'r' = 0.3
 Allowance for climate change = 10%
 Proposed discharge rate (litres/sec) = 7.73

Proposed development Data

Impermeable area (m²) = 3430
 Partially impermeable area (m²) = 0
 Effective impermeable area (m²) = 3430

Required storage volume per rainfall duration for a 10 year return period event

Rainfall duration (min)	Rainfall Factor Z1	Rainfall Factor Z2	Rainfalls (mm)	Inflow (m ³)	Outflow (m ³)	Required storage (m ³)
5	0.34	1.17	6.57	22.52	2.32	20.20
10	0.49	1.18	9.54	32.71	4.64	28.07
15	0.59	1.19	11.54	39.58	6.96	32.62
30	0.77	1.19	15.16	51.99	13.91	38.08
60	1.00	1.20	19.80	67.91	27.83	40.09
120	1.25	1.19	24.60	84.36	55.66	28.71
240	1.57	1.18	30.64	105.11	111.31	0.00
360	1.78	1.18	34.66	118.87	166.97	0.00
600	2.12	1.18	41.21	141.36	278.28	0.00
1440	2.84	1.17	54.70	187.64	667.87	0.00



Required maximum storage for a 10 year event with 10% allowance for climate change (m³) = 40.09

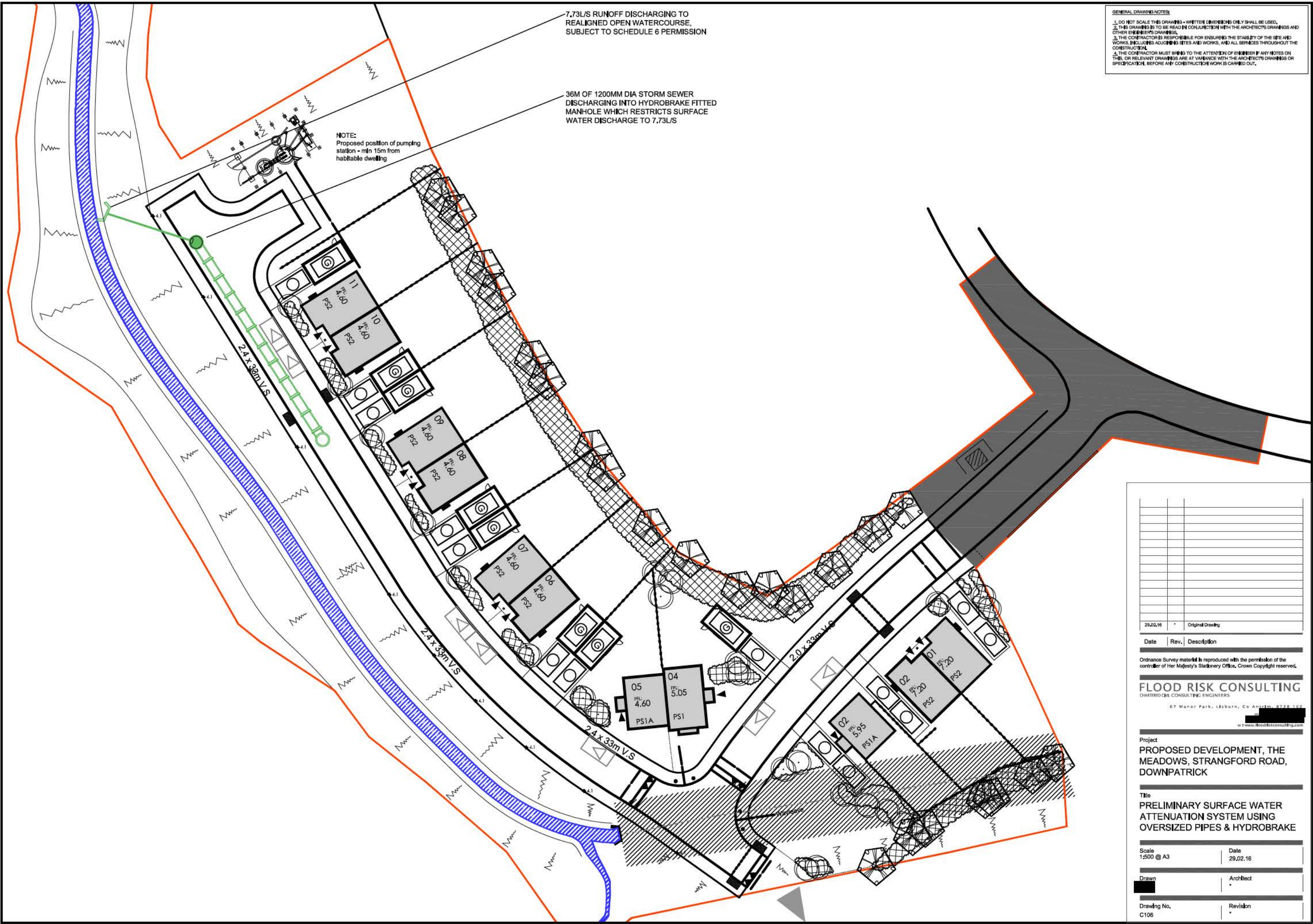
GENERAL DRAWING NOTES:

1. DO NOT SCALE THIS DRAWING - WRITTEN DIMENSIONS ONLY SHALL BE USED.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE ARCHITECT'S DRAWINGS AND OTHER ENGINEER'S DRAWINGS.
3. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THE STABILITY OF THE SITE AND WORKS, INCLUDING ADJOINING SITES AND WORKS, AND ALL SERVICES THROUGHOUT THE CONSTRUCTION.
4. THE CONTRACTOR MUST BRING TO THE ATTENTION OF ENGINEER ANY NOTES ON THIS, OR RELEVANT DRAWINGS ARE AT VARIANCE WITH THE ARCHITECT'S DRAWINGS OR SPECIFICATION, BEFORE ANY CONSTRUCTION WORK IS CARRIED OUT.

7.73L/S RUNOFF DISCHARGING TO REALIGNED OPEN WATERCOURSE, SUBJECT TO SCHEDULE 6 PERMISSION

36M OF 1200MM DIA STORM SEWER DISCHARGING INTO HYDROBRAKE FITTED MANHOLE WHICH RESTRICTS SURFACE WATER DISCHARGE TO 7.73L/S

NOTE:
Proposed position of pumping station - min 15m from habitable dwelling



29.02.16	Original Drawing
Date	Rev. Description

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 CHARTERED CIVIL CONSULTING ENGINEERS
 67 Manor Park, Lisburn, Co Antrim, BT28 1EF
 www.floodriskconsulting.com

Project
PROPOSED DEVELOPMENT, THE MEADOWS, STRANGFORD ROAD, DOWNPATRICK

Title
PRELIMINARY SURFACE WATER ATTENUATION SYSTEM USING OVERSIZED PIPES & HYDROBRAKE

Scale 1:500 @ A3 | Date 29.02.16

Drawn | Architect

Drawing No. C106 | Revision

[REDACTED]

From: Deegan, Ryan
Sent: 06 December 2018 16:05
To: [REDACTED]
Subject: RE: PROPOSED DISCHARGE OF STORM WATER AND RE-ALIGNMENT OF WATERCOURSE AT THE MEADOWS, DOWNPATRICK.

DfI Rivers Lisburn

[REDACTED]

Ravarnet House
36 Altona Road
Lisburn
BT27 5QB
Tel: 028 9260 6100

Your reference:
Our reference: IN1-18-12387

Date: 6th December 2018

Dear Sir,

RE: PROPOSED DISCHARGE OF STORM WATER AND RE-ALIGNMENT OF WATERCOURSE AT THE MEADOWS, DOWNPATRICK.

Thank you for your e-mail dated the 10th October 2018 referring to the above. From a drainage aspect my comments are as follows.

This site is not affected by a watercourse which is designated within the terms of the Drainage (Northern Ireland) Order 1973.

The Department for Infrastructure Rivers consents to your proposal to discharge 7.73 l/s to the undesignated watercourse as per your Flood Risk Assessment & Drainage Assessment and Drawing Number's C106 and C401.

The overflow pipe should be turned in the direction of flow and anti-scour measures taken to prevent bank and bed erosion.

If your client deems it necessary to fit a Flap valve the continuing maintenance of this valve will be their responsibility.

Dfl Rivers cannot comment on the quality of discharge and you should seek consent / approval from the Northern Ireland Environment Agency (NIEA) in this regard.

Dfl Rivers also consents to your proposal to re-align the undesignated watercourse as per your e-mail dated the 10th October 2018, Flood Risk Assessment & Drainage Assessment and Drawing No's C102, C103 and C104, provided the following conditions are adhered to:

1. The works should be carried out ensuring the existing hydraulic capacity be maintained during the construction process, excavation of the new channel, infilling existing channel etc.
2. As river velocity may increase through the new cut and the reaches downstream, steps should be taken to ensure that any erosion which may be attributed to these works is minimised and that adequate measures are taken to protect the bed and banks from such erosion.
3. Other interested bodies should be informed of your proposals and their approval sought as required.
4. You should note that it is your responsibility to seek and obtain any necessary consents and way leaves from any landowners that may be affected by your proposals.

Dfl Rivers advises that when working in watercourses you liaise with the Northern Ireland Environment Agency (NIEA) and DAERA Fisheries to provide facility downstream to minimize the effects the works and proposed uniformly trapezoidal channel shown in drawing number C103 may create.

In giving its consent Dfl Rivers would stress that it is your responsibility to ensure that all proposed works do not result in any obstruction to flow arising from blockage, structural failure, poor workmanship or any other reasons. Similarly, it is your responsibility to make provision for existing drainage. Moreover, if in the future, another landowner wishes to drain land adjoining this site and within the same catchment he should not be prevented from doing so.

This consent is valid for a period of 12 months from the date of this letter. If proposals are not completed within this period of time they should be resubmitted for further appraisal

You should note that, in accordance with Paragraph 11 of Schedule 6 of the Drainage (Northern Ireland) Order 1973, any consents/ approvals given by Dfl Rivers under Schedule 6 shall not affect the liability of any riparian/developer to comply with other legislation. It is your responsibility to contact any other parties which may have an interest in your proposals e.g. NIEA, Landowners, Fisheries etc.

Please note that failure to adhere to the above conditions is a contravention of the Drainage (Northern Ireland) Order 1973 and may result in legal proceedings.

Under the terms of Schedule 6 of the Drainage (Northern Ireland) Order 1973 the applicant must submit to DfI Rivers for its consent any proposal to carry out works which might affect a watercourse.

Please quote above reference number on any further correspondence

Yours faithfully,

Ryan Deegan

DfI Rivers,
Engineering Section,
Ravarnet House,
Altona Road,
Lisburn, BT27 5QB

TEL: 028 9260 6100

Ext: [REDACTED]



üTo help promote the use of Electronic Documents and to be kinder to the environment, please consider whether you really need to print this e-mail.

[REDACTED]

From: Deegan, Ryan
Sent: 04 April 2019 13:12
To: [REDACTED]
Cc: [REDACTED]
Subject: RE: PROPOSED DISCHARGE OF STORM WATER AT THE MEADOWS, DOWNPATRICK.

DfI Rivers Lisburn

[REDACTED]

Ravarnet House
36 Altona Road
Lisburn
BT27 5QB
Tel: 028 9260 6100

Your reference:
Our reference: IN1-18-12387

Date: 4th April 2019

Dear Madam,

RE: PROPOSED DISCHARGE OF STORM WATER AT THE MEADOWS, DOWNPATRICK.

Thank you for your e-mail dated the 14th January 2019 referring to the above. From a drainage aspect my comments are as follows.

This site is not affected by a watercourse which is designated within the terms of the Drainage (Northern Ireland) Order 1973.

The Department for Infrastructure Rivers consents to your proposal to discharge an equivalent green field run-off rate of 105 l/s storm water to the undesignated watercourse as per your Site Location Plan and Drawing Number C401, received 14th January 2019. You should note that DfI Rivers previous consent issued on the 6th December 2018 is no longer valid.

The overflow pipe should be turned in the direction of flow and anti-scour measures taken to prevent bank and bed erosion.

If your client deems it necessary to fit a Flap valve the continuing maintenance of this valve will be their responsibility.

The quality of discharge is outside the remit of DfI Rivers and you should seek consent / approval from the Northern Ireland Environment Agency (NIEA) in this regard.

In giving its consent DfI Rivers would stress that it is your responsibility to ensure that the proposed works do not result in any obstruction to flow arising from blockage, structural failure, poor workmanship or any other reasons. Similarly, it is your responsibility to make provision for existing drainage. Moreover, if in the future, another landowner wishes to drain land adjoining this site and within the same catchment he should not be prevented from doing so.

This consent is valid for a period of 12 months from the date of this letter. If proposals are not completed within this period of time they should be resubmitted for further appraisal

You should note that, in accordance with Paragraph 11 of Schedule 6 of the Drainage (Northern Ireland) Order 1973, any consents/ approvals given by DfI Rivers under Schedule 6 shall not affect the liability of any riparian/developer to comply with other legislation. It is your responsibility to contact any other parties which may have an interest in your proposals e.g. NIEA, Landowners, Fisheries etc.

It is your responsibility to obtain all necessary way leaves to carry out these works.

Under the terms of Schedule 6 of the Drainage (Northern Ireland) Order 1973 the applicant must submit to Rivers Agency for its consent any proposal to carry out works which might affect a watercourse.

Please quote above reference number on any further correspondence.

Yours faithfully,

Ryan Deegan

DfI Rivers,
Engineering Section,
Ravarnet House,
Altona Road,
Lisburn, BT27 5QB

TEL: 028 9260 6100

Ext: [REDACTED]