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22-028

CAVAN COUNTY COUNCIL

PROPOSED HOUSING DEVELOPMENT AT WIDOW'S ROW, BELTURBET, Co. CAVAN

Foul Water, Surface Water, Watermain Calculations & Details



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1.0 Introduction

Alan Traynor Consulting Engineers Ltd have been engaged by Cavan County Council to carry out engineering services design for the proposed 9-unit residential development at Widow's Row, Belturbet, Co. Cavan. This report addresses the surface and foul water drainage and water supply for this application.

1.1 Site Description

The site has an area of approximately 0.143 hectares and is located adjacent to The Church of the Immaculate Conception in Belturbet town at the junction of Widow's House Lane and Fay Crescent. There are currently 6 bungalows present on the site in a single terrace. The site is adjoined by the church to the North and residential dwellings to the South, East and West of one-two storey height.

2.0 Surface Water Drainage

2.1 Surface Water Drainage - Existing

The site has existing sections of hard surface area, made up of the roofs of the six houses. It is unclear where the surface water currently discharges to. There are existing public surface water sewers in Railway Road to the east of the site and Fay Crescent to the south of the site.

2.2 Surface Water Drainage – Proposed

It is proposed to collect the surface water from the hard standing areas of the development, both roofs and new carparking area, in a suitably sized network and discharge it into the existing public surface water sewer in Railway Road.

3.0 Foul Drainage

3.1 Foul Drainage – Existing

It is unclear where the existing houses connect to the public foul water sewer. There is a public foul water sewer running in Widows House Lane along the north boundary of the site, which proceeds to cut across the northeast section of the site into Martin's Row. There is also an existing foul water sewer running in Railway Road a short distance from the site.



3.2 Foul Drainage – Proposed

It is proposed to replace the public foul water sewer running along the north boundary of the site in Widow's House Lane and divert the section running through the northeast part of the site to the existing foul water sewer in Railway Road. The 9 new units will be connected to the new foul sewer.

4.0 Water

4.1 Water - Existing

There is an existing watermain running by the boundary of the site in Widow's House Lane.

4.2 Water - Proposed

It proposed to make a 100mm diameter connection to the existing watermain in Widow's House Lane and construct a loop in the carparking area of the new development. The nine units will then be connected to the new section of watermain. Appendix A – Surface Water Calculations

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SEWER RE	DATA EFERENCE		STORM WAT Modified Rati			Cr = Cv =	-	SEWER DES Ks =									
From	То		,	Impervious Area	Cumulative Impervious Area		Storm Water Flow Q=Ap*I*Cr*Cv*2.78	Size of drain (mm)	Gradient (1 in x)	Length (m)	Capacity (l/sec)	Pipe full Velocity	Actual Velocity	Half full velocity	Max Velocity (m/sec)	Depth of flow (mm)	Reserve capacity
Manhole 1	Manhole 2	Area A1	Area A2	5	6	7	It/sec	Q	10	11	12	(m/sec) 13	(m/sec) 14	(m/sec)	15	16	(l/sec) 17
	2	5		3	0	1	0		10		12	10	17		10	10	17
S1	S2	0.011	0.017	0.028	0.028	50.00	3.54	225	100	27.990	51.94	1.31	0.75	1.31	1.48	39.55	48.39
S2	S3	0.000	0.023	0.023	0.051	50.00	6.40	225	20	26.330	116.82	2.94	1.59	2.94	3.33	35.60	110.42
S3	S4	0.000	0.010	0.010	0.061	50.00	7.67	225	20	42.275	116.82	2.94	1.68	2.94	3.33	38.67	109.15
S4	Sext	0.000	0.000	0.000	0.061	50.00	7.67	225	134	6.700	44.79	1.13	0.85	1.13	1.28	62.40	37.13

Appendix B – Foul Water Calculations

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DATA								SEWER DESI Ks =										
	WER RENCE To	HOUSES	UNITS/ HOUSE	UNIT	S	TOTAL UNITS	TOTAL FLOW	Size of drain (mm)	Gradient (1 in x)	Length (m)	Capacity (l/sec)	Pipe full Velocity (m/sec)	Actual Velocity (m/sec)	Half full velocity (m/sec)	Self cleansing at half full	Max Velocity (m/sec)	Depth of flow (mm)	Reserve capacity (l/sec)
Manhole	Manhole	No.	No.	No.		l/s	l/s											
1	2	3	4	5		6	7	8	9	10	11	12	13	14	15	16	17	18
F1	F2	3	14		42	42	3.267	150	60.0	32.035	20.000	1.132	0.831	1.132	OK	1.291	41.016	16.733
F2	F3	5	14		70	70	3.662	150	20.0	25.760	34.715	1.964	1.267	1.964	OK	2.240	32.813	31.053
F3	F4	1	14		14	126	4.148	150	20.0	42.865	34.715	1.964	1.315	1.964	OK	2.240	35.156	30.567
F4	Fext3	0	14		0	126	4.148	150	43.0	8.180	23.643	1.338	1.003	1.338	OK	1.526	42.188	19.495

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Foul Discharge Design Calculations

The following calculations are in accordance with Appendix C 'Wastewater Flow Rates for Design' of Irish Water Code of Practice for Wastewater Infrastructure. (IW-CDS_5030-03)

Domestic Dwelling - Flow Rate = 150 litres/occupant/day

Peak Design Flow Rate = 6 x Domestic Flow Rate

Project Name:	Widow's Row, Belturbet
Project Number:	22-028

1 Bed Unit = Max	2	persons
2 Bed Unit = Max	4	persons
3 Bed Unit = Max	6	persons
4 Bed Unit = Max	7	persons

1 Bed Units =	3	
Flow Rate =	0.0035	l/s per unit
Peak Design Flow Rate =	0.0208	l/s per unit
Total Flow from 3 Units =	0.063	l/s

2 Bed Units =	6	
Flow Rate =	0.0069	l/s per unit
Peak Design Flow Rate =	0.0417	l/s per unit
Total Flow from 6 Units =	0.250	l/s

3 Bed Units =	0	
Flow Rate =	0.0000	l/s per unit
Peak Design Flow Rate =	0.0000	l/s per unit
Total Flow from 0 Units =	0.000	l/s

4 Bed Units =	0	
Flow Rate =	0.0000	l/s per unit
Peak Design Flow Rate =	0.0000	l/s per unit
Total Flow from 0 Units =	0.000	l/s

Total Flow From Development (9 Units)(30 Persons) =

4500 litres or

4.5 m³/day

Peak Design Flow Rate = 0.313 l/s

Average Discharge = 0.0521 l/s

Appendix C – Irish Water Pre-Connection Application

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Pre-connection enquiry form



housing developments

This form is to be filled out by applicants enquiring about the feasibility of a water and/or wastewater connection to Irish Water infrastructure. If completing this form by hand, please use BLOCK CAPITALS and black ink. Please note that this is a digital PDF form and can be filled in electronically

Please refer to the **Guide to completing the pre-connection enquiry form** on page 14 of this document when completing the form.

* Denotes mandatory/ required field. Please note, if mandatory fields are not completed the application will be returned.

Section A | Applicant details

1 *Applicant details:

Registered compa	ny r	nam	e (if	[;] apj	plica	ble):																		
Trading name (if a	ppli	icab	e):																						
Company registrat	tion	nur	nbe	er (if	app	olica	able):]				
Parent company r	egis	tere	d c	omp	bany	/ na	me	(if a	ppli	cab	le):										-				
												-													
Parent company r	egis	trati	ion	nur	nbe	r (if	арр	olica	ble)	:															
lf you are not a reg	giste	ered	со	mpa	any/	bus	ines	55, p	leas	se p	rovi	de t	he :	app	lica	nťs	nan	ne:							
*Contact name:	S	E	А	М	U	S		М	C	L	0	U	G	Н	L	I	N								
*Postal address:	C	A	V	A	N		C	0	U	N	Т	Y		С	0	U	N	C	I	L					
CAVAN		C	0	U	R	Т	Η	0	U	S	Ε	,		F	A	R	Ν	H	A	М		S	Т	,	
C A V A N		Т	0	W	Ν	,		С	0			С	А	V	А	Ν									
*Eircode:																									
Please provide eitl	her	a lar	ndli	ne d	or a	mol	bile	nur	nbe	r															
Landline:	0	9	4	3	7	8	3	6	3																
*Mobile:	0	8	7	4	1	9	8	4	5	1															
*Email:	s	m	С	1	0	u	g	h	1	i	n	@	С	a	v	a	n	С	0	С	0		i	е	



2 Agent details (if applicable):

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*Contact name	2: [J	0	Η	Ν		0	T	R	Ε	Ι	L	L	Y												
Company nam	e (if a	рр	olica	ble):	A	L	A	N		Т	R	A	Y	N	0	R		С	0	N	S		Е	Ν	G
*Postal addres	s: 🛛	в	Е	L	Т	U	R	В	Е	Т		В	U	S	I	N	Е	S	S		P	A	R	K		
CREE	N	Y	,		В	Е	L	Т	U	R	В	Е	Т	,		C	0	•		С	А	V	A	N		
*Eircode:																										
Please provide	eithe	er a	a lar	ndlii	ne c	or a	mol	oile	nun	nbe	r															
Landline:		0	4	9	9	5	2	2	2	3	6															
*Mobile																										
*Email:		j	0	h	n	@	a	1	a	n	t	r	a	У	n	0	r		с	0	m			-		
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*Site address ' W I D O	l (incl	luc	le S	ite				ding	, dia	1		Idin	g ni	uml	ber)	:										
*Site address W I D O *Address 2	W	uc	le S	ite			W	ding	, dia	1		Idin	g ni	uml	ber)											
*Site address f W I D O *Address 2 *Address 3	W		s	T	R	0	W		; na	1		ldin	g nu	uml	ber)		Ei	rco	de [

Note: Values for Eastings must be between 015,900 and 340,000. Northings, between 029,000 and 362,000 Eg. co-ordinates of GPO, O'Connell St., Dublin: E(X) 315,878 N(Y) 234,619

6 *Local Authority where proposed development is located:

C A V A N C O U N T Y C O U N C I L

7 *Has full planning permission been granted?

Yes

No 🗸

If Yes', please provide the current or previous planning reference number:

8 *Is this development affiliated with a government body/agency?

Yes

No 🗸

If 'Yes', please specify the body/agency:

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Eg. IDA, HSE, LDA, etc.

Section C | Development details

9 *Please outline the domestic and/or industry/business use proposed:

Domestic:

Property type	Number of units	Property type	Number of units
House	6	Apartments	3
Duplex		Number of Apartment Blocks	

Industry/business:

Property type	Number of units	Property type	Number of units
Agricultural		Brewery / Distillery	
Restaurant / Café / Pub		Car Wash / Valeting	
Creche		Data Centre	
Fire Hydrant		Fire Station	
Food Processing		Hotel Accommodation	
Industrial / Manufacturing		Laundry / Laundrette	
Office		Primary Care Centre	
Residential / Nursing Care Home		Retail	
School		Sports Facility	
Student Accommodation		Warehouse	
Other (please specify type)			No. of Units

9.1 Please provide additional details if your proposed business use are in the Food Processing, Industrial unit/ Manufacturing, Sports Facility or Other Categories.

- Please provide the maximum expected occupancy in number of people, according to the proposed 9.2 development you selected, e.g. Number of office workers, number of nursing home residents, maximum pub occupancy, number of hotel beds, number of retail workers:
 - 0 0 0 3 0 0

No

*Approximate start date of proposed development: 10

5 2 0 2 0 1 0 3

Yes

*Is the development multi-phased? 11

If 'Yes', application must include a master-plan identifying the development phases and the current phase number.

If 'Yes', please provide details of variations in water demand volumes and wastewater discharge loads due to phasing requirements.

*Please indicate the type of connection required by ticking the appropriate box below: 12

Both Water and Wastewater (**•**) Please complete both Sections D and E

Please go to Section D

Wastewater only

Water only



Please go to Section E

Reason for only applying for one service (if applicable):

Sec	tion D Water connection and demand details		"是中国的"
13	*Is there an existing connection to public water mains at the site?	Yes	
	If yes, is this enquiry for an additional connection to one already installed If yes, is this enquiry to increase the size of an existing connection?	I? Yes	No No
14	Approximate date water connection is required:	01/05/	2023

- 15 *What diameter of water connection is required to service the development?
- 16 *Is more than one connection required to the public infrastructure to service this development?

If 'Yes', how many?

17

Post-development peak hour water demand	0.313	l/s
Post-development average hour water demand	0.0521	l/s

Please indicate the business water demand (shops, offices, schools, hotels, restaurants, etc.):

Please include calculations on the attached sheet provided. Where there will be a daily/weekly/seasonal variation in the water demand profile, please provide all such details.

18 Please indicate the industrial water demand (industry-specific water requirements):

Post-development peak hour water demand	l/s
Post-development average hour water demand	l/s

Please include calculations on the attached sheet provided. Where there will be a daily/weekly/seasonal variation in the water demand profile, please provide all such details.

19 What is the existing ground level at the property boundary at connection point (if known) above Malin Head Ordnance Datum?

64.	3	1	m
-----	---	---	---

1 0

Yes

0 | mm

20 What is the highest finished floor level of the proposed development above Malin Head Ordnance Datum?

65.	4	5	m
-----	---	---	---

21 Is on-site water storage being provided?

Yes No 🗸

Please include calculations on the attached sheet provided.

22	Are there fire flow requirements?	Yes	No 🖌
	Additional fire flow requirements over and above those identified in Q17-18	I/:	5

Please include calculations on the attached sheet provided, and include confirmation of requirements from the Fire Authority.

23 Do you propose to supplement your potable water supply from other sources?

No 🗸

Yes

l/s

If 'Yes', please indicate how you propose to supplement your potable water supply from other sources (see **Guide to completing the application form** on page 15 of this document for further details):

Sec	tion E Wastewater connection and di	scharge details	1	1.14.1
24	*Is there an existing connection to a public se	wer at the site?	Yes	No 🖌
24.1	If yes, is this enquiry for an additional connection	to the one already insta	alled? Yes	No
24.2	If yes, is this enquiry to increase the size of an ex	isting connection?	Yes	No
25 · 26	*Approximate date that wastewater connecti *What diameter of wastewater connection is r	-	0 1 / 0 5 /	2 0 2 3
27	*Is more than one connection required to the p to service this development? If 'Yes', how many?	public infrastructure	Yes	No 🖌
28	Please indicate the commercial wastewater hyd	raulic load (shops, office	es, schools, hotels, re	estaurants, etc.):
	Post-development peak discharge	0.313		l/s

Please include calculations on the attached sheet provided.

Post-development average discharge

29 Please indicate the industrial wastewater hydraulic load (industry-specific discharge requirements):

Post-development peak discharge	l/s
Post-development average discharge	l/s

Please include calculations on the attached sheet provided.

30 Wastewater organic load:

Characteristic	Max concentration (mg/l)	Average concentration (mg/l)	Maximum daily load (kg/day)
Biochemical oxygen demand (BOD)	£		
Chemical oxygen demand (COD)			
Suspended solids (SS)			-
Total nitrogen (N)			
Total phosphorus (P)			
Other			
Temperature range			
pH range			

*Storm water run-off will only be accepted from brownfield sites that already have a storm/surface water 31 connection to a combined sewer. In the case of such brownfield sites, please indicate if the development intends discharging surface water to the combined wastewater collection system:

Yes	No 🗸

If 'Yes', please give reason for discharge and comment on adequacy of SUDS/attenuation measures proposed.

Please submit detailed calculations on discharge volumes, peak flows and attenuation volumes with this application

32	*Do you propose to pump the wastewater?	Yes	No 🗸	
----	---	-----	------	--

If Yes', please include justification for your pumped solution with this application.

- What is the existing ground level at the property boundary at connection point (if known) above Malin 33 **Head Ordnance Datum?**
 - 6 0 9 1 m

5

5 m

6 4 NI T

- What is the lowest finished floor level on site above Malin Head Ordnance Datum? 34
- What is the proposed invert level of the pipe exiting the property to the public road? 35

59.51

Section F | Supporting documentation

Please provide the following additional information (all mandatory):

- > Site location map: A site location map to a scale of 1:1000, which clearly identifies the land or structure to which the enquiry relates. The map shall include the following details:
 - i. The scale shall be clearly indicated on the map.
 - ii. The boundaries shall be delineated in red.
 - iii. The site co-ordinates shall be marked on the site location map.
- > Details of planning and development exemptions (if applicable).
- > Calculations (calculation sheets provided below).
- Site layout map to a scale of 1:500 showing layout of proposed development, water network and wastewater network layouts, additional water/wastewater infrastructure if proposed, connection points to Irish Water infrastructure.
- Conceptual design of the connection asset from the proposed development to the existing Irish Water infrastructure, including service conflicts, gradients, pipe sizes and invert levels.
- > Any other information that might help Irish Water assess this pre-connection enquiry.

Section G | Declaration

I/We hereby make this application to Irish Water for a water and/or wastewater connection as detailed on this form.

I/We understand that any alterations made to this application must be declared to Irish Water.

The details that I/we have given with this application are accurate.

I/We have enclosed all the necessary supporting documentation.

Any personal data you provide will be stored and processed by Irish Water and may be transferred to third parties for the purposes of the water and/or wastewater connection process. I hereby give consent to Irish Water to store and process my personal data and to transfer my personal data to third parties, if required, for the purposes of the connection process.

If you wish to revoke consent at any time or wish to see Irish Water's full Data Protection Notice, please see **https://www.water.ie/privacy-notice/**

Signature:	John O'Reilly Digitally signed by John O'Reilly Date: 2022.10.12 15:13:28 +01'00'	Date:	12	10,	2	0 2	2				
Your full name (in BLOCK CAPITALS):											
JOHN	O ' R E I L L Y										

Irish Water will carry out a formal assessment based on the information provided on this form. Any future connection offer made by Irish Water will be based on the information that has been provided here.

Please submit the completed form to newconnections@water.ie or alternatively, post to:

Irish Water PO Box 860 South City Delivery Office Cork City