



OBA | CONSULTING
CIVIL & STRUCTURAL
ENGINEERS

ENGINEERING DRAINAGE REPORT FOR PLANNING SUBMISSION

636 Whitechurch Road
Rathfarnham
Dublin 16

Reference: 103-04
Date: 25 July 2022



ENGINEERS
IRELAND



ACEI
Association of Consulting
Engineers Ireland

OBA Consulting Engineers Ltd
The School Yard
1 Grantham Street
Dublin 8
Tel +353 1 535 0084
Web www.obaconsulting.ie

636 Whitechurch Road, Rathfarnham, Dublin 16
Ref: 103-04

Drainage Summary for 636 Whitechurch Road, Rathfarnham, Dublin 16

1.0 General

The site is traversed by a 150mm diameter foul sewer and a 100mm diameter cast-iron watermain to the rear of the existing residential building. Please refer to attached records for clarity. The foul sewer has a change of direction manhole located midway to the rear of the existing building. The sewer flows northwards where it passes beneath the neighbouring residential building at no. 637 Whitechurch Road. The site rises up approximately 2 metres from Whitechurch Road to the rear of the site.

2.0 Foul Water Drainage

It is proposed relay the existing foul sewer, retaining the direction of the existing sewer (EX. F2 northwards) and to construct a diverted leg F2-F1-southwards. This diversion (F2-F1) is to be located 3 metres offset from the southern wall of the residence (and 3 metres from the boundary wall). The sewer passing beneath the building is to be protected in accordance with section 1.7.1 of Building Guidance Document H, Environment, Heritage and Local Government.

Email correspondence, dated 18 January 2022, has been entered into with Mr. Juan Rubio, Diversions, Connections and Developer Services of Irish Water, in relation to the foul sewer and watermain traversing the rear of the site. Further details and a 'build-over' application is in the process of being submitted for Irish Water consent. Copy of correspondence attached for further clarity.

New dedicated foul drains are to be provided around the rear and southern perimeter of the new building, discharging by gravity to the final outfall manhole F4, prior to saddle connection to the new sewer. Final manhole is to be built in accordance with Irish Water Standard detail WW-STD-13. Please refer to OBA drawing no. 103-04-C01 for further clarity.

All new foul drains and sewers shall be 100/150mm diameter uPVC at gradients producing velocities within the range of 0.75 and 3.0 m/s and are designed and will be installed in accordance with BS 8301: 1985.

3.0 Surface Water Drainage

To comply with the Greater Dublin Strategic Drainage Study (GSDSDS) and Sustainable Urban Drainage Systems (SUDs), a **soakaway** is to be provided. It is proposed to provide the new soakaway structure at the rear of the residence. The soakaway structure has been provisionally sized based on an assumed soil infiltration rate. Soil infiltration tests are to be undertaken by the contractor prior to construction of the soakaway in order to finalise the design dimensions.

The access driveway is to be provided a permeable stone chip surface.

All surface water drains shall 100mm diameter uPVC, at gradients producing velocities ranging between 0.8 and 3 m/s and are designed and to be installed in accordance with BS 8301: 1985 and the greater Dublin Regional Code of Practice for Drainage Work. All drainage works shall be in accordance with the requirements of Dun Laoghaire County Council.

Refer to drawing no. 104-03-C01 for the proposed site drainage layout plan.

4.0 Water Supply

The existing 100mm diameter CI watermain in the rear of the site is to be retained in its present position, with an offset of 3.23 metres from the building at its closest position.

It is proposed to retain the existing water service connection to the site.

Refer to drawing no. 103-04-C01 for further details.

From: Ciaran <ciaran.mccabe3@hotmail.com>
Date: 18 January 2022 at 10:07:14 GMT
To: Catherine <cackyjoyce@gmail.com>
Subject: Fwd: 636 whitechurch road

Sent from my iPhone

Begin forwarded message:

From: "Juan Rubio (C)" <jrubio@water.ie>
Date: 18 January 2022 at 09:26:32 GMT
To: ciaran mc cabe <ciaran.mccabe3@hotmail.com>
Cc: Diversions <Diversions@water.ie>
Subject: RE: 636 whitechurch road

Morning Ciaran

Thanks for your clarification.

Unfortunately IW don't have resources to meet with applicants at this stage of the project or query.

In relation to the water main, It is fine for IW if your proposal extension works will be at less 3m horizontal separation distance from the existing water main, if this horizontal separation distance will be reduced, IW need to assess your proposal works and confirm if the water can stay at the same location or it has to be diverted. Note applicant has to confirm the location and depth of the water main onsite before this assessment is carry out.

In relation to the sewer main, it is fine to build over but applicant has to apply for a build over application form and send to IW the relevant information (existing and proposal layout, depth and material of the existing sewer main, CCTV survey report along the section to be build over, cross section drawing between the new extension and existing sewer main,...). Once applicant apply for the build over and send us the relevant information, IW will assess your proposal and IW will confirm if the build over is feasible or not, If it is feasible, IW and applicant will execute a build over agreement before any works commence onsite. If IW find any issue during the assessment, maybe IW will request to applicant to replace the existing sewer with new sewer main in order to accept the proposal build over. All that will be reviewed/assessed during the build over application procedure.

Please, let me now if you need any further assistance.

Regards,

Juan Antonio Gragera Rubio
Diversions, Connections and Developer Services
Irish Water
Colvill House, 24-26 Talbot Street, Dublin 1, Ireland
E: diversions@water.ie

From: ciaran mc cabe <ciaran.mccabe3@hotmail.com>
Sent: Monday 17 January 2022 13:52
To: Juan Rubio (C) <jrubio@water.ie>
Subject: Fwd: 636 whitechurch road

CAUTION: This email originated from outside of your organisation. Do not click links or open attachments unless you recognise the sender and are sure that the content is safe.

Sent from my iPhone

Begin forwarded message:

From: ciaran mc caba <ciaran.mccabe3@hotmail.com>
Date: 17 January 2022 at 13:27:31 GMT
To: Catherine <cackyjoyce@gmail.com>
Subject: Re: 636 whitechurch road

Hi Juan

Many thanks for prompt reply. I'm just wondering is there any possibility of a site visit been conducted to discuss the proposed extension and location.

We are not planning to build over the water main and we will be leaving the manhole exposed. The only plan to build over is the exciting sewer pipe. We are just gone sale agreed on this property so looking for any advice/meeting would be much appreciated as if an extension is not possible due to water pipes we will not be able to progress the sale any further

Kind regards
Ciaran mccabe
Sent from my iPhone

On 17 Jan 2022, at 12:31, Ciaran <ciaran.mccabe3@hotmail.com> wrote:

Sent from my iPhone

Begin forwarded message:

From: "Juan Rubio (C)" <jrubio@water.ie>
Date: 17 January 2022 at 10:02:25 GMT
To: ciaran.mccabe3@hotmail.com
Cc: Diversions <Diversions@water.ie>
Subject: RE: 636 whitechurch road

Morning Ciaran

Many thanks for your email.

I am checking our IW GIS record system and there are 2 recorded IW mains along your site which can be affected by your proposal extension works. As below screenshot from our records, there are 100mm CI water main and 150mm unknown foul main with a manhole.

Please, note that IW Standards and Code of Practices don't allow to applicant to build over any existing water main and over any existing manhole so in this case, applicant has to confirm how the new extension works will affect to those asset and also how to the 150mm foul main.



In order to IW Diversion Team to register, review, comment and approve your proposal diversion works, the below information is required;

- Completed and signed diversion/build over application form.
- Location map.
- Detailed layout drawing showing the existing and proposal extension works and location of existing IW mains along your land. Please, could you indicate the horizontal separation distances from existing/proposed services and existing/proposal permanent structures?.
- Cross section drawing for the proposal build over indicating the existing and proposal extension works, foundation, separation distance between them,....
- Planning reference.
- A deed of easement is to be put in place and registered over any existing Irish Water asset where one does not currently exist as part of any diversion or build over agreement. Draft template attached.
- Detailed drawing for the manholes to be installed onsite if the existing manhole has to be relocated.
- CCTV survey report along existing foul main sections to be built over.
- it is your/applicant responsibility to locate all Irish Water assets present on your site. Details can be obtained by emailing an Ordinance Survey map identifying the site location to Datarequests@water.ie. Note there is a disclaimer that applies to the map provided by Irish Water stating that it is a general guideline only and the location of Irish Water's assets will need to be confirmed on site by applicant. Please include the results of any survey as part of your application;
- In accordance with the Connection Charging Policy the customer will be liable for the full cost of the diversion work and will be required to enter into a Diversion Agreement with Irish Water prior to works commencing.
- Once application form and detailed drawings are received, Irish Water will carry out a review to assess feasibility. If Irish Water have no objection to the proposal design, Irish Water will progress with the Diversion/Build over Agreement.

Diversion/build over application form and process can be found in <https://www.water.ie/connections/developer-services/diversion-and-build-over/>

IW Standards and Code of Practices can be found in <https://www.water.ie/connections/developer-services/technical-guidance/>

Once IW Diversion Team has received the above information, IW will register your case in our system and an engineer will contact you to review/comment/approve your proposal diversion works.

Note, a diversion agreement has to be executed between IW and applicant prior any works can commence onsite.

Please, let me know if you need any further assistance in that.

Regards,

Juan Antonio Gragera Rubio

Diversions, Connections and Developer Services

Irish Water

Colvill House, 24-26 Talbot Street, Dublin 1, Ireland

E: diversions@water.ie

-----Original Message-----

From: Ciaran <ciaran.mccabe3@hotmail.com>

Sent: Friday 14 January 2022 17:07

To: Diversions <Diversions@water.ie>

Subject: 636 whitechurch road

Hi,

My name is Ciaran mc cabe I am planning on building a extension on to my house. 636 whitechurch road rathfarnham Dublin 16. At the back of my house the public sewer runs along the back. I will need to build over the sewer. Is it possible someone ring to see what my opinions are. If I need to divert the sewer or if I can build over the sewer. I hopefully will be going in for planning in the next few weeks. I have attached a drawing with the map which shows the pipe. I can take a call at anytime on this on 0872431327

Thanks

Ciaran Mc Cabe.

Sent from my iPhone

The information transmitted is intended only for the person or entity to which it is addressed and may contain confidential, commercially sensitive and/or privileged material. Any review, retransmission, dissemination or other use of, or taking of any action in reliance upon, this information by persons or entities other than the intended recipient is prohibited and may be unlawful. Irish Water accepts no liability for actions or effects based on the prohibited usage of this information. Irish Water is neither liable for the proper and complete transmission of the information contained in this communication nor for any delay in its receipt. If you received this in error, please contact the sender and delete the material from any computer. E-Mail may be susceptible to data corruption, interception and unauthorised amendment. Irish Water accepts no responsibility for changes to or interception of this e-mail after it was sent or for any damage to the recipients systems or data caused by this message or its attachments. Please also note that messages to or from Irish Water may be monitored to ensure compliance with Irish Water's policies and standards and to protect our business. Irish Water, a designated activity company limited by shares, is a subsidiary of Ervia, established pursuant to the Water Services Act 2013, having its principal place of business at Colvill House, 24-26 Talbot Street, Dublin 1.

Thank you for your attention.

Soakaway Design DG365-2016

Storm Rainfalls for a range of storm durations

Storm Duration min	M ₁₀₀ -D min = R mm
10	26.30
15	30.90
30	38.70
60	48.30
120	60.40
240	75.50
360	86.00
720	107.40
1440	134.30

Assumed values for a rectangular soakaway

length (L) = 5 m
depth (D) = 1.2 m
width (W) = W m

Calculate the design width of the soakaway (W):

Accumulative impermeable area (A) = 196 m² (includes roof only)

Inflow (I) = The inflow from the impermeable area drained to the soakaway
 $I = A \times R$, where
A = Accumulative impermeable area
R = The total rainfall in a design storm for a specific duration

Outflow (O) = The outflow infiltrating into the soil during rainfall
 $O = a_{s50} \times f \times d$, where
 a_{s50} = The internal surface area of the Soakaway to 50% effective depth :this excludes the base
f = The soil infiltration rate determined in a trial pit
d = The storm duration

$$a_{s50} = 2 \times (L + W) \times (D / 2)$$

$$= 6 + 1.2 W$$

$$f = 1.00E-05 \text{ m/s} \quad \text{assumed}$$

Assume Modular units with 95% free volume shall be used to construct the soakaway

Storage (S) = 95% of the effective volume of soakaway, and

0.95

Storage (S) = The required storage in the soakaway
 $S = I - O$

100 year storm (+20%)

Duration minutes	Rainfall mm	1.2 x Rainfall 20% climate	Inflow m ³	Outflow m ³	Storage m ³	W m
10	26.30	31.56	6.18576	0.03600 + 0.0072 W	6 W	1.0775
15	30.90	37.08	7.26768	0.05400 + 0.0108 W	6 W	1.2632
30	38.70	46.44	9.10224	0.10800 + 0.0216 W	6 W	1.5720
60	48.30	57.96	11.3602	0.21600 + 0.0432 W	6 W	1.9404
120	60.40	72.48	14.2061	0.43200 + 0.0864 W	6 W	2.3804
240	75.50	90.60	17.7576	0.86400 + 0.1728 W	6 W	2.8766
360	86.00	103.20	20.2272	1.29600 + 0.2592 W	6 W	3.1768
720	107.40	128.88	25.2605	2.59200 + 0.5184 W	6 W	3.6454
1440	134.30	161.16	31.5874	5.18400 + 1.0368 W	6 W	3.9193
2880	149.50	179.40	35.1624	10.36800 + 2.0736 W	6 W	3.1896

Therefore construct a Soakaway:

5 m long x 1.2 m deep x 4 m wide

Prepared by: A. Manthe

Met Eireann
Return Period Rainfall Depths for sliding Durations
Irish Grid: Easting: 314477, Northing: 226731,

DURATION	Interval 6months, 1year,	Years														
		2,	3,	4,	5,	10,	20,	30,	50,	75,	100,	150,	200,	250,	500,	
5 mins	2.7, 4.0,	4.7,	5.8,	6.6,	7.1,	9.1,	11.5,	13.0,	15.3,	17.3,	18.9,	21.4,	23.3,	25.0,	N/A,	
10 mins	3.8, 5.6,	6.5,	8.1,	9.1,	10.7,	12.7,	16.0,	18.1,	21.3,	24.1,	26.3,	29.8,	32.5,	34.8,	N/A,	
15 mins	4.4, 6.5,	7.7,	9.5,	10.7,	11.0,	15.0,	18.8,	21.3,	25.0,	28.3,	30.9,	35.0,	38.2,	40.9,	N/A,	
30 mins	5.8, 8.5,	10.0,	12.2,	13.8,	15.0,	19.1,	23.8,	26.9,	31.4,	35.5,	38.7,	43.6,	47.5,	50.7,	N/A,	
1 hours	7.7, 11.1,	13.0,	15.8,	17.7,	19.3,	24.3,	30.1,	34.0,	39.5,	44.5,	48.3,	54.3,	59.0,	62.9,	N/A,	
2 hours	10.1, 14.4,	16.8,	20.4,	22.8,	24.7,	31.0,	38.1,	42.9,	49.6,	55.7,	60.4,	67.7,	73.3,	78.1,	N/A,	
3 hours	11.8, 16.8,	19.6,	23.6,	26.4,	28.6,	35.7,	43.8,	49.2,	56.7,	63.5,	68.8,	76.9,	83.3,	88.6,	N/A,	
4 hours	13.3, 18.8,	21.8,	26.3,	29.3,	31.7,	39.5,	48.3,	54.1,	62.4,	69.8,	75.5,	84.3,	91.2,	96.8,	N/A,	
6 hours	15.6, 21.9,	25.4,	30.5,	34.0,	36.7,	45.5,	55.5,	62.0,	71.3,	79.6,	86.0,	95.8,	103.5,	109.9,	N/A,	
9 hours	18.3, 25.6,	29.5,	35.4,	39.3,	42.4,	52.4,	63.7,	71.1,	81.5,	90.8,	98.0,	109.0,	117.5,	124.6,	N/A,	
12 hours	20.5, 28.6,	32.9,	39.3,	43.6,	47.0,	57.9,	70.2,	78.3,	89.6,	99.7,	107.4,	119.4,	128.6,	136.3,	N/A,	
18 hours	24.1, 33.4,	38.3,	45.6,	50.6,	54.4,	66.7,	80.6,	89.7,	102.5,	113.7,	122.4,	135.8,	146.1,	154.6,	N/A,	
24 hours	27.0, 37.2,	42.6,	50.7,	56.1,	60.3,	73.8,	88.9,	98.8,	112.7,	124.9,	134.3,	148.7,	159.8,	169.0,	201.1,	
2 days	33.8, 45.6,	51.7,	60.7,	66.6,	71.2,	85.9,	102.1,	112.6,	127.1,	139.8,	149.5,	164.3,	175.7,	185.0,	217.3,	
3 days	39.4, 52.3,	59.0,	68.7,	75.1,	80.1,	95.7,	112.8,	123.9,	139.0,	152.3,	162.3,	177.6,	189.3,	198.9,	231.8,	
4 days	44.3, 58.2,	65.4,	75.7,	82.6,	87.8,	104.3,	122.2,	133.7,	149.5,	163.2,	173.6,	189.4,	201.4,	211.3,	244.9,	
6 days	52.8, 68.5,	76.5,	87.9,	95.4,	101.2,	119.1,	138.5,	150.9,	167.7,	182.3,	193.3,	209.9,	222.5,	232.8,	267.9,	
8 days	60.4, 77.6,	86.2,	98.6,	106.7,	112.9,	132.1,	152.7,	165.8,	183.6,	198.9,	210.4,	227.8,	241.0,	251.7,	288.1,	
10 days	67.4, 85.9,	95.1,	108.4,	117.0,	123.5,	143.8,	165.6,	179.3,	197.9,	213.8,	225.9,	244.0,	257.6,	268.7,	306.3,	
12 days	73.9, 93.6,	103.4,	117.4,	126.5,	133.3,	154.7,	177.4,	191.7,	211.1,	227.7,	240.1,	258.8,	272.9,	284.4,	323.0,	
16 days	86.0, 107.9,	118.7,	134.1,	144.0,	151.4,	174.6,	199.1,	214.4,	235.1,	252.8,	266.1,	285.9,	300.8,	312.9,	353.5,	
20 days	97.3, 121.0,	132.7,	149.3,	160.0,	168.0,	192.7,	218.8,	235.1,	257.0,	275.6,	289.5,	310.3,	326.0,	338.6,	381.0,	
25 days	110.5, 136.4,	149.1,	167.0,	178.5,	187.1,	213.7,	241.5,	258.8,	282.0,	301.7,	316.5,	338.4,	354.8,	368.1,	412.5,	

NOTES:

N/A Data not available

These values are derived from a Depth Duration Frequency (DDF) Model

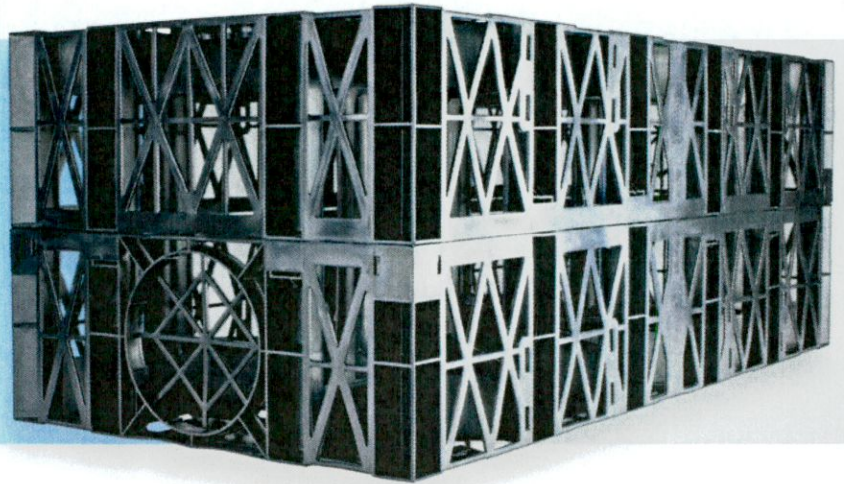
For details refer to:

'Fitzgerald D. L. (2007), Estimates of Point Rainfall Frequencies, Technical Note No. 61, Met Eireann, Dublin',
Available for download at www.met.ie/climate/dataproducts/Estimation-of-Point-Rainfall-Frequencies_TN61.pdf

AquaCell Eco

Product description

AquaCell Eco is manufactured from specially reformulated, recycled material and has been specifically designed for shallow, non-trafficked, landscaped applications. AquaCell Eco is NOT suitable for locations subject to high water tables.



Technical specification

Product code / SAP code	6LB025 / 4040289	Void ratio	95%
Colour	Black	Material	Recycled PP
Dimensions	1m x 0.5m x 0.4m	Vertical loading	21.3 tonnes/m ² (213 kN/m ²)
Weight	7kg	Lateral loading	5.2 tonnes/m ² (52 kN/m ²)
Storage volume	190 litres	BBA approval	Certificate 03/4018

Maximum installation depths

Typical soil type	Maximum depth of installation – to base of units (m) ¹		
	Soil weight kN/m ³	Angle of internal friction ϕ (degrees) ^{2,3}	Landscaped areas
Over consolidated stiff clay	20	24	1.53
Silty sandy clay	19	26	1.68
Loose sand and gravel	18	30	2.08
Medium dense sand and gravel	19	34	2.35
Dense sand and gravel	20	38	2.68

Minimum cover depths

Landscaped areas	
Minimum cover depth (m)	0.30 ³

1. These values relate to installations where the groundwater is a minimum of one metre below the base of the excavation.

2. AquaCell Eco units should not be used where groundwater is present.

3. 0.5m cover is required where a ride-on mower may be used.

Assumptions made:

- Ground surface is horizontal
- Shear planes or other weaknesses are not present within the structure of the soil

Source: BBA

