Douglas Carroll
Consulting Engineers

Water Boosting and Balancing Tank Report for Development at Old Nangor Road for Dublin Simon Community

Adam Stringer

W1739

21/10/2022

Table of Contents

Douglas Carroll
Consulting Engineers

1 INTRODUCTION:

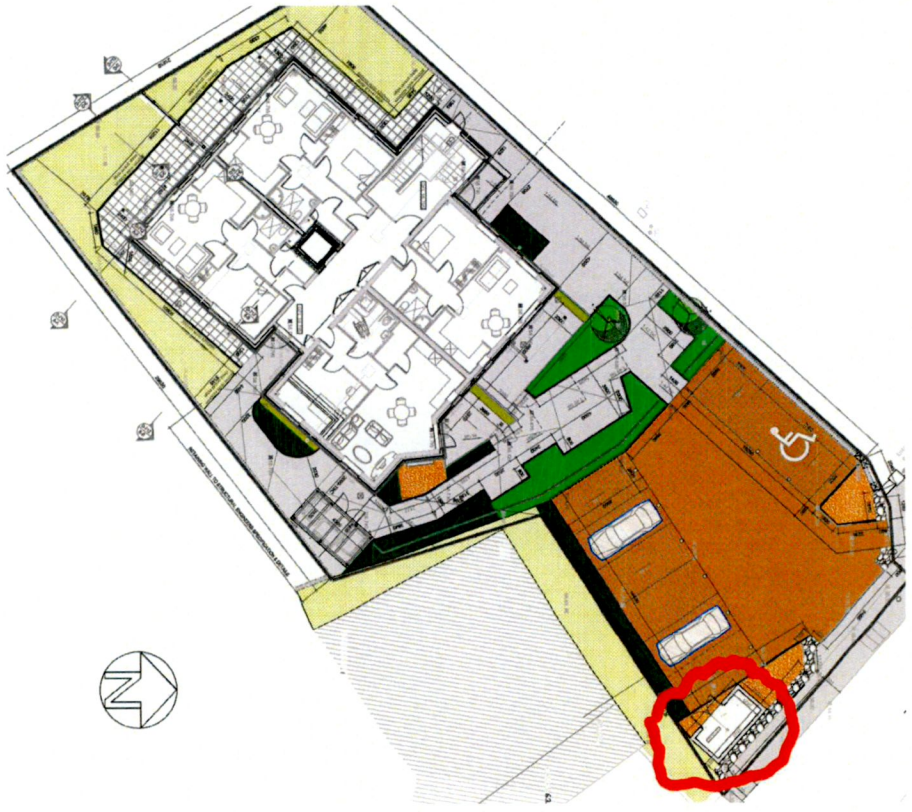
The following report has been prepared by Douglas Carroll Consulting Engineers on behalf of Dublin Simon Community to provide sufficient information regarding the Water Boosting Requirements associated with planning permission.

2 BACKGROUND

Dublin Simon Community have issued documentation seeking planning permission from South Dublin County Council for the construction of a social housing development. This social housing development comprises of 10No. 1 bed units in a three-storey apartment building, bin stores, water plant room together with parking for cars and bicycles & new vehicular access onto Old Nangor Road, Clondalkin, Dublin 22.

This report will show details of the booster pumps and balancing tanks as required by Irish Water to serve the proposed apartment block. The report also contains the Specifications for Laying of Watermains & Drinking Water Supply. The Booster Pump and Balancing Tank will be in the Plant Room at the rear of the site as shown below

.



Douglas Carroll
Consulting Engineers

3 WATER DEMAND

Section 3.7.2 of the Irish Water *Code of Practice for Water Infrastructure* IW-CDS-5020-30 is used to calculate the water demand associated with the development & is outlined below:

Irish Water Guidelines - Section 3.7		
Average Daily Domestic Demand	150	l/person per day
Average Occupancy Ratio	2.7	persons per dwelling
No. of Dwellings	10	
Daily Demand	4050	litres per day
Average Day / Peak week	5062.5	litres per day
Peak Demand - Pipe Sizing	2.1	m3/hr
Booster Pump Output	2.1	m3/hr
Booster Pump Pressure	4	Bar
Booster Pump Output in 30 mins	1055	*30 minutes storage

The typical service pipe to the development from break tank and booster pump room should be 80mmø internal diameter unless dictated otherwise by the fire consultant for water flow to fire hydrants and wet risers.

Internal services pipes to each dwelling should be 20mmø internal diameter.

Pipe Size (ID) mm	**Pipe Material**
25 to 80	HDPE and MDPE
100 to 150	HDPE, MDPE and DI
200 to 300	HDPE, MDPE and DI
350 to 600	HPPE and DI
>600	DI

As noted in the table above the peak water demand for the development is 2.1 m^3/hr.

Douglas Carroll
Consulting Engineers

4 BOOSTED WATER SUPPLY AND BREAK TANKS

Section 3.13 of the Irish Water *Code of Practice for Water Infrastructure* IW-CDS-5020-03, outlines the requirement for a building that is more than two storeys in height to provide internal pressure boosting arrangement

The building should be equipped with a balancing tank and booster pump to allow sufficient pressure throughout the building.

The water demand as noted in the previous section 3.0 is 2.1 m^3/hr. This is 35 L/min and is greater than 10 L/min therefore in-line boosting is not permitted.

The booster pumps must have a capacity of 2.1 m^3/hr to match the peak daily demand.

The break tank feeding the booster pumps should have an effective capacity of not less than 30 minutes pump out capacity, or 1,050 litres.

An unrestricted air-gap device (AA type device, IS EN1717) should be fitted on each of the 10 water supplies distributed from the break tank to prevent contamination.

A sampling tap must be provided on the inlet pipe feeding the break tank for the use of Irish Water for quality sampling purposes.

Details of the proposed plant room showing tank, meters and booster pump set are shown below.

5 APPENDIX 1: BREAK TANK AND BOOSTER PUMPSET DETAILS

BOOSTER PUMP

HYDRO BOOSTERS BOOSTER SET

HYDRO MULTI-E 2 CME 3-3

No. 98494921

Suitable for

- Commercial water pressure boosting
- District cooling
- District heating

View more

Energy efficient pressure boosting system for boosting of clean water. Available with 2-4 parallel connected frequency controlled pumps, Integrated advanced controller and all necessary fittings

Product name	HYDRO MULTI-E 2 CME 3-3
Product No	98494921
EAN number	5711496108495
Price	EUR 7596

Technical

Max flow	10.4 m³/h
Min flow system	0.31 m³/h
Head max	39.4 m
Pump name	CME 3-3
Number of pumps	2

Materials

Pump housing	Cast iron
Manifolds	GALVANISED STEEL

Installation

Maximum operating pressure	10 bar
Maximum permissible inlet pressure	PN 10 bar
Flange standard	DIN ISO 7/1
Manifold inlet	R 1 1/2
Manifold outlet	R 1 1/2

Liquid

Pumped liquid	Water
Liquid temperature range	5 .. 60 °C
Selected liquid temperature	20 °C
Density	998.2 kg/m³

Electrical data

IE Efficiency class	IE5
Power (P2) main pump	1.1 kW
Mains frequency	50 / 60 Hz
Rated voltage	3 x 380-415 V
Phase main pump	1
Rated current	6.5 A
Start. method	electronically
Enclosure class (IEC 34-5)	IP54

Tank

Volume of pressure tank	8 l
Diaphragm tank	Yes

Others

Net weight	65 kg
Gross weight	73 kg
Shipping volume	0.315 m³
Language	Multi

Douglas Carroll
Consulting Engineers

WATER TANK:

1500L ONE PIECE INSULATED GRP WATER TANK

This one piece insulated cold water storage tank is manufactured from WRAS approved GRP materials. These insulated water tanks have fully encapsulated insulation to sides and lid and a close fitting and sealed lid which is removable for maintenance. The insulated water tanks are supplied complete with screened vent and screened overflow unit up to a maximum of 2â€¦ to comply with The Water supply (water fittings) Regulations 1999. These insulated water tanks are manufactured to BS EN 13280:2001 and Quality System manufactured in accordance with ISO 9001:2000.

SUITABLE FOR ALL COLD WATER APPLICATIONS INCLUDING:

- Potable & Non Potable water storage
- Process water (including process cooling) applications -15Â° to +29Â° c
- Provides mains water protection from fluid category 1, 2, 3 & 4 with standard lid arrangement & fluid category 5 when raised float valve housing is fitted

SPECIFICATION:

- Internal dims : 1500 x 1000 x 1000 mm
- Manufactured from the highest quality GRP materials
- CFC free PU foam insulation is completely encapsulated within the GRP laminate
- Structural support where required is provided by rolled hollow section steel with welded corner jointing, which is also completely encapsulated within the GRP laminate
- The outer surface of the tank is coated with polyester gel coat to ensure tank suitability for external positioning in most extremes of weather as standard

Nominal capacity shown

Nominal capacity = full capacity to top of tank

Actual capacity = float level

Please note: valves and fittings are supplied loose (items can be fitted to the tank for an additional fee). More options for fittings are available on request.

The Encapsulated Baseboard will come moulded into the internal base of the tank to become part of the tanks construction and overall strength of the base. This will benefit the tank if its on uneven surfaces or positioned raise supports. It will not come supplied as a separate item.

Tank is supplied as standard with two built-in fixing pads, positioned at opposite ends of the tank (please see image for location of fixing pads).

Douglas Carroll Consulting Engineers

Suite 7, 3rd Floor

Station House, Railway Square

Waterford.

Tel 051 306670