Project

PROPOSED EXTERNAL VEHICLE WASH AT UNIT 2007/2008 ORCHARD AVE. CITY WEST

Penort Title

CAR WASH PUMP DESIGN REPORT

Client

Gowan Distributor Ltd





Job Title: Proposed External Vehicle Wash at Unit 2007/2008 Orchard Ave.

City West

Job Number: 210091

Report Title: Car Wash Pump Design Report

Report Reference: 210091-DBFL-SW-SP-RP-C-0001

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Revision	Issue Date	Description	Prepared	Reviewed	Approved
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P2	16/02/2022	Planning Reponse	TCA	JK	DJR

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Appendix A. PUMP DESIGN CALCULATIONS

1.0 INTRODUCTION

1.1 Background

The proposed development comprises of changes to the existing development at Units 2007 and 2008, Orchard Avenue, Citywest Business Campus, Dublin 24. The application includes provision of a new car wash facility to be installed in addition to the proposed changes to the existing development approved under planning ref SD21A/0240.

1.2 Report Objectives

This report is intended to address the strategy to discharge wastewater generated by the proposed car wash to the existing foul drainage network previously installed under planning reference SD21A/0240.

2.0 PROPOSED DRAINAGE

The proposed location for the new car wash facility is currently a hardstanding concrete footpath. The new facility will not contribute to additional surface water drainage discharging to the existing network.

Wastewater generated from the new carwash will be collected in a Car Wash Silt trap and discharged to the foul sewer installed to the south of the building as part of a previous planning application ref: SD21A/0240. The proposed car wash system is a Stargate S6 Aquarama is an uncovered unit. Rainwater falling on the new car wash will therefore be cross contaminated and will be collected in the proposed foul drainage network.

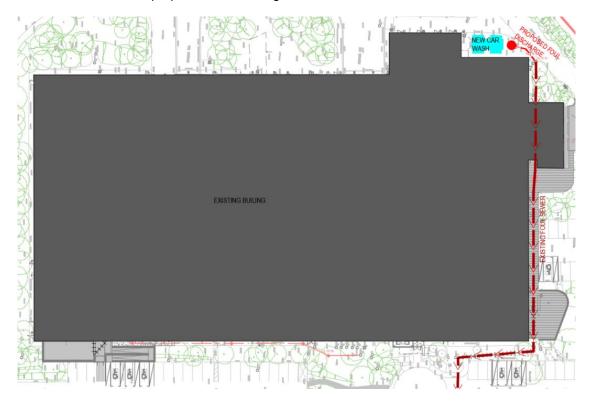


Figure 2-1 General Layout

Due to the existing topography of the site and the levels of the existing foul sewer the discharge from the new car wash will need to be pumped via rising main to the nearest foul manhole. The pump is proposed to be located within a precast pump chamber that will also provide 24-hour storage will be provided to allow for maintenance/repair of the pump system. Wastewater will pass through washdown separator (Klargester W1/020 or similar approved) prior to entering the pump.

Refer to DBFL drawing 210091-DBFL-CS-SP-DR-C-5310 for further details.

3.0 DESIGN CALCULATIONS

The proposed car wash system is a Stargate S6 Aquarama Car Wash with a discharge rate of 42 l/min when in use. The new car wash is estimated to be used several times throughout the working day. Further design criteria are as follows:

Minimum pipe size: 80mm Ductile Iron

Flow Rate: 42 l/min Working Hours: 5 hrs

Daily Flow:12.6 m³/dayInvert of Pump:106.00mInvert of Discharge Manhole:107.60mPipe Roughness Coefficient:1.5mm

Minimum Velocity: 3.77 l/s (self-cleansing)

Table 1 Estimated Flow Rates

Flow Rate	Working Hours	Daily Flow	Daily Loading
(I/min)	(hrs)	m³/day	I/s
42	5	12.6	0.7
Peak inflow to Pump (6DWF) I/s			4.2
Chosen Pump Rate I/s			5.0
	24 hour Emergend	y Storage Requirement	2.4m ³

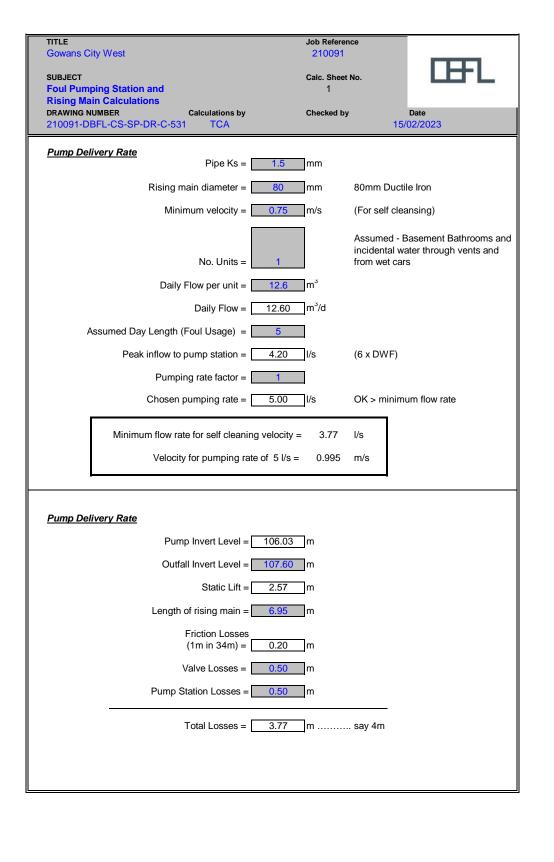
Table 2 Estimated Water Demand

Flow Rate	Daily Working Hours	Average Daily demand
(I/m)	(hrs)	I/day
42	5	12,600
Peaking Factor in Accor	1.25	
Average Day/Peak Week Demand (I/day)		15,750

Full pump design calculations available in Appendix A.

APPENDIX A

PUMP DESIGN CALCULATIONS



TITLE
Gowans City West

Job Reference 210091

SUBJECT

Foul Pumping Station and Rising Main Calculations

Calc. Sheet No.



DRAWING NUMBER 210091-DBFL-CS-SP-DR-C-531

Calculations by TCA

Checked by

m

 m^3

Date 15/02/2023

Septicity of Rising Main

Length of rising main = 6.95

Volume of rising main = 0.03

Total daily flow = $5.25 m^3 day$

Time interval between clearing of main = 0.2 hours

0.2hrs < 6.0hrs max retention time septicity OK (IW < 6 hours)

MINIMUM SUMP STORAGE VOLUME

Minimum sump storage volume =	Q(P-Q) P(1/N)	-
Where:		
Q => Inflow =	4.20	I/s
P => Outflow =	5.00	I/s
N => Time B/W Starts =	3600	Secs
(Assumed starts per hr. =	1	nr)

Minimum sump storage volume = 2419.20 |

or = 2.40 m^3

Sump volume provided = $6.92 \text{ m}^3 \dots OK$

Max Height between starts = 2.00 m

EMERGENCY STORAGE

24 hour: Minimum storage volume required = 5.0 m³ 6 hour: Minimum storage volume required = 1.0 m³

Overflow Tank Storage volume = 0.0 m³

Sump Storage volume = 6.9 m³

Total Storage volume provided = 6.9

m³ *OK*