BEFORE THE NORTHLAND REGIONAL COUNCIL HEARINGS COMMISSIONER

IN THE MATTER of an application under section 88 of the Resource Management Act 1991 (Act)

AND an application by Doug's Opua Boatyard for resource consents relating to the redevelopment of the boatyard located at 1 Richardson Street, Opua.

FURTHER STATEMENT FROM JOHN PAPESCH IN RESPONSE TO QUESTIONS FROM THE COMMISSIONER

Dated this 5th day of August 2020

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Introduction

1. This further statement has been prepared by John Papesch (on behalf of DOBY) in response to stormwater questions raised at the hearing by Commissioner for resource consents relating to the redevelopment of the boatyard at 1 Richardson Street, Opua.

2. My statement of qualifications and experience is provided in my evidence dated the 20th July 2020. In preparing this further statement, I have read and agree to comply with the Code of Conduct for expert witnesses as set out in the Environment Court's Practice Note 2014. Any opinions expressed in this evidence are my own and are not influenced by the client or their agents. This evidence is within my area of expertise, except where I state that I am relying on the evidence of others. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

3. At the conclusion of the exchange of my brief of evidence, the Commissioner requested further information about the first flush system and how the pumping system of trade waste operates.

First Flush Volume

4. The first flush volume stated on page 42 of the AEE is 2.4 m^3. Page 10 of the Vision report lays out the calculation of 2.4 m^3 as the flush volume comprising 0.7 m^3 of water blasting the hull of a vessel, followed by 0.7 m^3 of cleaning the slipway, with a further 1.0 m^3 of rainfall or additional water blasting.

5. During my exchange I confirmed to the Commissioner that a first flush system is recommended in accordance with best practice, and further that the first 10 mm of rainfall is a reasonable rainfall depth for a first flush. The inherent principle of volume-based sizing is that the "first flush" is contained and treated. In this case, a first flush depth is derived from the desire to capture a certain amount of rainfall as trade waste which is discharged to the sewer.

6. The Water Quality Flow (WQF) from Auckland Council publication GD01 is calculated for water quality effects based upon a rainfall intensity of 10 mm per hour, which is considered equivalent to

treating the runoff from approximately 90 % of the annual rainfall. I also note that the first 10 mm of rainfall as a first flush is given as a calculation note (example) on the '*schematic detail of the of FF600 system'* within the technical literature contained in Appendix E of the Vision report.

7. The fox valve is designed for use in areas where there is no guarantee that the wash bay will be left clean at the completion of a wash activity. It is designed to cleanse a site by capturing the initial runoff and diverting it to suitable treatment, as it is most likely that this initial runoff will carry with it any residual pollutants that have been left on the site.

8. I consider the first 10 mm of rainfall for a first flush is appropriate to adopt for DOBY, subject to the owner cleaning the slipway after water blasting. Cleaning the slipway after water blasting should form part of the management plan. If cleaning the slipway did not form part of the management plan, I would recommend that the first flush volume was increased to 25 mm.

First flush system

9. The fox valve is actuated with the demand driven valve; ie at the commencement of water blasting (by turning on the hose tap) the fox valve is opened and discharge to trade waste commences. It is able to divert wash water as well as the 'first flush' (being a volume that is pre-programmed into the controller) to trade waste.

10. The fox valve will not close until a pre-programmed volume of water has been discharged to the sewer, which is based upon cycles of the float valve sensor and the algorithm that controls the valve. The fox valve operates at a flow rate of up to 1200 litres per minute = 20 litres per second, which is more than adequate for water blasting and stormwater run-off from the 218 m^2 catchment area.

11. To discharge trade waste to the sewer, a pump chamber is required, with a pump that is sized to meet the operational (water blasting) and first flush requirements.

12. The detail shown in the Vision report adopts trade waste discharge from the fox valve to an existing pump sump. With redevelopment of the slipway that this existing pump sump is no longer in operation,

and with installation of the Stormwater360 system, it is an opportune time to install a new pumping system.

13. The Environment One (E/one) pressure sewer system to which this site is connected adopts resilient grinder pumps which have been adopted for pressure sewer networks throughout NZ. From inspection of the grinder pump performance curve [**Attachment 2**], at a 25 m pressure head the grinder pump operates at a flow rate of 0.6 litres per second x 60 = 36 litres per minute (the outflow rate). A water blaster typically operates at 15 litres per minute. 10 mm of rainfall over a 218 m^2 concrete area = 2.2 m^3 of stormwater in one hour / 60 = 36 litres per minute (the inflow rate).

14. On the basis of the above a standard E/one pump would have adequate capacity to meet the discharge requirement of a first flush. Alternative pumps are also suitable, subject to selection of a pump that meets the hydraulic requirements of the discharge.

15. The pump chamber size stated on the Vision drawing is 1.5 m x 0.5 m x 1.0 m deep = 0.75 m^3. The pump chamber volume is less than the volume generated in the first flush scenario but I consider a pump chamber of this volume is adequate, subject to use of an appropriate pump and subject to the pump chamber being fitted with level alarms.

16. A standard E/one Simplex pump chamber has a volume of 0.65 m^3 [**Attachment 1**] which I consider to be an appropriate example of a system specification which could be integrated into the Vision design if a new pump chamber is required. The integration of an E/one pump chamber remains in general accordance with the Vision design and drawings.

17. Greater resilience of the trade waste pumping system can be achieved with;

    a. Duty/standby pump arrangement

    b. Emergency storage (capacity to hold a greater volume)

    c. Backup generator

18. It unlikely that washdown water will discharge to the storm filter and the CMA as the washdown system similarly relies on pumps and electricity. Subject to the trade waste pump system being fitted with

alarms, the likelihood of washdown water discharging to the stormwater treatment system is very low.

19. Subject to the trade waste pump system being fitted with alarms, the regularity of the first flush draining through the storm filter is also low. If an appropriate pump is adopted, the main event that this could occur is in a power failure. In the event of a power failure, stormwater will still discharge through the stormfilter treatment system before discharging to the CMA. As the regularity of the event is low, and the potential impact is low, I consider the risk to be very low and as such integration of greater resilience to the trade waste pumping system is not necessary.

Conclusions

20. I consider a consent condition requiring a first flush of the first 10 mm of rainfall is a reasonable approach for a site which has a management plan in place.

21. The trade waste discharge to town sewerage is reliant on a suitable pumping system. The Simplex E/one pump and pump chamber is an example an appropriate brand that could meet the requirements of the Vision report.

22. The discharge to trade waste is reliant on a mechanical pump and electricity to operate. However, in the event of a power cut or a pump failure, stormwater will still discharge through the stormfilter before discharging to the CMA.

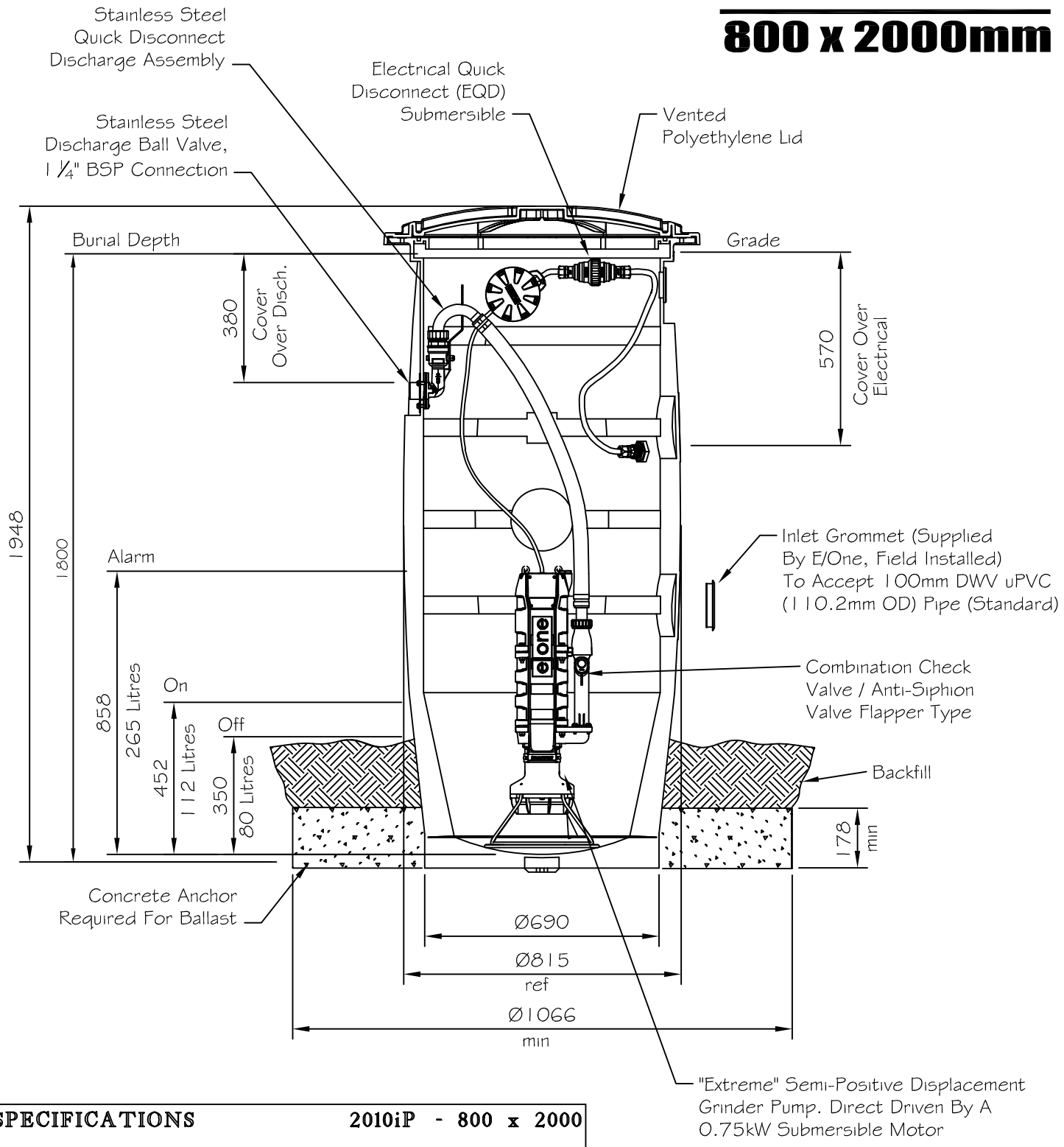
23. The gravity component of the stormwater discharge is subject to the positioning of the stormwater treatment system as is currently before the Environment Court.

John Francis Papesch

Dated this 5th day of August 2020

ATTACHMENT 1

MODEL 2010iP
800 x 2000mm



SPECIFICATIONS 2010iP - 800 x 2000

	Diameter (mm)	Height (mm)	Weight (kg)	Total Capacity (l)	Capacity Above Alarm (l)	Ballast (m3)	Inlet Pipe Size (mm)
BASIN	800	2000	74	650	379	SEE DWG	100

	Pump (s)	Dimensions (mm)	Weight (kg)	Nominal Pump Rate @ 0m TDH (lps)	Nominal Pump Rate @ 20m TDH (lps)	Nominal Pump Rate @ 42m TDH (lps)	Discharge Size (mm)
PUMP	Simplex (1)	330 X 800	47	.75	.63	.47	32

	Voltage (VAC)	Phase	Cycle (Hz)	Supply Cable (m)	Alarm Panel
ELECTRICAL	240	Single	50	As Specified	Simplex (1)

ecoflow

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P.O Box 300-249, Albany, Auckland
Ph (09)447-1793 Fax (09) 447-3901

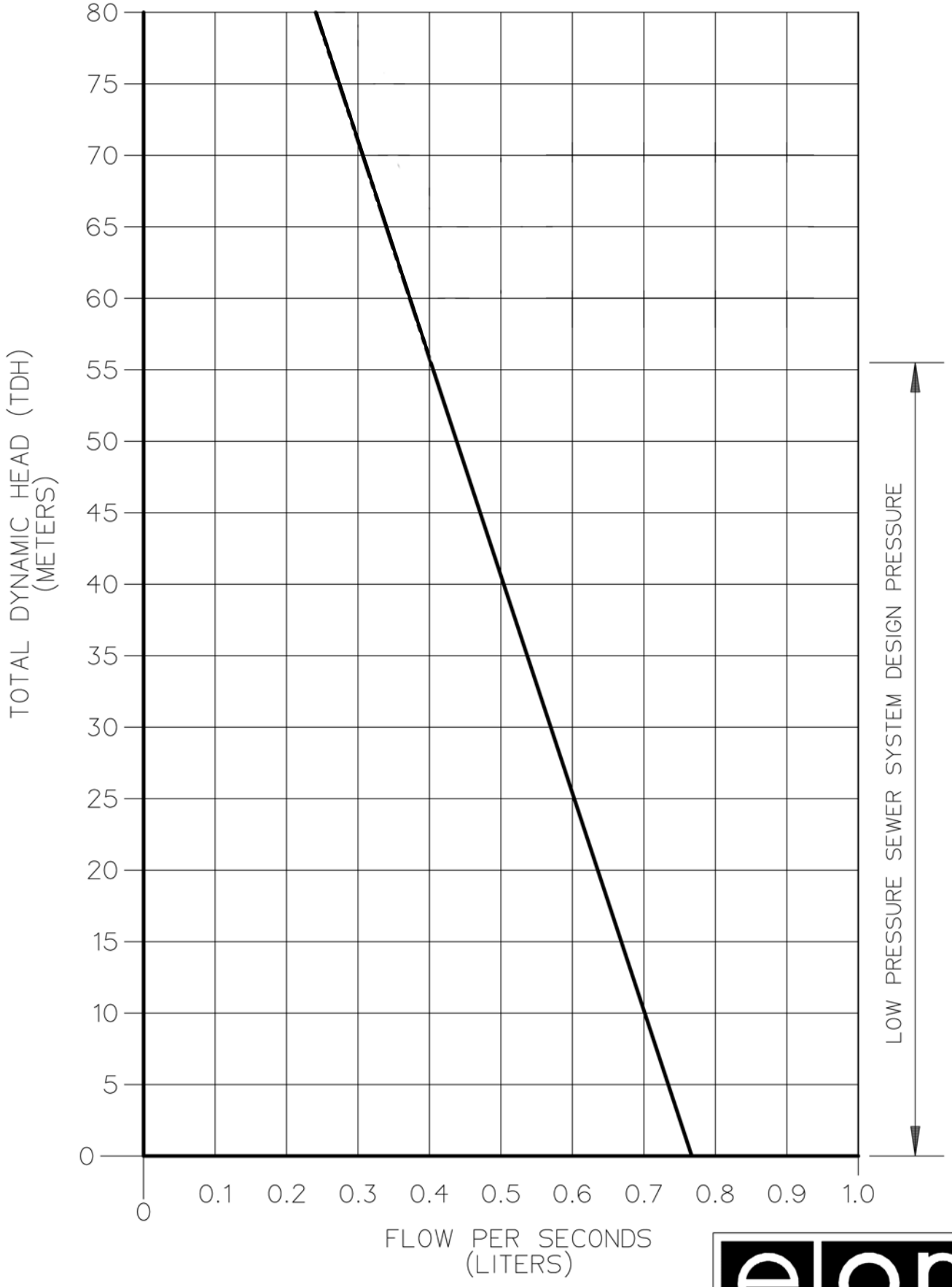
Environment One Simplex 800x2000iP

e/one SEWER SYSTEMS

ATTACHMENT 2

GRINDER PUMP PERFORMANCE CURVE

1 HP, 50 Hz



EXTREME SERIES
METRIC 50 Hz PUMP CURVE ESD 07-0052

e|one
SEWER SYSTEMS