Queensland Government

TREATMENT PLANT APPROVAL 08/2022

Plumbing and Drainage Act 2018

Approval

1. The **Eljen GSF A42 (8EP/1200L)** ("the system") described in the Specifications and Drawings in the attached Schedule and manufactured by **Eljen Corporation** ("the manufacturer") (ABN 93 607 351 511) ("the manufacturer") has been assessed in accordance with the Queensland Plumbing and Wastewater Code (QPW Code) dated 26 March 2019.

2. Approval is granted for the secondary quality wastewater treatment system, subject to compliance by the manufacturer with the requirements of the *Plumbing and Drainage Regulation 2018*, and the conditions of approval detailed below.

3. This approval, the conditions of approval and the Schedule comprise the entire Treatment Plant Approval document.

4. Any modification by the manufacturer to the design, drawings or specifications scheduled to this approval must be approved by the Chief Executive.

Conditions of approval

5. The manufacture, installation, operation, service and maintenance of the systems must be in conformity with the conditions of this Treatment Plant Approval.

6. The secondary quality wastewater treatment system, which is an example of the approved system incorporates:

   (a) a 4000L baffled septic tank fitted with a bristle-type outlet filter followed by pressure-dosing 1000L pump-well in accordance with AS1546.1:2008 and complies with the QPW code.

   (b) a sand filter bed with an approximate dimension of 6.4m length x 2.7m width or a design that is sized in accordance with the 'Eljen GSF System Design Program' which treats to a limited of 8EP/1200L/day

   (c) The GSF treatment bed consists of a minimum 15 Eljen A42 polypropylene media modules to support biological growth (Figure 1), supported by a bed of specified sand (ASTM C33 compliant particle size distribution: Table 1) to a depth of 300mm.

7. An inspection/sampling point connected to a collection pipe must be installed permanently at the opposite end of the GSF treatment bed from where the effluent stream enters the sand filter bed.

Treatment Plant Approval
Approved by: Lindsay Walker
Delegated Authority
Department of Energy & Public Works

Queensland Government

Queensland Government

8. The system when tested by a certification accreditation body in accordance with AS1546.3:2017 was found to comply with the secondary 8EP/1200L level and must continue to meet the following requirements:

TABLE 2.1 (AS1546.3:2017)

EFFLUENT COMPLIANCE CRITERIA FOR AN STS WITH NO NUTRIENT REDUCTION FACILITIES

Parameter	Secondary effluent	
	90% of samples	Maximum
BOD_5	≤20 mg/L	30 mg/L
TSS	≤30 mg/L	45 mg/L
*E. coli**	≤10 cfu/100 mL	30 cfu/100 mL
FAC	Minimum 0.5 mg/L†	N/A
Turbidity	N/A	N/A

* Where disinfection is required.

† Minimum level, not 90% of samples.

9. Each system must be serviced in accordance with the accreditation certificate by SAI Global Pty Ltd on 22 July 2021, and details supplied in the owner's operation and maintenance manual.

10. Each system must be supplied with —

(a) a copy of this Treatment Plant Approval document;
(b) details of the system;
(c) instructions for authorised persons for its installation;
(d) a copy of the owner's manual to be given to the owner at the time of installation; and
(e) detailed instructions for authorised service personal for its operation and maintenance.

11. At each anniversary of the Treatment Plant Approval date, the supplier must submit to the Chief Executive a list of all systems installed in Queensland during the previous 12 months. Where the Chief Executive is notified of any system failures the Chief Executive may randomly select a number of installed systems for audit. The Chief Executive will notify the supplier's nominated NATA accredited laboratory which systems are to be audited for BOD^5 and TSS. The sampling and testing of the selected systems, if required, is to be done at the supplier's expense. The following results must be reported to the Chief Executive;

(a) Address of premises;
(b) Date inspected and sampled;
(c) Sample identification number;
(d) BOD^5 for influent and effluent; and
(e) TSS for influent and effluent.

12. The Chief Executive may, by written notice, cancel this approval if the manufacturer/supplier fails —

    (a) to comply with one or more of the conditions of approval; or
    (b) within 30 days, to remedy a breach, for which a written notice been given by the Chief Executive.

13. This approval may only be assigned with the prior written consent of the Chief Executive.

14. This approval expires on 28 November 2027 unless cancelled earlier in accordance with paragraph 10 above.

Treatment Plant Approval
Approved by: Lindsay Walker
Delegated Authority
Department of Energy & Public Works

Queensland Government

Lindsay Walker
Director
Plumbing, Drainage and Special Projects
Building Legislation and Policy
Date approved: 29 November 2022

Level 15,
53 Albert Street Brisbane

GPO Box 2457, Brisbane Qld 4001

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Facsimile +61 7 3237 1248
Website www.epw.qld.gov.au

ABN 61 331 950 314

Queensland Government

TREATMENT PLANT APPROVAL No. 08/2022
Plumbing and Drainage Act 2018

SCHEDULE

Attachment 1

Drawings and Specifications for the

Eljen GSF A42 (8EP/1200L)

Treatment Plant Approval
Approved by: Lindsay Walker
Delegated Authority
Department of Energy & Public Works

Queensland Government

A description of the flow path;

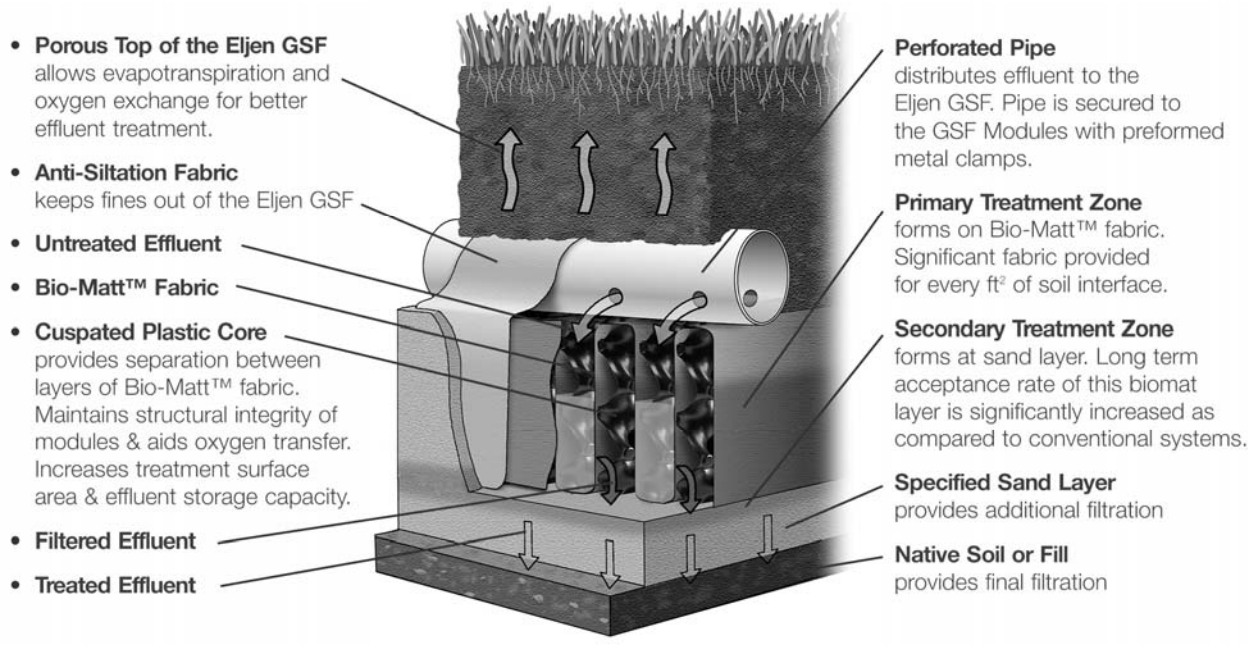
Primary Treatment Zone

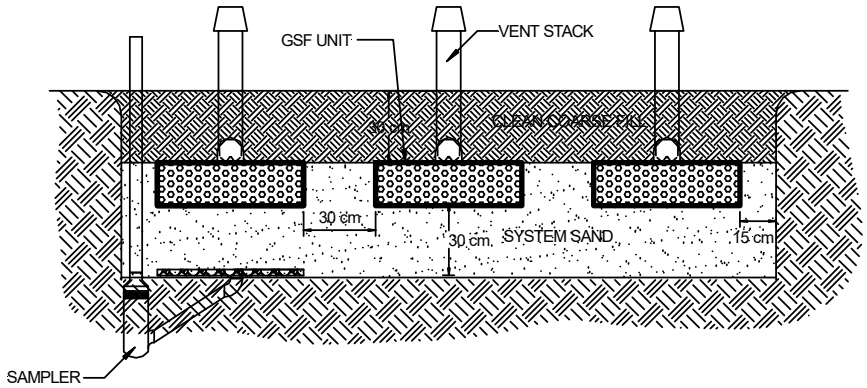
- Perforated pipe is centered above the GSF module to distribute septic effluent over and into corrugations created by the cuspated core of the geotextile module.
- Septic effluent is filtered through the Bio-Matt fabric. The module's unique design provides increased surface area for biological treatment that greatly exceeds the module's footprint.
- Open air channels within the module support aerobic bacterial growth on the modules geotextile fabric interface, surpassing the surface area required for traditional absorption systems.
- An anti-siltation geotextile fabric covers the top and sides of the GSF module and protects the Specified Sand and soil from clogging, while maintaining effluent storage within the module.

Secondary Treatment Zone

- Effluent drips into the Specified Sand layer and supports unsaturated flow into the native soil. This Specified Sand/soil interface maintains soil structure, thereby maximizing the available absorption interface in the native soil. The Specified Sand supports nitrification of the effluent, which reduces oxygen demand in the soil, thus minimizing soil clogging from anaerobic bacteria.
- The Specified Sand layer also protects the soil from compaction and helps maintain cracks and crevices in the soil. This preserves the soil's natural infiltration capacity, which is especially important in finer textured soils, where these large channels are critical for long-term performance.

GSF SYSTEM OVERVIEW





TITLE

GSF SYSTEM

CROSS VIEW

ID

0 12.5 25 cm 50 75

eljen PACIFIC

MOBILE : 0418132021

EMAIL : paul@eljenpacific.com

WEBSITE : eljenpacific.com

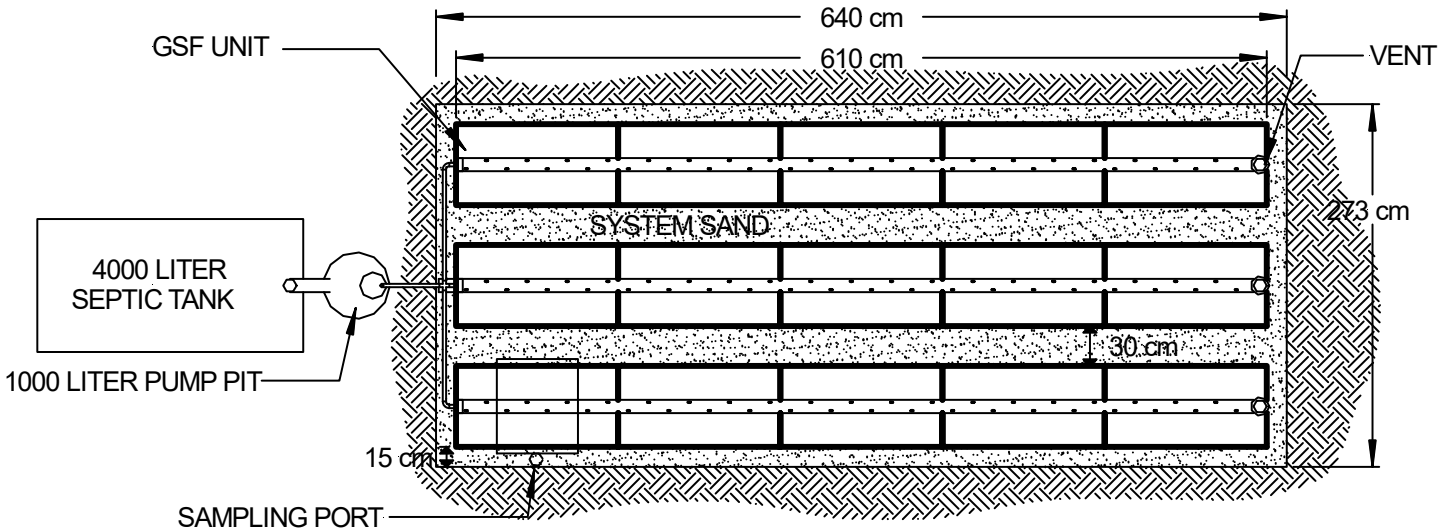
ADDRESS : 16 The Lee
Devonport
TAS 7310
Australia

DESIGNED DATE

APPROVED DATE

REVISION

SCALE	SIZE	SHEET
1:25	A4	1/1



TITLE

GSF SYSTEM

PLAN VIEW

ID

0 25 50 cm 100 150

N

eljen PACIFIC

MOBILE : 0418132021

EMAIL : paul@eljenpacific.com

WEBSITE : eljenpacific.com

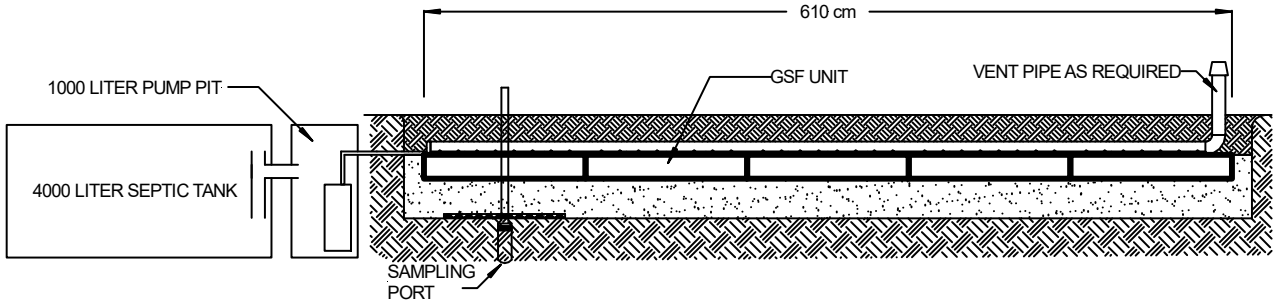
ADDRESS : 16 The Lee
Devonport
TAS 7310
Australia

DESIGNED DATE

APPROVED DATE

REVISION

SCALE	SIZE	SHEET
1:50	A4	1/1



TITLE

GSF SYSTEM

SIDE VIEW

ID

0 25 50 cm 100 150

N

eljen PACIFIC

MOBILE : 0418132021

EMAIL : paul@eljenpacific.com

WEBSITE : eljenpacific.com

ADDRESS : 16 The Lee
Devonport
TAS 7310
Australia

DESIGNED DATE

APPROVED DATE

REVISION

SCALE 1:50 SIZE A4 SHEET 1/1

ELJEN GSF SYSTEM DESIGN PROGRAM

Eljen GSF System Design Program

RESET FORM

Date:		Client Name:			
Site Address:				Council Area:	
Designer:		Designer Phone Number:		Is this new construction Y or N:	
Plumber:		Plumber Phone Number:		Plumber License Number:	

Note: This design program is a guide only. All design constraints and limitations must be addressed by the designer prior to design and installation.

System Design Information		Design Notes and Comments
Design Occupancy (Number of persons):		
Daily Design Flow (L/Person/Day):		
Total Daily Design Flow (L/Day):		
Trench or Bed		
Soil Category *(Note: Soil Catagories 4-6 May Require additional design consideration. Please reference AS/1547 2012 when designing in these soil types.)*		
Site Design Loading Rate (L/mm/day):		
System Area Slope (%):		
System Area Slope (converted from % slope to degrees slope):		
System Basal Area Bore Log Depth: *(Note: Must be greater than 600 mm)*		
Maximum System Length Based on Site Constraints:		
Desired Rows or Trenches in System		
Distribution Type (G = Gravity - P = Pump to Gravity - LPD = Low Pressure Distribution):		

System Dimensions	
Would you like to use a specific width? (y or n) Not applicable in Trenches	
Specific Width (m)	

	Treatment Zone	Dispersal Zone Extension
Length (m)		
Width (m)		
Sand Height (m)		
Sand Area (m^2)		

System Capacity	
Total Daily Design Flow (L/Day):	
Minimum Number of A42 Units Required	
Units per Row	
Length of Rows with 0.15 m Sand Extension	
End to End Space Between Modules (TRENCH ONLY)	

Materials		
Minimum Number of A42 Units Required		
The system requires a high vent. Are using 50mm or 100mm pipe		
Low vent		
Effluent Filter		
Inspection Ports		
Pipe Required (m)		
Estimate of System Sand Required (m^3)		

Zenox High Head Submersible Drainage Pumps

The ZHS Series of pumps are robust, submersible high-head drainage pumps suitable for use in domestic applications. These pumps are ideal for use in high-head stormwater or treated wastewater applications.

SPECIFICATIONS:

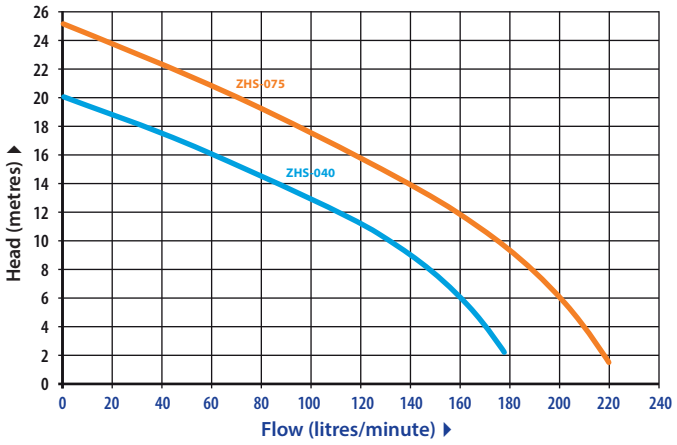
Four Models Available:

ZHS-040-1	0.40kW, 240 volt, Manual
ZHS-040-1A	0.40kW, 240 volt, Automatic
ZHS-075-1	0.75kW, 240 volt, Manual
ZHS-075-1A	0.75kW, 240 volt, Automatic

FEATURES:

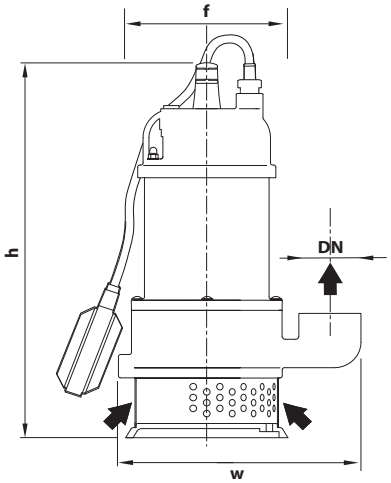
- Stainless steel/cast iron construction
- Cast iron vortex-style impeller
- Double mechanical seal separated by an oil chamber
- Thermal overload protection
- Passage of solids up to 8mm
- 10m H07 RN-F power cable

PUMP PERFORMANCE:



DIMENSIONS:

MODEL	DIMENSIONS (mm)				Weight (kg)
	DN	h	f	w	
ZHS-040	1 ¼"	370	151	227	16
ZHS-075	1 ½ "	474	170	245	17



Netco Pumps reserves the right to change product specifications.

Liquid Level Alarms

ZLA-240-FM Indoor Liquid Level Alarm

- Aesthetically pleasing flush mounting design
- Can be used on all tanks and sumps
- After 12 hour mute feature
- A low voltage supply to float switch
- Simple dip switch operation to select alarm for "High Level" or "Low Level"
- Quality construction - Made in Australia
- Supplied complete with level-sensing float switch

SPECIFICATION:

- 240 volt power supply
- 240 VDC operating voltage
- 118mm high x 71mm wide
- Standard float cable length 10 metres, lengths up to 50 metres available on request

ZLA-240-EX Outdoor Liquid Level Alarm

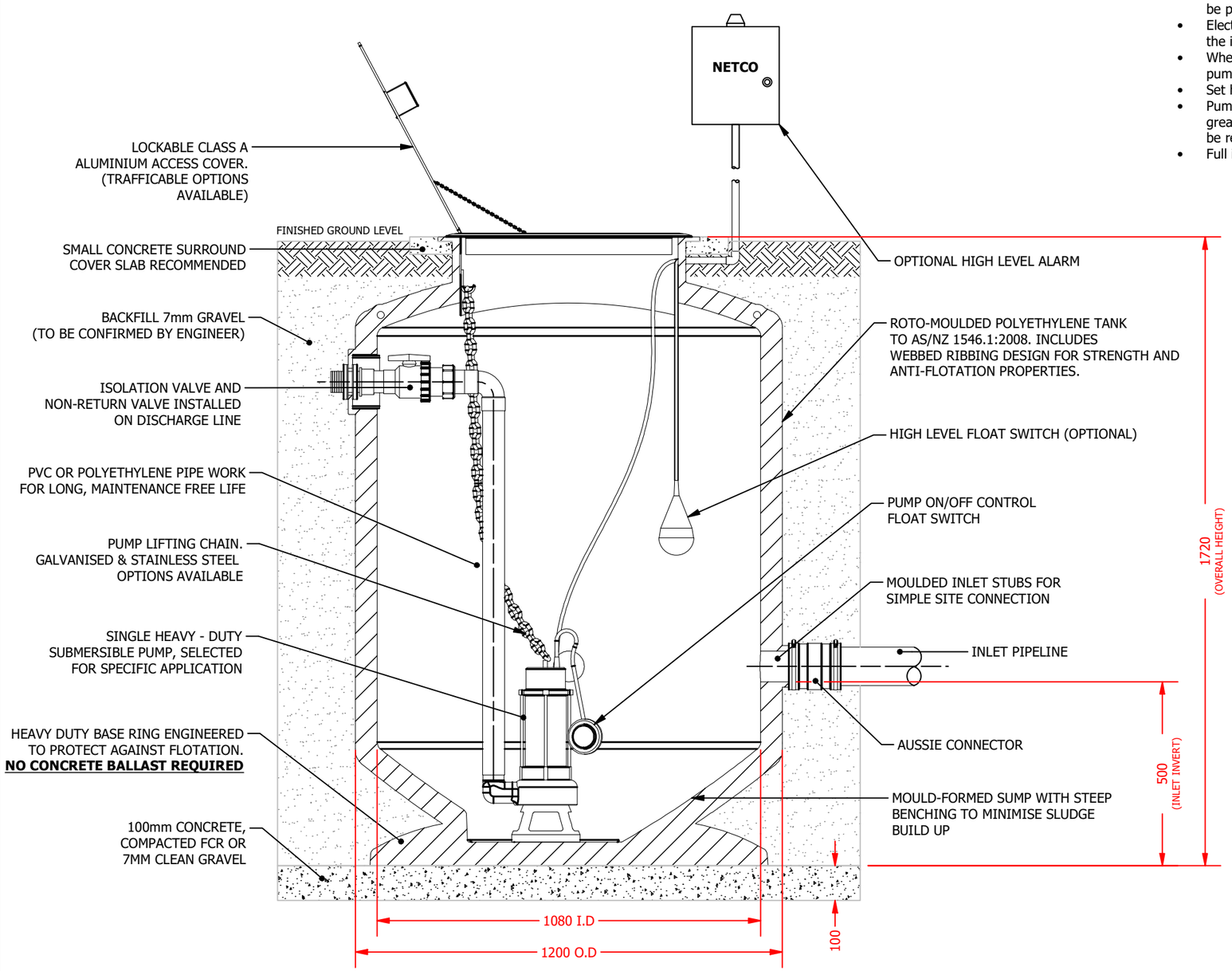
- Fully weatherproof, lockable steel enclosure
- Can be used on all tanks and sumps
- After 12 hour mute feature
- A low voltage supply to float switch
- Simple dip switch operation to select alarm for "High Level" or "Low Level"
- Quality construction - Made in Australia
- Supplied complete with level-sensing float switch

SPECIFICATION:

- 240 volt power supply
- 240 VDC operating voltage
- 300mm wide x 150mm deep x 300mm high
- Standard float cable length 10 metres, lengths up to 50 metres available on request

NETCO PACKAGED 1200 LITRE POLYETHYLENE PUMP STATION

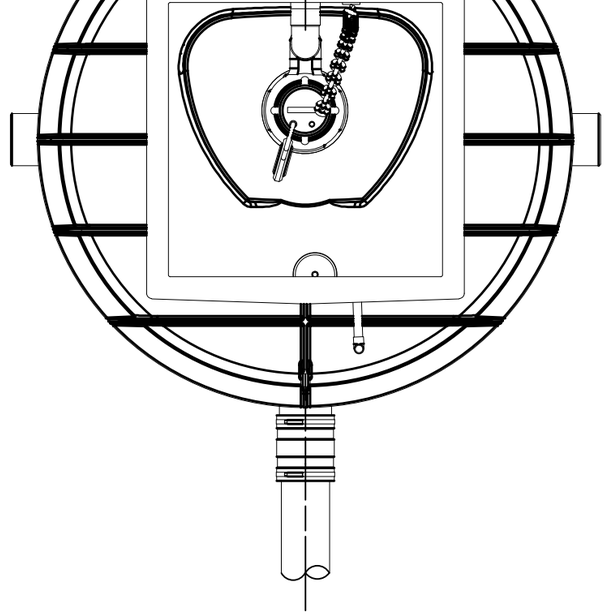
MODEL	NOMINAL DEPTH	CAPACITY
NPE-1200-S	1720 mm	1200 L



PUMP STATION TYPICAL SECTION

INSTALLATION NOTES:

- Excavate the installation site to a depth 100 mm greater than the overall pump chamber height.
- Fill the base of the excavation with a 100 mm thick concrete slab or 100 mm bed of compacted FCR or 7mm clean gravel.
- Fill the pump chamber with 300 mm - 400 mm water prior to placement on 100 mm base.
- Confirm with site engineer regarding backfill requirements. As a minimum, backfill the excavation with 7mm clean gravel.
- Vent penetrations and inlet penetrations to be made on site and sealed through inlet stub or via rubber connection through the chamber wall using a multi-seal or similar. Vent to be as close as possible to the top of the chamber. All penetrations to be perpendicular to the chamber wall.
- Electrician to install conduit(s) for the pump(s) through the chamber wall using plain to screwed adaptors. Seal cables on the inside of conduits. Ensure adequate power supply.
- When commissioning, set overloads to amperage shown on pump nameplate. Record voltage and running current whilst pump is under load.
- Set high level alarm float switch 100 mm above pump start float switch.
- Pump chamber is to be regularly cleaned with a handheld hose and pump and alarm operation checked. In sewage or high grease applications, the chamber should be degreased on a regular basis by a waste removal contractor. Pump(s) should be removed for service on a 12-month cycle (approximately).
- Full installation guidelines are available for download at www.netcopumps.com.au



PUMP STATION PLAN VIEW
(COVER REMOVED FOR CLARITY)

NO.	REVISION	DATE	BY	APPROVED
1	ORIGINAL DRAWING	18.08.2020	J.M	L.C

DRAWING STATUS: APPROVED

DO NOT SCALE
DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE NOTED

REFERENCE DRAWINGS

	SIGNED	DATE
DRAWN	J.M	18.08.2020
CHECKED	L.C	18.08.2020
DESIGNED	J.M	18.08.2020
APPROVED	L.C	18.08.2020

NETCO PUMPS & EQUIPMENT
100 SUNDERLAND STREET, DERWENT PARK
TASMANIA 7009
(03) 6272 6628
sales@netcopumps.com.au

PROJECT NAME
NETCO POLYETHYLENE PUMPING STATIONS

DRAWING TITLE
1200 LITRE POLYETHYLENE PUMP STATION
SINGLE FREESTANDING PUMP
MODEL: NPE-1200-S

DRAWING NUMBER
2008-NPE1200-001

SCALE AT A3
NTS

REVISION
1

STANDARDSMARK LICENCE

SAI Global hereby grants:

Eljen Corporation

Trading As

Eljen Pacific

90 Meadow Road, Windsor, CT United States

StandardsMark Licence

Manufactured to:

AS 1546.3:2017 - On-site domestic wastewater treatment units - Secondary treatment systems

"the StandardsMark Licensee" the right to use the STANDARDSMARK as shown below only in respect of the goods described and detailed in the Schedule which are produced by the Licensee or on behalf of the Licensee* and which comply with the appropriate Standard referred to above as from time to time amended. The Licence is granted subject to the rules governing the use of the STANDARDSMARK and the Terms and Conditions for certification and licence. The Licensee covenants to comply with all the Rules and Terms and Conditions.

Licence No: SMK41040

Issued : 22 July 2021
Expires : 16 July 2026

Originally Certified : 17 July 2021
Current Certification : 17 July 2021

Frank Camasta
Global Head of Technical Services
SAI Global Assurance

Certified Product™ Australian Standard

JAS-ANZ
WWW.JAS-ANZ.ORG/REGISTER

** For details of manufacture, refer to the licensee*

SAI GLOBAL
INFORM. INSPIRE. IMPROVE.

SCHEDULE TO
STANDARDSMARK LICENCE

SAI Global hereby grants:

Eljen Corporation

90 Meadow Road, Windsor, CT United States

StandardsMark Licence

Manufactured to:

AS 1546.3:2017 - On-site domestic wastewater treatment units - Secondary treatment systems

Model identification of the goods on which the STANDARDSMARK may be used:

Brand Name & Model ID	Treatment Capacity (Litre / Day)	Treatment Type	Compliance Type	Disinfection Method	Service Interval	Date Endorsed
A42 GSF	1200	Sand filter	Secondary	None	3 years as nominated by the manufacturer	16 Jul 2021

End of Record

Licence No: SMK41040 **Issued Date:** 22 July 2021

This schedule supersedes all previously issued schedules

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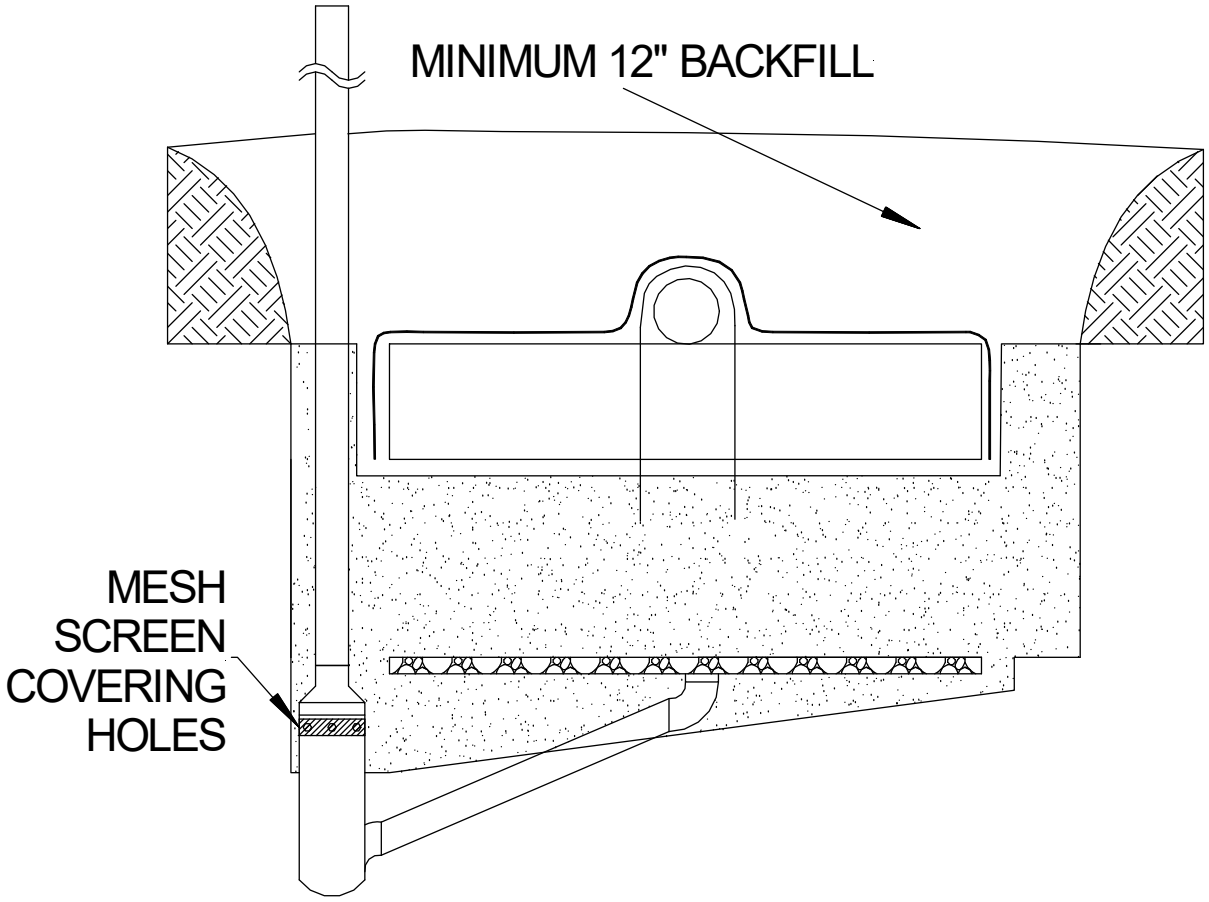
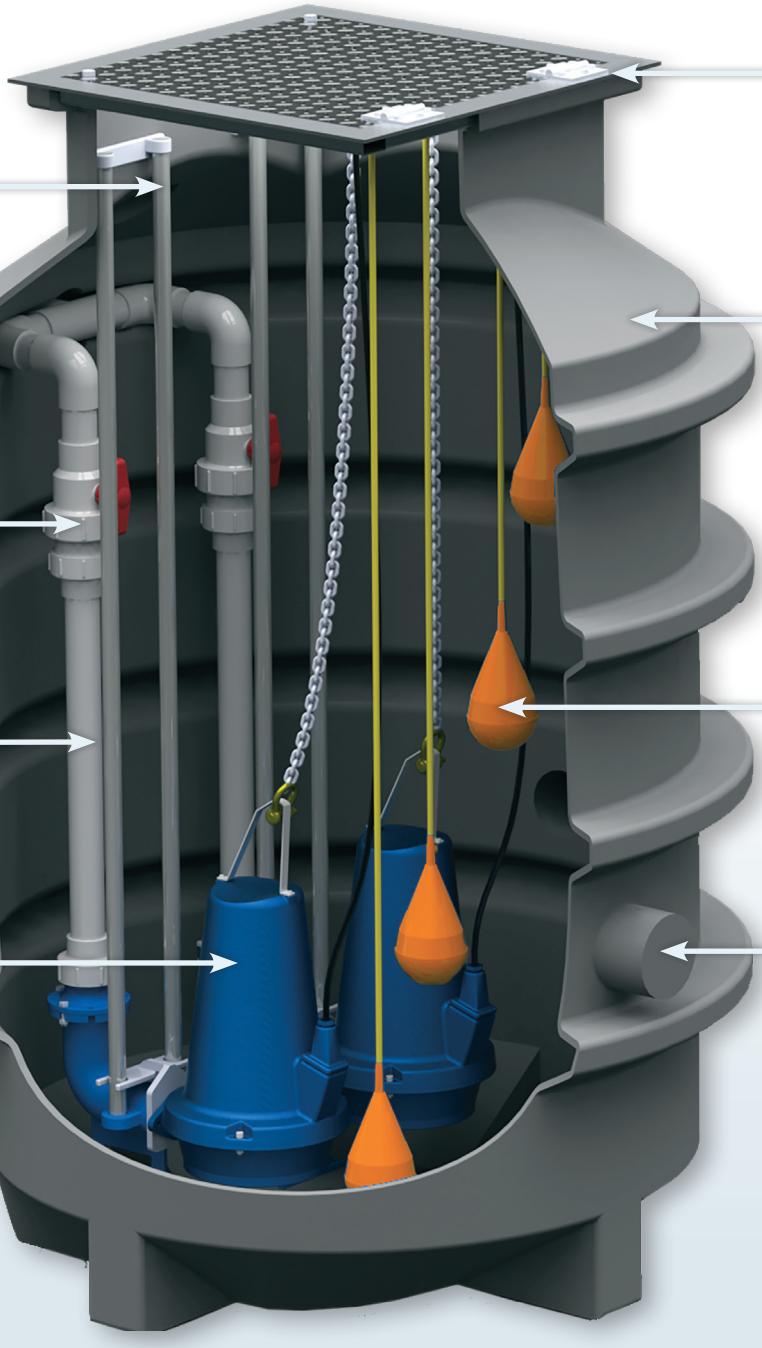
* For details of manufacture, refer to the licensee

PAN SAMPLER



Zenox Polyethylene Packaged Pump Station

The Zenox polyethylene packaged pump station is the quick and reliable solution for any situation where sewage or storm water needs to be pumped to a mains connection.
Designed to reduce site work and installation time, each pump station is supplied as a complete factory assembled package, with pumps, pipework and controls specifically selected to meet your site requirements. Site wiring of pumps and controls is required.



Optional Auto-couplings guide rail system for quick removal and reinstallation of pumps.

Check valves - available in PVC, bronze or stainless steel.

PVC or polyethylene pipework for a long, maintenance free life.

Single or dual heavy-duty submersible sewage or stormwater pumps. Wide range of options available.

Aluminium anti-skid access cover. Trafficable Cast Iron options available.

Rotomoulded polyethylene tank with oversized heavy duty ribbing. Adds strength and assists in antifloatation.

Float switch and level probe options available for reliable pump control.

Moulded inlet stubs ensure leak-free installation - no damage to the environment.

Zenox Pumps

Zenox Polyethylene Packaged Pump Station

- Quick, reliable packaged pump solution for any situation where sewage or storm water needs to be pumped to a mains connection
- Purpose-designed to site specifics, constructed and supplied as a complete, factory-assembled package ready to install and connect to all exterior pipework
- Very cost effective, saves on-site time and labour
- One piece corrosive resistant sealed unit eliminates leakages and ground water ingress

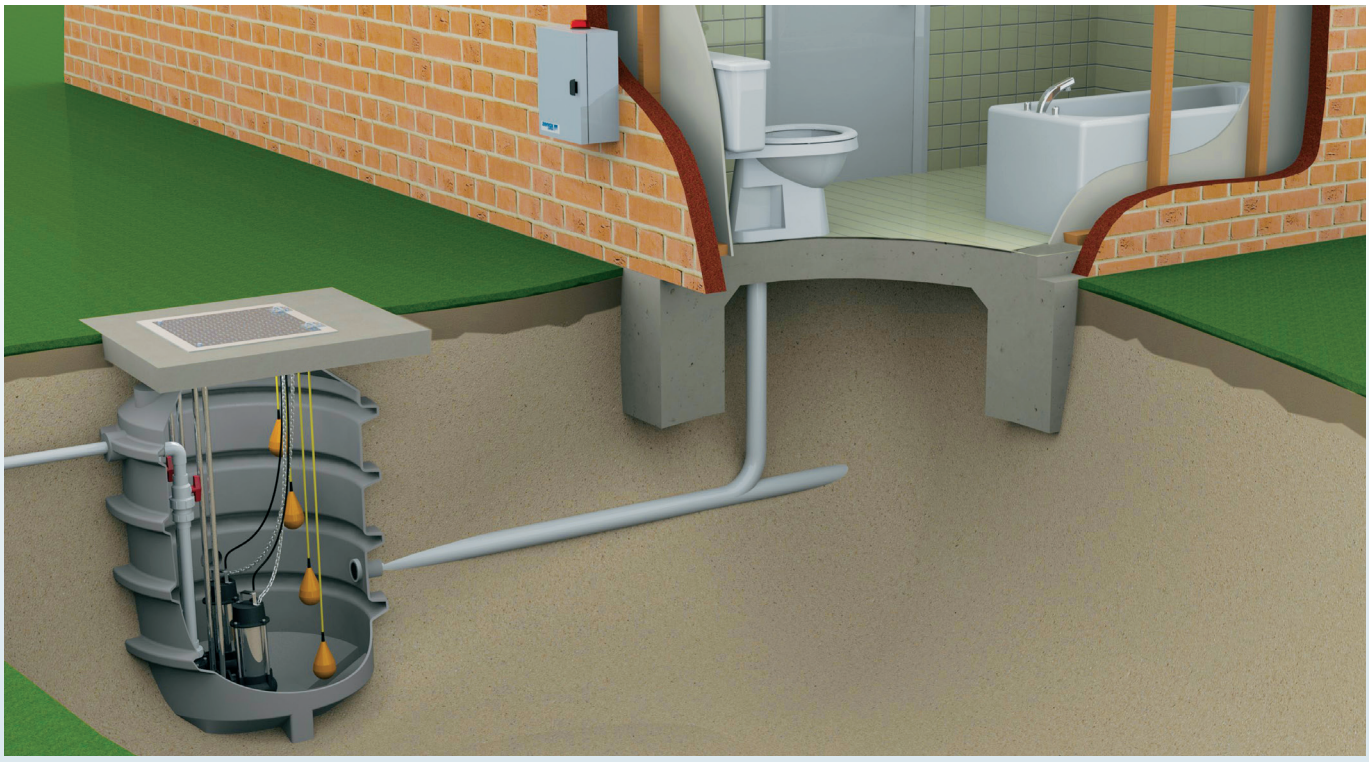
FEATURES:

- Heavy duty, roto-moulded polyethylene tank construction
- Large range of heavy duty submersible pumps to suit a variety of pumping applications
- Trafficable and non-trafficable lid options
- Wide range of control systems available
- Free-standing or guide rail mount options
- Simple, packaged pumping solution
- Single and multiple pump configurations
- Lightweight, strong and robust design

CHAMBER DIMENSIONS:

Model	Internal Diameter	Nominal Depth	Volume
NPE-100	410 mm	700 mm	100 Litres
NPE-250	650 mm	900 mm	250 Litres
NPE-650	1000 mm	1000 mm	650 Litres
NPE-1200	1000 mm	1600 mm	1200 Litres
NPE-1600	1000 mm	2200 mm	1600 Litres
NPE-2000	1200 mm	2000 mm	2000 Litres
NPE-3000	1600 mm	2300 mm	3000 Litres

- Other sizes available on request



Zenox Pumps

Eljen GSF System Design Program

RESET FORM

Date:		Client Name:			
Site Address:				Council Area:	Sorell
Designer:		Designer Phone Number:		Is this new construction Y or N:	Y
Plumber:	Eljen Pacific	Plumber Phone Number:		Plumber License Number:	

Note: This design program is a guide only. All design constraints and limitations must be addressed by the designer prior to design and installation.

System Design Information		Design Notes and Comments
Design Occupancy (Number of persons):	7	
Daily Design Flow (L/Person/Day):	120	
Total Daily Design Flow (L/Day):	840	
Trench or Bed	Bed	
Soil Category *(Note: Soil Catagories 4-6 May Require additional design consideration. Please reference AS/1547 2012 when designing in these soil types.)*	2 - Sandy Loams	
Site Design Loading Rate (L/mm/day):	32	
System Area Slope (%):	0%	
System Area Slope (converted from % slope to degrees slope):	.00	
System Basal Area Bore Log Depth: *(Note: Must be greater than 600 mm)*	600	
Maximum System Length Based on Site Constraints:	20	
Desired Rows or Trenches in System	2	
Distribution Type (G = Gravity - P = Pump to Gravity - LPD = Low Pressure Distribution):	G	

eljen PACIFIC

18/7/2018

System Dimensions	
Would you like to use a specific width?	**Y**
Specific Width (m)	**2**

	Treatment Zone	Dispersal Zone Extension
Length (m)	**11.28**	**13.13**
Width (m)	**1.80**	**2**
Sand Height (m)	**0.15**	**0.15**
Sand Area (m^2)	**20.30**	**26.25**

System Capacity	
Total Daily Design Flow (L/Day):	**840**
Minimum Number of A42 Units Required	**18**
Units per Row	**9**
Length of Rows with 0.15 m Sand Extension	**11.28**
End to End Space Between Modules (TRENCH ONLY)	

Materials	
Minimum Number of A42 Units Required	**18**
The system requires a high vent. Are using 50mm or 100mm pipe?	
Low vent	**1 x 100mm vent**
Effluent Filter	**1**
Inspection Ports	**2**
Pipe Required (m)	**22.56**
Estimate of System Sand Required (m^3)	**9.62**