

STAV'S HYDRAULIC SERVICES
ABN: 64 467 212 730
QBCC: 15061807
stephen@stavs.com.au
www.stavs.com.au
0402 303 599

SITE & SOIL EVALUATION REPORT
149 SANDY CREEK ROAD, BROMELTON

Prepared for:	Beaudesert & Boonah Cranes
Prepared by:	Stav's Hydraulic Services
Purpose:	Site & Soil Evaluation Report
Issue No:	A
Date Issued:	13-Oct-23
Author:	Stephen Stavrinou

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2. Intro

Stav's Hydraulic Services have carried out a Site and Soil Evaluation for the On-Site waste water treatment and the effluent disposal at Lot 3 on RP40309 - 149 Sandy Creek Road Bromelton, Qld.

The following report has been prepared in accordance with AS/NZS1547:2012, On-Site Domestic Waste Water Management and the Queensland Plumbing and Waste Water Code.

3. Executive summary

The recommendation and comments:

1. Use an Advanced Secondary all-waste sewage system such as the Envirocycle 10EP advanced Secondary Wastewater treatment system for the proposed sheds 1-4
2. Reuse the existing greywater pump out and black water septic systems for the existing residence
3. The peak daily design volume for the entire site is 9.2 Equivalent persons – 1,380l/day – loads from existing residence & proposed sheds 1 – 4.
4. Soil is a densely structured category 5 – Clayey Sand, Low Plasticity, Fine Grained, yellow - Design Irrigation Rate (DIR) = 21 mm / week
5. Total land application to be comprised of a land application area of 418m² spread across 5 systems.
6. Have warning signs, complying with AS1319 at the boundaries of the designated area in two places and clearly visible to property users with wording such as "Recycled Water – Avoid Contact – DO NOT DRINK"
7. On-site sewage systems are not designed to cope with the flow from garbage grinders, fats, oils or chemicals and household cleaning products are to be used in accordance with their labels.
8. The land application area is an important area and has to be maintained e.g. regularly mowed, do not drive vehicles over the area or allow livestock to access the land application area Follow the maintenance requirements specified by the manufacturer and authorised service agent.

4. Site Investigation

Site Investigation	
Date of Investigation	20.09.2023
Address	149 Sandy Creek Road Bromelton
Area of Site	40,170m ²
Property Description	Lot 3 on RP40309
Local Council	Scenic Rim Regional Council
Weather	Fine
Ground Cover	Grass
Well/Bores	1
Waterways	Nil
Water Table	Nil
Embankments	Nil
Buildings	Existing Residence and sheds to western corner
Site Exposure	Full Sunlight
Boundaries	Sufficient
Landscape Description	Waxing Divergent
Diversion / Retention Mound	Nil
Ground Water Cut off drains	Nil
Intended Water Supply	Rain Water

Soil Characteristics	
Depth	0-600mm
Texture - structure - Colour	Silty Sand Loam in the top layers that increase in clay content with depth
Soil Category	5
Indicative permeability (Ksat) m/day	0.06
Design Irrigation Rate (DIR) mm/week	21
Design Loading Rate (DLR) mm/week	30

5. Effluent Quality and Control Parameters

Effluent Quality Parameters			
Parameter	Primary	Secondary	Advanced Secondary
Bod ₅	120-240	20	10
Total Suspended Solids (mg/L)	65-180	30	10
Thermotolerant Coliforms (org/100mL)	N/A	200	10

6. Design Calculations

Design Loadings - Existing Residence			
No. of Bedrooms	2		
Equivalent Persons (EP)	3		
Desing Flow L/day	60	Black Water only	
Daily flow / Weekly Flow	180	/	1260
Design Loading Rate (DLR) mm/week	30		
Trench Area required (m ²)	18 m ²		
Trench Sizing	Adopt 2 trenches @ 15m long x 0.6m wide		
Design Loadings - Shed 1			
No. of Staff	10		
Desing Flow L/day	30	Tank Water Supply	
Daily flow / Weekly Flow	300	/	2100
Design Loading Rate (DIR) mm/week	21		
Land Application Area (m ²)	100 m ²	Adopt	100 m ²
Design Loadings - Shed 2			
No. of Staff	10		
Desing Flow L/day	30	Tank Water Supply	
Daily flow / Weekly Flow	300	/	2100
Design Loading Rate (DIR) mm/week	21		
Land Application Area (m ²)	100 m ²	Adopt	100 m ²
Design Loadings - Shed 3			
No. of Staff	10		
Desing Flow L/day	30	Tank Water Supply	
Daily flow / Weekly Flow	300	/	2100
Design Loading Rate (DIR) mm/week	21		
Land Application Area (m ²)	100 m ²	Adopt	100 m ²
Design Loadings - Shed 4			
No. of Staff	10		
Desing Flow L/day	30	Tank Water Supply	
Daily flow / Weekly Flow	300	/	2100
Design Loading Rate (DIR) mm/week	21		
Land Application Area (m ²)	100 m ²	Adopt	100 m ²
TOTAL DESIGN LOADINGS FOR SITE			
Daily flow / Weekly Flow	1380	/	9660
Equivalent population	9.2		

Bod5 Applied - Total Site	
Bod5 Applied 10mg / litre/ day	5.037 kg/year
Soil Absorption Only	0.05kg / m ² / year
Minimum land Application Area	100.74 m ²

The proposed wastewater system utilises an Advanced Secondary all-waste sewage treatment plant - Envirocycle 10EP advanced Secondary Wastewater treatment system for proposed sheds 1 -4

The Proposed systems will discharge to separate sprinklers as per below calculations.

Sprinkler Calculations - Sheds 1 - 4	
Sprinkler Zones Area	100 50 m ² / sprinkler head
No. Sprinklers	2.0 Sprinkler heads
Sprinkler radius	3.99 m
Flow Rate Per Sprinkler Head	360 l/hour
Pressure @ Sprinkler Head	68 kpa
Effluent Flow Rate	720 L/hour
Effluent Transfers	4 transfers @ 7 minutes each

The existing residence currently discharges to separate greywater pump out and and black water septic systems. These systems are proposed to remain as is with the exception of the black water trenches to be replaced with new in new location. 2

AS1547 states that:

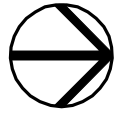
- a. The effluent is required to be evenly distributed within the designated area.
- b. Have warning, complying with AS1319 at the boundaries of the designated area in two places and clearly visible to property users with wording such as "Recycled Water – Avoid Contact – DO NOT DRINK"
- c. Ensure that the effluent does not come into contact with people, domestic animals, fruit or vegetables for human consumption

7. Operation and Maintenance

Maintenance requirements specified by the manufacturer and authorized service agent are to be implemented. These include:

- Use low sodium biodegradable soaps and detergents
- No paints, solvents, chemicals, food scraps, fats, oils or any other solids are not to be disposed of "down the drain"
- On-site sewage systems are not designed to cope with the flow from garbage grinders
- The land application area is an important area and has to be maintained e.g. regularly mowed or pruned also ensuring that there is no ponding of effluent in the disposal area
- Vehicles, livestock or general access is to be generally restricted with warning signs erected

8. Appendix A - Land application area plan

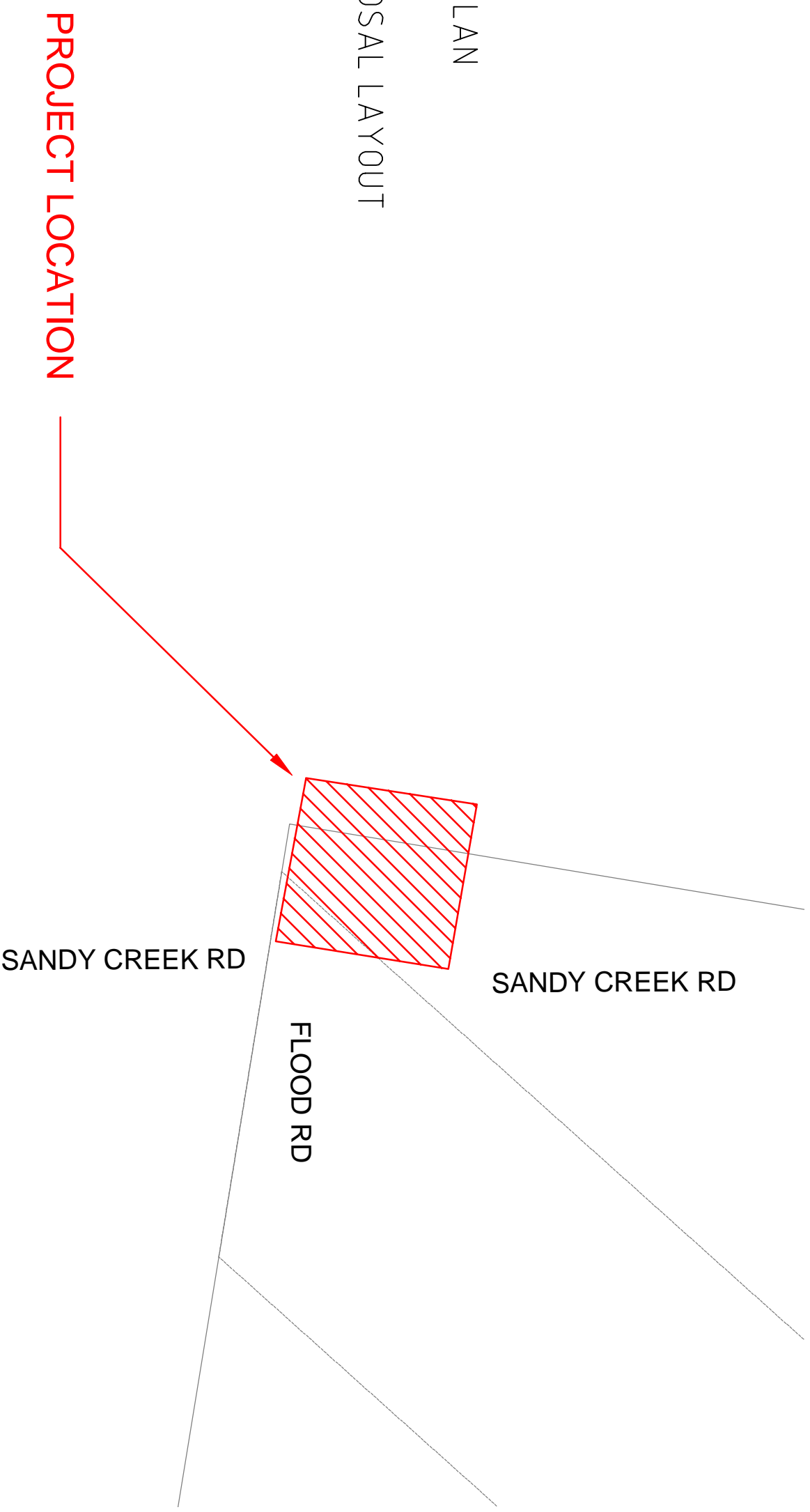


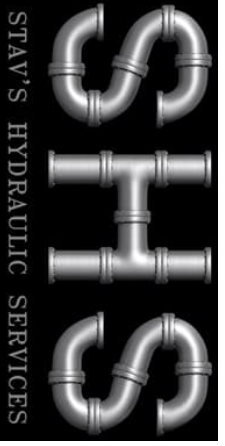
EFFLUENT DISPOSAL

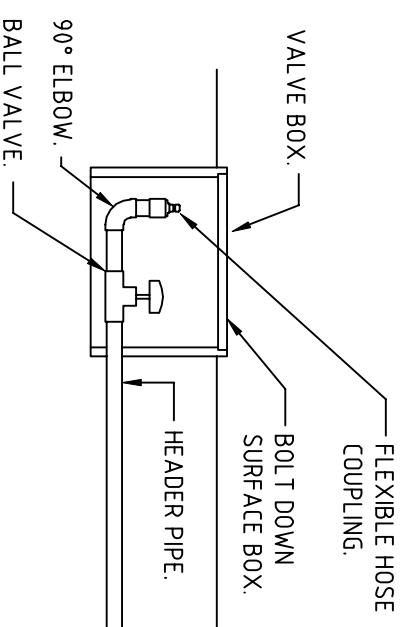
149 SANDY CREEK ROAD
BROMELTON, QLD

DRAWING LIST

- H101 - COVER SHEET & LOCATION PLAN
- H102 - LEGEND, NOTES & DETAILS
- H103 - SITE PLAN EFFLUENT DISPOSAL LAYOUT



ISSUE	AMENDMENT	DATE	CLIENT:
A	APPROVAL ISSUE	13.10.2023	BEAUDESERT & BOONAH CRANES
			
CONSULTANT: 07 5623 4177 www.stavs.com.au shs@stavs.com.au PO Box 529, Jimboomba, Qld			
PROJECT:			
LOT 3 ON RP40309 149 SANDY CREEK ROAD BROMELTON, QLD			
TITLE:			
HYDRAULIC SERVICES COVER SHEET & LOCATION PLAN			
PROJECT No.	BBC1	DRAWING No.	H101
SCALE / SIZE:	N.T.S @ A3	ISSUE No.	A
DESIGNER: STEPHEN STAVRINOU QBCC 15061807			



FLUSHING VALVE DETAIL

SCALE: NTS

- THESE PLANS SHALL BE READ IN CONJUNCTION WITH THE APPROVED ARCHITECTURAL AND RELEVANT SERVICES PLANS AND SPECIFICATIONS

- LOCATION OF EXISTING SERVICES HAS BEEN DETERMINED FROM SITE VISITS AND EXISTING RECORD PLANS. NO PROVING OF SERVICES HAS BEEN UNDERTAKEN. THE CONTRACTOR SHALL PROVE ALL SERVICES PRIOR TO COMMENCING CONSTRUCTION AND ADVISE THE SUPERINTENDENT OF ANY DISCREPANCIES BEFORE PROCEEDING. THIS CONTRACTOR MUST CO-ORDINATE WITH ALL OTHER SERVICES. PIPEWORK SHOWN ON THIS DRAWING IS DIAGRAMMATIC ONLY. FINAL LOCATION OF SERVICES SHALL BE DETERMINED ON SITE.
- ARRANGE & APPLY TO THE LOCAL AUTHORITY FOR ALL NECESSARY PERMITS. PAY ALL PLUMBING INSPECTION FEES AND CHARGES. OBTAIN COMPLETION CERTIFICATE AND SUBMIT TO SUPERVISOR.
- THE ENTIRE HYDRAULIC SERVICES INSTALLATION AND EQUIPMENT SHALL BE MAINTAINED UNDER WARRANTY FOR A PERIOD OF TWELVE (12) MONTHS AFTER PRACTICAL COMPLETION HAS BEEN ACHIEVED.
- PROVIDE INSTRUCTIONS MANUALS AT PRACTICAL COMPLETION. CONTAINING THE FOLLOWING:
 - GENERAL DESCRIPTION OF PROJECT
 - LISTING OF EQUIPMENT, MANUFACTURERS NAMES, AGENTS ETC.
 - OPERATING AND MAINTENANCE INSTRUCTIONS AND WARRANTY INFORMATION FOR EACH ITEM OF EQUIPMENT.
 - "AS CONSTRUCTED" DRAWINGS.
 - COUNCIL INSPECTION REPORTS AND FINAL COMPLETION CERTIFICATES FROM RELEVANT AUTHORITIES.

WATER

- ALL EXPOSED HW & CW PIPEWORK SHALL BE COPPER TUBE TYPE "B" TO AS1432. CONNECT COPPER PIPE WITH BRAZED JOINTS IN AS1645 OR COMPRESSION JOINTS AS1585. USE PRE-INSULATED PIPEWORK FOR HOT WATER SERVICES OR INSULATE WITH 'ARMAFLEX' INSULATION OR SIMILAR. DENSU WRAP ALL CW PIPEWORK IN-GROUND. PROVIDE INSULATION TO ALL HOT WATER PIPEWORK. PROVIDE ALL NECESSARY ALLOWANCES FOR THERMAL MOVEMENT OF PIPES.
- WATER SUPPLY PIPEWORK CONCEALED IN WALLS AND EXTERNAL TO BUILDING IN-GROUND MAY BE POLYETHYLENE PIPE OF MIN. CLASS 12, AND SHALL COMPLY WITH AS 1159. INSTALLATION OF POLYETHYLENE PIPES SHALL BE IN ACCORDANCE WITH AS 2033 AND THE MANUFACTURERS SPECIFICATIONS.
- TAKE ALL NECESSARY PRECAUTIONS TO PREVENT WATER HAMMER AND RECTIFY SHOULD IT OCCUR.
- EXTERNAL AND INTERNAL HOSE COCKS SHALL BE FITTED WITH HOSE TYPE VACUUM BREAKERS.
- PROVIDE HW & CW STOPCOCKS TO ALL HW & CW FIXTURES.
- ALL PIPEWORK TO BE IDENTIFIED IN ACCORDANCE WITH AS1345.
- ALL PIPE DIAMETERS NOMINATED ARE NOMINAL BORE DIAMETERS UNLESS NOTED OTHERWISE.

ON SITE DISPOSAL NOTES

- IRRIGATION SYSTEM TO COMPLY WITH AS1547, QLD PLUMBING WASTE WATER CODE, ASSOCIATED DOCUMENTATION AND MANUFACTURERS SPECIFICATIONS.

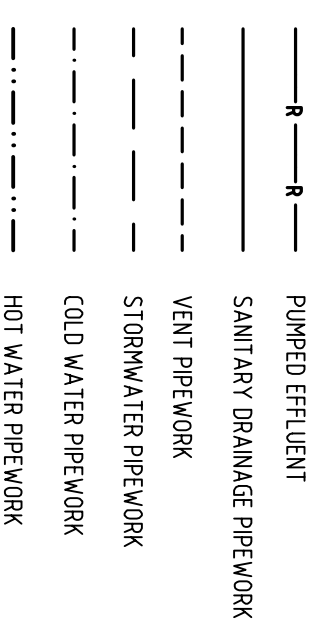
- MINIMUM COVER OVER RISING MAIN 450mm. RISING MAINS TO BE 32φ PIPES TO AS/NZS 1477. PIPE TO BE LILAC COLORED AND/OR INSTALLED WITH TAPE IDENTIFYING THE PIPES CONTENTS AS SEWAGE EFFLUENT.

- IRRIGATION SYSTEMS DISTRIBUTE EFFLUENT INTO THE TOPSOIL LAYERS TO PROVIDE IN-SOIL TREATMENT OF THE REMAINING EFFLUENT RESIDUALS AS WELL AS PROVIDE NUTRIENT UPTAKE AND EVAPOTRANSPIRATION BY GRASS, SHRUBS OR PLANTINGS. THE CHOSEN GRASS, SHRUBS OR PLANTINGS SHALL BE PLANTED/SEEDED PRIOR TO THE COMMISSIONING OF THE SYSTEM TO ALLOW FOR PROPER EFFLUENT DISPOSAL.

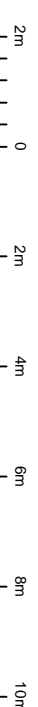
DRAINAGE

- SANITARY DRAINAGE & VENT PIPEWORK IN UPVC IN ACCORDANCE WITH AS1260 AND THE MANUFACTURERS SPECIFICATIONS.
- ALL PIPEWORK TO BE IDENTIFIED IN ACCORDANCE WITH AS1345.
- ALL PIPE DIAMETERS NOMINATED ARE NOMINAL BORE DIAMETERS UNLESS NOTED OTHERWISE.

LEGEND



⊗	VALVE
AFFL	ABOVE FINISHED FLOOR LEVEL
AHD	AUSTRALIAN HEIGHT DATUM
B	BASIN
CD	CONDENSATE DRAIN
COS	CLEAR OUT TO SURFACE
Cu	COPPER PIPE
CW	COLD WATER
CV	CONTROL VALVE
DP	DOWN PIPE
DW	DISHWASHER
e	EXISTING TO REMAIN
FFL	FINISHED FLOOR LEVEL
FW	FLOOR WASTE GULLY (c/w REMOVABLE CHROME GRATE)
H/L	HIGH LEVEL
HC	HOSE COCK c/w KEY OPERATED HANDLE
HW	HOT WATER
HWH	HOT WATER HEATER
IC	INSPECTION CHAMBER
IO	INSPECTION OPENING
L/L	LOW LEVEL
ORG	OVERFLOW RELIEF GULLY
SHR	SHOWER
SK	SINK
WC	WATER CLOSET
VB	VACUUM BREAKER



ISSUE	AMENDMENT	DATE
A	APPROVAL ISSUE	13.10.2023

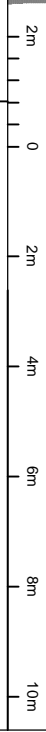
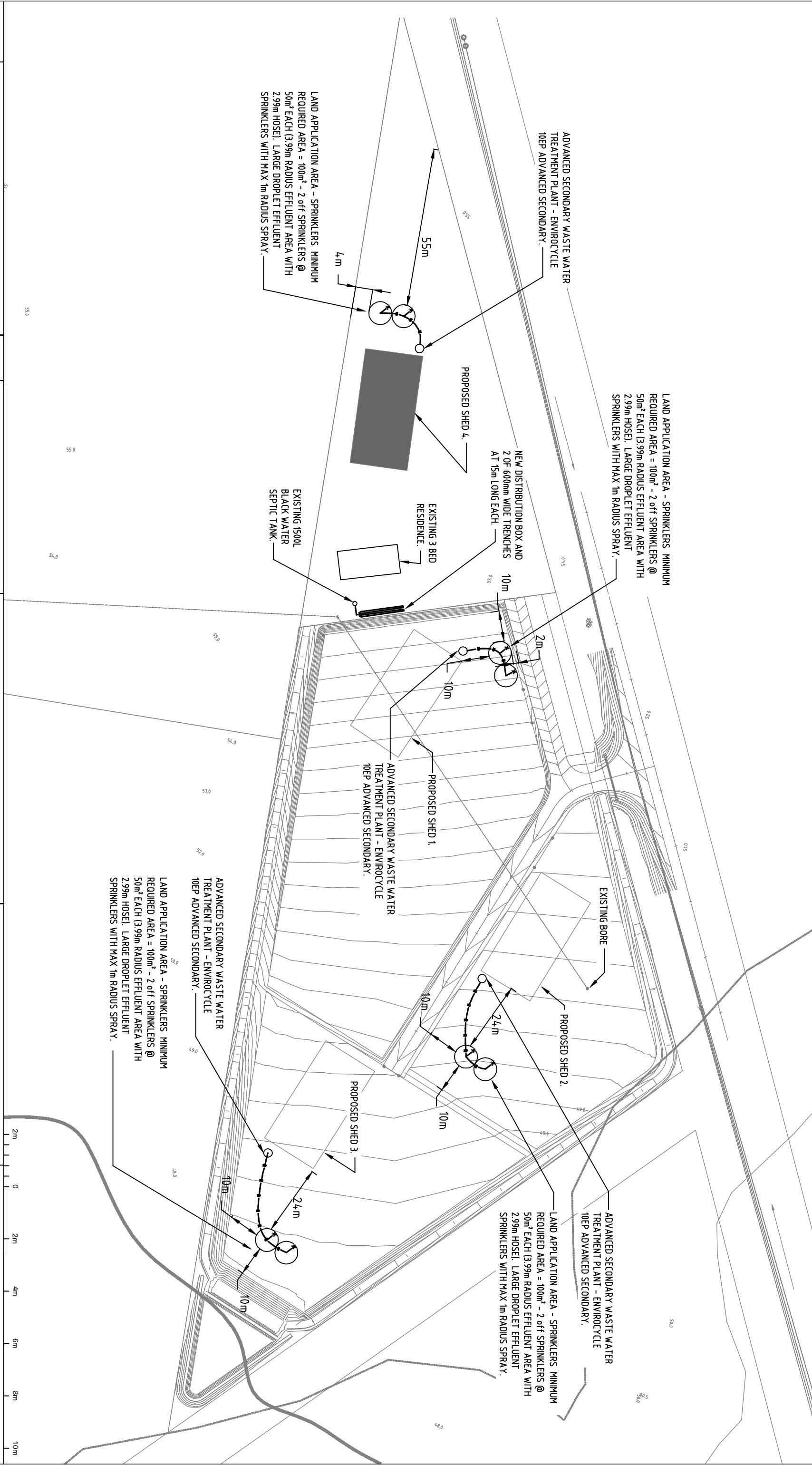
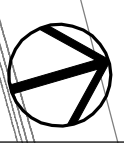
CLIENT: **BEAUDESERT & BOONAH CRANES**

CONSULTANT: **SHS**
STAV'S HYDRAULIC SERVICES

07 5623 4177
www.stavs.com.au
shs@stavs.com.au
PO Box 529,
Jimboomba, Qld

PROJECT: **LOT 3 ON RP40309 149 SANDY CREEK ROAD BROMELTON, QLD**

TITLE: HYDRAULIC SERVICES LEGEND, NOTES & DETAILS	
PROJECT No.	BBC1
DRAWING No.	H102
ISSUE No.	A
SCALE / SIZE:	NTS @ A3



ISSUE	AMENDMENT	DATE	CLIENT:	CONSULTANT:	PROJECT:	TITLE:
A	APPROVAL ISSUE	13.10.2023	BEAUDESERT & BOONAH CRANES		LOT 3 ON RP40309 149 SANDY CREEK ROAD BROMELTON, QLD	HYDRAULIC SERVICES SITE PLAN EFFLUENT DISPOSAL LAYOUT
B	SITE LAYOUT AMENDED	02.02.2024				

PROJECT No.	DRAWING No.	ISSUE No.
BBC1	H103	B

SCALE / SIZE: 1:1250 @ A3

DESIGNER: STEPHEN STAVRINOU QBCC 15061807