

ON-SITE WASTEWATER ASSESSMENT

328 Lune River Road

Lune River

October 2020



GEO-ENVIRONMENTAL

S O L U T I O N S

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Geo-Environmental Solutions P/L 29 Kirksway Place, Battery Point 7004. Ph 6223 1839

Introduction

Client:	Dark Lab
Date of inspection:	24/08/20
Location:	328 Lune River Road Lune River.
Land description:	Approx. 5ha lot
Building type:	Existing tourist site, accommodation and dwelling
Investigation:	Geo-Probe540UD and hand auger
Inspected by:	G. McDonald

Background information

Map:	Mineral Resources Tasmania 1:25 0000 South East Tasmania Sheet
Rock type:	Triassic sandstone/Quaternary alluvium
Soil depth:	Approx. 2.40m
Planning overlay:	Biodiversity Protection Area Scenic Landscape Corridor
Local meteorology:	Annual rainfall approx. 800 mm
Local services:	Tank water with on site wastewater disposal required

Site conditions

Slope and aspect:	3% Southeast facing slope
Site drainage:	Imperfect subsoil drainage
Vegetation:	Native flora
Weather conditions:	Cloudy, approx. 20mm rainfall received in preceding 7 days.
Ground surface:	Moist surface conditions

Investigation

A number of excavations were completed to identify the distribution of, and variation in soil materials on the site. Representative excavation from each proposed lot indicated on the site plan were chosen for testing and classification according to AS1547-2012 (see profile summaries).

Profile Summaries – Typical soils

Hole 1 Depth (m)	Hole 2 Depth (m)	Horizon	Description
0 – 0.10	0 – 0.30	A1	Grey Silty SAND (SM) , single grain, moist dense consistency, few fine roots, gradual boundary to
0.10 – 0.50	0.30 – 0.60	A2	Light Grey Silty SAND (SM) , single grain, moist dense consistency, gradual boundary to
0.50 – 1.10	0.60 – 1.20	B2	Olive Grey CLAY (CH) , massive structure, moist firm consistency, high plasticity, gradual boundary to
1.10 – 1.90	1.20 – 2.0+	B21	Light Greenish Grey CLAY (CH) , massive structure, slightly moist stiff consistency, high plasticity, gradual boundary to
1.90 – 2.40		BC	Greenish Grey Clayey SAND (SC) , ~15% clay, massive structure, slightly moist hard consistency, low plasticity, auger refusal on rock

Soil Profile Notes

The soils on site consist of sands overlying clayey subsoils which have developed from Triassic sandstone and Quaternary alluvium. The clay fraction is likely to show moderate to significant ground surface movement with moisture fluctuations and may lose bearing capacity when wet.

The soils are moderately structured, have a low permeability and high CEC for retention of nutrients. The soils across the site area classified according to AS1547-2012 as **Category 5 – Light Clay**.

Site Summary

The site is currently serviced by a commercial AWTS wastewater system. The existing super treat system is rated to approximately 25EP or 5000L/day and it was operating well under the design rating for the system prior to closure of the site in late 2018 (figures from 2018 assessment in appendix 1). The system has remained relatively dormant over the past 2 years; however, the system components and irrigation area remain in working order. It is anticipated based on advice from wastewater Systems Tasmania who service the system that minor works will be required to activate the system.

Proposed wastewater loading

The capability of the system to support the proposed updated site facilities and projected visitor numbers and on-site wastewater disposal has been evaluated to ensure environmental values are maintained. Based upon peak of approximately 300 visitors per day with tank water supply, the expected loading from visitors according to AS1547-2012 is 3000L/day. This was taken at an estimated average loading of 10L/person/day, from a mix of visitors using toilet facilities only at 6L/person/day and a mix of other patrons dining in the visitor centre at 15L/person/day.

Existing system and proposed wastewater loading

It is proposed the commercial system will service the following site infrastructure:

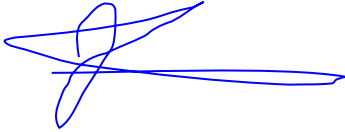
- Visitor centre
- 3 Accommodation cabins
- Caretakers house
- Ablution blocks servicing the cabins

Site wastewater budget – proposed loadings

- Visitor centre – 300 visitors per day @ 10L/day = 3000L/day
- 3 Accommodation cabins – 2 persons each @ 120L/day = 740L/day
- Caretakers house – 4 persons @ 120L/day = 480L/day
- Total estimated peak site loading – 4220L/day
- Total average site loading @ 63% occupancy – 2658L/day

The proposed redeveloped site has an estimated total peak loading of approximately 4200L/day and based upon ABS occupancy figures for accommodation and attractions in Tasmania of approximately 63% an average wastewater loading of 2658L/day would be applicable. It is anticipated the projected loading on the system will not affect the system performance and is within the original design parameters for the system. Likewise, the irrigation assigned for the operating capacity of the system is also underutilised at present as a result, no upgrade to either the system or the irrigation area is deemed necessary prior to reopening of the site.

I should be notified of any variation to the loading on the system and the maintenance contractors for the system (wastewater systems Tasmania) should be notified of the planned reopening in advance.

A handwritten signature in blue ink, consisting of several overlapping loops and a long horizontal stroke extending to the right.

Dr John Paul Cumming B.Agr.Sc (hons) PhD CPSS GAICD
Environmental and Engineering Soil Scientist

Appendix 1 – Historical Loading Figures (from 2018 assessment)

The commercial system was formerly servicing the following site infrastructure:

- Café building
- Railway station
- 3 Accommodation cabins
- Caretakers house
- 16 Campervan and camper sites
- Ablution blocks servicing the cabins and camping areas

Site wastewater budget – historical loadings

- Café building & Railway station – 200 visitors per day @ 10L/day = 2000L/day
- 3 Accommodation cabins – 2 persons each @ 120L/day = 740L/day
- Caretakers house – 4 persons @ 120L/day = 480L/day
- 16 Campervan and camper sites with ablutions – 2 persons each @ 40L/day = 1280L/day
- Total estimated peak site loading – 4500L/day
- Total historical peak site loading – 3100L/day

The estimated system loading based upon visitor records and historical site occupancy is between 1100L/day in winter up to 3100L/day in summer peak season. The system was therefore previously operating at approximately 60% of capacity even in peak summer season.

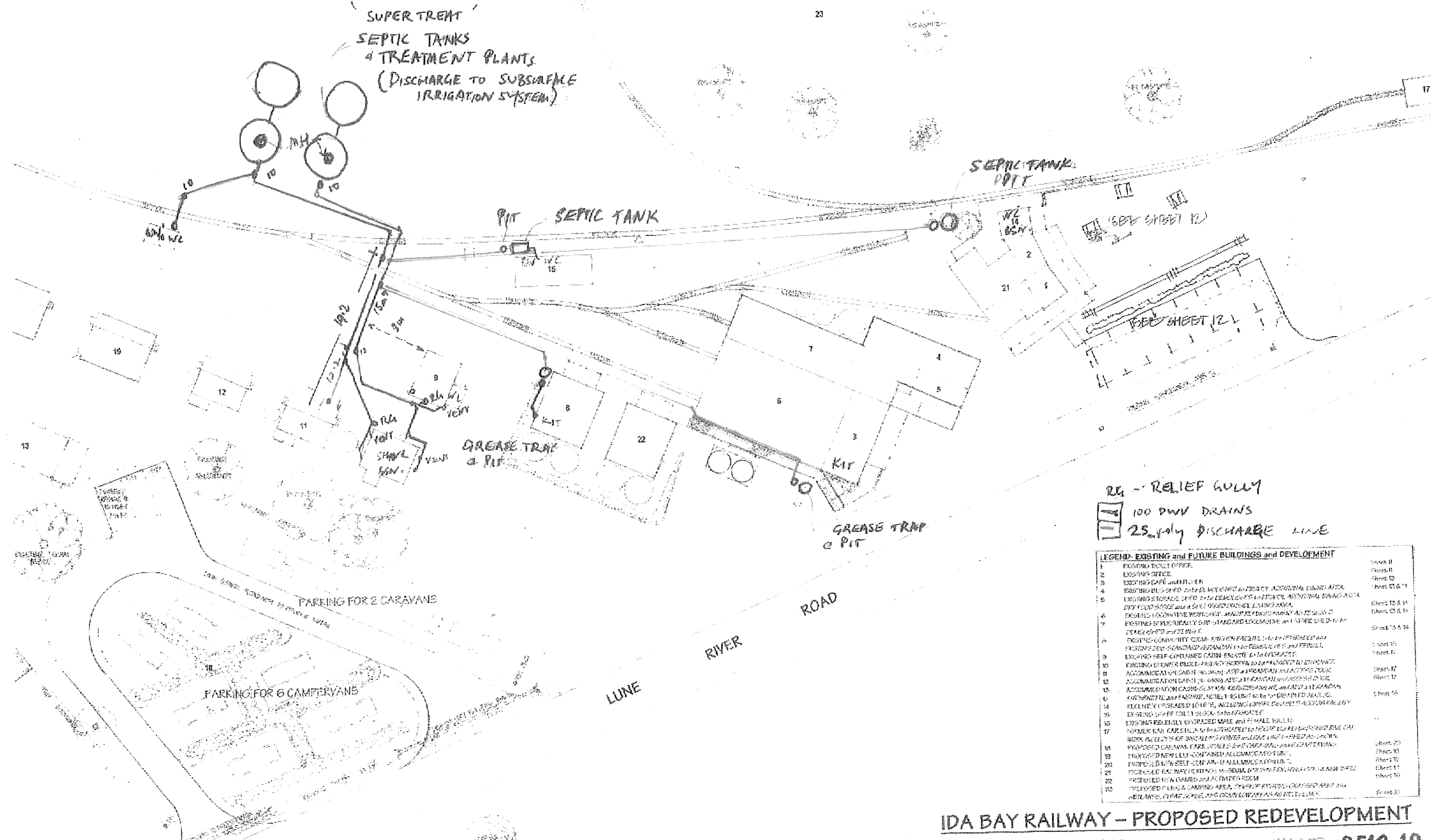
AS INSTALLED DRAINAGE PLAN

IDA BAY RAILWAY

— PUMP LINES

— SEWER LINES

SUPERTREAT
SEPTIC TANKS
& TREATMENT PLANTS
(DISCHARGE TO SUBSURFACE
IRRIGATION SYSTEM)



RG - RELIEF GULLY
100 D/WV DRAINS
25.4mm DISCHARGE LINE

LEGEND- EXISTING and FUTURE BUILDINGS and DEVELOPMENT		
1	POSTING TICKET OFFICE	Sheet 11
2	EXISTING OFFICE	Sheet 11
3	EXISTING CAFE and KITCHEN	Sheet 12
4	EXISTING BUS SHED	Sheet 12 & 13
5	EXISTING STORAGE SHED	Sheet 12 & 13
6	EXISTING LOCOMOTIVE WORKSHOP	Sheet 12 & 13
7	EXISTING EXHIBITIONALLY DISPLAYED LOCOMOTIVE	Sheet 12 & 13
8	EXISTING COMMUNITY ROOM	Sheet 13
9	EXISTING SELF-CONTAINED CASH ENCLAVE	Sheet 13
10	EXISTING POWER BLOCK	Sheet 13
11	ACCOMMODATION CASH ENCLAVE	Sheet 13
12	ACCOMMODATION CASH ENCLAVE	Sheet 13
13	ACCOMMODATION CASH ENCLAVE	Sheet 13
14	EXISTING UPGRADED TOILETS	Sheet 13
15	EXISTING UPGRADED TOILETS	Sheet 13
16	EXISTING RECENTLY UPGRADED MALE and FEMALE TOILETS	Sheet 13
17	EXISTING EXHIBITION CAR SHED	Sheet 13
18	PROPOSED EXHIBITION PARK	Sheet 20
19	PROPOSED NEW SELF-CONTAINED ACCOMMODATION UNIT	Sheet 20
20	PROPOSED NEW SELF-CONTAINED ACCOMMODATION UNIT	Sheet 20
21	PROPOSED NEW GAMES and ACTIVITIES ROOM	Sheet 21
22	PROPOSED PARK & CAMPING AREA	Sheet 21