

Appendix II
Sewage Treatment Proposal



祥達顧問有限公司

Gender Consultants Limited

Proposed Two Standalone Houses, One at Lot 1120 S.A in D.D.92 and 408 S.B. ss.1 S.A in D.D.94, (H1) and One at Lot 408 S.B ss.1 S.B. in D.D. 94 (H2), Kwu Tung South, Sheung Shui Sewage Treatment Proposal

1 EVALUATION OF SEWAGE IMPACT

1.1 Evaluation of Generation

1.1.1 This report is to evaluate the potential sewage generation being generated by each of two houses. The planning unit flow factors for person as recommended in the “ Guidelines for Estimating Sewage Flows (Version 1.0) (hereinafter as “GESF”) published by EPD “ is being adopted. The estimated number of residents for each house are summarized in **Table 1.1**.

Table 1.1 Estimated Population in Each House

Type of People	Number of People per Day
Resident	12

1.1.2 For the sewage flow estimation from resident, the planning unit flow factor of $0.37\text{m}^3/\text{person}/\text{day}$ in GESF has been adopted.

1.1.3 As derived from the above, the total estimated daily flow generated by residents in each house will be $4.5\text{m}^3 / \text{day}$. The calculation is provided in **Appendix A** for reference..

1.2 Proposed Sewage Treatment Facility

1.2.1 As the Application Site is not currently served by any public sewer, a septic tank system (STS) for each house is proposed as an interim measure to resolve the sewage generated by each proposed house. These two on-site interim measures will be disused once the public sewer system is available.

1.2.2 The estimated daily flow generated residents of the proposed development will be $4.5\text{m}^3/\text{day}$. In order to allow sufficient capacity of the STS, a septic tank with a capacity of minimum 5.0m^3 in each house lot is recommended to be constructed. According to the design requirement as specified in “ Drainage Plans Subject to Comment by the Environmental Protection Department “ (ProPECC PN 5/93), the recommended dimensions of the septic tank should be about (L) 4.80m x (W) 1.90m x (D) 2.00m with a concrete wall thickness of 0.20m to fulfil the specified dimension requirement.



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Sewage Treatment Proposal For Lot 1120SA in Dd 92 and 408 S.B. ss.1 SA in D.D. 94 (H1) and Lot 408 S.B. ss.1 S.B. in D.D. 94 (H2)

1.2.3 The minimum clearance requirements for a soakaway system are shown in **Table 1.2**

Table 1.2 Minimum Clearance Requirements for Soakaway Systems

Type	Distance from	Remarks	Soakaway System(m)
Building	3	-	
Retaining Walls	6	-	
Wells	50	-	
Stream where the bed is lower than invert of Soakaway System	15 (30)	Should the water from the stream or pool is used or likely to be used for drinking or domestic purpose, the distance (30) will be adopted	
Pools	7.5 (30)	-	
Cuts of Embankments	30	-	
Paths	1.5	-	
Beaches	100	From boundaries of gazette beaches or bathing Beach subzones of water control zone	
Beaches	30	From H.W.M. and from nearest watercourses for other cases	
Ground water table	0.6	Below invert	

1.2.4 Figure 1.1 shows the proposed location of the septic tank and soakaway system and Drawing Number EP 50/D1/5/01 & EP 50/D1/5/02 showing the Septic Tank Detail and Soakaway Pit System respectively.

1.2.5 As the Application site is not served by public sewer and the use of STS for each house is considered the most suitable interim option for sewage disposal.

1.2.6 With the provision of the proposed on-site sanitary facility (i.e. STS)in each house , there will be no adverse water quality/sewage impact to be resulted from the proposed development during the operational phase.



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*Sewage Treatment Proposal For Lot 1`120SA in DD92 and 408 S.B. ss.1 S.A in D.D. 94 (H1)
and Lot 408 S.B. ss.1 S.B. in D.D. 94 (H2)*

1.3 Provision of Sewage Treatment and Disposal Facilities Recommendation

1.3.1 The Septic Tank System (STS) should be properly sited, designed, constructed, operated and maintained in accordance with the “ Guidance Notes on Discharges from Village Houses” and “ Drainage Plans subject to Comment by the Environmental Protection Department (ProPECC PN 5/93)” published by the EPD. To minimize the adverse impact on the public and the environment, the following precaution should be considered during planning a new STS:

- Locate the STS away from the beach, stream, well, retaining wall etc. to prevent water contamination and leakage;
- Carry out a soil percolation test before the STS construction to ensure the permeability of Soil; and
 - Locate the STS in an open space with easy access for desludging.

1.3.2 - The operator should implement good housekeeping practices to ensure that the continuous operation of the STS. These should include:

- Avoid deposit any oil, chemical and solid waste into the STS;
- Inspect and measure of the sludge depth of treatment components at least once every 6 months;
- Remove the STS sludge properly when exceed 1/4 of overall water depth;
- Inspect the STS immediately when flooding, overflow, odour become noticeable or not flush well and;
- Clean and flush of screens and other sewage handling equipment regularly.

1.3.3 According to the ‘ Guideline Notes on Discharges from Village Houses, the STS should be inspected and desludged regularly. Desludging should be done by Specialist Contractor. A tank lorry equipped with a pump is often used for pumping out the content of the septic tank and transport to sludge treatment facility for future treatment.

- END -

Appendix A

Sewage Treatment Proposal for Lot 1120SA in DD92 and 408 S.B. ss.1 S.A in D.D.94, (H1)
and Lot 408 S.B. ss.1 S.B. in D.D. 94 (H2) ,Kwu Tung South, Sheung Shui

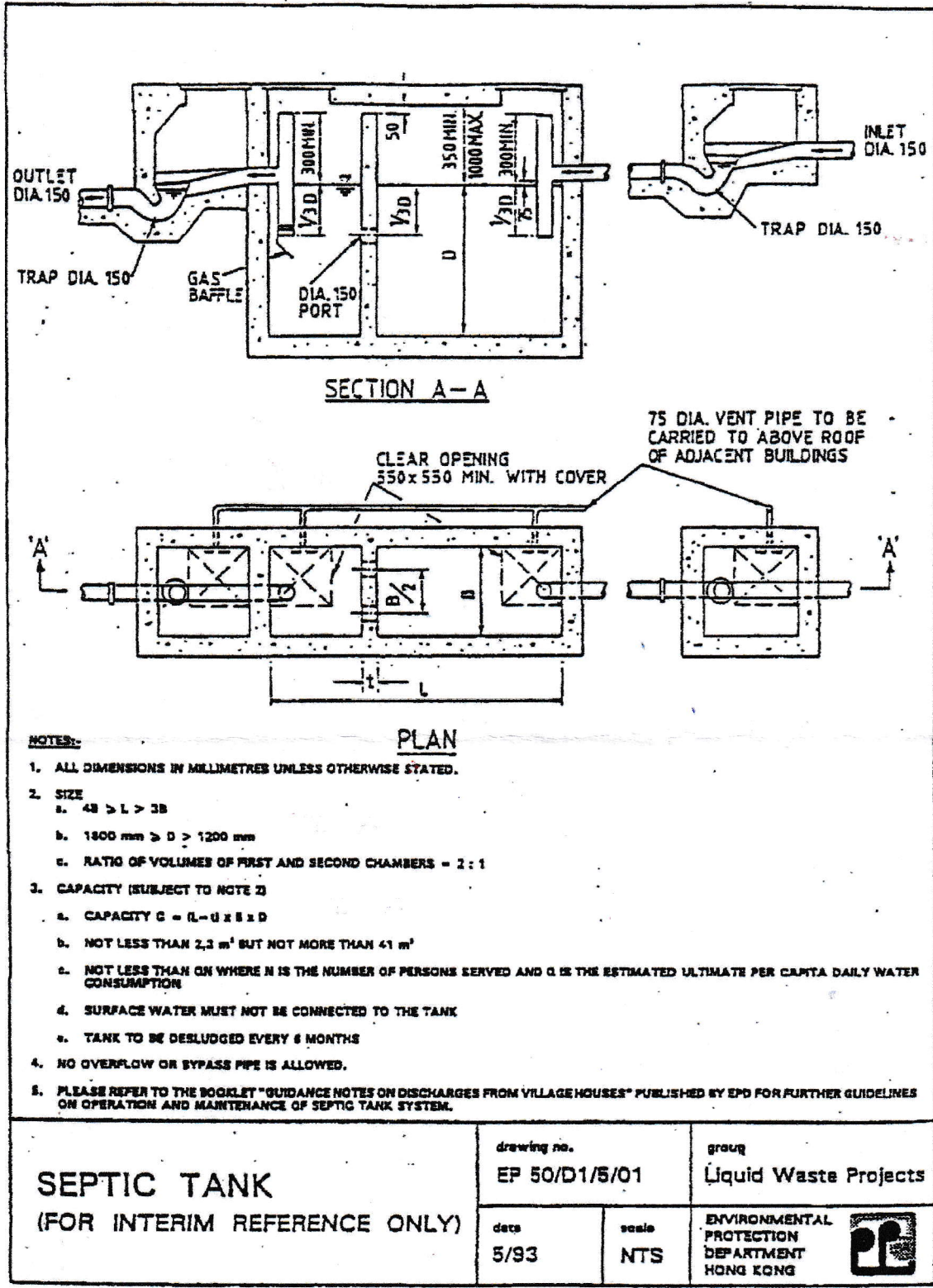
Calculation of Daily Flow

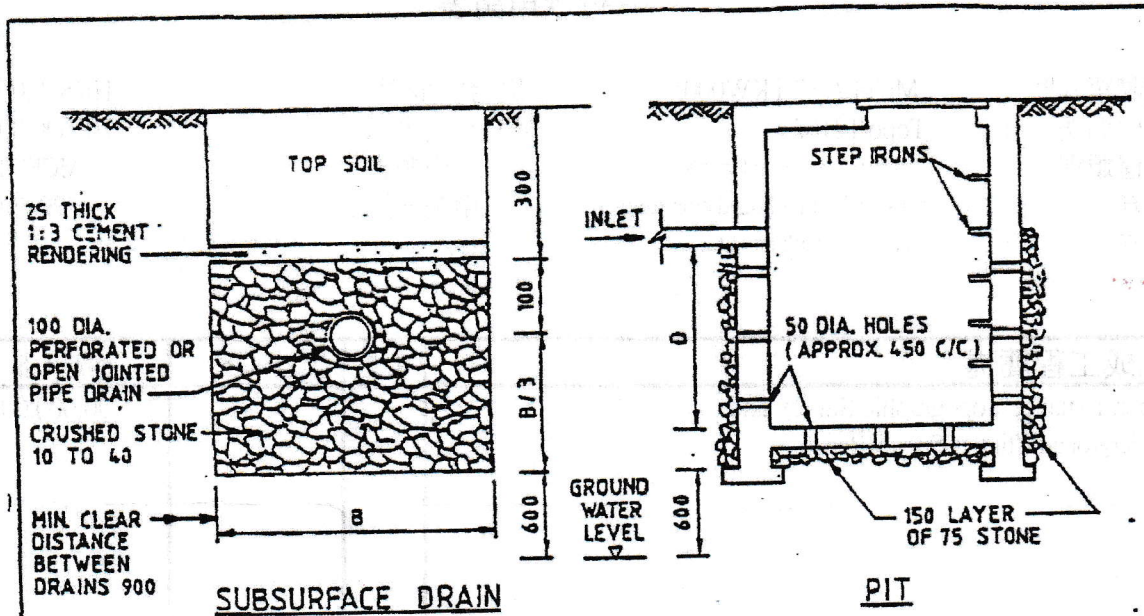
Estimation of Sewage Flow from the Villa Development

Total number of Inhabitants	12 persons	
Unit flow- Activities	0.37 m ³ /person/day	Referred to the planning unit flow factor for “Domestic Flow” activities in Table T-1 of GESF ^(a)
Estimated daily flow	4.5 m ³ /day	
Total Estimated Daily Flow	4.5m³/Day	

Note :

(a) GESF – ‘ Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning Version 1.0 ‘ published by Environmental Protection (EPD)





NOTES:

1. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED
2. PERCOLATION TEST FOR DETERMINING ABSORPTION CAPACITY OF SOIL
 - a. EXCAVATE A HOLE 300 mm SQUARE TO THE SAME DEPTH OF THE PIT OR TRENCH.
 - b. FILL THE HOLE WITH APPROXIMATELY 150 mm OF WATER AND ALLOW TO SEEP AWAY COMPLETELY.
 - c. RE-FILL THE HOLE WITH WATER TO A DEPTH OF 150 mm AND OBSERVE THE TIME, IN MINUTES, FOR WATER TO SEEP COMPLETELY AWAY.
 - d. DIVIDE THE TIME BY 4 TO GIVE TIME TAKEN TO FALL 25 mm FOR USE IN TABLE BELOW.
3. ALLOWABLE LOADING OF SOAKAWAY SYSTEMS

TIME IN MINUTES FOR WATER TO FALL 25 mm IN TEST PIT	ALLOWABLE LOADING IN LITRES PER m ² PER DAY	
	DRAIN TRENCH BOTTOM AREA	PIT PERCOLATION AREA
1 OR LESS	183	278
2	130	175
3	98	150
10	69	94
30	53	48

THE TOTAL ALLOWABLE LOADING PER DAY SHOULD EQUATE WITH THE DAILY INCOMING FLOW

4. MINIMUM CLEARANCE REQUIREMENTS FOR SOAKAWAY SYSTEMS

	DISTANCE FROM SOAKAWAY SYSTEMS (m)	
BUILDING	3	
RETAINING WALLS	8	
WELLS	50	
STREAM WHERE THE BED IS LOWER THAN INVERT OF SOAKAWAY SYSTEM	15 (30)*	THESE DISTANCES SHOULD BE INCREASED TO DISTANCES SHOWN IN BRACKETS IF THE WATER FROM THE STREAM OR POOL IS USED OR LIKELY TO BE USED FOR DRINKING OR DOMESTIC PURPOSES.
POOLS	7.5 (30)*	
CUTS OR EMBANKMENTS	30	
PATHS	1.5	
BEACHES	100	(FROM BOUNDARIES OF GAZETTED BEACHES OR BATHING BEACH SUBZONES OF WATER CONTROL ZONES)
	30	(FROM M.W.M. AND FROM NEAREST WATERCOURSES FOR OTHER CASES)
GROUND WATER TABLE	0.6	(BELOW INVERT)

<h2>SOIL SOAKAWAY SYSTEM</h2> <p>(FOR INTERIM REFERENCE ONLY)</p>	drawing no.	EP 50/D1/5/02		group	Liquid Waste Projects
	date	5/93	scale	NTS	ENVIRONMENTAL PROTECTION DEPARTMENT HONG KONG