



Foul Drainage Capacity Assessment Issue 1

11 March 2026

Redwood, Tiltwood, Hophurst Lane, Crawley
Down.

1.0 Introduction

An assessment has been undertaken to determine the capacity of the existing private foul drainage at Redwood, Tiltwood, Hophurst Lane, Crawley Down.

The purpose of this assessment is to demonstrate that the existing private foul drainage network has sufficient capacity to accommodate the discharge from the proposed single dwelling development.

The proposed dwelling will discharge via a new private foul pumping station, which will discharge into the existing private gravity foul drainage network via an existing inspection chamber.

This assessment has been undertaken in accordance with:

- Building Regulations 2010
- Approved Document H 2015

2.0 Site Location

The site is located at Redwood, Tiltwood, Hophurst Lane, Crawley Down, Crawley, West Sussex RH10 4LL.



3.0 Existing Drainage Arrangement

The site connects to an existing private foul gravity sewer comprising:

- 100mm diameter clay pipe
- Flattest downstream gradient: 1 in 69 (before discharge into adopted sewer)
- Proposed connection point existing inspection chamber (EX-01)
- Downstream discharge via existing network to adopted sewer in Aviary Way
- Network upstream of EX01 serves three houses
- Network downstream of EX01 (before discharge into adopted sewer) serves five houses

The system is understood to be operational and free from surcharge.

Existing foul network plans are included in Appendix A

4.0 Proposed Development and Drainage Strategy

The proposed development comprises:

- 1 no. residential dwelling
- 8 people
- Total population equivalent (PE): 8 people

Due to site levels, foul drainage will discharge to:

- A twin-pump packaged foul pumping station
- Duty/standby pump configuration
- High-level alarm
- Non-return valves
- 24-hour emergency storage (in accordance with Part H)

The pumping station will discharge via a rising main into a new outfall chamber then via a short length of gravity sewer into existing chamber EX-01 (100mm diameter gravity sewer).

Proposed drainage plans are included in Appendix B

5.0 Foul Flow Assessment (Existing)

5.1 Design population

5 dwellings × 5 persons (assumed) = 25 PE

5.2 Average Daily Flow

Using 150 litres/person/day (standard domestic allowance):

$$25 \times 150 = 3,750 \text{ litres/day}$$

$$= 3.75 \text{ m}^3/\text{day}$$

5.3 Peak Flow Estimation

Applying conservative peak factor of 6:

Average hourly flow:

$$3.75 \div 24 = 0.16 \text{ m}^3/\text{hr}$$

Peak hourly flow:

$$0.16 \times 6 = 0.96 \text{ m}^3/\text{hr}$$

Converted to litres per second:

$$0.96 \div 3.6 = 0.27 \text{ l/s}$$

Estimated peak foul discharge:

$$0.27 \text{ l/s}$$

6.0 Foul Flow Assessment (Proposed)

6.1 Design population

1 dwelling × 8 persons = 8 PE

6.2 Average Daily Flow

Using 150 litres/person/day (standard domestic allowance):

$8 \times 150 = 1,200$ litres/day

$= 1.2 \text{ m}^3/\text{day}$

6.3 Peak Flow Estimation

Applying conservative peak factor of 6:

Average hourly flow:

$1.2 \div 24 = 0.05 \text{ m}^3/\text{hr}$

Peak hourly flow:

$0.05 \times 6 = 0.30 \text{ m}^3/\text{hr}$

Converted to litres per second:

$0.30 \div 3.6 = 0.17 \text{ l/s}$

Estimated peak foul discharge:

0.08 l/s

7.0 Pumped Discharge Considerations

While the calculated peak flow from the dwellings is 0.08 l/s , the pumping station will operate intermittently.

The proposed package pumping station will operate at an instantaneous pump discharge rate of 3.0 l/s .

8.0 Hydraulic Capacity of Existing 100mm Gravity Sewer

8.1 Peak Flow Estimation

- Pipe diameter: 100mm
- Gradient: 1 in 69 (0.0145)
- Material: Clay
- Colebrook-White $k = 1.5$

Using Colebrook-White equation full-bore flow = 6.4 l/s

9.0 Conclusions

- The existing downstream gravity sewer is 100mm.
- The calculated peak flow in the existing system is approximately 0.27 l/s.
- The flattest pipe in the existing downstream network is 1 in 69 (before discharge into adopted sewer).
- Using Colebrook-White equation the full-bore capacity of the pipe is = 6.4 l/s
- The peak flow from the pumping station is 3 l/s, the pumping station will operate intermittently.
- The total existing and proposed calculated peak flow is 3.27l/s
- The total calculated peak flow of 3.27 l/s is less than the capacity of the existing pipe at 6.4l/s.

It is therefore concluded that there is no reasonable likelihood of surcharge, flooding, or hydraulic overloading as a result of accommodating the proposed development.



Appendix A

Existing Foul Drainage



- General Notes**
- Any indication of site boundaries are to be considered diagrammatic. This drawing is based on layouts prepared by others and our details are not in themselves intended to be any definition of land ownership.
 - The contractor shall check all levels and dimensions, any errors or omissions are to be reported to the Engineer.
 - All information regarding below ground obstructions has been added to our general arrangement drawing as far as we are reasonably able to obtain at the time. The contractor shall allow for breaking out obstructions where necessary and increasing the depth of foundations to a suitable and approved formation, in accordance with our details.

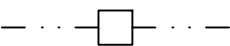
Legend

Drainage (Non-adopted)

Foul Water

Proposed

Existing Chamber



Drainage (Adopted)

Foul Water

Existing Manhole



A First Issue. JT 11.03.26

Rev Description By Date

KRYSTAL ENGINEERING LTD
1 STATION ROAD SOUTH,
MERSTHAM,
SURREY
RH1 3EF
01737 333139



Project
NEW BUILD HOUSE AT
TILTWOOD EAST,
HOPHURST LANE,
CRAWLEY DOWN RH19 4LL

Drawing Title
EXISTING FOUL DRAINAGE
SHEET 1

Drawing No. 7107-205 Revision A

Scale 1:200 @ A1 Date MAR 2026

Drawing Status FOR APPROVAL

Drawn By JT Checked By KH

Client
TILTWOOD HOMES LTD



General Notes

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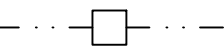
Legend

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Existing Manhole



First Issue.		JT	11.03.26
Rev	Description	By	Date
	KRYSTAL ENGINEERING LTD 11 STATION ROAD SOUTH, MERSTHAM, SURREY RH1 3EF 01737 333139 		
Project			
	NEW BUILD HOUSE AT TILTWOOD EAST, HOPHURST LANE, CRAWLEY DOWN RH19 4LL		
Drawing Title			
	EXISTING FOUL DRAINAGE SHEET 2		
Drawing No.		Revision	
7107-206		A	
Scale	1:200 @ A1	Date	MAR 2026
Drawing Status			
FOR APPROVAL			
Drawn By		Checked By	
JT		KH	
Client			
TILTWOOD HOMES LTD			



Appendix B

Proposed Drainage Layout

Legend

Drainage (Non-adopted)

Surface Water

Inspection Chamber
Manhole
Rodding Eye
Rainwater Pipe

Foul Water

SVP/SS
Inspection Chamber
Combined
Inspection Chamber
Pumped Main
Pumping Station
Existing Chamber

Symbols

Site Boundary
Proposed Level
Existing Level
Existing Level (interpolated)
Proposed Gradient
Tree Retained (RPA)
Tree Removed
No Dig Construction (permeable)
Blue roof

General Notes

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- Refer to Architect's drawings for location and details of all fencing and soft landscaping.

Surface Water Strategy

The surface water strategy has been developed in accordance with the following criteria;

- Total site area = 1317m²
- Greenfield run-off rate (Q_{bar}) has been established as 0.71/s
- The proposed development incorporates blue roofs with outlets restricted to 0.25l/s (minimum 2 outlets per roof). The maximum total flow from the building into the sub-surface drainage system is 0.5l/s.
- Blue roof storage has been provided to accommodate the 100yr +40% climate change critical storm event.
- The climate change allowance has been established from DEFRA guidance; Medway Management Catchment peak rainfall allowances, 1% annual exceedance rainfall event 2070s, Epoch Upper end allowance 40%, (2070s epoch for development with a lifetime between 2061 and 2125).
- Proposed external works for the driveway and parking areas are formed of permeable construction.
- Surface water discharges from the development site by means of a gravity piped connection to an adjacent ditch via a new headwall.

All drainage pipes are 100mm ϕ unless noted otherwise

See insert

Pumped main to existing gravity combined sewer

See insert

See drawing 201

See drawing 201

Existing live services are present on site.

Statutory Undertakers record drawings must be obtained which identify the location of their services.

Further on site investigations are to be undertaken by the Contractor to confirm the position of the apparatus and thus establish the effect on the proposed development and the necessity or otherwise for the permanent or temporary diversion of the service to allow the construction of the development to safely and successfully proceed.

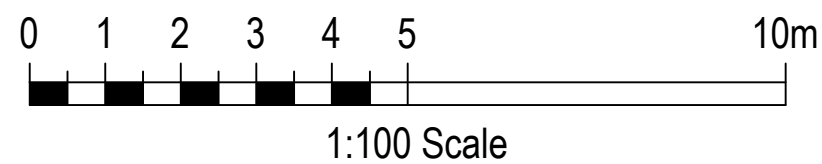
Blue roof outlet 0.25l/s

Blue roof outlet 0.25l/s (on to lower roof)

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Ground Floor/First Floor Roof Level



C Surface water strategy updated. JT 11.03.26
B Outfall chamber added. JT 19.07.23
A First Issue. JT 03.05.23

Rev Description By Date

KRYSTAL ENGINEERING LTD
1 STATION ROAD SOUTH,
MERSTHAM,
SURREY
RH1 3EF
01737 333139

Project
NEW BUILD HOUSE AT
TILTWOOD EAST,
HOPHURST LANE,
CRAWLEY DOWN RH19 4LL

Drawing Title
DRAINAGE AND EXTERNAL
WORKS LAYOUT
SHEET 1

Drawing No. 7107-200 Revision C

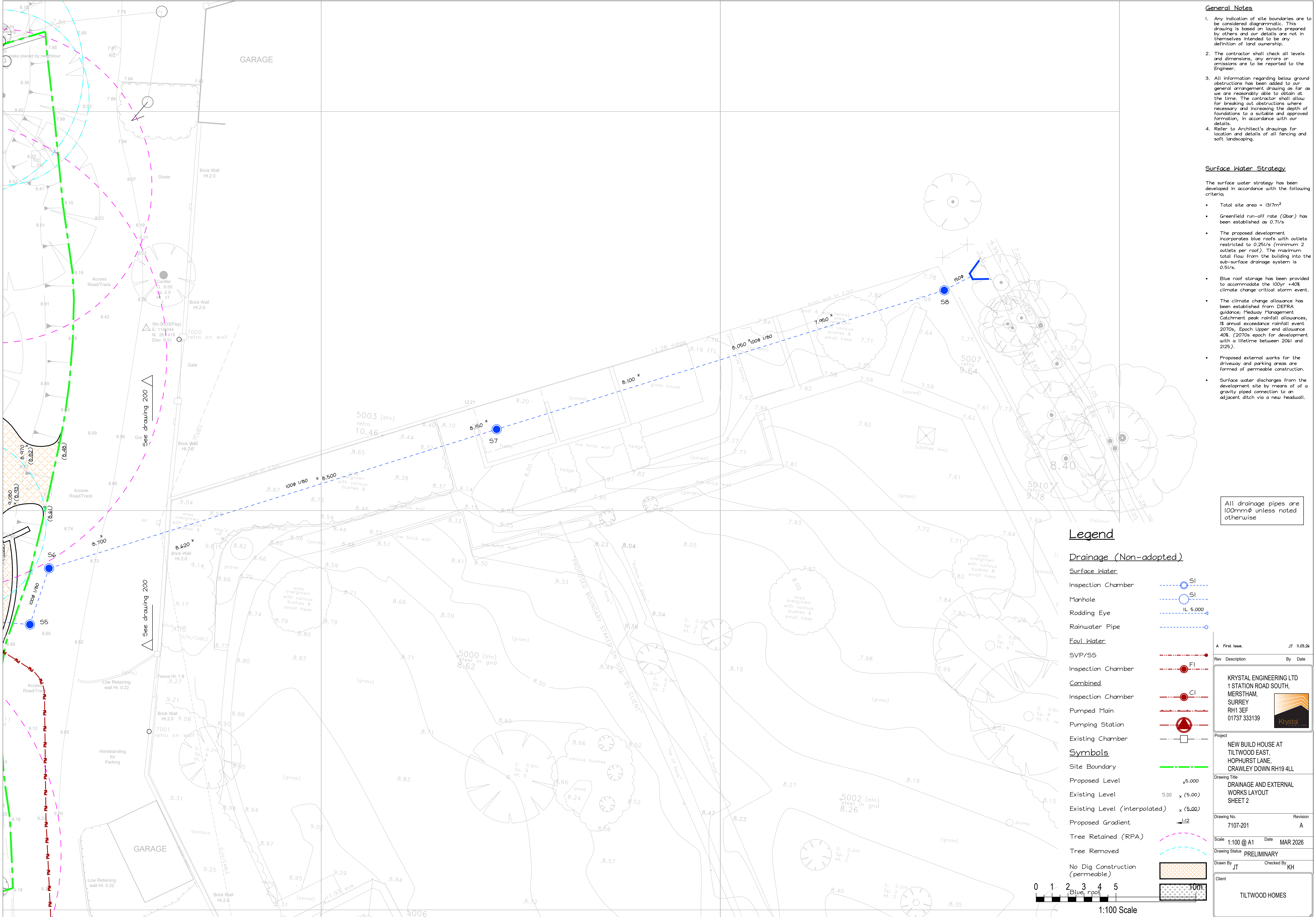
Scale 1:100 @ A1 Date APRIL 2023

Drawing Status PRELIMINARY

Drawn By JT Checked By KH

Client

TILTWOOD HOMES



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Surface Water

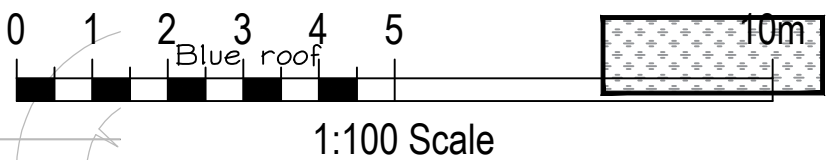
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- Manhole
- Rodding Eye
- Rainwater Pipe

Foul Water

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Project NEW BUILD HOUSE AT TILTWOOD EAST, HOPHURST LANE, CRAWLEY DOWN RH19 4LL			
Drawing Title DRAINAGE AND EXTERNAL WORKS LAYOUT SHEET 2			
Drawing No. 7107-201		Revision A	
Scale 1:100 @ A1		Date MAR 2026	
Drawing Status PRELIMINARY		Drawn By JT Checked By KH	
Client TILTWOOD HOMES			