

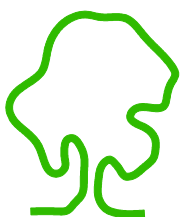
LESSTOBUILDIT LTD



LAND TO THE SOUTH OF LEACROFT, LONDON ROAD,
HICKSTEAD, WEST SUSSEX, RH17 5LZ

Drainage Strategy

May 2026



eas ltd

Environmental Assessment Services Ltd

REPORT DATA SHEET

Requirement	Data
Report Ref:	872/Ellisdon/Leacroft/DS
Date	May 2026
Client	LesstoBuildIt Ltd
Report type	Drainage Strategy
Purpose	Planning Application
Revisions	
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Approved by	Xanthe Lyford BSc (Hons)

LESSTOBUILDIT LTD

**LAND TO THE SOUTH OF LEACROFT, LONDON ROAD, HICKSTEAD
WEST SUSSEX, RH17 5LZ**

Drainage Strategy

May 2026

CONTENTS

1. THE SITE & PROPOSED REDEVELOPMENT
2. GEOLOGY, HYDROGEOLOGICAL CONSIDERATIONS & FLOOD RISK
3. EXISTING SITE DRAINAGE
4. PERCOLATION TESTING
5. PROPOSED SURFACE WATER DRAINAGE OPTIONS
6. SURFACE WATER DRAINAGE DESIGN
7. PROPOSED FOUL DRAINAGE
8. OPERATION & MAINTENANCE OF THE SYSTEM
9. SUMMARY

APPENDIX A:

- | | |
|-----------|---------------------------------------|
| Figure 1: | Location Plan |
| Figure 2: | Existing Site Layout |
| Figure 3: | Proposed Redevelopment |
| Figure 4: | Suggested Drainage Arrangement |

APPENDIX B: Photographs

APPENDIX C: Environment Agency Flood Maps

APPENDIX D: Greenfield Flow Rates

APPENDIX E: Output from the Drainage Design model

APPENDIX F: Plan showing easement corridor for outfall pipes.

LESSTOBUILDIT LTD**LAND TO THE SOUTH OF LEACROFT, LONDON ROAD, HICKSTEAD
WEST SUSSEX, RH17 5LZ****Drainage Strategy**

May 2026

1. THE SITE AND PROPOSED REDEVELOPMENT

- 1.1 The site comprises a plot of land, currently used for the storage and distribution of bricks for the building trade with a site office building to the northeast corner, located off London Road, Hickstead, some 800 m north of the centre of Hickstead Village. The site area is approximately 0.4 ha. The Ordnance Survey (OS) map reference for the site is TQ 2668 2092. The site elevation is approximately +14 m OD. See Appendix A, Figure 1 for the site location plan, Figure 2 for the existing site layout.
- 1.2 The site is bordered to the north by a detached residential property, Leacroft, to the east by the A2300, which also acts as a slip road to the northbound A23, to the south by a detached residential dwelling, Rendena, plus the offices of Sweepstech and to the west by a detached residential dwelling, Sunny Acres. The neighbouring residential properties all have garden areas surrounding the dwellings.
- 1.3 It is proposed to redevelop the site for a commercial use with seven warehouse units arranged around the outside of the site and a central yard and parking area. See Appendix A, Figure 3 for the proposed site layout
- 1.4 A drainage strategy was previously prepared by Hemsley Orrel Partnership of Hove in September 2023.
- 1.5 There is a planning application submitted for the site with prior approval, subject to conditions. One of the Conditions requires the preparation of a drainage strategy for the proposed redevelopment.

2. GEOLOGY, HYDROGEOLOGICAL CONSIDERATIONS & FLOOD RISK

- 2.1 According to the British Geological Survey (available online), the site lies on Weald Clay Formation (mudstone).
- 2.2 Trial pits excavated at the site revealed made ground of gravel, road planings and mixed soils over Weald Clay. The Weald Clay was encountered 0.5 – 1.0 m below the surface. Groundwater was encountered at shallow depth within the Weald Clay.

- 2.3 The Department for Environment, Food and Rural Affairs (Defra) online mapping (MAGIC) shows the site lies on unproductive bedrock (Weald Clay). DEFRA classify the soil type as “*slightly acid but base-rich loamy and clayey soils*”. The site lies on an area of ‘unproductive’ groundwater vulnerability and does not lie in a groundwater source protection zone (SPZ).
- 2.4 According to the EA online Flood Map for Planning, the site lies within Flood Zone 1 (low risk of flooding from fluvial sources) and will remain in Flood Zone 1 the 2070 - 2125 scenario. The site is not at risk from surface water flooding in the 1 in 30-year scenario, but the adjacent road, A2300 is at risk; the very edge of the eastern boundary of the site is at risk from surface water flooding in the 1 in 100-year scenario, this area increases slightly in the 1 in 1000-year scenario. Groundwater flooding or reservoir flooding are deemed unlikely at the site.

3. EXISTING SITE DRAINAGE

- 3.1 There is presently no formal surface water drainage at the site. Rainfall presently soaks into the site’s permeable gravel surface or flows, following the slight fall across the site, to the north and west.
- 3.2 There is some pipework in chambers beneath a broken concrete bell-mouth at the site entrance, but this appears to connect to the highway drainage and receives no runoff from the site.
- 3.3 The existing office/messing area on the northern edge of the site is connected to a small sewage treatment plant in the northwest corner. Treated effluent is believed to drain via an easement corridor to a large north-flowing watercourse on the far side of Sunny Acres.
- 3.4 The watercourse joins a branch of the River Adur that flows west under Rice Bridge and joins the main river at Wineham.

4. PERCOLATION TESTING

- 4.1 The preferred sustainable drainage (SuDS) option is drainage to soakaway, where the surface water will not leave the site. This option requires suitably permeable underlying soils.
- 4.2 In this case the underlying Weald Clay has low permeability and percolation testing carried out in trial pits (by Land Science and others) did not reveal suitable infiltration coefficients. Recent (2026) trial pits were found to have flooded and only one (Northeast corner) approached half emptying within 24 Hours.
- 4.3 It was concluded that drainage to soakaway would not be practicable at this site. This was also the conclusion of the Sustainable Drainage Assessment prepared by Hemsly Orrell Partnership (HOP) in 2023.

5. PROPOSED SURFACE WATER DRAINAGE OPTIONS

5.1 The hierarchy for SuDS is as follows:

- i. Re-use of harvested rainwater.
- ii. Disposal to soakaway
- iii. Attenuation storage with release of rainwater to a watercourse at a maximum of greenfield flow.
- iv. Attenuation storage with release of rainwater to a surface water sewer at a maximum of greenfield flow.
- v. Attenuation storage with release of rainwater to a combined sewer at a maximum of greenfield flow.

5.2 The opportunities for using harvested rainwater in the proposed development are uncertain. Rainwater could be collected for irrigation of any planted areas, for washdown and/or for lavatory flushing.

5.3 Disposal to soakaway has already been ruled out as impracticable, Attenuation storage with discharge to a watercourse would appear to be practicable. There is a suitable watercourse to the west of the site with an existing easement for a pipe route.

5.4 How the attenuation storage is provided is to be decided. Above ground locations (a pond or swale) are preferred as the storage remains visible and accessible. However, there does not appear to sufficient room available within the site and underground storage will be the favoured option. The Greenfield flow rates are summarised in Table 5.1 below:

TABLE 5.1
GREENFIELD FLOW RATES

Return Period	Greenfield Flow l/s
1 in 1 year	3.3
1 in 2 year	3.4
1 in 10 year	6.2
1 in 30 year	8.8
1 in 100 year	12.3
1 in 200 year	14.4

5.5 The Environment Agency non-statutory recommendation is that the maximum flow rate should not exceed the 1 in 1 year return period flow (3.3 l/s).

6. SURFACE WATER DRAINAGE DESIGN

6.1 A surface water drainage scheme has been designed in outline using the MasterDrain network drainage model. See Figure 4. Pipe and chamber sizes plus other details are given in Appendix E.

-
- 6.2 The attenuation volume required has been calculated at 110 m³. Due to high groundwater levels, the attenuation volume should be as shallow as practicable.
- 6.3 An underground crate system has been suggested. The crate units come in 400 mm deep modules and one layer of the system is recommended. An 18 m x 18 m x 0.4 m deep AquaCell Core or similar has been proposed. An alternative would be to create the void in a drainage blanket laid under the proposed parking area permeable paving.
- 6.4 The outfall from the attenuation storage would be via a flow control chamber, with vortex valve set to a maximum flow of 3.3 l/s, or an orifice plate of 57.7 mm diameter. The outfall pipe would be connected to the watercourse to the northwest via the easement corridor. See Appendix F.
- 6.5 Risks of contamination from the proposed development should be fairly low. The permeable surfacing on drainage blanket proposed for the parking area and the attenuation storage will provide some protection against pollution of the watercourse. See Tables 26.2 and 26.3 in the SuDS Manual.

7. PROPOSED FOUL DRAINAGE

- 7.1 There are no public foul sewers within practicable reach from the site.
- 7.2 Foul sewage from the proposed units would have to be treated by a package sewage treatment plant discharging treated effluent to the aforementioned watercourse to the northwest via the easement pipe corridor.
- 7.3 A foul sewerage scheme has been designed in outline using the MasterDrain (Foul) network drainage model. A foul sewerage layout is shown in Figure 4. Chamber details and pipe sizes are given in Appendix E.

8. OPERATION & MAINTENANCE OF THE SYSTEM

- 8.1 The surface water drainage system should require minimal operational input once construction has been completed. However, it will require regular maintenance.
- 8.2 Items requiring maintenance (mainly the removal of silt) will include:
- Gullies, strip drains and channels.
 - Chambers.
 - Flow control device (vortex valve or orifice plate).
 - Occasional maintenance of the attenuation storage.
- 8.3 The sewage treatment plant will require regular maintenance, at least annually. Maintenance costs to be covered by the freeholder with input from the unit tenants where appropriate.

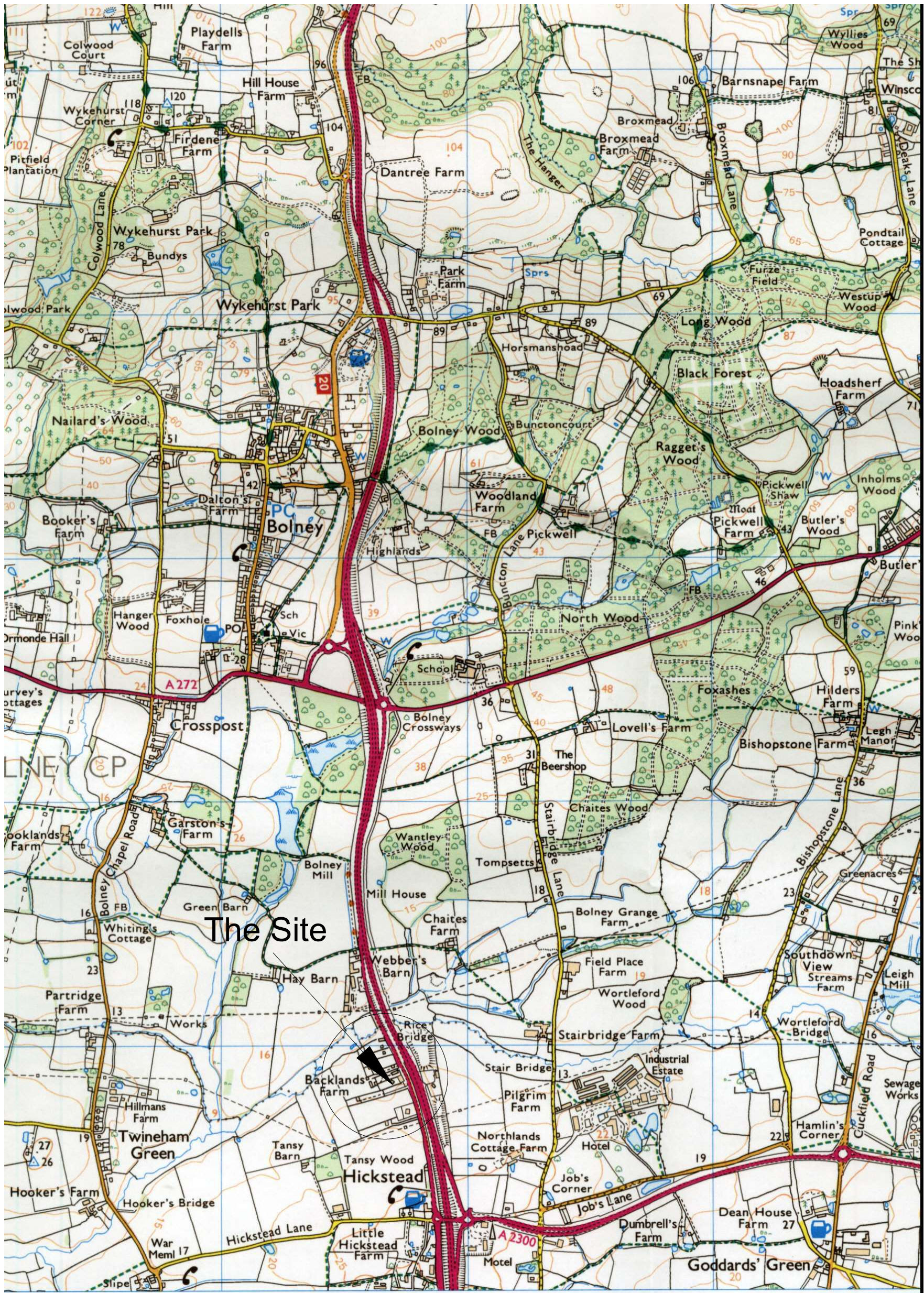
9. SUMMARY & CONCLUSIONS

- 9.1 It is proposed to redevelop the site, presently used for the storage and distribution of bricks to the south of Leacroft on London Road (A2300) in Hickstead, for a commercial use with seven warehouse units arranged around the outside of the site and a central yard and parking area. See Appendix A, Figure 3 for the proposed site layout.
- 9.2 The underlying Weald Clay has been found to be unsuitable for drainage to soakaway (the preferred SuDS option) and a scheme based on attenuation storage with outflow limited to greenfield flow has been recommended as the surface water drainage strategy. The controlled flow would be piped to an outfall on the substantial watercourse to the northwest of the site via an easement crossing the northern edge of the adjacent Sunny Acres property. An outline design has been prepared and is shown in Figure 4.
- 9.3 There are no public sewers within the vicinity of the site and the foul drainage strategy will require a package sewage treatment plant with outfall of treated effluent to the abovementioned watercourse to the northwest of the site via the existing pipe easement across the northern edge of the adjacent Sunny Acres property. An outline design has been prepared and is shown in Figure 4.
- 9.4 Some maintenance will be required, particularly to ensure the proper operation of the flow control device and the sewage treatment plant.

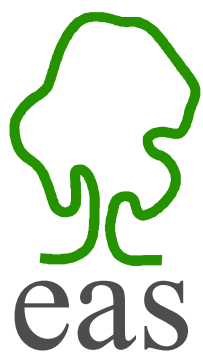


APPENDIX A

- Figure 1: **Location Plan**
- Figure 2: **Existing Site Layout**
- Figure 3: **Proposed Redevelopment**
- Figure 4: **Suggested Drainage Arrangement**



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Land to the South of Leacroft

London Road, Hickstead, West Sussex, RH17 5LZ

Scale 1:25000

Figure 1: Site Location

May 2026

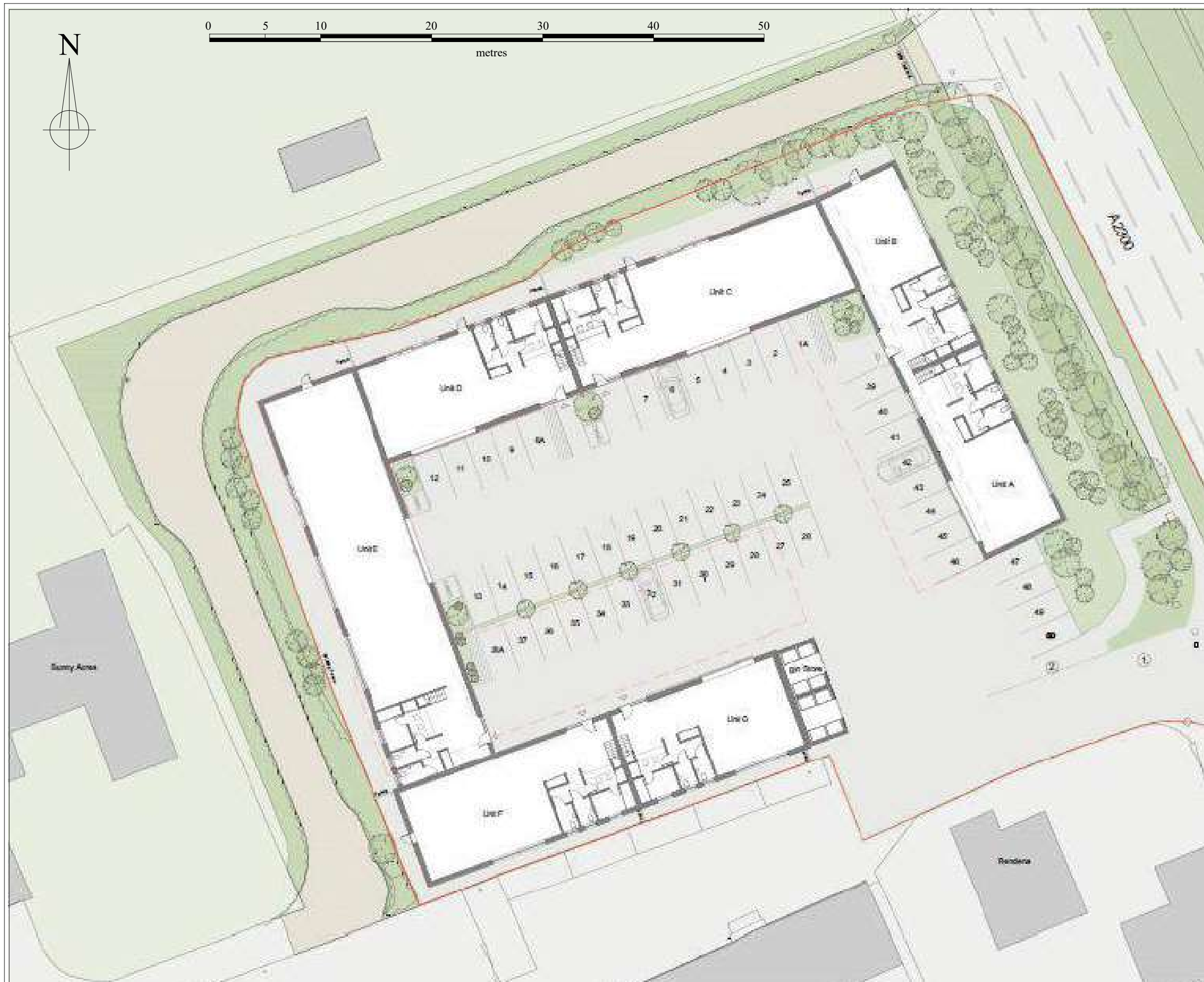


Land to the South of Leacroft
London Road, Hickstead, West Sussex, RH17 5LZ

Figure 2: Site as Existing

Scale as shown

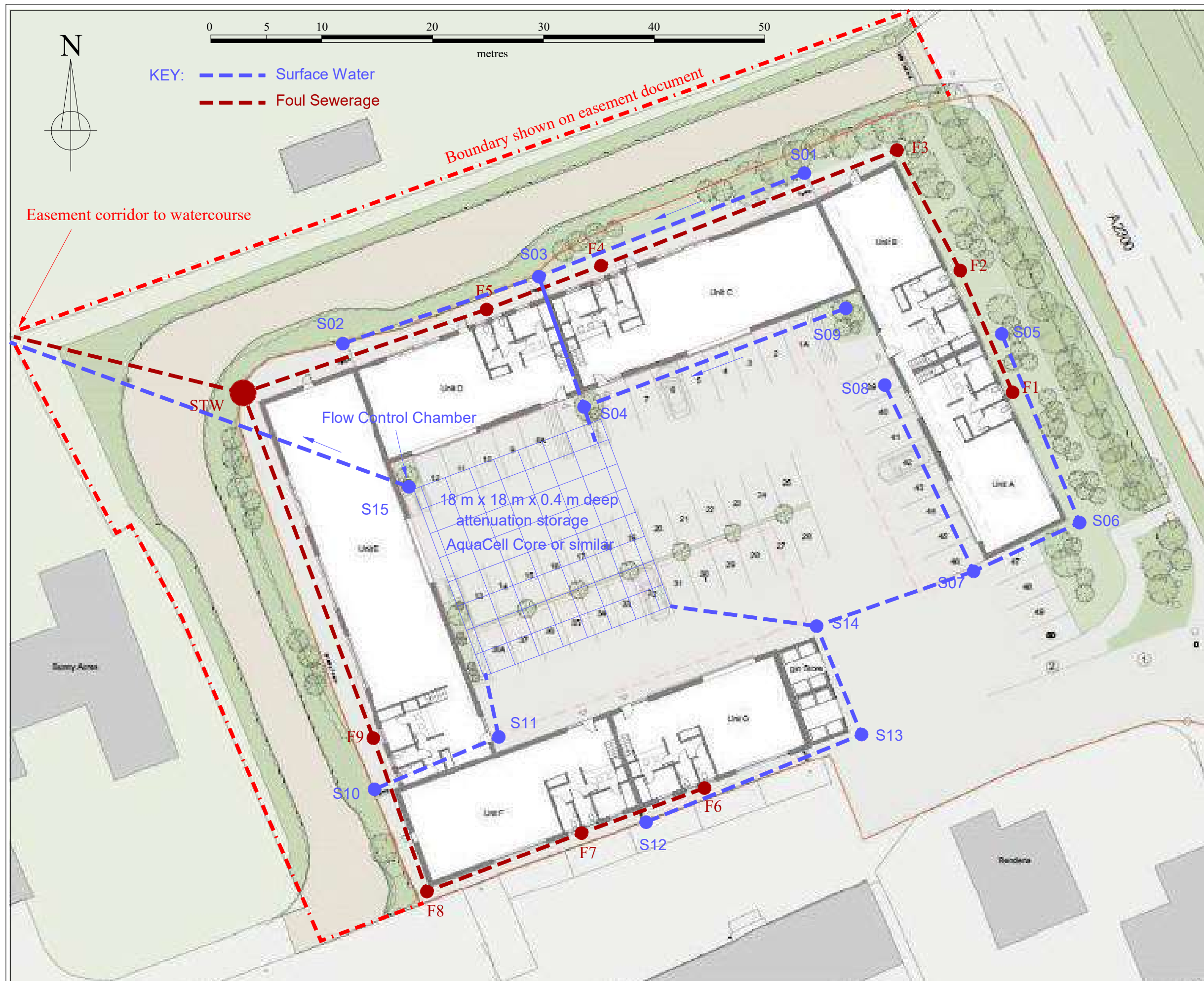
May 2026



LAND SOUTH OF LEACROFT
LONDON ROAD, HICKSTEAD
Figure 3: Proposed Development

May 2026

Scale as shown



LAND SOUTH OF LEACROFT
 LONDON ROAD, HICKSTEAD
Figure 4: Drainage Arrangement

May 2026

Scale as shown

APPENDIX B:

Photographs



Photo 1: Chambers in the site entrance



Photo 2: Trial hole excavation. Note clay close to the surface.



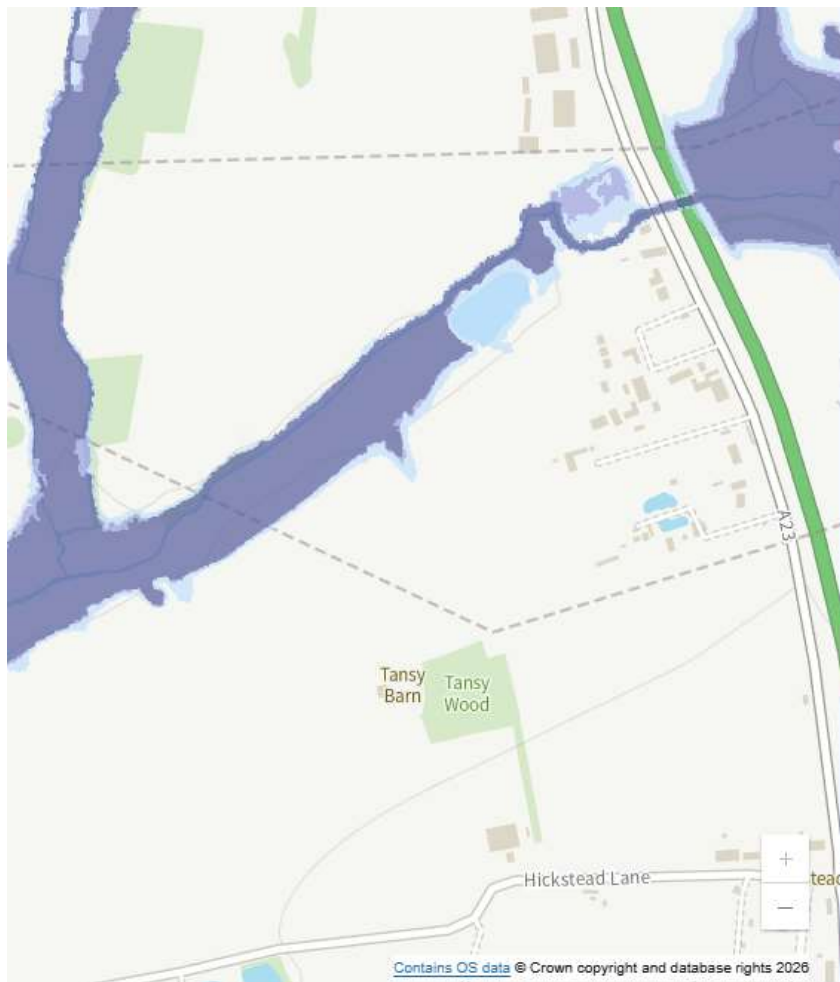
Photo 3: Site office/messing.



Photo 4: The watercourse to the northwest of the site.

APPENDIX C:

Flood Mapping



Rivers and sea map

Yearly chance of flooding

☒ Extent

- High chance
More than 3.3% chance each year
- Medium chance
Between 1% and 3.3% chance each year
- Low chance
Between 0.1% and 1% chance each year
- Very low chance
Less than 0.1% chance each year

☐ Depth

Yearly chance of flooding between 2036 and 2069

☐ Extent



Surface water map

Yearly chance of flooding

☒ Extent

- High chance
More than 3.3% chance each year
- Medium chance
Between 1% and 3.3% chance each year
- Low chance
Between 0.1% and 1% chance each year

☐ Depth

Yearly chance of flooding between 2040 and 2060

☐ Extent

☐ Depth

APPENDIX D:
Greenfield Flow Rates

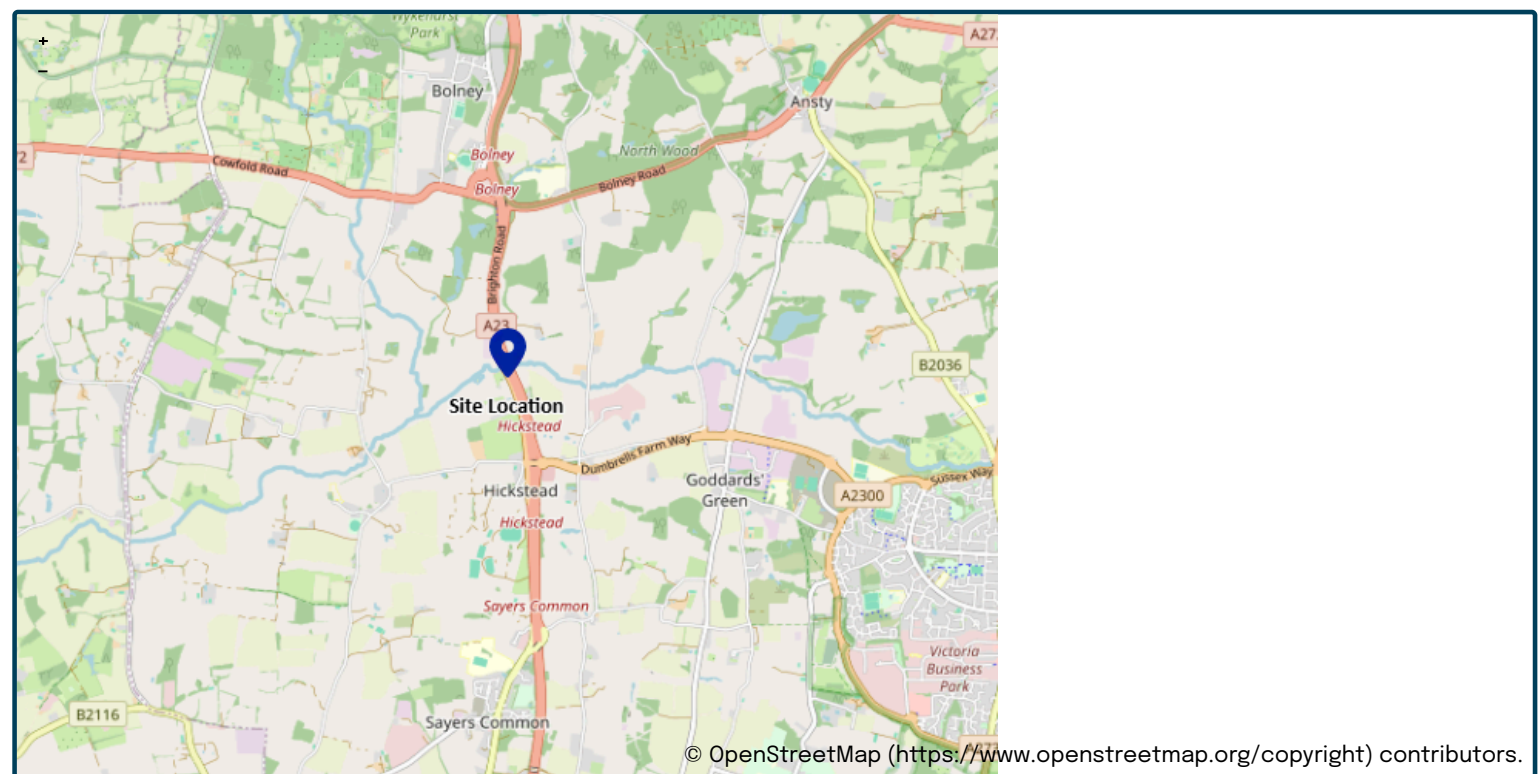
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	05/05/2026
Calculated by	Malcolm McKemey
Reference	Land south of Leacroft
Model version	2.2.3

Location

Site name	Land south of Leacroft
Site location	Hickstead



Site easting (British National Grid)	526697
Site northing (British National Grid)	120801

Site details

Total site area (ha)	0.432	ha
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Greenfield runoff

Method

Method	FEH statistical (2025)
--------	------------------------

FEH statistical (2025)

	<u>My value</u>	<u>Map value</u>
SAAR9120 (mm)	831	mm
BFIHOST19scaled	0.236	
QMed-QBar conversion	1.136	1.136
QMed (l/s)	3.4	l/s
QBar (FEH statistical 2025) (l/s)	3.8	l/s

Growth curve factors

	<u>My value</u>	<u>Map value</u>
Hydrological region	7	7
1 year growth factor	0.85	
2 year growth factor	0.88	
10 year growth factor	1.62	
30 year growth factor	2.3	
100 year growth factor	3.19	
200 year growth factor	3.74	

Results

Method	FEH statistical (2025)
Flow rate 1 year (l/s)	3.3
Flow rate 2 year (l/s)	3.4
Flow rate 10 years (l/s)	6.2
Flow rate 30 years (l/s)	8.8
Flow rate 100 years (l/s)	12.3
Flow rate 200 years (l/s)	14.4

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent ‘zero’ figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.2.3) developed by HR Wallingford and available at uksuds.com (<https://www.uksuds.com/>). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at uksuds.com/terms-conditions (<https://www.uksuds.com/terms-conditions>). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

APPENDIX E:

Output from the Drainage Design model



MasterDrain
SW

Environmental Assessment Services Ltd

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Job No. 872		
Sheet no. 1		
Date 07/05/26		
By MDM	Checked	Reviewed

Project	Land south of Leacroft, Hickstead
Title	Hydrograph storage analysis (Winter profile) for HASSOCKS

Data:-

FEH Hydrology:-

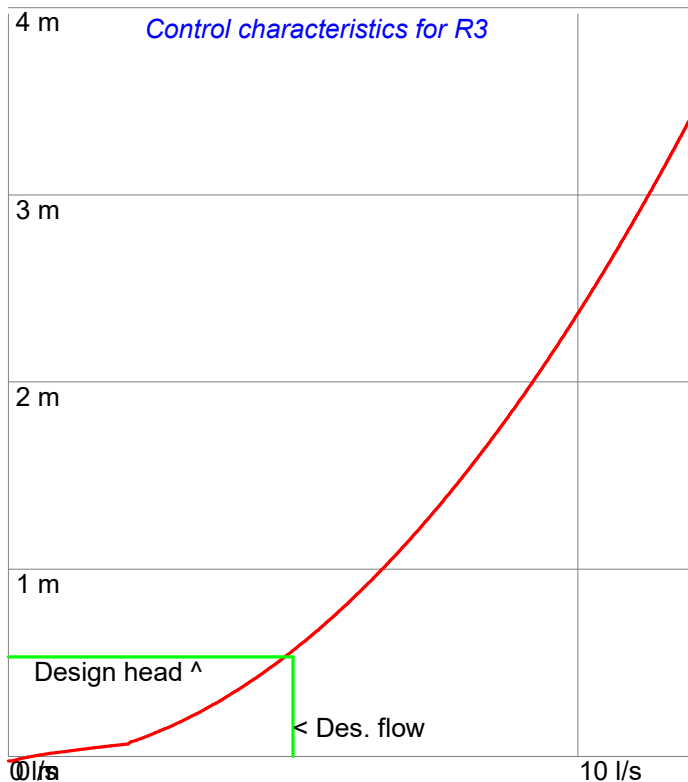
Location = HASSOCKS Grid reference = TQ3015
 c = -0.0270 d1 = 0.3790 d2 = 0.2810
 d3 = 0.4170 e = 0.3170 f = 2.4620
 Return period = 100 Climate change = 45%

Percentage runoff = 100.0% (manual setting)

Imperv. area = 1323 m² Pervious area = 0 m²
 Total area = 1323 m² Equiv area = 1323 m² (Tot. area x % runoff).
 Total runoff = 145.7 m³ Discharge rate = 5.000 l/s

Design Head = 0.6m Peak flow = 4.96 l/s
 Control device = R3 Orifice diam = 71.0 mm
 Max. calc. depth = 0.6 m Available depth = 0.0 m³
 Mean discharge = 3.08 l/s

Available system storage = 0.00 m³ under a system plane at the design head level.
 Offline storage = 0.0 m³
 Total storage = 104.0 m³ Peak input flow = 20.24 l/s



Head (m)	Flow (l/s)	Head (m)	Flow (l/s)
0.01	0.07	2.01	9.15
0.05	0.74	2.05	9.24
0.10	2.10	2.10	9.35
0.15	2.50	2.15	9.46
0.20	2.89	2.20	9.57
0.25	3.23	2.25	9.68
0.30	3.54	2.30	9.79
0.35	3.82	2.35	9.90
0.40	4.08	2.40	10.00
0.45	4.33	2.45	10.10
0.50	4.56	2.50	10.21
0.55	4.79	2.55	10.31
0.60	5.00	2.60	10.41
0.65	5.20	2.65	10.51
0.70	5.40	2.70	10.61
0.75	5.59	2.75	10.70
0.80	5.77	2.80	10.80
0.85	5.95	2.85	10.90
0.90	6.12	2.90	10.99
0.95	6.29	2.95	11.09
1.00	6.45	3.00	11.18
1.05	6.61	3.05	11.27
1.10	6.77	3.10	11.37
1.15	6.92	3.15	11.46
1.20	7.07	3.20	11.55
1.25	7.22	3.25	11.64
1.30	7.36	3.30	11.73
1.35	7.50	3.35	11.81
1.40	7.64	3.40	11.90
1.45	7.77	3.45	11.99
1.50	7.91	3.50	12.08
1.55	8.04	3.55	12.16
1.60	8.16	3.60	12.25
1.65	8.29	3.65	12.33
1.70	8.42	3.70	12.42
1.75	8.54	3.75	12.50
1.80	8.66	3.80	12.58
1.85	8.78	3.85	12.67
1.90	8.90	3.90	12.75
1.95	9.01	3.95	12.83
2.00	9.13	4.00	12.91

Calculation data provided by Crown Water Ltd, SL5 7NT



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By MDM	Checked	Reviewed

Project **Land south of Leacroft, Hickstead**

Title **Hydrograph storage analysis (Winter profile) for HASSOCKS**

Storage curves for a 5 hours storm.

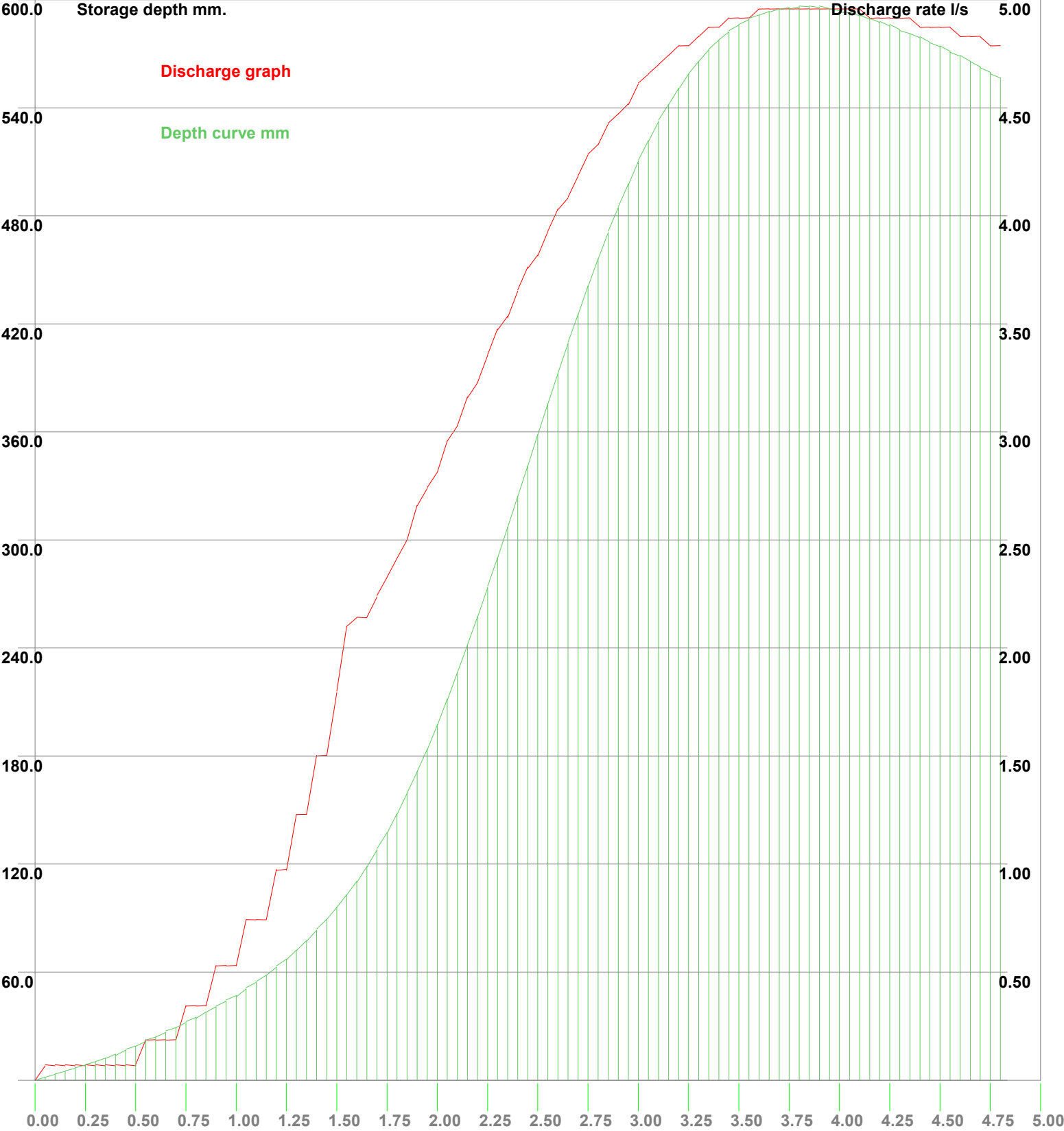
Storage depth mm.

Discharge rate l/s

5.00

Discharge graph

Depth curve mm





Project	Land south of Leacroft, Hickstead
Title	Hydrograph storage analysis (Winter profile) for HASSOCKS

Incremental rainfall figures.

Storm Mins	Storage Depth mm	Control Flow l/s	Storm Mins	Storage Depth mm	Control Flow l/s
3.0	1.7	0.07	153.0	375.6	3.93
6.0	3.3	0.07	156.0	392.4	4.03
9.0	5.0	0.07	159.0	409.1	4.08
12.0	6.7	0.07	162.0	425.4	4.18
15.0	8.5	0.07	165.0	441.1	4.28
18.0	10.3	0.07	168.0	456.2	4.33
21.0	12.3	0.07	171.0	470.8	4.43
24.0	14.4	0.07	174.0	484.6	4.47
27.0	16.6	0.07	177.0	497.7	4.52
30.0	19.0	0.07	180.0	510.2	4.61
33.0	21.5	0.19	183.0	521.7	4.65
36.0	24.0	0.19	186.0	532.3	4.70
39.0	26.6	0.19	189.0	542.0	4.74
42.0	29.2	0.19	192.0	550.8	4.79
45.0	32.1	0.35	195.0	558.8	4.79
48.0	34.9	0.35	198.0	565.8	4.83
51.0	37.8	0.35	201.0	572.2	4.87
54.0	40.8	0.53	204.0	577.6	4.87
57.0	43.8	0.53	207.0	582.2	4.92
60.0	47.0	0.53	210.0	585.9	4.92
63.0	50.6	0.74	213.0	589.0	4.92
66.0	54.3	0.74	216.0	591.6	4.96
69.0	58.3	0.74	219.0	593.5	4.96
72.0	62.8	0.98	222.0	594.8	4.96
75.0	67.3	0.98	225.0	595.6	4.96
78.0	72.3	1.23	228.0	596.0	4.96
81.0	77.5	1.23	231.0	596.1	4.96
84.0	83.2	1.50	234.0	595.7	4.96
87.0	89.3	1.50	237.0	595.0	4.96
90.0	96.0	1.79	240.0	594.0	4.96
93.0	103.0	2.10	243.0	592.6	4.96
96.0	110.4	2.14	246.0	591.0	4.96
99.0	118.7	2.14	249.0	589.2	4.92
102.0	127.8	2.24	252.0	587.4	4.92
105.0	137.5	2.33	255.0	585.5	4.92
108.0	148.0	2.42	258.0	583.4	4.92
111.0	159.3	2.50	261.0	581.2	4.92
114.0	171.3	2.66	264.0	578.8	4.87
117.0	183.9	2.74	267.0	576.5	4.87
120.0	197.3	2.81	270.0	574.0	4.87
123.0	211.6	2.96	273.0	571.4	4.87
126.0	226.3	3.03	276.0	568.6	4.83
129.0	241.6	3.16	279.0	565.8	4.83
132.0	257.3	3.23	282.0	562.8	4.83
135.0	273.5	3.35	285.0	559.7	4.79
138.0	290.2	3.48	288.0	556.6	4.79
141.0	307.1	3.54	291.0	553.4	4.79
144.0	324.2	3.65	294.0	550.2	4.79
147.0	341.4	3.76	297.0	546.9	4.74
150.0	358.5	3.82	300.0	543.6	4.74

Using the Get Max button causes the program to step through a series of storm durations until a maximum volume is obtained.

Each duration is sampled 600 times and the results recorded. The storm durations (hrs) are:-

0.25, 0.5, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 15, 18, 20, 24, 30, 36, 42, 48, 54, 60, 66, 72, 84, 96, 120, 150, 175, 200, 250, 300, 375, 500, 750, 1000, 1250, 1500, 1570, 2000, 2500, 3000, 3500, 4000

It should be noted that the six hour storm frequently requested rarely demonstrates the worst case for storage.



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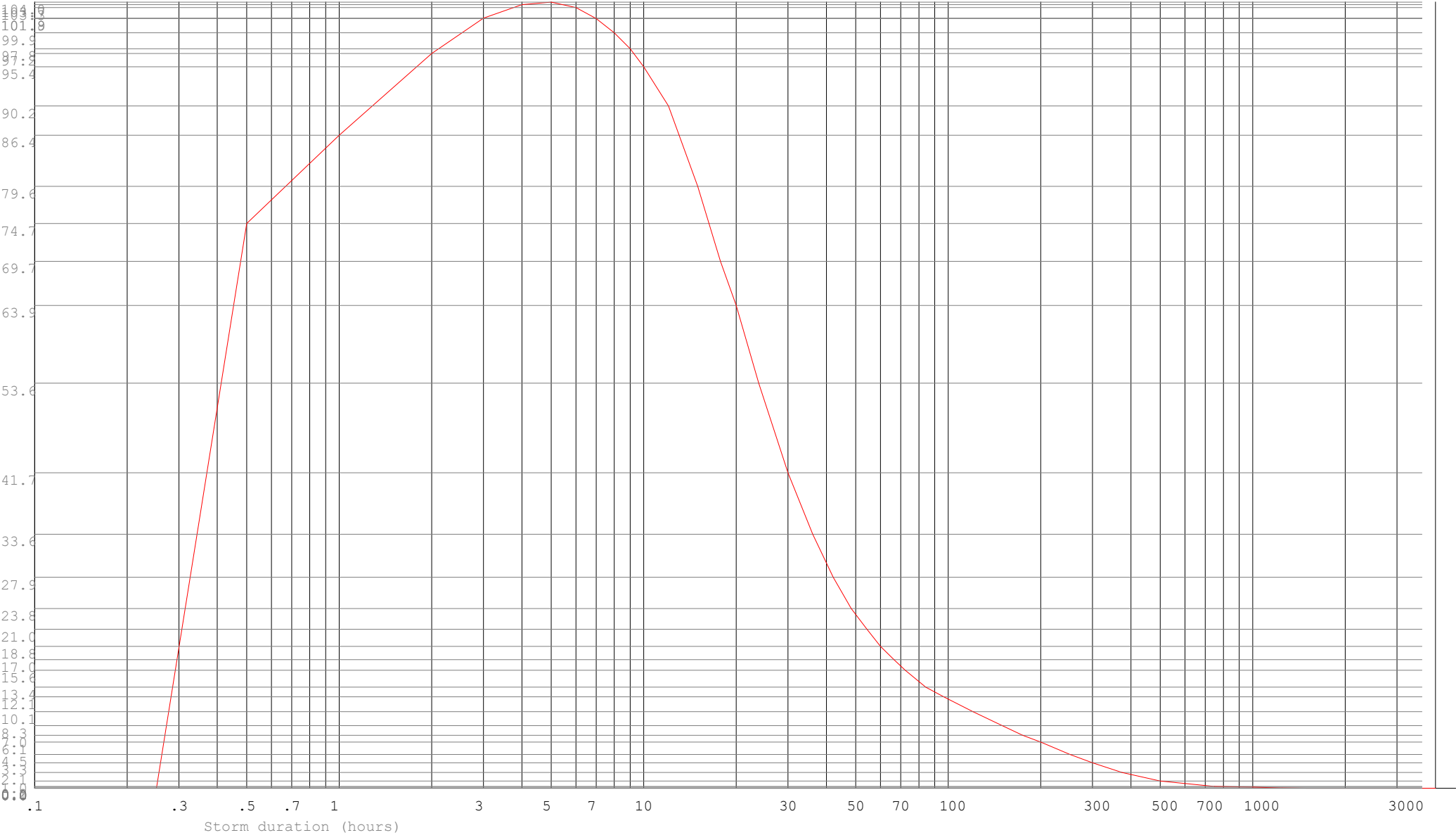
MasterDrain
SW

Project Land south of Leacroft, Hickstead

Title Hydrograph storage analysis (Winter profile) for HASSOCKS

Sequential storage volume at specific storm durations.

m³



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				Sheet no. 1		
				Date 07/05/26 11:43		
Project Land South of Leacroft, London Road, Hickstead				By MDM	Checked	Reviewed
Title Manhole printout for HICKSTEAD.SW						

Manhole ref.	X ref	Y ref	Form	Cham diam. or length	Rect. width	Chamb. height	Shaft height	MH Volume	Exit Diam	Exit Crown	Exit Invert	Chamb const	Slab level	Cover Level	Dwnstr MH
S01	71.61	73.00	circ	450	N/A	0.50		0.08	150	13.515	13.340	N/A	13.290	13.840	S03
S02	29.98	57.74	circ	450	N/A	0.50		0.08	150	13.875	13.700	N/A	13.650	14.200	S03
S03	48.21	63.56	circ	1200	N/A	0.91		1.03	225	13.340	13.090	N/A	13.040	14.000	S04
S09	76.34	60.81	circ	450	N/A	0.50		0.08	150	13.515	13.340	N/A	13.290	13.840	S04
S04	51.73	52.03	circ	1200	N/A	1.23		1.39	225	13.220	12.970	N/A	12.920	14.200	Atten
S05	89.4	58.39	circ	450	N/A	0.51		0.08	150	13.515	13.340	N/A	13.290	13.850	S06
S06	96.43	41.47	circ	1200	N/A	1.22		1.38	150	13.345	13.170	N/A	13.120	14.390	S07
S08	78.75	54.11	circ	450	N/A	0.50		0.08	100	13.925	13.800	N/A	13.750	14.300	S07
S07	86.77	37.19	circ	1200	N/A	1.34		1.52	225	13.310	13.060	N/A	13.010	14.400	S14
S12	57.32	14.67	circ	600	N/A	0.50		0.14	225	14.460	14.210	N/A	14.160	14.710	S13
S13	76.77	22.36	circ	1200	N/A	0.69		0.78	225	14.260	14.010	N/A	13.960	14.700	S14
S14	72.7	32.24	circ	1200	N/A	1.71		1.93	300	13.215	12.890	N/A	12.840	14.600	Atten
S10	32.83	17.41	circ	1200	N/A	0.50		0.57	225	14.450	14.200	N/A	14.150	14.700	S11
S11	43.92	22.36	circ	1200	N/A	0.60		0.68	225	14.340	14.090	N/A	14.040	14.690	Atten
Atten	45.37	43.72	circ	20000	N/A	2.10		659.73	225	12.650	12.400	N/A	12.350	14.500	S15

All manholes to be as per 'Sewers for Adoption'

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Sheet no.
2

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07/05/26 11:43

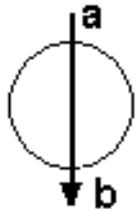
Project
Land South of Leacroft, London Road, Hickstead

Title
Manhole printout for HICKSTEAD.SW

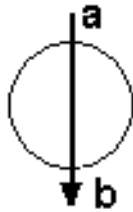
By
MDM

Checked

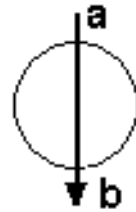
Reviewed



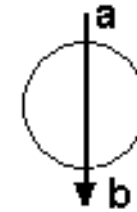
MH = S01
a=head
b = 150



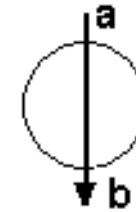
MH = S02
a=head
b = 150



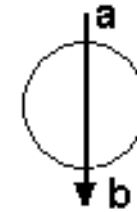
MH = S09
a=head
b = 150



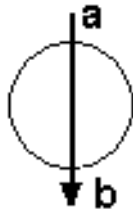
MH = S05
a=head
b = 150



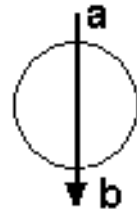
MH = S06
a= 150
b = 150



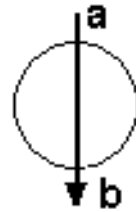
MH = S08
a=head
b = 100



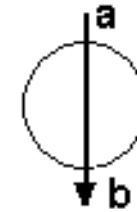
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a= 150
b = 225
c = 100
d = 150



MH = S12
a=head
b = 225



MH = S10
a=head
b = 225



MH = S11
a= 225
b = 225

MH = S03
a= 150
b = 225
c = 150
d = 150

MH = S14
a= 225
b = 300
c = 225
d = 225

MH = Atten
a= 225
b = 225
c = 225
d = 300

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				Date 07/05/26 11:43		
Project	Land South of Leacroft, London Road, Hickstead			By MDM	Checked	Reviewed
Title	Manhole printout for HICKSTEAD.SW					

These explanatory notes should be read in conjunction with the Manhole printout

- 1) Manhole ref - the reference for the manhole in question
- 2) Form - either circular or rectangular
- 3) Chamber diam or length - diameter of chamber if circular, or length if rectangular - in metres
- 4) Rectangular width - if form is rectangular, this gives the width of the chamber
- 5) Chamber height - height of chamber from invert
- 6) Shaft height - height of access shaft if applicable, from top of chamber to ground level
- 7) Manhole volume - cubic capacity of manhole chamber
- 8) Exit diameter - diameter of pipe leaving this manhole
- 9) Exit crown - crown level of pipe leaving this manhole
- 10) Exit invert - invert level of pipe leaving this manhole
- 11) Chamb const - manhole construction :-
 - N/A - not specified
 - Conc - concrete rings
 - Poly - polypropylene rings surrounded by selected fill
 - Poly/conc - polypropylene rings surrounded by concrete
 - Brick - brick built with waterproof render
 - In situ - concrete cast in situ
- 12) Slab level - surface level of base slab (if no sump, this is placed at 50mm below exit invert to allow levels manipulation).
- 13) Manhole diameters of 9999 have exceeded the sizes available in SfA
- 14) Manhole diameters may have to be modified due to the number of branches



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Date 07/05/26		
By MDM	Checked	Reviewed

Project **Land south of Leacroft**

Title **Surcharge calcs (Sized at 30 yrs storm) for HICKSTEAD.SW CCF = 45%**

Free flowing outlet
Return period = 100 yrs
Climate change factor = 45

PEAK hydrograph values printed
Storm duration = 15 mins
No offline storage

Mean rain intens. 298.00 mm/hr
Storm profile = Summer
Using FEH data

Peak rain intens. 1168.16 mm/hr
Sample period = 7.5 secs.

Entry No.	SECT. No.	MANHOLE REF	PIPE CAPACITY l/s	RATE FLOW l/s	PIPE SIZE mm	CHAMBER DIAM/LxW mm	INVERT LEVEL m	WATER LEVEL m	GRND LEVEL m	SURCHARGE fract.	Depth	EXCESS FLOW l/s	FLOODED VOL m ³	DRAINED AREA (m ²)	STATUS
1	I	1.01	S01	17.6	10.9	150	450	13.34	13.43	13.84	0.62	0.09	0.00	0.000	77 OK
2	B	2.01	S02	32.0	26.1	150	450	13.70	13.81	14.20	0.81	0.11	0.00	0.000	183 OK
3	I	1.02	S03	51.9	51.9	225	1200	13.09	13.31	14.00	1.00	0.22	0.00	0.000	365 OK
4	B	3.01	S09	21.1	10.8	150	450	13.34	13.42	13.84	0.51	0.08	0.00	0.000	76 OK
5	I	1.03	S04	123.1	78.8	225	1200	12.97	13.11	14.20	0.64	0.14	0.00	0.000	554 OK
6	B	4.01	S05	17.0	10.5	150	450	13.34	13.43	13.85	0.62	0.09	0.00	0.000	74 OK
7	B	4.02	S06	18.1	14.9	150	1200	13.17	13.29	14.39	0.82	0.12	0.00	0.000	104 OK
8	S1	5.01	S08	12.2	7.0	100	450	13.80	13.86	14.30	0.58	0.06	0.00	0.000	49 OK
9	B	4.03	S07	55.4	26.4	225	1200	13.06	13.17	14.40	0.48	0.11	0.00	0.000	185 OK
10	S1	6.01	S12	50.7	21.9	225	600	14.21	14.31	14.71	0.43	0.10	0.00	0.000	154 OK
11	S1	6.02	S13	165.4	29.3	225	1200	14.01	14.06	14.70	0.18	0.05	0.00	0.000	206 OK
12	B	4.04	S14	143.6	63.1	300	1200	12.89	13.03	14.60	0.44	0.14	0.00	0.000	444 OK
13	B	7.01	S10	49.5	18.4	225	1200	14.20	14.29	14.70	0.37	0.09	0.00	0.000	129 OK
14	B	7.02	S11	145.0	36.9	225	1200	14.09	14.16	14.69	0.25	0.07	0.00	0.000	259 OK
15	I	1.04	Atten†	104.4	178.8	225	20000	12.40	12.63	14.50	1.71	0.23	74.42	0.000	1257 Surch.



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Project Land south of Leacroft	By MDM	Checked	Reviewed
Title Surcharge calcs (Sized at 30 yrs storm) for HICKSTEAD.SW CCF = 45%			

Notes

Printout headings

- | | | |
|---|---|--|
| 1) Entry no - position in file | 2) Section no - pipe identifier | 3) Manhole ref - Manhole identifier |
| 4) Pipe cap - full bore capacity of that pipe | 5) Rate of flow - calculated flow rate (l/s) ± = flow restrictor. | 6) Pipe diam - outlet pipe diameter (mm) |
| 7) Chamber diam - chamber diam. at base of MH | 8) Invert level - invert level of manhole | 9) Water level - calculated peak water level. |
| 10) Grnd level - ground / cover level | 11) Surch. fract - calc.flow/pipe capacity | 12) Surch. depth - surcharge level above soffit |
| 13) Overflow - surcharged flow rate (l/s) | 14) Flooded vol - volume of water above cover | 15) Upstrm Vol - upstream pipe vol to previous manhole(s) |
| 16) Status - OK - outlet not surcharged | 17) Status - Surcharged - outlet surcharged | 18) Status - Warning - water level within 299mm of cover level |
| 19) Status - Flooded - cover over-topped | 20) § against diameter indicates throttle pipe used. | |

Title box

Hydrograph data

- | | | |
|---|--------------------------------------|--|
| 1) Ret. period - that used to calculate profile | 2) Duration - length of storm (mins) | 3) Profile - either Winter (75%) or Summer (50%) |
|---|--------------------------------------|--|

Flow restrictors

Manhole reference - Atten

Restrictor flowrate - 3.3 l/s

Flood volumes

Check that the upstream storage of the manhole is adequate to take the flood volume - see Upstrm Vol above.



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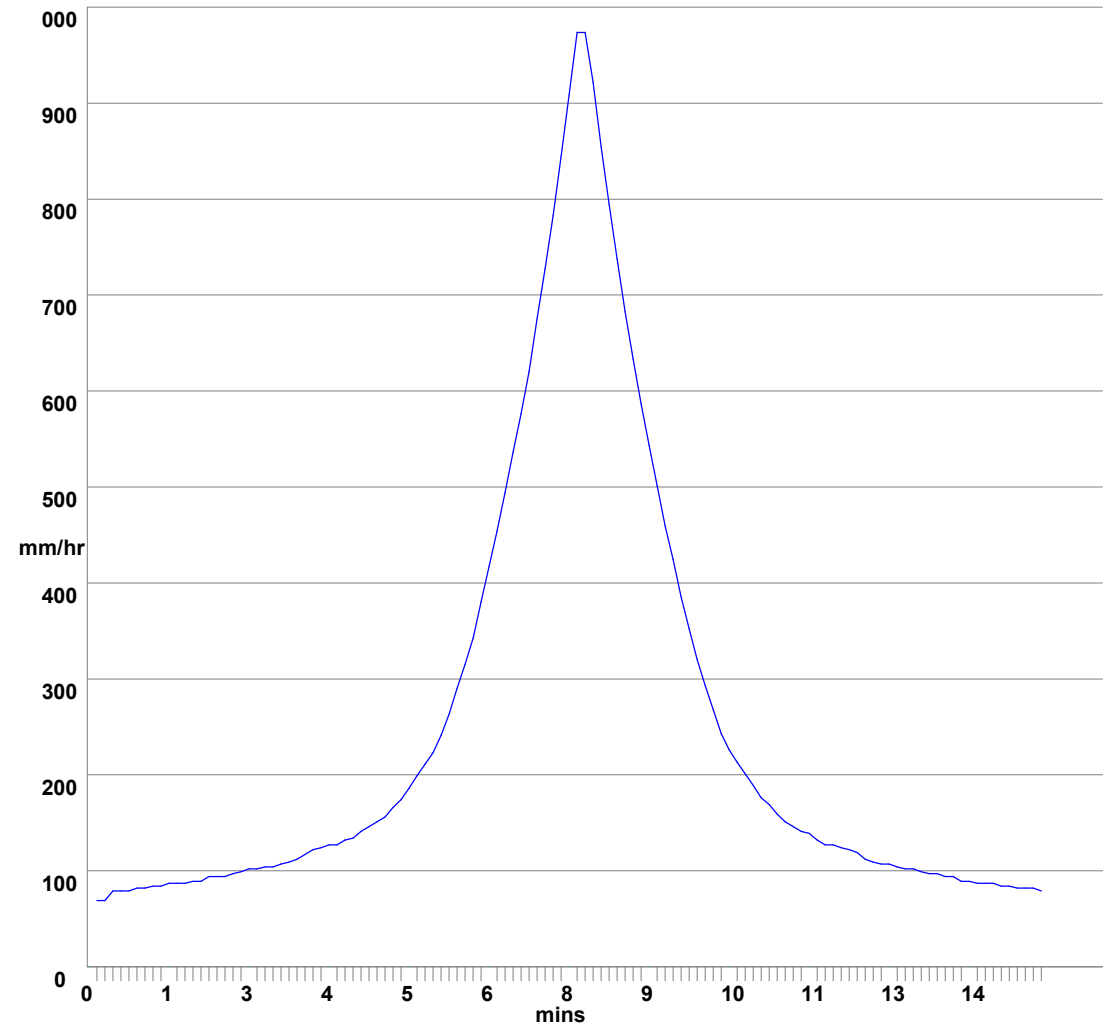
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Project Land south of Leacroft	
Title Surcharge calcs (Sized at 30 yrs storm) for HICKSTEAD.SW CCF = 45%	

Time mins	Rain mm/hr	Time mins	Rain mm/hr	Time mins	Rain mm/hr
0:08	69.49	5:08	198.54	10:08	213.43
0:15	69.49	5:15	210.95	10:15	201.02
0:22	79.42	5:22	223.36	10:22	188.61
0:30	79.42	5:30	240.73	10:30	176.20
0:38	79.42	5:38	263.06	10:38	168.76
0:45	81.90	5:45	290.36	10:45	158.83
0:52	81.90	5:52	315.18	10:52	151.39
1:00	84.38	6:00	342.48	11:00	146.42
1:08	84.38	6:08	379.70	11:08	141.46
1:15	86.86	6:15	416.93	11:15	138.98
1:22	86.86	6:22	454.16	11:22	131.53
1:30	86.86	6:30	493.86	11:30	126.57
1:38	89.34	6:38	536.05	11:38	126.57
1:45	89.34	6:45	575.76	11:45	124.09
1:52	94.31	6:52	620.43	11:52	121.60
2:00	94.31	7:00	675.03	12:00	119.12
2:08	94.31	7:08	727.15	12:08	111.68
2:15	96.79	7:15	781.74	12:15	109.20
2:22	99.27	7:22	843.79	12:22	106.71
2:30	101.75	7:30	908.31	12:30	106.71
2:38	101.75	7:38	972.84	12:38	104.23
2:45	104.23	7:45	972.84	12:45	101.75
2:52	104.23	7:52	920.72	12:52	101.75
3:00	106.71	8:00	853.71	13:00	99.27
3:08	109.20	8:08	794.15	13:08	96.79
3:15	111.68	8:15	737.07	13:15	96.79
3:22	116.64	8:22	682.47	13:22	94.31
3:30	121.60	8:30	632.84	13:30	94.31
3:38	124.09	8:38	585.69	13:38	89.34
3:45	126.57	8:45	543.50	13:45	89.34
3:52	126.57	8:52	501.31	13:52	86.86
4:00	131.53	9:00	459.12	14:00	86.86
4:08	134.01	9:08	424.38	14:08	86.86
4:15	141.46	9:15	384.67	14:15	84.38
4:22	146.42	9:22	352.41	14:22	84.38
4:30	151.39	9:30	320.14	14:30	81.90
4:38	156.35	9:38	292.84	14:38	81.90
4:45	166.28	9:45	268.03	14:45	81.90
4:52	173.72	9:52	243.21	14:52	79.42
5:00	186.13	10:00	225.84	15:00	79.42

Hydrograph profile derived from data in the Flood Studies Report

Return period= 100 yrs Duration= 15 mins Profile - summer





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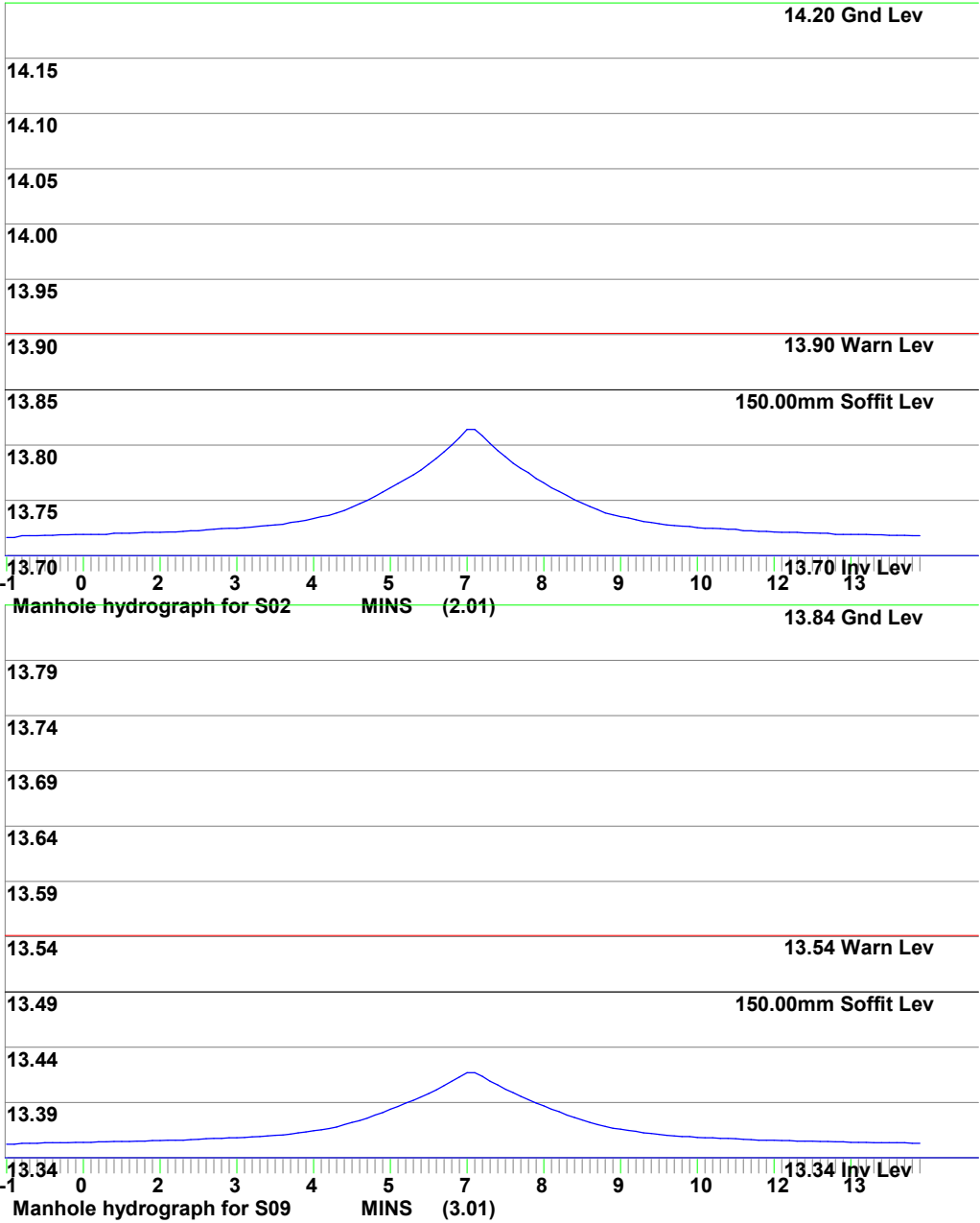
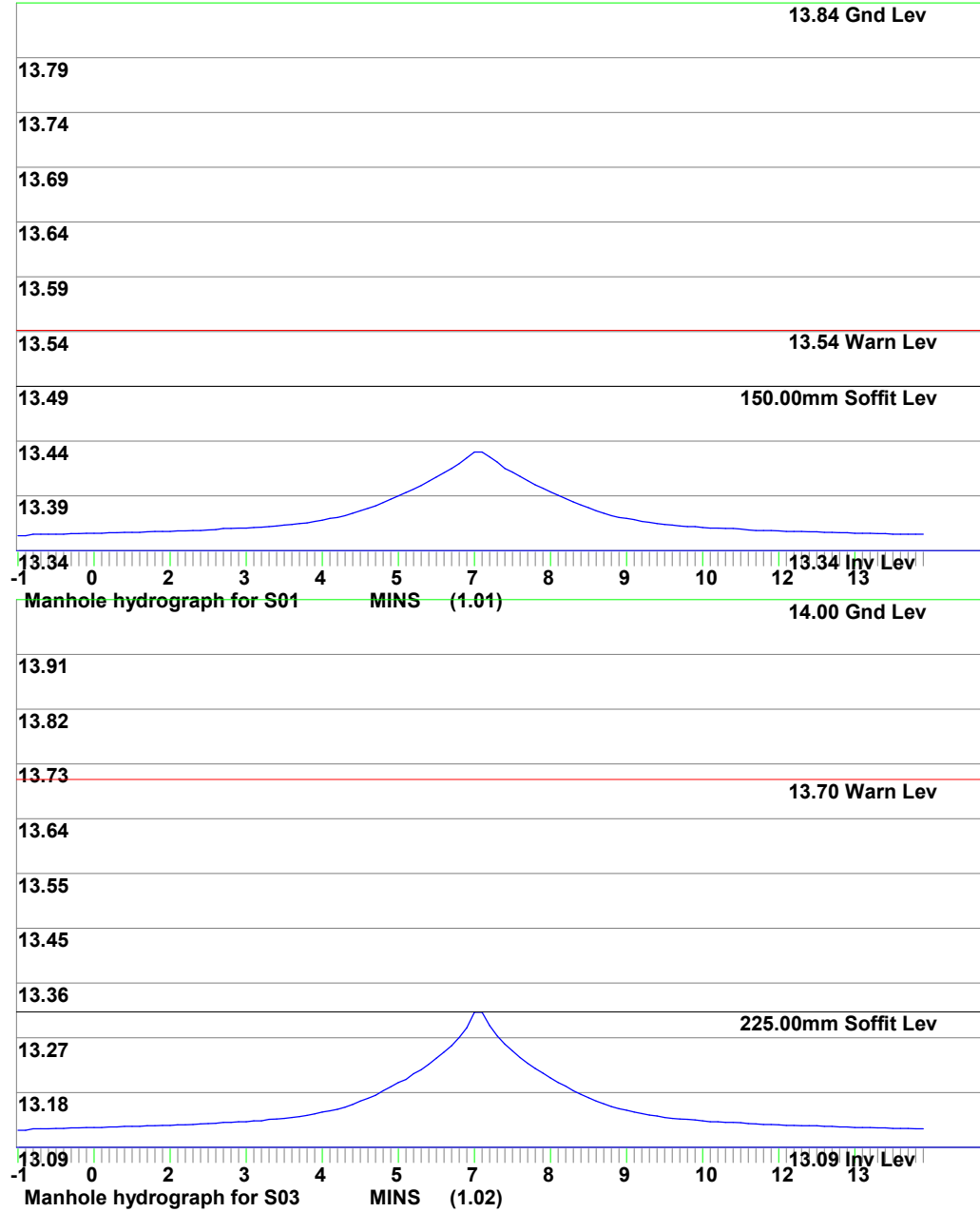
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Project Land south of Leacroft	By MDM	Checked	Reviewed
Title Surcharge calcs (Sized at 30 yrs storm) for HICKSTEAD.SW CCF = 45%			





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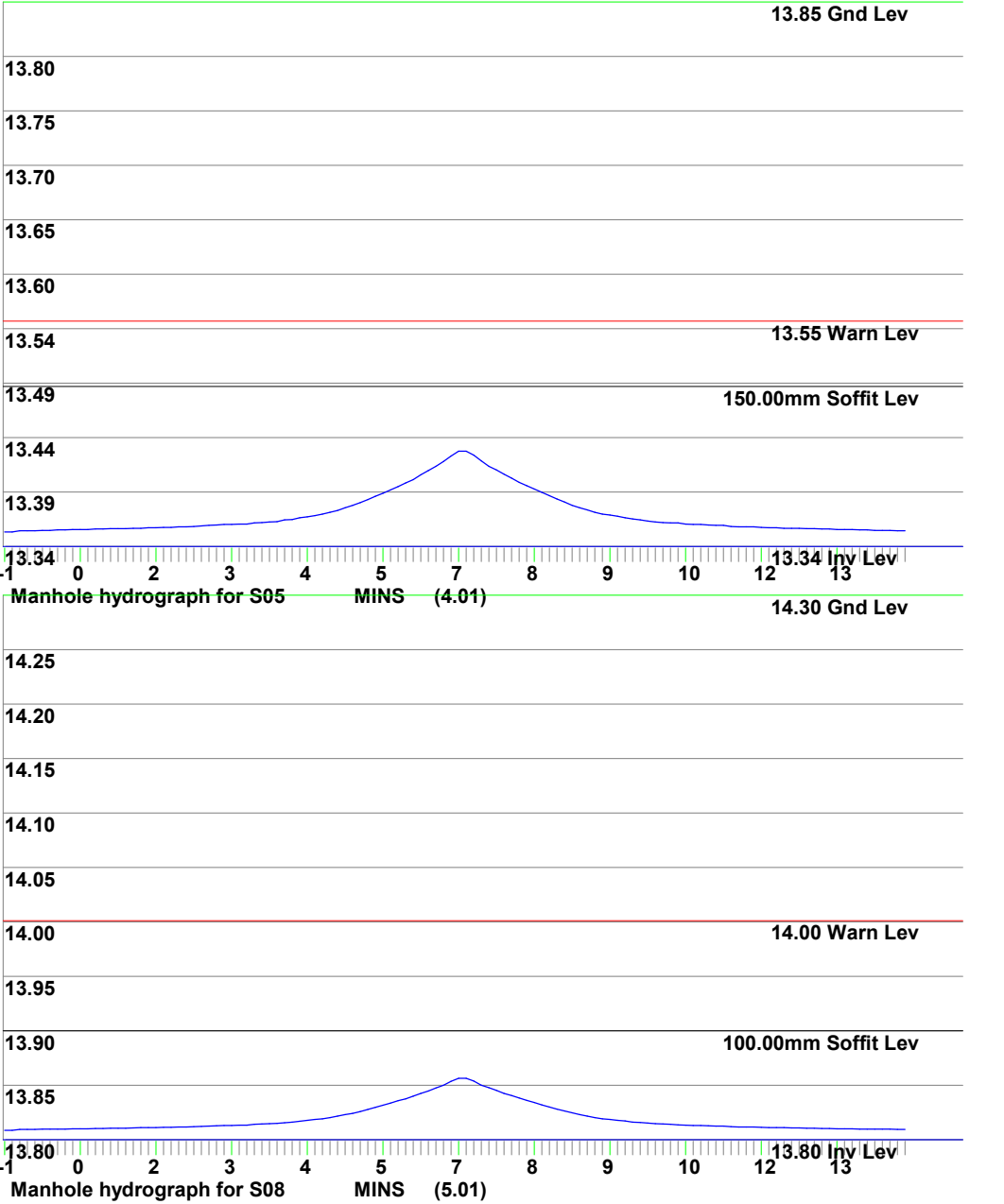
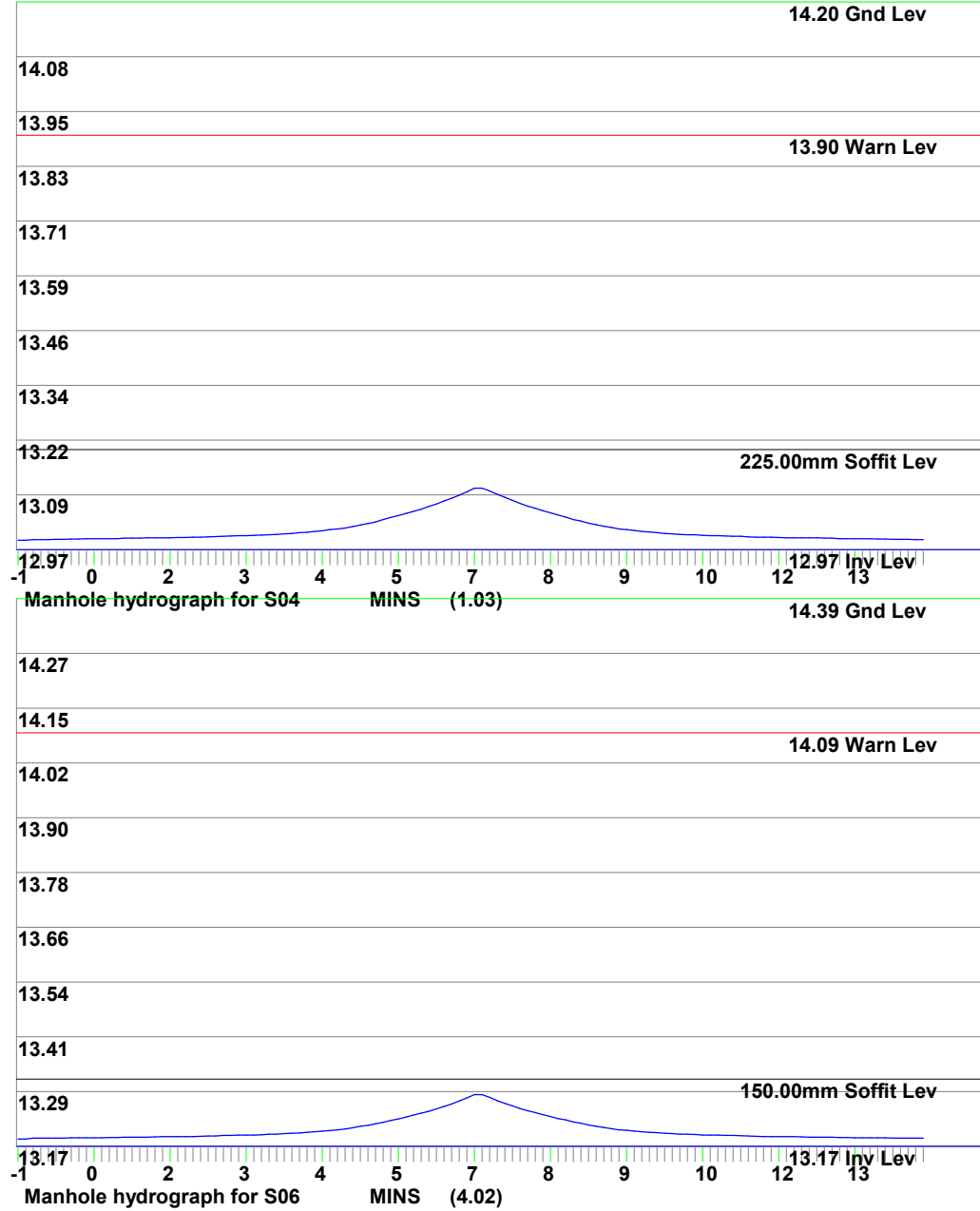
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Date	07/05/26	
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Project	Land south of Leacroft
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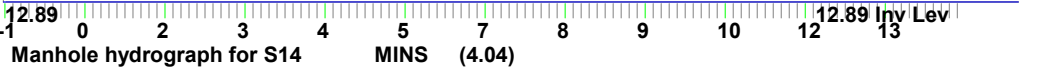
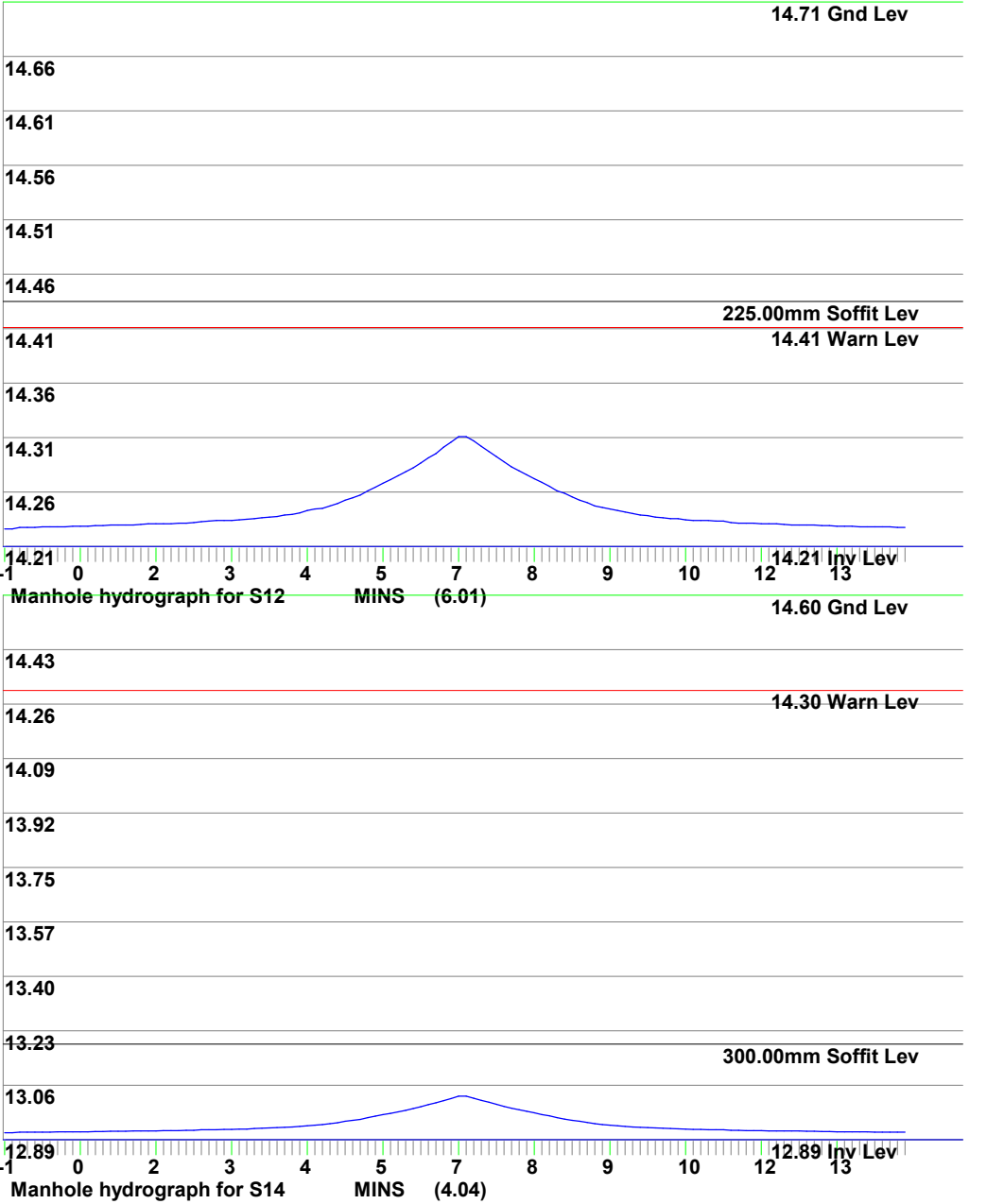
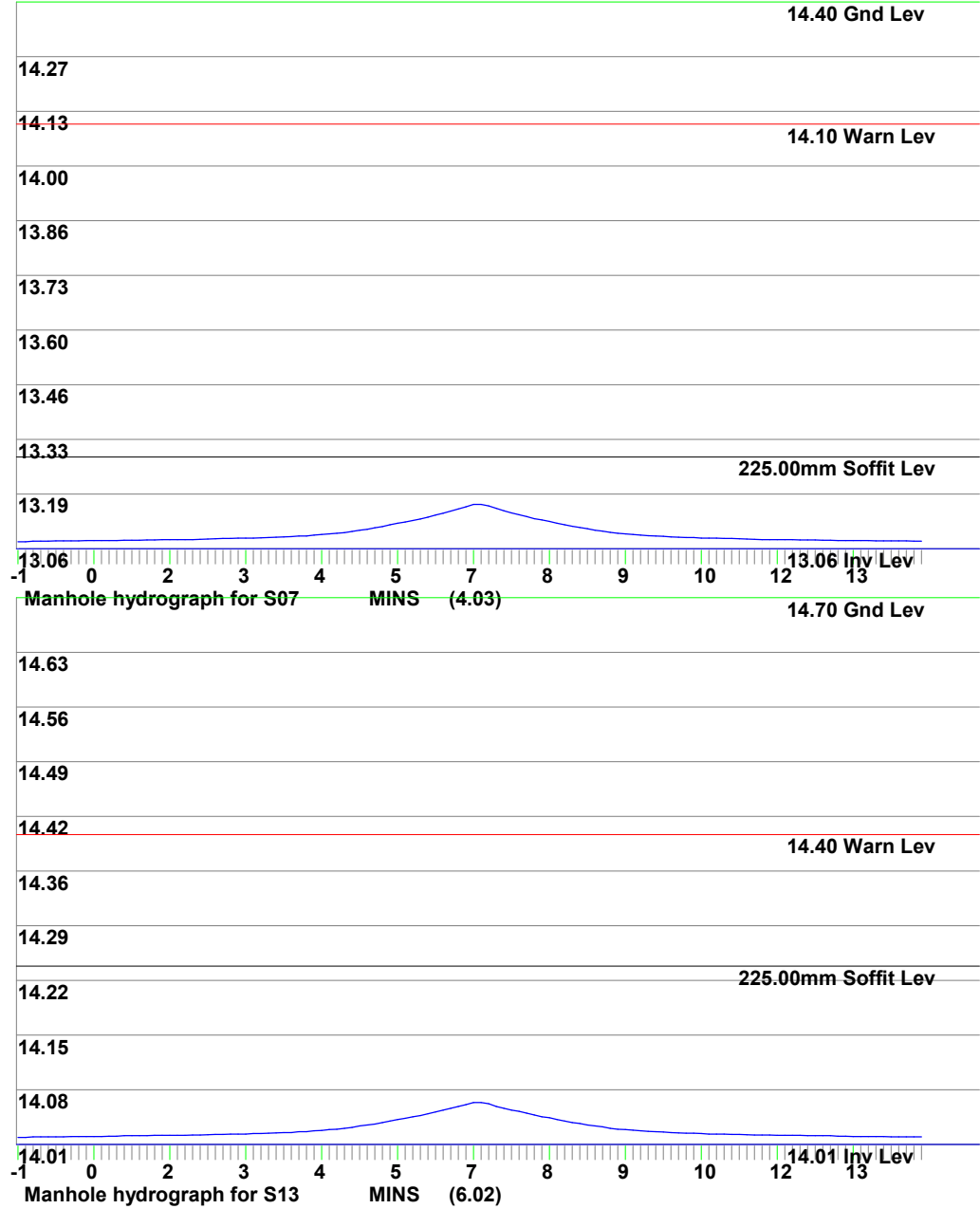
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Title	Surcharge calcs (Sized at 30 yrs storm) for HICKSTEAD.SW CCF = 45%





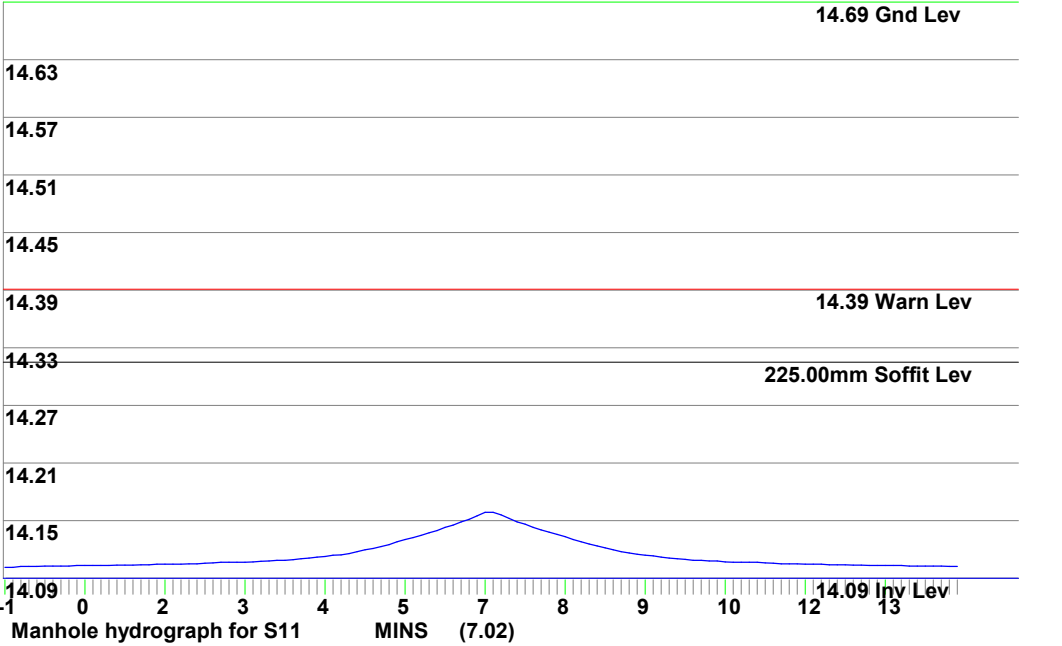
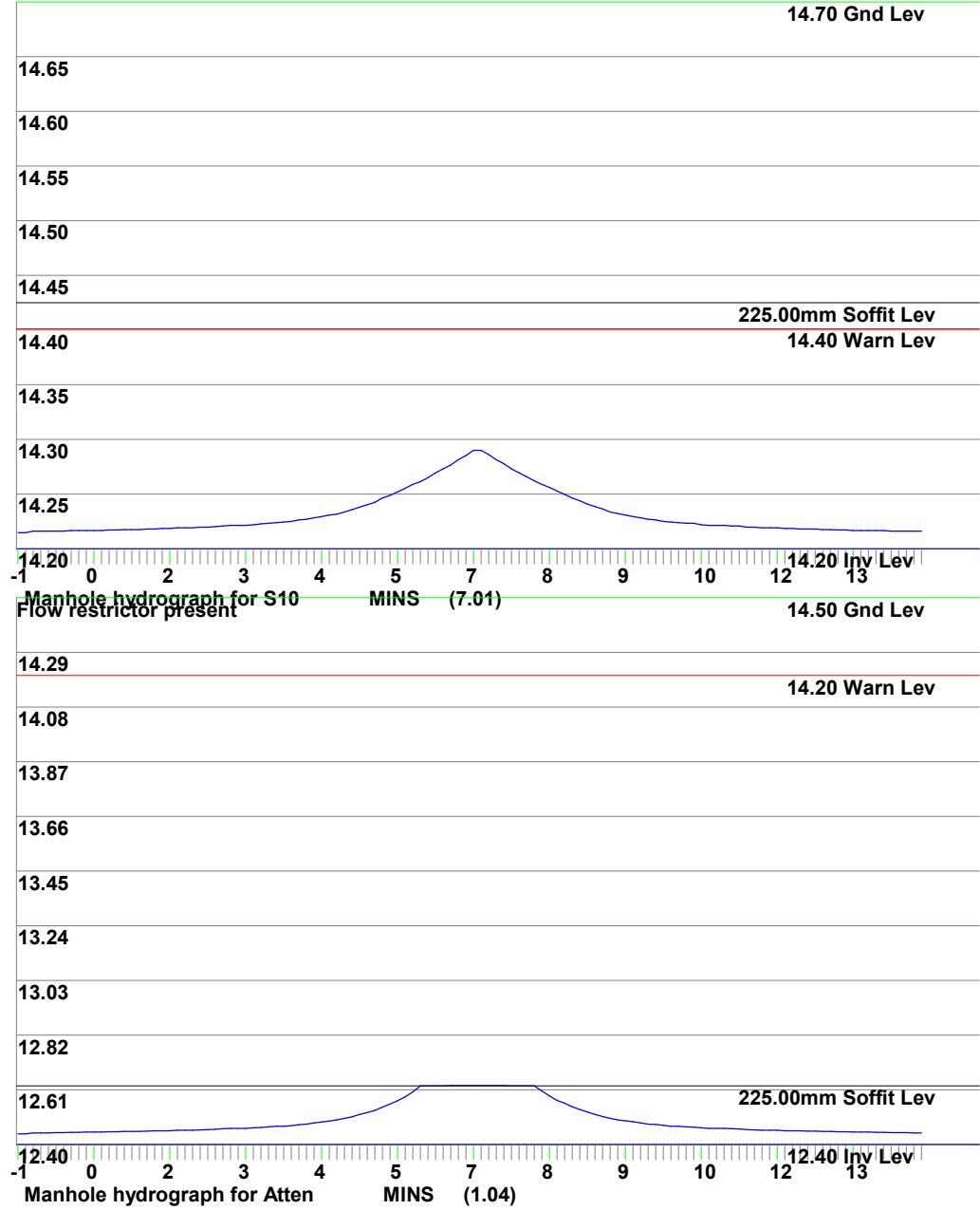
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Project

Title **Surcharge calcs (Sized at 30 yrs storm) for HICKSTEAD.SW CCF = 45%**

Free flowing outlet
Return period = 100 yrs
Climate change factor = 45

PEAK hydrograph values printed
Storm duration = 30 mins
No offline storage

Mean rain intens. 178.00 mm/hr
Storm profile = Summer
Using FEH data

Peak rain intens. 697.76 mm/hr
Sample period = 15.0 secs.

Entry No.	SECT. No.	MANHOLE REF	PIPE CAPACITY l/s	RATE FLOW l/s	PIPE SIZE mm	CHAMBER : DIAM/LxW mm	INVERT: LEVEL m	WATER: LEVEL m	GRND : LEVEL m	SURCHARGE fract. Depth		EXCESS FLOW l/s	FLOODED VOL m³	DRAINED : AREA (m²) :x FACTOR :	STATUS	
1	I	1.01	S01	17.6	6.5	150	450	13.34	13.40	13.84	0.37	0.06	0.00	0.000	77	OK
2	B	2.01	S02	32.0	15.6	150	450	13.70	13.77	14.20	0.49	0.07	0.00	0.000	183	OK
3	I	1.02	S03	51.9	31.0	225	1200	13.09	13.22	14.00	0.60	0.13	0.00	0.000	365	OK
4	B	3.01	S09	21.1	6.5	150	450	13.34	13.39	13.84	0.31	0.05	0.00	0.000	76	OK
5	I	1.03	S04	123.1	47.0	225	1200	12.97	13.06	14.20	0.38	0.09	0.00	0.000	554	OK
6	B	4.01	S05	17.0	6.3	150	450	13.34	13.40	13.85	0.37	0.06	0.00	0.000	74	OK
7	B	4.02	S06	18.1	8.9	150	1200	13.17	13.24	14.39	0.49	0.07	0.00	0.000	104	OK
8	S1	5.01	S08	12.2	4.2	100	450	13.80	13.84	14.30	0.34	0.04	0.00	0.000	49	OK
9	B	4.03	S07	55.4	15.7	225	1200	13.06	13.13	14.40	0.28	0.07	0.00	0.000	185	OK
10	S1	6.01	S12	50.7	13.1	225	600	14.21	14.28	14.71	0.26	0.07	0.00	0.000	154	OK
11	S1	6.02	S13	165.4	17.5	225	1200	14.01	14.05	14.70	0.11	0.04	0.00	0.000	206	OK
12	B	4.04	S14	143.6	37.7	300	1200	12.89	12.98	14.60	0.26	0.09	0.00	0.000	444	OK
13	B	7.01	S10	49.5	11.0	225	1200	14.20	14.26	14.70	0.22	0.06	0.00	0.000	129	OK
14	B	7.02	S11	145.0	22.0	225	1200	14.09	14.14	14.69	0.15	0.05	0.00	0.000	259	OK
15	I	1.04	Atten†	104.4	106.7	225	20000	12.40	12.63	14.50	1.02	0.23	2.28	0.000	1257	Surch.



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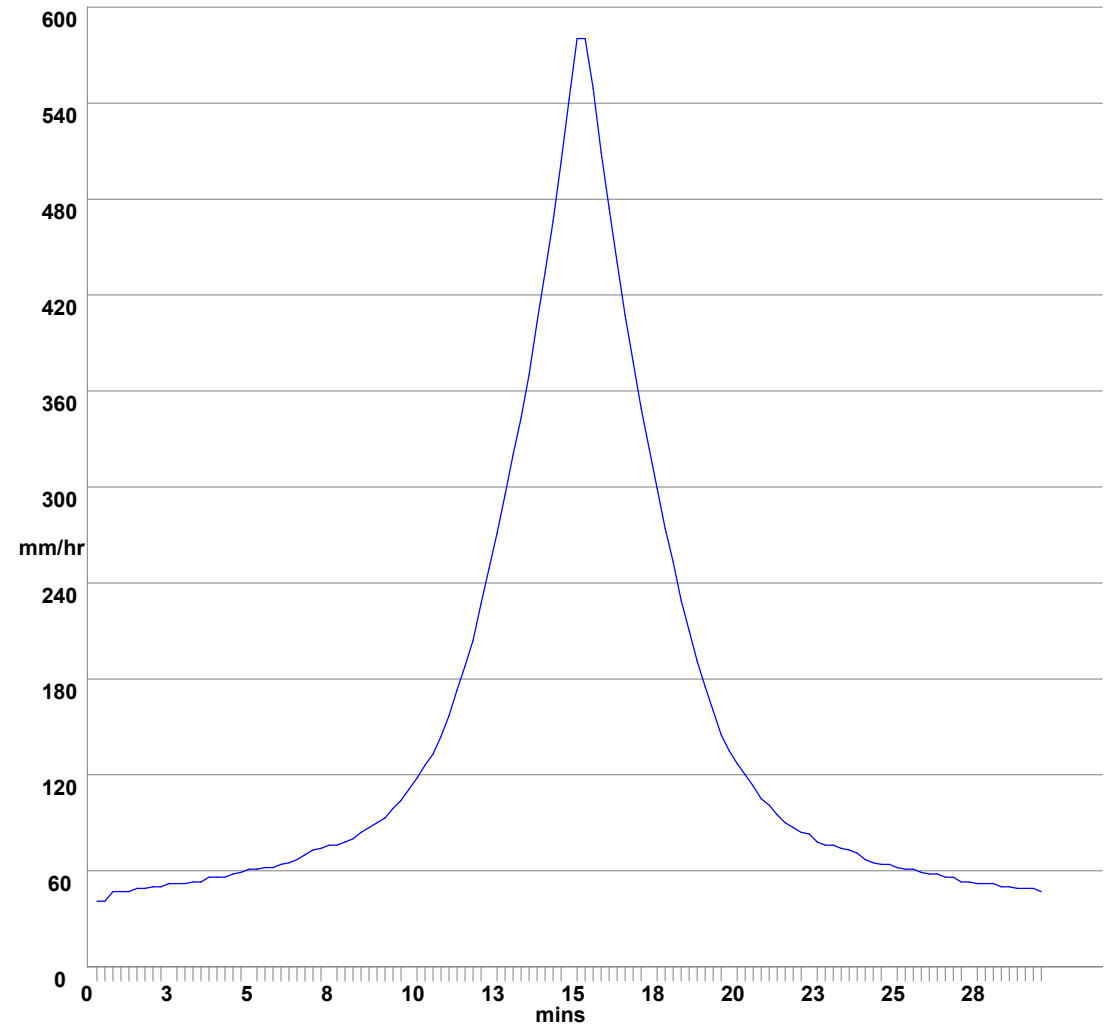
Project

Title **Surcharge calcs (Sized at 30 yrs storm) for HICKSTEAD.SW CCF = 45%**

Time mins	Rain mm/hr	Time mins	Rain mm/hr	Time mins	Rain mm/hr
0:15	41.46	10:15	118.44	20:15	127.33
0:30	41.46	10:30	125.85	20:30	119.93
0:45	47.38	10:45	133.25	20:45	112.52
1:00	47.38	11:00	143.61	21:00	105.12
1:15	47.38	11:15	156.94	21:15	100.68
1:30	48.86	11:30	173.23	21:30	94.76
1:45	48.86	11:45	188.03	21:45	90.31
2:00	50.34	12:00	204.32	22:00	87.35
2:15	50.34	12:15	226.53	22:15	84.39
2:30	51.82	12:30	248.73	22:30	82.91
2:45	51.82	12:45	270.94	22:45	78.47
3:00	51.82	13:00	294.63	23:00	75.51
3:15	53.30	13:15	319.80	23:15	75.51
3:30	53.30	13:30	343.49	23:30	74.03
3:45	56.26	13:45	370.14	23:45	72.55
4:00	56.26	14:00	402.71	24:00	71.07
4:15	56.26	14:15	433.80	24:15	66.63
4:30	57.74	14:30	466.38	24:30	65.14
4:45	59.22	14:45	503.39	24:45	63.66
5:00	60.70	15:00	541.88	25:00	63.66
5:15	60.70	15:15	580.38	25:15	62.18
5:30	62.18	15:30	580.38	25:30	60.70
5:45	62.18	15:45	549.29	25:45	60.70
6:00	63.66	16:00	509.31	26:00	59.22
6:15	65.14	16:15	473.78	26:15	57.74
6:30	66.63	16:30	439.73	26:30	57.74
6:45	69.59	16:45	407.15	26:45	56.26
7:00	72.55	17:00	377.54	27:00	56.26
7:15	74.03	17:15	349.41	27:15	53.30
7:30	75.51	17:30	324.24	27:30	53.30
7:45	75.51	17:45	299.07	27:45	51.82
8:00	78.47	18:00	273.90	28:00	51.82
8:15	79.95	18:15	253.18	28:15	51.82
8:30	84.39	18:30	229.49	28:30	50.34
8:45	87.35	18:45	210.24	28:45	50.34
9:00	90.31	19:00	190.99	29:00	48.86
9:15	93.28	19:15	174.71	29:15	48.86
9:30	99.20	19:30	159.90	29:30	48.86
9:45	103.64	19:45	145.09	29:45	47.38
10:00	111.04	20:00	134.73	30:00	47.38

Hydrograph profile derived from data in the Flood Studies Report

Return period= 100 yrs Duration= 30 mins Profile - summer





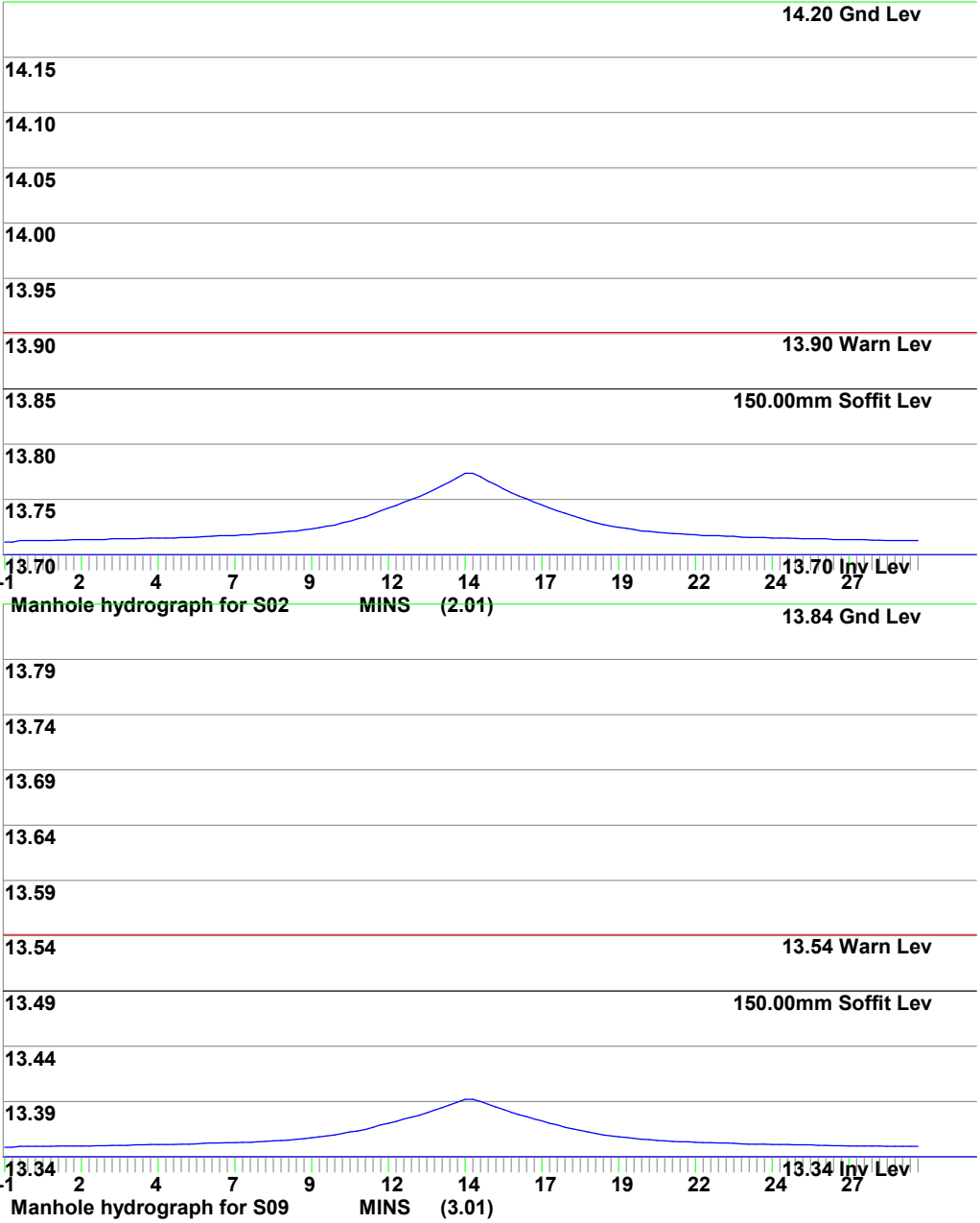
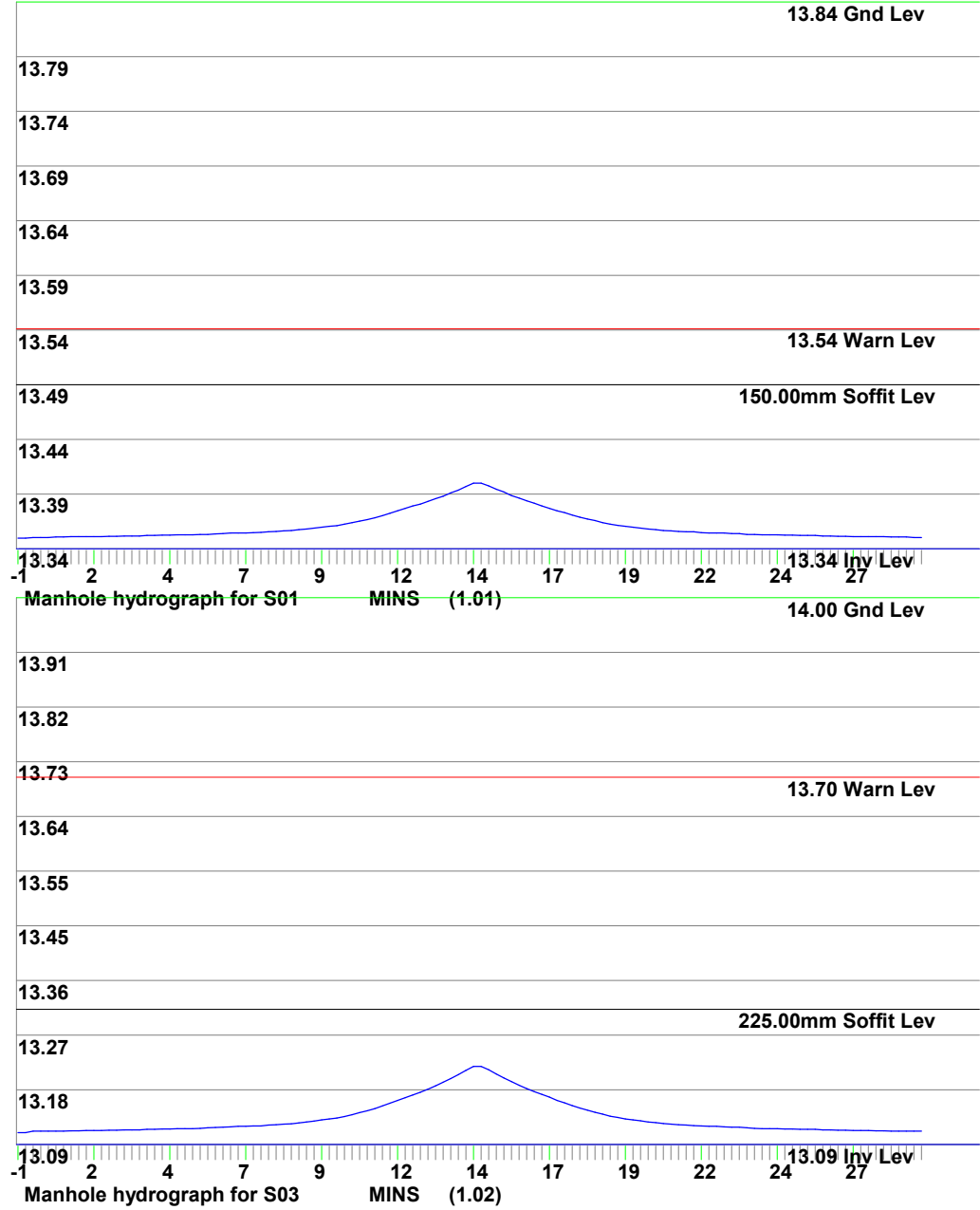
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Job No.	872	
Sheet no.	4	
Date	07/05/26	
By	MDM	Checked
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Project	
Title	Surcharge calcs (Sized at 30 yrs storm) for HICKSTEAD.SW CCF = 45%





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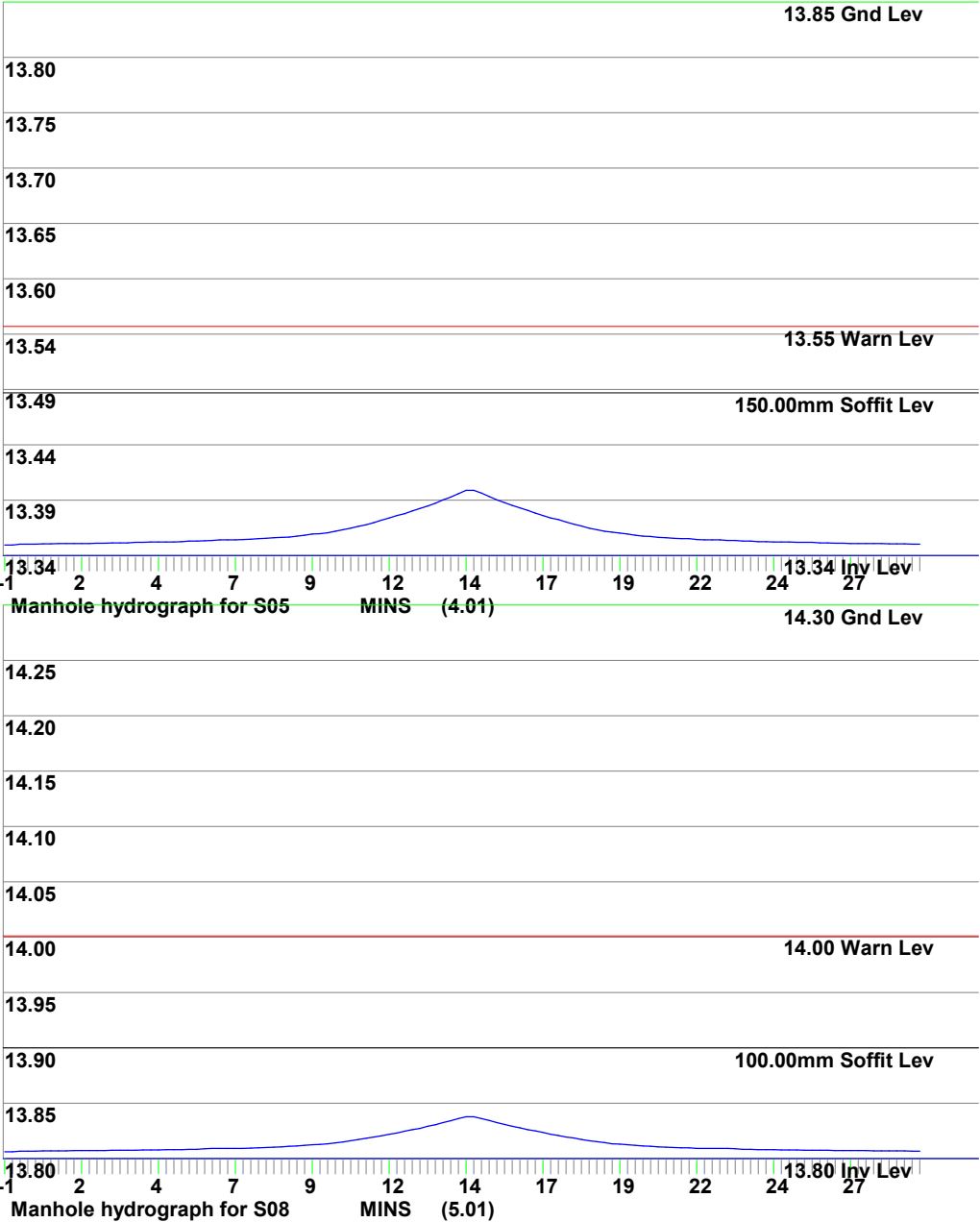
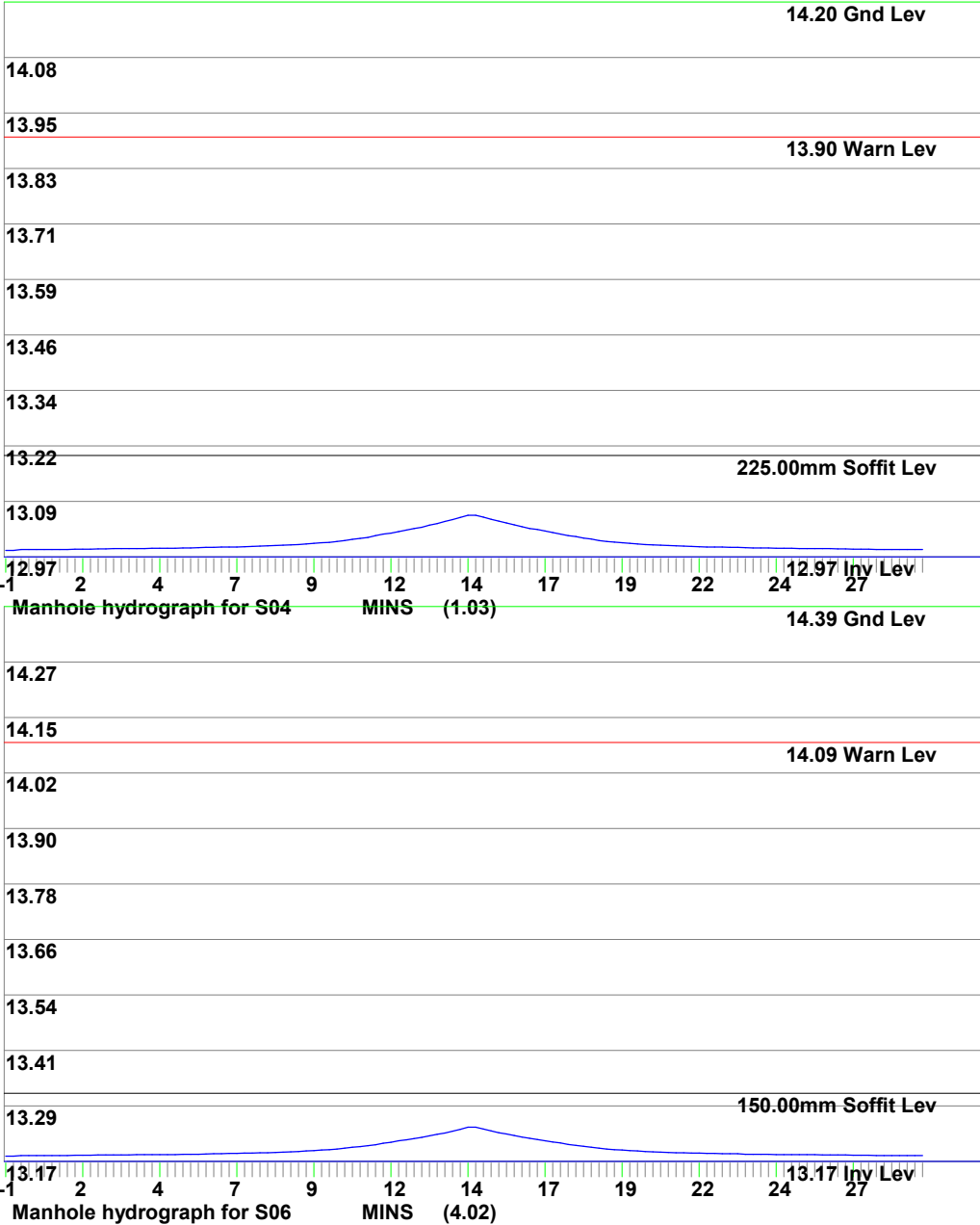
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Project

Title **Surcharge calcs (Sized at 30 yrs storm) for HICKSTEAD.SW CCF = 45%**





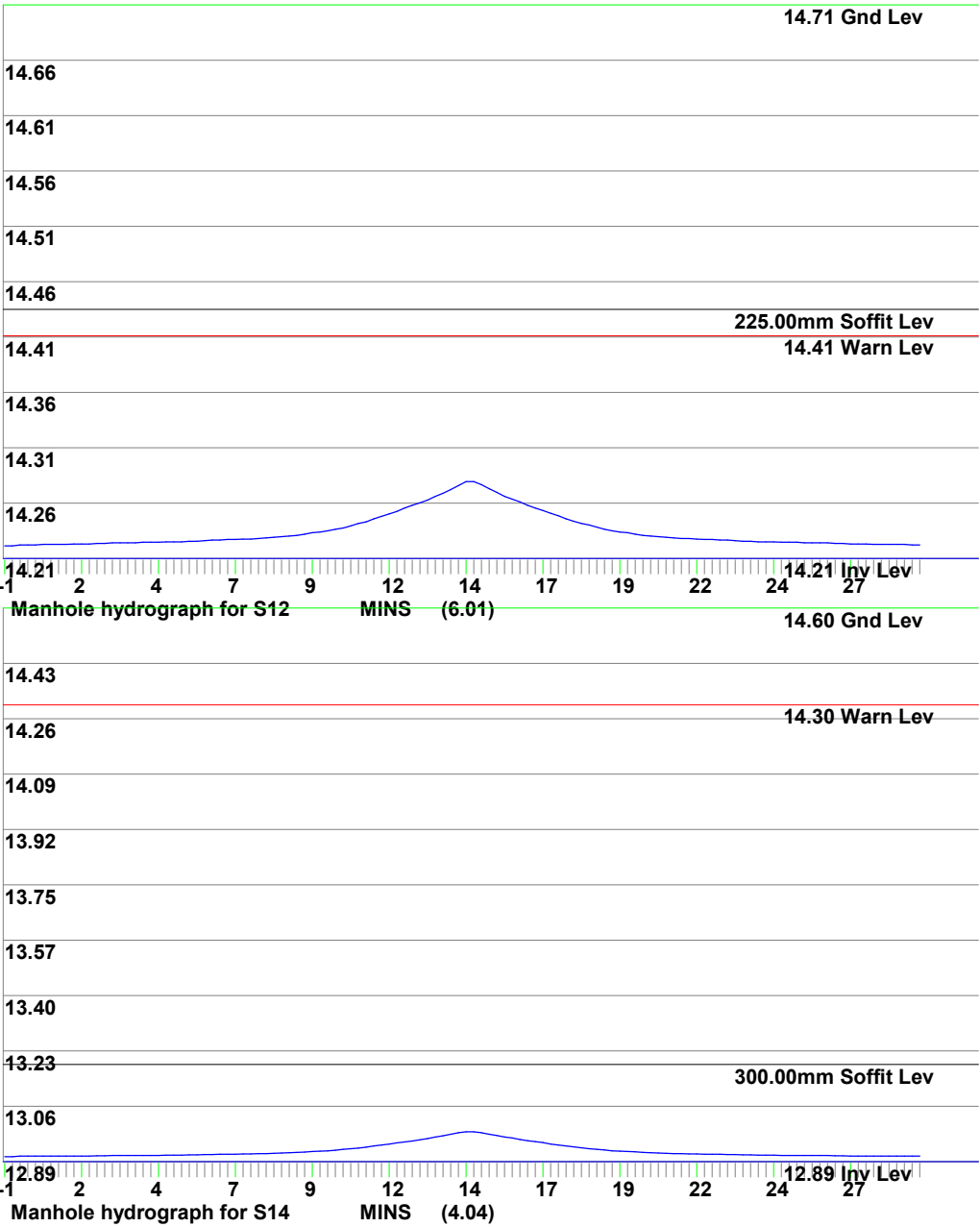
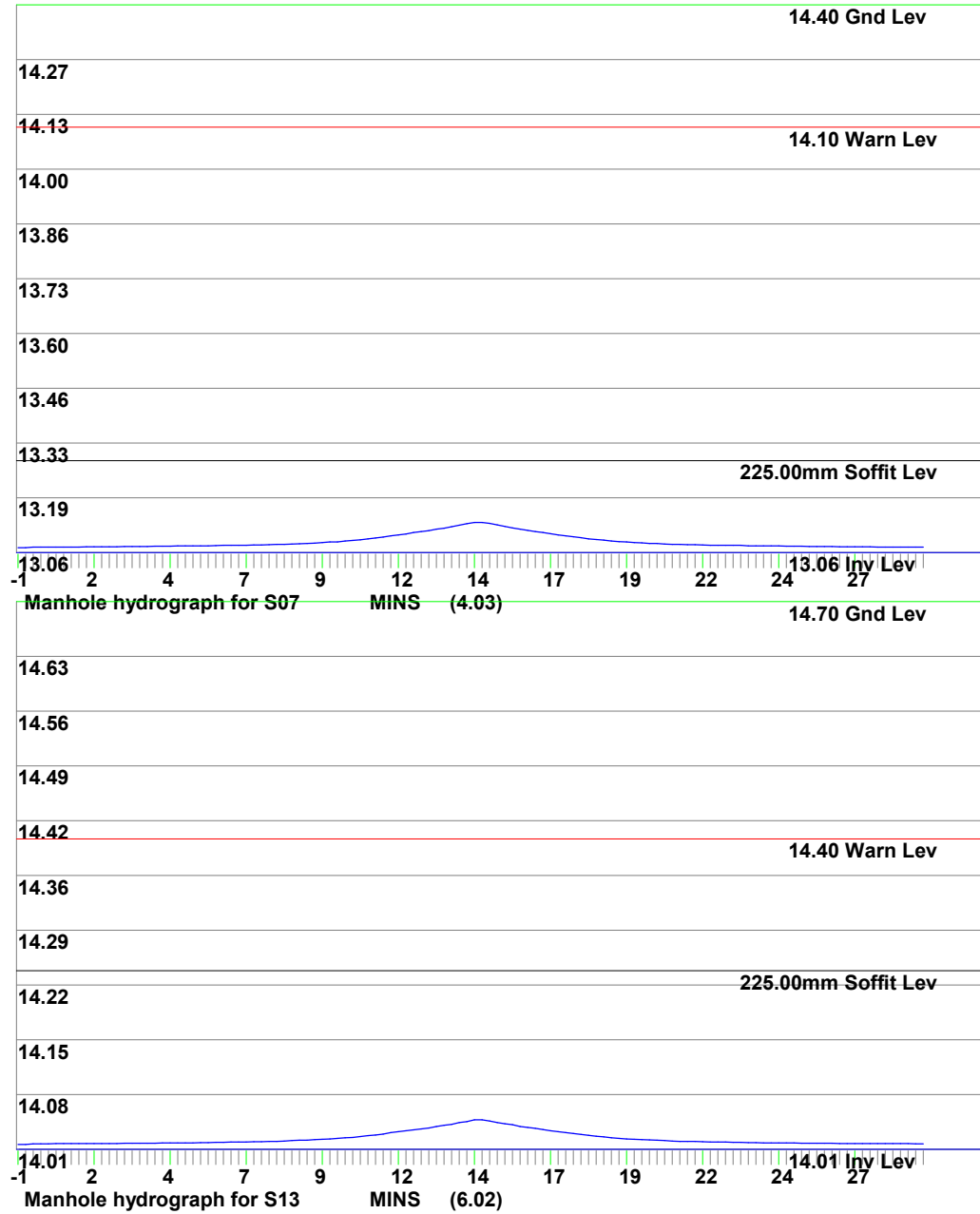
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Sheet no.	6	
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Project	
Title	Surcharge calcs (Sized at 30 yrs storm) for HICKSTEAD.SW CCF = 45%





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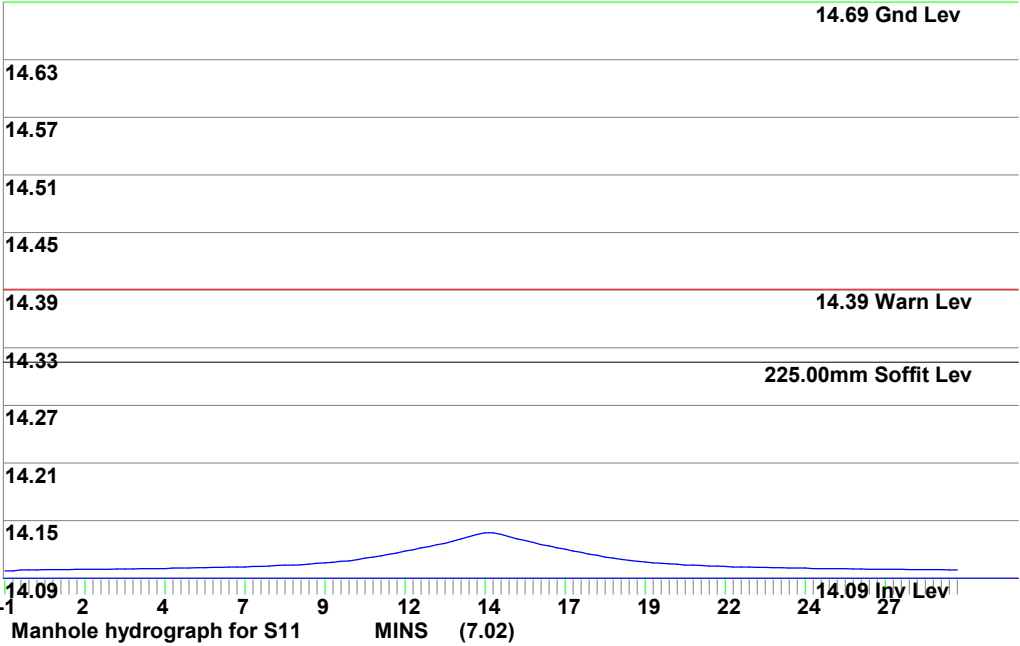
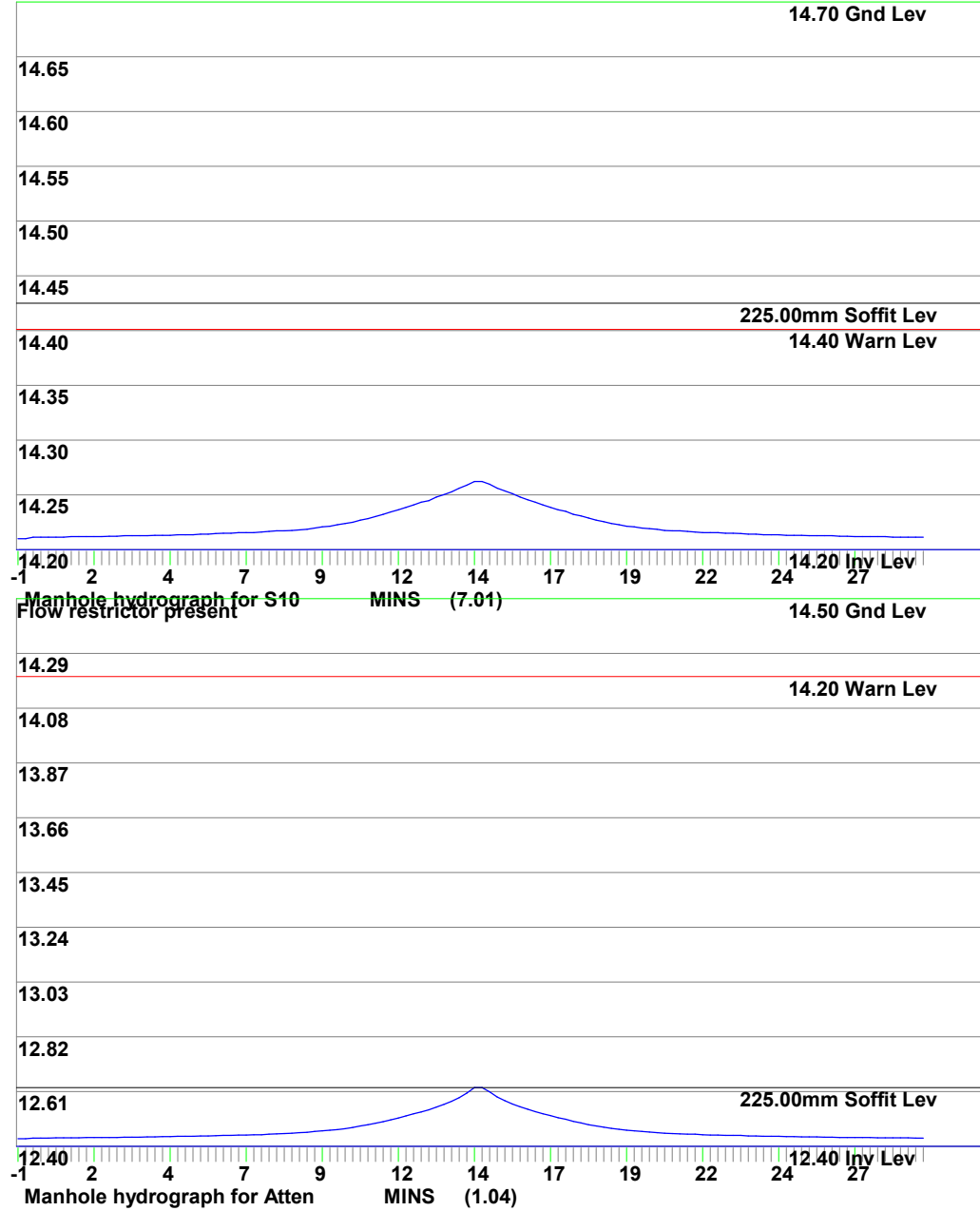
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Project		
Title	Surcharge calcs (Sized at 30 yrs storm) for HICKSTEAD.SW CCF = 45%	





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Project

Title **Surcharge calcs (Sized at 30 yrs storm) for HICKSTEAD.SW CCF = 45%**

Free flowing outlet
Return period = 100 yrs
Climate change factor = 45

PEAK hydrograph values printed
Storm duration = 45 mins
No offline storage

Mean rain intens. 131.00 mm/hr
Storm profile = Summer
Using FEH data

Peak rain intens. 513.52 mm/hr
Sample period = 22.5 secs.

Entry No.	SECT. No.	MANHOLE REF	PIPE CAPACITY l/s	RATE FLOW l/s	PIPE SIZE mm	CHAMBER :DIAM/LxW mm	INVERT: LEVEL m	WATER: LEVEL m	GRND: LEVEL m	SURCHARGE fract. Depth		EXCESS FLOW l/s	FLOODED VOL m³	DRAINED :AREA (m²): :x FACTOR :	STATUS	
1	I	1.01	S01	17.6	4.8	150	450	13.34	13.39	13.84	0.27	0.05	0.00	0.000	77	OK
2	B	2.01	S02	32.0	11.5	150	450	13.70	13.76	14.20	0.36	0.06	0.00	0.000	183	OK
3	I	1.02	S03	51.9	22.9	225	1200	13.09	13.19	14.00	0.44	0.10	0.00	0.000	365	OK
4	B	3.01	S09	21.1	4.8	150	450	13.34	13.38	13.84	0.23	0.04	0.00	0.000	76	OK
5	I	1.03	S04	123.1	34.8	225	1200	12.97	13.04	14.20	0.28	0.07	0.00	0.000	554	OK
6	B	4.01	S05	17.0	4.6	150	450	13.34	13.39	13.85	0.27	0.05	0.00	0.000	74	OK
7	B	4.02	S06	18.1	6.6	150	1200	13.17	13.23	14.39	0.36	0.06	0.00	0.000	104	OK
8	S1	5.01	S08	12.2	3.1	100	450	13.80	13.83	14.30	0.25	0.03	0.00	0.000	49	OK
9	B	4.03	S07	55.4	11.6	225	1200	13.06	13.12	14.40	0.21	0.06	0.00	0.000	185	OK
10	S1	6.01	S12	50.7	9.7	225	600	14.21	14.27	14.71	0.19	0.06	0.00	0.000	154	OK
11	S1	6.02	S13	165.4	12.9	225	1200	14.01	14.04	14.70	0.08	0.03	0.00	0.000	206	OK
12	B	4.04	S14	143.6	27.8	300	1200	12.89	12.97	14.60	0.19	0.07	0.00	0.000	444	OK
13	B	7.01	S10	49.5	8.1	225	1200	14.20	14.25	14.70	0.16	0.05	0.00	0.000	129	OK
14	B	7.02	S11	145.0	16.3	225	1200	14.09	14.13	14.69	0.11	0.04	0.00	0.000	259	OK
15	I	1.04	Attent	104.4	78.9	225	20000	12.40	12.56	14.50	0.76	0.16	0.00	0.000	1257	OK



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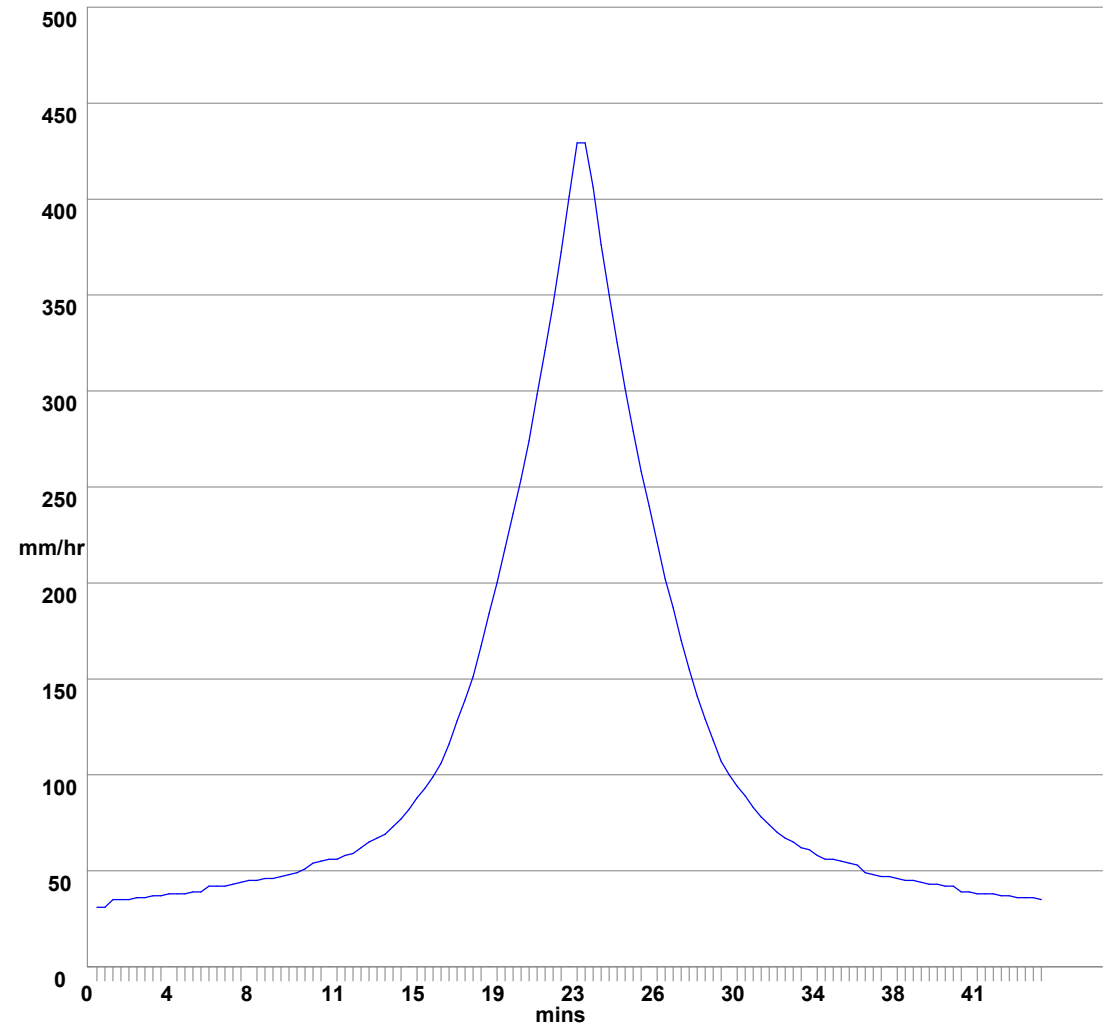
Project

Title **Surcharge calcs (Sized at 30 yrs storm) for HICKSTEAD.SW CCF = 45%**

Time mins	Rain mm/hr	Time mins	Rain mm/hr	Time mins	Rain mm/hr
0:22	30.64	15:22	87.56	30:22	94.12
0:45	30.64	15:45	93.03	30:45	88.65
1:08	35.02	16:08	98.50	31:08	83.18
1:30	35.02	16:30	106.16	31:30	77.71
1:52	35.02	16:52	116.01	31:52	74.42
2:15	36.12	17:15	128.05	32:15	70.05
2:38	36.12	17:38	139.00	32:38	66.76
3:00	37.21	18:00	151.04	33:00	64.57
3:22	37.21	18:22	167.45	33:22	62.38
3:45	38.31	18:45	183.87	33:45	61.29
4:08	38.31	19:08	200.29	34:08	58.01
4:30	38.31	19:30	217.80	34:30	55.82
4:52	39.40	19:52	236.40	34:52	55.82
5:15	39.40	20:15	253.92	35:15	54.72
5:38	41.59	20:38	273.62	35:38	53.63
6:00	41.59	21:00	297.69	36:00	52.53
6:22	41.59	21:22	320.68	36:22	49.25
6:45	42.68	21:45	344.76	36:45	48.16
7:08	43.78	22:08	372.12	37:08	47.06
7:30	44.87	22:30	400.57	37:30	47.06
7:52	44.87	22:52	429.03	37:52	45.97
8:15	45.97	23:15	429.03	38:15	44.87
8:38	45.97	23:38	406.05	38:38	44.87
9:00	47.06	24:00	376.50	39:00	43.78
9:22	48.16	24:22	350.23	39:22	42.68
9:45	49.25	24:45	325.06	39:45	42.68
10:08	51.44	25:08	300.98	40:08	41.59
10:30	53.63	25:30	279.09	40:30	41.59
10:52	54.72	25:52	258.29	40:52	39.40
11:15	55.82	26:15	239.69	41:15	39.40
11:38	55.82	26:38	221.08	41:38	38.31
12:00	58.01	27:00	202.48	42:00	38.31
12:22	59.10	27:22	187.15	42:22	38.31
12:45	62.38	27:45	169.64	42:45	37.21
13:08	64.57	28:08	155.41	43:08	37.21
13:30	66.76	28:30	141.19	43:30	36.12
13:52	68.95	28:52	129.15	43:52	36.12
14:15	73.33	29:15	118.20	44:15	36.12
14:38	76.61	29:38	107.26	44:38	35.02
15:00	82.08	30:00	99.60	45:00	35.02

Hydrograph profile derived from data in the Flood Studies Report

Return period= 100 yrs Duration= 45 mins Profile - summer





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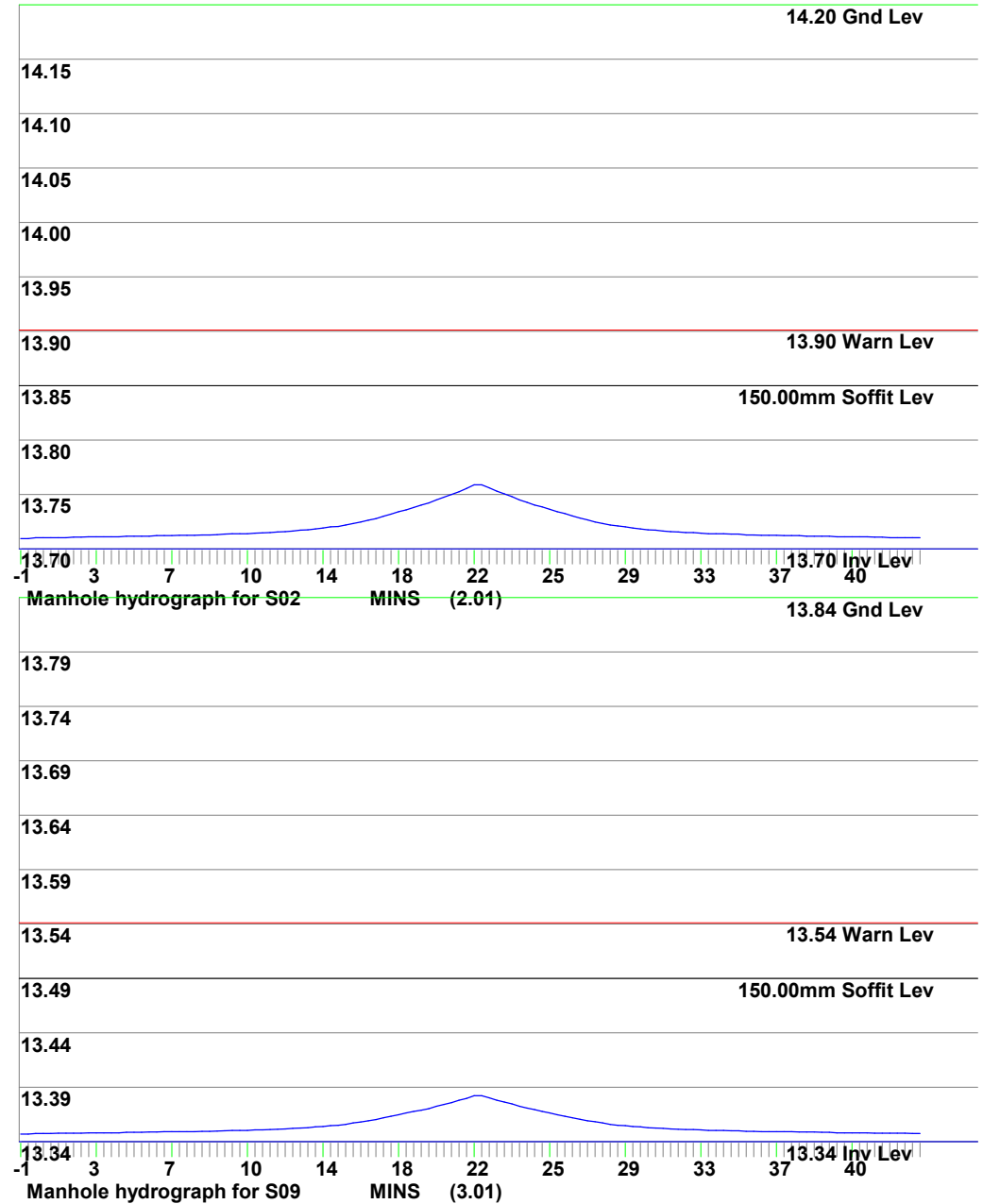
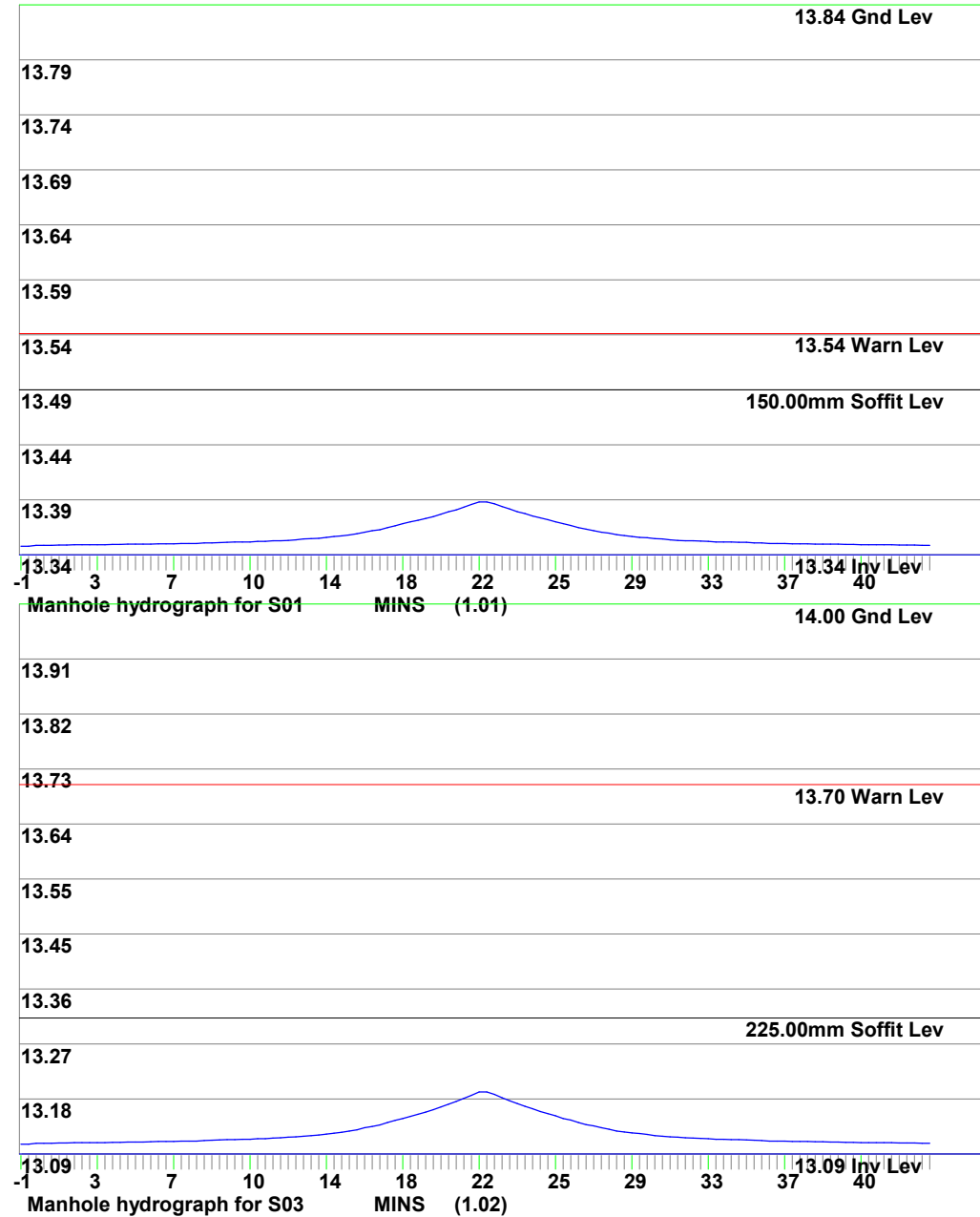
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Project

Title

Surcharge calcs (Sized at 30 yrs storm) for HICKSTEAD.SW CCF = 45%





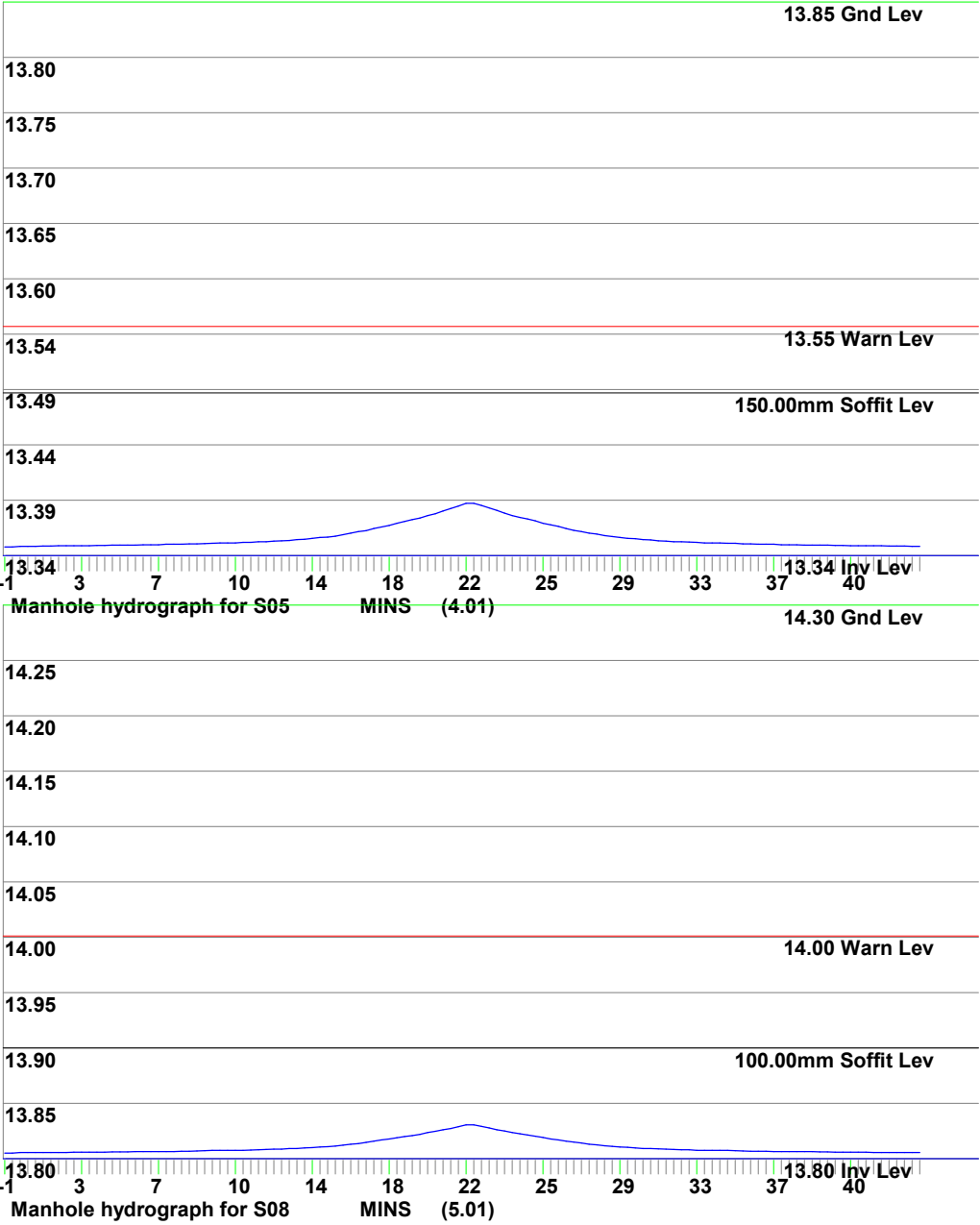
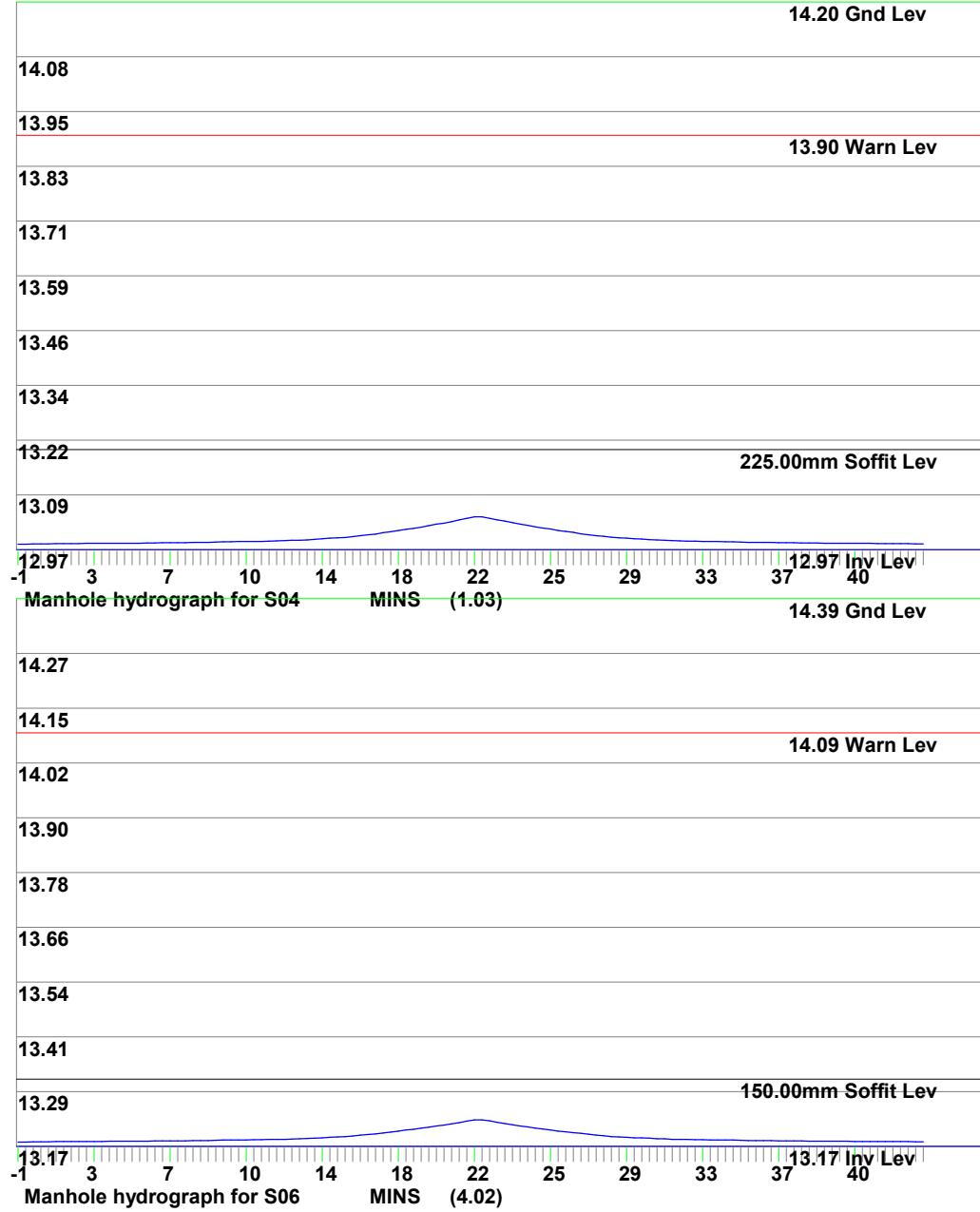
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Project	
Title	Surcharge calcs (Sized at 30 yrs storm) for HICKSTEAD.SW CCF = 45%





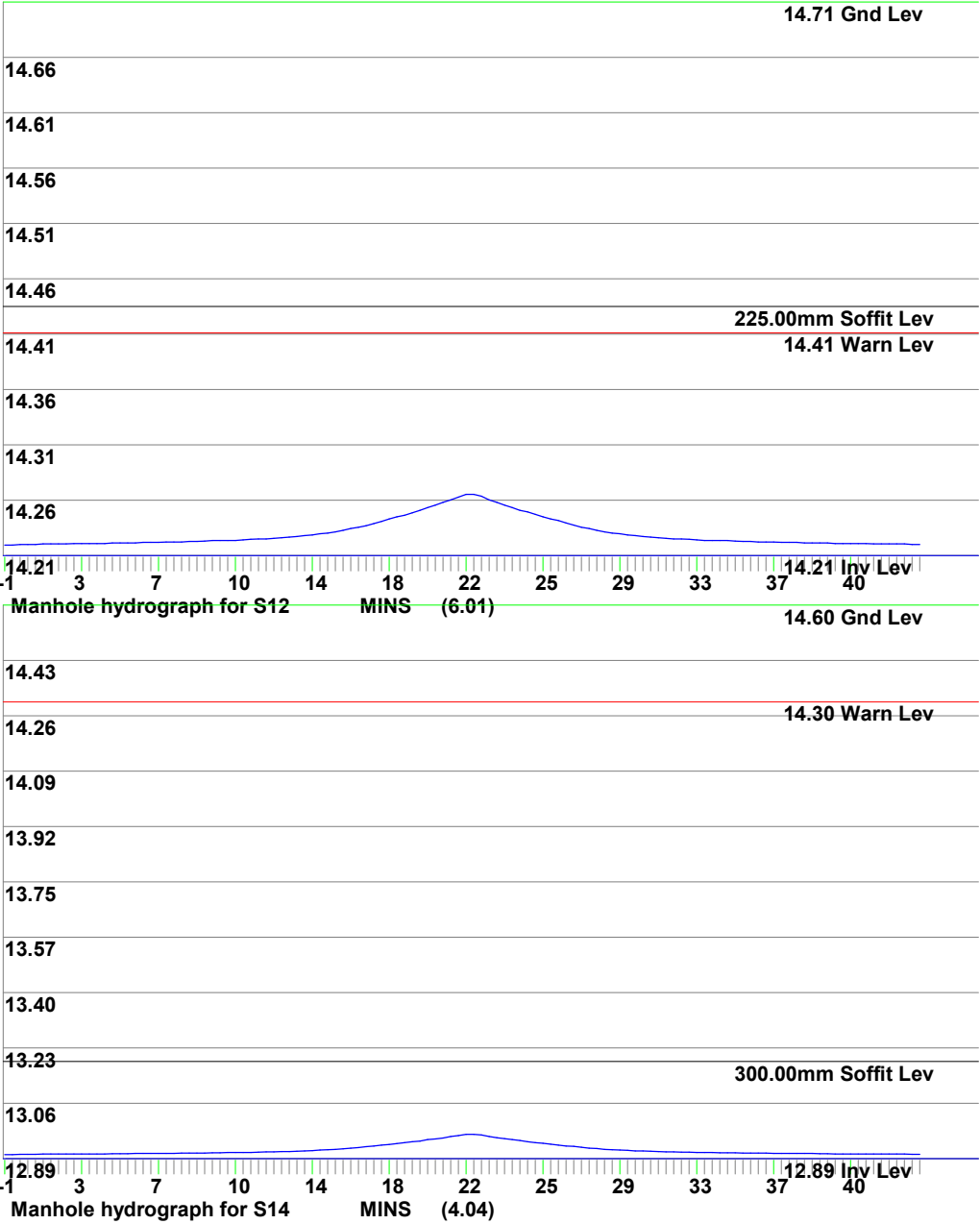
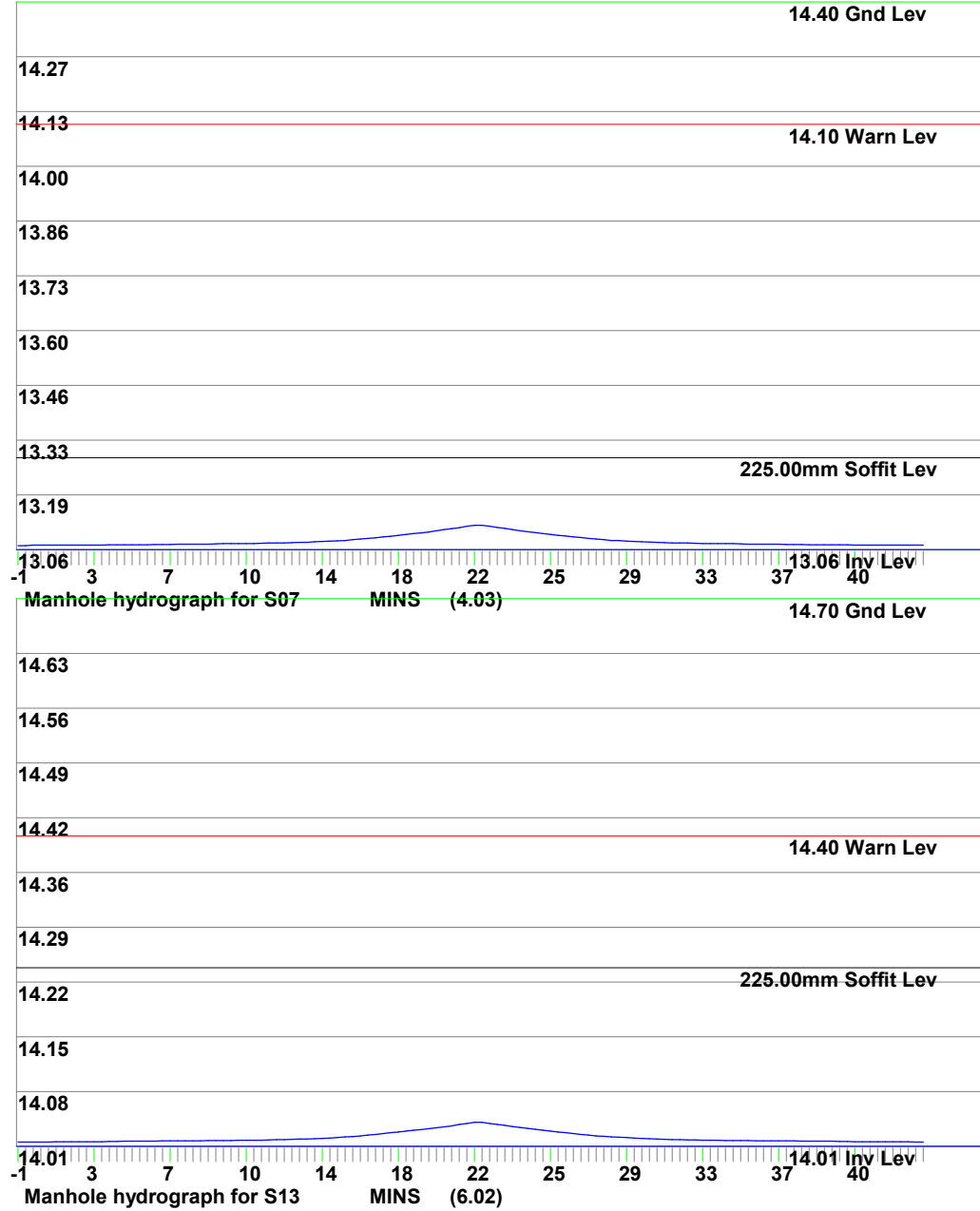
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Sheet no.	6	
Date	07/05/26	
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Project		
Title	Surcharge calcs (Sized at 30 yrs storm) for HICKSTEAD.SW CCF = 45%	





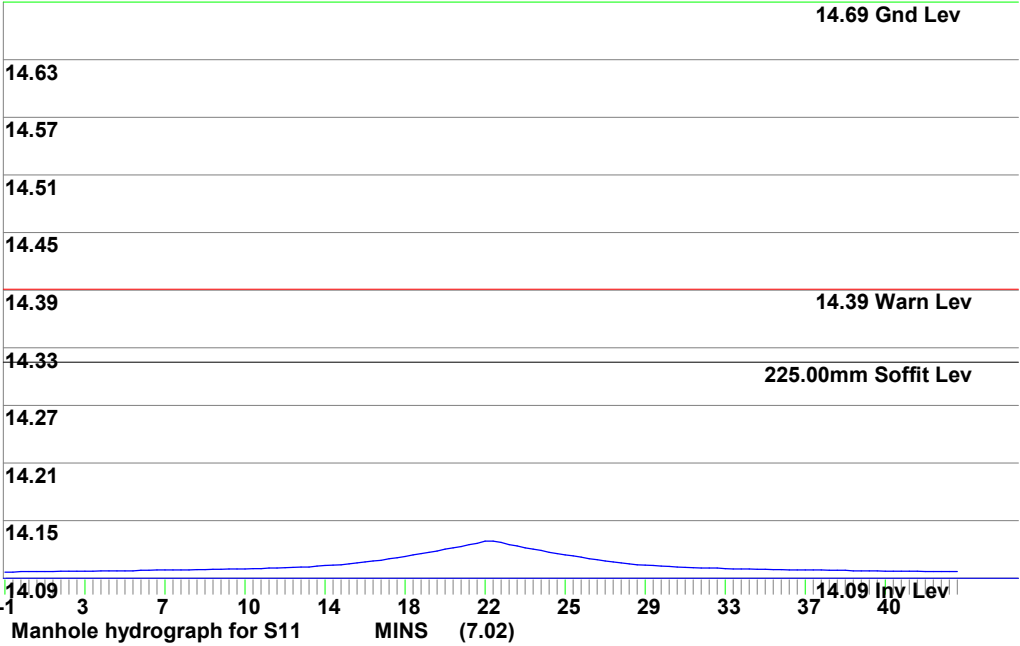
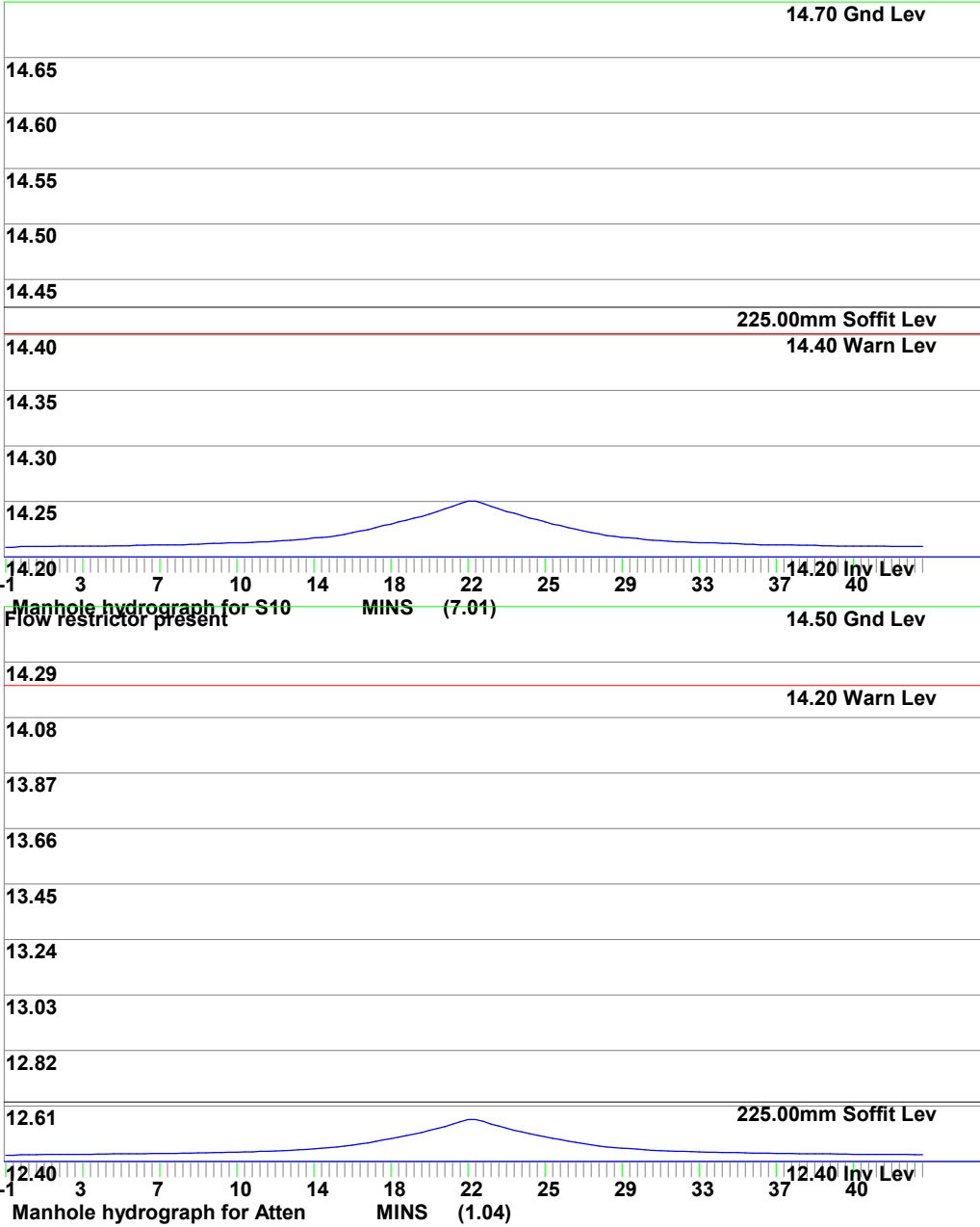
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Date 07/05/26		
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Project	
Title	Surcharge calcs (Sized at 30 yrs storm) for HICKSTEAD.SW CCF = 45%





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Sheet no. 1		
Date 07/05/26		
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Project

Title **Surcharge calcs (Sized at 30 yrs storm) for HICKSTEAD.SW CCF = 45%**

Free flowing outlet
Return period = 100 yrs
Climate change factor = 45

PEAK hydrograph values printed
Storm duration = 60 mins
No offline storage

Mean rain intens. 106.00 mm/hr
Storm profile = Summer
Using FEH data

Peak rain intens. 415.52 mm/hr
Sample period = 30.0 secs.

Entry No.	SECT. No.	MANHOLE REF	PIPE CAPACITY l/s	RATE FLOW l/s	PIPE SIZE mm	CHAMBER :DIAM/LxW mm	INVERT LEVEL m	WATER LEVEL m	GRND LEVEL m	SURCHARGE fract. Depth		EXCESS FLOW l/s	FLOODED VOL m³	DRAINED :AREA (m²) :x FACTOR :	STATUS	
1	I	1.01	S01	17.6	3.9	150	450	13.34	13.38	13.84	0.22	0.04	0.00	0.000	77	OK
2	B	2.01	S02	32.0	9.3	150	450	13.70	13.75	14.20	0.29	0.05	0.00	0.000	183	OK
3	I	1.02	S03	51.9	18.5	225	1200	13.09	13.18	14.00	0.36	0.09	0.00	0.000	365	OK
4	B	3.01	S09	21.1	3.8	150	450	13.34	13.38	13.84	0.18	0.04	0.00	0.000	76	OK
5	I	1.03	S04	123.1	28.0	225	1200	12.97	13.03	14.20	0.23	0.06	0.00	0.000	554	OK
6	B	4.01	S05	17.0	3.8	150	450	13.34	13.38	13.85	0.22	0.04	0.00	0.000	74	OK
7	B	4.02	S06	18.1	5.3	150	1200	13.17	13.22	14.39	0.29	0.05	0.00	0.000	104	OK
8	S1	5.01	S08	12.2	2.5	100	450	13.80	13.83	14.30	0.21	0.03	0.00	0.000	49	OK
9	B	4.03	S07	55.4	9.4	225	1200	13.06	13.11	14.40	0.17	0.05	0.00	0.000	185	OK
10	S1	6.01	S12	50.7	7.8	225	600	14.21	14.26	14.71	0.15	0.05	0.00	0.000	154	OK
11	S1	6.02	S13	165.4	10.4	225	1200	14.01	14.04	14.70	0.06	0.03	0.00	0.000	206	OK
12	B	4.04	S14	143.6	22.5	300	1200	12.89	12.96	14.60	0.16	0.07	0.00	0.000	444	OK
13	B	7.01	S10	49.5	6.5	225	1200	14.20	14.24	14.70	0.13	0.04	0.00	0.000	129	OK
14	B	7.02	S11	145.0	13.1	225	1200	14.09	14.12	14.69	0.09	0.03	0.00	0.000	259	OK
15	I	1.04	Atten#	104.4	63.6	225	20000	12.40	12.53	14.50	0.61	0.13	0.00	0.000	1257	OK



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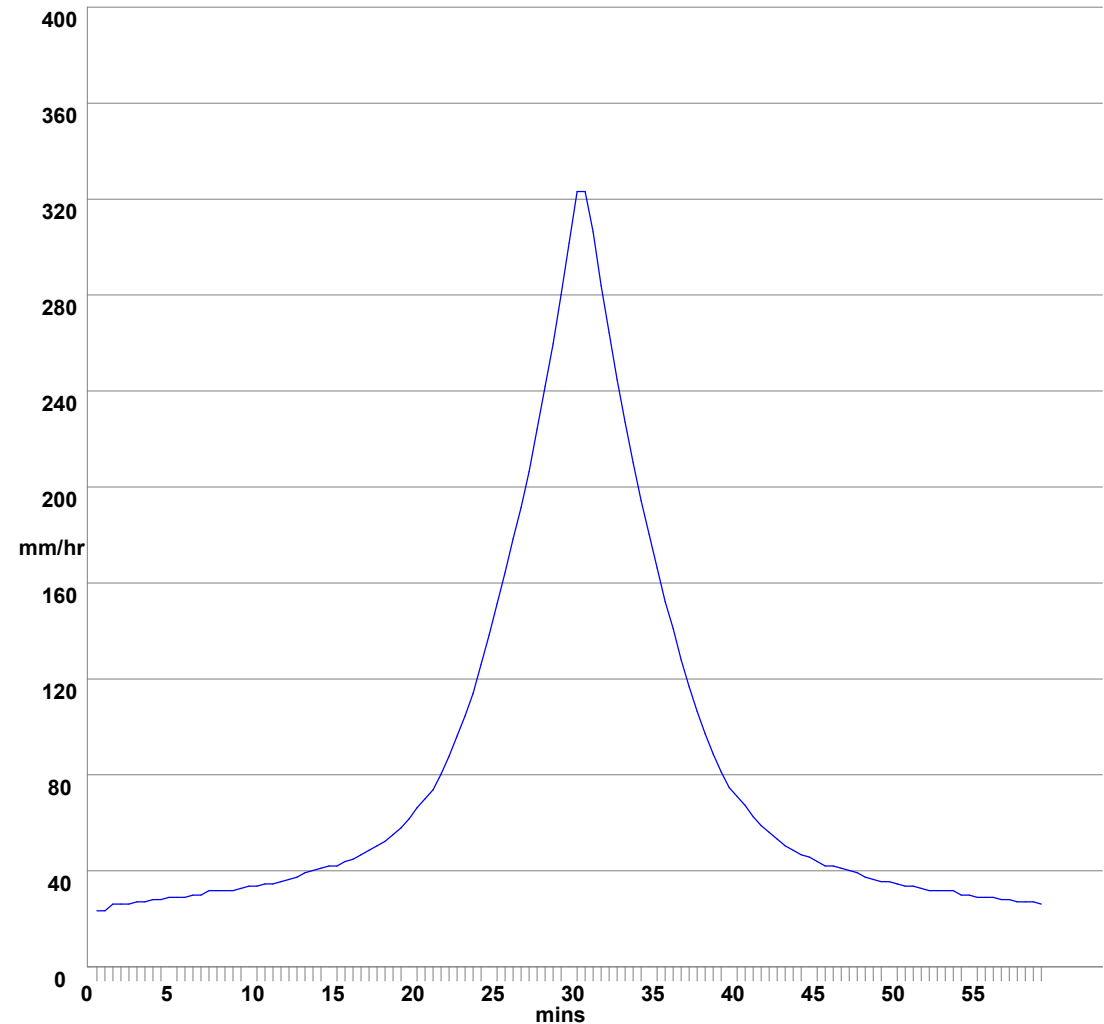
Project

Title **Surcharge calcs (Sized at 30 yrs storm) for HICKSTEAD.SW CCF = 45%**

Time mins	Rain mm/hr	Time mins	Rain mm/hr	Time mins	Rain mm/hr
0:30	24.73	20:30	70.66	40:30	75.96
1:00	24.73	21:00	75.08	41:00	71.55
1:30	28.26	21:30	79.49	41:30	67.13
2:00	28.26	22:00	85.68	42:00	62.71
2:30	28.26	22:30	93.63	42:30	60.06
3:00	29.15	23:00	103.34	43:00	56.53
3:30	29.15	23:30	112.18	43:30	53.88
4:00	30.03	24:00	121.89	44:00	52.11
4:30	30.03	24:30	135.14	44:30	50.35
5:00	30.91	25:00	148.39	45:00	49.46
5:30	30.91	25:30	161.64	45:30	46.81
6:00	30.91	26:00	175.77	46:00	45.05
6:30	31.80	26:30	190.79	46:30	45.05
7:00	31.80	27:00	204.92	47:00	44.16
7:30	33.56	27:30	220.82	47:30	43.28
8:00	33.56	28:00	240.25	48:00	42.40
8:30	33.56	28:30	258.80	48:30	39.75
9:00	34.45	29:00	278.23	49:00	38.86
9:30	35.33	29:30	300.31	49:30	37.98
10:00	36.21	30:00	323.28	50:00	37.98
10:30	36.21	30:30	346.24	50:30	37.10
11:00	37.10	31:00	346.24	51:00	36.21
11:30	37.10	31:30	327.70	51:30	36.21
12:00	37.98	32:00	303.85	52:00	35.33
12:30	38.86	32:30	282.65	52:30	34.45
13:00	39.75	33:00	262.33	53:00	34.45
13:30	41.51	33:30	242.90	53:30	33.56
14:00	43.28	34:00	225.24	54:00	33.56
14:30	44.16	34:30	208.45	54:30	31.80
15:00	45.05	35:00	193.44	55:00	31.80
15:30	45.05	35:30	178.42	55:30	30.91
16:00	46.81	36:00	163.41	56:00	30.91
16:30	47.70	36:30	151.04	56:30	30.91
17:00	50.35	37:00	136.91	57:00	30.03
17:30	52.11	37:30	125.43	57:30	30.03
18:00	53.88	38:00	113.94	58:00	29.15
18:30	55.65	38:30	104.23	58:30	29.15
19:00	59.18	39:00	95.39	59:00	29.15
19:30	61.83	39:30	86.56	59:30	28.26
20:00	66.25	40:00	80.38	60:00	28.26

Hydrograph profile derived from data in the Flood Studies Report

Return period= 100 yrs Duration= 60 mins Profile - summer





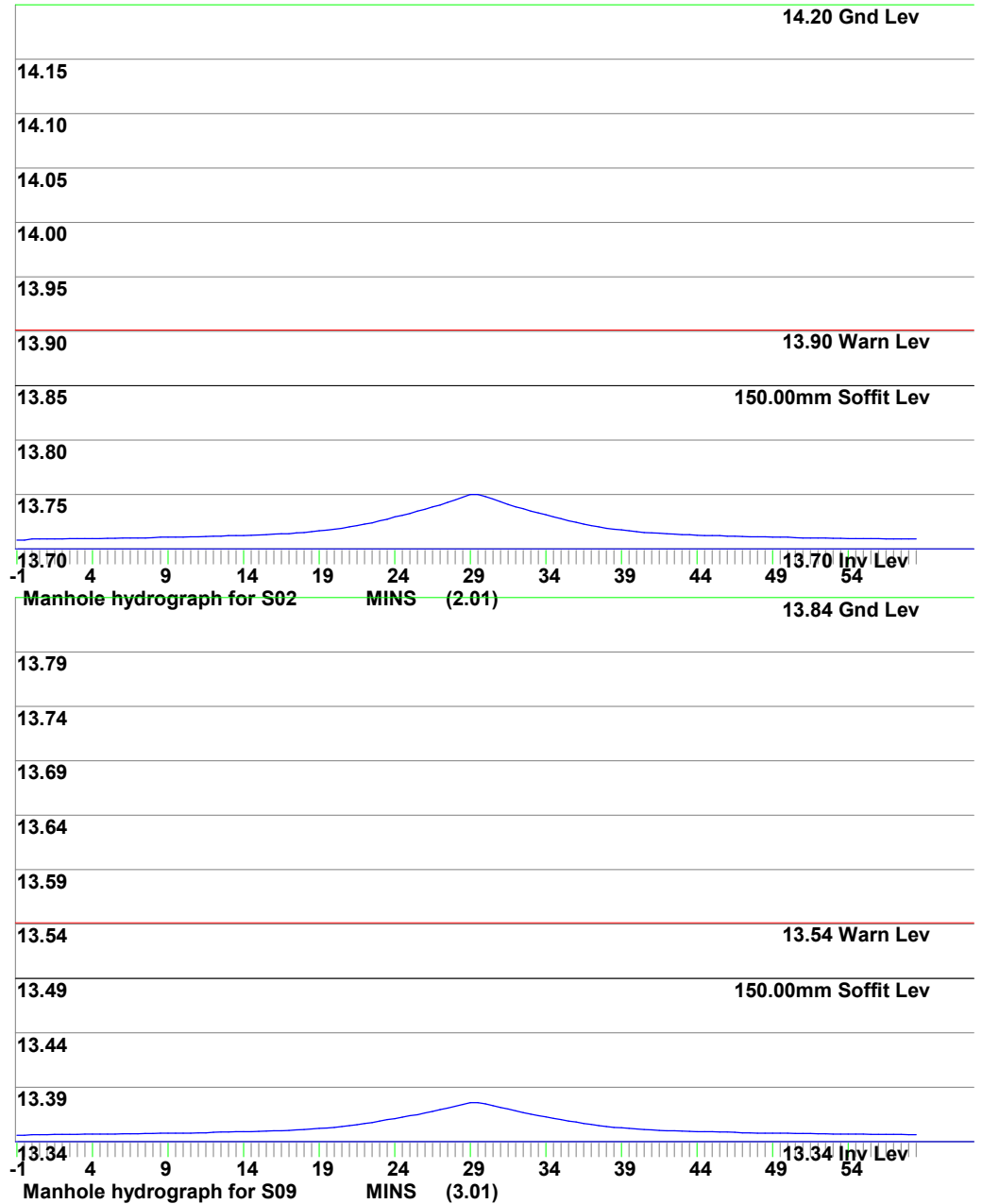
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Job No. 872		
Sheet no. 4		
Date 07/05/26		
By MDM	Checked	Reviewed

Title **Surcharge calcs (Sized at 30 yrs storm) for HICKSTEAD.SW CCF = 45%**

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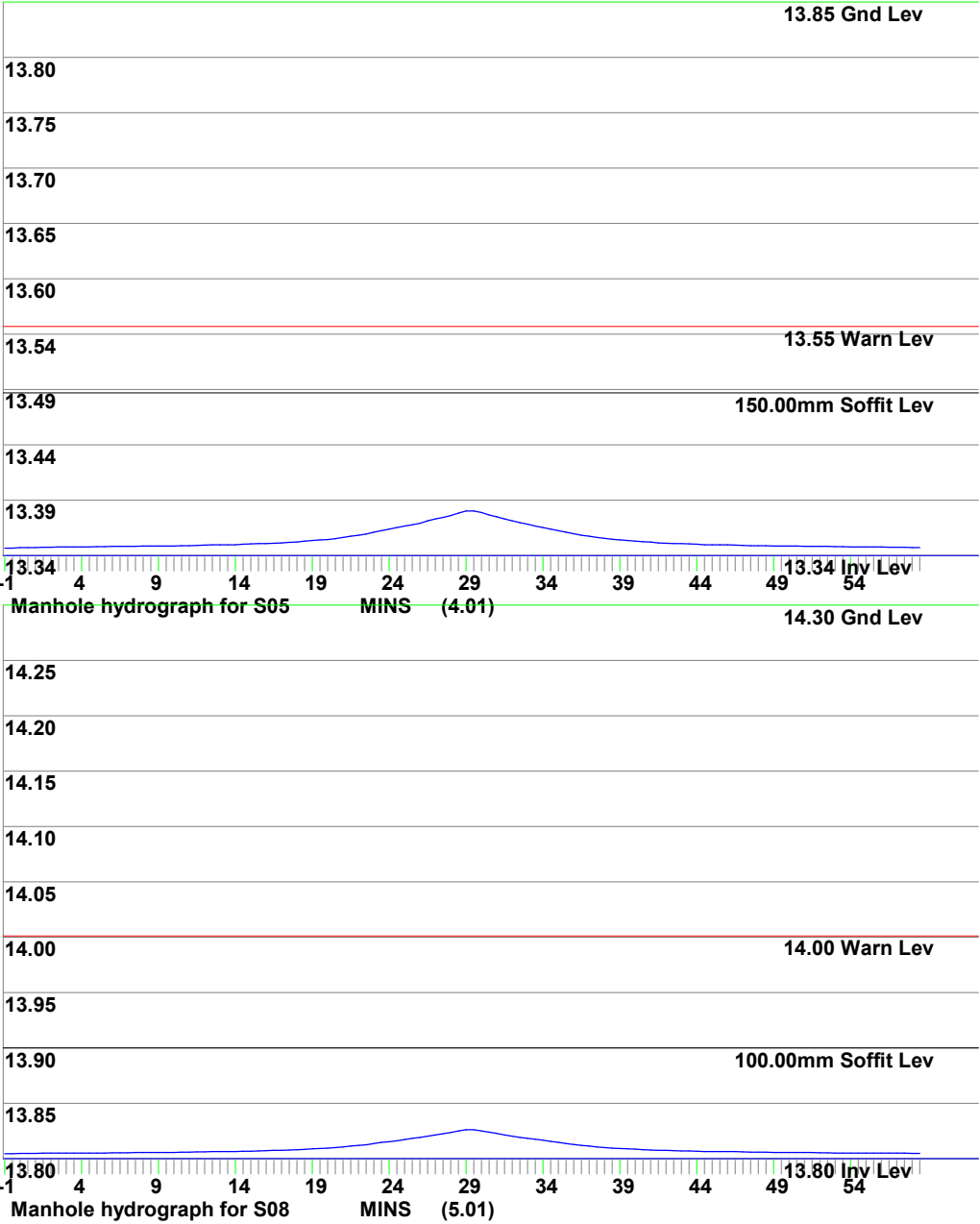
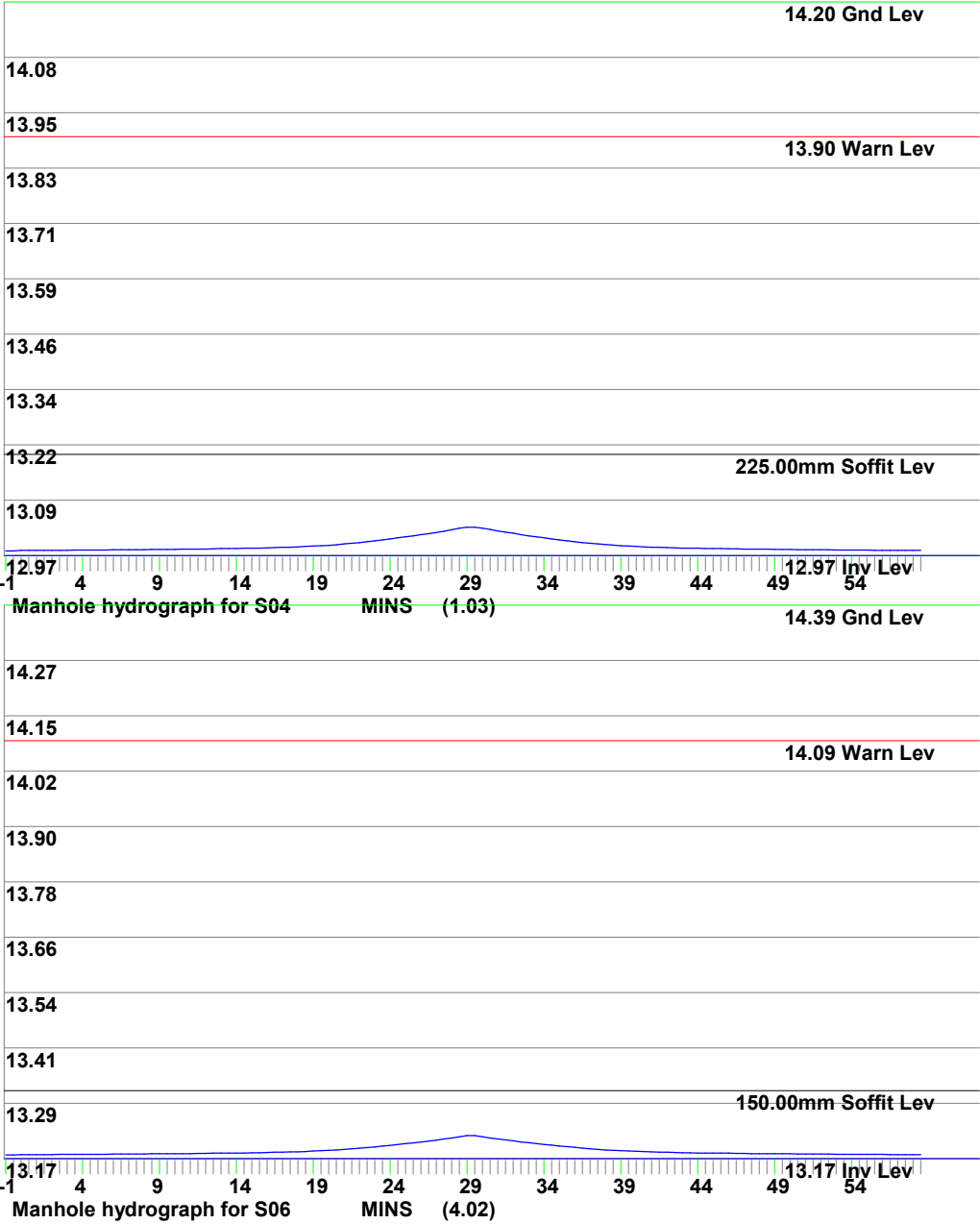
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Project

Title **Surcharge calcs (Sized at 30 yrs storm) for HICKSTEAD.SW CCF = 45%**





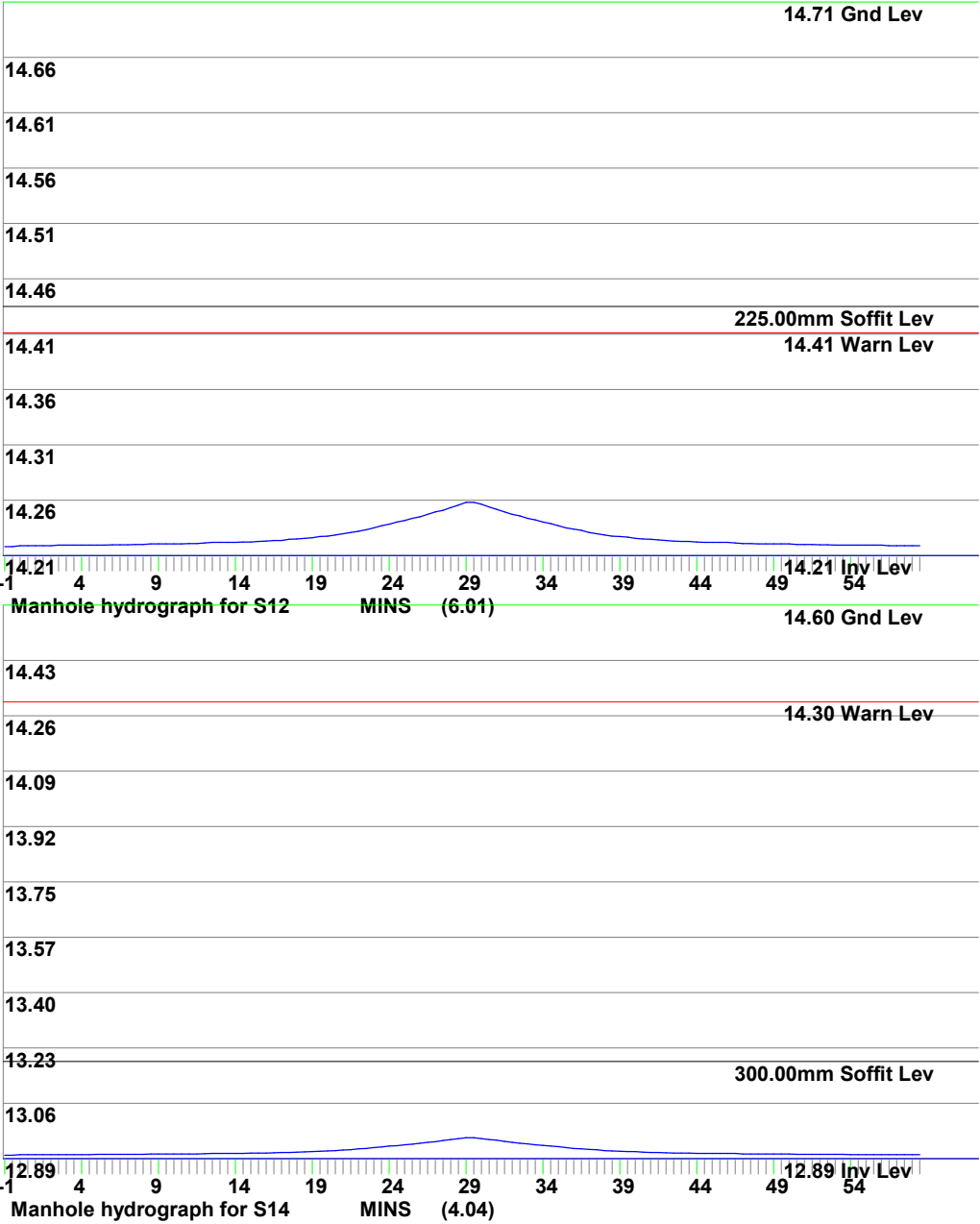
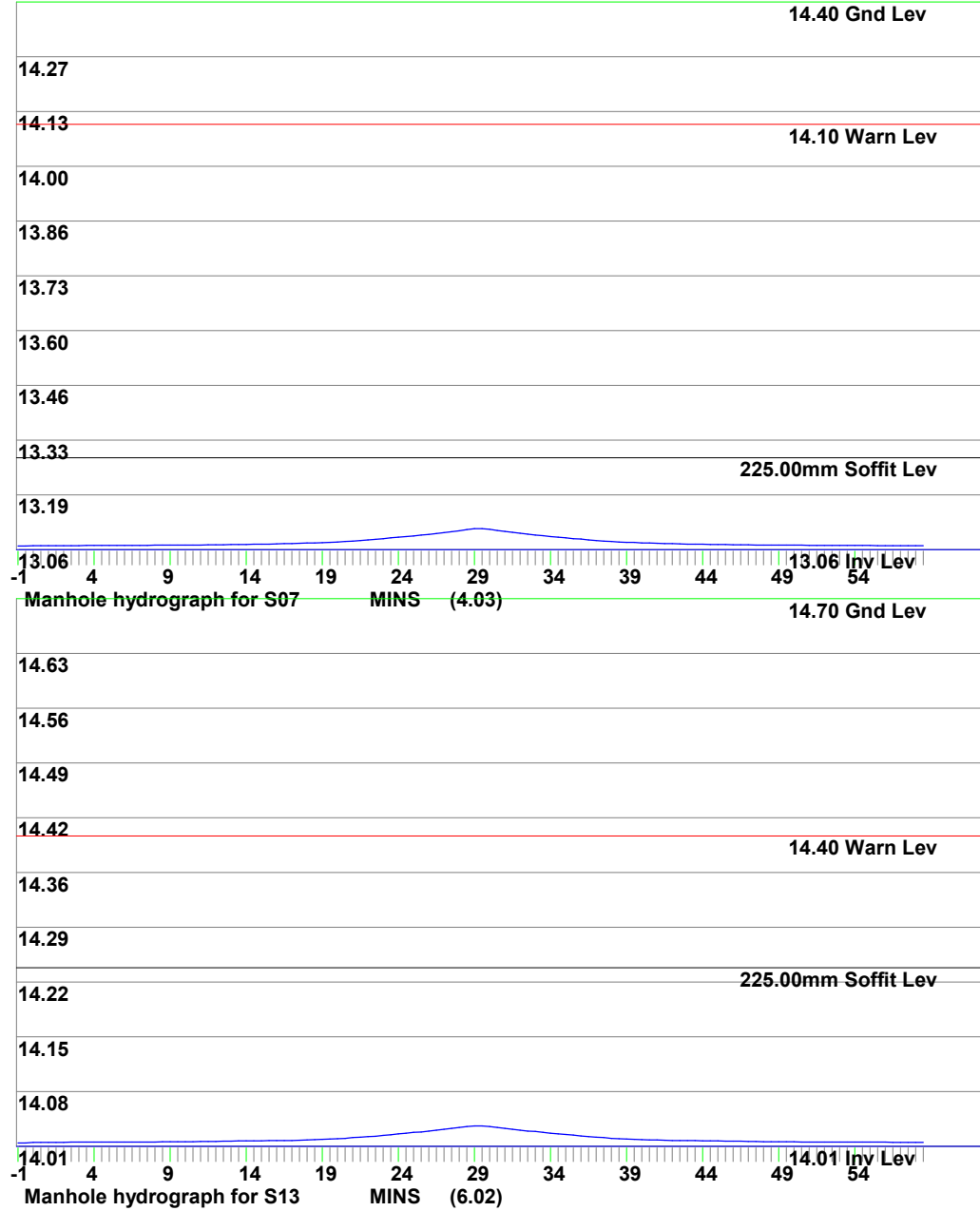
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Title	Surcharge calcs (Sized at 30 yrs storm) for HICKSTEAD.SW CCF = 45%	

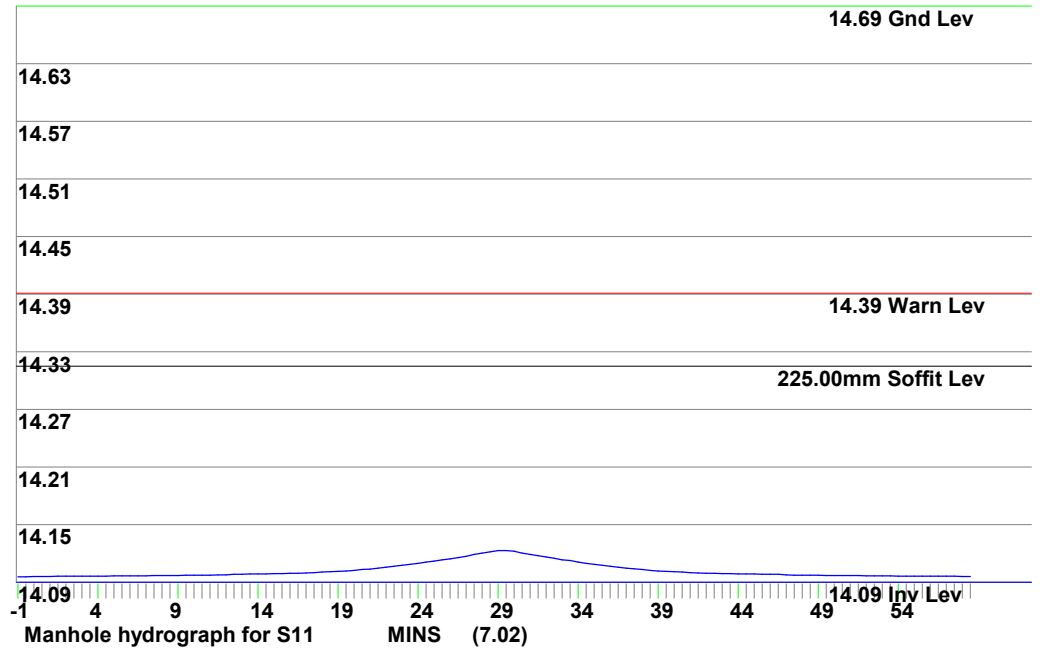




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Title **Surcharge calcs (Sized at 30 yrs storm) for HICKSTEAD.SW CCF = 45%**





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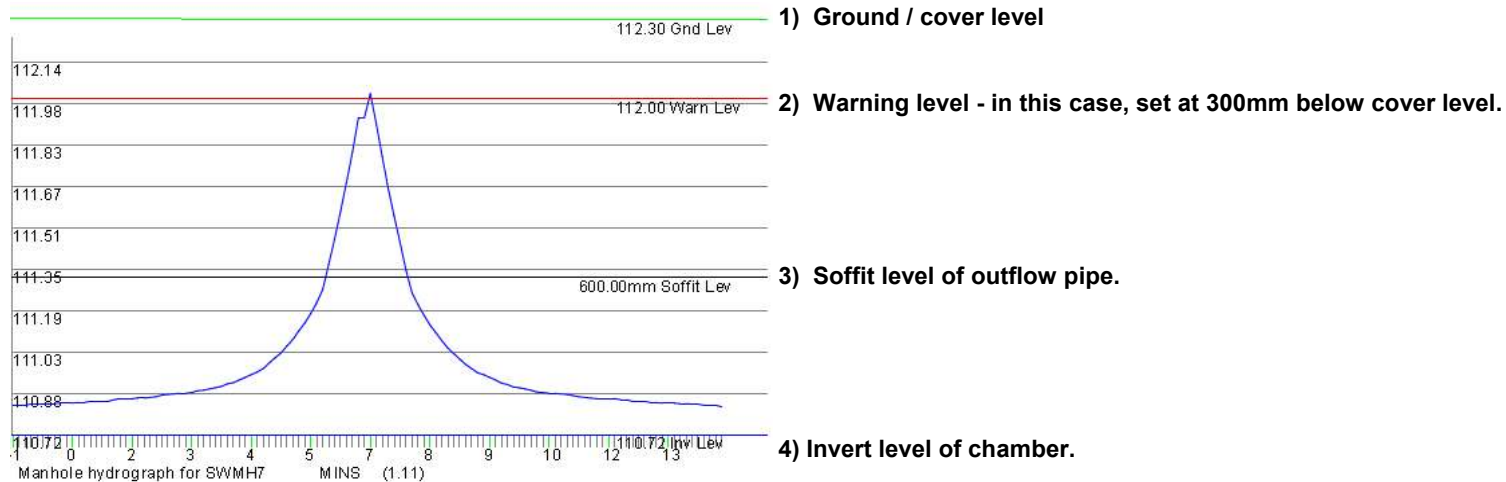
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Title **Surcharge calcs (Sized at 30 yrs storm) for HICKSTEAD.SW CCF = 45%**



Notes

- Lower section of the graph shows the water depth filling the channel. Channel is assumed to be a full pipe diameter in depth.
- Upper section of the graph shows the water depth filling the chamber. Chamber has a greater width/diameter than the channel, so increases in depth are proportionally less.
- The top of the graph clips the warning level and would be marked thus on the printout.
- In many cases the invert of the offline storage is required to enter at the channel soffit level, meaning that the pipe will still surcharge but flooding risk reduced.
- The diagram above is a general one and is not part of the current calculation.



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Project **Land to the south of Leacroft, London Road, Hickstead**

Title **Manhole printout for HICKSTEAD.FL**

Manhole ref.	Form	Cham diam. or length	Rect. width	Chamb. height	Shaft height	MH Volume	Ent. Diam	Ent. Crown	Ent. Invert	Exit Diam	Exit Crown	Exit Invert	Chamb const	Cover Level	Dwnstr MH
F1	circ	450	N/A	0.50		0.08	Head	----	----	100	13.175	13.050	N/A	13.550	F2
F2	circ	450	N/A	0.97		0.15	100	0.000	0.000	100	13.055	12.930	N/A	13.900	F3
F3	circ	450	N/A	1.19		0.19	100	0.000	0.000	100	12.935	12.810	N/A	14.000	F4
F4	circ	600	N/A	1.49		0.42	100	0.000	0.000	100	12.645	12.520	N/A	14.010	F5
F5	circ	600	N/A	1.60		0.45	100	0.000	0.000	100	12.535	12.410	N/A	14.010	STW
F6	circ	450	N/A	0.50		0.08	Head	----	----	100	14.335	14.210	N/A	14.710	F7
F7	circ	450	N/A	0.61		0.10	100	0.000	0.000	100	14.215	14.090	N/A	14.700	F8
F8	circ	450	N/A	0.75		0.12	100	0.000	0.000	100	14.065	13.940	N/A	14.690	F9
F9	circ	600	N/A	0.89		0.25	100	0.000	0.000	100	13.915	13.790	N/A	14.680	STW

All manholes to be as per 'Sewers for Adoption'

Levels calculated for level inverts



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Project **Land to the south of Leacroft, London Road, Hickstead**

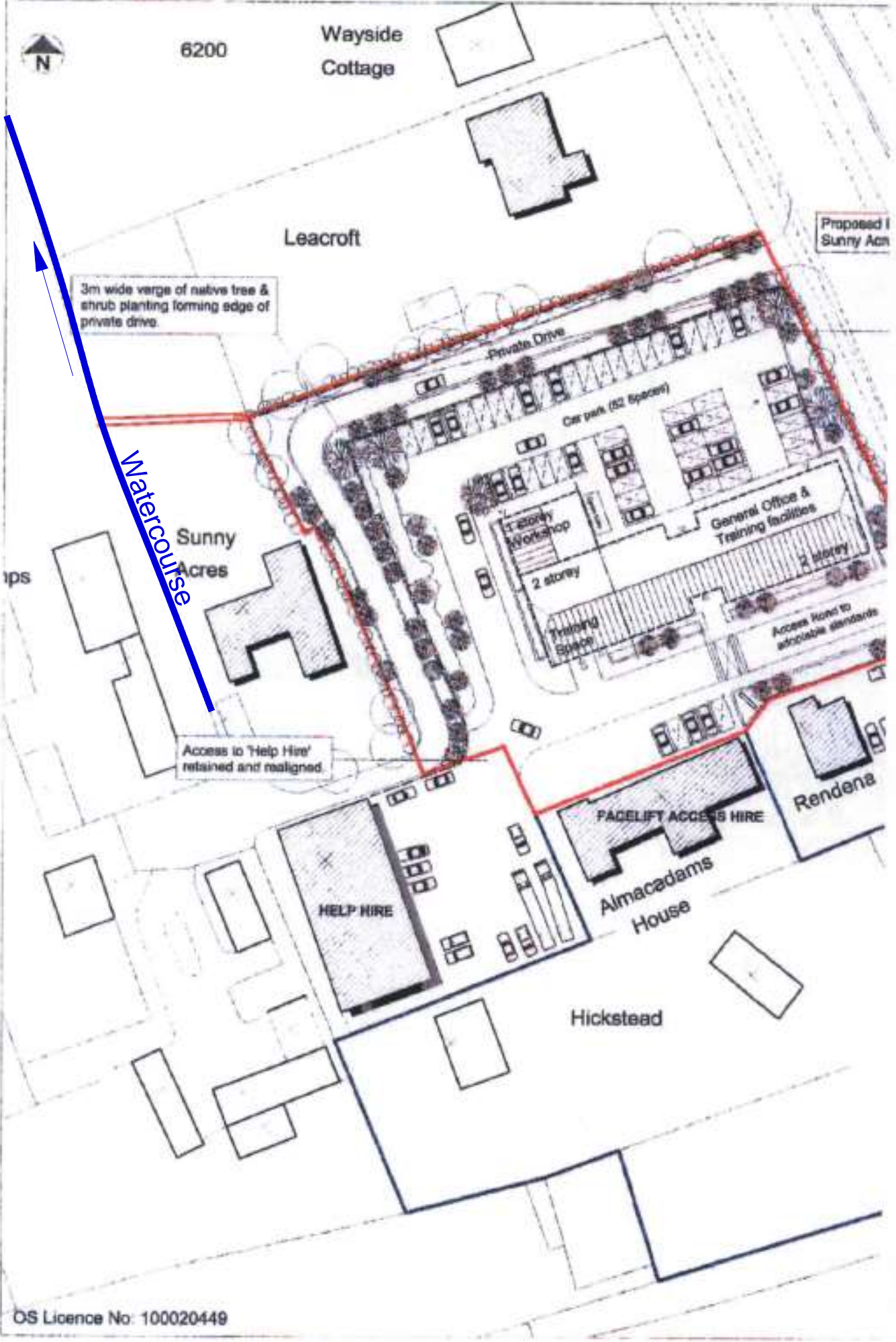
Title **Manhole printout for HICKSTEAD.FL**

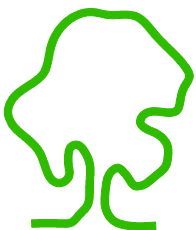
These explanatory notes should be read in conjunction with the Manhole printout

- 1) Manhole ref - the reference for the manhole in question
- 2) Form - either circular or rectangular
- 3) Chamber diam or length - diameter of chamber if circular, or length if rectangular - in metres
- 4) Rectangular width - if form is rectangular, this gives the width of the chamber
- 5) Chamber height - height of chamber from invert
- 6) Shaft height - height of access shaft if applicable, from top of chamber to ground level
- 7) Manhole volume - cubic capacity of manhole chamber
- 8) Exit diameter - diameter of pipe leaving this manhole
- 9) Exit crown - crown level of pipe leaving this manhole
- 10) Exit invert - invert level of pipe leaving this manhole
- 11) Manhole diameters of 9999 have exceeded the sizes available in Sfa
- 12) Manhole diameters may have to be modified due to the number of branches

APPENDIX F

Plan showing easement corridor for outfall pipes.





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