structural | civil | transportation | environmental | geotechnical

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Phase 13, Groby Road
Ratby
Flood Risk Statement
For
Cawrey Limited

DEVELOPMENT SERVICES
20 MAR 2008
RECEIVED

07037/FRS
January 2008

Flood Risk Statement

Phase 13, Groby Road, Ratby – Residential Dwellings, Medical Centre and Day Nursery

Prepared By:

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1.0 Introduction

2.0 Background Information

3.0 Flood Risk Assessment

4.0 Recommendations

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Appendix B Topographical Survey

Appendix C Proposed Site Layout

Appendix D Phase 12 Drainage Layout & Calculations

1.0 INTRODUCTION

1.1 TERMS OF REFERENCE

1.1.1 BSP Consulting has been commissioned by Cawrey Limited to prepare a Flood Risk Statement for Phase 13 of the development at Groby Road, Ratby.

1.1.2 A site visit was made in January 2008, to walk the local area and to assess the local topography, and proposed development site constraints.

1.1.3 This Flood Risk Statement has been prepared in accordance with the Department for Communities and Local Government (DCLG) publication 'Planning Policy Statement 25 (PPS25) Development and Flood Risk'.

1.1.4 This report has been produced on behalf of the client, Cawrey Ltd, and no responsibility is accepted to any third party for all or any part. This report should not be relied upon or transferred to any other parties without the express written authorisation of BSP Consulting. If any unauthorised third party comes into possession of this report, they rely on it at their own risk and the authors owe them no duty of care or skill.

2.0 BACKGROUND INFORMATION

2.1 SITE LOCATION, DESCRIPTION AND DETAILS

2.1.1 The site occupies an area of approximately 2.2 ha (including the Medical Centre & Day Nursery) and is located to the south east of Groby Road, Ratby at OS GR 451678,306113. The site is currently undeveloped and occupied by grass fields. Existing residential development is located to the west of the site, construction works are currently underway on a previous phase of residential development to the south of the site (known as Phase 12). The M1 corridor forms the eastern boundary of the site. A site location Plan is included as Appendix A.

2.1.2 A topographical survey of the site has been carried out and is included as Appendix B. Site levels within the development area fall from a maximum of 101m AOD in the north west to a 91m AOD in the south east. Levels continue to fall away to the south of the site to approximately 82m AOD to the south of the Phase 12 development.

3.0 FLOOD RISK ASSESSMENT

3.1 DEVELOPMENT DESCRIPTION AND PLANNING CONTEXT

3.1.1 The current development proposals are for the development of the site for approximately 56 residential dwellings, including a Day Nursery and Medical Centre. The proposed development layout plan is included as Appendix C.

3.1.2 In accordance with PPS 25, the proposed development falls under the More Vulnerable category in terms of flood risk.

3.2 DEFINITION OF THE FLOOD HAZARD

3.2.1 The potential sources of flooding in the vicinity of the site are as detailed below:

3.2.2 Water courses

3.2.2.1 The Rothley Brook flows in a easterly direction approximately 1km to the south of the site. Inspection of the EA's indicative flood map for the area confirms the site to be outside of the flood risk area for this watercourse. As such this watercourse is not considered to present any flood risk to the proposed development.

3.2.3 Site Drainage

3.2.3.1 The site is currently undeveloped and as such there is not thought to be any existing drainage systems on the site. The Phase 12 development to the south of the site is served by an adopted drainage system, which discharges at a restricted rate to a minor watercourse that is a tributary of the Rothley Brook.

3.2.3.2 Given that levels fall approximately 9m across the Phase 12 site, any localised flooding from the existing drainage system would not present any flood risk to the proposed Phase 13 development.

3.3 PROBABILITY

3.3.1 The Environment Agency indicative flood map shown in Figure 3.1 below indicates that the site is outside the area that would be at risk of flooding for a 1% probability flood event. This map shows the indicative extent of the natural floodplain, if there were no flood defences or certain other manmade structures and channel improvements.

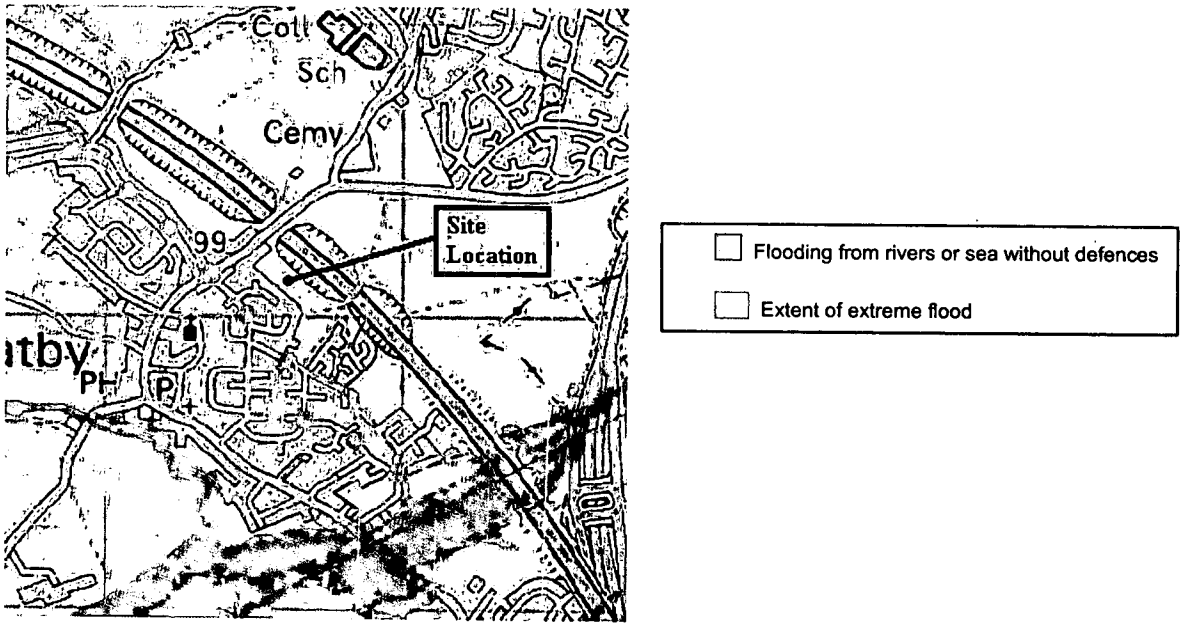


Figure 3.1 – EA Indicative flood map

3.3.2 In accordance with PPS 25, the site should be classified as lying within Flood Zone 1, Low Probability, having a less than 1:1000 (<0.1%) annual probability of river or sea flooding in any year.

3.4 CLIMATE CHANGE

3.4.1 Climate change is recognised as a factor for consideration in terms of its effects on flood risk. This issue affects the local catchment from fluvial sources in as much as peak rainfall intensity is predicted to increase by up to 30% over the next 100 years.

3.4.2 The proposed drainage system should be tested with a factor of 1.3 applied to the rainfall rate to account for the possible future effects of Climate Change.

3.5 DETAILED DEVELOPMENT PROPOSALS

3.5.1 The proposed development and vulnerability classification are discussed in Section 3.1 above.

3.5.2 PPS 25 states that all development categories are acceptable in Flood Zone 1.

3.6 FLOOD RISK MANAGEMENT MEASURES

3.6.1 Safe Access / Egress

3.6.1.1 As the site is located within flood zone 1 safe access/egress to and from the site will be maintained in times of flood from Groby Road and Ferndale Drive.

3.6.2 Proposed Site Drainage & SUDs Techniques

3.6.2.1 The current development proposals are at a planning stage and as such a detailed drainage layout cannot be provided. However, based upon the information available to date, we are able to comment as follows:

3.6.2.2 As discussed in Section 3.2.3, the Phase 12 development to the south of the site is served by an adopted drainage system. A layout drawing and calculations for the existing Phase 12 development are included within Appendix D. The Phase 12 drainage system has been designed to accept a discharge of 100 l/s from the proposed Phase 13 development into manhole S1. Attenuation is provided within the Phase 12 system and this consists of both oversized pipes and a balancing pond. This attenuation system discharges at an equivalent greenfield run off rate of 5 l/s/ha (55l/s) and provides storage for the 1:100 year event.

3.6.2.3 Although this system has been designed to accept a discharge of 100 l/s, additional attenuation will still be required to serve the Phase 13 development. Preliminary calculations have indicated that approximately 200m^3 of storage will be required and at this stage is envisaged that this will be provided within oversized pipes located beneath the proposed highway.

3.6.2.4 The proposed drainage and attenuation system should be designed such that no flooding occurs in the 1:30 year storm and that no flooding of buildings occurs in the 1:100 year climate change storm. All above ground flood water should remain on site for all storms up to the 1:100 year climate change return period. The proposed drainage system should be checked with a factor of 1.3 applied to the rainfall rate to allow for the future effects of climate change.

3.6.2.5 It is currently proposed that SUDs in the form of 'green roofs' will be utilised on parts of the site. These sustainable drainage systems will assist in reducing the speed of the surface water run-off and peak flood flow rate from the development. The design of these 'green roofs' and how they will be incorporated into the proposed drainage system will be subject to detailed design works at a later stage.

3.7 OFF SITE IMPACTS

3.7.1 The proposed development drainage discharge will be restricted to a rate which is equivalent to the sites greenfield runoff, as discussed in section 3.6.2 above. Therefore the proposed development will not increase or exacerbate any flooding problems adjacent to or downstream of the site.

3.7.2 As the proposed development is located within flood zone 1, no functional flood plain will be lost as part of the re-development proposals.

3.8 RESIDUAL RISKS

3.8.1 The investigations carried out as part of this flood risk assessment and flood risk management measures proposed have demonstrated that the development will be safe, without increasing flood risk elsewhere. No further residual flood risks will affect the proposed development.

4.0 RECOMMENDATIONS

4.1 The following recommendations are made to ensure flood risk at this site is minimised:

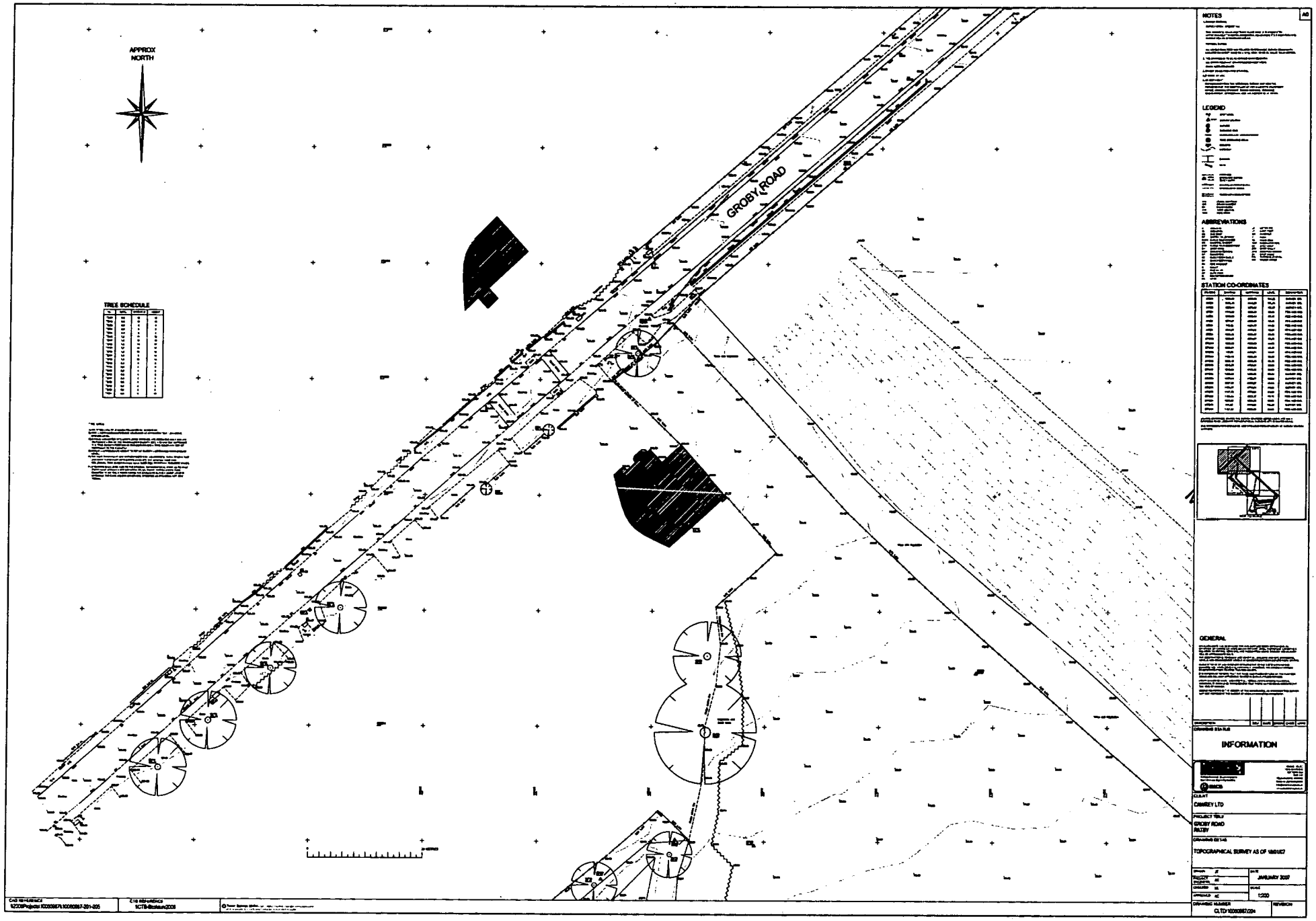
- The proposed drainage and attenuation system should be designed such that no flooding occurs in the 1:30 year storm and that no flooding of buildings occurs in the 1:100 year climate change storm.
- The proposed drainage system should be tested with a factor of 1.3 applied to the rainfall rate to account for the possible future effects of Climate Change.
- The use of SUDs should be considered during the detailed design stage to assist in reducing the surface water runoff from the development.

Disclaimer
We would note that all comments made in this report are based on the sources stated in Section 1.1. This report and its recommendations are intended for the use of Cawrey Ltd for the above site only.

Appendix A
Site Location Plan



Appendix B
Topographical Survey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LEGEND
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STATION CO-ORDINATES
GENERAL
INFORMATION
CLIENT
CANREY LTD
PROJECT TITLE
GROBY ROAD
RATBY
DRAWING DETAIL
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JANUARY 2007
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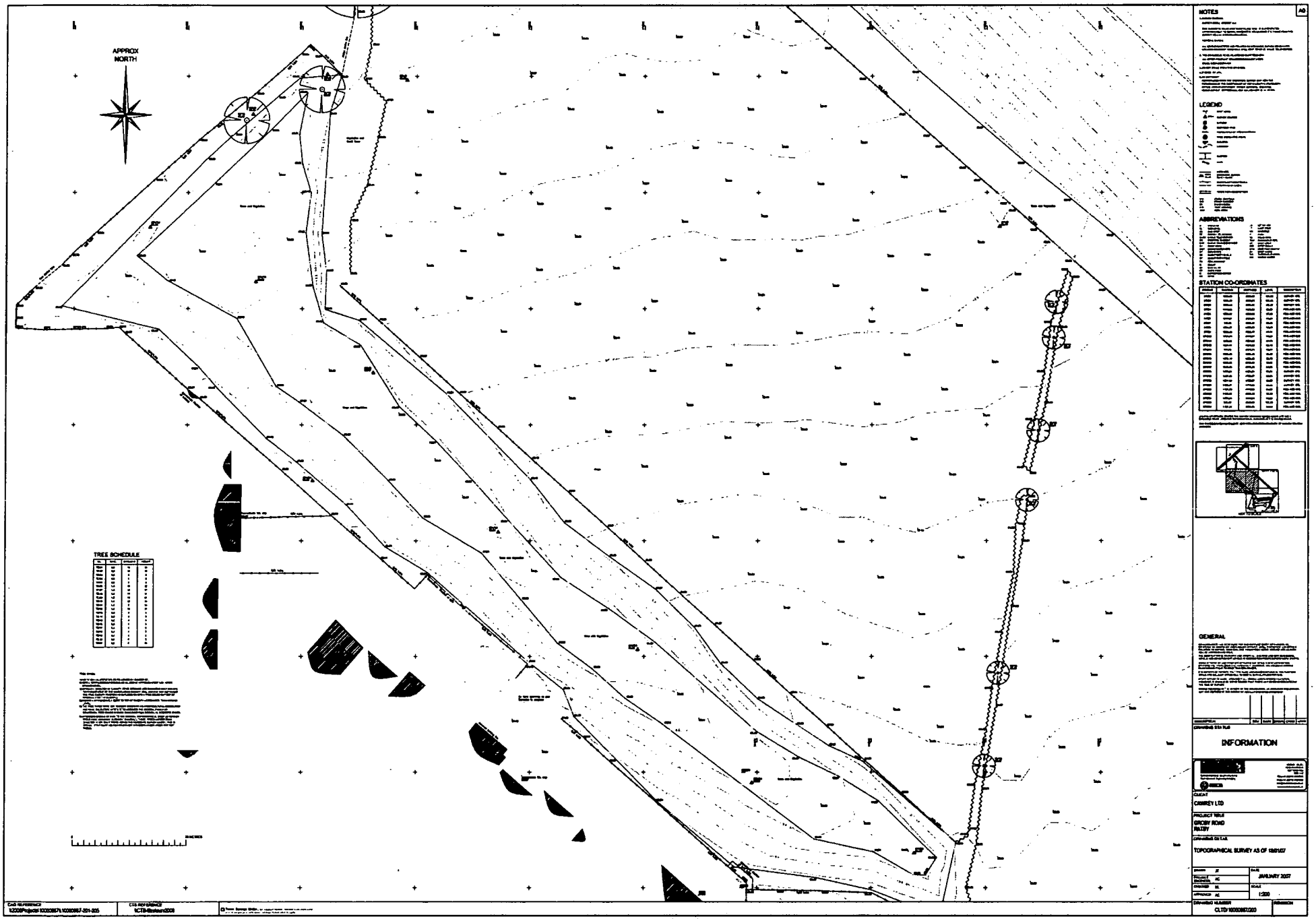
DRAWING NUMBER
CLTD/10000987/204
REVISION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RATBY
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JANUARY 2007
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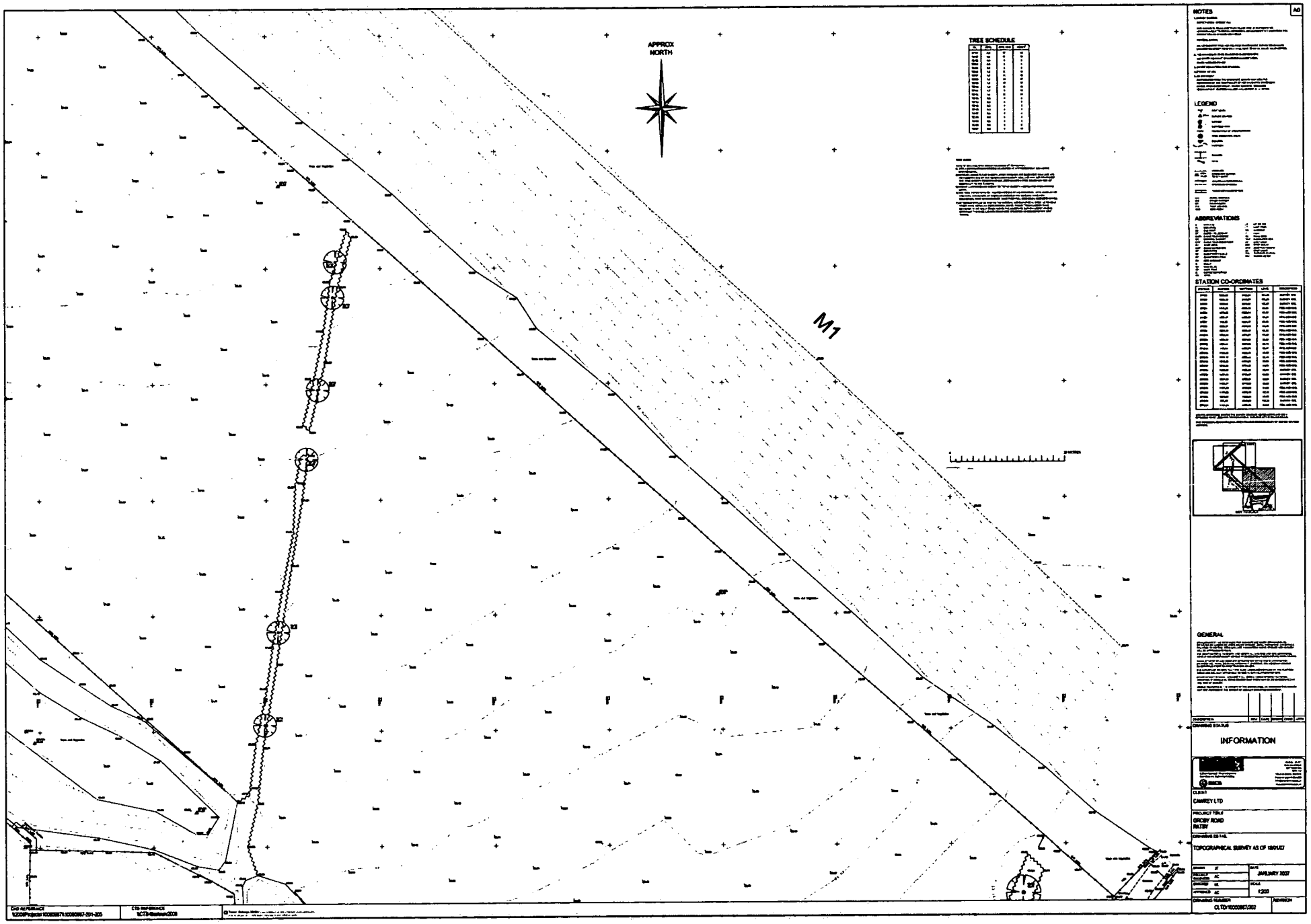
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STATION CO-ORDINATES
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GROBY ROAD
RATBY
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JANUARY 2007
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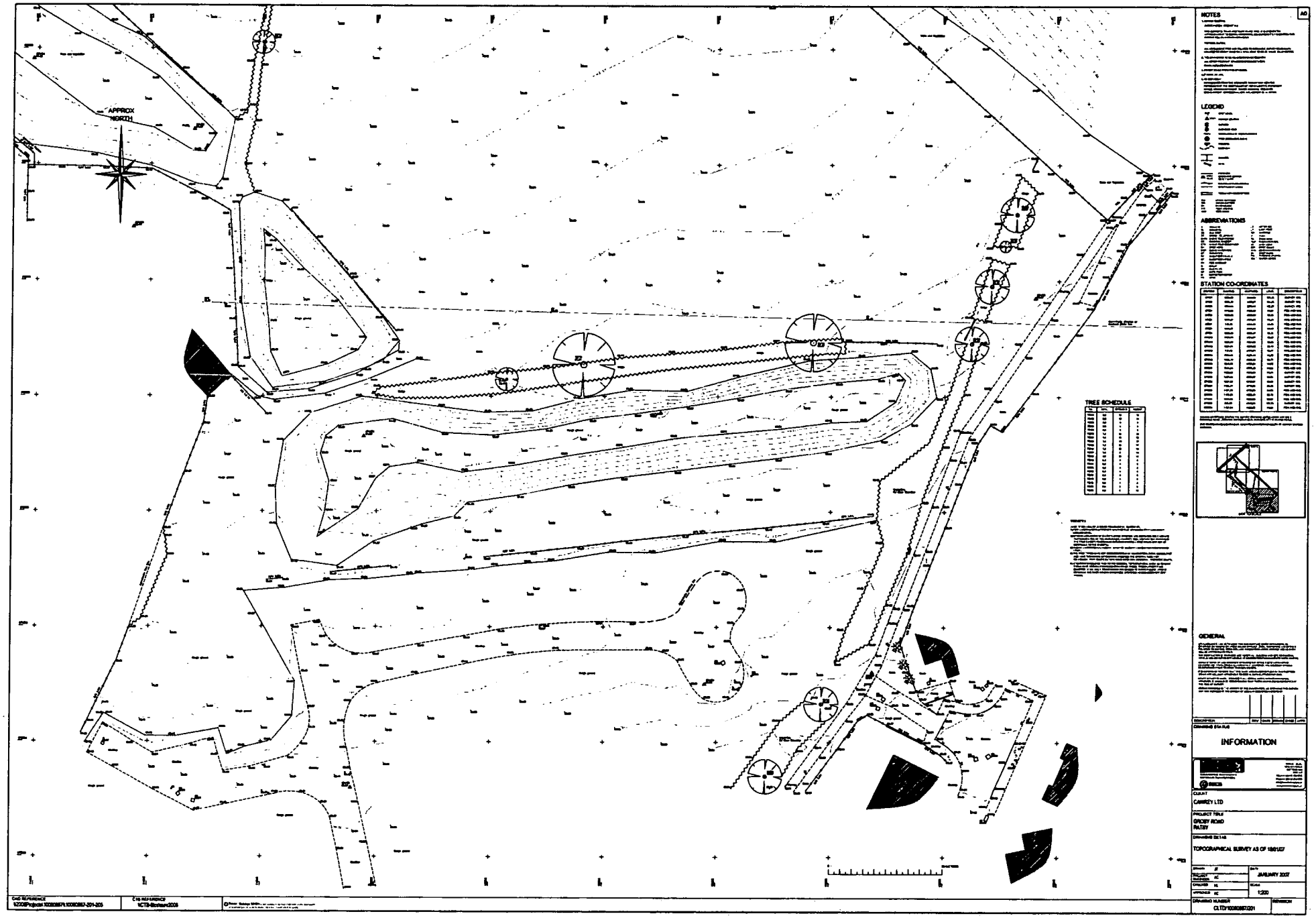
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RATBY
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JANUARY 2007
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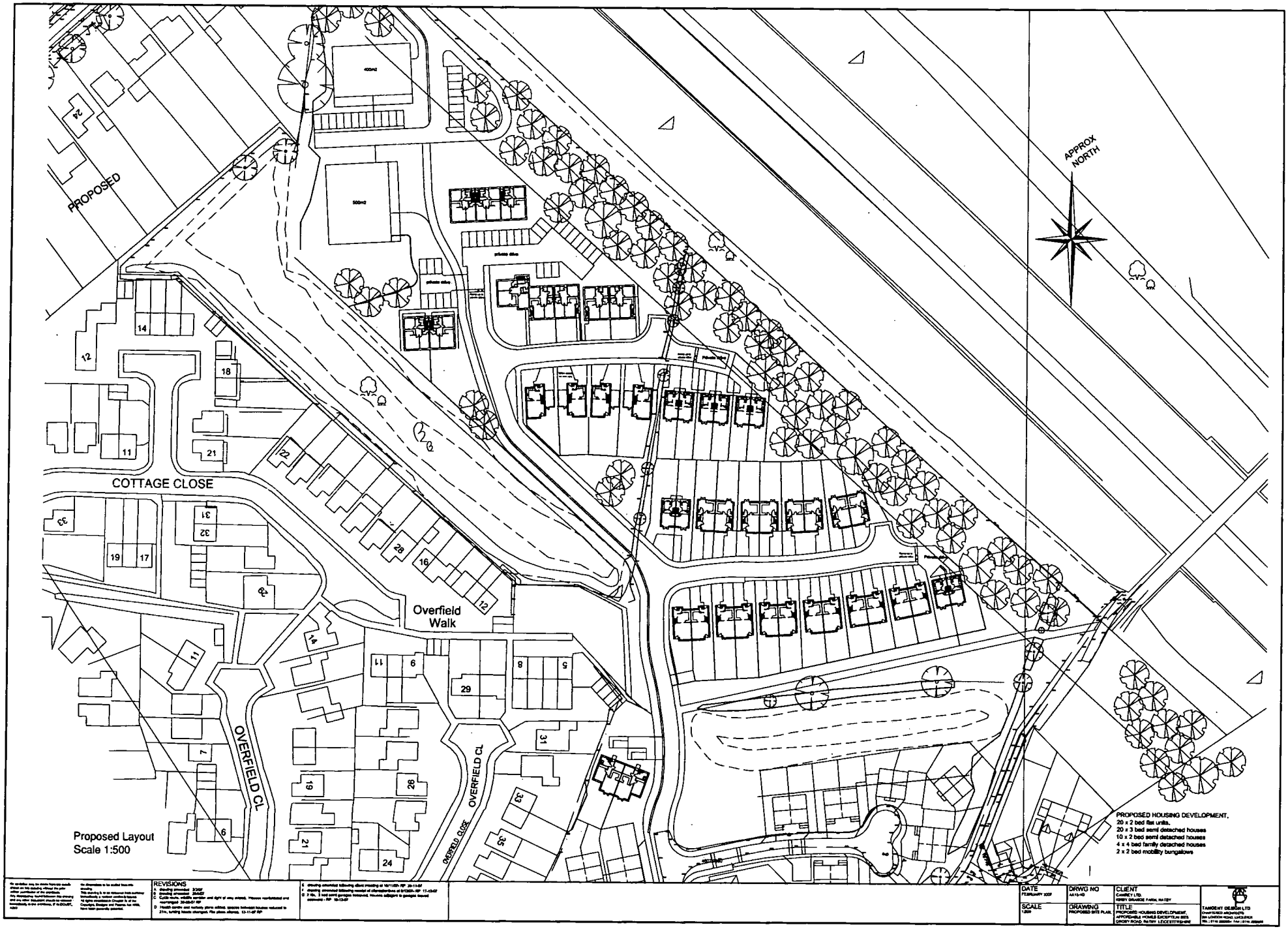
Appendix C
Proposed Site Layout


PROPOSED
APPROX NORTH
COTTAGE CLOSE
Overfield Walk
OVERFIELD CL
OVERFIELD CL
OVERFIELD CLOSE
PROPOSED HOUSING DEVELOPMENT,
20 x 2 bed flat units,
20 x 3 bed semi detached houses
10 x 2 bed semi detached houses
4 x 4 bed family detached houses
2 x 2 bed mobility bungalows
Proposed Layout
Scale 1:500
REVISIONS
DATE
FEBRUARY 2007
DRWG NO
AA13-10
CLIENT
SCALE
1:200
DRAWING
PROPOSED SITE PLAN
TITLE
PROPOSED HOUSING DEVELOPMENT
TANGENT DESIGN LTD

Appendix D
Phase 12 Drainage Layout & Calculations

bsp consulting

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Surface Water Drainage Calculations for

Proposed Development

at Phase 12,

Ferndale Drive, Ratby.

Client: Cawrey Limited

Project No. 03205

October 2003

Rev A – Feb '04

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Nottingham Office: 12 Oxford Street, Nottingham NG1 5BG
Breakwell Sumner Partnership Ltd. Registered Office: 12 Oxford Street, Nottingham NG1 5BG.
Registered in England and Wales No. 3669014

1.0 Site Layout

1.1 A schematic site layout is shown in Appendix 1.

1.2 The system has been modelled to be put forward for adoption by Severn Trent Water.

2.0 Analysis

2.1 Pipe sizes have been formulated using the Modified Rational method for a 1 in 2 year rainfall event, with rainfall intensity limited to 50 mm per hour. Results are shown in Appendix 2. Unrestricted discharge has been assumed for all runs excluding the end run to the head wall. At the point of discharge a restriction to 55 l/s has been used (5 l/s/ha as requested by the Environment agency see letter in Appendix 1).

2.2 There is a proposed development for 50 units at the head of the run a flow of 100 l/s has been allowed for, therefore, attenuation is to be provided at the point of connection.

2.3 Simulation analyses have been undertaken for the following rainfall events (with $C_v = 0.75$):

2.3.1 2 year return period – 15 minute duration (Results are shown in Appendix 3)

2.3.2 2 year return period – 30 minute duration (Results are shown in Appendix 3)

2.3.3 30 year return period – 15 minute duration (Results are shown in Appendix 4)

2.3.4 30 year return period – 30 minute duration (Results are shown in Appendix 4)

2.3.5 100 year return period – 15 minute duration (Results are shown in Appendix 5)

2.3.6 100 year return period – 30 minute duration (Results are shown in Appendix 5)

3.0 Discussion of Results

3.1 The results, in Appendix 2 indicate no surcharging within the system for a 1 in 2 year rainfall event.

3.2 The results in Appendix 3 indicate no flooding in any of the runs for a 1 in 30 year rainfall event.

3.3 The results in Appendix 4 indicate no flooding in any of the runs for a 1 in 100 year rainfall event.

4.0 Layout Plan

4.1 The proposed drainage layout drawing is included (in Appendices 5)

5.0 Drainage Area Plan

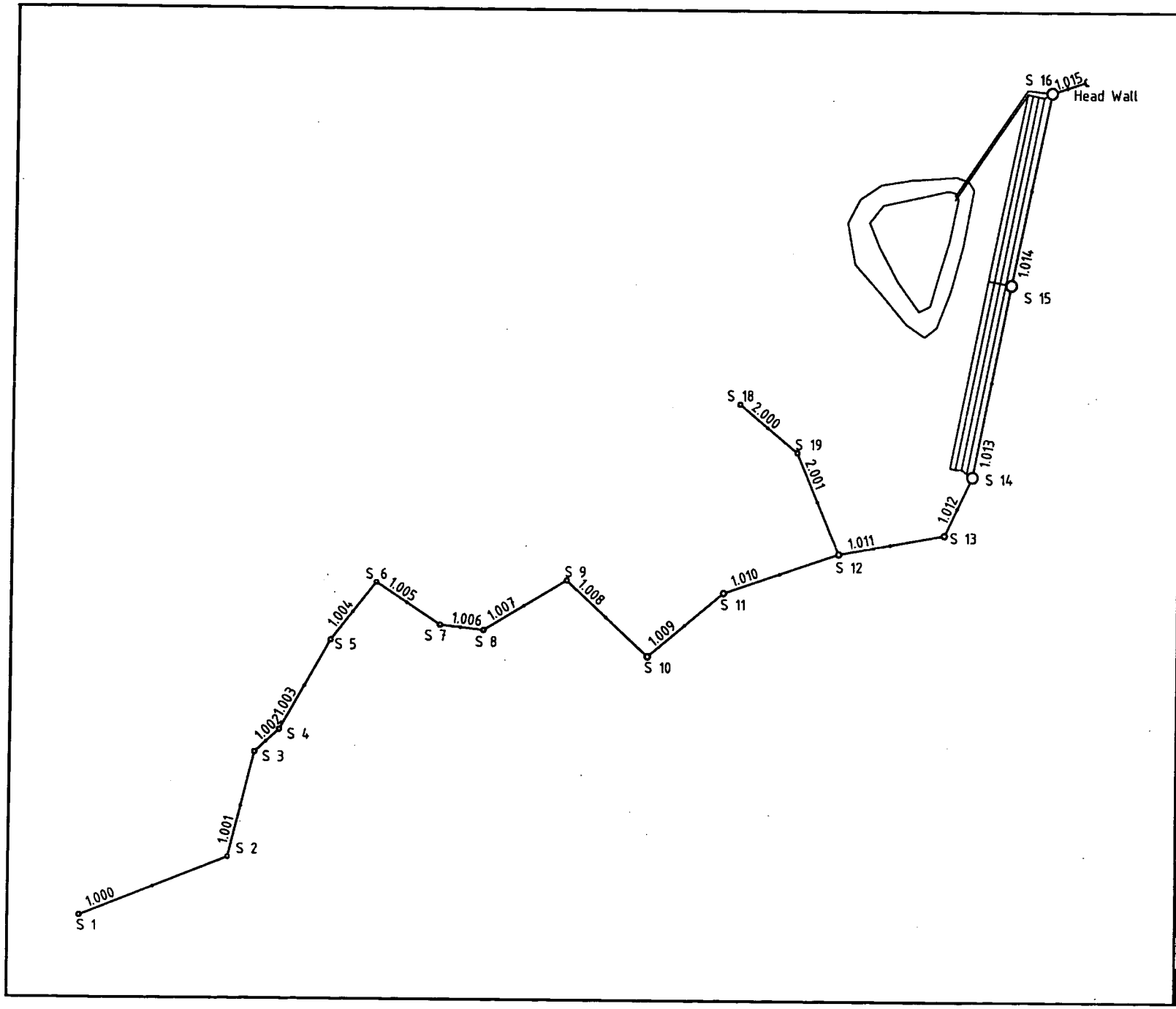
5.1 The drainage area plan is included (in Appendices 6)

6.0 Summary

6.1 The results (in Appendices 3 to 5) comply with the requirements of Sewers For Adoption 5th Edition and the approval letter from STW is within Appendices 7.

Appendix 1

Schematic Layout



General Notes

1. DO NOT SCALE.

2. This drawing is to be read in conjunction with all other relevant drawings.

3. Should there be any conflict between the details indicated on this drawing and those indicated on other drawings the Engineer should be informed PRIOR to construction on site.

4. Until technical approval has been obtained from the relevant Authority, it should be understood that all drawings issued are Preliminary and NOT for construction. Should the contractor commence site work prior to such approval being given, it is entirely at his own risk.

5. All dimensions are in millimetres unless otherwise stated.

Rev	Description	Date	Drawn	Auth.

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Drawing Status: FOR APPROVAL

Client: Cawrey Ltd

Project Title: Phase 12, Ferndale drive, Ratby.

Drawing Title: WinDes pipe run layout

Drawn By: CD	Checked By:	Scale: NTS	
Project Engineer: CD	Approved By:	Date: 22/10/2003	
Drawing Number: 03205/Layout		Revision: -	

S104 PH. II + III

Fax

ENVIRONMENT AGENCY

To	Mr Chris Evans	From	P BONA
Company		Date	13 July 2001
Fax	0116 288 3063	Pages	1 of 1

PHASE II DEVELOPMENT, FERNDALE DRIVE, RATBY

Further to our telephone conversation earlier today regarding the above. I wish to confirm that a maximum rate of 5 litres/s/ha should be used for calculating the allowable discharge from the new phase of the development into the receiving watercourse. This is the same figure as that used for the previous phases of the development.

Please note that the flow attenuation facility provided for the new phase should be designed to store up to the 1 in 100 year storm event.

Best regards

P BONA
Development Control Officer

Direct dial 0115 846 3653
Direct fax 0115 846 3681

If this fax is incomplete or illegible, please contact P BONA

Environment Agency
Trentside Offices, Scarrington Road, West Bridgford, Nottingham, NG2 5FA
Tel. 0115 945 5722 Fax 0115 981 7743

Appendix 2

Simulation Analysis

2 year return period – 15 minute storm duration

&

2 year return period – 30 minute storm duration

Summary of Results

Return Period (years)	2	Analysis Time Step	Fine
Storm Duration (mins)	15	DVD Status	OFF
Profile Type	Winter	Inertia Status	OFF
Margin for Flood Risk warning (mm)	300		

PN	Water Lev. (m)	Surcharged Depth (m)	Flooded Vol (m³)	Flow/ Capacity	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	89.606	-0.134	0.000	0.59	0	100	O K
1.001	88.542	-0.117	0.000	0.69	0	102	O K
1.002	88.044	-0.031	0.000	0.94	0	102	O K
1.003	87.782	-0.105	0.000	0.75	0	128	O K
1.004	87.057	-0.106	0.000	0.74	0	128	O K
1.005	86.477	-0.141	0.000	0.55	0	131	O K
1.006	85.418	-0.115	0.000	0.70	0	131	O K
1.007	84.842	-0.130	0.000	0.61	0	144	O K
1.008	83.543	-0.129	0.000	0.62	0	165	O K
1.009	81.637	-0.135	0.000	0.81	0	351	O K
1.010	81.561	-0.024	0.000	0.79	0	347	O K
2.000	82.150	-0.040	0.000	0.87	0	18	O K
2.001	81.750	-0.144	0.000	0.27	0	18	O K
1.011	81.463	0.069	0.000	1.01	0	351	SURCH'ED
1.012	81.340	0.046	0.000	1.06	0	369	SURCH'ED
1.013	80.465	-0.769	0.000	0.07	0	366	O K
1.014	80.462	-0.591	0.000	0.03	0	159	O K
1.015	80.461	-0.811	0.000	0.16	0	55	O K

(c)1982-2006 Micro Drainage

Summary of Results

Return Period (years)	2	Analysis Time Step	Fine
Storm Duration (mins)	30	DVD Status	OFF
Profile Type	Winter	Inertia Status	OFF
Margin for Flood Risk warning (mm)	300		

PN	Water Lev. (m)	Surcharged Depth (m)	Flooded Vol (m³)	Flow/ Capacity	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	89.606	-0.134	0.000	0.59	0	100	O K
1.001	88.541	-0.118	0.000	0.68	0	102	O K
1.002	88.044	-0.031	0.000	0.94	0	102	O K
1.003	87.777	-0.110	0.000	0.73	0	124	O K
1.004	87.052	-0.111	0.000	0.72	0	124	O K
1.005	86.473	-0.145	0.000	0.53	0	126	O K
1.006	85.413	-0.120	0.000	0.67	0	126	O K
1.007	84.837	-0.135	0.000	0.58	0	137	O K
1.008	83.537	-0.135	0.000	0.58	0	155	O K
1.009	81.560	-0.212	0.000	0.74	0	322	O K
1.010	81.410	-0.175	0.000	0.75	0	329	O K
2.000	82.131	-0.059	0.000	0.68	0	14	O K
2.001	81.739	-0.155	0.000	0.21	0	14	O K
1.011	81.327	-0.067	0.000	0.96	0	334	O K
1.012	81.237	-0.057	0.000	1.00	0	347	O K
1.013	80.524	-0.710	0.000	0.07	0	346	O K
1.014	80.522	-0.531	0.000	0.02	0	122	O K
1.015	80.520	0.048	0.000	0.16	0	55	SURCH'ED

(c)1982-2006 Micro Drainage

Appendix 3

Simulation Analysis

30 year return period – 15 minute storm duration

&

30 year return period – 30 minute storm duration

Summary of Results

Return Period (years)	30	Analysis Time Step	Fine
Storm Duration (mins)	15	DVD Status	OFF
Profile Type	Winter	Inertia Status	OFF
Margin for Flood Risk warning (mm)	300		

PN	Water Lev. (m)	Surcharged Depth (m)	Flooded Vol (m³)	Flow/ Capacity	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	89.606	-0.134	0.000	0.59	0	100	O K
1.001	88.546	-0.113	0.000	0.71	0	106	O K
1.002	88.044	-0.031	0.000	0.97	0	106	O K
1.003	87.824	-0.063	0.000	0.98	0	168	O K
1.004	87.098	-0.065	0.000	0.97	0	168	O K
1.005	86.509	-0.109	0.000	0.73	0	174	O K
1.006	85.620	0.087	0.000	0.91	0	171	SURCH'ED
1.007	85.196	0.224	0.000	0.82	0	194	SURCH'ED
1.008	84.335	0.663	0.000	0.87	0	232	SURCH'ED
1.009	82.692	1.120	0.000	1.39	0	602	SURCH'ED
1.010	82.529	0.944	0.000	1.43	0	627	SURCH'ED
2.000	82.879	0.689	0.000	1.45	0	30	SURCH'ED
2.001	82.234	0.340	0.000	0.47	0	31	SURCH'ED
1.011	82.132	0.738	0.000	1.88	0	654	SURCH'ED
1.012	81.701	0.407	0.000	2.00	0	696	SURCH'ED
1.013	80.618	-0.616	0.000	0.14	0	690	O K
1.014	80.615	-0.438	0.000	0.05	0	272	O K
1.015	80.613	0.141	0.000	0.16	0	55	SURCH'ED

(c)1982-2006 Micro Drainage

Summary of Results

Return Period (years)	30	Analysis Time Step	Fine
Storm Duration (mins)	30	DVD Status	OFF
Profile Type	Winter	Inertia Status	OFF
Margin for Flood Risk warning (mm)	300		

PN	Water Lev. (m)	Surcharged Depth (m)	Flooded Vol (m³)	Flow/ Capacity	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	89.606	-0.134	0.000	0.59	0	100	O K
1.001	88.544	-0.115	0.000	0.70	0	104	O K
1.002	88.044	-0.031	0.000	0.96	0	104	O K
1.003	87.806	-0.081	0.000	0.88	0	151	O K
1.004	87.080	-0.083	0.000	0.87	0	150	O K
1.005	86.495	-0.123	0.000	0 65	0	155	O K
1.006	85.442	-0.091	0.000	0 83	0	155	O K
1 007	84.869	-0.103	0.000	0.76	0	178	O K
1.008	83.708	0.036	0 000	0.80	0	214	SURCH'ED
1.009	82.508	0.736	0.000	1.23	0	533	SURCH'ED
1.010	82.228	0.643	0.000	1.27	0	555	SURCH'ED
2.000	82.428	0.238	0.000	1.23	0	25	SURCH'ED
2.001	81.994	0.100	0.000	0.40	0	26	SURCH'ED
1.011	81.922	0.528	0.000	1.66	0	577	SURCH'ED
1.012	81.587	0.293	0.000	1.77	0	615	SURCH'ED
1.013	80.726	-0.508	0.000	0.12	0	613	O K
1.014	80.723	-0.330	0.000	0 04	0	183	O K
1.015	80.721	0.249	0.000	0.16	0	55	SURCH'ED

(c)1982-2006 Micro Drainage

Appendix 4

Simulation Analysis

100 year return period – 15 minute storm duration

&

100 year return period – 30 minute storm duration

12 Oxford Street	Phase 12
Nottingham	Ferndale Drive
NG1 5BG	Ratby
Date Feb-04	Designed By CD
File No MADD 02-02-04.SIM	Checked By
Elstree Computing Ltd	Simulation W.10.2

Summary of Results

Return Period (years)	100	Analysis Time Step	Fine
Storm Duration (mins)	15	DVD Status	OFF
Profile Type	Winter	Inertia Status	OFF
Margin for Flood Risk warning (mm)	300		

PN	Water Lev. (m)	Surcharged Depth (m)	Flooded Vol (m³)	Flow/ Capacity	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	89.606	-0.134	0.000	0.59	0	100	O K
1.001	88.548	-0.111	0.000	0.72	0	108	O K
1.002	88.239	0.164	0.000	1.04	0	113	SURCH'ED
1.003	88.077	0.190	0.000	1.06	0	180	SURCH'ED
1.004	87.388	0.225	0.000	1.01	0	175	SURCH'ED
1.005	86.912	0.294	0.000	0.75	0	179	SURCH'ED
1.006	86.417	0.884	0.000	0.99	0	187	SURCH'ED
1.007	86.028	1.056	0.000	0.87	0	205	SURCH'ED
1.008	85.198	1.526	0.000	0.90	0	240	SURCH'ED
1.009	83.636	1.864	0.000	1.66	0	719	SURCH'ED
1.010	83.116	1.531	0.000	1.71	0	750	SURCH'ED
2.000	83.716	1.526	0.000	1.83	0	38	SURCH'ED
2.001	82.699	0.805	0.000	0.68	0	39	SURCH'ED
1.011	82.544	1.150	0.000	2.26	0	785	SURCH'ED
1.012	81.925	0.631	0.000	2.42	0	838	SURCH'ED
1.013	80.716	-0.518	0.000	0.17	0	831	O K
1.014	80.713	-0.340	0.000	0.06	0	295	O K
1.015	80.711	0.239	0.000	0.16	0	55	SURCH'ED

(c)1982-2006 Micro Drainage

Summary of Results

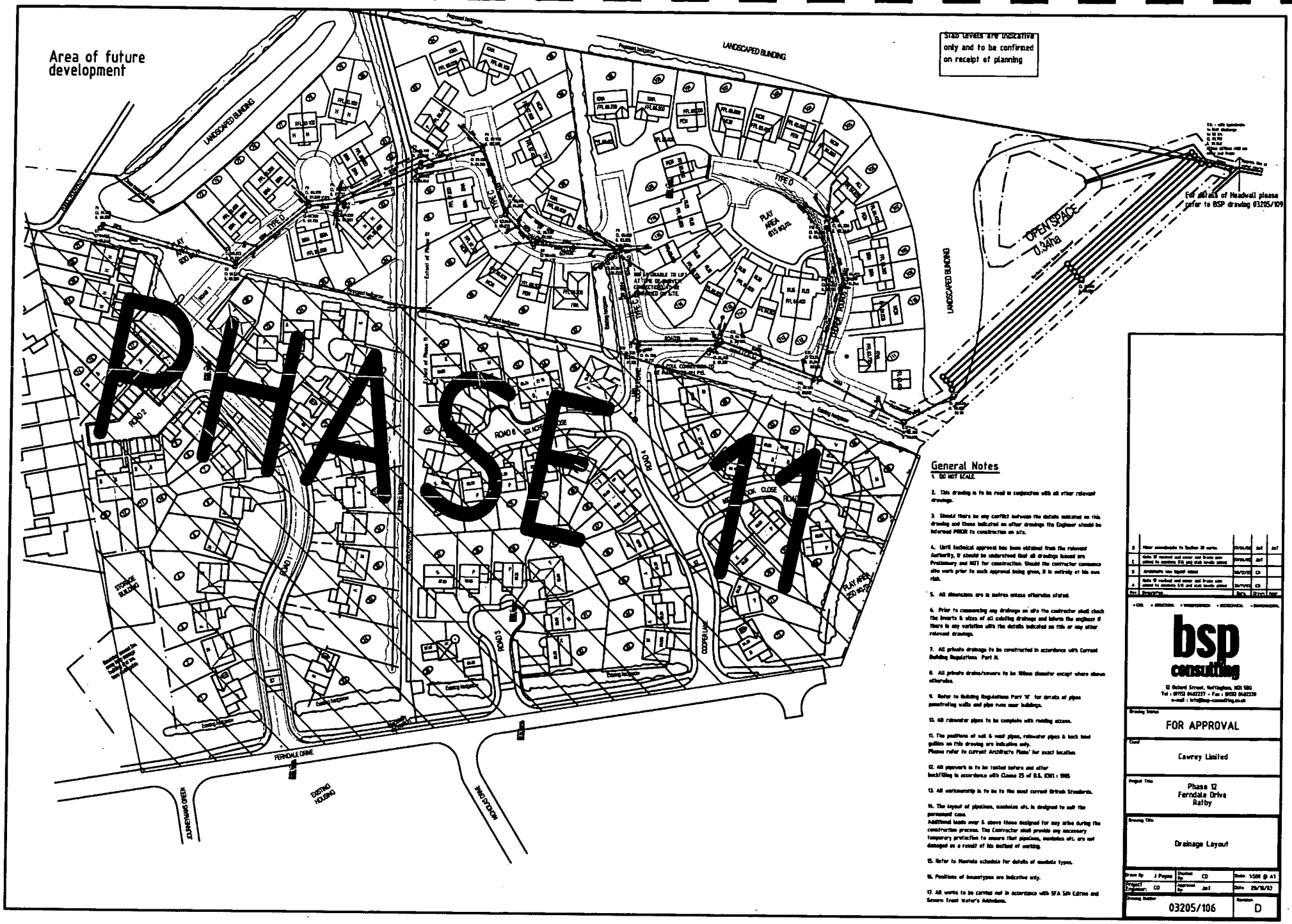
Return Period (years)	100	Analysis Time Step	Fine
Storm Duration (mins)	30	DVD Status	OFF
Profile Type	Winter	Inertia Status	OFF
Margin for Flood Risk warning (mm)	300		

PN	Water Lev. (m)	Surcharged Depth (m)	Flooded Vol (m³)	Flow/ Capacity	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	89.606	-0.134	0.000	0.59	0	100	O K
1.001	88.546	-0.113	0.000	0.71	0	106	O K
1.002	88.044	-0.031	0.000	0.97	0	106	O K
1.003	87.823	-0.064	0.000	0.97	0	166	O K
1.004	87.097	-0.066	0.000	0.96	0	166	O K
1.005	86.508	-0.110	0.000	0.72	0	172	O K
1.006	85.880	0.347	0.000	0.88	0	166	SURCH'ED
1.007	85.455	0.483	0.000	0.82	0	192	SURCH'ED
1.008	84.603	0.931	0.000	0.87	0	233	SURCH'ED
1.009	83.158	1.386	0.000	1.50	0	648	SURCH'ED
1.010	82.737	1.152	0.000	1.54	0	676	SURCH'ED
2.000	83.108	0.918	0.000	1.54	0	32	SURCH'ED
2.001	82.396	0.502	0.000	0.49	0	32	SURCH'ED
1.011	82.279	0.885	0.000	2.04	0	706	SURCH'ED
1.012	81.779	0.485	0.000	2.17	0	755	SURCH'ED
1.013	80.860	-0.374	0.000	0.15	0	750	O K
1.014	80.855	-0.198	0.000	0.04	0	208	O K
1.015	80.851	0.379	0.000	0.16	0	55	SURCH'ED

(c)1982-2006 Micro Drainage

Appendix 5

Drainage Layout Plan



General Notes

1. DO NOT SCALE.
2. This drawing is to be read in conjunction with all other relevant drawings.
3. Should there be any conflict between the details indicated on this drawing and those indicated on other drawings the Engineer should be informed PRIOR to construction on site.
4. Until technical approval has been obtained from the relevant Authority, it should be understood that all drawings issued are Preliminary and NOT for construction. Should the contractor commence site work prior to such approval being given, it is entirely at his own risk.
5. All dimensions are in metres unless otherwise stated.
6. Prior to commencing any drainage on site the contractor shall check the inverts & sizes of all existing drainage and inform the engineer if there is any variation with the details indicated on this or any other relevant drawings.
7. All private drainage to be constructed in accordance with Current Building Regulations Part H.
8. All private drains/sewers to be 100mm diameter except where shown otherwise.
9. Refer to Building Regulations Part 'A' for details of pipes penetrating walls and pipe runs near buildings.
10. All rainwater pipes to be complete with rodding access.
11. The positions of soil & vent pipes, rainwater pipes & back inlet gullies on this drawing are indicative only. Please refer to current Architect's Plans for exact location.
12. All pipework is to be tested before and after backfilling in accordance with Clause 25 of B.S. 8301 : 1985
13. All workmanship is to be to the most current British Standards.
14. The layout of pipelines, manholes etc. is designed to suit the permanent case. Additional loads over & above those designed for may arise during the construction process. The Contractor shall provide any necessary temporary protection to ensure that pipelines, manholes etc. are not damaged as a result of his method of working.
15. Refer to Manhole schedule for details of manhole types.
16. Positions of housetypes are indicative only.
17. All works to be carried out in accordance with SFA 5th Edition and Severn Trent Water's Addendum.

Rev	Description	Drn.	Chkd.	Appr.
D	Minor amendments to Section 38 works.	DYH/AM	JmT	JmT
C	Note 10 revised and cover and frame size added to manholes S16 and slab levels added	DYH/AM	JmT	
B	Amendments now layout issued	DH/GT/RC	CD	
A	Note 10 revised and cover and frame size added to manholes S16 and slab levels added	DH/GT/RC	CD	

bsp consulting
• CIVIL • STRUCTURAL • TRANSPORTATION • GEOTECHNICAL • ENVIRONMENTAL
12 Oxford Street, Nottingham, NG1 5BG
Tel : (0115) 9402227 - Fax : (0115) 9402229
e-mail : hq@bsp-consulting.co.uk

Drawing Status: FOR APPROVAL

Client: Cawrey Limited

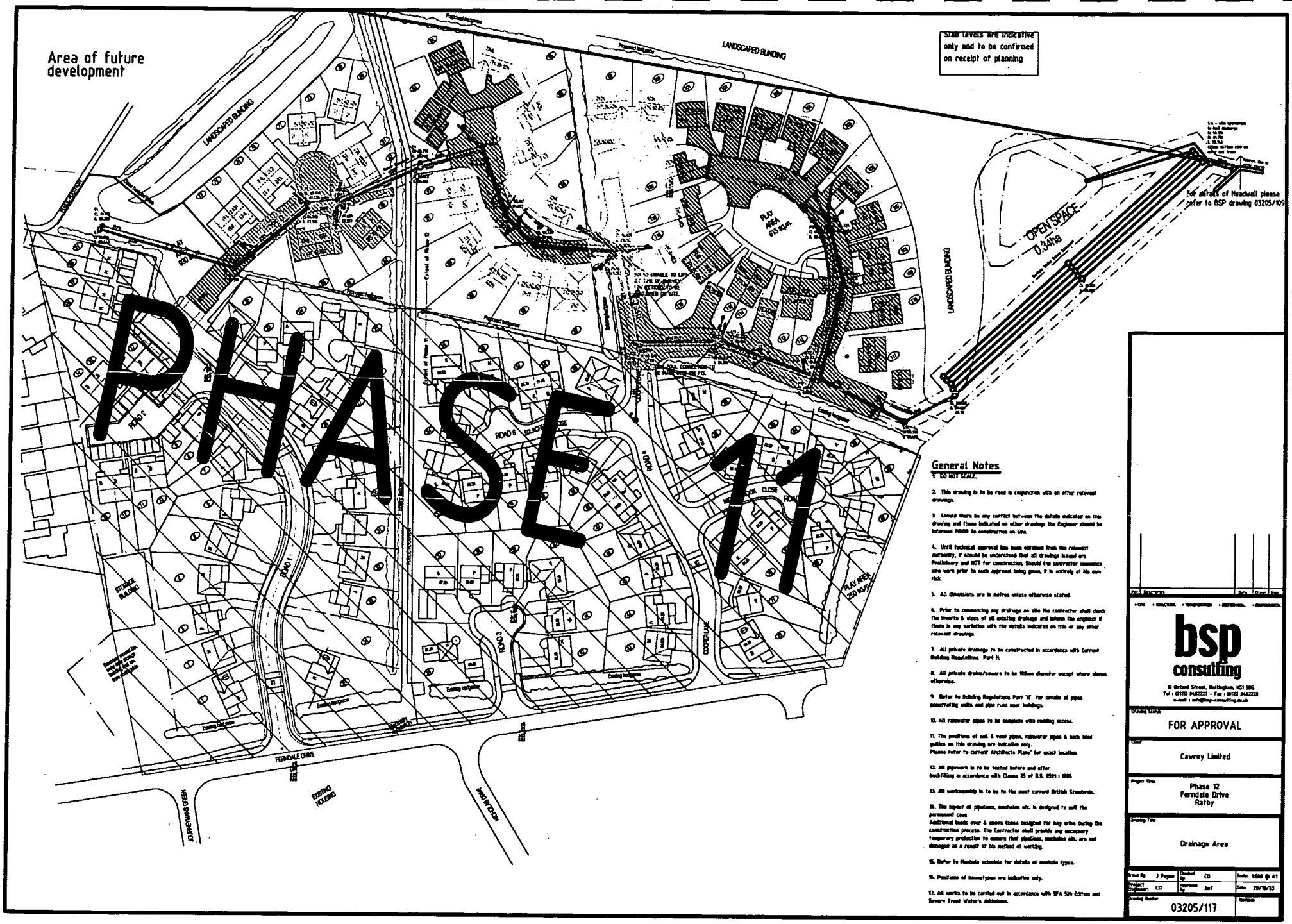
Project Title: Phase 12 Ferndale Drive Ratby

Drawing Title: Drainage Layout

Drawn By: J Payne	Checked By: CD	Date: 1:500 @ A1	
Project Engineer: CD	Approved By: JmT	Date: 29/10/03	
Drawing Number: 03205/106		Revision: D	

Appendix 6

Drainage Area Plan



General Notes

1. DO NOT SCALE.

2. This drawing is to be read in conjunction with all other relevant drawings.

3. Should there be any conflict between the details indicated on this drawing and those indicated on other drawings the Engineer should be informed PRIOR to construction on site.

4. Until technical approval has been obtained from the relevant Authority, it should be understood that all drawings issued are Preliminary and NOT for construction. Should the contractor commence site work prior to such approval being given, it is entirely at his own risk.

5. All dimensions are in metres unless otherwise stated.

6. Prior to commencing any drainage on site the contractor shall check the inverts & sizes of all existing drainage and inform the engineer if there is any variation with the details indicated on this or any other relevant drawings.

7. All private drainage is to be constructed in accordance with Current Building Regulations Part H.

8. All private drains/sewers to be 100mm diameter except where shown otherwise.

9. Refer to Building Regulations Part 'A' for details of pipes penetrating walls and pipe runs near buildings.

10. All rainwater pipes to be complete with rodding access.

11. The positions of soil & vent pipes, rainwater pipes & back inlet gullies on this drawing are indicative only.
Please refer to current Architects Plans' for exact location.

12. All pipework is to be tested before and after backfilling in accordance with Clause 15 of B.S. 8301 : 1985

13. All workmanship is to be to the most current British Standards.

14. The layout of pipelines, manholes etc. is designed to suit the permanent case.
Additional loads over & above those designed for may arise during the construction process. The Contractor shall provide any necessary temporary protection to ensure that pipelines, manholes etc. are not damaged as a result of his method of working.

15. Refer to Manhole schedule for details of manhole types.

16. Positions of basintypes are indicative only.

17. All works to be carried out in accordance with SFA 5th Edition and Severn Trent Water's Addendum.

bsp consulting
13 Oxford Street, Nottingham, NG1 5BL
Tel : (0115) 9422277 - Fax : (0115) 9422228
e-mail : info@bsp-consulting.co.uk

Drawing Status: FOR APPROVAL

Client: Cavrey Limited

Project Title: Phase 12
Ferndale Drive
Ratby

Drawing Title: Drainage Area

Drawn By	Checked By	Scale
J Payne	CD	1:500 @ A1
Project Engineer: CD	Approved By: JmF	Date: 28/10/03

Drawing Number: 03205/117

Appendix 7

Approval Letter

Severn Trent Water

SEVERN TRENT WATER Ltd
Leicester Water Centre
Gorse Hill
Leicester LE7 7GU

Tel 0121 722 4000
Fax 0116 235 5554

Direct Line 0116 234 3013
Direct Fax 0116 234 3714

Contact Mick Hinchliff
Your Ref
Our Ref mh/81058/0□/8105

Mick.hinchliff@severntrent.co.uk

20 February 2004

Mr C. Delamore,
B.S.P.Consulting.
12 Oxford Street,
Nottingham.
NG1 5BG

ited
25 FEB 2004
File

Wips No 81058

Dear Sir,

Without prejudice and subject to the completion of a Section 104 Agreement

PROPOSED AGREEMENT UNDER SECTION 104 OF WATER INDUSTRY ACT 1991 RELATING TO SEWERS AT FERNDALE DRIVE, RATBY (PHASE 12)

Thank you for your letter dated 6th February 2004 and the enclosed sewerage designs relating to the above site.
I am pleased to confirm your drainage proposals comply with our requirements for adoptable sewers.
Please note that sewer lengths F1-F3 and S1-S3 will not be included in this agreement. We are willing to inspect them if they are laid for an additional fee of £250.00. They will then form part of a future agreement.

SEWERS TO BE INCLUDED IN AGREEMENT

175 metres of foul sewer	(F3-F10 F12-F14 etc.)
175 metres of surface water sewer	(S3-S10 S18-S12 etc.)
0 metres of combined sewer	

ESTIMATED COSTS FOR INCLUSION IN AGREEMENT

Estimated construction costs	£88733
Bond (10% of cost estimate)	£8733
Inspection fees (2 1/2% estimate) □	£2218.32

CONTINUATION

Severn Trent Water

DRAWINGS TO BE INCLUDED IN AGREEMENT

Six copies of drawing No.(s) 03205/106 and two copies of all other drawings will be required for inclusion in the Agreement, with the layout drawings only coloured as follows,:-

Surface water sewers to be adopted	coloured blue
Foul sewers to be adopted	coloured brown
Combined sewers	coloured red
Site boundary	coloured green
Easements dimensioned and	coloured yellow

PARTIES TO BE INCLUDED IN THE AGREEMENT

Please complete the 'Request for information' schedule which is attached.

Under the provisions of the CDM Regulations you must inform me of your Designer, Planning Supervisor, and Principal Contractor. The CDM Health and Safety files will be required by this Company on adoption of the works.

Please note on site inspections will not be carried out until the drawings have been received, certification of compliance given, the appropriate inspection fees paid, the CDM notification as above received, and the Agreement completed. Completion of the S104 Agreement will signify the Company's formal acceptance of the proposed sewerage system.

In order that I am able to schedule inspection requirements I would be obliged if you could provide your Contractors Programme of Works.

Sewer records are required in the standard Severn Trent Water format. These are to be supplied on satisfactory completion of the works. When you are about to complete the records work please contact STW to ascertain the current format.

You may wish to employ one of the Sewer Survey Contractors this Company has used who are experienced in providing information in the required format. (List of Contractors can be provided) This does not constitute a recommendation.

This site involves post construction connections to the downstream sewers. Details of the proposed materials and method of construction should be submitted for agreement. The developer must carry out the work under the supervision of Severn Trent. You should seek approval to connect to these private (but prospectively maintainable public) sewers from the current owners and provide confirmation to ourselves that you have their permission to connect.

SEVERN TRENT
ENVIRONMENTAL LEADERSHIP

CONTINUATION

Severn Trent Water

Severn Trent applies a charge for the inspection work involved in a foul, combined, or surface water sewer connection as follows;

Supervision within normal working hours	£186
Supervision outside normal working hours	£209
Repeat supervision visit (within working hours)	£55 (per return visit)
Repeat supervision visit (outside working hours)	£55 (per return visit)

Normal working hours are Monday to Friday 9:00am to 5:00pm and exclude Bank Holidays.

Application forms can be supplied upon request if you have not already made an application

This charge must be paid at the same time as the connection details / application for an inspection are submitted. Please note multiple connections will attract a similar multiple charge.

I look forward to receiving the above data from you in the near future.

Yours faithfully,

pp

John Nicholson,
Networks Sewerage Adoptions Manager.

SEVERN TRENT
ENVIRONMENTAL LEADERSHIP