Appendix G Foul Water Drainage Calculations

Project:	ROCKINGHAM PHASES 2 AND 3			
Date:	09.12.2019	Job No.	Sheet No.	Rev
By:	JDM	4652-2	1	A
Checked:				
Title:	Preliminary FW Calculations Phase 2			

JPG CIVIL & STRUCTURAL ENGINEERING

Residential Developments

Based on SFA rate of 4000.0 Litres/dwelling/day

Use	L/Day	No.	Total (L/day)
General Housing	4000 per dwelling	0.0	0.00

Design Flow = Total/86400 Second = **0.000** **l/s (6DWF+10%)**
0.000 **l/s (1xDWF)**

Commercial/Industrial Developments

Based on SFA allow 0.6 litres/second/hectare of developable land for domestic flow

Domestic Flow	Area (ha)	Flow l/s
Commercial	28.000	16.800

Based on SFA allow 0.5 litres/second/hectare of developable land for trade effluent normal process and 1.0 litres/second/hectare of developable land for wet process

Trade Effluent	Area (ha)	Flow l/s
Normal	0.000	0.000
Wet	0.000	0.000

Total flow domestic + trade effluent = **16.800** **l/s**

Based on SFA allow 0.7 litres/second/hectare of developable land where proportion of wet industry is not known

Domestic +Trade	Area (ha)	Flow l/s
Commercial	0.000	0.000

Design Assumptions based on HCA drawing
671.60 (90) 001 & 671.60 (90) 002

Project:	ROCKINGHAM PHASES 2 AND 3			
Date:	09.12.2019	Job No.	Sheet No.	Rev
By:	JDM	4652-2	1	A
Checked:				
Title:	Preliminary FW Calculations Phase 3			

JPG CIVIL & STRUCTURAL ENGINEERING

Residential Developments

Based on SFA rate of 4000.0 Litres/dwelling/day

Use	L/Day	No.	Total (L/day)
General Housing	4000 per dwelling	0.0	0.00

Design Flow = Total/86400 Second = **0.000** **l/s (6DWF+10%)**
0.000 **l/s (1xDWF)**

Commercial/Industrial Developments

Based on SFA allow 0.6 litres/second/hectare of developable land for domestic flow

Domestic Flow	Area (ha)	Flow l/s
Commercial	10.000	6.000

Based on SFA allow 0.5 litres/second/hectare of developable land for trade effluent normal process and 1.0 litres/second/hectare of developable land for wet process

Trade Effluent	Area (ha)	Flow l/s
Normal	0.000	0.000
Wet	0.000	0.000

Total flow domestic + trade effluent = **6.000** **l/s**

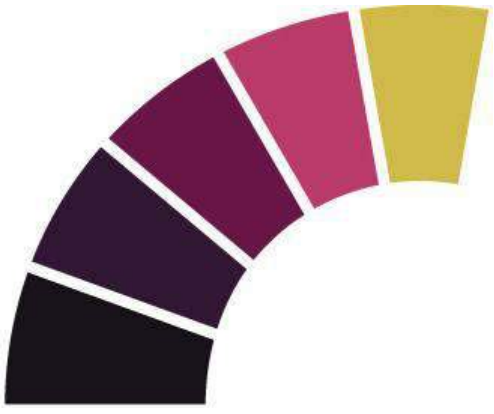
Based on SFA allow 0.7 litres/second/hectare of developable land where proportion of wet industry is not known

Domestic +Trade	Area (ha)	Flow l/s
Commercial	0.000	0.000

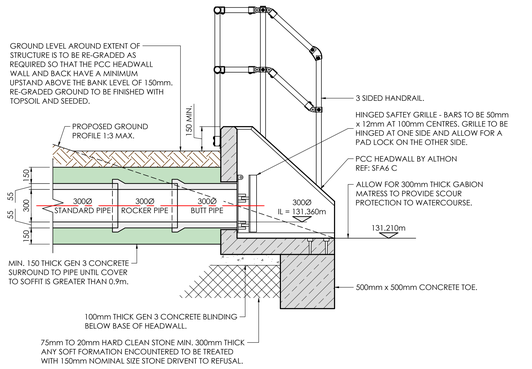
Design Assumptions based on HCA drawing
671.60 (90) 001 & 671.60 (90) 002

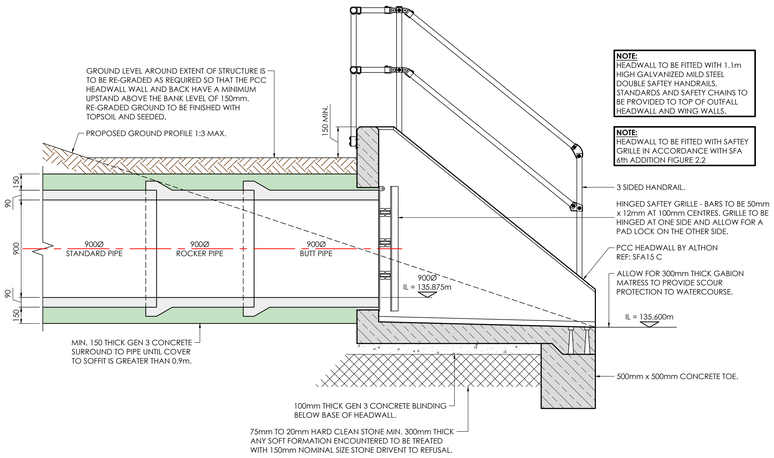
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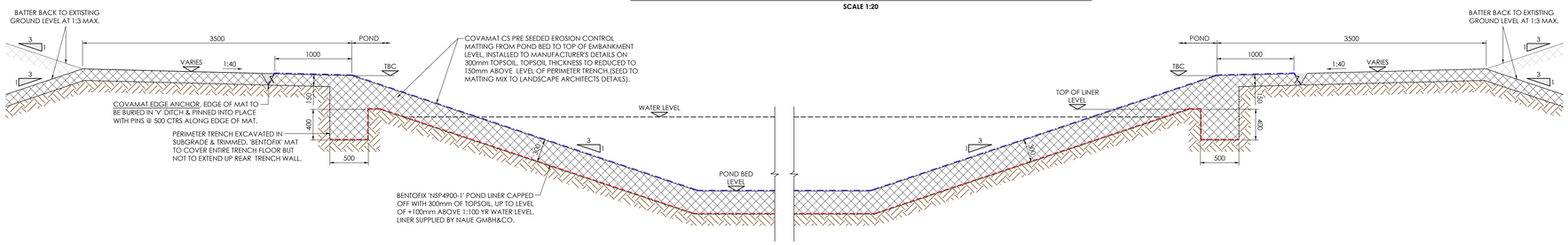
Appendix D JPG Attenuation Basin Drawing



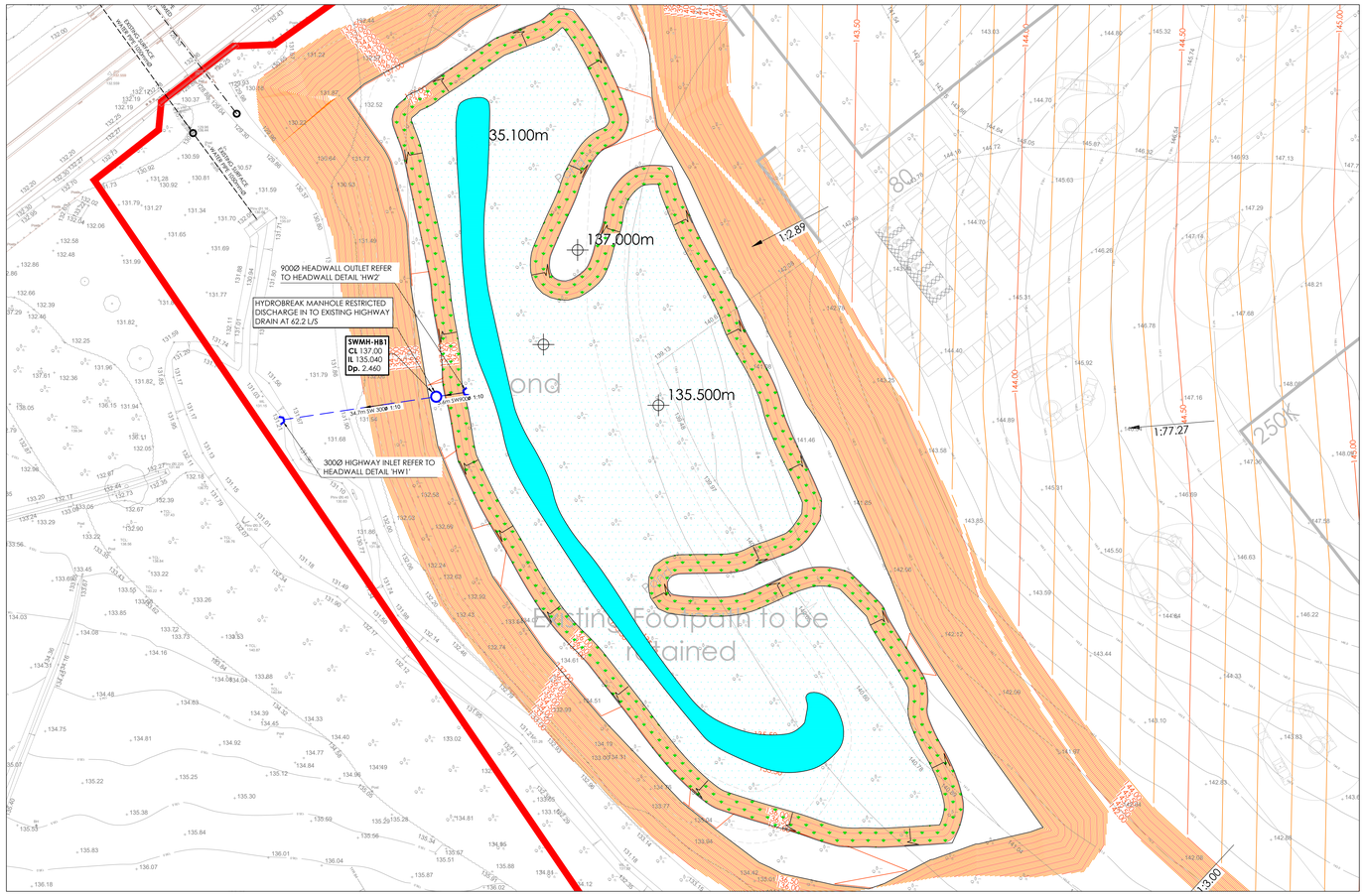


HW1
SECTION THROUGH 300Ø SURFACE WATER OUTLET PIPE TO WATERCOURSE
SCALE 1:20

HW2
SECTION THROUGH 900Ø SURFACE WATER OUTLET PIPE TO WATERCOURSE
SCALE 1:20



TYPICAL SECTION THROUGH SURFACE WATER ATTENUATION POND
SCALE 1:25



ATTENUATION / OUTFALL LAYOUT
SCALE 1:500

SURFACE WATER MANHOLE SCHEDULE

REF.	COVER LEVEL	INVERT LEVEL	SUMP DEPTH	DEPTH	EASTINGS	NORTHINGS	DIAMETER	TYPE	COVER	NOTES
HB1	137.00m	135.040m	0.500m	2.460m	435373.794	400827.606	2100Ø	TYPE B	1200x600 - CLASS D400	FLOW CONTROL CHAMBER
NOTE: ALL INVERT LEVELS SHOWN ARE FOR THE OUT GOING PIPE, ALL PIPES SHALL BE LAID WITH LEVEL SOFFITS (UNLESS OTHERWISE INDICATED ON THE DRAWING)										

LEGEND:

- PROPOSED SITE BOUNDARY
- EXISTING FW DRAINS /SEWERS
- EXISTING SW DRAINS/SEWERS
- PROPOSED FW DRAINS/SEWERS
- PROPOSED SW DRAINS/SEWERS
- PROPOSED FW RISING MAIN
- PROPOSED SW RISING MAIN
- EXISTING FW MANHOLE
- EXISTING SW MANHOLE
- PROPOSED FW MANHOLE
- PROPOSED SW MANHOLE
- PROPOSED FW PUMPING STATION
- PROPOSED SW PUMPING STATION
- PROPOSED SW INTERCEPTOR
- WPC — PROPOSED WASTE PIPE CONNECTION SIZE & LOCATION TBC BY OTHERS
- RWP — PROPOSED RAINWATER DOWN PIPE SIZE & LOCATION TBC BY OTHERS
- RG — PROPOSED TRADITIONAL TYPE ROAD GULLY WITH 150Ø OUTLET PIPE
- RE — PROPOSED RODDING EYE
- PROPOSED DRAINAGE CHANNEL
- PROPOSED KERB DRAINAGE

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DO NOT SCALE

NOTES

DRAINAGE NOTES

1. ALL BUILDING DRAINAGE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH BS EN 752:2008 DRAINAGE AND SEWER SYSTEMS OUTSIDE BUILDINGS, THE CURRENT BUILDING REGULATIONS AND THE LOCAL AUTHORITY BUILDING CONTROL SPECIFICATIONS AND REQUIREMENTS.
2. ANY DRAINAGE TO BE PUT FORWARD FOR ADOPTION EITHER WITHIN THE SITE OR OUTSIDE SHALL BE CONSTRUCTED TO SEWERS FOR ADOPTION LATEST EDITION AND ANY SPECIFIC REQUIREMENTS OF THE ADOPTING SEWERAGE/WATER AUTHORITY.
3. THE LOCATION, SIZE AND DEPTH OF ALL EXISTING DRAINS/SEWERS AND SERVICES SHALL BE ESTABLISHED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF WORKS ON SITE. ANY DISCREPANCIES FROM THE INFORMATION INDICATED ON THESE DRAWINGS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
4. THE CONTRACTOR SHALL ALLOW FOR THE PROTECTION, TEMPORARY AND PERMANENT SUPPORT AND DIVERSION WORKS AS NECESSARY, TO ALL EXISTING SERVICES TO THE SATISFACTION OF THE UTILITY COMPANIES.
5. THE CONTRACTOR SHALL ALLOW FOR DEALING WITH SURFACE WATER RUN OFF INTO EXCAVATIONS AND FROM GROUNDWATER BY MEANS OF SUMPS, PUMPING AND DE WATERING AS APPROPRIATE, IN ORDER TO KEEP THE EXCAVATION AS REASONABLY DRY AS POSSIBLE DURING THE CONSTRUCTION OF THE WORKS.
6. ALL LEVELS AND DIMENSIONS SHALL BE VERIFIED ON SITE PRIOR TO THE COMMENCEMENT OF ANY WORKS. ANY DISCREPANCIES SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
7. ALL EXISTING DRAINAGE LOCATIONS AND LEVELS ARE TO BE CONFIRMED BY THE CONTRACTOR AND THE ENGINEER NOTIFIED BEFORE ANY DRAIN RUNS ARE CONSTRUCTED.
8. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER SHOULD ANY EXISTING LIVE DRAINAGE BE FOUND WITHIN THE SITE BOUNDARY SERVING ADJACENT PROPERTIES.
9. ALL EXISTING DRAINAGE WITHIN THE SITE NOT REQUIRED FOR THE NEW DEVELOPMENT SHALL BE ABANDONED. DRAINS AND SEWER LESS THAN 1.500m DEEP WHICH ARE IN OPEN GROUND SHOULD AS FAR AS IS PRACTICABLE BE FULLY REMOVED. ALL OTHER PIPES SHOULD BE SEALED AT BOTH ENDS AND AT ANY POINT OF CONNECTION, AND BE GROUT FILLED TO ENSURE THAT RATS CANNOT GAIN ACCESS. LARGER PIPES 225Ø OR ABOVE SHOULD BE GROUT FILLED TO PREVENT SUBSIDENCE OR DAMAGE TO BUILDINGS OR SERVICES IN THE EVENT OF COLLAPSE.
10. ALL MANHOLE/CHAMBER COVER LEVELS ARE APPROXIMATE AND SHALL BE ADJUSTED ON SITE TO SUIT THE PROPOSED FINISHED LEVELS.
11. CONNECTIONS FROM WPC TO BE LAID AT 1/40 MINIMUM. AND 1/10 MAXIMUM GRADIENTS WHERE CONSTRUCTED UNDER THE BUILDING.
12. ALL PIPE CONNECTION FROM DRAINAGE CHANNELS AND GULLIES SHALL BE 150Ø PIPES AT A MINIMUM GRADIENT OF 1:100 WITH CLASS Z BEDDING UNO. ON THE DRAWING.
13. ALL PIPE CONNECTIONS FROM RWP'S TO BE 100Ø AT 1:60 MIN. WITH CLASS S BEDDING BENEATH THE BUILD AND CLASS Z UNDER EXTERNALS WHERE COVER IS LESS THAN 1.20m UNO. ON THE DRAWING (LOCATION OF RWP'S TO BE CONFIRMED BY THE ARCHITECT SHOWN INDICATIVELY ON THE DRAWING).
14. ALL SYPHONIC RWP SYSTEMS TO BE DESIGNED BY OTHERS. PIPEWORK FROM DOWN PIPE TO FIRST MANHOLE TO BE SIZED/ DESIGNED BY SYPHONIC SYSTEM DESIGNER. THE FIRST MANHOLE TO HAVE AN OPEN GRATE COVER SAINT GOBAIN WATERWAY 2000 - D400 OR SIMILAR APPROVED.
15. ALL PIPE CONNECTIONS FROM WPC'S TO FIRST CHAMBER SHALL BE 100Ø AT 1:40 MIN. WITH CLASS S BEDDING BENEATH THE BUILD AND CLASS Z UNDER EXTERNALS WHERE COVER IS LESS THAN 1.20m UNO. ON THE DRAWING (LOCATION OF WPC' TO BE CONFIRMED BY THE ARCHITECT AND TENANT (NOTE ADDITIONAL CHAMBERS AND PIPE WORK MAYBE REQUIRED TO SUIT THE TENANTS LAYOUT).
16. LOCATION SIZE AND SETTING OUT OF ALL RAINWATER AND WASTE PIPE CONNECTIONS REFER TO THE RELEVANT ARCHITECTS DRAWING FOR DESIGN PURPOSES THESE HAVE BEEN ASSUMED.
17. SUITABLY SIZED PETROL INTERCEPTORS MUST COMPLY WITH THE REQUIREMENTS OUTLINE IN PPG3 THESE INCLUDE SILT STORAGE CAPACITY AND HIGH LEVEL HYDROCARBON ALARM WIRED BACK TO A MANNED OFFICE.
18. THE CONTRACTOR SHALL TAKE ALL NECESSARY SAFETY PRECAUTIONS IN LINE WITH CURRENT LEGISLATION WHEN WORKING IN/NEAR CONFINED SPACES, DEEP EXCAVATIONS AND MACHINERY.
19. THE CONTRACTOR SHALL ALLOW FOR OBTAINING ALL APPROVALS FROM THE RELEVANT AUTHORITIES WHEN WORKING IN THE PUBLIC HIGHWAY AND ON THE SEWERAGE SYSTEM.
20. THE CONTRACTOR SHALL SUITABLY PROTECT PEDESTRIANS AND VEHICLES FROM WORKING AREAS.
21. ALL PIPES SHALL BE LAID WITH LEVEL SOFFITS AND ALL MANHOLE/INSPECTION CHAMBER INVERT LEVELS SHOWN ARE FOR THE OUT GOING PIPE (UNLESS OTHERWISE INDICATED IN THE DRAWING). PIPE RUNS SHALL BE LAID TO THE INVERT LEVELS AS DETAILED ON THE CONTRACT DRAWINGS. (NOTE THAT ALL PIPE GRADIENTS INDICATED ON THE DRAWINGS ARE APPROXIMATE).
22. ALL RAINWATER PIPES AND INTERNAL FOUL DRAIN CONNECTIONS POINTS ARE TO BE SIZED & POSITIONED AS SHOWN ON THE ARCHITECTS DRAWINGS. THE CONTRACTOR SHALL SUPPLY SUITABLE ADAPTORS AT PROPOSED GROUND LEVELS OR FINISHED FLOOR LEVEL TO ALLOW CONNECTION OF THE ABOVE GROUND DRAINAGE SYSTEM.(DETAILS OF THE ABOVE GROUND DRAINAGE SYSTEM AND ADAPTORS ALL BY OTHERS).
23. UPON COMPLETION OF THE DRAINAGE WORKS THE CONTRACTOR SHALL CLEAN ALL DRAIN RUNS BY JETTING AND REMOVE ALL DEBRIS FROM SITE. NO DEBRIS SHALL BE PERMITTED TO ENTER THE PUBLIC SEWER AND/OR WATERCOURSE SYSTEM. ONCE THE DRAINAGE SYSTEM HAS BEEN FULLY CLEANED OUT A CCTV CAMERA CONDITION SURVEY SHALL BE UNDERTAKEN TO ALL CONSTRUCTED DRAINAGE AND SEWER PIPES WITH THE FOOTAGE ISSUED TO THE ENGINEER FOR VIEW. THE AS BUILT INVERT AND COVER LEVELS SHALL BE RECORDED BY THE CONTRACTOR AND PASSED ON TO THE ENGINEER FOR REVIEW.

REV	DESCRIPTION	DATE	BY
P03	TYPICAL SECTION THROUGH ATTENUATION POND ADDED.	13.05.20	JAC
P02	FURTHER DETAIL ADDED TO DRAINAGE LAYOUT	30.04.20	RMR
P01	FIRST ISSUE.	28.02.20	LSG

Project
ROCKINGHAM PHASE 2A & 2B
HOYLAND

Drawing Title
PHASE 2
ATTENUATION POND OUTFALL DETAILS

INFORMATION ISSUE

Architect
THE HARRIS PARTNERSHIP

JPG
www.jpg.group
Leeds London Birmingham 0113 263 1155

JPG Project Ref	Scale at A0	Date	Checked	Drawn
4652-2	AS SHOWN	23.04.20	RMR	RMR

4652-2 - JPG - SW - 00 - DR - D - 1451 | S2 | P03

Appendix E Drainage Maintenance & Management Plan

DRAINAGE MAINTENANCE & MANAGEMENT PLAN

Rockingham Phase 2
Dearne Valley Parkway, Barnsley.

Reference	VW/DMMP/Y20112.v1
Date	May 2021
Version	1

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Confidentiality Statement

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2.0 Attenuation Basin 2
3.0 Drains (Pipes) 2
4.0 Manholes/Access Chambers 3
5.0 Flow Control Chamber 3
6.0 Health & Safety 3
7.0 Record History 3

APPENDICES

Appendix A Drainage Layout Plans
Appendix B Maintenance Visit Log Sheet
Appendix C Flow Control Details

Confidentiality Statement

This report is addressed to and may be relied upon by the following:

Harworth Group
Advantage House
Poplar Way
Rotherham
South Yorkshire
S60 5TR

This report has been prepared for the sole use and reliance of the above-named parties and the owners of the new properties. This report shall not be relied upon or transferred to any other parties without the express written authorisation of RWO Group. No responsibility will be accepted where this report is used, either in its entirety or in part, by any other party.

Document History

VERSION	PURPOSE/DESCRIPTION	DATE
1	First Issue	21.05.2021

1.0 INTRODUCTION

This document details the inspection and maintenance specification for the drainage systems on the proposed development known as Rockingham Phase 2 on land off Dearne Valley Park, Barnsley. The document is intended to cover the maintenance of the main infrastructure drainage systems, and not the private plot drainage for each individual property.

The document is laid out detailing:

- A description of the drainage components and its use
- Maintenance requirements and frequencies
- Inspection requirements and frequencies

The activities listed are specific to the drainage elements on the Rockingham Phase 2 development and represents the minimum maintenance and inspection requirements. However additional tasks, or varied maintenance frequency may be required. This may include:

- Measurement and recording of sediment levels
- Photographic recording of problem areas
- Increased frequency of litter/debris removal in areas identified as hotspots

This specification has been based upon the latest technical information for Sustainable Drainage Systems [SuDS].

The drainage system for the site is shown in Appendix A and comprises of the following assets: an attenuation basin for the rainfall events up to and including the 100-year plus climate change event, along with associated adoptable pipes, headwalls, and a flow control.

The attenuation basin forms part of the open space provision on the development with the primary role of providing surface water attenuation during periods rain. The basin receives surface water runoff from the roofs, roads and hardstanding areas of the development, with runoff being conveyed to the SUDS by a collector system (surface water sewer, gullies and rooftop guttering, swales).

The attenuation basin is designed to be grassed lined structure with a varying permanent water depth, the water depth in the basin will temporarily increase following rainfall events.

The management company will be responsible for the inspection and maintenance of the attenuation basin, including removal of material deposited within the system. Any gross contamination of the system will be, were practicable, contained, safely removed, and reported to the appropriate body. In such cases the management company will liaise with the Environment Agency and the Local Authority in prosecuting the polluter.

As the attenuation basin becomes established, it will start to develop ecological importance with landscaping, this may result in wildlife being attracted to the area such as birds and invertebrates. Major works, for example de-silting of structures, will be scheduled to avoid the nesting season; spawning and the emergence of invertebrates, in doing so reduce the impact on the local environment.

The attenuation basin will be subject to a 5-yearly review to establish if the current management regime is meeting the management objectives. This will require liaison with the Local Authority, Yorkshire Water, the Environment Agency and the Highways Authority. Any significant changes to the approved Management Plan will be first referred to the Planning Authority for approval.

The main piped foul and surface water drainage systems dwill be adopted by Yorkshire Water under a Section 104 agreement. The future maintenance of these elements will be subject to Yorkshire Water's maintenance regime.

The gullies and associated tails within the adoptable highway will be adopted by the local Highway Authority under a Section 38 agreement. The future maintenance of these elements will be subject to the Highway Authority's maintenance regime.

The following are RWO recommendations for future maintenance of the drainage systems.

2.0 ATTENUATION BASIN

The attenuation basin is designed to attenuate runoff for the development; it is a grassed structure with shallow side slopes. Due to the depth and size of the basin associated safety equipment and warning signs are to be provided by the maintenance company.

The flow rate is not restricted prior to entering the basin area but the flow is restricted to greenfield run off prior to leaving the site. The flow is to be restricted by a hydro brake flow control unit (the hydro brake is to be maintained by the management company). The hydro brake (flow control) is positioned within a flow control manhole structure prior to discharging to the watercourse.

The headwalls and pipes from the basin to the flow control manhole and to the watercourse will be private and the management company will be responsible for maintaining these.

For operation and maintenance requirements refer to the maintenance log in Appendix B.

For hydro-brake information refer to Appendix C.

3.0 DRAINS (PIPES)

Maintenance includes:

- Local repair or local replacement of damaged pipes or other structures in order to maintain the functioning of the sewer.
- Cleaning and removal of sediments, obstructions etc. to restore hydraulic capacity.
- Jetting/vacuum of sewers to be undertaken as often as necessary to remove silts and/or ordinary debris.
- In the event that any extraordinary issues are encountered during an inspection, further information may be required such as a CCTV survey report.
- Maintenance to be undertaken on a six-monthly schedule.

To avoid damaging the pipe, PSI pressures need to be verified before jetting of the sewers. Cleaning of drainage systems may require the temporary sealing of the system and careful collection of the effluent for disposal off site.

4.0 MANHOLES/ACCESS CHAMBERS

All manhole covers should be lifted, and the manholes visually inspected for silt, debris and signs of blockages within the drainage system. Check manhole covers and frames for damage and ensure they are correctly bolted together. This should be undertaken on a quarterly basis.

Should any debris or blockages be detected, the manholes should be cleaned along with associated pipe runs which should be high pressure jetted and CCTV surveyed to verify/identify that no further remedial works are required.

5.0 FLOW CONTROL CHAMBER (FC)

The location of the flow control chamber is shown JPG drawing no. 4652-2-SW-00-DR-D-1451-S2-P03 in Appendix A.

The flow control chamber covers should be lifted, and the chamber visually inspected for silt, debris and signs of blockages within the drainage system. Check covers and frames for damage and ensure they are correctly bolted together. This should be undertaken on a quarterly basis.

Should any debris/silt or blockages be detected, the chamber should be cleaned along with associated pipe runs which should be high pressure jetted and CCTV surveyed to verify/identify that no further remedial works are required. Care should be taken to ensure during high pressure jetting any debris/silt is not passed upstream into the underground storage structure.

6.0 HEALTH & SAFETY

The adopting authorities and management company shall, so far as is reasonably practical, provide and maintain systems of work that are safe and without risks to health. The systems of work shall cover all aspects of the works including above-ground operations (for example manhole location and traffic control), access to the sewer system and all operations in the confined space of the sewer system.

7.0 RECORD HISTORY

An inspection log shall be undertaken after every maintenance activity (Appendix B).

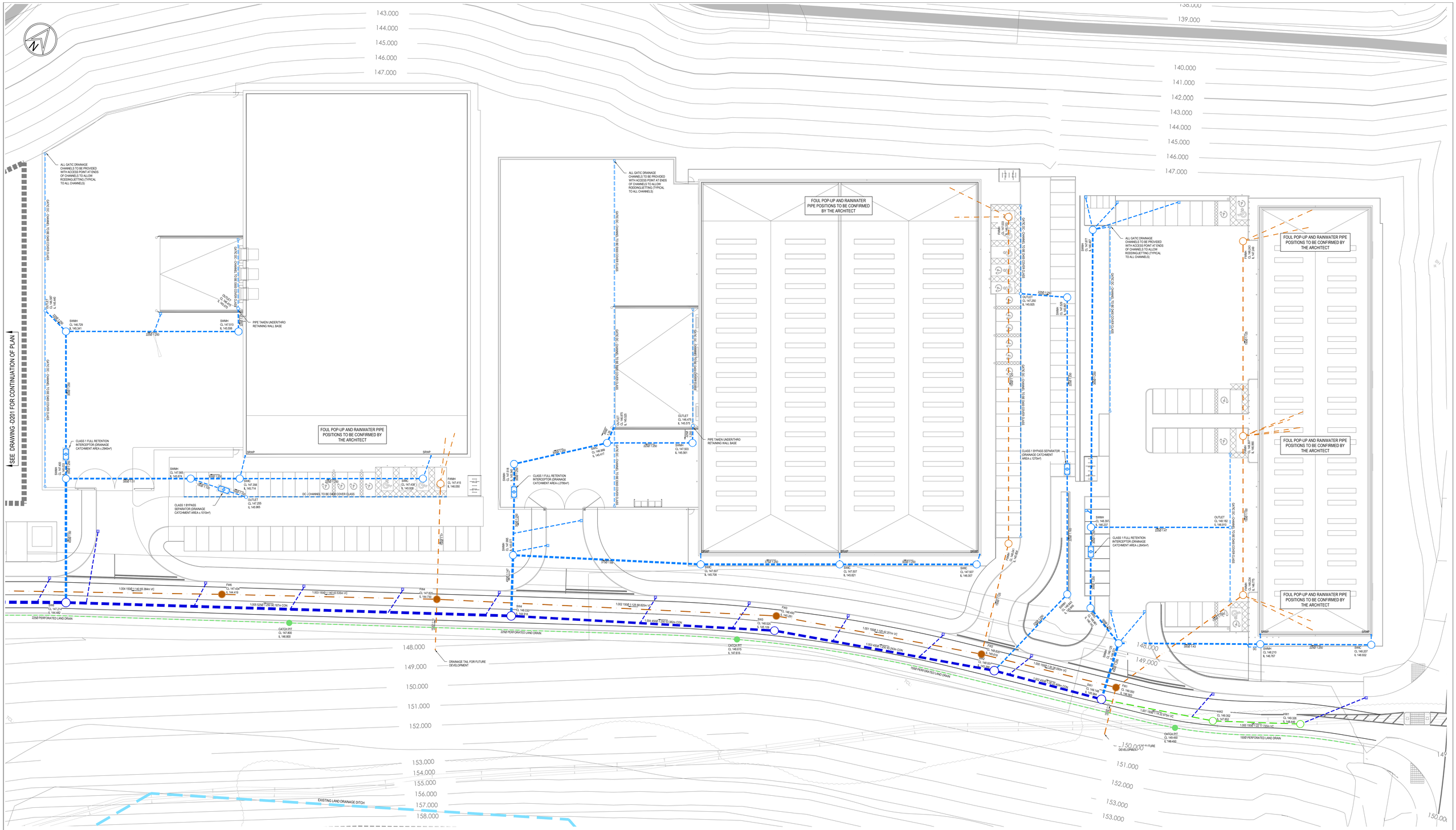
A full site inspection of the drainage systems shall be undertaken at least annually to confirm the maintenance requirements if no specific frequency is detailed. Details of this shall be recorded in the inspection log (Appendix B).

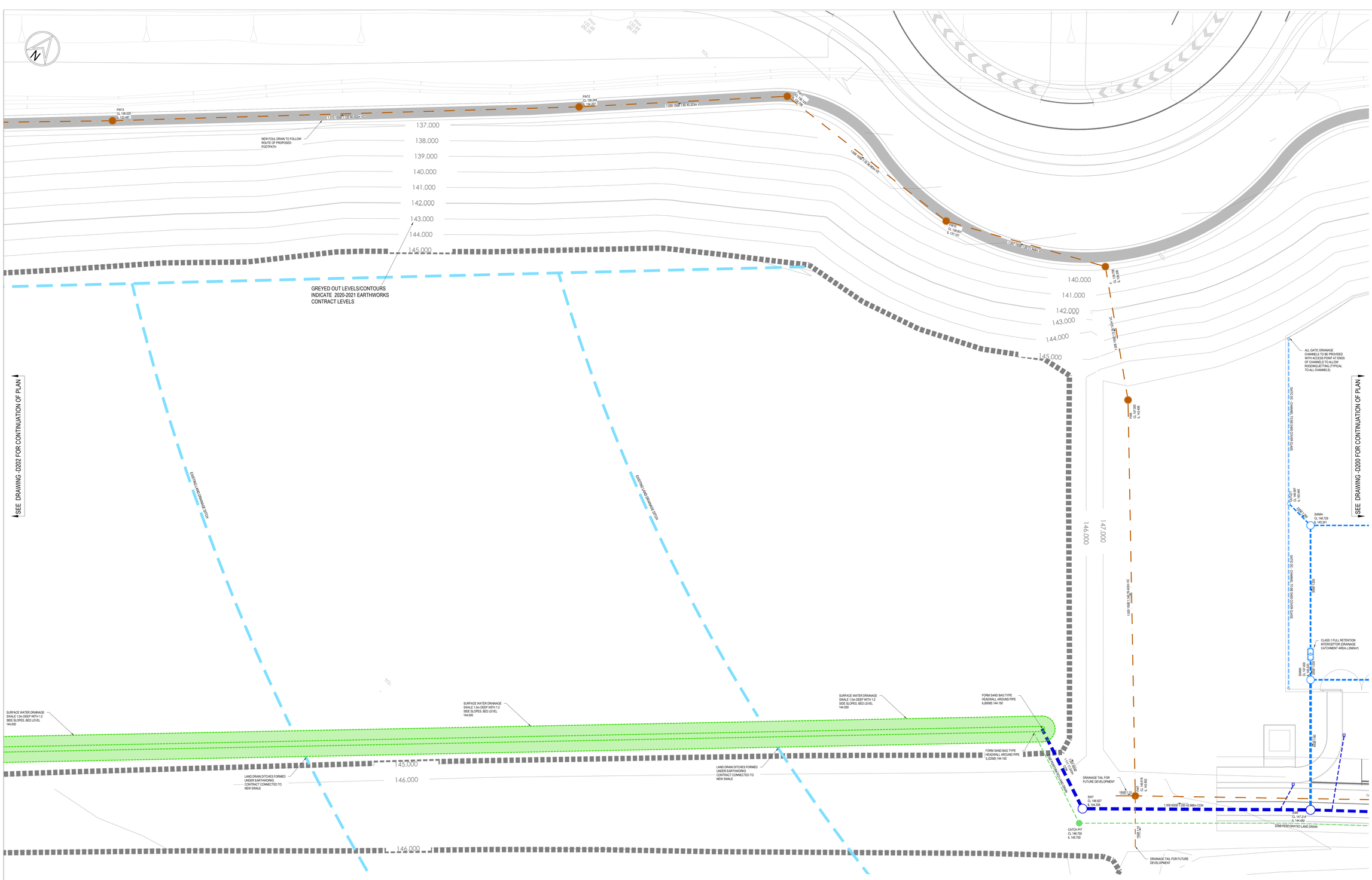
This log will be held by the management company and submitted to the LLFA if required.

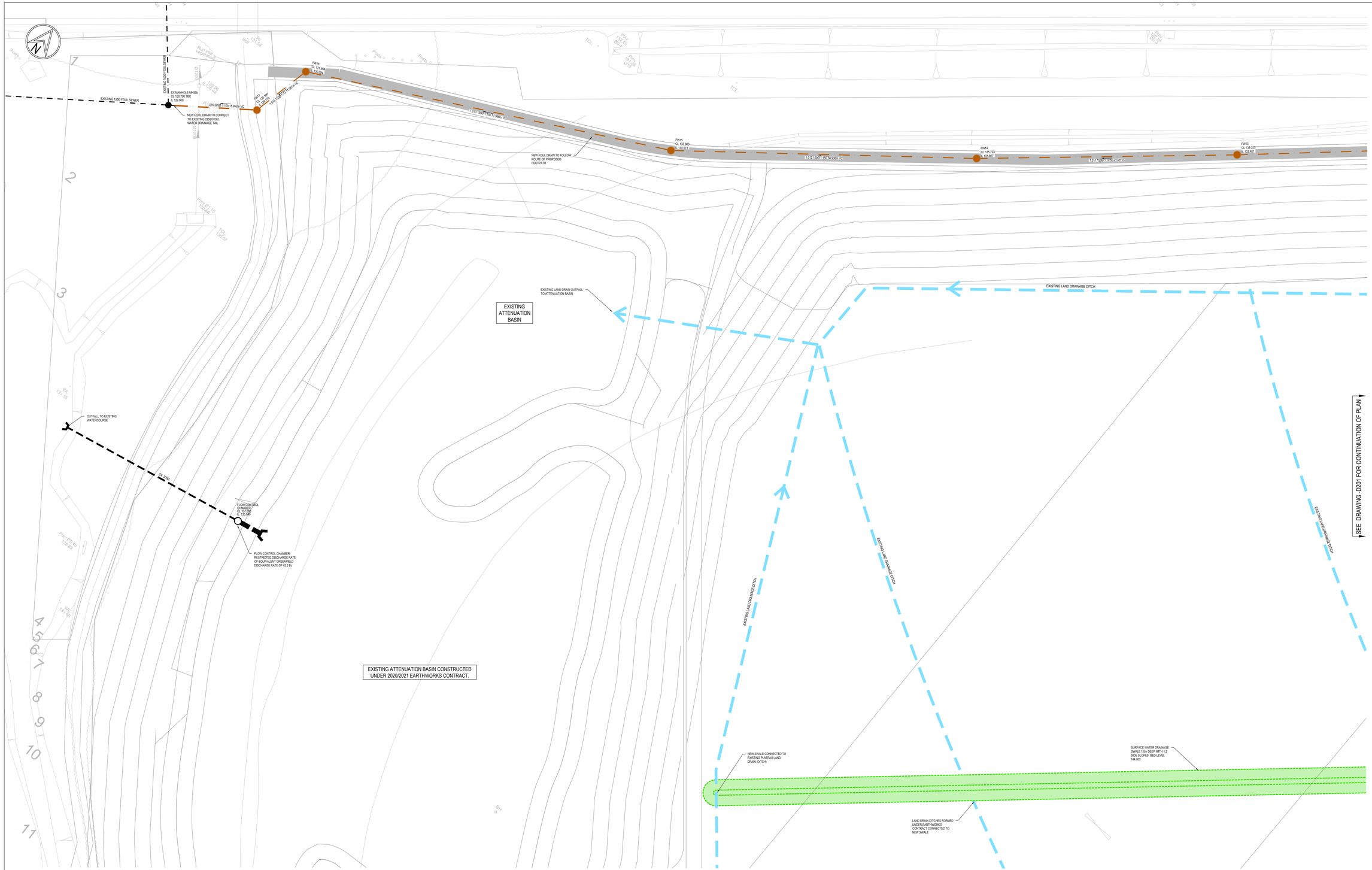


Andrew Fairburn
For and behalf of RWO Group

Appendix A Drainage Layout Plans


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SEE DRAWING D201 FOR CONTINUATION OF PLAN
ALL GATIC DRAINAGE CHANNELS TO BE PROVIDED WITH ACCESS POINT AT ENDS OF CHANNELS TO ALLOW RODDING/JETTING (TYPICAL TO ALL CHANNELS)
FOUL POP-UP AND RAINWATER PIPE POSITIONS TO BE CONFIRMED BY THE ARCHITECT
CLASS 1 FULL RETENTION INTERCEPTOR (DRAINAGE CATCHMENT AREA c.2940m²)
CLASS 1 BYPASS SEPARATOR (DRAINAGE CATCHMENT AREA c.1010m²)
CLASS 1 FULL RETENTION INTERCEPTOR (DRAINAGE CATCHMENT AREA c.2795m²)
CLASS 1 BYPASS SEPARATOR (DRAINAGE CATCHMENT AREA c.1270m²)
CLASS 1 FULL RETENTION INTERCEPTOR (DRAINAGE CATCHMENT AREA c.2645m²)
PIPE TAKEN UNDER/THRO RETAINING WALL BASE
DC - CHANNEL TO BE D400 COVER CLASS
SRWP
SWMH CL 147.729 IL 145.341
SWMH CL 147.513 IL 145.556
SWMH CL 147.566 IL 145.714
SWMH CL 147.356 IL 145.714
SWMH CL 147.438 IL 145.938
FWMH CL 147.415 IL 146.050
OUTLET CL 147.255 IL 145.965
OUTLET CL 166.475 IL 145.571
SWMH CL 147.503 IL 145.561
SWMH CL 147.515 IL 146.015
SWMH CL 146.999 IL 145.477
SWMH CL 147.999 IL 147.999
SWMH CL 147.507 IL 145.758
SWMH CL 147.507 IL 145.621
SWMH CL 147.507 IL 146.007
OUTLET CL 147.250 IL 145.825
SWMH CL 147.250 IL 145.977
SWMH CL 148.077 IL 146.977
SWMH CL 148.597 IL 146.397
SWMH CL 148.337 IL 146.337
SWMH CL 148.337 IL 146.337
SWMH CL 148.397 IL 146.237
SWMH CL 148.397 IL 146.237
OUTLET CL 148.182 IL 146.182
FWMH CL 148.543 IL 146.543
FWMH CL 148.543 IL 146.543
SWMH CL 146.210 IL 146.767
SWMH CL 146.207 IL 146.602
SWMH CL 146.207 IL 146.602
SWMH CL 146.207 IL 146.602


FW13
CL 138.025
IL 133.487
FW12
CL 138.245
IL 134.207
FW11
CL 138.74
IL 134.74
FW10
CL 138.661
IL 137.101
FW9
CL 141.000
IL 140.000
FW8
CL 145.129
IL 143.341
FW7
CL 146.887
IL 145.887
FW6
CL 146.827
IL 144.336
FW5
CL 147.214
IL 144.482
CATCH PIT
CL 146.750
IL 145.750
1500 1:150 FOUL
1500 1:150 SURFACE WATER
1500 1:150 LAND DRAIN
1 000 150D 1:80 40.203m VC
1 000 150D 1:80 40.203m VC
1 000 150D 1:80 40.203m VC



GENERAL SAFETY NOTES:

1. WHERE THE BASE (ROAD BASE) HAS BEEN USED AS A TEMPORARY RUNNING SURFACE DURING THE CONTRACT IT SHALL BE THOROUGHLY CLEANED AND POWER WASHED AS NECESSARY. AFTER DRYING AND IMMEDIATELY BEFORE THE BINDER COURSE IS LAID A TACK COAT OF BITUMEN EMULSION CLASS A1-40 OR K1-40 TO BS434 SHALL BE APPLIED AT A RATE OF 0.35-0.55 LITRES/SQ METER.
2. ALL RADIUS KERBS WITH A RADIUS OF 12m OR LESS SHALL BE FORMED WITH PROPRIETARY RADIUS KERBS.

HEALTH & SAFETY:

1. CONTRACTOR SHOULD BE AWARE OF GENERAL CONSTRUCTION RISKS TO PREVENT SLIPS, TRIPS AND FALLS AND TAKE NECESSARY PRECAUTIONS WITHOUT SPECIAL INSTRUCTION.

ROADS & DRAINAGE

2. CONTRACTOR TO PROVIDE TRENCH SUPPORTS AS APPROPRIATE AND ENSURE THAT PLANT REMAINS A SAFE DISTANCE FROM TRENCHES PRIOR TO INSTALLING DRAINAGE
3. THE TIME THAT EXCAVATIONS ARE OPEN ON SITE SHOULD BE KEPT TO A MINIMUM AND ALL TRENCHES SHOULD BE SUPPORTED BY SHORING
4. EXCAVATIONS AND SHORING SHOULD BE MADE BY APPROVED CONTRACTOR ONLY
5. CONTRACTOR TO MAKE OPERATIVES AWARE OF ASSOCIATED DANGERS TO HEALTH SUCH AS LEPTOSPIROSIS (WEILS DISEASE) AND RECOMMENDED PRECAUTIONS. ADEQUATE WELFARE FACILITIES AND PROTECTIVE CLOTHING TO BE PROVIDED AS REQUIRED.
6. UNFINISHED MANHOLES MUST BE COVERED WITH LOAD BEARING MATERIALS AND SURROUNDED WITH BARRIER.

PIPES & CABLES

7. CONTRACTOR TO OBTAIN ALL SERVICE RECORDS PRIOR TO WORKS COMMENCING.
8. SERVICE RECORDS TO BE REFERRED TO PRIOR TO WORK COMMENCING. CONTRACTOR TO PROCEED WITH CAUTION AND SERVICES TO BE LOCATED BY HAND DIG AND PROTECTED ACCORDINGLY.

EXCAVATION/FILL

9. CONTRACTOR TO ENSURE RELEVANT MEASURES ARE TAKEN TO KEEP PLANT AND PEOPLE A SAFE DISTANCE FROM STEEP SLOPES DURING THE WORKS.
10. CONTRACTOR TO ENSURE THAT PROCEDURES ARE IN PLACE TO KEEP PEOPLE A SAFE DISTANCE FROM WORKING PLANT WHERE NECESSARY.
11. CONTRACTOR TO REFER TO GROUND INVESTIGATION REPORT FOR CONTAMINATION TESTS AND TO PROVIDE ADEQUATE WELFARE FACILITIES AND PROTECTIVE CLOTHING AS REQUIRED.

DRAINAGE SPECIFICATION FOR YORKSHIRE WATER

1. ALL ADOPTABLE SEWER WORKS AND MATERIALS TO BE IN ACCORDANCE WITH THE "DESIGN AND CONSTRUCTION GUIDANCE UNDER THE CODE FOR ADOPTION AGREEMENTS" THE RELEVANT BRITISH/EUROPEAN AND YORKSHIRE WATER'S STANDARDS/REQUIREMENTS/ADDENDUM TO THE SPECIFICATION FOR HIGHWAY WORKS (SHW) AS AMENDED.
2. MANHOLE COVERS SHALL/MUST HAVE A CLEAR OPENING OF 600mm AND SHALL BE CLASS D400 TO BS EN 124 WITH 150mm DEEP FRAMES IN HIGHWAYS.
3. FILLED GROUND MUST BE FILLED AND CONSOLIDATED UNDER THE SUPERVISION AND TO THE SATISFACTION OF YORKSHIRE WATER BEFORE ANY SEWER WORKS ARE CARRIED OUT.
4. YORKSHIRE WATER IS NOT OBLIGED TO ACCEPT FILTER DRAINS AND DRAINAGE RUN-OFF INTO THE PUBLIC SEWER NETWORK OR ADOPTABLE DRAINAGE SYSTEM (DIRECTLY OR INDIRECTLY). AN ALTERNATIVE METHOD OF DISPOSAL OF THE LAND DRAINAGE RUN-OFF WILL THEREFORE BE REQUIRED AND YOU WILL HAVE TO LIAISE WITH THE LOCAL AUTHORITY. LAND DRAINAGE SECTION WITH REGARD TO THE DISPOSAL OF THE FILTER DRAINS AND DRAINAGE RUN-OFF.
5. COVER SLABS MUST CARRY THE BSI KITEMARK OR WILL BE REJECTED BY YORKSHIRE WATER INSPECTOR. WHERE THE CLEAR OPENING OF THE KITEMARKED PRODUCT IS DIFFERENT TO THAT OF THE COVER AND FRAME, A LOADING BEARING SLAB SHOULD BE FITTED ABOVE THE COVER SLAB TO BRING THE SIZE DOWN TO 600mm X 600mm FOR THE YORKSHIRE WATER SPECIFIED COVER SIZE. PLEASE REFER TO CONCRETE PIPE SYSTEMS ASSOCIATION (CPSA), 'TECHNICAL BULLETIN' ISSUED AUTUMN 2004 FOR KITEMARKED COVER SLAB OPENING SIZES.
6. ELASTOMERIC SEALING RINGS TO BE USED FOR ALL CONCRETE PRODUCTS MUST BE USED OR A SUITABLE MORTAR CEMENT: (CEMENT: SAND) MIX THAT BOAST PROPERTIES ARE NOT NECESSARY.
7. THE ADOPTABLE SEWERS SHOULD BE A MINIMUM OF 1m AND MANHOLES 2.5m FROM KERB FACES AND SERVICE MARGINS.
8. 'SEWERS MUST HAVE 5 METRES CLEARANCE FROM TREES AND HEDGES. PLEASE ALSO REFER TO FIGURE 2.3 ON PAGE 33 IN 'SEWERS FOR ADOPTION' 6TH EDITION FOR RESTRICTIONS ON TREE PLANTING ADJACENT TO SEWERS'
9. SEWERS TO BE LAID IN CLASS 'S' BEDDING (150mm GRANULAR BED AND SURROUND). WHERE DEPTH OF COVER TO TOP OF THE SEWER IS LESS THAN 1.2m IN HIGHWAYS AND VERGES (OR LESS THAN 900mm IN NONE VEHICULAR ACCESS AREAS) THEN A CONCRETE SLAB SHOULD BE PROVIDE ABOVE GRANULAR BED AND SURROUND.
10. BEDDING AND BACKFILL MATERIAL TO CONFORM TO THE REQUIREMENT OF WATER INDUSTRY SPECIFICATION A-08-02 (TABLE A2).
11. THE CHAMBER SIZE OF MANHOLES WITH MORE THAN ONE CONNECTION IN THEM MAY NEED TO BE INCREASED AN INCREMENT TO ACCOMMODATE THE CONNECTIONS AND BENDS.
12. YORKSHIRE WATER POLICY IS NOT TO ACCEPT TYPE 'C' BRICK MANHOLES AND 1050mm DIA MANHOLE RINGS, INSTEAD IT IS PREFERRED THAT YOU USE A TYPE 'B' MANHOLE WITH 1200mm DIA OR 1500mm DIA RINGS, WITH THE OPENING SITED OVER THE CHANNEL WHERE DEPTH OF COVER TO PIPE SOFFIT IS 1 - 1.2m.
13. ALL ADOPTABLE PLASTIC SEWER PIPES TO BE KITEMARKED (CERTIFIED TO WIS 4-35-01 AND BSEN7076). ADOPTABLE PLASTIC SEWER PIPES TO BE LAID IN MAXIMUM 3 METRE LENGTHS UNLESS THERE IS A SPECIFIC OPERATIONAL NEED TO LAY LONGER LENGTHS. PLASTIC CHANNEL SECTIONS IN MANHOLES ARE NOT ACCEPTABLE AND YORKSHIRE WATER WOULD PREFER CLAYWARE CHANNEL IN MANHOLES. PLASTIC CHANNELS ARE DIFFICULT TO SET IN CONCRETE BECAUSE THEY FLOAT AND A SATISFACTORY FINISH CANNOT BE OBTAINED ON THE BENCHING.
14. WHERE A B125 COVER AND FRAME HAS BEEN APPROVED, THIS MUST NOT BE COATED IN PLASTIC AND MUST HAVE LIFTING EYES SUITABLY SIZED TO ACCOMMODATE STANDARD LIFTING KEYS. SCREW DOWN COVERS ARE NOT ACCEPTABLE.

OTHER DRAINAGE NOTES

15. ALL PRIVATE DRAINAGE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH BUILDING REGULATIONS 2002 EDITION.
16. CONTRACTOR TO ESTABLISH POSITION SIZE AND DEPTH OF ALL EXISTING SEWERS AND SERVICES PRIOR TO COMMENCEMENT ON SITE.
17. THE CONTRACTOR SHALL ALLOW FOR THE PROTECTION, TEMPORARY AND PERMANENT SUPPORT, AND TEMPORARY AND PERMANENT DIVERSION WORKS, AS NECESSARY TO ALL EXISTING SERVICES.
18. THE CONTRACTOR SHALL ALLOW FOR ALL TRAFFIC MANAGEMENT IN CONNECTION WITH ROAD AND SEWER WORKS.
19. THE CONTRACTOR SHALL ALLOW FOR KEEPING SEWER TRENCHES AND EXCAVATIONS AS DRY AS PRACTICABLE BY PUMPING FROM TEMPORARY SUMPS AND DEWATERING AS APPROPRIATE. THE POINT AND METHOD OF DISCHARGE TO BE AGREED WITH THE DRAINAGE AUTHORITY.
20. FOR PIPE SPECIFICATION PLEASE REFER TO ADDITIONAL NOTES.
21. VITRIFIED CLAY PIPES AND FITTINGS SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS ENDS5 AND BS 65 RESPECTIVELY AND BE KITEMARKED. ALL PIPES SHALL BE EXTRA STRENGTH TO BS 65 OR EQUIVALENT BS ENDS PIPE CRUSHING STRENGTH.
22. PRECAST CONCRETE PRODUCTS SHALL COMPLY WITH THE RELEVANT PROVISIONS OF BS 5911 AND BE KITEMARKED. CONCRETE PIPES TO BE CLASS 120 UNLESS NOTED OTHERWISE.
23. CAST IRON MANHOLE COVERS AND FRAMES SHALL COMPLY WITH THE PROVISIONS OF BS EN124 AND BE OF A NON-ROCKING DESIGN WITH CAPTIVE HINGE ACCESS AND, BE KITEMARKED. LOAD CLASS D400 FOR ROADS AND SERVICE YARD AREAS. CLASS C250 TO BE USED IN CAR PARKING AREAS.
24. BACKFILLING AND REINSTATEMENT TO TRENCHES IN PUBLIC HIGHWAYS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS AND SPECIFICATIONS OF THE ADOPTING AUTHORITY, OR, IN THE ABSENCE OF SUCH, IN ACCORDANCE WITH THE REQUIREMENTS OF "THE STREET WORKS REGULATIONS 1992" AND RELEVANT PROVISIONS OF H.A.U.C. "SPECIFICATION FOR THE REINSTATEMENT OF OPENINGS IN HIGHWAYS" JUNE 1992, BOTH UNDER SECTION 71 OF THE NEW ROADS AND STREET WORKS ACT 1991.
25. ALL TRADITIONAL RAINWATER PIPE DOWN COMERS TO DISCHARGE TO TRAPPED GULLIES.
26. ALL SIPHONIC DRAINAGE DOWN COMERS TO MANUFACTURERS SPECIFICATION.
27. ALL ROAD GULLIES ARE TO BE TRAPPED GULLIES.
28. ALL GULLY LEADS TO BE 150mm DIAMETER.
29. ALL REDUNDANT EXISTING DRAINAGE TO BE GRUBBED UP OR GROUTED, ANY EXISTING LIVE DRAINAGE SHOULD BE REPORTED TO THE ENGINEER AND RECONNECTED.
30. ALL ROAD GULLIES & LEADS TO BE CLEARED OF DEBRIS UPON COMPLETION OF WORKS
31. THE CONTRACTOR MUST ENSURE THAT ANY OF THE EXISTING DRAINAGE WHICH IS LIVE IS KEPT CLEAR OF DEBRIS AND SHOULD ALLOW FOR JETTING THROUGH THE NEW & EXISTING DRAINAGE UPON COMPLETION.
32. CONTRACTOR TO TAKE MEASURES TO PROTECT HIS OPERATIVES WITH RESPECT TO THE PRESENCE OF GAS IN SEWER TRENCHES AND MANHOLES THROUGH THE USE OF GAS MONITORING EQUIPMENT AND BREATHING APPARATUS AS REQUIRED.
33. CONTRACTOR TO APPLY FOR SEWER PERMITS AND ROAD OPENING PERMITS AS NECESSARY FROM THE APPROPRIATE AUTHORITIES, PRIOR TO COMMENCING WORKS.
34. WHERE PLASTIC PIPES ARE INSTALLED PRIOR TO GETTING APPROVAL THEN A LIGHT LINE CCTV SURVEY AND REPORT (ELECTRONIC DEFLECTION TESTING) OF THE PROSPECTIVELY ADOPTABLE SEWERS ARE REQUIRED PRIOR TO APPROVAL AT THE DEVELOPERS EXPENSE.

YORKSHIRE WATER NOTES

- ALL ADOPTABLE SEWERS TO BE BSI KITEMARK **(CERTIFIED TO WIS 4-35-01)**
- ADOPTABLE SEWER PIPES TO BE LAID IN MAXIMUM 3 METRE LENGTHS UNLESS THERE IS A SPECIFIC OPERATIONAL NEED TO LAY LONGER LENGTHS
- PLASTIC CHANNEL SECTIONS IN MANHOLES ARE NOT ACCEPTABLE AND YORKSHIRE WATER WOULD PREFER CLAYWARE CHANNEL IN MANHOLES. PLASTIC CHANNELS ARE DIFFICULT TO SET IN CONCRETE BECAUSE THEY FLOAT AND A SATISFACTORY FINISH CANNOT BE OBTAINED ON THE BENCHING.
- WHERE PLASTIC PIPES ARE INSTALLED INTO THE GROUND PRIOR TO APPROVAL, THE DEVELOPER WILL HAVE TO PROVIDE A LIGHT-LINE CCTV SURVEY AND REPORT OF THE PROSPECTIVELY ADOPTABLE SEWERS.

DESIGN NOTES:

1. ALL WORKS TO COMPLY WITH CURRENT VERSION OF THE FOLLOWING DOCUMENTS:
- DESIGN MANUAL FOR ROADS AND BRIDGES (DMRB)
- SPECIFICATION FOR HIGHWAY WORKS (SHW)
- LOCAL AUTHORITY DESIGN GUIDE AND SPECIFICATION
2. PRIOR TO COMMENCING WORKS THE CONTRACTOR SHOULD INVESTIGATE AND LOCATE AS NECESSARY ANY STATUTORY UNDERTAKERS EQUIPMENT WITHIN THE NEW ACCESS AND DISCUSS REQUIREMENTS FOR LOWERING/DIVERSION AND PROTECTION WITH THE RELEVANT UNDERTAKER.
3. ALL WORKS WITHIN THE PUBLIC HIGHWAY TO MEET LOCAL AUTHORITY REQUIREMENTS. CONTRACTOR TO APPLY FOR ROAD OPENING NOTICES ETC. AS REQUIRED.
4. CBR VALUE NOT AVAILABLE. ROAD CONSTRUCTION DETAIL SUBJECT TO CONFIRMATION OF CBR VALUES. CONTRACTOR TO ALLOW FOR LAB TESTS TO BE UNDERTAKEN IN AGREEMENT WITH LOCAL AUTHORITY HIGHWAY ENGINEER PRIOR TO WORKS COMMENCING.
5. PROPOSED LEVELS HAVE BEEN BASED ON THE EARTHWORKS CONTRACT PLATEAU LEVELS BY **JPC GROUP DATED SEPTEMBER 2020**.
6. PROPOSED DRAWING BASED ON ARCHITECTURAL LAYOUT BY **THE HARRIS PARTNERSHIP ARCHITECTS REF: 1006-2-0111 RECEIVED APRIL 2021**.
7. SLOPES GREATER THAN 1 IN 6 MAY REQUIRE STABILISATION. GEOTECHNICAL ENGINEER TO BE CONTACTED TO CONFIRM REQUIREMENTS

DRAINAGE NOTES:

1. ALL PIPES 100Ø UNLESS OTHERWISE STATED.
2. ALL PRIVATE FOUL WATER PIPES NOT ANNOTATED TO BE A MINIMUM OF 100Ø INSTALLED AT 1:40. ALL PRIVATE SURFACE WATER PIPES NOT ANNOTATED TO BE A MINIMUM OF 100Ø INSTALLED AT 1:100.
3. ALL PRIVATE TO ADOPTABLE CONNECTIONS 150Ø UNLESS OTHERWISE STATED.
4. ALL PPCs OVER 1.2m DEEP TO BE PROVIDED WITH REDUCED ACCESS COVER AND FRAME IN ACCORDANCE WITH BUILDING REGULATIONS PART H.
5. ALL PPCS IN TRAFFICKED AREAS TO HAVE D400 COVERS & CONCRETE SURROUND.
6. ALL INTERNAL PLOT DRAINAGE REQUIRES CONFIRMATION PRIOR TO CONSTRUCTION. CONTRACTOR TO CONFIRM MH COVER & INVERT LEVEL OF PROPOSED CONNECTION POINT PRIOR TO CONSTRUCTION. ANY VARIATION TO BE REPORTED TO ENGINEER.
7. THE INVERT LEVEL OF THE EXISTING SEWERS ARE TO BE VERIFIED PRIOR TO COMMENCEMENT OF ANY DRAINAGE WORKS. ANY DISCREPANCY MUST BE NOTIFIED TO THE ENGINEER.
8. EXISTING MANHOLES TO BE MODIFIED TO ACCOMODATE THE PROPOSED LATERAL CONNECTIONS. THESE WORKS ARE SUBJECT TO THE WATER AUTHORITY FOR THE SECTION 106 APPROVAL TO MAKE THE CONNECTIONS. PIPES ARE TO BE LAID WITH COMMON INVERT LEVELS.
9. ALL STUB PIPES ARE TO BE CAPPED.
10. ALL PIPES CONNECTIONS TO BE SOFFIT TO SOFFIT UNLESS STATED OTHERWISE. REFER TO MANHOLE SCHEDULE FOR FURTHER INFORMATION.
11. ALL PROPOSED FILTER DRAINS TO CONNECT BACK INTO PLOT DRAINAGE.
12. STONE FILLED LAND DRAINS REQUIRED IN BACK GARDENS WHERE FALLING TOWARDS PROPERTY
13. FLOOD DEFENSE WORKS APPLICATION OR EQUIVALENT TO BE MADE TO THE LOCAL AUTHORITY PRIOR TO CARRYING OUT ANY WORKS TO THE EXISTING WATERCOURSE.

KEY

INDICATIVE SITE BOUNDARY	PROPOSED PRIVATE SURFACE WATER PPIC
MAJOR CONTOUR	PROPOSED PRIVATE SW ACCESS CHAMBER (3002)
MINOR CONTOUR	PROPOSED RODDING EYE
PROPOSED ADOPTABLE SURFACE WATER	PROPOSED CLASS 1 SEPARATOR
PROPOSED ADOPTABLE FOUL WATER	PROPOSED DRAINAGE CHANNEL
PROPOSED EASEMENT	PROPOSED PRIVATE GULLY
PROPOSED ADOPTABLE HIGHWAY DRAIN	PROPOSED SIPHONIC RAINWATER PIPE
PROPOSED ADOPTABLE HIGHWAY GULLY	PROPOSED PRIVATE FOUL WATER
PROPOSED PRIVATE SURFACE WATER	PROPOSED PRIVATE FOUL WATER MANHOLE
PROPOSED PERFORATED LAND DRAIN PIPE	PROPOSED PRIVATE FW ACCESS CHAMBER (3002)
PROPOSED PRIVATE SURFACE WATER MANHOLE	

0 10 20 Metres

Date	Revisions	Drawn	Checked	Rev
11.05.21	NOTES ADDED TO ATTENUATION BASIN	AMF	VW	1
10.05.21	FIRST ISSUE	AMF	VW	1

Dwg Status: PRELIMINARY

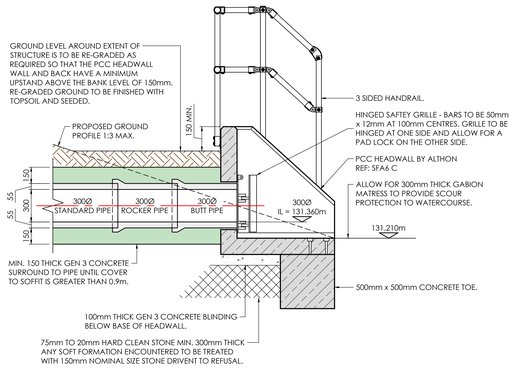
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YORKSHIRE 0113 5323500
RWO CONSULTING ENGINEERS
WWW.RWO.GROUP
INFO@RWO.GROUP

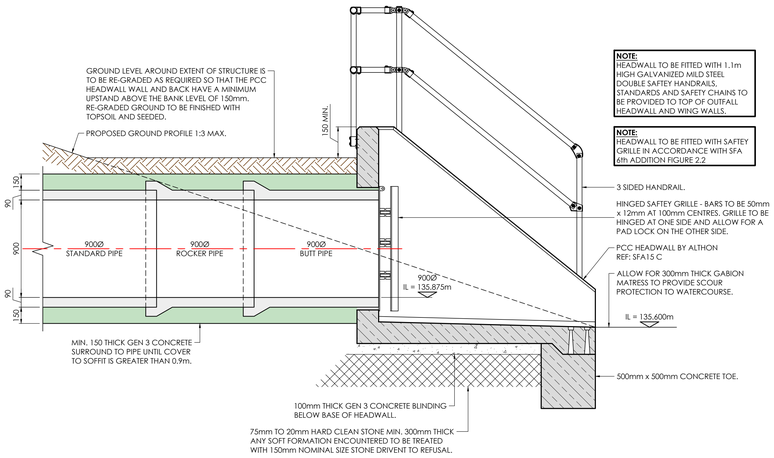
Client: HARWORTH GROUP

Project: ROCKINGHAM PHASE 2
BIRDWELL

Title: PROPOSED DRAINAGE LAYOUT
SHEET 3 OF 3

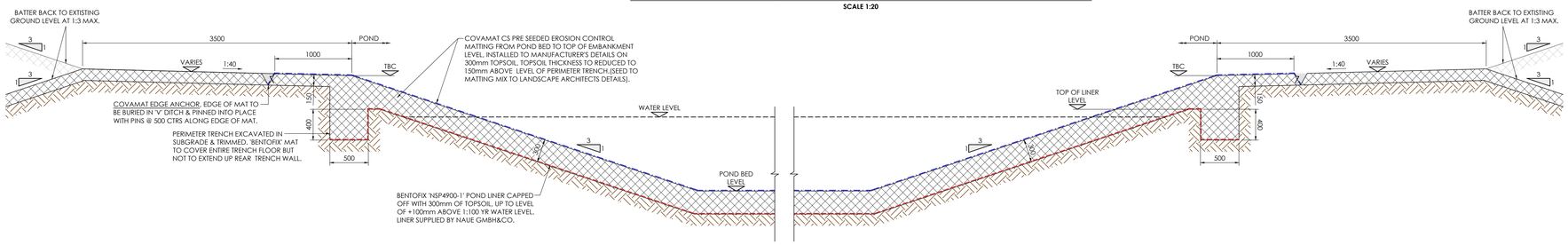
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Job No: Y20112	Dwg No: D202			Rev: 2



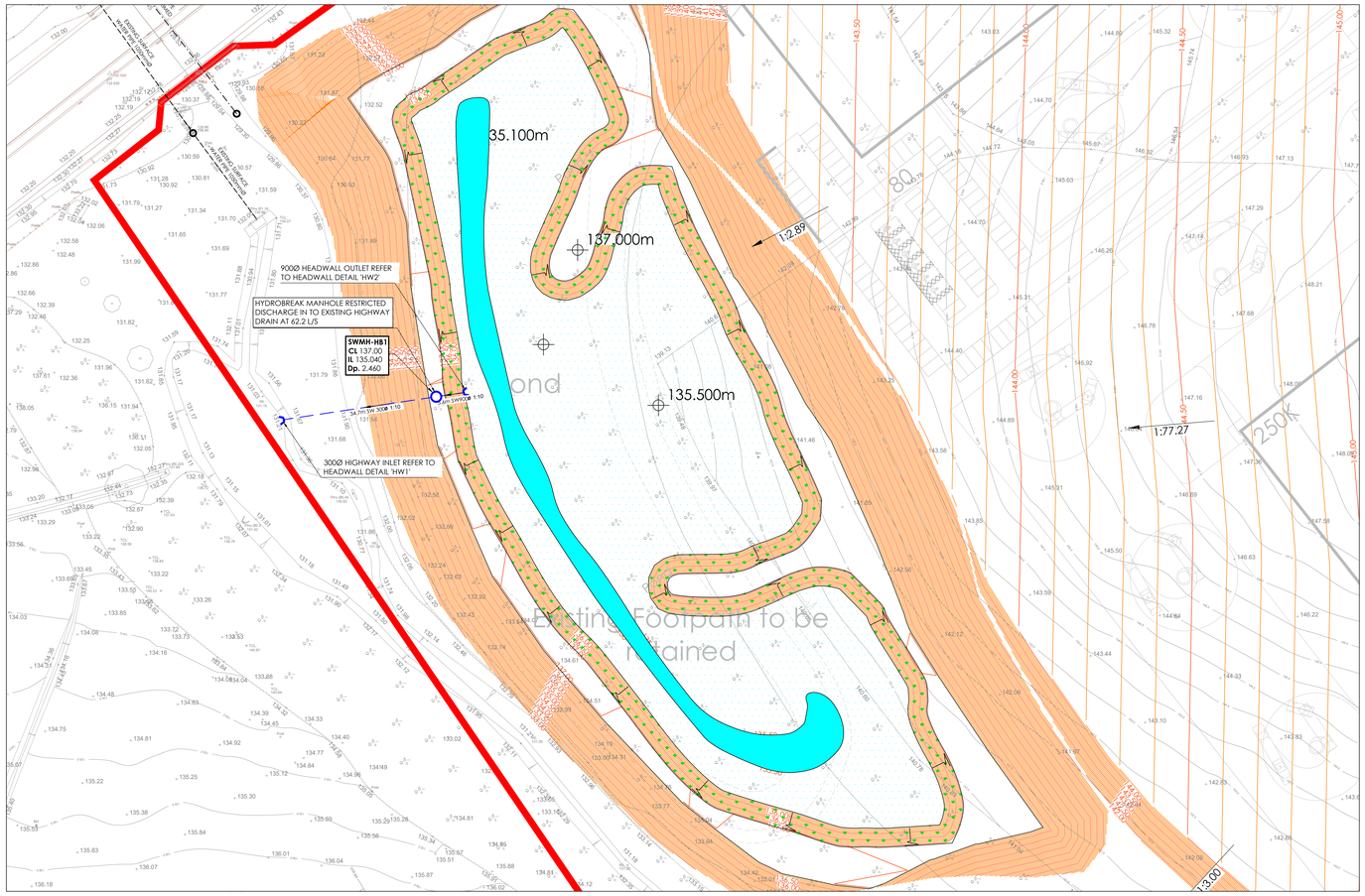


HW1
SECTION THROUGH 300Ø SURFACE WATER OUTLET PIPE TO WATERCOURSE
SCALE 1:20

HW2
SECTION THROUGH 900Ø SURFACE WATER OUTLET PIPE TO WATERCOURSE
SCALE 1:20



TYPICAL SECTION THROUGH SURFACE WATER ATTENUATION POND
SCALE 1:25



ATTENUATION / OUTFALL LAYOUT
SCALE 1:500

SURFACE WATER MANHOLE SCHEDULE

REF.	COVER LEVEL	INVERT LEVEL	SUMP DEPTH	DEPTH	EASTINGS	NORTHINGS	DIAMETER	TYPE	COVER	NOTES
HB1	137.00m	135.040m	0.500m	2.460m	435373.794	400827.606	2100Ø	TYPE B	1200x600 - CLASS D400	FLOW CONTROL CHAMBER
NOTE: ALL INVERT LEVELS SHOWN ARE FOR THE OUT GOING PIPE, ALL PIPES SHALL BE LAID WITH LEVEL SOFFITS (UNLESS OTHERWISE INDICATED ON THE DRAWING)										

LEGEND:

- PROPOSED SITE BOUNDARY
- EXISTING FW DRAINS /SEWERS
- EXISTING SW DRAINS/SEWERS
- PROPOSED FW DRAINS/SEWERS
- PROPOSED SW DRAINS/SEWERS
- PROPOSED FW RISING MAIN
- PROPOSED SW RISING MAIN
- EXISTING FW MANHOLE
- EXISTING SW MANHOLE
- PROPOSED FW MANHOLE
- PROPOSED SW MANHOLE
- PROPOSED FW PUMPING STATION
- PROPOSED SW PUMPING STATION
- PROPOSED SW INTERCEPTOR
- WPC — PROPOSED WASTE PIPE CONNECTION SIZE & LOCATION TBC BY OTHERS
- RWP — PROPOSED RAINWATER DOWN PIPE SIZE & LOCATION TBC BY OTHERS
- RG — PROPOSED TRADITIONAL TYPE ROAD GULLY WITH 150Ø OUTLET PIPE
- RE — PROPOSED RODDING EYE
- PROPOSED DRAINAGE CHANNEL
- PROPOSED KERB DRAINAGE

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DO NOT SCALE

NOTES

DRAINAGE NOTES

1. ALL BUILDING DRAINAGE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH BS EN 752:2008 DRAINAGE AND SEWER SYSTEMS OUTSIDE BUILDINGS, THE CURRENT BUILDING REGULATIONS AND THE LOCAL AUTHORITY BUILDING CONTROL SPECIFICATIONS AND REQUIREMENTS.
2. ANY DRAINAGE TO BE PUT FORWARD FOR ADOPTION EITHER WITHIN THE SITE OR OUTSIDE SHALL BE CONSTRUCTED TO SEWERS FOR ADOPTION LATEST EDITION AND ANY SPECIFIC REQUIREMENTS OF THE ADOPTING SEWERAGE/WATER AUTHORITY.
3. THE LOCATION, SIZE AND DEPTH OF ALL EXISTING DRAINS/SEWERS AND SERVICES SHALL BE ESTABLISHED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF WORKS ON SITE. ANY DISCREPANCIES FROM THE INFORMATION INDICATED ON THESE DRAWINGS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
4. THE CONTRACTOR SHALL ALLOW FOR THE PROTECTION, TEMPORARY AND PERMANENT SUPPORT AND DIVERSION WORKS AS NECESSARY, TO ALL EXISTING SERVICES TO THE SATISFACTION OF THE UTILITY COMPANIES.
5. THE CONTRACTOR SHALL ALLOW FOR DEALING WITH SURFACE WATER RUN OFF INTO EXCAVATIONS AND FROM GROUNDWATER BY MEANS OF SUMPS, PUMPING AND DE WATERING AS APPROPRIATE, IN ORDER TO KEEP THE EXCAVATION AS REASONABLY DRY AS POSSIBLE DURING THE CONSTRUCTION OF THE WORKS.
6. ALL LEVELS AND DIMENSIONS SHALL BE VERIFIED ON SITE PRIOR TO THE COMMENCEMENT OF ANY WORKS. ANY DISCREPANCIES SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
7. ALL EXISTING DRAINAGE LOCATIONS AND LEVELS ARE TO BE CONFIRMED BY THE CONTRACTOR AND THE ENGINEER NOTIFIED BEFORE ANY DRAIN RUNS ARE CONSTRUCTED.
8. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER SHOULD ANY EXISTING LIVE DRAINAGE BE FOUND WITHIN THE SITE BOUNDARY SERVING ADJACENT PROPERTIES.
9. ALL EXISTING DRAINAGE WITHIN THE SITE NOT REQUIRED FOR THE NEW DEVELOPMENT SHALL BE ABANDONED. DRAINS AND SEWER LESS THAN 1.500m DEEP WHICH ARE IN OPEN GROUND SHOULD AS FAR AS IS PRACTICABLE BE FULLY REMOVED. ALL OTHER PIPES SHOULD BE SEALED AT BOTH ENDS AND AT ANY POINT OF CONNECTION, AND BE GROUT FILLED TO ENSURE THAT RATS CANNOT GAIN ACCESS. LARGER PIPES 225Ø OR ABOVE SHOULD BE GROUT FILLED TO PREVENT SUBSIDENCE OR DAMAGE TO BUILDINGS OR SERVICES IN THE EVENT OF COLLAPSE.
10. ALL MANHOLE/CHAMBER COVER LEVELS ARE APPROXIMATE AND SHALL BE ADJUSTED ON SITE TO SUIT THE PROPOSED FINISHED LEVELS.
11. CONNECTIONS FROM WPC TO BE LAID AT 1/40 MINIMUM. AND 1/10 MAXIMUM GRADIENTS WHERE CONSTRUCTED UNDER THE BUILDING.
12. ALL PIPE CONNECTION FROM DRAINAGE CHANNELS AND GULLIES SHALL BE 150Ø PIPES AT A MINIMUM GRADIENT OF 1:100 WITH CLASS Z BEDDING UNO. ON THE DRAWING.
13. ALL PIPE CONNECTIONS FROM RWP'S TO BE 100Ø AT 1:60 MIN. WITH CLASS S BEDDING BENEATH THE BUILD AND CLASS Z UNDER EXTERNALS WHERE COVER IS LESS THAN 1.20m UNO. ON THE DRAWING (LOCATION OF RWP'S TO BE CONFIRMED BY THE ARCHITECT SHOWN INDICATIVELY ON THE DRAWING).
14. ALL SYPHONIC RWP SYSTEMS TO BE DESIGNED BY OTHERS. PIPEWORK FROM DOWN PIPE TO FIRST MANHOLE TO BE SIZED/ DESIGNED BY SYPHONIC SYSTEM DESIGNER. THE FIRST MANHOLE TO HAVE AN OPEN GRATE COVER SAINT GOBAIN WATERWAY 2000 - D400 OR SIMILAR APPROVED.
15. ALL PIPE CONNECTIONS FROM WPC'S TO FIRST CHAMBER SHALL BE 100Ø AT 1:40 MIN. WITH CLASS S BEDDING BENEATH THE BUILD AND CLASS Z UNDER EXTERNALS WHERE COVER IS LESS THAN 1.20m UNO. ON THE DRAWING (LOCATION OF WPC' TO BE CONFIRMED BY THE ARCHITECT AND TENANT (NOTE ADDITIONAL CHAMBERS AND PIPE WORK MAYBE REQUIRED TO SUIT THE TENANTS LAYOUT).
16. LOCATION SIZE AND SETTING OUT OF ALL RAINWATER AND WASTE PIPE CONNECTIONS REFER TO THE RELEVANT ARCHITECTS DRAWING FOR DESIGN PURPOSES THESE HAVE BEEN ASSUMED.
17. SUITABLY SIZED PETROL INTERCEPTORS MUST COMPLY WITH THE REQUIREMENTS OUTLINE IN PPG3 THESE INCLUDE SILT STORAGE CAPACITY AND HIGH LEVEL HYDROCARBON ALARM WIRED BACK TO A MANNED OFFICE.
18. THE CONTRACTOR SHALL TAKE ALL NECESSARY SAFETY PRECAUTIONS IN LINE WITH CURRENT LEGISLATION WHEN WORKING IN/NEAR CONFINED SPACES, DEEP EXCAVATIONS AND MACHINERY.
19. THE CONTRACTOR SHALL ALLOW FOR OBTAINING ALL APPROVALS FROM THE RELEVANT AUTHORITIES WHEN WORKING IN THE PUBLIC HIGHWAY AND ON THE SEWERAGE SYSTEM.
20. THE CONTRACTOR SHALL SUITABLY PROTECT PEDESTRIANS AND VEHICLES FROM WORKING AREAS.
21. ALL PIPES SHALL BE LAID WITH LEVEL SOFFITS AND ALL MANHOLE/INSPECTION CHAMBER INVERT LEVELS SHOWN ARE FOR THE OUT GOING PIPE (UNLESS OTHERWISE INDICATED IN THE DRAWING). PIPE RUNS SHALL BE LAID TO THE INVERT LEVELS AS DETAILED ON THE CONTRACT DRAWINGS. (NOTE THAT ALL PIPE GRADIENTS INDICATED ON THE DRAWINGS ARE APPROXIMATE).
22. ALL RAINWATER PIPES AND INTERNAL FOUL DRAIN CONNECTIONS POINTS ARE TO BE SIZED & POSITIONED AS SHOWN ON THE ARCHITECTS DRAWINGS. THE CONTRACTOR SHALL SUPPLY SUITABLE ADAPTORS AT PROPOSED GROUND LEVELS OR FINISHED FLOOR LEVEL TO ALLOW CONNECTION OF THE ABOVE GROUND DRAINAGE SYSTEM.(DETAILS OF THE ABOVE GROUND DRAINAGE SYSTEM AND ADAPTORS ALL BY OTHERS).
23. UPON COMPLETION OF THE DRAINAGE WORKS THE CONTRACTOR SHALL CLEAN ALL DRAIN RUNS BY JETTING AND REMOVE ALL DEBRIS FROM SITE. NO DEBRIS SHALL BE PERMITTED TO ENTER THE PUBLIC SEWER AND/OR WATERCOURSE SYSTEM. ONCE THE DRAINAGE SYSTEM HAS BEEN FULLY CLEANED OUT A CCTV CAMERA CONDITION SURVEY SHALL BE UNDERTAKEN TO ALL CONSTRUCTED DRAINAGE AND SEWER PIPES WITH THE FOOTAGE ISSUED TO THE ENGINEER FOR VIEW. THE AS BUILT INVERT AND COVER LEVELS SHALL BE RECORDED BY THE CONTRACTOR AND PASSED ON TO THE ENGINEER FOR REVIEW.

REV	DESCRIPTION	DATE	BY
P03	TYPICAL SECTION THROUGH ATTENUATION POND ADDED.	13.05.20	JAC
P02	FURTHER DETAIL ADDED TO DRAINAGE LAYOUT	30.04.20	RMR
P01	FIRST ISSUE.	28.02.20	LSG

Project
ROCKINGHAM PHASE 2A & 2B
HOYLAND

Drawing Title
PHASE 2
ATTENUATION POND OUTFALL DETAILS

INFORMATION ISSUE

Architect
THE HARRIS PARTNERSHIP

JPG
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Leeds London Birmingham 0113 263 1155

JPG Project Ref	Scale at A0	Date	Checked	Drawn
4652-2	AS SHOWN	23.04.20	RMR	RMR

4652-2 - JPG - SW - 00 - DR - D - 1451 | S2 | P03

Appendix B Maintenance Visit Log Sheet

Appendix B - Maintenance visit log sheet

Operation and maintenance requirements for SuDS basin

Maintenance Schedule	Required Action	Typical Frequency	Date of visit / inspection / work									
			1	2	3	4	5	6	7	8	9	10
Regular inspections	Inspect information signs. Signs to be free from damage and graffiti.	Quarterly										
	Inspect banksides, structures & pipework for evidence of physical damage.	Quarterly/after significant rainfall event.										
	Inspect inlets, outlets and pre-treatment components for silt accumulation. Includes visual inspection of chamber & inspection of flow control.	Quarterly/after significant rainfall event.										
	Inspect inlets and outlets for blockages.	Quarterly/after significant rainfall event.										
Regular maintenance	Remove litter and surface debris. Litter & debris to be removed prior to any grass cutting activity to minimise risk of shredding litter. Particular attention should be paid to inlet/outlet structures.	Monthly										
	Grass cutting: landscaped areas, base, banks, spillways & access routes.	Monthly (during growing season) or as required.										
	Manage other vegetation and remove nuisance plant. Weeding should be conducted by hand or use non-toxic and biodegradable weed killer. Invasive species should be removed in accordance with best practice.	Monthly (at implementation) then as required										
	Remove sediment, litter and debris build-up from around inlets	Quarterly to bi-annually										
Occasional maintenance	Re-seed areas of poor vegetation growth.	As required *										
	Remove sediment from inlets and outlet areas. Disconnecting manhole with sump: desilt when level reaches 50% of sump. Headwall/aprons: sediments should be removed by hand to minimise damage to vegetation and disposed off-site.	As required *										
	Prune & trim trees/ shrubs and remove cuttings. Where vegetation is planted as a barrier management of upward growth to encourage outward growth is necessary (after shrub seedlings are established).	As required *										
Remedial actions	Repair ersoion or other damage by re turfing or re-seeding.	As required										
	Remove sediment from basin when attenuation volume is reduced by 20%. Sediment level will be dependent upon presence & type of upstream SUDS, size and land use of catchment as well as local soil conditions.	As required										
	Re-level uneven surfaces and re-instate design levels.	As required										
	Repair / rehabilitation of inlets, outlets and overflows.	As required										

Operation and maintenance requirements for basin inlets and outlets

Maintenance Schedule	Required Action	Typical Frequency	Date of visit / inspection / work									
			1	2	3	4	5	6	7	8	9	10
Regular inspections	Remove litter and surface debris. Litter & debris to be removed prior to any grass cutting activity to minimise risk of shredding litter.	Quarterly/after significant rainfall event.										
	Inspect structures for evidence of poor operation. Assessment of structure condition and operation to identify necessary remedial works.	Quarterly/after significant rainfall event.										
	Inspect inlets and outlets for blockage	Quarterly/after significant rainfall event.										
Regular maintenance	Remove sediment, litter and debris build-up from around inlets.	Quarterley or after every major storm event										
Remedial actions	Repair / remediate / replace structure. Corrective maintenance to be carried out as identified.	As required										

Operation and maintenance requirements for pipes a (Applicable for private drainage & adoptable prior to adoption by YWS)

Maintenance Schedule	Required Action	Typical Frequency	Date of visit / inspection / work									
			1	2	3	4	5	6	7	8	9	10
Regular inspections	Inspect channel within all manholes for blockages and visual damage within manhole	Quarterly										
	Operate hydro brake flow control release cable within flow control chamber to ensure satisfactory movement, reset once complete. Check visible fixing bolts.	Quarterly										
	Operate penstock within manhole S43 to ensure satisfactory movement, reset once complete. Check visible fixing bolts on penstock.	Quarterly										
Occasional maintenance	Clean out silt and debris from sump in flow control manhole	As required (likely quarterly)										

* Inspection, Recording and Reporting to be carried out at least annually

Appendix C Flow Control Details

(to be provided by contractor following completion of works)

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