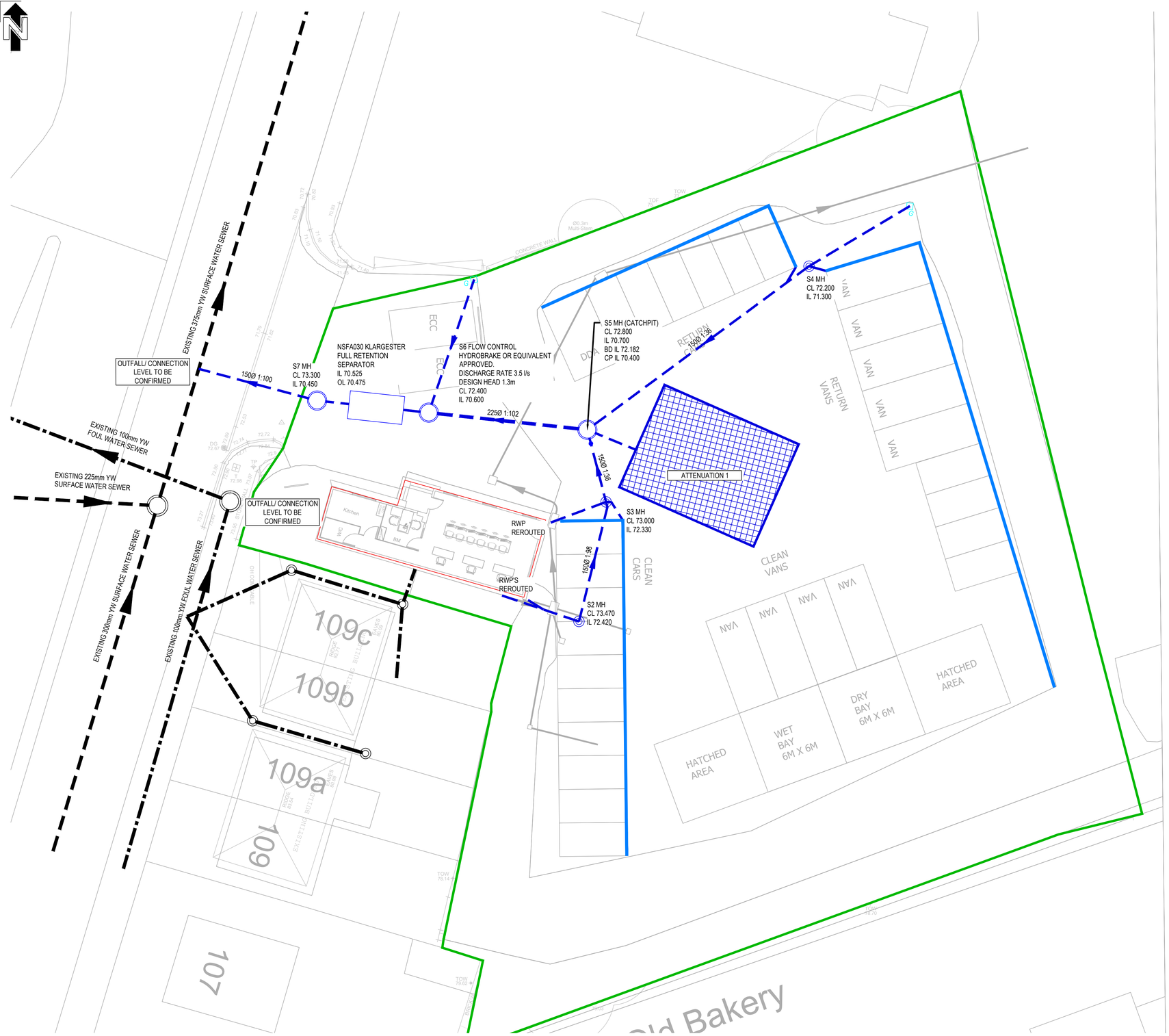



## DRAINAGE NOTES:

1. ALL WORKS TO BE CONDUCTED IN STRICT ACCORDANCE WITH SPECIFICATION OF THE LOCAL AUTHORITY & BS EN 752:2017.
2. ALL PIPE RUNS NEAR BUILDINGS TO COMPLY WITH THE LATEST BUILDING REGULATIONS PART H1. WHERE A PIPE IS WITHIN 1m OF A FOUNDATION THE TRENCH SHALL BE FILLED WITH CLASS GEN3 CONCRETE UP TO THE LOWEST LEVEL OF THE FOUNDATION. WHERE THE TRENCH IS FURTHER THAN 1m FROM THE FOUNDATION, THE TRENCH SHALL BE FILLED WITH CLASS GEN3 CONCRETE TO A LEVEL BELOW THE LOWEST LEVEL FOR THE FOUNDATION EQUAL TO THE DISTANCE FROM THE FOUNDATION LESS 150mm. IN BOTH CASES THE PIPE SHALL BE BEDDED AND SURROUNDED IN 150mm THICK CLASS GEN3 CONCRETE.
3. WHERE PIPES, EXTERNAL TO THE STRUCTURES, HAVE A DEPTH TO SOFFIT FROM GROUND LEVEL OF LESS THAN 600mm THEY SHALL HAVE A CLASS GEN3 CONCRETE ENCASEMENT (150mm THICK).
4. WHERE A PIPE, UNDER A CARRIAGEWAY, HAS A DEPTH OF COVER OF LESS THAN 1.2m THE PIPE SHALL BE LAID IN A CLASS Z BEDDING.
5. WHERE PIPES ARE BEDDED AND SURROUNDED IN CONCRETE, FLEXIBLE JOINTS SHOULD BE PROVIDED. COMPRESSIBLE BOARDS (FIBREBOARD OR POLYSTYRENE) SHALL BE PROVIDED AT A MAXIMUM OF 8m CENTRES (COINCIDING WITH PIPE JOINTS). THE BOARDS SHALL BE PRE-CUT TO PIPE DIAMETER AND TO A HEIGHT AND WIDTH EQUAL TO THE CONCRETE CROSS SECTION. A BOARD THICKNESS OF 18mm FOR PIPES UP TO 450mm NOMINAL DIAMETER AND 36mm FOR PIPES OVER 450mm NOMINAL DIAMETER.
6. ALL PRIVATE BUILDING DRAINAGE SHALL BE CONSTRUCTED IN STRICT ACCORDANCE WITH BS EN 752:2017.
7. UNLESS OTHERWISE SPECIFIED, BUILDING DRAINAGE TO BE 100mm INTERNAL DIAMETER.
8. MINIMUM GRADIENT FOR Ø100mm SURFACE DRAINAGE PIPES IS 1:60, AND Ø150mm IS 1:100 U.N.O.
9. MINIMUM GRADIENTS FOR FOUL DRAINAGE PIPES:Ø100mm: 1:40 WHERE FLOW IS LESS THAN 1L/S, OR WHERE NO WCS ARE CONNECTED.Ø100mm: 1:80 WHERE FLOW IS 1L/S OR GREATER, OR WHERE AT LEAST 1NO. WC IS CONNECTED. Ø150mm: 1:135 WHERE FLOW IS LESS THAN 5L/S, OR WHERE UP TO 5NO. WCS ARE CONNECTED.Ø150mm: 1:150 WHERE FLOW IS 5L/S OR GREATER, OR WHERE 5NO. OR MORE WCS ARE CONNECTED
10. Ø450mm PPIC'S TO HAVE A Ø150mm TO Ø225mm REDUCER FOR ALL OUTFALL CONNECTIONS TO A Ø225mm PIPE. NO Ø225mm PIPES TO CONNECT AS INLETS TO Ø450 PPIC'S, Ø600 PPIC'S TO BE USED IN THIS OCCURRENCE.
11. ALL GULLIES NOT CONNECTED TO INSPECTION CHAMBERS ARE TO BE RODDABLE.
12. ALL GULLY CONNECTIONS OTHER THAN THOSE AT MANHOLES TO BE MADE VIA 'Y' JUNCTIONS.
13. GULLIES COINCIDENT WITH PEDESTRIAN/ DRIVE CROSSINGS TO HAVE PEDESTRIAN TYPE GULLY COVERS.
14. ALL ROAD GULLY CONNECTIONS TO BE 150mm DIAMETER AND ANY GULLY CONNECTIONS SUBJECT TO TRAFFIC LOADING TO HAVE CLASS Z BEDDING & SURROUND.
15. ALL STUB STACKS TO BE FITTED WITH AIR ADMITTANCE VALVES WHERE BRANCH DRAIN EXCEEDS 12m EXCEPT AT THE HEAD OF THE RUN. SOIL VENT PIPES LOCATED AT THE HEAD OF A RUN TO BE INSTALLED WITH ROOF TILE VENT.
16. ALL CONNECTIONS TO BE MADE FROM SOFFIT TO SOFFIT UNLESS WERE NOTED OTHERWISE.
17. ALL MANHOLES SHALL BE WATERTIGHT.
18. TRENCH TEMPORARY FORMWORK IS REQUIRED TO ALL EXCAVATIONS EXCEEDING 1.2m DEPTH TO PROVIDE ADEQUATE SUPPORT AND STABILITY AT ALL TIMES.
19. SEWERS ARE TO BE CONSTRUCTED IN SINGLE SECTIONS BETWEEN MANHOLES ONLY. TRENCHES TO BE BACKFILLED PRIOR TO EXCAVATING THE SUCCEEDING SEWER RUN.
20. ALL CONCRETE AND CONCRETE PRODUCTS TO BE IN ACCORDANCE WITH BRE SPECIAL DIGEST 1 FOR SULPHATES.
21. WHERE SEWER OR DRAINS ARE TO BE ABANDONED THEY SHALL BE REMOVED OR INFILLED BY GROUTING IN ACCORDANCE WITH THE CIVIL ENGINEER SPECIFICATION FOR THE WATER INDUSTRY 7TH EDITION, CLAUSE S.23.
22. EXTERNAL RAIN WATER PIPES TO HAVE ACCESS POINTS 1m ABOVE GROUND LEVEL. (REFER TO DETAIL WITHIN CONSTRUCTION DETAILS).
23. ALL RWP, SVP AND SS LOCATIONS TO HAVE ABOVE GROUND RODDABLE ACCESS POINTS BY M&E.
24. ALL DRAINAGE TO BE CCTV SURVEYED FOLLOWING CONSTRUCTION.
25. REFER TO SPECIFICATION FOR DETAILS OF PIPE BEDDING BENEATH / ADJACENT TO FLOOR SLAB & FOUNDATIONS.
26. THE CONTRACTOR SHALL CHECK ALL EXISTING MANHOLE INVERT LEVELS PRIOR TO THE COMMENCEMENT OF ANY DRAINAGE WORKS AND REPORT HIS FINDINGS BACK TO THE ENGINEER IN WRITING.
27. WHERE PROPOSED DRAINAGE PIPE WORK RUNS ARE IN CLOSE PROXIMITY TO THE NEW FOUNDATIONS, THE CONTRACTOR SHALL ALLOW FOR EXTENDING THE DEPTH OF NEW FOUNDATIONS IN LEAN MIX CONCRETE DOWN TO THE PROPOSED PIPE BEDDING LEVEL, EXCLUDING WHERE SITE HAS PILED FOUNDATIONS

Notes

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECTS, ENGINEERS AND SPECIALISTS DRAWINGS TOGETHER WITH THE APPROPRIATE SPECIFICATIONS.
- IT IS THE CONTRACTORS RESPONSIBILITY TO CHECK ALL DIMENSIONS ON SITE. DIMENSIONS MUST NOT BE SCALED FROM THIS DRAWING. ANY DISCREPANCIES TO BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ARCHITECT IN WRITING.
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
- ALL LEVELS ARE IN METRES, UNLESS NOTED OTHERWISE

## GENERAL NOTES:

1. THE WORKS SHALL BE IN ACCORDANCE WITH THE FOLLOWING SPECIFICATIONS, NATIONAL BUILDING SPECIFICATION (NBS) BUILDING REGULATIONS PART H & VOLUME 1 OF THE MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS DRAWINGS, ARCHITECTS DRAWINGS, MECHANICAL AND ELECTRICAL DRAWINGS AND SPECIFICATIONS.
3. THE LOCATION, LINE & LEVEL OF ALL KNOWN EXISTING BURIED SERVICE MAINS AND DRAINAGE PIPEWORK INDICATED ON THE DRAWINGS ARE APPROXIMATE AND FOR GUIDANCE PURPOSES ONLY. IT IS THE CONTRACTORS RESPONSIBILITY TO DETERMINE THEIR EXACT LINE & LEVEL, BY WAY OF HAND EXCAVATED TRIAL PITS, PRIOR TO THE COMMENCEMENT OF ANY EXCAVATION WORKS ON SITE. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO MAINTAIN THE STRUCTURAL INTEGRITY OF ALL ABOVE AND BELOW GROUND SERVICE MAINS / DRAINAGE INSTALLATIONS.
4. THE CONTRACTOR MUST COMPLY WITH ALL CURRENT LEGISLATION RELATING TO HEALTH & SAFETY.
5. THE MAIN CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF ALL TEMPORARY WORKS, AND IS ALSO RESPONSIBLE FOR THE SAFE MAINTENANCE AND STABILITY OF EXISTING BUILDINGS AT ALL TIMES.
6. THE MAIN CONTRACTOR IS RESPONSIBLE FOR THE MITIGATION OF ALL OCCURRENCES OF GROUND WATER DURING THE CONSTRUCTION PERIOD.
7. THE CONTRACTOR SHALL MAKE ALLOWANCE FOR RAISING / LOWERING ALL EXISTING ACCESS COVERS & FRAMES TO SUIT NEW FINISHED LEVELS.
8. CONTRACTOR TO CONFIRM THE CONDITION OF THE EXISTING PIPES BEFORE REUSE. ANY PIPES THAT ARE BROKEN SHOULD BE LINED, REPAIRED OR REPLACED. ANY PIPES THAT ARE BLOCKED SHOULD BE CLEARED.
9. ALL SOFT / HARD PAVED AREAS AFFECTED BY THE WORKS SHALL BE FULLY REINSTATED UPON COMPLETION OF THE WORKS. ALL SURFACE MARKINGS DAMAGED BY THE WORKS SHALL BE FULLY REINSTATED.
10. 10. ALL SURPLUS EXCAVATED MATERIAL SHALL BE DISPOSED OF OFF SITE.
11. ALL LEVELS ARE TO ORDNANCE DATUM.
12. EXISTING SEWERS ARE SHOWN INDICATIVELY FROM RECORDS.

DRAINAGE DESIGN BASED ON THE FOLLOWING DRAWINGS:
SITE PLAN 'IS RS137-104' (INFORM SURVEYING)
TOPOGRAPHICAL SURVEY '1122-137_2D-(A1)' (MT SURVEYS LTD)

**NOTE:**
PAVING/LANDSCAPING DESIGN TO IMPLEMENT MEASURES TO KEEP FIRST 5mm OF WATER ONSITE. FOR FOUL DRAINAGE DETAILS REFER TO 'BY1046-3' BY BYWATER SERVICES LTD.

| Rev | Date | By | Description | Appd |
|---|---|---|---|---|
| P05 | 18.04.23 | BM | SURFACE WATER PETROL INTERCEPTOR ADDED. NOTE ADDED REGARDING FOUL WATER. | JS |
| P04 | 12.04.23 | BM | MANHOLE S5 NOW SPECIFIED AS A CATCHPIT. | JS |
| P03 | 21.03.23 | BM | FOUL DRAINAGE REMOVED AND NOTATION ADDED. | JS |
| P02 | 07.02.23 | BM | SURFACE WATER PETROL INTERCEPTOR REMOVED. LINEAR CHANNELS AMENDED AND S1 REMOVED. DRAWING TITLE UPDATED. | JS |
| P01 | 26.01.2023 | BM | FIRST ISSUE. | JS |

PRELIMINARY

APEX CONSULTING ENGINEERS
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Client: enterprise rent-a-car

Architect: INFORM

Project: ENTERPRISE RENT-A-CAR, BARNSLEY

Title: DRAINAGE GENERAL ARRANGEMENT

| Scale | Drawn | Revision |
|---|---|---|
| 1:100 @A1 | BM | P05 |
| Date | Checked | |
| JANUARY 2023 | JS | |

1205-ACE-ZZ-XX-DR-C-8000

CONTRACTOR TO CONFIRM AND SATISFY THEMSELVES OF EXACT LOCATION OF EXISTING UNDERGROUND SERVICES AND DRAINAGE.

FOUL DRAINAGE TO BE DESIGNED BY OTHERS.

EXISTING SEWERS TO BE SURVEYED TO CONFIRM LOCATION AND LEVEL. SURVEY TO BE UNDERTAKEN PRIOR TO COMMENCEMENT ONSITE.

ATTENUATION 1
84m³ x 0.800m DEEP (95% VOID) POLYSTORM OR EQUIVALENT APPROVED SURFACE WATER CELLULAR ATTENUATION SYSTEM.
STORAGE VOLUME 63.84m³ TO CATER FOR 1 IN 100 YEAR STORM EVENT +40% CLIMATE CHANGE.
BASE OF TANK: 70.740
TOP OF TANK 71.540
CELLULAR ATTENUATION SYSTEM TO BE FULLY ENCAPSULATED WITH IMPERMEABLE MEMBRANE.
ALLOWANCE TO BE MADE FOR AN ACCESS TURRET AND VENT PIPES (INSTALLATION & ACCESS POINTS TO BE IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS).
FURTHER PROTECTION REQUIRED IF COVER LEVELS OVER THE TANK ARE REDUCED BELOW 72.290

LEGEND

- SITE BOUNDARY
- PROPOSED FOUL DRAIN (SVP/SS CONNECTIONS TO BE 100Ø)
- PROPOSED SURFACE WATER DRAIN (RWP CONNECTIONS TO BE 150Ø)
- PROPOSED FOUL POLYPROPYLENE INSPECTION CHAMBER
- PROPOSED SW POLYPROPYLENE INSPECTION CHAMBER
- PROPOSED FOUL PRECAST CONCRETE MANHOLE
- PROPOSED SW PRECAST CONCRETE MANHOLE
- PROPOSED DRAINAGE CHANNEL
- PROPOSED FOUL DRAINAGE CHANNEL
- EXTENTS OF PROPOSED CELLULAR ATTENUATION
- EXISTING ON SITE SURFACE WATER SEWER TO BE REMOVED
- EXISTING FOUL SEWER
- EXISTING MANHOLE
- EXISTING YORKSHIRE WATER SURFACE WATER SEWER
- BACKDROP
- G GULLY

A1