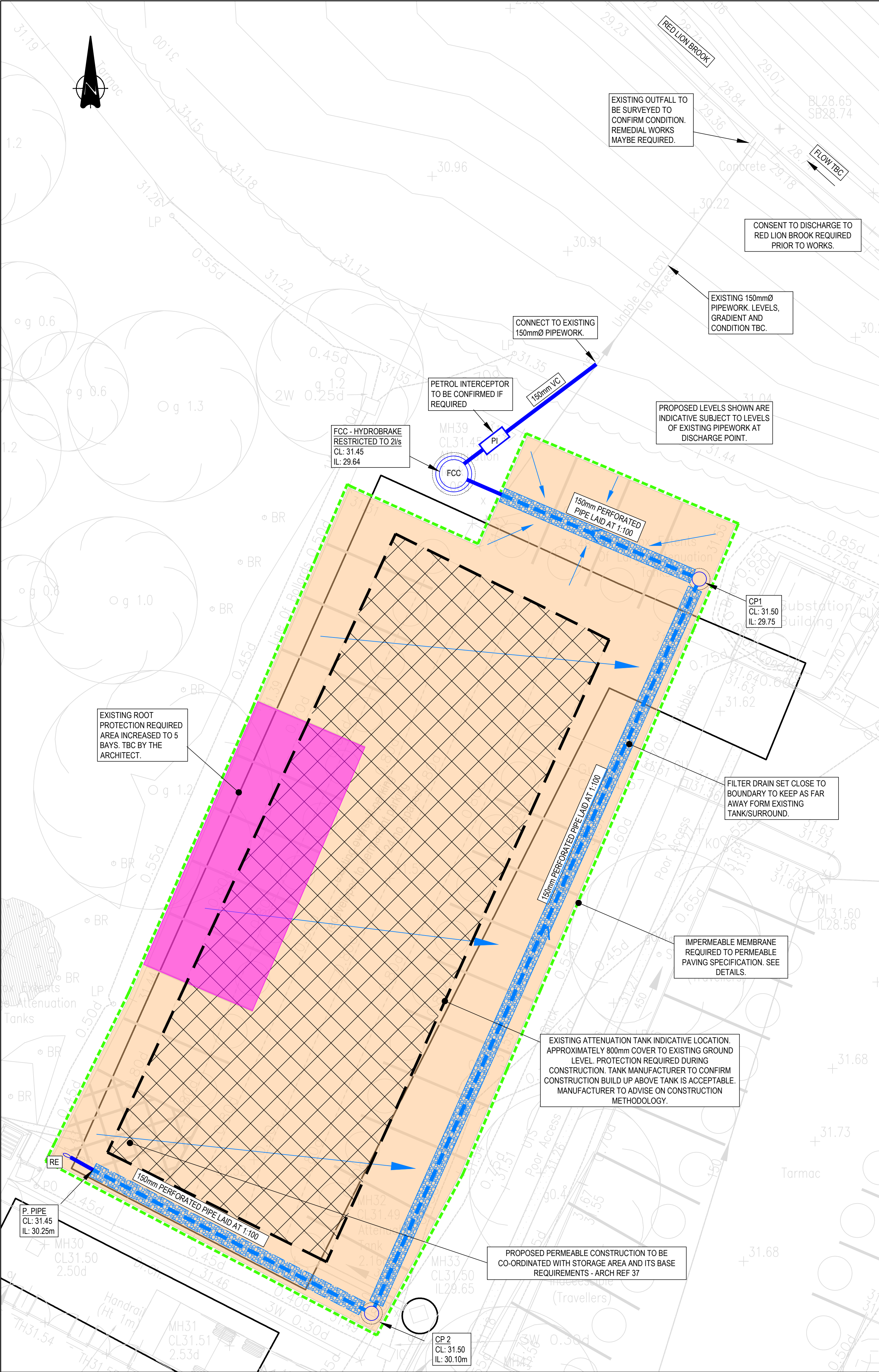




Quick Storage Estimate

Variables

FSR Rainfall

Return Period (years) 100

Region England and Wales

Map M5-60 (mm) 18.000

Ratio R 0.370

Cv (Summer) 0.750

Cv (Winter) 0.840

Impermeable Area (ha) 0.054

Maximum Allowable Discharge (l/s) 2.0

Infiltration Coefficient (m/hr) 0.00000

Safety Factor 2.0

Climate Change (%) 40

Analyse OK Cancel Help

Enter Maximum Allowable Discharge between 0.0 and 999999.0

Quick Storage Estimate

Results

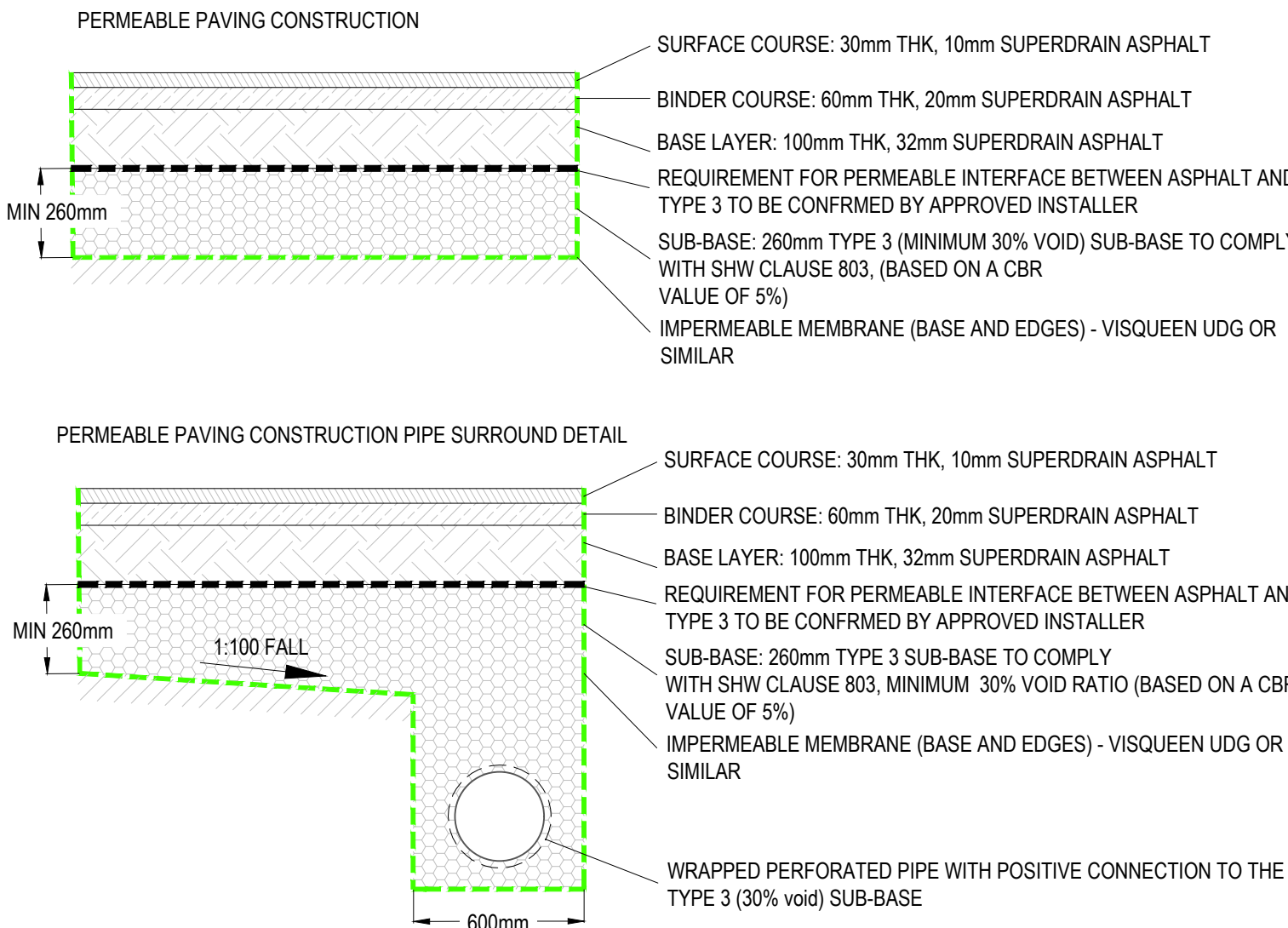
Global Variables require approximate storage of between 16 m³ and 26 m³.

These values are estimates only and should not be used for design purposes.

Analyse OK Cancel Help

Enter Maximum Allowable Discharge between 0.0 and 999999.0

CONSTRUCTION SPECIFICATION



SITE ASSESSMENT

EXISTING AREA IS ROUGH GROUND, NO POSITIVE DRAINAGE IDENTIFIED ON TOPOGRAPHICAL SURVEY.

ASSUME RAIN WATER CURRENTLY SOAKS AWAY INTO THE GROUND WATER AND INTO THE BROOK.

SITE TOPOGRAPHY SHOWS SLIGHT FALL c.100mm ACROSS THE SITE HOWEVER GENERALLY FLAT.

CLOSEST WATER BODY IS RED LION BROOK, c.15m TO THE NORTH OF THE SITE.

PROPOSED STRATEGY

INFILTRATION TESTING TO BE CARRIED OUT TO CONFIRM IF A SOAKAWAY SYSTEM CAN BE USED.

SHOULD A SOAKAWAY SYSTEM NOT BE FEASIBLE GREENFIELD RATES SHOULD APPLY.

DUE TO NO POSITIVE DRAINAGE PRESENT ON SITE GREENFIELD RATES SHOULD APPLY.

CLOSEST WATER BODY IS RED LION BROOK, c.15m TO THE NORTH OF THE SITE.

CAR PARK TO BE PERMEABLE TARMAC THEREFORE ATTENUATION CAN BE PROVIDED WITH THE BASE LAYERS.

PAVEMENT SYSTEM TO BE WRAPPED IN IMPERMEABLE MEMBRANE WITH WRAPPED PERMEABLE PIPEWORK.

FLOW CONTROL CHAMBER PROVIDED PRIOR TO DISCHARGING TO THE WATERCOURSE.

PETROL INTERCEPTOR MAY BE REQUIRED AS SECOND STAGE TREATMENT, INFILTRATION THROUGH STONE TO BE FIRST STAGE OF TREATMENT. TO BE AGREED WITH LLFA.

HYDRO-BRAKE OR SIMILAR TO BE PROVIDED TO RESTRICT FLOWS.

CATCHMENTS AND DISCHARGE RATE

EXISTING CATCHMENT AREA = 535m² (0.054ha)

QBAR = 0.1l/s (GREENFIELD)

DUE TO THE SMALL ORIFICE REQUIRED FOR 0.1l/s AND THE HIGH RISK OF BLOCKAGE, WE PROPOSE A MAX 2 l/s DISCHARGE RATE.

DRAINAGE DESIGN

REQUIRED STORAGE VOLUME TO BE ATTENUATED WITHIN STONE SUB-BASE LAYER = MAX 26m³ BASED ON 1:100 YR PLUS 40% CLIMATE CHANGE.

CAR PARK AREA = 535m² x 0.260m (SUB-BASE LAYER DEPTH) = 139.1m³.

139.1m³ x 0.3 (30%VR) = 41.73m³ (ACTUAL STORAGE PROVIDED).

PAVEMENT DESIGN

BASED ON SUPERDRAIN ASPHALT, MAX LOADING 3.5t TBC BY OTHERS.

30mm SURFACE COURSE
60mm BINDER COURSE
100mm BASE LAYER
260mm SUB-BASE
INCREASE SUB-BASE TO 260mm FROM 185mm TO PROVIDE MINIMUM 450mm FROST SUSCEPTIBLE MATERIAL.

BASED ON 5% CBR.

SEE CONSTRUCTION SPECIFICATION.

DRAINAGE KEY

- PROPOSED SW PERFORATED PIPE
- PROPOSED SW PIPE
- FCC PROPOSED FLOW CONTROL CHAMBER
- CP PROPOSED CATCHPIT
- RE PROPOSED RODDING EYE
- PROPOSED PERMEABLE PAVEMENT
- PROPOSED SUB-BASE FALL ARROWS
- PI PROPOSED PETROL INTERCEPTOR (TBC IF REQUIRED)
- TREE ROOT PROTECTION REQUIRED. CELLWEB SYSTEM TO BE USED REFER TO MANUFACTURERS DESIGN.



THE PERMEABLE PAVING IS AN INTEGRAL PART OF THE SURFACE WATER SYSTEM. A MINIMUM 185mm SUB-BASE (TYPE 3 AT 30% VOID RATIO) IS REQUIRED TO ATTENUATE WATER IS STORM EVENTS - INCREASE DEPTH (260mm) PROPOSED BASED ON LOADING REQUIREMENTS. A POSITIVE CONNECTION TO THE PIPE NETWORK VIA THE PERFORATED PIPES IS ESSENTIAL OF THE SYSTEM TO WORK.

GENERAL NOTES:

GENERAL NOTES:

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
- ALL PRIVATE DRAINAGE WORKS TO BE IN ACCORDANCE WITH CURTINS DRAINAGE SPECIFICATION, "CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY 7th EDITION", BS EN 752 2017 'DRAIN AND SEWER SYSTEMS OUTSIDE BUILDINGS' AND THE BUILDING REGULATIONS APPROVED 'DOCUMENT H'.
- DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
- DESIGN BASED ON TOPOGRAPHICAL SURVEY INFORMATION AVAILABLE AT THE TIME OF THE DESIGN.
- OUTFALL CONNECTION(S) SUBJECT TO AGREEMENT WITH THE APPROVING AUTHORITY.
- ALL DIMENSIONS ARE IN METRES AND LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE NOTED.
- COVER LEVELS ARE APPROXIMATE AND SHALL BE CONFIRMED BY ARCHITECT/ LANDSCAPE ARCHITECT. CONTRACTOR TO ALLOW FOR ADJUSTMENT TO SUIT AGREED POSITIONS AND FINISHED LEVELS, AND CONFIRM ALL COVER LEVELS ON SITE.
- INVERT LEVELS AT MANHOLES/ INSPECTION CHAMBERS TO BE USED TO SET OUT PIPEWORK. PIPE GRADIENTS ARE SHOWN INDICATIVELY ONLY.
- ALL PIPE DIAMETERS GIVEN ARE NOMINAL INTERNAL PIPE DIAMETERS.
- ALL PIPEWORK, UNLESS AGREED OTHERWISE STATED, SHALL BE:
 - 100mm to 300mm DIA TO BE VITRIFIED CLAY.
 - 375mm DIA AND GREATER TO BE CLASS 120 CONCRETE PIPES.
- AS AN ALTERNATIVE THE CONTRACTOR MAY USE AN APPROVED UNPLASTICISED POLYVINYL CHLORIDE (PVCU) WITH APPROVAL FROM THE ENGINEER.
- SEWER PIPES TO BE LAID IN MAXIMUM 3 METRE LENGTHS UNLESS THERE IS A SPECIFIC OPERATIONAL NEED TO LAY LONGER LENGTHS.
- THE FIRST PIPE OUT OF MANHOLES TO BE AS SHORT AS PRACTICABLE SO AS TO PROVIDE A FLEXIBLE JOINT AS CLOSE AS POSSIBLE TO THE OUTSIDE FACE OF THE CONCRETE SURROUND AND CONNECTED TO A LENGTH OF ROCKER PIPE.
- ALL NEW CONNECTIONS INTO EXISTING MANHOLES (OR INTO EXISTING SEWERS) TO BE 'SOFFITS LEVEL' UNLESS OTHERWISE NOTED.
- WHERE PEAT IS ENCOUNTERED DURING THE SITE INVESTIGATION, ADDITIONAL NOTES WILL BE REQUIRED AND DESIGN ADJUSTED TO SUIT.
- ALL MANHOLE COVERS IN BLOCK/SLAB AND EXTERNAL PAVING AREAS TO HAVE RECESSED COVERS OF THE APPROPRIATE GRADE TO ACCEPT ARCHITECT'S PAVING PROPOSAL.
- UNLESS NOTED OTHERWISE IN THE MANHOLE SCHEDULE, ALL MANHOLE, GULLY AND CHANNEL COVERS (IRONWORK) SHOULD BE THE FOLLOWING SPECIFICATION:
 - B125 LOAD CLASS IN PEDESTRIAN AREAS
 - D400 LOAD CLASS IN VEHICULAR AREAS
- ALL PROPRIETARY PRODUCTS TO BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS, INSTRUCTIONS AND RECOMMENDATIONS.
- THE DESIGN IS BASED ON A GRAVITY RAINWATER SYSTEM.
- CONSENT REQUIRED TO CONNECT TO RED LION BROOK BY RELEVANT AUTHORITY.
- CATCHPIT CHAMBERS PROVIDED PRIOR TO FLOW CONTROL TO CATCH SILTS AND PREVENT BLOCKAGE RISK.
- SURFACE WATER ATTENUATION TO BE PROVIDED WITHIN THE CONSTRUCTION BUILD UP.
- REFER TO DRAWING 92551 FROM DRAINAGE DETAILS.

P05	BACKGROUND TOPO UPDATE	11.02.22	CS	CG
P04	STAGE 4 UPDATE	19.11.21	CD	CG
P03	DRAFT STAGE 4 UPDATE - LATEST SITE PLAN	05.11.21	CD	CG
P02	UPDATED TO INCORPORATE TEAMS COMMENTS	30.06.21	CS	CD
P01	STAGE 4 ISSUE	04.06.21	CD	CG
Rev:	Description:	Date:	By:	Chkd:

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Status:

STAGE 4 UPDATE

Project:

HOUGH END
SPORTS VILLAGE

Orig Title:

CAR PARK DRAINAGE

Size:	Date:	Drawn By:	Designed By:	Checked By:
A1	14/05/21	CD	CG	CG
Scale: 1:100				
Project No:	Originator:	Volume:	Level:	Type:
				Role:
				Category / Number:
				Rev:

HEV - CUR - XX - XX - DR - C - 92550 - P05