



BENCH MARK INFORMATION

All levels relate to O.S (Newlyn) Datum. Established using network RTK. Survey plotted on a plane local grid, orientated to National Grid.

ALL PIPES TO HAVE CLASS "S" BED EXCEPT PIPES WITH CONCRETE PROTECTION. MINIMUM 150mm THICK GRANULAR BEDDING AND SURROUND MATERIAL TO PIPES WITH CONCRETE PROTECTION.

ROAD3

EXISTING GROUND LEVEL			45.603			45.514			46.033			45.715			46.098			45.916			45.767			45.633			45.569			45.545						
ALIGNMENT LEVEL			46.201			46.326			46.451			46.576			46.701			46.824			46.944			46.184			45.964			45.892						
VERTICAL ALIGNMENT			G= 1.250% 1: 80.0										L= 20.000 KF= -5.79710					G= -2.200% 1: -45.5																		
HORIZONTAL ALIGNMENT																																				
STORMWATER COVER LEVEL					CL 46.306 IL 43.081	Pipe 1.001 Dia 1200 Circular CONC 1 in 394 61.541																	CL 46.333 IL 43.237			Pipe 1.000 Dia 1200 Circular CONC 1 in 393 17.288			CL 46.966 IL 43.281							
FOULWATER COVER LEVEL			CL 46.212 IL 44.325			Pipe 2.001 Dia 150 Circular UPVC 1 in 150 66.089																	CL 46.371 IL 44.766													
CHAINAGE			0.000		9.415 10.000			20.000		30.000		40.000		40.536		45.000		47.782		50.000		55.000		60.000		60.536		70.000		70.587		80.000		90.000		93.265

SW NETWORK 3

MPH No.	SHB3
TYPE	SHB-0140-8600-0700-8600
DESIGN HEAD (m)	0.7
MAX. FLOW (l/sec/sec)	8.6
ORFICE DIA. (mm)	140
SURROUNDING OUTLET PIPE	YES

MPH No.	SHB3
TYPE	SHB-0129-8600-1450-8600
DESIGN HEAD (m)	1.4
MAX. FLOW (l/sec/sec)	8.5
ORFICE DIA. (mm)	140
SURROUNDING OUTLET PIPE	YES

ALL EXISTING MANHOLE INVERT LEVELS ARE TO LOCATED AND SURVEYED PRIOR TO START ON SITE TO ENSURE THAT THEY ARE CORRECT AND ALSO TO ENSURE THAT LEVEL CLASHES ARE AVOIDED AND THAT INTERPOLATED INVERT LEVELS ARE CORRECT. ANY DISCREPANCY TO BE REPORTED TO REFA PRIOR TO START TO ENABLE ANY CHANGES TO BE MADE TO DESIGN THAT PROVE NECESSARY

ALL DRAGOUT CONNECTIONS FROM MAIN SEWER MANHOLES TO FIRST INSPECTION CHAMBER TO BE 150mm Ø UNLESS INDICATED OTHERWISE

ALL ROAD GULLY CONNECTIONS TO BE 150mm Ø

ALL STORAGE MANHOLES ON THE TANK SEWER WILL NEED TO BE CONCRETE SURROUNDED AS THEY ARE WATER RETAINING.

OUTSIDE OF NEW SEWERS TO BE LOCATED 1.0m MINIMUM FROM KERBLINES OUTSIDE OF MANHOLE CHAMBERS TO BE LOCATED 0.5m MINIMUM FROM KERBLINES

ALL PIPES TO HAVE CLASS "S" BED EXCEPT PIPES WITH CONCRETE PROTECTION. MINIMUM 150mm THICK GRANULAR BEDDING AND SURROUND MATERIAL TO PIPES WITH CONCRETE PROTECTION.

ROAD5

EXISTING GROUND LEVEL			45.069																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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PLEASE NOTE THAT THIS DRAWING IS ISSUED FOR INFORMATION/TENDER PURPOSES ONLY UNTIL TECHNICAL APPROVAL HAS BEEN GRANTED. ANY WORK UNDERTAKEN PRIOR TO TECHNICAL APPROVAL BEING GRANTED IS AT THE CLIENTS RISK.

IF THE CLIENT OR CONTRACTOR IDENTIFIES ANY DISCREPANCIES BETWEEN THE DRAWINGS PRODUCED BY REFA FOR THIS PROJECT THEN THEY SHOULD CONTACT REFA IMMEDIATELY AND BEFORE ANY WORKS COMMENCE OR PROCEED IF IN DOUBT ASK !!!

PROPOSED SURFACE WATER SYSTEM DESIGNED TO CATER FOR EVENTS UP TO AND INCLUDING THE 1% AEP + 45% CC WITH NO PREDICTED SURFACE FLOODING. TOTAL AGREED SURFACE WATER DISCHARGE RATE FOR FULL ARE AS FOLLOWS:
1 YEAR RP = 26.8 L/SEC
30 YEAR RP = 57.3 L/SEC
100 YEAR + 45% CC = 75.2 L/SEC
THIS IS TO BE SPLIT OVER FOUR SEPARATE OUTFALL LOCATIONS BY WAY OF HYDROBRAKE FLOW CONTROL DEVICES.

ROAD4

EXISTING GROUND LEVEL		45.746		45.975		45.914		45.590
ALIGNMENT LEVEL		46.306		46.387		46.522		46.600
VERTICAL ALIGNMENT		G= 1.250% 1: 80.0						
HORIZONTAL ALIGNMENT								
STORMWATER DETAILS		CL 46.333 IL 43.387		Pipe 2.000 Dia 1050 Circular CONC 1 in 398 21.885		CL 46.511 IL 43.442		
FOULWATER DETAILS		CL 46.371 IL 44.766		Pipe 2.000 Dia 150 Circular UPVC 1 in 150 21.743		CL 46.527 IL 44.311		
CHAINAGE		0.000		2.750		10.000		26.271

EXISTING SERVICES CROSSING THE SITE - REFER TO UTILITIES SURVEY FOR TYPE AND POSITIONS

THE S38/S278 AGREEMENT FOR THIS SCHEME IS ALSO ASSOCIATED WITH THE LATEST APPROVED REVISION OF THE FOLLOWING PLANS:-
ROAD AND DRAINAGE LAYOUT - DRGS: 22122/100/1, 22122/100/2
LONGITUDINAL SECTIONS - DRGS: 22122/100/3, 22122/100/4, 22122/100/5, 22122/100/6, 22122/100/7
ROAD LEVELS & CONTOURS - DRGS: 22122/101/1
TYPICAL ROAD CONSTRUCTION DETAILS - DRGS: 22122/113/1, 22122/113/2
KERBING & SURFACING - DRGS: 22122/116/1, 22122/116/2

SW NETWORK 5

ALL PIPES TO HAVE CLASS "S" BED EXCEPT PIPES WITH CONCRETE PROTECTION. MINIMUM 150mm THICK GRANULAR BEDDING AND SURROUND MATERIAL TO PIPES WITH CONCRETE PROTECTION.

CIVILS DESIGN RISK MANAGEMENT

Abnormal or unusual residual risks associated with the design outcomes shown on this drawing are:-

1

EXISTING SERVICES
EXISTING ELECTRIC MAIN

2

WORKING ON EXISTING HIGHWAY
AND IN AREAS WHERE MEMBERS OF PUBLIC
MAY HAVE ACCESS

3

DANGER OF COLLAPSE TO
ALL EXCAVATIONS - RISK TO BE ASSESSED AND
MANAGED BY CONTRACTOR IN ACCORDANCE
WITH HSE GUIDANCE

4

WORKING ADJACENT TO EXISTING CULVERTED
WATERCOURSE OR LIVE FOUL SEWER (WEIL'S
DISEASE)

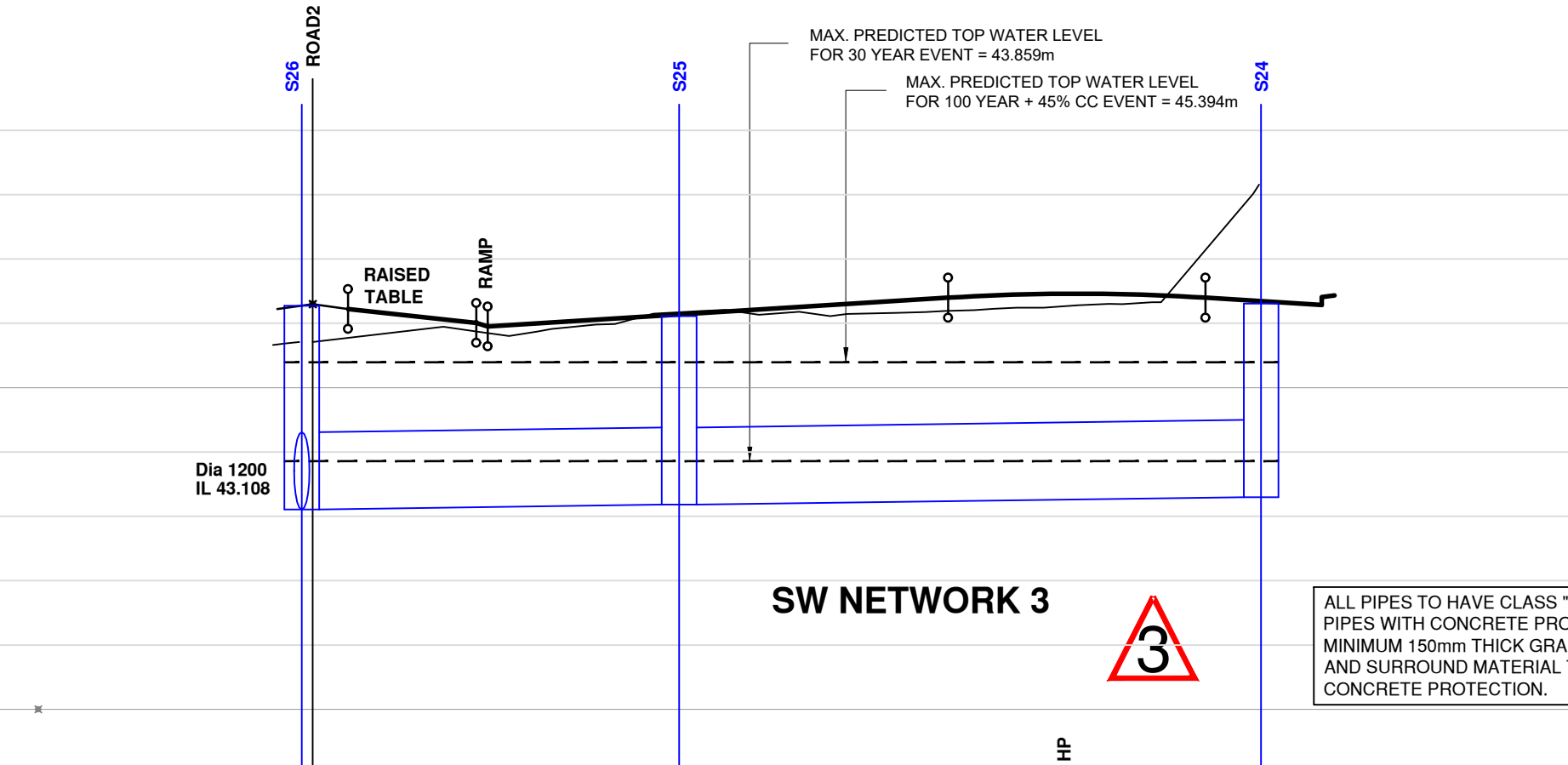
5

WORKING CLOSE TO EXISTING CULVERT

6

WORKING CLOSE TO EXISTING RAILWAY LINE

REFA Ltd has followed its Design Risk Management process for Hazard Elimination and Risk reduction in developing the designs shown on this drawing. Abnormal or unusual residual risks may be shown above where it is considered that such risk may not normally be expected by competent persons engaged on work of this nature or type



ROAD6

EXISTING GROUND LEVEL		45.711		45.942		45.940		46.169		46.117		46.197		46.405		46.448		46.460		46.441		46.398		47.281										
ALIGNMENT LEVEL		46.221		46.065		46.006		45.930		46.030		46.155		46.280		46.398		46.405		46.441		46.398		46.285										
VERTICAL ALIGNMENT		G= -2.159% 1: -46.3				G= -6.250% 1: -16.0				G= 1.250% 1: 80.0				L= 20.000 KF= -8.0				G= -1.250% 1: -80.0																
HORIZONTAL ALIGNMENT																																		
STORMWATER DETAILS		CL 46.272 IL 43.108		Pipe 2.001 Dia 1200 Circular CONC 1 in 397 29.343		CL 46.110 IL 43.182		CL 46.182 IL 43.182		Pipe 2.000 Dia 1200 Circular CONC 1 in 393 45.238		CL 46.308 IL 43.237																						
CHAINAGE		0.000		2.750		10.000		12.710		13.610		20.000		30.000		40.000		49.397		50.000		55.000		59.397		60.000		65.000		69.397		70.000		74.437

GENERAL

- All adaptable sewers and associated works are to comply fully with "Design and Construction Guidance" & Local Practices
- All highway works to be to adaptable standards and to comply fully with the Local Authority specification.
- All private drainage works are to comply fully with part H of the Building Regulations
- All existing invert levels to be checked by the Contractor at the start of works and any discrepancies notified to REFA. All levels are based on topographical survey information provided by others.
- All materials to bear the relevant B.S. Kitemark and comply fully with the specifications. All concrete & concrete products must use Sulphate resistant cement (unless the site investigation report proves that sulphate attack from soils and groundwater will not occur)
- All opening notices etc. as required under highways acts etc. are to be obtained prior to commencement of works. All works are to be inspected by L.A., NHBC or Relevant Water Authority as applicable.

C.D.M. REGULATIONS 2015

In line with the above regulations we are obliged to inform the Client of their responsibilities under section CDM 15/1, and residual risks that may be encountered in the construction of these works. All design work has been carried out with Health and Safety aspects given full consideration.

Wherever possible risks have been eliminated from the design, however due to the very nature of this type of work it is not possible to remove all the risks from the design.

We would also respectfully remind the Client of his obligations to take all reasonable steps in ensuring that only competent Contractors who have a valid safety policy are employed.

They should also provide satisfactory responses at tender stage as to the manner in which they will deal with the elements of risk involved in this type of work and in particular those highlighted by REFA below:-

- Support / treatment for ALL excavation work.
- Guarding to edges of excavations to prevent people, materials and vehicles falling into excavation.
- Guarding of excavations outside working hours to prevent unauthorised access.
- Undermining to adjacent roads or structures.
- Confined space operations.
- Dealing with existing services.
- Traffic management on existing highways.
- Procedure to be followed in event of accident or emergency.
- Method of working where contaminated ground is present on site.
- Confirmation will be required that all operatives are adequately trained, copies of relevant training certificates to be supplied.

The above list is by no means exhaustive but it does highlight operations that present a risk to contractors and the general public. For clarification on any item please contact REFA.

rev	Revision details	RevBy	Date
F	TWL'S & H'S REVISED FOLLOWING SW RECALCULATIONS	RW	13.07.23
E	FW REFERENCE NUMBERS CORRECTED	RF	06.04.23
D	SEWER REDESIGN FOLLOWING UPDATED EXISTING SEWER INFORMATION	RF	06.04.23
C	REVISED FOLLOWING LLFA COMMENTS	AS	23.02.23
B	CULVERT DIVERSION & NETWORK 4 REVISED ROADS 4, 5 & RAMPS REVISED	RF	20.01.23
A	MINOR SEWER REVISIONS TO SW & FW SEWERS IN ROADS 3 & 4, F10 & S53 REMOVED	RF	30.11.22

Drawing Stage	Drawing Status
☐ Draft	☐ Comments
☒ Issued	☐ Information
	☒ Approval
	☐ Tender
	☐ Construction
	☐ As Built

Client
KELLEN HOMES LIMITED

Job title
BENNETT STREET MANCHESTER

Drawing title
LONGITUDINAL SECTIONS 3

REFA			45 Bridgeman Terrace Wigan, Lancs WN1 1TT Tel: - (01942) 826020 Fax: - (01942) 230816
<u>CONSULTING ENGINEERS</u> CIVIL / STRUCTURAL GEOTECHNICAL / ENVIRONMENTAL			
Date 17.11.22	Scale 1:500 H ; 1:100 V	Drawn RF	
DRAWING No	22122/100/5	Rev F	
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