SECTION 104 & 38 NOTES

1. All adoptable drainage works have been designed and are to be constructed in accordance with "Sewers for Adoption, 7th Edition", and Welsh Water Supplemental Guidelines
2. All clay pipe work shall be Extra Strength Clayware to B.S. EN 295:1991 Part 1
3. All precast concrete pipework shall be to the class stated on the drawings in accordance with BE EN 1916:2002. All manholes and chambers shall be to BS EN 1917:2002
4. The Contractor may elect to use reinforced PVC pipes as covered by BS 4660:2000 & BS EN 1401–1 Structured wall upvc pipes to comply with wis 4–35–01 up to and including 300mm.(By prior agreement with adopting authority) MAX. PIPE LENGTH TO BE 3.0m
5. All levels relate to an Ordnance Datum.
6. This drawing is to be read in conjunction with all other relevant drawings.
7. House drainage connections to sewers must be 150mm ø and unless otherwise stated laid to the dragout invert level shown.
8. Levels given on drag out chambers are incoming pipe levels.
9. House drainage runs to be kept within the curtilage of the plot they serve wherever possible.
10. The Contractor shall be responsible for ensuring that any existing invert levels indicated on drawings are correct before work commences.
11. The Contractor should satisfy himself as to the position and depth of any existing Statutory Undertakers plant which could effect the works before the works are commenced.
12. Road gully connections are to be 150mm ø connecting either directly to manholes shown, or to sewer runs using pre–formed junctions.
13. All connections to adoptable sewers shall be by manufactured junction pipes. Saddle connections will not be permitted.
14. All sewers for adoption with greater than 1.20 metres cover in roads or 0.9m metres cover in fields shall have Class S granular bed and surround.
15. Any sewer for adoption with less than 1.2 metres cover in roads or 0.9 metres cover in fields shall have a minimum of 150mm ST4 concrete surround. Flexibility shall be maintained by the provision of Flexcell or similar approved joint filler breaks in the concrete surround at each pipe joints

SITE TEAMS INSTALLING STRUCTURAL WALL PLASTIC PIPES ARE REQUIRED TO HAVE ATTENDED A COURSE AND TO HAVE A VALID CERTIFICATE FROM THE BPF PLASTIC PIPE GROUP STRUCTURAL WALL UPVC PIPES ARE TO BE LAID IN 3m LENGTHS

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 AND SURROUND UNLESS SHOWN OTHERWISE
ALL CONCRETE PIPES TO BE CLASS 120
ALL CLAY PIPES TO BE EXTRA STRENGTH VITRIFIED CLAY
ALL UPVC PIPES TO COMPLY WITH BS 4660:2000 & BS EN 1401–1
STRUCTURED WALL UPVC PIPES TO COMPLY WITH WIS 4–35–01 MAX. PIPE LENGTH TO BE 3.0m

FOUNDATIONS TO BE DESIGNED / CONSTRUCTED TO TAKE INTO ACCOUNT THE PROXIMITY AND DEPTH OF ADJACENT SEWERS AND DRAINS IN ACCORDANCE WITH SFA 7TH EDITION PART B

CONTRACTOR TO BE AWARE OF AND TAKE APPROPRIATE ACTION TO ENSURE DE–STABILISATION OF ANY EXISTING STRUCTURES, TREES, EMBANKMENTS OR OTHER FEATURES DOES NOT OCCUR AS A RESULT OF ANY EXCAVATIONS WORKS UNDERTAKEN IN ACCORDANCE WITH THE DESIGNS SHOWN ON THIS DRAWING IF CONTRACTOR IS UNSURE ABOUT ANY ASPECT OF THE ABOVE HE SHOULD SEEK ADVICE BEFORE COMMENCING EXCAVATION WORK.

ALL EXISTING SERVICES TO BE LOCATED AT COMMENCEMENT IN ACCORDANCE WITH UNDERTAKERS REQUIREMENTS AND PROTECTED ACCORDINGLY DURING THE WORKS

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

ALL ROAD GULLY CONNECTIONS TO BE 150mmø

THE OFF SITE SEWER CONNECTIONS HAVE BEEN DESIGNED TO TIE IN WITH THE EXISTING SEWERS AND WHILST IT IS ANTICIPATED NO CLASHES WITH EXISTING SERVICES WILL OCCUR DUE TO THE INHERENT INACCURACIES IN DEPTHS OF EXISTING SERVICES THIS CANNOT BE GUARANTEED.

REFA WOULD ADVISE THE CLIENT TO EMPLOY A SUITABLY EXPERIENCED COMPANY TO UNDERTAKE A SURVEY ALONG THE ROUTE OF THE CONNECTIONS TO ASCERTAIN THE EXISTENCE AND PROXIMITY OF ANY SERVICES AND ADVISE REFA OF ANY POTENTIAL CLASHES TO ASCERTAIN IF DESIGN CHANGES CAN BE MADE.

DUE TO THE NEED FOR OFF SITE SEWER WORKS IT IS STRONGLY ADVISED THAT THESE ARE CONSTRUCTED PRIOR TO ANY WORKS ON SITE TO ALLOW DESIGN CHANGES ON SITE TO BE MADE IN THE EVENT THAT THE OFF SITE DESIGNS REQUIRE REVISION.
REFA WILL NOT BE HELD RESPONSIBLE FOR ANY ABORTIVE WORKS IF THIS PROCEDURE IS NOT FOLLOWED

CONTRACTOR/CLIENT SHOULD NOTE THE EXISTENCE OF EXISTING BURIED PLANT AND OR OVERHEAD POWER CABLE(S) BEFORE WORK COMMENCES CONTRACTOR MUST UNDERTAKE RISK ASSESSMENT AND PROVIDE METHOD STATEMENT FOR WORKING IN THIS AREA IN ACCORDANCE WITH HSE AND POWER SUPPLIERS GUIDELINES TO SATISFACTION OF THE PRINCIPLE DESIGNER

CONTRACTOR TO ALLOW FOR REBUILDING EXISTING MANHOLE TO CURRENT STANDARDS IF CONNECTION CANNOT BE MADE IN ACCORDANCE WITH UNDERTAKERS GUIDELINES

TO CATER FOR ANY DEVIATIONS IN THE AS CONSTRUCTED ROAD / FOOTPATH LEVELS IN RELATION TO THE DESIGN LEVELS, THE PROPOSED FLOOR LEVELS SHOWN MUST BE CHECKED ON SITE BY THE SITE AGENT OR ENGINEER IN RELATION TO AS BUILT ROAD LEVELS TO ENSURE COMPLIANCE WITH PART M OF THE BUILDING REGULATIONS

SCALE IN METRES
0 5 10 20 50

ORIGIN, ORIENTATION & DATUM:
ORDNANCE SURVEY OSTN02

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 !!!

S185 SEWER DIVERSION
EXISTING 150mm Ø ADOPTED FOUL SEWER TO BE ABANDONED BETWEEN PROPOSED MANHOLE F5 & PROPOSED MANHOLE F32.
ADOPTED 150mm Ø FOUL SEWER IS TO BE DIVERTED AS SHOWN FROM MANHOLE F5 TO EXISTING MANHOLE ADJACENT TO CEMENTARY

THE PURPOSE OF THIS IS TO ENSURE THAT PLOTS CAN BE DRAINED TO A SEWER LAID FOR THE MOST PART THAT WILL BE UNDER ADOPTED HIGHWAY, AND ALSO TO AVOID THE NEED TO PUMP

EXISTING SEWER TO BE ABANDONED TO BE CCTV SURVEYED TO ENSURE ANY LIVE CONNECTIONS ARE CATERED FOR
DENOTES SEWERS TO BE ABANDONED

EX FW MH2
CL 86.902m
IL 83.042m 225ø
3.86m DEEP FROM SURVEY

EX FW MH3
CL 86.773m
IL 83.673m 225ø
IL 83.748m 150ø
3.0m DEEP FROM SURVEY
CL TO BE RAISED TO CL 87.00m

EX FW MH5
CL 86.181m
IL 84.741m 150ø
2.44m DEEP FROM SURVEY
CL TO BE RAISED TO CL 87.15m

EX FW MH6
CL 86.460m
IL 86.000m 150ø
2.46m DEEP FROM SURVEY

EX FW MH4
CL 85.969m
IL 84.329m 150ø
3.66m DEEP FROM SURVEY
TO BE ABANDONED

SOFFIT LEVEL 84.350
INVERT LEVEL 82.350
SOAKAWAY EASEMENT

BOREHOLE 1 FALLING HEAD TESTS
AT 3 - 4m BELOW EGL = 2806mm/hr
AT 4.5 - 5.5m BELOW EGL = 4777mm/hr
AT 5.5 - 6.5m BELOW EGL = 3407mm/hr
AT 7 - 8m BELOW EGL = 12060mm/hr

CELLULAR SOAKAWAY
Based on the following parameters:-
Infiltration rate of 2.88 metres/hour (taken from falling head test by Groundsolve Ltd)
Infiltration allowed through sides only, no infiltration through base as SuDS manual.
Storage factor for cells taken as 95%
Soakaway size 45m long by 15m wide by 2m deep
Invert level 82.200m at base Cells to be
Geolight or other approved in accordance with manufacturers design with 750mmØ perforated distribution pipe as shown
Sofit level 84.350m
Design return period 100 years
Climate change allowance 20%
Urban creep allowance 10%
As stipulated in letter from Neil Taunt to Waterco dated 11/9/19

Manhole S33 to be Aqua Swirl (or other approved) Chamber to suppliers design
All road gullies and rainwater pipes to be trapped

PLEASE NOTE ALL PROPOSED SW DRAINAGE IS SUBJECT TO APPROVAL OF WREXHAM CO / SAB APPROVAL BODY

PLEASE NOTE FW DRAINAGE PROPOSALS AND CONNECTIONS ARE SUBJECT TO CONFIRMATION & APPROVAL OF WELSH WATER

Note 1- SFA 7th Footnote

The Developer must self-vet and certify that the design criteria, material standards and workmanship specifications for the proposed adoptable sewers are in accordance with those set out in "Sewers for Adoption" 7th Edition, The Welsh Ministers Standards and the requirements of DCWW as the Statutory Sewerage Undertaker.

Note 2 - Connection

Subject to a Section 104 Adoption Agreement being complete, a *Section 106 application to connect to adopted sewers must be made to DCWW, the developer shall give 21 days notice prior to connection. The works may only be undertaken by an SSIP Health & Safety approved contractor.*

Note - 3 Materials

All materials are to comply fully with the requirements of clause "E" in Sewers for Adoption 7th Edition, of which the contractor must fully acquaint himself with to ensure compliance.

GENERAL

1. All adoptable sewers and associated works are to comply fully with "Sewers for Adoption" 7th.Edition dated August 2012.
2. All highway works to be to adoptable standards and to to comply fully with the Local Authority specification.
3. All private drainage works are to comply fully with part H of the Building Regulations
4. 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.
5. 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)
6. 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:–

1. Support / treatment for ALL excavation work.
2. Guarding to edges of excavations to prevent people,materials and vehicles falling into excavation.
3. Guarding of excavations outside working hours to prevent unauthorised access.
4. Undermining to adjacent roads or structures.
5. Confined space operations.
6. Dealing with existing services.
7. Traffic management on existing highways.
8. Procedure to be followed in event of accident or emergency.
9. Method of working where contaminated ground is present on site.
10. 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.

DENOTES PROPOSED ADOPTABLE SURFACE WATER SEWERS

DENOTES PROPOSED ADOPTABLE SURFACE WATER PLOT DRAINAGE

DENOTES PROPOSED FOUL WATER SEWERS

DENOTES EXISTING FOUL WATER SEWER

DENOTES PROPOSED FOUL WATER PLOT DRAINAGE

DENOTES PROPOSED FOUL SEWER SECTION TO BE ABANDONED

DENOTES EASEMENT

CIVILS DESIGN RISK MANAGEMENT

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

1. EXISTING SERVICES
   OVERHEAD ELECTRIC
   GAS MAIN
   OVERHEAD TELECOMS
2. WORKING ON EXISTING HIGHWAY
   WORKING IN AREAS WHERE MEMBERS OF THE PUBLIC 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 WATERCOURSE OR LIVE FOUL SEWER (WEIL'S DISEASE)

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

THIS DRAWING IS BASED ON PLANNING LAYOUT PROVIDED BY CLIENT
DRAWING NUMBER:- PL1/WD1000
REVISION:- J
CLIENT TO ENSURE THE ABOVE LAYOUT IS CURRENT BEFORE USING THIS DRAWING FOR CONSTRUCTION PURPOSES

rev	Revision details	RevBy	Date

worksafe designer — all recognised by SSIP SAFETY SCHEMES IN PROCUREMENT — www.smasltd.com

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

Client
SG ESTATES LIMITED

Job title
LLAY NEW ROAD RHOSROBIN, WREXHAM

Drawing title
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GEOTECHNICAL• ENVIRONMENTAL

Date	Scale	Drawn
26.01.22	1:500	AS

DRAWING No 21148/111/1 Rev

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A1 SHEET