DENOTES PROPOSED FOUL SEWER TO BE ADOPTED UNDER S104 AGREEMENT

DENOTES PROPOSED SURFACE WATER SEWER TO BE ADOPTED UNDER S104 AGREEMENT

DENOTES EXISTING ADOPTED COMBINED WATER SEWER

DENOTES EXISTING CULVERTED WATER COURSE

DENOTES PROPOSED ATTENUATION STORAGE BASIN (TO REMAIN PRIVATE)

DENOTES SEWER EASEMENT

THE OFF SITE SEWER CONNECTION(S) HAVE BEEN DESIGNED IN ACCORDANCE WITH INFORMATION AND FRA PROVIDED BY THE CLIENT

REFA WOULD ADVISE THE CLIENT TO EMPLOY A SUITABLY EXPERIENCED COMPANY TO UNDERTAKE TRIAL HOLES TO ASCERTAIN THE EXACT LOCATION OF EXISTING SERVICES AND THE PROXIMITY OF THE SAME TO THE PROPOSED SEWERS AND THEN TO ADVISE REFA OF ANY POTENTIAL CLASHES TO ENABLE DESIGN CHANGES TO BE MADE WHERE FEASIBLE

DUE TO THE NEED FOR OFF SITE SEWER WORKS IT IS STRONGLY ADVISED THAT THESE INVESTIGATIONS ARE UNDERTAKEN PRIOR TO ANY CONSTRUCTION ON SITE TO ALLOW DESIGN CHANGES TO BE MADE.

REFA WILL NOT BE HELD RESPONSIBLE FOR ANY ABORTIVE WORKS IF THIS PROCEDURE IS NOT FOLLOWED

REFA WOULD ADVISE THE CLIENT THAT A DETAILED OFF SITE SURVEY SHOULD BE UNDERTAKEN AT THE EARLIEST OPPORTUNITY TO ENABLE THE FEASIBILITY DRAWINGS TO BE UPDATED WITH ACCURATE INFORMATION OF PARTICULAR IMPORATNCE ARE :-

1. **EXISTING MAINS SERVICES AND OTHER APPARATUS**
2. **EXISTING SEWER INVERT LEVELS**
3. **THE DEPTHS SIZE AND LOCATION OF THE CULVERT IN TO WHICH IT IS PROPOSED TO CONNECT SURFACE WATER, NOT ONLY TO CONFIRM THE SURFACE WATER CONNECTION BUT ALSO TO MAKE A PROPER ASSESSMENT OF THE FOUL WATER SEWER WHICH NEEDS TO PASS EITHER UNDER OR ABOVE THE CULVERT**

DUE TO LACK OF AVAILABLE INFORMATION ON SEWER RECORDS AND SURVEY IN RELATION TO EXISTING SEWER NETWORK IT IS IMPERATIVE THAT WHERE INVERT LEVELS HAVE BEEN ASSUMED OR INTERPOLATED THESE ARE VERIFIED AS CORRECT BY CLIENT / CONTRACTOR PRIOR TO ANY CONSTRUCTION WORKS TAKING PLACE. REFA ACCEPT NO RESPONSIBILITY FOR THE ACCURACY OF SEWER RECORD INFORMATION OR SURVEY INFORMATION.
ANY DISCREPANCIES ARE TO BE REPORTED TO REFA TO ENABLE DESIGNS TO BE CHECKED AND UPDATED AS NECESSARY

ATTENUATION BASIN
TO CATER FOR 1%AEP+CC EVENTS
INVERT LEVEL 80.80m
BATTER SLOPES 1 IN 3 MAX.

ATTENUATION BASIN
TO CATER FOR 1%AEP+CC EVENTS
INVERT LEVEL 78.80m
BATTER SLOPES 1 IN 3 MAX.

HYDROBRAKE IN MANHOLE S110 TO LIMIT FLOWS TO 67.30 l./second FOR ALL EVENTS UP TO AND INCLUDING 1%AEP + 30% CC

DUE TO DEPTH OF OFF SITE SEWERS BETWEEN :-
S108-S110 & F98-F100
THE USE OF DIRECTIONAL

THE FOUL AND SURFACE WATER DRAINAGE SYSTEMS HAVE BEEN DESIGNED IN ACCORDANCE WITH SFA 7th EDITION, SuDS MANUAL CIRIA C753, AND SC030219.
FOUL WATER CONNECTION SUBJECT TO APPROVAL BY DCWW

THE PIPE DIAMETERS AND GRADIENTS SHOWN ARE FOR GUIDANCE ONLY AND MAY BE SUBJECT TO CHANGE AT DETAILED DESIGN STAGE

SURFACE WATER IS TO DISCHARGE TO EXISTING CWC AT THE RATES SHOWN SUBJECT TO AGREEMENT WITH LPA/LLFA/NRW AND UNITED UTILITIES WITH RATES OF RUN OFF LIMITED AS SHOWN.

ATTENUATION TO CATER FOR EVENTS UP TO AND INCLUDING 1%AEP + 30% CC IN ATTENUATION BASIN SUBJECT TO DETAILED DESIGN

THE PIPE DIAMETERS AND GRADIENTS SHOWN ARE FOR GUIDANCE ONLY AND MAY BE SUBJECT TO CHANGE AT DETAILED DESIGN STAGE

FLOOR LEVELS SHOWN ARE INDICATIVE ONLY AND ARE SUBJECT TO DETAILED REVIEW AND REVISION AT FULL DESIGN STAGE

SCALE IN METRES
0 5 10 20 50

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.

rev	Revision details	Rev.By	Date
F	TO PLANNING REV P18 SEWERS REDESIGNED TO SUIT	GWH	26.10.17
E	CENTRAL AREA ATTENUATION COMBINED	GWH	22.8.17
D	TO UPDATED PLANNING LAYOUT P15	GWH	22.8.17
C	TO UPDATED PLANNING LAYOUT P12	GWH	22.8.17
B	ATTENUATION BASINS I PLACE OF GEOCELL STORAGE	GWH	15.8.17
A	INDICATIVE FLOOR LEVELS ADDED	GWH	13.7.17

smas worksafe consultant www.smasltd.com — as recognised by SSIP SAFETY SCHEMES IN PROCUREMENT

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

Client
ANWYL CONSTRUCTION
BELLWAY HOMES

Job title
GRESFORD ROAD
LLAY

Drawing title
DRAINAGE FEASIBILTY
DRG 3 OF 7

REFA
45 Bridgeman Terrace
Wigan, Lancs
WN1 1TT
Tel:-(01942) 826020
Fax:-(01942) 230816
CONSULTING ENGINEERS
CIVIL• STRUCTURAL
GEOTECHNICAL• ENVIRONMENTAL

Date	Scale	Drawn
11.4.17	1/500	GWH

DRAWING No 17040/06/3 Rev F

© This drawing is the property of REFA and should not be copied, used or its contents divulged without prior written consent.

A1 SHEET