



CONSULTING ENGINEERS

CIVIL • STRUCTURAL
GEOTECHNICAL • ENVIRONMENTAL

SURFACE WATER DRAINAGE

**WOODLANDS FARM
DODDS LANE
GWERSYLLT
WREXHAM**

**WALES AND WEST
HOUSING ASSOCIATION**

NOVEMBER 2018

Revision B

Project 14155

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1.0 INTRODUCTION

Robert E Fry & Associates are consulting civil and structural engineers based in Wigan, with over 20 years experience in the appraisal and design of drainage schemes to serve new housing developments, ranging from small developments of 6 units up to 400 units plus.

We are instructed by Wales and West Housing Association to review the surface water drainage options for a housing development at Woodlands Farm, Dodds Lane, Gwersyllt, Wrexham, consisting of 23 properties.

2.0 PROPOSED SURFACE WATER DRAINAGE SOLUTION

There is an established hierarchical process to be adopted when arriving at a surface water drainage solution for a development site set out in part H3 of the Approved Document, summarised in order of preference as follows:

- a. Infiltration / soakaway
- b. Discharge to watercourse
- c. Discharge to sewer

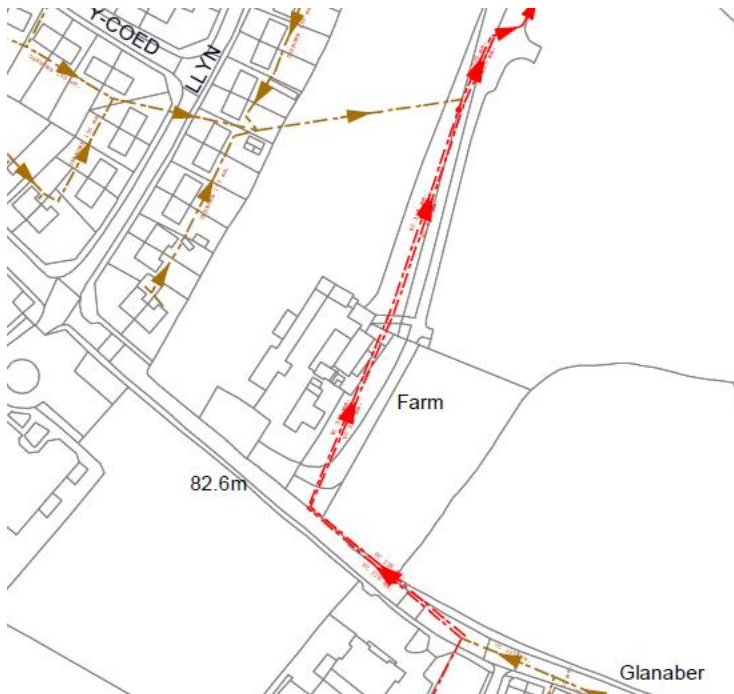
Reference to Geo-Environmental report reference 14155/GEIR dated April 2015 indicates that infiltration may be an option for surface water disposal on this site.

A more detailed review of the trial pit records for this portion of the site indicates that the clay subgrade in some areas is of a stiff nature which in our opinion would preclude the use of traditional soakaways at nominal depths.

The use of deep bore soakaways was investigated, results obtained from the site investigation concluded that these may be an option. However following consultation with the Local Authority this option was discounted.

The sewer records do not indicate any suitable surface water sewers into which the site could connect to against this option was discounted.

See plan below



A watercourse has been identified within the client's title boundary of the development. It is thus proposed to discharge the surface water to this watercourse, situated to the North East of the site.

Flows will be restricted to equivalent "Greenfield" run off rates, with on-site attenuation for storms up to and including the 1 in 100 year event plus 30% climate change.

A maximum rate of surface water runoff of 5.74 litres /second for all events up to and including the 1 in 100 year + 30% CC (1%AEP + CC) has been discussed with Wrexham County Borough Council and agreed in principle.

It is also noted that parts of this site appear to be at “low risk” of surface waterflooding, see extract below.



This information relates to LIDAR data and is only very approximate and very often relates to areas where water may pond during periods of prolonged rainfall. With any development site there will be an element of design and re-contouring that will take place which will alter the existing run off pattern and areas of potential minor ponding of surface water. Site levels will be designed to direct water away from proposed properties and indeed properties will be sited at a minimum of 150mm above surrounding ground levels as standard practice which will negate this potentially very low risk of flooding.

3.0 PROPOSED FOUL WATER DRAINAGE SOLUTION

It is proposed to drain foul water from part of the site into the existing 225mm diameter FW sewer crossing the site with the remainder of the FW discharging to an existing FW manhole within the site. This is shown on the Drainage Strategy plan.

Connection to these sewers will be made under a Section 106 of the Water Industry Act 1991

Signed for and on behalf of
R E FRY & ASSOCIATES LTD

Robin Foster BEng (Hons)

21.11.18

From: Geoff Hardman
Sent: 08 October 2018 16:17
To: 'Neil Taunt'
Cc: Alison Hammans; 'Laura Mackey'
Subject: DMO response Woodlands Farm, Gwersyllt

Good afternoon Neil,

Further to our email last week we have now consulted with our client Wales and West Housing who advise that the watercourses to the north east of their site are within the site curtilage and thus a right of connection for surface water exists and rates not exceeding the current values.

We attach for you information the following plans :-

- Master map extract showing location of watercourses
- Clients land registry title plan
- Plan showing the overall developable site area with POS excluded which amounts to 1.05ha
- UK SuDS greenfield run off calculation with soil value adjusted to take account of clay overburden

From this the 1 year run off is 5.06 l./second and the Qbar is 5.74 l./sec.

Thus in accordance with current guidance we would seek to restrict flows for all events up to and including the 1%AEP + 30% CC to the Qbar figure of 5.74 l./sec.

The system would incorporate oversized pipes with a hydro brake flow control for events up to the 3.33% AEP event (adoptable by DCWW) with off line attenuation for events over and above the 3.33% AEP up to the 1% AEP + 30% CC.

Would you kindly confirm that this approach would be acceptable to Wrexham CBC please?

This being the case revised details can be prepared to accompany the planning application.

Regards
Geoff Hardman
Director



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From: Neil Taunt <Neil.Taunt@wrexham.gov.uk>
Sent: 19 October 2018 09:27
To: Geoff Hardman
Cc: Alison Hammans; Peter Douthwaite
Subject: RE: WOODLANDS FARM, DODDS LANE

Hi Geoff,

In principle I have no objection with the proposals as described, assuming future maintenance and management of the system is clearly defined.

There are a number of things that should be considered – particularly if the intention is to go for a highway adoption.

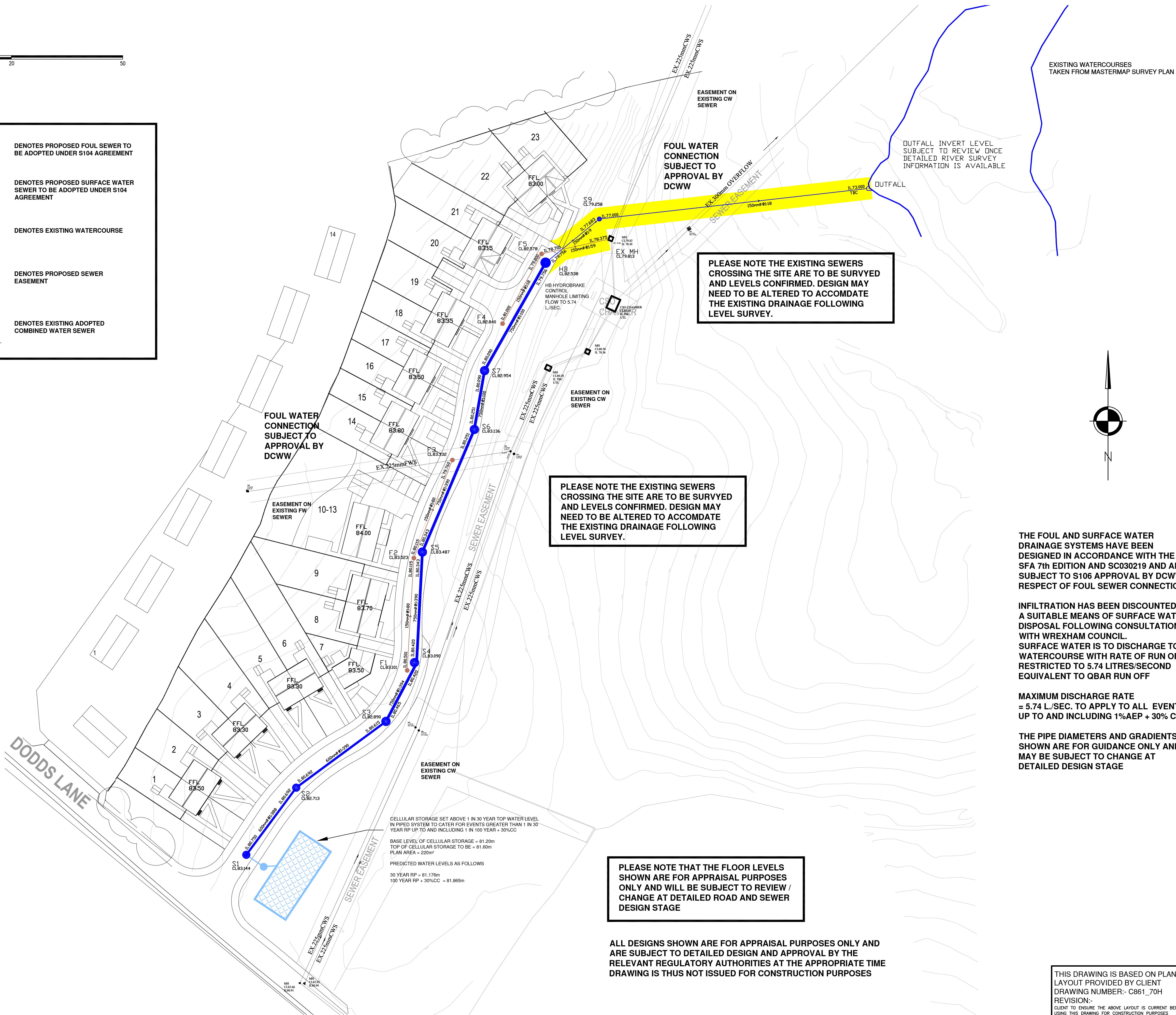
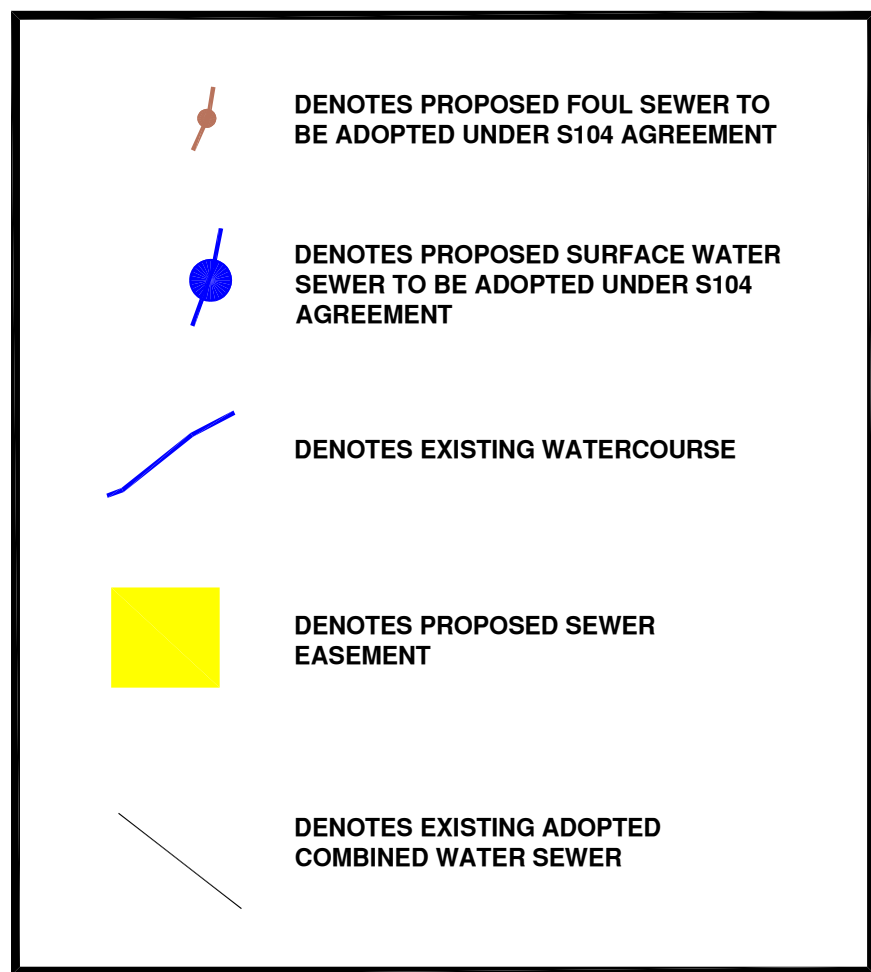
- It is normal that a highway adoption would only be considered if the highway drainage is discharging to an “adopted” system, or watercourse where the highways authority have control of the system to the outfall.
- This system would need to be separate from “private” surface water.

If this cannot be achieved then it is unlikely that the highways authority would look to adopt.

Alternatively, following the implementation of Schedule 3 of the Flood and Water Management Act on 7th January 2019, this situation is unlikely to arise if a SuDS system, compliant with the statutory national standards for Wales, is submitted, approved and constructed in accordance with the approval. This would result in a SuDS scheme being adopted by the SuDS approving body, but would also permit a combined surface water system serving both private dwellings and highway drainage.

Many thanks

Neil



PLEASE NOTE THE EXISTING SEWERS CROSSING THE SITE ARE TO BE SURVYED AND LEVELS CONFIRMED. DESIGN MAY NEED TO BE ALTERED TO ACCOMDATE THE EXISTING DRAINAGE FOLLOWING LEVEL SURVEY.

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PLEASE NOTE THAT THE FLOOR LEVELS SHOWN ARE FOR APPRAISAL PURPOSES ONLY AND WILL BE SUBJECT TO REVIEW / CHANGE AT DETAILED ROAD AND SEWER DESIGN STAGE

ALL DESIGNS SHOWN ARE FOR APPRAISAL PURPOSES ONLY AND ARE SUBJECT TO DETAILED DESIGN AND APPROVAL BY THE RELEVANT REGULATORY AUTHORITIES AT THE APPROPRIATE TIME DRAWING IS THUS NOT ISSUED FOR CONSTRUCTION PURPOSES

THIS DRAWING IS BASED ON PLANNING LAYOUT PROVIDED BY CLIENT
DRAWING NUMBER:- C861_70H
REVISION:-
CLIENT TO ENSURE THE ABOVE LAYOUT IS CURRENT BEFORE USING THIS DRAWING FOR CONSTRUCTION PURPOSES

THE FOUL AND SURFACE WATER DRAINAGE SYSTEMS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE SFA 7th EDITION AND SC030219 AND ARE SUBJECT TO S106 APPROVAL BY DCWW IN RESPECT OF FOUL SEWER CONNECTIONS.

INFILTRATION HAS BEEN DISCOUNTED AS A SUITABLE MEANS OF SURFACE WATER DISPOSAL FOLLOWING CONSULTATION WITH WREXHAM COUNCIL. SURFACE WATER IS TO DISCHARGE TO WATERCOURSE WITH RATE OF RUN OFF RESTRICTED TO 5.74 LITRES/SECOND EQUIVALENT TO QBAR RUN OFF

MAXIMUM DISCHARGE RATE
= 5.74 L./SEC. TO APPLY TO ALL EVENTS UP TO AND INCLUDING 1%AEP + 30% CC.

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

- GENERAL**
- All adoptable sewers and associated works are to comply fully with 'Sewers for Adoption' 7th Edition dated August 2012.
 - All highway works to be to adoptable 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	Rev'd by	Date
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Drawing Stage	Drawing Status
☐ Draft	☐ Comments
☒ Issued	☐ Information
☐	☐ Approval
☐	☐ As Built

Client
WALES & WEST HOUSING ASSOCIATION

Job title
DODDS LANE GWERSYLLT, WREXHAM

Drawing title
DRAINAGE STRATEGY

REFA
CONSULTING ENGINEERS
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Date 13.11.18	Scale 1:500	Drawn RF
DRAWING No 14155/05/1	Rev	

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