SCALE IN METRES
0 5 10 20 50

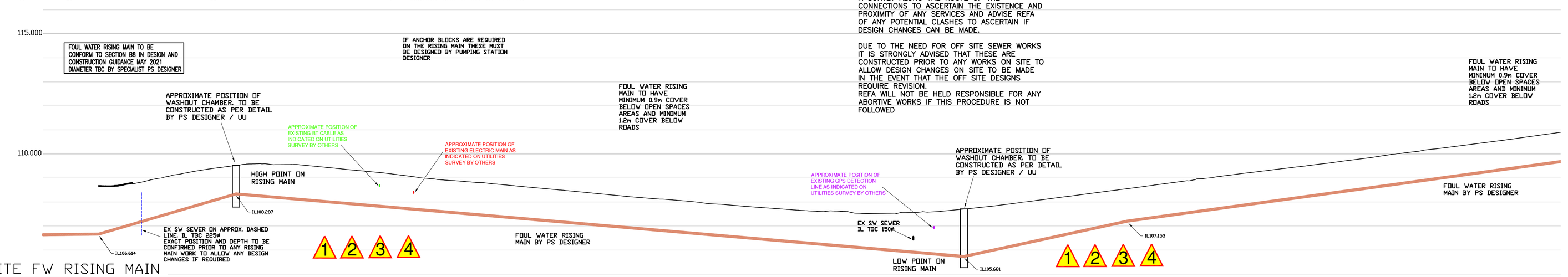
REFA WOULD ADVISE THE CLIENT
THAT A DETAILED OFF SITE SURVEY SHOULD BE UNDERTAKEN AT THE EARLIEST OPPORTUNITY TO PARTICULAR IMPORTANCE ARE :-

1. EXISTING MAINS / SERVICES AND OTHER APPARATUS
2. EXISTING SEWER INVERT LEVELS

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



OFF-SITE FW RISING MAIN

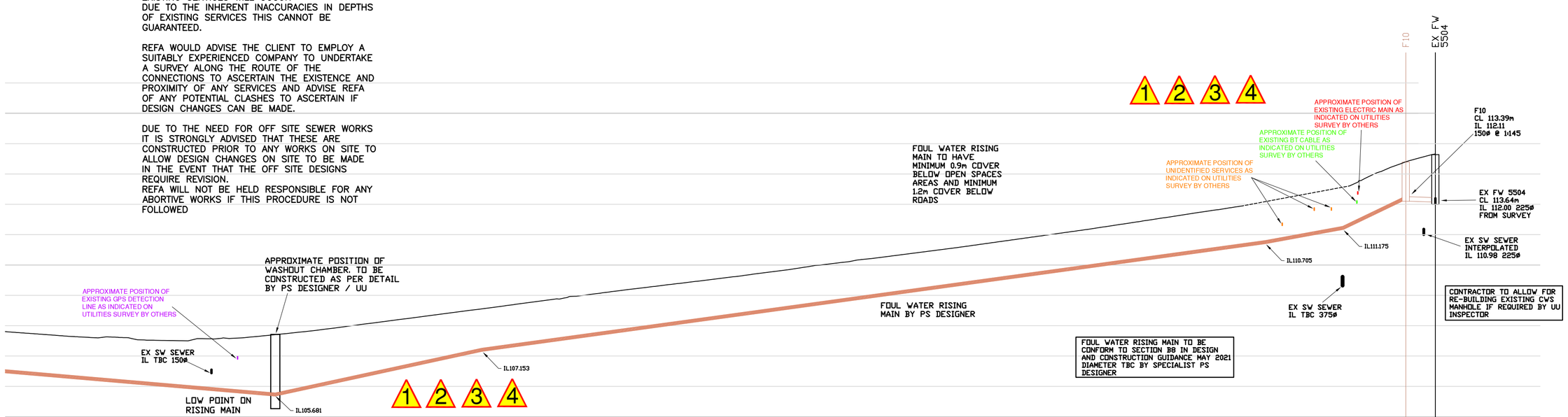
CHAINAGE	0.000	10.000	20.000	30.000	40.000	50.000	60.000	70.000	80.000	90.000	100.000	110.000	120.000	130.000	140.000	150.000	160.000	170.000	180.000	190.000	200.000	210.000	220.000	230.000	240.000	250.000	260.000	270.000	280.000	290.000	300.000	
SURVEY LEVEL		108.750	108.880	109.281	109.564	109.560	109.387	109.190	108.950	108.803	108.607	108.422	108.227	108.075	107.893	107.736	107.605	107.518	107.567	107.708	107.935	108.195	108.455	108.719	108.984	109.239	109.480	109.735	110.007	110.262	110.518	110.793
RISING MAIN DETAILS	IL106.614	GRADIENT 1 IN 17 RISING		IL108.287								GRADIENT 1 IN 58 FALLING								IL105.681	GRADIENT 1 IN 23 RISING		IL107.153	GRADIENT 1 IN 36 RISING								
		28.41										151.43									34.01			129.10								

OFFSITE RM

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



CHAINAGE	140.000	150.000	160.000	170.000	180.000	190.000	200.000	210.000	220.000	230.000	240.000	250.000	260.000	270.000	280.000	290.000	300.000	310.000	320.000	330.000	340.000	350.000	360.000	370.000	380.000
SURVEY LEVEL	107.736	107.695	107.518	107.567	107.708	107.935	108.195	108.455	108.719	108.984	109.239	109.480	109.735	110.007	110.262	110.518	110.793	111.073	111.368	111.672	111.947	112.608	113.168	113.658	
RISING MAIN DETAILS	IL105.681	GRADIENT 1 IN 23 RISING			IL107.153	GRADIENT 1 IN 36 RISING															IL110.705	GRADIENT 1 IN 27 RISING	IL111.175	GRADIENT 1 IN 11 RISING	IL112.110
		34.01				129.10																12.68		10.41	

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.

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 Design & Construction Guidance

Contractor to be aware of and take appropriate action to ensure de-stabilization of any existing structures, trees, embankments or other features does not occur as a result of any excavation 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.

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

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

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

SCALE IN METRES
0 5 10 20 50

CIVILS DESIGN RISK MANAGEMENT

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

1. EXISTING SERVICES
2. WORKING ON EXISTING ROAD
3. DANGER OF COLLAPSE TO ALL EXCAVATIONS - RISK TO BE ASSSESED AND MANAGED BY CONTRACTOR IN ACCORDANCE WITH HSE GUIDANCE
4. WORKING IN AREAS WHERE MEMBERS OF THE PUBLIC HAVE ACCESS E.G. MAIN ROAD
5. WORKING ADJACENT TO EXISTING RIVER / CULVERT AND ON LIVE FOUL / COMBINED SEWERS (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

GENERAL

1. All adoptable sewers and associated works are to comply fully with "Design and Construction Guidance" & Local Practices
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

smas worksafe designer — for procurement by SSIP SAFETY SCHEMES IN PROCUREMENT — www.smasltd.com

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

Client
HOLLINS HOMES LIMITED

Job title
LANGLEY LANE BIRCH

Drawing title
OFF-SITE RISING MAIN LONG SECTION

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

Date	Scale	Drawn
19.06.23	1/500H & 1/100V	RF

DRAWING No 18070/100/4 Rev

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

A1 SHEET