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TECHNICAL NOTE

WORKSHOP UNIT FACTORY ROAD

240802

FLOODING AND DRAINAGE PROPOSALS

1. Location and background.

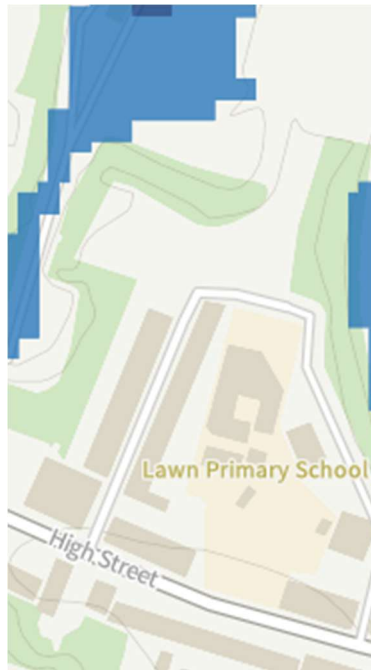
The area for the proposed construction of a new small workshop unit is sited at the Northern extent of Factory Road in Northfleet Kent. There was formerly a workshop building constructed on the site, but this was demolished in 2008 when the general demolition and clearance of the main cement works was undertaken.

View from 2008.

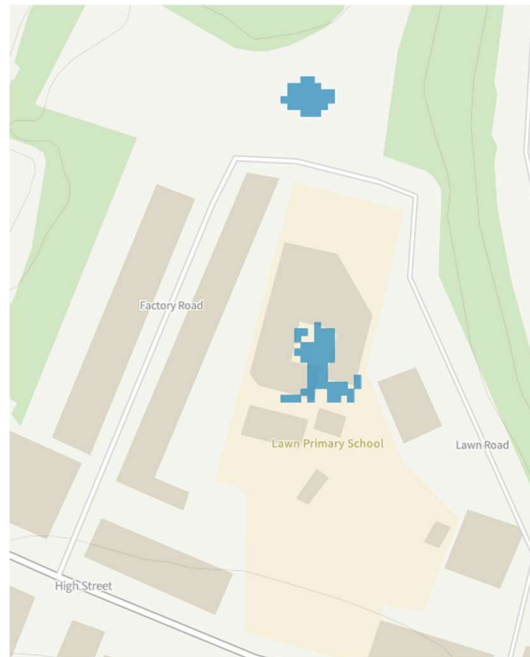


The site lies at an elevation of 26m AOD and whilst relatively close to the Thames is set some distance above the current flood defence level of 6.9m AOD. The site is situated next to existing early 1900 terraced houses of Factory Road and above the adjoining Factory Road pavement. There is no recorded history of flooding in this area and the Environment Agency maps do not show there is a likelihood of surface water or ground water flooding, as expected. See below

Tidal flooding

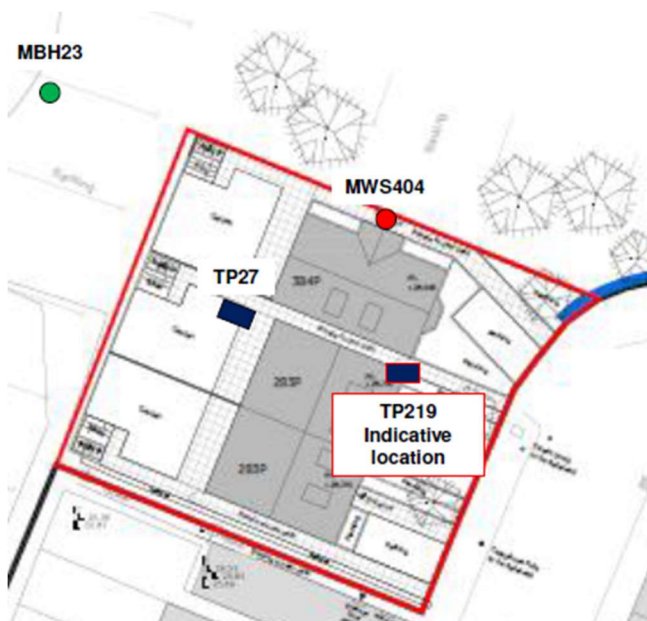


Surface Water flooding



The area is underlain by a surface layer of Made Ground over River Terrace Gravels over Chalk. The soil sequence being clearly visible on the cutting faces of the adjoining access road to the Northfleet Cement Works. Site investigation works have also been undertaken which have proved the soil sequence, although the deeper investigation bores are at the edge of the site and were performed for both this site and the Bevans Park retaining wall and Access Pedestrian Bridge.

An evaluation of the soils was undertaken by Idom Consultants – investigation plan below



MBH23

IDOM				Borehole Log				Borehole No.				
								MBH23				
								Sheet 1 of 4				
Project Name:		Northfleet Embankment		Project No:		17855ca		Co-ords:				
Location:		Gravesend		Level (m):		26.00		Scale				
Equipment:		Dando 2000		Date:		19/05/2020		Logged By				
								Checked By				
Well	Wt/ Stn	Sample and In Situ Testing			Coring				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	RI	TCK	SCR	RQD				
		0.30	R						1.20	26.80		MEDIUM GRISSED compacting grey, greenish-brown and brownish-grey sandy gravel with occasional sub-size fragments of brick. Gravel are fine to coarse angular to rounded flint, concrete, brick and chert.
		0.50	R									
		1.00	R									
		1.20 - 1.45	D									
		1.20	SPT(S)	N=7 (1,1/2,2,2,2)								
		2.00 - 2.45	D									
		2.00	SPT(S)	N=6 (1,1/2,2,2,2)								
		3.00 - 3.45	D									
		3.00	SPT(S)	N=7 (1,1/2,2,2,2)								
		4.00 - 4.45	D									
		4.00	SPT(S)	N=5 (1,1/2,2,2,2)								
		5.00 - 5.50	D									
	5.00	SPT(S)	N=6 (1,1/2,2,2,2)									
	6.00 - 6.45	D										
	6.00	SPT(S)	N=14 (2,2/3,3,4,4)									
	7.00	D										
	7.50 - 7.95	D										
	7.50	SPT(S)	N=16 (2,3/3,4,4,5)									
	8.00	D										
	9.00 - 9.45	D										
	9.00	SPT(S)	N=17 (2,3/4,4,4,5)									
	10.00	D										

S = small disturbed sample (shd)
 F = organic sample (amber glass vial)
 F = unfilled sample (amber glass vial)
 R = rock bag sample
 SPT(S) = Standard Penetration Test (Spoon)
 SPT(U) = Standard Penetration Test (Spoon)

RFI = hand shear vane (kPa)
 PP = pocket penetrometer (kg/cm²)
 PDI = photoacoustic detector (open)
 RI = Rock Index
 SCR = solid core recovery
 RQD = rock quality designation

Remarks
 Coordinates and levels, where indicated, must not be used for design purposes.
 The user is responsible for verifying all site and setting out dimensions.
 Hand excavated service inspection pit GL - 1.20 m; Casing - 200 mm GL - 10.5 m; 150 mm GL - 15.5 m

IDOM				Borehole Log				Borehole No.				
								MBH23				
								Sheet 2 of 4				
Project Name: Northfleet Embankment			Project No: 17855c2		Co-ords:			Scale: 1:50				
Location: Gravesend					Level (m): 26.00			Logged By: C.B.				
Equipment: Dando 2000					Date: 19/05/2020			Checked By:				
Well	Wt Sta	Sample and In Situ Testing			Coring				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	RI	TGR	SCR	RQD				
		10.50 - 10.95	D	N=12 (2,2,3,3,4,4)					11.50	10.50		Medium dense orange-brown, dark yellowish brown and pale brown silty fine and medium SAND with occasional fine and medium subangular and subrounded fine gravel (DEPOSIT TERRACE DEPOSITS - BROWN HILL GRAVEL MEMBER)
	10.50	SPT(N)										
	11.00	D										
			12.00 - 12.45	D	N=8 (1,1/2,2,2,2)					13.50		CHALK encountered as off white, cream and pale brown slightly sandy gravelly SILT / silty slightly sandy SILTS. Clasts are weak to moderately weak fine to medium directly white with occasional orange-brown and yellowish brown oxidation spots and bands. Matrix is unconsolidated off white, pale yellowish yellow and pale whitish brown with frequent orange-brown oxidation staining and soft brown clay INFIL. Occasional flints (BEPFORD CHALK FORMATION)
	12.00	SPT(N)										
	13.00	D										
			13.50 - 13.95	D	N=14 (2,2/3,4,4,4)					14.50		
	13.50	SPT(N)										
	14.00	D										
			15.00 - 15.45	D	N=14 (2,2/3,4,4,4)					15.50		
	15.00	SPT(N)										
	16.00	D										
			16.50 - 16.95	D	N=17 (1,1/2,3,4,5,5)					17.50		
	16.50	SPT(N)										
	17.00	D										
			18.00 - 18.00	D	N=20 (1,1/2,3,4,5,5)					18.50		
18.00	SPT(N)											
18.50 - 18.95	D											
		19.00 - 19.50	D	N=24 (1,1/2,3,4,5,6,6,7)					19.50			
19.00	D											
19.50 - 19.95	D											
		20.00	D						20.00			

1 = small disturbed sample (inf)

1 = organic sample (amber glass inf)

2 = wide sample (amber glass inf)

3 = bulk bag sample

SPT(N) = Standard Penetration Test (Correct)

SPT(U) = Standard Penetration Test (Spill System)

RII = hard clear water (RII)

PP = pocket penetrometer (kg/cm2)

PD = photoacoustic detector (open)

RI = Rafter index

SCR = total core recovery

SCR = solid core recovery

RQD = rock quality designation

Remarks

Coordinates and levels, where indicated, must not be used for design purposes. The user is responsible for verifying all site and setting out dimensions.

Hand excavated service inspection pit GL - 1.20 m. Ceiling - 200 mm GL - 10.5 m, 150 mm GL - 15.0 m.

The investigation extended to 30.5m below the site with the base of the investigation at a level of -4.5m AOD and was dry throughout.

The report clearly identified made ground on the surface but confirmed the following.

Controlled Waters

The contamination identified at the site (Metals and PAH compounds) is relatively immobile. Furthermore, the material has been in place since 1932. The potential for leachable contamination that may impact upon controlled waters to be present is considered to be low and in view of this the potential risk to controlled waters is also considered to be low.

2 Proposal

The proposal is to construct a small workshop unit with associated paving and car parking off of Factory Road. There are no surface water sewers in the vicinity, and it is believed all properties, and the local highways discharge surface water into the ground by infiltration. There are local foul sewers shown on the Southern Water maps which flow south along Factory Road. The existing foul sewer that used to accommodate the now demolished workshop, and the existing terraced houses has been surveyed, and the carrier pipe is sited within the ally between the former workshop wall and the terraced houses. This sewer will be reused to make a positive connection from the new building to accommodate effluent from the proposed toilets and kitchen.

The workshop will be used for the fabrication of specialist bearings and seals and all works are to be undertaken undercover, as performed at the current workshop in College Road . All surface water falling onto the new hard surfaced areas will be therefore discharge via infiltration. Whilst the near surface soils do not contain any significant contamination, discharge will not be made into the Made Ground and due to the potential for wash out in the Terrace Gravels these will not be employed either. Discharge of surface water will be into the underlying chalk. In order to provide a generous unsaturated zone the base of the infiltration bore will be set well above the water table. The discharge is to commence at 12.5m below existing ground level and terminate at 20m below ground level. This is still well above the ground water table and also above the surface of the nearby access road to the cement works .

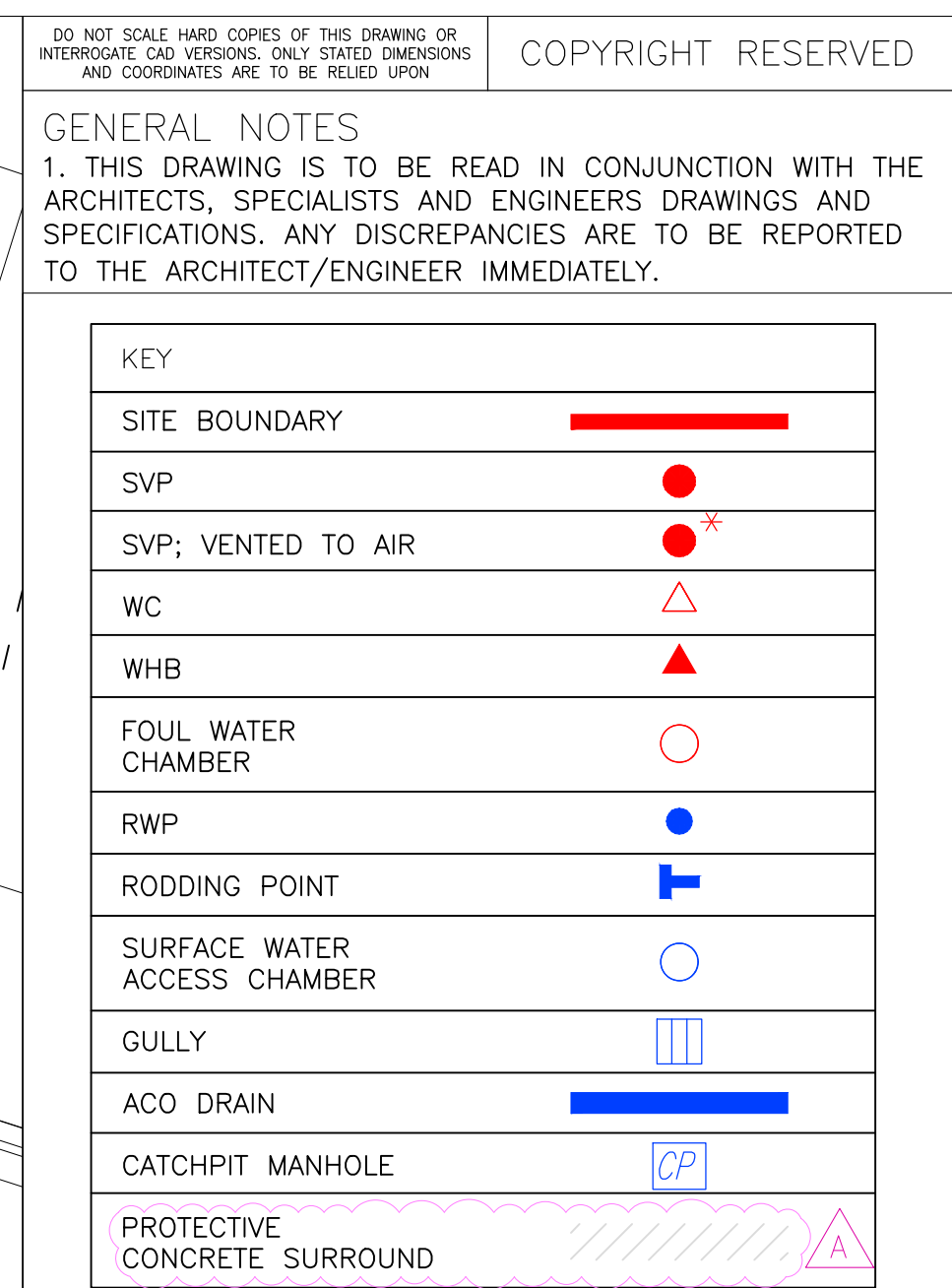
The infiltration bore will be installed at 150mm diameter and tested for permeability and at this stage it will be determined if any onsite storage is required. From the high rates of flow on other areas of the mixed-use site, it is believed that this will not be necessary, but this will be subject to field tests. A catchpit manhole is to be provided up-stream of the deep bore soakaway chamber, and all gullies will have deep seals to allow retention and evaporation, should there be any hydrocarbons washed into them. The ACO channels at the front of the site will also have containment sumps. The deep bore soakaway will be set 10m away from the building to guard against the effect of dissolution within the chalk. The workshop will however also be supported on piled foundations.

3 Conclusion

The foul water will be positively discharged into the existing adopted sewer and all surface water will be contained onsite and vertically infiltrated and will not cause any adverse effect or flooding to third party properties.

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N Turnbull
BSc CEng MICE




 LATEST REVISIONS ARE 'TAGGED' WITH THIS INDICATOR. HOWEVER, ALL USERS OF THIS DRAWING MUST SATISFY THEMSELVES OF ALL REVISIONS TO ANY PREVIOUS ISSUES, BY COMPARISON OF THIS DRAWING AGAINST OTHER ISSUES, AS IT CANNOT BE GUARANTEED THAT EVERY ITEM OF REVISION HAS BEEN 'TAGGED'.

A	07.05.25	LEVELS AMENDED. CONCRETE PROTECTION ADDED.	GED	NTU
Rev	Date	Description	Drawn & Checked	Onchecked
Revisions				
Date	06.05.25	FIRST ISSUE	GED	NTU

Project	
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FACTORY ROAD,
NORTHFLEET

Title
1. <i>Introduction to the Special Issue</i>
2. <i>Editorial Board</i>
3. <i>Editorial Board</i>
4. <i>Editorial Board</i>
5. <i>Editorial Board</i>
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DRAINAGE LAYOUT

Figure 1

Client **BELLWAY HOMES**

BELLWAY HOMES
(THAMES GATEWAY)

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Dwg No.: 2408/01/3000	Scale: 1:100 @ A1	Rev: A
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GENERAL NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE ARCHITECT'S, SPECIALIST'S AND ENGINEER'S DRAWINGS AND SPECIFICATIONS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ARCHITECT/ENGINEER IMMEDIATELY.
2. DRAINS ARE TO BE 100mm NOMINAL DIAMETER LAID AT A GRADIENT NOT FLATTER THAN 1/100 FOR SURFACE WATER, AND 1/40 FOR FOUL WATER UNDER DWELLINGS, UNLESS SHOWN OTHERWISE
3. Foul DRAINS WITHOUT AT LEAST ONE W.C. CONNECTED ARE TO BE LAID NOT FLATTER THAN 1/40.
4. DRAINS CONSTRUCTED USING PP/UPVC/PE/HDPE PIPES (WHERE SPECIFIED) TO BS EN 13598-1:2020, ALL WITH FLEXIBLE JOINTS, BEDDED AND BACKFILLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND BS EN 752:2017. ANY PIPES DIAMETER GREATER THAN 225mm SHALL BE CONCRETE.
5. FLEXIBLE PIPES WITH LESS THAN 600mm COVER ARE TO BE SURROUNDED WITH CONCRETE, OR TO HAVE CONCRETE SLAB LAID AS PROTECTION ABOVE THE PIPE.
6. COVERS AND FRAMES FOR MANHOLES/INSPECTION CHAMBERS MUST COMPLY WITH BS EN 124, CLASS D400 FOR HARD STANDING AREAS WHERE VEHICLE USE WILL BE REQUIRED AND CLASS C250 ELSEWHERE.
7. A VENTILATING DRAIN SHOULD BE PROVIDED AT, OR NEAR THE HEAD OF EACH MAIN FOUL SEWER RUN, ANY BRANCH LONGER THAN 6m SERVING A SINGLE APPLIANCE OR 12m SERVING A GROUP OF APPLIANCES.
8. ELSEWHERE, DISCHARGE STACKS MUST BE TERMINATED WITH AIR ADMITTANCE VALVES VENTILATED IN THE ROOF SPACE.
9. GULLIES, RAINWATER PIPES AND SVP'S MUST BE PROVIDED WITH RODDABLE ACCESS. WHERE RWP'S OR SVP'S HAVE NO INSPECTION CHAMBER AVAILABLE, ABOVE GROUND ACCESS MUST BE PROVIDED FOR RODDING.
10. ALL PIPES LAID SOFFIT TO SOFFIT, UNLESS NOTED OTHERWISE.
11. LONG RADIUS BENDS TO BE USED AT THE BASE OF ALL SOIL STACKS.
12. ALL COVER LEVELS ARE APPROXIMATE ONLY.
13. PRIVATE GULLIES IN PEDESTRIAN HARD STANDING AREAS TO HAVE FRAMES TO MINIMUM BS EN 124 CLASS C250 (D400 FOR VEHICULAR AREAS)
14. ALL POLYPROPYLENE CHAMBERS, GULLY POTS AND FITTINGS TO BE SURROUNDED BY 150mm MINIMUM ST4 CONCRETE - HEAVY DUTY COVERS & FRAMES TO BE SUPPORTED ON A CONCRETE PAD WITHIN THE SURROUND.
15. FOUL SURFACE WATER OUTFALL CONNECTIONS AND LEVELS MUST BE VERIFIED PRIOR TO ANY DRAINAGE BEING INSTALLED, AS INVERTS HAVE BEEN SUPPLIED VIA THIRD PARTY TOPOGRAPHY SURVEY, SHOULD DISCHARGE INVERT LEVEL AND/OR OUTFALL POSITION DIFFER FROM STATED ON ANY RLT DRAWING, RLT ENGINEERING CONSULTANTS MUST BE MADE AWARE TO PROPOSE ALTERNATIVE. THE LAST CONNECTIONS MUST BE VERIFIED TO ENSURE DRAINAGE DESIGN CAN BE CONSTRUCTED AND MUST TAKE INTO ACCOUNT ANY POTENTIAL CLASH WITH EXISTING SERVICES.
16. WHERE INSPECTION CHAMBERS ARE SITED IN HARD LANDSCAPED AREAS/DRIVEWAYS, RECESSED COVERS AND FRAMES MUST BE USED TO MATCH FINISH MATERIAL.

