Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
2501	F	68.6	60.41	8.19
2502	F	66.81	61.01	5.8
2701	F	62.71	58.88	3.83
2702	F	63.33	59.24	4.09
2801	F	62.54	58.65	3.89
3501	F	65.78	60.02	5.76
3601	F	64.08	59.49	4.59
4501	F	-	-	-
4502	F	-	-	-
4503	F	-	-	-
4504	F	-	-	-
4800	F	-	95.37	-
4901	F	64.41	59.19	5.22
5500	F	-	-	-
5801	F	65.64	59.93	5.71
6501	F	66.31	64.9	1.41
6502	F	-	-	-
6701	F	66.05	60.5	5.55
7501	F	66.75	63.41	3.34
7502	F	66.64	63.12	3.52
7503	F	66.73	65.52	1.21
7504	F	66.62	65.23	1.39
7601	F	67.37	-	-
7602	F	67.26	61.95	5.31
7701	F	67.18	61.37	5.81
8501	F	65.87	64.65	1.22
8502	F	66.13	64.36	1.77
8503	F	65.84	63.98	1.86
1852	S	62.49	59.74	2.75
2551	S	-	61.12	-
2651	S	63.75	60.26	3.49
2751	S	62.73	60.14	2.59
3551	S	-	60.66	-
4551	S	-	-	-
4552	S	-	-	-
4553	S	-	-	-
4554	S	-	-	-
4951	S	63.93	60.28	3.65
5551	S	-	-	-
5552	S	-	-	-
5851	S	65.61	61.67	3.94
5852	S	-	-	-
5853	S	65.61	61.33	4.28
5854	S	-	-	-
6551	S	66.38	64.8	1.58
6552	S	-	64.54	-
6553	S	66.33	64.09	2.24
6554	S	66.03	-	-
6555	S	-	-	-
6751	S	66.2	62.25	3.95
7551	S	66.79	63.38	3.41
7552	S	66.67	63.36	3.31
7553	S	-	64.88	-
7554	S	66.54	64.84	1.7
7555	S	66.46	64.67	1.79
7556	S	66.76	64.48	2.28
7557	S	66.66	64.28	2.38
7651	S	67.36	63.04	4.32
7652	S	67.58	62.78	4.8
7751	S	67.7	62.54	5.16
8551	S	66	64.23	1.77
8552	S	65.83	64.04	1.79
8553	S	-	64.27	-
8554	S	66.1	63.82	2.28
8555	S	65.82	63.64	2.18
8556	S	-	64.91	-

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

APPENDIX 7

StantecDrainage Strategy

TECHNICAL NOTE

Job Name: Land at Caldecote Farm, Newport Pagnell

Job No: 38748

Note No: TN2015/001 Rev B

Date: 5th July 2018 – Updated 28th July 2021

Prepared By: J Balzer

Subject: **Preliminary Surface Water Drainage Strategy**

Item	Subject
1.	**Introduction** This Technical Note has been prepared by Stantec UK Ltd on behalf of Newlands Developments in support of an outline planning application comprising of the erection of two storage and distribution units (Class B8) with associated access, car parking, servicing, landscaping, earthworks and drainage due south of Newport Pagnell, Buckinghamshire. This Technical Note sets out the design parameters, constraints and assumptions used to prepare the Preliminary Surface Water Drainage Strategy. This Technical Note is to be appended to BWB Consulting Ltd's Flood Risk Assessment (FRA) produced for the site. Peter Haddon & Partners Architects proposed site plan 4179-1 SK015 Rev P45 has been included in **Appendix A**. The Surface Water Drainage Strategy has been prepared in accordance with Milton Keynes Council's Surface Water Drainage – Guidance for Planning Applications as well as current best practice guidance in relation to Sustainable Urban Drainage Systems (SuDS). Liaison with the Bedford Group of Internal Drainage Boards (IDB) has been undertaken by BWB Consulting Ltd and a maximum allowable discharge rate for the proposed development agreed, refer to Item 4 'Site Wide Surface Water Management Strategy'. An anticipated point of outfall has also been identified at an unnamed ditchcourse to the north of the development site that lies within the jurisdiction of the IDB. The associated correspondence with the IDB is located within **Appendix B**.
2.	**Proposed Development Site** <u>Site Location</u> The 18.72ha existing site is predominantly greenfield and is located due south of the town of Newport Pagnell, and to the north east of Milton Keynes. It is bound on its western and southern extents by the M1 motorway and on its eastern extent by Willen Road. The H3 Monks Way runs along the northern boundary. To the west of the development and the M1 is the Tongwell Industrial Estate whilst to the east and north of the development there is existing residential / arable field. The site has previously been used as a quarry for the extraction of sand and gravel (between approximately 2010 and 2014). This quarry has since been infilled with in-situ overburden and inert fill materials.

Item	Subject
	Areas of standing water have previously been observed within the south east end of the site, these areas may be associated with the existing earthworks on site. The approximate OS grid reference for the centre of the development site is NGR 487595; 242165. The general location of the site is indicated on Stantec Drawing 38748/100/004 – 'Location Plan' contained in **Appendix C**. Existing Topography and Drainage Catchments Ground levels vary between approximately 59.0 to 62.5m AOD along the western / southern boundary, to approximately 58.0m AOD in the north / east corner of the site. The development site consists of a single surface water drainage catchment in its existing form, outfalling towards the existing highway ditchcourses that bound the site to the north and east. These highway ditchcourse ultimately outfall to the Tongwell Brook. The site topographical survey, catchment areas and the existing drainage features are indicated on Stantec Drawing 38748/100/011 – 'Preliminary Surface Water Drainage Strategy' (**Appendix C**). The topographical survey undertaken by Greenhatch Ltd and indicated on Drawings:- • 38748/100/022 – 'Willen Road Topographical Survey North'; • 38748/100/023 – 'Willen Road Topographical Survey South'; and located within **Appendix D** indicates that beyond the timber post and rail boundary fence bounding the development, the site is bound on its eastern and northern extents by highway drainage ditches between 500mm and 900mm deep. Existing Watercourses and Water Features The existing watercourses and water features described in this Section are indicated on Stantec Drawing 38748/100/011 – 'Preliminary Surface Water Drainage Strategy' (**Appendix C**). There are two existing ditchcourse located within the site, one is located along the eastern boundary of the site which runs from the southern point of the site near the M1 to the existing access into the site. This ditchcourse appears to receive highway run-off from Willen Road, although this drain is located within the site boundary. The other ditchcourse is located on site near to the existing bunds and may be associated with the former quarry works. The Tongwell Brook is located approximately 120m north of the proposed development and flows from the north west to the north east and is classed as an Environment Agency (EA) Main River. The River Ouzel is located approximately 600m to the east of the development, which the Tongwell Brook discharges into. An unnamed watercourse runs parallel with the Tongwell Brook, to the south of Tongwell Lane. This is under the jurisdiction of the IDB and is referenced as '18a' on the plan provided by the IDB which can be found within **Appendix B**. A review of historical highway drainage design drawings, from improvement works to the A422 / H3 Monks Way and the Marsh End Road Roundabout undertaken in 1990, indicates that surface water run-off generated from the proposed development site discharge to the highway drainage ditchcourse located along the northern extents of the site, via the 2No. on site ditchcourse. These records indicate this highway drainage ditchcourse once conveyed surface water to 2No. culverts which conveyed water north under the A422 / H3 Monks way before discharging into ditchcourses that ultimately discharged into the Tongwell Brook approximately 120m north of the site.

Item	Subject
	The records also indicate that a 3rd culvert once conveyed surface water in a west east direction under Willen Road, from the highway drainage ditchcourse at the north east corner of the site, before continuing onwards through a series of land drains. During a site visit, it was noted by the Design Team that these culverts could not be located. Historic satellite imagery available on Google Earth indicates that during the period 2000 - 2005, the culverts were visible, however, they are no longer visible onsite. <u>Existing Surface Water Drainage Infrastructure</u> The site is predominantly undeveloped agricultural land, which currently contains no existing surface water drainage and is not connected to any existing off-site surface water drainage infrastructure. However, this would need to be confirmed on site before detailed design commences. There may be some surface water drainage infrastructure associated with the gravel workings to the south of the site. The site in part served by the highway drainage ditchcourses that bound the sites northern and eastern extents. The Incumbent Sewerage Undertaker is Anglian Water Services Limited (AWS). A review of their asset records supplied (a copy of which is contained in **Appendix E**), indicates that there are no AWS public surface water sewers within the vicinity of the proposed development. Therefore, AWS will be unable to provide the site with a feasible solution of surface water disposal within the current assets.
3.	**Highway Improvement Works and Highway Drainage** As part of the proposed development site, highway improvement works are required to accommodate the likely increase in traffic flows generated by the proposed commercial development. This includes increasing the size of the Marsh End Road junction to the north east of the development site and the proposed signalised junction along Willen Road that serves the development itself. Due to these improvement works, and the increase in impermeable area, additional surface water attenuation is required. A pond to the south east of the Marsh End Road Roundabout is proposed to attenuate surface water run-off from the highway, and control its rate of discharge into the existing highway network, in order to prevent downstream flooding. This is required in accordance with the following legislation:- • The National Planning Policy Framework and associated guidance; • The Water Framework Directive; • The Land Drainage Act 1991; and • The Lead Local Flood Authority (Milton Keynes Council); The pond has been designed to attenuate the volume of surface water run-off from the increased impermeable area (over and above the existing paved surfaces) generated by the proposed improvements to the Marsh End Road Roundabout and widening of Willen Road. The storage volume requirements for this option have been calculated based on an additional impermeable area of 1.24ha. It is proposed that this area will be attenuated to 4l/s/ha, which gives a volume of attenuation required in the pond of 996m³. This will discharge into the existing highway drainage

Item	Subject
	network on the southern side of the A422 at the appropriate controlled rate. This pond has been indicated on Stantec Drawing 38748/100/011 (**Appendix C**).
4.	**Site Wide Surface Water Management Strategy** The proposed development site has been split up into two drainage networks based on the masterplan for the site and existing site topography. The proposed development is to be served by a series of above and below ground attenuation features. These attenuation features will provide storage for extreme storm events, in order to limit the surface water discharge to the agreed rate of 4l/s/ha as agreed with the IDB. This has been indicated on Stantec Drawing 38748/100/011 (**Appendix C**). Surface water run-off from each network will drain to its respective attenuation features via a piped network which will ultimately discharge to the wider surface water drainage network via a proposed surface water pumping station. The surface water pumping station will be located along the northern extents of the development, and will discharge at a maximum rate of 53.6 l/s based on the maximum allowable discharge of 4l/s/ha, as agreed with the IDB to the unnamed watercourse (reference 18a) via a rising main. The rising main will be laid within land to the north of the proposed development which is within control of the applicant. **Surface Water Drainage Discharge Options** The Building Regulations Approved Document H3 stipulates that rainwater from roofs and paved areas should discharge to one of the following, listed in order of priority:- 1) An adequate soakaway or some other adequate infiltration system; 2) A watercourse or, where that is not practicable; 3) A sewer; Therefore, the following options have been considered:- Option 1 – Infiltration With reference to the Geotechnical and Geo-environmental Ground Investigation, the site is underlain by a variable thickness of made ground comprising various types of backfill over Felmersham member and Glacial Till. It has been deemed that a soakaway drainage system would not be feasible due to the cohesive nature of the site. Refer to RSK Report ref: 313114-02 (00) Willen Road, Newport Pagnell Geotechnical and Geo-environmental ground investigation – Phase 2 June 2017, Section 8.3 within **Appendix F**. Option 2 – Discharge into the Existing Watercourses / Ditchcourse In order to replicate the existing greenfield drainage regime, the development site would need to discharge to the existing IDB watercourse (Ref 18a) flowing parallel to Tongwell Lane or the existing highway drainage ditchcourse along the northern extent of the development via a surface water pumping main. Option 3 – Discharge into Public / Private Sewer(s) As there are no AWS public surface water sewers within the vicinity of the proposed development, this option has been discounted. **Therefore, Option 2 is the preferred method of surface water run-off discharge from this site.**

Item	Subject

Design Parameters

Discharge Rates

A maximum allowable discharge rate from the proposed development of 4l/s/ha has been agreed with the IDB for up to and including a 1 in 100 year event plus climate change.

Flood Estimation Handbook

The design of surface water attenuation provision will be undertaken using catchment specific rainfall parameters derived from the Flood Estimation Handbook (FEH) in accordance with industry standard practice, a copy of which is included within **Appendix G** for reference.

Volumetric Run-off Coefficient for Design of the Attenuation Provision

A volumetric run-off coefficient (cv) of 0.85 will be utilised in the sizing of the surface water attenuation provision in accordance with industry standard practice.

Impermeable Areas

The proposed impermeable areas are taken from Peter Haddon & Partners Architects Drawing 4179-1 SK015 Rev P45. Table 1 below shows total areas and total impermeable areas for the development:

Zone	Total Area (ha)	Total Imp Area (ha)
Zone 1 (Including Site Access)	10.04	7.49
Zone 2	8.68	5.91
Total	18.72	13.40

Table 1: Summary of Site Wide Impermeable Area

Piped Surface Water Drainage System

The proposed surface water drainage systems will be designed in accordance with Sewers for Adoption 6th Edition.

The proposed piped surface water drainage system will be designed to ensure self-cleansing velocities are achieved in the 1 in 1 year event, utilising:-

- Flood Studies Report (FSR) rainfall data (industry standard practice);
- A volumetric run-off coefficient (cv) of 0.75 in accordance with industry standard practice;
- MicroDrainage design software, such that the piped drainage network will have no above soffit surcharging in the 1 in 1 year rainfall event and no above ground flooding in the 1 in 30 year rainfall event, as per requirements of the Sewers for Adoption (SfA);

All SuDS features will be designed in accordance with guidance given by Milton Keynes Council (MKC) as Lead Local Flood Authority (LLFA). Highway drainage will be designed in accordance with the requirements of the Local Highway Authority (MKC). Any private systems will comply with the requirements of Building Regulations: Approved Document Part H.

Climate Change

The capacity of the proposed surface water attenuation features will be designed to accommodate a 1 in 100 year event with an additional allowance of 40% for an increase in peak rainfall intensity due to climate change, in accordance with National Planning Policy Framework (NPPF) guidance.

Item	Subject
	Attenuation Proposals The storage volume requirements have been calculated based on the estimation of the impermeable areas as indicated on Peter Haddon & Partners Architects Drawing 4179-1 SK015 Rev P45. The required attenuation volumes have been calculated using MicroDrainage Quick Storage Estimate based on a limiting discharge of 4l/s/ha for rainfall event up to and including a 1 in 100 year event with an 40% additional allowance for Climate Change. It is proposed that surface water run-off from Zone 1 and 2 will be attenuated to 4l/s/ha, as agreed with the IDB. The impermeable areas, limiting discharge rates and storage volumes required are summarised in Table 2 below.
5.	**SuDS Hierarchy – Water Quality and Pollution Control** Surface water run-off currently flows into the existing highway drainage ditchcourse along the northern extents of the development. Measures will be incorporated within the onsite surface water drainage system to ensure that water quality, biodiversity and ecology within the ditchcourse are maintained to the highest standards. Pollution control is to be provided by embedding the concept of the surface water 'management train' (also referred to as the 'treatment train') within the surface water management strategy, as set out in CIRIA C753 – The SuDS Manual.

Zone	Contributing Impermeable Area (ha)	Discharge Rate 4l/s/ha (l/s)	Total Attenuation Required (m^3)	Attenuation Features
Zone 1 (Including Site Access)	7.49	29.96	6,701	On Site Ponds, Underground Storage
Zone 2	5.91	23.64	5,291	On Site Ponds, Underground Storage
Highway Improvement Works	1.24	5.00	996	Off Site Pond

Table 2: Summary of Surface Water Attenuation Required

All attenuation for the development will be provided in the form of strategically located ponds, and underground tanks (tanks located as far as practicable within the car parking areas). Each pond will have a minimum freeboard of 300mm (as set out within CIRIA C753 – The SuDS Manual) to allow for any residual risk such as blockage or pump failure during an extreme rainfall event.

Item	Subject
	CIRIA C753 sets out a hierarchy of techniques within the management train, as follows:- • Prevention – the use of good site design and site housekeeping measures to prevent run-off and pollution (e.g. sweeping to remove surface dust and detritus from car parks) and rainwater re-use / harvesting. Prevention policies generally included within the site management plan; • Source control – control of run-off at or very near its source (e.g. soakaways, other infiltration methods, green roofs, porous pavements); • Site control – management of water in a local area or site (e.g. routing water from building roofs and car parks to a large soakaway, infiltration or detention basin); • Regional control – management of run-off from a site or several sites, typically in a balancing pond or wetland; All of the above have been considered within the proposals. Measures will be incorporated within the surface water drainage system and the management train to ensure that water quality, bio-diversity and ecology are maintained to the highest standards as required by the EU Water Framework Directive. Water quality and pollution control will be provided by adopting the concept of the surface water 'management train' (also referred to as the 'treatment train') within the surface water management strategy, as set out in CIRIA C753 – 'The SuDS Manual' and provision for the following will be made:- • Trapped gullies and oil separators located within the lorry / car parks; • Catchpit manholes to be used; • Planting within ponds to provide filtration; • Filter drains; All of which will be looked at further at detailed design stage. Therefore, as a minimum prior to entering the SuDS features, surface water will be intercepted by trapped gullies. After which the majority of surface water will flow through multiple SuDS features (ponds) to ensure that the maximum amount of water is treated during its journey through the SuDS train. This will maximise the amount of pollutants removed from the water prior to its discharge from the site.
6.	**Ownership and Maintenance** <u>Piped Network</u> The surface water sewers will be designed to adoptable standards as a source of best practice, but are not proposed to be offered for adoption at this time and will be maintained privately. <u>Attenuation Ponds</u> Proposed attenuation features (Ponds / Underground Tanks) are anticipated to be maintained privately.

Item	Subject
	The table below (taken from CIRIA C793) details maintenance activities and suggested frequency of undertaking:-

TABLE 32.1 Typical key SuDS components operation and maintenance activities (for full specifications, see Chapters 11–23)

Operation and maintenance activity	SuDS component												
	Pond	Wetland	Detention basin	Infiltration basin	Soakaway	Infiltration trench	Filter drain	Modular storage	Pervious pavement	Swale/bioretention/ trees	Filter strip	Green roofs	Proprietary treatment systems
Regular maintenance													
Inspection	■	■	■	■	■	■	■	■	■	■	■	■	■
Litter and debris removal	■	■	■	■	□	■	■	□	■	■	■		□
Grass cutting	■	■	■	■	□	■	■	□	□	■	■		
Weed and invasive plant control	□	□	□	□		□	□		□		□	■	
Shrub management (including pruning)	□	□	□	□					□	□	□		
Shoreline vegetation management	■	■	□										
Aquatic vegetation management	■	■	□										
Occasional maintenance													
Sediment management[1]	■	■	■	■	■	■	■	■	■	■	■		■
Vegetation replacement	□	□	□	□						□	□	■	
Vacuum sweeping and brushing									■				
Remedial maintenance													
Structure rehabilitation /repair	□	□	□	□	□	□	□	□	□	□	□	□	
Infiltration surface reconditioning				□	□	□	□		□	□	□		

Key

■ will be required

□ may be required

Notes

1 Sediment should be collected and managed in pre-treatment systems, upstream of the main device.

Item	Subject
7.	**Conclusion and Summary** Stantec have been engaged by Newlands Developments to prepare a site specific Preliminary Surface Water Drainage Strategy to be appended to BWB's FRA in support of an outline planning application for the proposed development Land at Caldecote Farm, Newport Pagnell. This preliminary surface water drainage strategy complies with the 'Land at Caldecote Farm, Newport Pagnell Flood Risk Assessment' (FRA) (BWB report ref NPG-BWB-EWE-XX-RP-YE-0001_FRA) and in accordance with guidelines set out by the LLFA and AWS. The assessment may be summarised as follows:- • The surface water drainage strategy is based upon the use of SuDS, the principles of which are set out by the Environment Agency as well as National, Regional and local policies which require that post development run-off quantity and quality matches the existing greenfield nature of the catchment; • In order to replicate the existing greenfield drainage, the development will discharge into the existing IDB watercourse Reference 18a with discharge rates limited to 4l/s/ha, as agreed with the IDB; • The development will be drained by a gravity surface water drainage system to a private surface water pumping station, designed in accordance with adoptable standards; • Surface water run-off from the development will be stored in surface water ponds and underground tanks located strategically within the development; • The attenuation ponds and underground storage have been sized to accommodate a 1 in 100 year event with an 40% additional allowance for Climate Change in accordance with NPPF guidelines;

DOCUMENT ISSUE RECORD

Technical Note No	Rev	Date	Prepared	Checked	Reviewed (Discipline Lead)	Approved (Project Director)
38748/2015/TN001	A	21/05/19	JB	SG	JSH	JSH
38748/2015/TN001	B	28/07/21	JB	SG	JSH	JSH

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Appendix A

Peter Haddon & Partners Architects Drawing 4179-1 SK015 Rev P45 – ‘Proposed Master Plan’;

LOCATION PLAN SCALE 1:10000

UNIT 1
Gross Internal Areas

Warehouse	454,900 ft²	42,261 m²
Office (3 floors)	18,000 ft²	1,672 m²
Hub Office (2 floors)	2,000 ft²	186 m²
TOTAL	474,900 ft²	44,119 m²
Gatehouse	366 ft²	34 m²
TOTAL	**475,266 ft²**	**44,153m²**

10.04 ha (24.82 acres)

UNIT 2
Gross Internal Areas

Warehouse	345,000 ft²	32,116 m²
Office (3 floors)	21,000 ft²	1,950 m²
Hub Office (2 floors)	2,000 ft²	186 m²
SUB TOTAL	368,000 ft²	34,252 m²
Gatehouse	366 ft²	34 m²
TOTAL	**368,366 ft²**	**34,286 m²**

8.68 ha (21.45 acres)

N

0 25m 50m SCALE 1:1250

LAND AT CALDECOTE FARM NEWPORT PAGNELL

newlands developments

pHp Architects

www.peter-haddon.com

PROPOSED MASTERPLAN

Drawing Status:	PRELIMINARY
CAD Reference:	4179 - SK015
Drawn:	CW
Date:	JUNE 2018
Scale: 1: @ A1	1:1250

Project No:	Drawing No:	Rev:
4179-01	SK015	P45

TECHNICAL NOTE

Appendix B

IDB Correspondence;

Robert Ward

From: Trevor Skelding [redacted].uk>
Sent: 24 October 2017 10:26
To: Robert Ward
Subject: RE: Request for Information - Land at Caldecote Farm, Newport Pagnell
Attachments: Caldecote.pdf

Robert

For your information I have attached a plan indicating the extent of the Board's district relative to your site. Please note that although no ditches are shown on the plan, any minor land drainage ditch found within the Board's area will be subject to its statutory control.

No flood records exist for this location. Any proposed surface water discharge into the land drainage system will be subject to the Board's agreement and consent and should be based on the equivalent of a maximum of 4 l/s per impermeable hectare.

Regards

Trevor Skelding MSc IEng MICE
Principal Engineer

Bedford Group of Drainage Boards|Vale House|Broadmead Road|Stewartby|Bedfordshire|MK43 9ND

[redacted]| www.idbs.org.uk

From: Robert Ward [[redacted]]
Sent: 23 October 2017 15:55
To: Frances Bowler [redacted]
Subject: Request for Information - Land at Caldecote Farm, Newport Pagnell

Dear Sir/Madam,

I'm an engineer at BWB Consulting Ltd, our team deal with flood risk and flood risk assessment. We are assessing the above site in terms of flood risk and wondered if you had any relevant information for the site or surface water drainage advice in particular any information regarding; ditches and discharge from the site, allowable discharge rates and information on any water which are IDB managed.

Please find attached plan showing the location of the site. Your website indicates that the site is within close proximity to IDB watercourses 18a, 18b and 19, for which I cannot find any other record or information on.

Please feel free to contact me if you require any further information. I look forward to hearing from you.

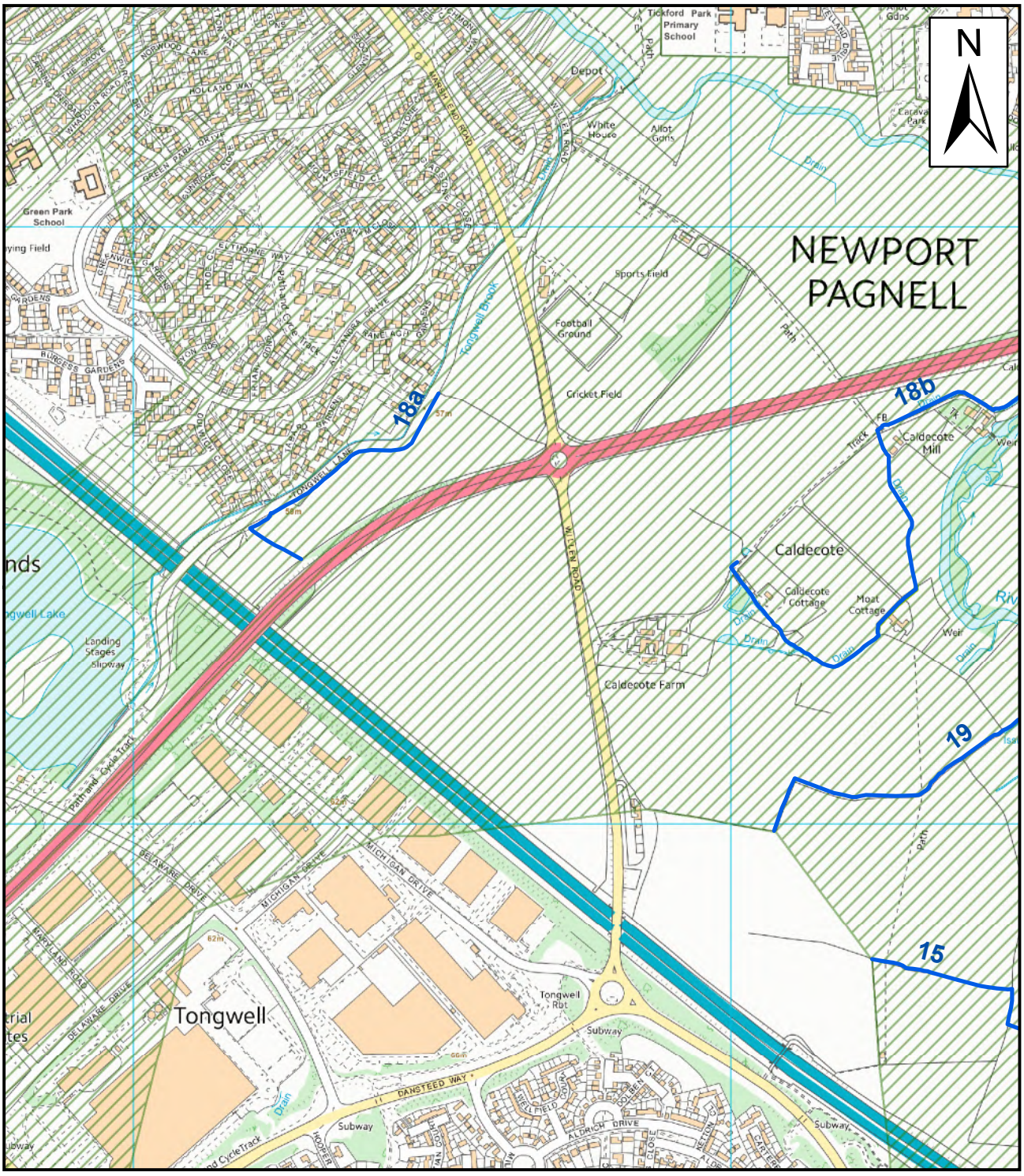
Kind Regards

Robert Ward
Engineer | BWB Consulting Limited

[redacted]ottingham, NG2 3DQ

Bedford Group of Drainage Boards

Buckingham & River Ouzel



Scale 1 = 10,000

Legend

IDB Watercourse

IDB District

BOARD

Buckingham and River Ouzel IDB

Meters

0 100 200 400

Caldecote Farm

TECHNICAL NOTE

Appendix C

Stantec Drawings

38748/100/004 Rev C – ‘Location Plan’;
38748/100/011 Rev B – ‘Preliminary Surface Water Drainage Strategy’;

KEY:-

INDICATIVE SITE BOUNDARY

Rev.	Description	Drawn	Date	Chkd
C	DRAWING BORDER UPDATED	JB	28.07.21	JSH
B	DRAWING BORDER UPDATED	JB	21.05.19	JSH
A	UPDATED INDICATIVE BOUNDARY TO REFLECT SITE	SW	11.06.18	JH

LAND AT CALDECOTE FARM NEWPORT PAGNELL

NEWLANDS DEVELOPMENTS

STANTEC UK LTD
https://www.stantec.com/uk

LOCATION PLAN

Drawing Status:	PRELIMINARY
CAD Reference:	38748/100/004
Drawn:	SW/JSH
Date:	31.10.2017
Scale @A1:	1:10,000

Project No:	Drawing No:	Rev:
38748	100/004	C

KEY:-

- INDICATIVE PROPOSED SURFACE WATER SEWER
- INDICATIVE PROPOSED SURFACE WATER MANHOLE
- INDICATIVE PROPOSED SURFACE WATER RISING MAIN
- INDICATIVE ONSITE PROPOSED POND
- INDICATIVE PROPOSED UNDERGROUND STORAGE
- INDICATIVE PROPOSED SURFACE WATER PUMPING STATION
- EXISTING WATERCOURSE
- EXISTING HIGHWAY DITCH COURSES
- DIRECTION OF EXISTING OVERLAND FLOWS
- SITE BOUNDARY
- PLANNING BOUNDARY

NOTES:-

1. THIS DRAWING SHOWS AN INDICATIVE SURFACE WATER DRAINAGE STRATEGY. THE STRATEGY IS SUBJECT TO DETAILED DESIGN.

2. ONSITE ATTENUATION PONDS WILL BE PROVIDED TO ATTENUATE SURFACE WATER RUNOFF FOR RAINFALL EVENTS UP TO AND INCLUDING A 1 IN 100 YEAR RAINFALL EVENT WITH AN ADDITIONAL ALLOWANCE OF 40% FOR CLIMATE CHANGE BELOW THE FREEBOARD. ATTENUATION POND FOOTPRINTS ARE SHOWN INDICATIVELY AT THIS STAGE, BASED ON QUICK STORAGE ESTIMATES.

3. ONSITE ATTENUATION PONDS WILL BE SIZED ON THE FOLLOWING: -
- FEH RAINFALL DATA - IN ACCORDANCE WITH INDUSTRY PRACTICE;
- VOLUMETRIC RUNOFF COEFFICIENT (CV) OF 0.85 - IN ACCORDANCE WITH INDUSTRY PRACTICE;
- DISCHARGE RATE OF 4/l/s/impermeable hectare - AGREED WITH THE IDB;

4. SURFACE WATER DRAINAGE SYSTEM TO BE DESIGNED IN ACCORDANCE WITH SEWERS FOR ADOPTION 6th EDITION.

5. HIGHWAY DRAINAGE SHALL BE DESIGNED AND CONSTRUCTED IN FULL COMPLIANCE WITH MILTON KEYNES COUNCIL'S HIGHWAY ADOPTION STANDARDS.

6. MASTERPLAN TAKEN FROM PETER HADDON & PARTNERS ARCHITECTS DRAWING 4179-1-SK015 P45 - 'PROPOSED MASTER PLAN'.

UNNAMED WATERCOURSE

TONGWELL BROOK

IDB DRAIN 18A

PROPOSED HEADWALL MAY REQUIRE EROSION PROTECTION INSTALLED SUBJECT TO DETAILED DESIGN

PROPOSED LENGTH OF GRAVITY DRAIN TO ALLOW FLOWS TO DISCHARGE TO WATERCOURSE

SECTION 50 AGREEMENT REQUIRED FOR INSTALLING RISING MAIN IN HIGHWAY

GATED ACCESS WILL BE PROVIDED TO ALLOW MAINTENANCE ACCESS

EXISTING MANHOLE 'MH301 (A)' (LOCATION TO BE CONFIRMED)
EX IL: 56.020m AOD
PROPOSED IL: 55.95m AOD
TAKEN FROM AS-BUILT RECORDS PROVIDED BY MKC

PROPOSED DITCHCOURSE

SHORT LENGTH OF DITCHCOURSE TO BE CULVERTED TO ACCOMMODATE MAINTENANCE VEHICULAR ACCESS AROUND PERIMETER OF POND

OFFSITE HIGHWAY POND
IL: 56.0m AOD
APPROXIMATE FOOTPRINT: 1940m²
APPROXIMATE VOLUME: 1015m³
DEPTH: 1.5m
FREEBOARD: 0.3m
1:2.5 SIDE SLOPES
ESTIMATED IMPERMEABLE AREA: 1.240ha

SHORT LENGTH OF DITCHCOURSE TO BE CULVERTED TO ACCOMMODATE MAINTENANCE VEHICULAR ACCESS AROUND PERIMETER OF POND

UNDERGROUND STORAGE
INDICATIVE STORAGE = 2,734m³

POND 4
INDICATIVE POND STORAGE = 707m³

UNDERGROUND STORAGE
INDICATIVE STORAGE = 2,586m³

POND 5
INDICATIVE POND STORAGE = 1,483m³

POND 3
INDICATIVE POND STORAGE = 1,330m³

POND 2
INDICATIVE POND STORAGE = 572m³

UNDERGROUND STORAGE
INDICATIVE STORAGE = 1,788m³

POND 1
INDICATIVE POND STORAGE = 1,609m³

EXISTING QUARRY ACCESS

CALDECOTE FARM

Rev.	Description	Drawn	Date	Chkd
B	UPDATED TO REFLECT LATEST DEVELOPMENT PROPOSALS	JB	28.07.21	JSH
A	UPDATED TO REFLECT LATEST DEVELOPMENT PROPOSALS	JB	21.05.19	JSH

LAND AT CALDECOTE FARM NEWPORT PAGNELL

NEWLANDS DEVELOPMENTS

STANTEC UK LTD
https://www.stantec.com/uk

PRELIMINARY SURFACE WATER DRAINAGE STRATEGY

Drawing Status:	PRELIMINARY
CAD Reference:	38748/100/011
Drawn:	DL
Date:	05.07.18
Scale @A0:	1:1000

Project No:	Drawing No:	Rev:
38748	100/011	B

38748/100/022 Rev B – ‘Willen Road Topographical Survey North’;
38748/100/023 Rev B – ‘Willen Road Topographical Survey South’;

FOR CONTINUATION REFER TO DRAWING 38748/100/023

OS Note:

Some services may have been omitted due to parked vehicles. The Ordnance Survey tile is to be used as a guide only.

OS Buildings | Surveyed Buildings

This survey has been orientated to the Ordnance Survey (O.S) National Grid OSGB36(15) via Global Navigational Satellite Systems (GNSS) and the O.S. Active Network (OS Net).

A true OSGB36 coordinate has been established near to the site centre via a transformation using the OSTN15GB & OSGM15GB transformation models.

The survey has been correlated to this point and a further one or more OSGB36 (15) points established to create a true O.S. bearing for angle orientation.

No scale factor has been applied to the survey therefore the coordinates shown are arbitrary & not true O.S. Coordinates which have a scale factor applied.

Please refer to Survey Station Table to enable establishment of the on-site grid and datum.

Legend:

Buildings	Overhead Cable	IC	Inspection chamber	Bo	Bollard
Wall	Concrete edge	PInv	Pipe invert	IB	Illuminated bollard
Kerb line	Tarmac edge	Gy	Gully	Bin	Rubbish bin
Line marking	Grass verge	Bg	Back gully	Vp	Vent pipe
Drop kerb	Canopy/Overhang	Dp	Down pipe	Grl	Ground light
Centre line	Verge	Pipe	Pipe above ground	Lbox	Letter box
Top of bank	Bottom of bank	MH	Manhole	Stmp	Tree Stump
1	Station and Name	WL	Water level	Sty	Stile
100.000	Station Level	Fl	Flood light	IFL	Internal floor level
		Lp	Lamp post	THL	Threshold level
	Tree / Bush / Sapling	Tp	Telegraph post	Sp	Sign post
	Area of Undergrowth	Ep	Electricity post	TH	Trialhole
	Woodland	Tl	Traffic light	BH	Borehole
		Bus	Bus stop	ELC	Electric
R:	Ridge Level	Sv	Stop valve	BT	British Telecom
E:	Eaves Level	St	Stop tap	C'box	Control box
F:	Flat Roof Level	Er	Earth rod	TT	Tactile
	Gate	Wm	Water meter	BP	Brick paved
Fence types:		Gas	Gas valve	CPS	Concrete paving slabs
I\W	Interwoven	Av	Air valve	CVR	Cover
I\R	Iron Railings	ICU	Unidentified inspection	R/wall	Retaining wall
W\M	Wire Mesh	Wo	Wash out	TWL	Top of Wall Level
P\R	Post & Rail	Re	Rodding eye	TCL	Tree canopy level
P\W	Post & Wire	BB	Belisha beacon	G:	Girth
C\L	Chain Link	CTV	Cable tv	MG	Multi girth
W\P	Wooden Panels	Mkr	Marker post	IC	Inspection chamber
C\B	Close Boarded	Gmkr	Gas marker post	CL:	Cover level
S\P	Steel Palisade	So	Soffit	IL:	Invert level
		Fh	Fire hydrant	UTL	Unable to lift

NOTE:-

1. TOPOGRAPHICAL SURVEY TAKEN FROM GREENHATCH DRAWING NO. 26594_T_NORTH REV 1, 'WILLEN ROAD, NEWPORT PAGNELL TOPOGRAPHICAL SURVEY'.

Rev.	Description	Drawn	Date	Chkd
B	UPDATED DRAWING BORDER	JB	28.07.21	JSH
A	UPDATED DRAWING BORDER	JB	21.05.19	JSH

LAND AT CALDECOTE FARM NEWPORT PAGNELL

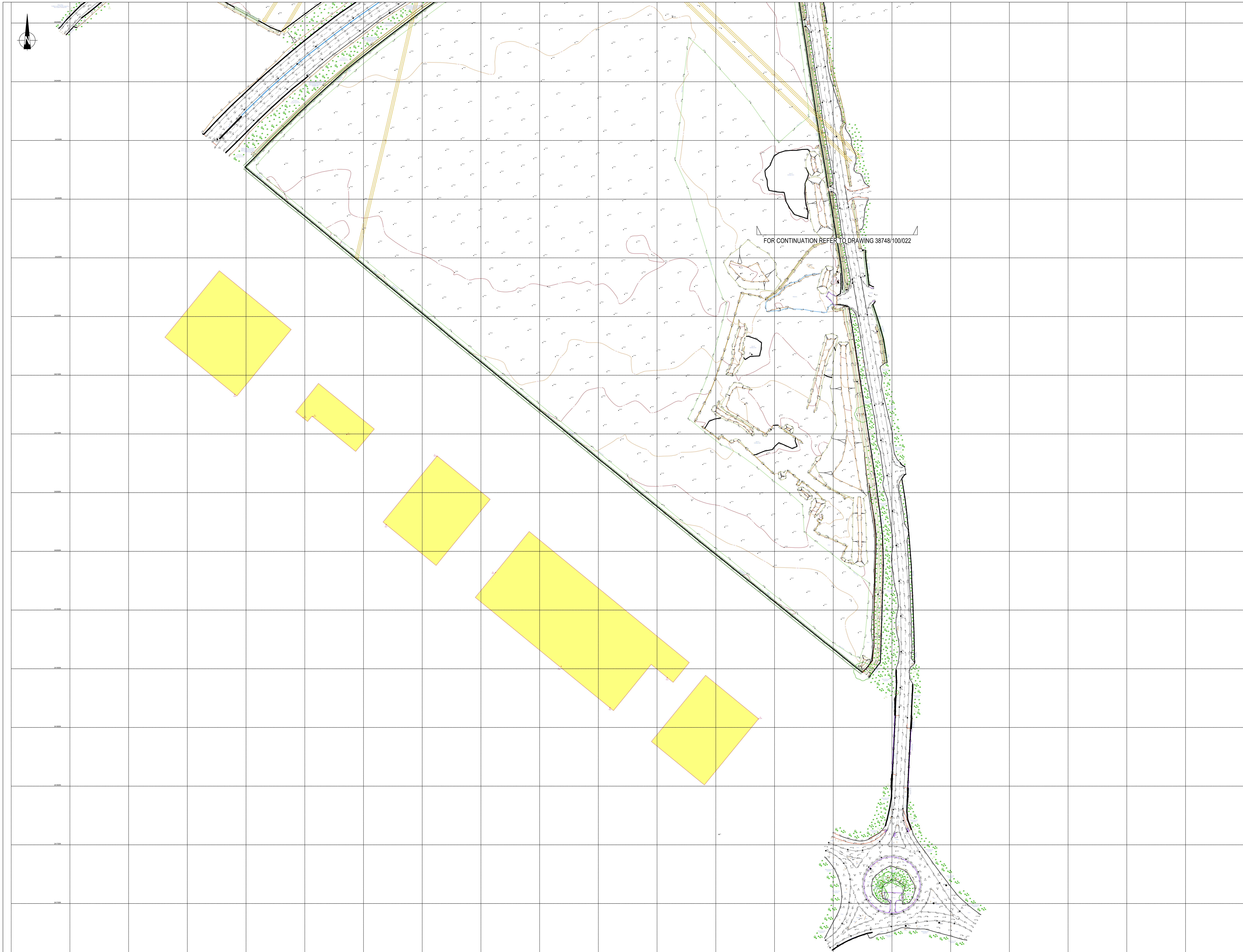
NEWLANDS DEVELOPMENTS

STANTEC UK LTD
https://www.stantec.com/uk

WILLEN ROAD
TOPOGRAPHICAL SURVEY NORTH

Drawing Status:
CAD Reference: 38748/100/022
Drawn: SW
Date: 22.06.18
Scale @A0: 1:1000

Project No: 38748
Drawing No: 100/022
Rev: B



OS Note:

Some services may have been omitted due to parked vehicles. The Ordnance Survey tile is to be used as a guide only.

OS Buildings | *Surveyed Buildings*

This survey has been orientated to the Ordnance Survey (O.S) National Grid OSGB36(15) via Global Navigational Satellite Systems (GNSS) and the O.S. Active Network (OS Net).

A true OSGB36 coordinate has been established near to the site centre via a transformation using the OSTN15GB & OSGM15GB transformation models.

The survey has been correlated to this point and a further one or more OSGB36 (15) points established to create a true O.S. bearing for angle orientation.

No scale factor has been applied to the survey therefore the coordinates shown are arbitrary & not true O.S. Coordinates which have a scale factor applied.

Please refer to Survey Station Table to enable establishment of the on-site grid and datum.

Legend:

Buildings	Overhead Cable	IC	Inspection chamber	Bo	Bollard
Wall	Concrete edge	PInv	Pipe invert	IB	Illuminated bollard
Kerb line	Tarmac edge	Gy	Gully	Bin	Rubbish bin
Line marking	Grass verge	Bg	Back gully	Vp	Vent pipe
Drop kerb	Canopy/Overhang	Dp	Down pipe	Grl	Ground light
Centre line	Verge	Pipe	Pipe above ground	Lbox	Letter box
Top of bank	Bottom of bank	MH	Manhole	Stmp	Tree Stump
1	Station and Name	WL	Water level	Sty	Stile
100.000	Station Level	Fl	Flood light	IFL	Internal floor level
		Lp	Lamp post	THL	Threshold level
	Tree / Bush / Sapling	Tp	Telegraph post	Sp	Sign post
	Area of Undergrowth	Ep	Electricity post	TH	Trialhole
	Woodland	Tl	Traffic light	BH	Borehole
		Bus	Bus stop	ELC	Electric
R:	Ridge Level	Sv	Stop valve	BT	British Telecom
E:	Eaves Level	St	Stop tap	C'box	Control box
F:	Flat Roof Level	Er	Earth rod	TT	Tactile
	Gate	Wm	Water meter	BP	Brick paved
Fence types:		Gas	Gas valve	CPS	Concrete paving slabs
I\W	Interwoven	Av	Air valve	CVR	Cover
I\R	Iron Railings	ICU	Unidentified inspection	R/wall	Retaining wall
W\M	Wire Mesh	Wo	Wash out	TWL	Top of Wall Level
P\R	Post & Rail	Re	Rodding eye	TCL	Tree canopy level
P\W	Post & Wire	BB	Belisha beacon	G:	Girth
C\L	Chain Link	CTV	Cable tv	MG	Multi girth
W\P	Wooden Panels	Mkr	Marker post	IC	Inspection chamber
C\B	Close Boarded	Gmkr	Gas marker post	CL:	Cover level
S\P	Steel Palisade	So	Soffit	IL:	Invert level
		Fh	Fire hydrant	UTL	Unable to lift

NOTE:-

1. TOPOGRAPHICAL SURVEY TAKEN FROM GREENHATCH DRAWING NO. 26594_T_SOUTH REV 1, 'WILLEN ROAD, NEWPORT PAGNELL TOPOGRAPHICAL SURVEY'.

Rev.	Description	Drawn	Date	Chkd
B	UPDATED DRAWING BORDER	JB	28.07.21	JSH
A	UPDATED DRAWING BORDER	JB	21.05.19	JSH

LAND AT CALDECOTE FARM NEWPORT PAGNELL

NEWLANDS DEVELOPMENTS

STANTEC UK LTD
https://www.stantec.com/uk

WILLEN ROAD
TOPOGRAPHICAL SURVEY SOUTH

Drawing Status:
CAD Reference: 38748/100/023
Drawn: SW
Date: 22.06.18
Scale @A0: 1:1000

Project No: 38748 | Drawing No: 100/023 | Rev: B

TECHNICAL NOTE

Appendix E

Anglian Water Services Limited Asset Records;

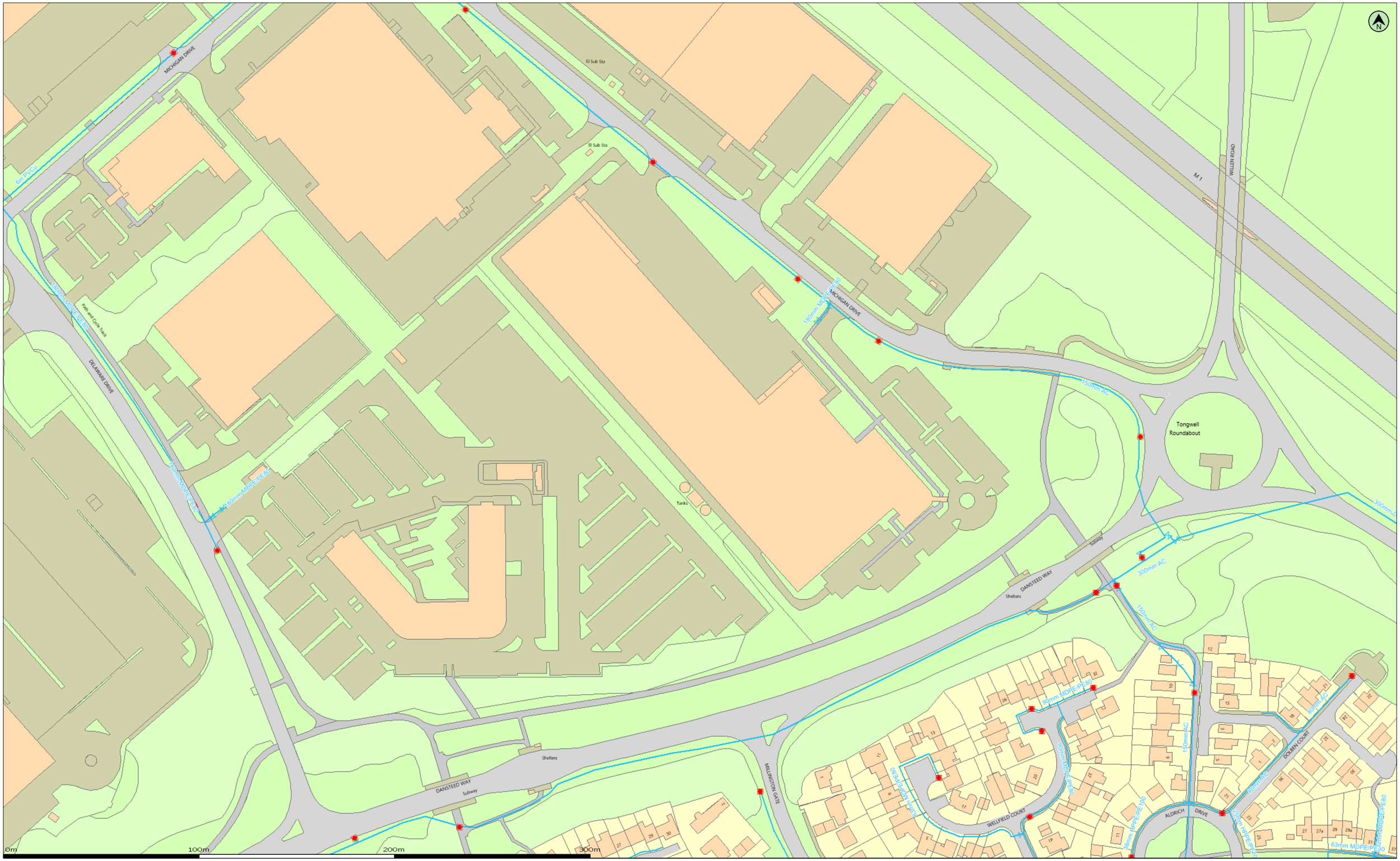
Date: 28/09/17 | Scale: 1:1250 | Map Centre: 487541,242423 | Data updated: 01/08/17 | Our Ref: 237853 - 1 | Clean Water Plan A0

Potable Water — Fitting
Raw Water (RAW)
Decommissioned Water — Hydrant

jane.griffin@utilityconnections.co.uk

2292

love every drop
anglianwater



(c) Crown copyright and database rights 2017 Ordnance Survey 100022432 | Date: 28/09/17 | Scale: 1:1250 | Map Centre: 487537,241722 | Data updated: 01/08/17 | Our Ref: 237853 - 3 | Clean Water Plan A2

Potable Water
Raw Water
Decommissioned Water
Fitting
Hydrant

jane.griffin@utilityconnections.co.uk
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love every drop
anglianwater

 | Date: 28/09/17 | Scale: 1:1250 | Map Centre: 487541,242423 | Data updated: 01/08/17 | Our Ref: 237853 - 2 | Wastewater Plan A0

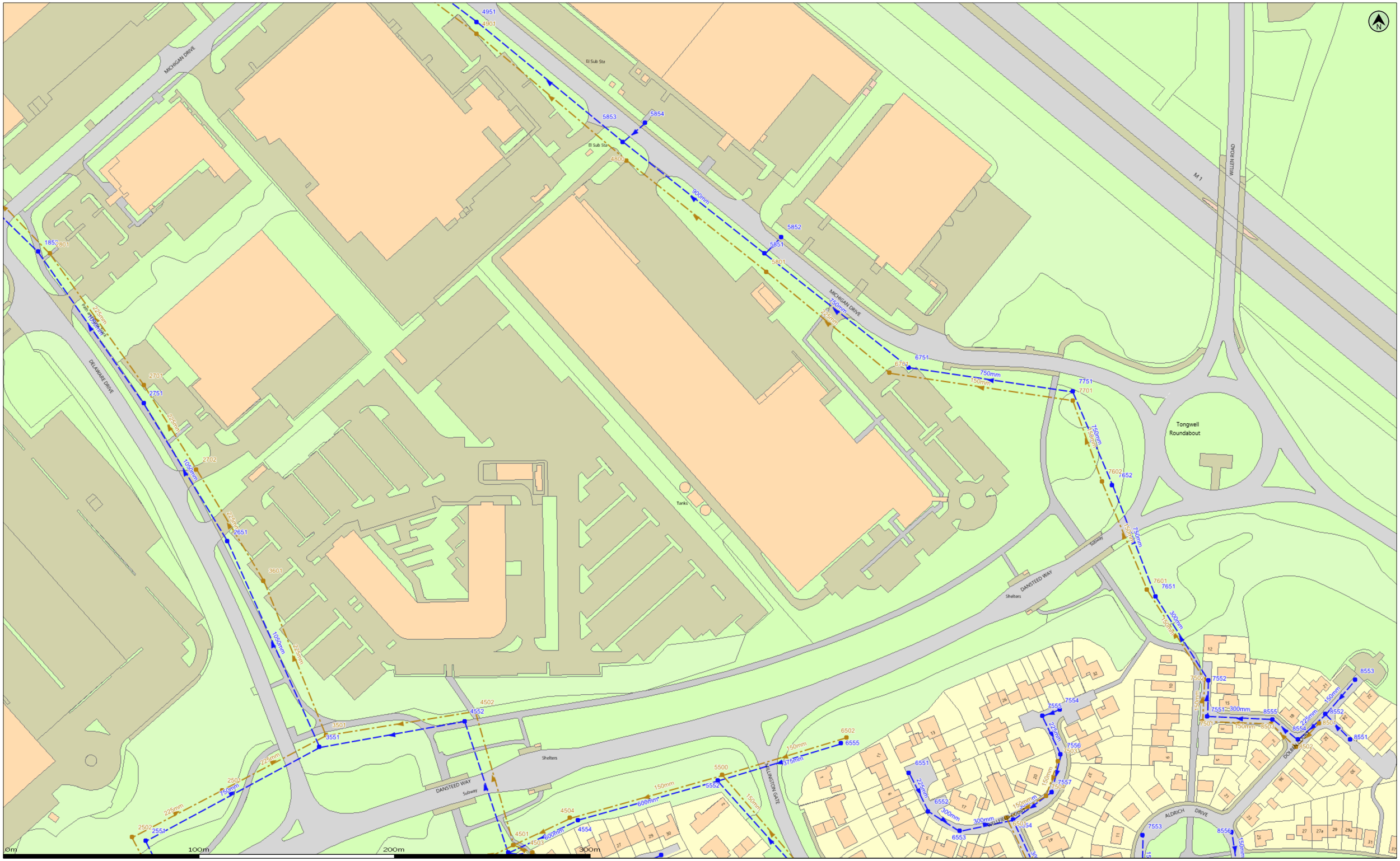
Foul Sewer
Surface Sewer
Combined Sewer
Final Effluent
Rising Main (Colour denotes effluent type)
Private Sewer (Colour denotes effluent type)
Decommissioned Sewer (Colour denotes effluent type)
Outfall (Colour denotes effluent type)
Inlet (Colour denotes effluent type)
Manhole (Colour denotes effluent type)
Sewage Treatment Works
Pumping Station

jane.griffin@utilityconnections.co.uk

2292

love every drop
anglianwater

Manhole Reference	Easting	Northing	Liquid Type	Cover Level	Invert Level	Depth to Invert
2501	488223	242547	E	-	-	-
0001	487022	242032	F	-	-	-
0002	487074	242095	F	-	-	-
0600	487078	242677	F	59.32	56.85	2.47
0601	487048	242663	F	59.77	58.27	1.5
0602	487075	242607	F	58.892	57.69	1.202
0701	487095	242789	F	59.07	56.9	2.17
0702	487075	242769	F	59.22	56.54	2.68
0703	487005	242751	F	61.12	58.3	2.82
0704	487012	242735	F	60.77	58.37	2.4
0705	487030	242735	F	60.49	58.44	2.05
0801	487028	242866	F	60.21	58.86	1.35
0802	487056	242896	F	59.34	57.97	1.37
0803	487061	242866	F	59.68	58.41	1.27
0804	487006	242811	F	60.644	57.582	3.062
0805	487015	242818	F	-	-	-
0901	487005	241944	F	60.95	57.56	3.39
1100	487114	242164	F	-	-	-
1101	487132	242164	F	-	-	-
1500	487157	242589	F	58.22	57.07	1.15
1501	487168	242561	F	58.32	57.17	1.15
1502	487176	242557	F	-	-	-
1503	487177	242553	F	-	-	-
1504	487179	242544	F	-	-	-
1600	487108	242677	F	58.9	56.41	2.49
1601	487113	242649	F	58.63	56.53	2.1
1602	487114	242610	F	58.56	57.16	1.4
1603	487130	242622	F	58.43	56.85	1.58
1700	487128	242725	F	59.207	55.997	3.21
1801	487133	242800	F	58.75	57.19	1.56
1802	487181	242857	F	-	-	-
1803	487151	242862	F	-	-	-
1804	487142	242867	F	-	-	-
1805	487136	242856	F	-	-	-
2001	487295	242033	F	-	-	-
2002	487216	242098	F	-	-	-
2500	487253	242589	F	58.065	56.775	1.29
2600	487220	242646	F	58.235	57.815	0.42
2601	487208	242652	F	58.405	56.005	2.4
2602	487278	242668	F	58.07	56.902	1.168
2603	487260	242639	F	57.925	56.125	1.8
2704	487290	242735	F	58.53	55.18	3.35
2706	487285	242780	F	58.64	55.51	3.13
2707	487258	242717	F	-	-	-
2708	487267	242703	F	58.139	55.675	2.464
2709	487264	242703	F	58.093	55.663	2.43
2710	487204	242705	F	58.451	55.651	2.8
2711	487205	242751	F	58.748	56.168	2.58
2712	487213	242772	F	58.657	56.327	2.33
2713	487230	242799	F	58.285	56.615	1.67
2800	487221	242824	F	58.318	56.888	1.43
2801	487202	242887	F	-	-	-
3600	487303	242664	F	58.055	56.145	1.91
3601	487301	242635	F	57.745	56.485	1.26
3701	487322	242773	F	58.18	54.99	3.19
3702	487335	242700	F	57.655	56.455	1.2
3703	487361	242736	F	58.039	55.639	2.4
3704	487368	242753	F	58.089	55.543	2.546
3801	487390	242820	F	57.28	54.72	2.56
3802	487367	242841	F	57.57	54.62	2.95
3803	487344	242809	F	58.07	54.88	3.19
3901	487356	241975	F	62.06	58.97	3.09
4701	487467	242753	F	57.18	56.05	1.13
4702	487440	242772	F	57.28	55.69	1.59
4703	487435	242782	F	57.18	55.6	1.58
4801	487439	242800	F	57.01	55.46	1.55
4802	487405	242816	F	57.15	55.05	2.1
4803	487440	242821	F	56.84	55.28	1.56
4804	487488	242836	F	56.57	55.04	1.53
4805	487482	242858	F	56.74	54.78	1.96
4806	487492	242869	F	56.52	54.67	1.85
4807	487424	242886	F	56.94	54.15	2.79
4901	487499	242900	F	56.48	54.46	2.02
5801	487520	242899	F	56.67	54.9	1.77
8700	486884	242746	F	64.38	62.44	1.94
8701	486892	242765	F	64.47	62.02	2.45
8702	486860	242787	F	65.73	63.93	1.8
8703	486822	242790	F	66.75	64.74	2.01
8802	486820	242878	F	65.99	64.53	1.46
8803	486841	242885	F	65.43	64.13	1.3
8804	486893	242876	F	63.77	62.31	1.46
8805	486869	242879	F	64.54	63.13	1.41
9001	486980	242009	F	-	-	-
9700	486981	242776	F	61.43	57.83	3.6
9701	486962	242765	F	62.21	60.04	2.17
9702	486934	242741	F	62.8	60.63	2.17
9703	486941	242723	F	62.45	60.73	1.72
9704	486933	242762	F	63.07	60.49	2.58
9800	486913	242888	F	62.91	61.01	1.9
9901	486934	241963	F	61.54	58.73	2.81
0051	487010	242050	S	-	-	-
0052	487037	242065	S	-	-	-
0053	487040	242095	S	-	-	-
0054	487042	242096	S	-	-	-
0055	487068	242098	S	-	-	-
0651	487083	242675	S	59.27	57.7	1.57
0652	487059	242665	S	59.69	58.49	1.2
0653	487099	242607	S	58.63	57.683	0.947
0751	487075	242772	S	59.26	56.97	2.29
0752	487095	242792	S	59.1	57.31	1.79
0753	487062	242760	S	58.97	56.3	2.67
0754	487014	242733	S	60.74	58.71	2.03
0755	487047	242732	S	60.02	58.84	1.18
0756	487014	242708	S	60.49	59.27	1.22
0757	487004	242756	S	61.05	58.56	2.49
0851	487026	242864	S	60.21	58.37	1.84
0852	487064	242865	S	59.61	57.84	1.77
0853	487058	242896	S	59.38	57.24	2.14
0854	487009	242810	S	-	-	-
1151	487114	242168	S	-	-	-
1152	487132	242170	S	-	-	-
1551	487156	242594	S	58.31	57.16	1.15
1552	487168	242566	S	58.39	57.29	1.1
1553	487180	242554	S	-	-	-
1651	487110	242674	S	58.81	56.45	2.36
1652	487116	242649	S	58.692	56.72	1.972
1653	487117	242608	S	58.52	57.55	0.97
1654	487135	242621	S	58.37	56.99	1.38
1655	487164	242698	S	58.888	56.248	2.64
1851	487129	242800	S	58.58	57.4	1.18
1852	487176	242883	S	58.143	57.193	0.95
2051	487294	242038	S	-	-	-
2052	487221	242098	S	-	-	-
2551	487255	242587	S	58.05	56.85	1.2
2651	487233	242695	S	58.4	56.05	2.35
2652	487219	242645	S	58.29	57.03	1.26
2653	487207	242650	S	58.42	57.22	1.2
2654	487279	242667	S	58.045	56.295	1.75
2655	487261	242638	S	57.95	56.46	1.49
2656	487202	242693	S	58.493	56.113	2.38
2751	487227	242798	S	58.36	56.97	1.39
2752	487209	242771	S	58.65	56.74	1.91
2753	487233	242757	S	58.69	57.01	1.68
2755	487298	242723	S	58.13	55.79	2.34
2756	487267	242706	S	58.24	55.88	2.36
2757	487201	242708	S	58.451	56.411	2.04
2758	487202	242750	S	58.796	56.596	2.2
2851	487201	242867	S	58.64	57.07	1.57
2852	487256	242837	S	58.41	56.39	2.02
3651	487300	242638	S	57.745	56.645	1.1
3652	487331	242663	S	57.7	56.6	1.1
3653	487323	242671	S	57.9	56.48	1.42
3654	487301	242662	S	58.05	56.55	1.5
3751	487310	242768	S	58.35	56.03	2.32
3752	487329	242758	S	58.2	55.6	2.6
3753	487367	242755	S	58.169	56.126	2.043
3754	487344	242759	S	58.259	55.909	2.35
3755	487334	242702	S	57.705	56.315	1.39
3756	487360	242737	S	58.054	56.186	1.868
3851	487393	242821	S	57.3	55.57	1.73
3852	487380	242832	S	57.31	55.48	1.83
3853	487386	242838	S	57.42	55.41	2.01
3951	487358	241980	S	62.15	59.5	2.65
4751	487466	242756	S	57.21	56.21	1
4752	487443	242772	S	57.28	56.07	1.21
4753	487437	242782	S	57.22	55.88	1.34
4754	487441	242799	S	56.98	55.78	1.2
4851	487403	242818	S	57.15	55.62	1.53
4852	487442	242823	S	56.83	55.72	1.11
4853	487491	242833	S	56.55	55.67	0.88
4854	487485	242857	S	56.74	55.28	1.46
4855	487492	242865	S	56.55	55.2	1.35
4856	487459	242895	S	56.81	55.12	1.69
4857	487412	242860	S	57.44	55.26	2.18
4951	487449	242904	S	56.56	55.52	1.04
5951	487502	242902	S	56.55	55.11	1.44
8051	486858	242010	S	-	-	-
8751	486887	242748	S	64.39	62.58	1.81
8752	486894	242763	S	64.4	62.47	1.93
8753	486857	242785	S	65.71	64.18	1.53
8754	486833	242787	S	66.52	64.72	1.8
8851	486822	242876	S	65.97	64.02	1.95
8852	486867	242877	S	64.71	62.83	1.88
8853	486839	242882	S	65.49	63.74	1.75
8854	486864	242858	S	64.83	63.34	1.49
8855	486891	242874	S	63.8	61.89	1.91
8951	486856	241979	S	62.2	58.85	3.35
8952	486891	241947	S	-	59.08	-
9651	486946	242696	S	62.31	61.26	1.05
9751	486985	242776	S	61.4	58.34	3.06
9752	486961	242761	S	62.23	60.43	1.8
9753	486938	242736	S	62.67	60.94	1.73
9754	486945	242719	S	62.39	61.09	1.3
9755	486936	242758	S	63.01	60.82	2.19
9851	486913	242883	S	62.96	59.83	3.13
9852	486950	242846	S	-	-	-
9951	486962	241996	S	61.88	-	-



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- Foul Sewer
- Surface Sewer
- Combined Sewer
- Final Effluent
- Rising Main (Colour denotes effluent type)
- Private Sewer (Colour denotes effluent type)
- Decommissioned Sewer (Colour denotes effluent type)
- Outfall (Colour denotes effluent type)
- Inlet (Colour denotes effluent type)
- Manhole (Colour denotes effluent type)
- Sewage Treatment Works
- Pumping Station

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