

Pell Frischmann

Land Off Cronton Road

Flood Risk Assessment

110840-PEF-XX-HDG-RP-00001

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Report Ref.		110233-PEF-CC-CCC-RP-00001				
Rev	Suit	Description	Date	Originator	Checker	Approver
P01	S1	FOR SUBMISSION	16/12/2025	M King J Holton	A. HALL	A. HALL
P01	S2	For submission following client comments	19/12/2025	J Holton	A. HALL	A. HALL
Ref. reference. Rev revision. Suit suitability.						

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1 Introduction

Pell Frischmann has been appointed by Bellway Homes Limited (Bellway Homes), to undertake a Flood Risk Assessment (FRA) to support an application for outline planning permission for a residential development at land at Cronton Road, Cronton, Widnes, closest postcode WA8 5QD.

1.1 Scope of Works

The following scope of works has been undertaken to provide an FRA in line with best practice and policy guidance:

- Collate and undertake a desk-based review of publicly available flood risk information, such as Environment Agency (EA) mapping, local data, policy and guidance;
- Undertake a desktop review of other data that has been made available, such as topographic surveys, existing drainage plans and proposed layout plans;
- Provide outline advice on flood mitigation measures; and
- Provide an FRA based on the above information.

This FRA has been assessed in accordance with the National Planning Policy Framework (NPPF) in line with best practice and guidance (see Section 4).

1.2 Sources of Information

A review of the relevant information from a range of sources has been undertaken and includes the following:

- National Planning Policy Framework, December 2024;
- Technical Guidance to the National Planning Policy Framework; and
- Knowsley Metropolitan Borough Council Local Flood Risk Management Strategy, October 2017.

The following information has been gathered from the EA's Spatial Data Catalogue, data.gov.uk (accessed December 2025):

- Flood Map for Planning – Flood Zones (inc. standardised attributes);
- EA Reservoir Flood Extents – Fluvial Contribution (National);
- EA Reservoir Flood Extents – Wet Day (National);
- EA Catchment Data Explorer;
- Risk of Flooding from Surface Water Extent;
- Risk of Flooding from Rivers and Sea;
- EA Statutory Main River Map;
- EA Check Long Term Flood Risk Map;
- Recorded Flood Outlines;
- Historic Flood Map; and
- LiDAR Composite DTM (1m).

2 The Site

Land off Cronton Road, Cronton (the 'site') is located adjacent to the village of Cronton, approximately 1km north west of Widnes. The site is located off A5080 Cronton Road, which runs east to west linking Widnes and Warrington to Liverpool. The approximate centre of the site is positioned at National Grid Reference SD 49014 88329. The site is shown in Figure 1 below.



Figure 1 Site Location Plan

2.1 Site Description

The area of the site is circa 4.32 hectares (ha). The site comprises of a 'Z' shaped agricultural field, bordered on all sides by mature hedgerow. Along the northern site boundary is a watercourse, with another agricultural field beyond/The M62 is located around 1km north. To the north east is a line of trees forming the limit of a designated dog walking field, which is provided for the village of Cronton adjacent to the eastern and south eastern site boundary. To the south is access from Cronton Road A5080, which the junction of the minor road Lodge Lane is located opposite. A residential property, and the farm of Caxton Lodge are located due south, surrounded by agricultural land. A line of hedgerow with trees runs the majority of the length of the western site boundary. The community of George's Hall and George's Hall Cottages is located immediately adjacent, also off Cronton Road. A small pond is situated adjacent to the eastern boundary, located within an agricultural field. Small parcels of woodland including George's Wood and agricultural fields are located further to the west of the site boundary, with Symmetry Park, a business park, under construction located 1.3km north west.

2.2 Topography

Figure 2 below shows the LiDAR data for the site. The site is located between circa 27mAOD (metres above ordnance datum) to circa 32.5mAOD. The site is a moderately flat slope from northeast to west. Elevation increases between the northern boundary and the south west field margin from 27mAOD to 31mAOD, which is associated with higher elevation of the residential village of Cronton. There are slight topographic depressions associated with the watercourse along the northern site boundary and the pond located adjacent to the western site boundary.

The topography of the site is generally consistent with the wider topography of the area, with land dropping further in elevation to the north east associated with woodland. Cronton to the east of the site is higher in elevation at 30m to 35mAOD.

According to the design drawings layout and the LiDAR data, the proposed works will be located in areas ranging between 28.5m and 32mAOD. Works on the proposed SuDS will be located in areas ranging from elevations of around 29m to 31mAOD.

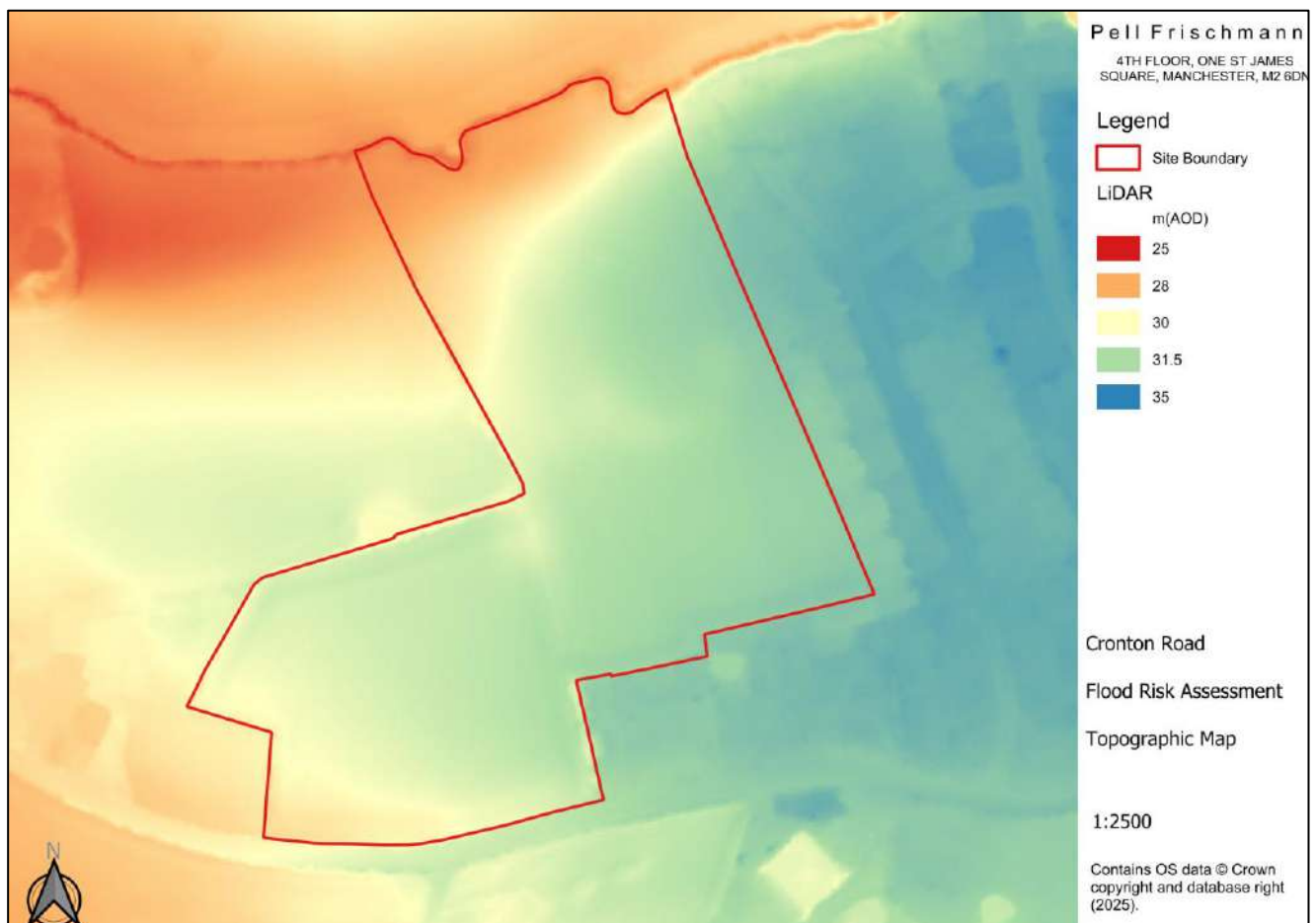


Figure 2 Topographic Map

2.3 Existing Drainage

2.3.1 Watercourses

The closest designated Main River is Dog Clog Brook (including Mill Brook) which is located adjacent to the northern site boundary, respectively. Dog Clog Brook (including Mill Brook) leads to Ditton Brook (Halewood to Mersey Estuary) water body, located approximately 3.7km southwest of the site boundary. This water body is located within the Ditton Management Catchment and flows into the Mersey water body via the Lower Mersey Bain and North Merseyside Permo-Triassic Sandstone Aquifers Water Body, which is located within the North West River Basin District.

The surrounding agricultural land to the west and south contains seasonal field drains and ponds, associated with the agricultural land.

EA flood defence mapping indicates that the Dog Clog Brook (including Mill Brook) Water Body is protected by informal flood defences for the majority of its length. As it passes the site and flows east towards Liverpool, it is protected for the entirety of its length by defences for 5km, in the form of high ground and a raised earth embankment. Only a couple of small sections located 230m upstream from the site boundary are unprotected. Ditton Brook (Halewood to Mersey Estuary) is protected by high ground, flood walls and embankments along the entirety of its length.

There is a drainage ditch running along the western boundary of the site as well as additional field drains within the agricultural land to the south of Cronton Road.

The location of the defences, and seasonal field drains are shown on Figure 3 below.

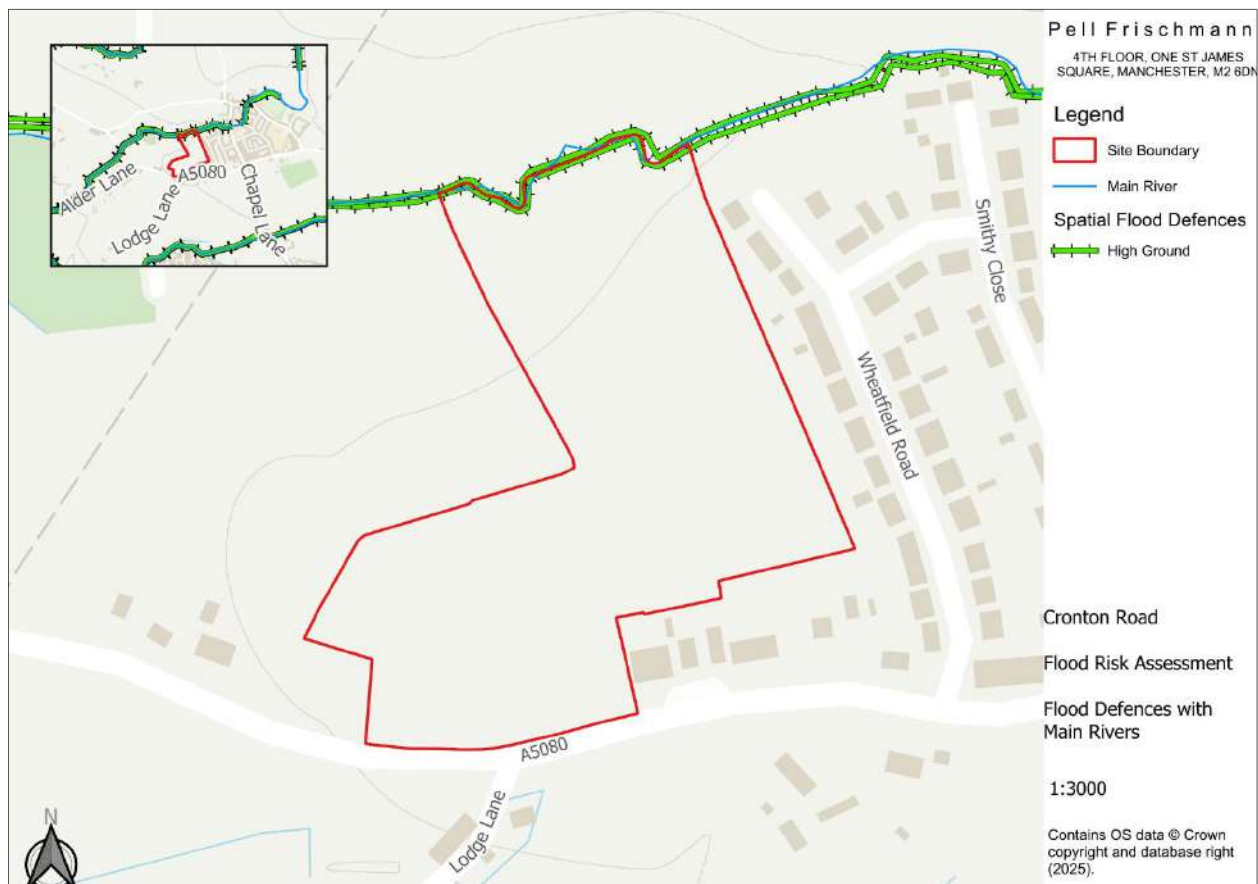


Figure 3 Site Watercourses and Flood Defence Map

2.3.2 Public Sewers

The site is served by existing sewer infrastructure, with the following located in close proximity (drawing ref: BH.TS.07):

- 225 mm diameter private sewer – located within the south of the site;
- 100 mm diameter combined public sewer – located within the south of the site;
- 1125mm diameter public foul sewer – located 20m north of the site boundary; and
- 1200 mm diameter foul sewer – located 30m south of the site boundary.

2.4 Geology

Online British Geological Survey (BGS) mapping at a scale of 1:50,000 shows the site is underlain by the following deposits:

- **Superficial:** Devensian Till. This is an unsorted sediment with gravel deposited by ice. This is a deposit formed during the Devensian period of the Quaternary period between 115,000 and 11,700 thousand years ago.
- **Bedrock:** Kinnerton Sandstone – Sandstone. This is a red-brown to yellow sandstone formed between 251.9 and 246.7 million years ago during the early Triassic Period.

Figure 4, below, shows the superficial deposits layer as overlapping the bedrock layer. The Diamicton Till overlies the entirety of the site, above the Kinnerton Formation. A review of BGS Borehole records within 1km of the site encountered water at a depth of 28.5 metres. Infiltration tests in line with BRE 365 Guidelines, and the recommended actions within the LLFA's decision response, should be carried out to determine whether infiltration will be viable.



Figure 4 Geological Map

2.5 Proposed Works

Bellway is seeking outline planning permission for a residential development of up to 120 dwellings, along with associated infrastructure, and SuDS.

The proposed works are anticipated to include:

- Main access via proposed site junction onto A5058 Cronton Road;
- New residential properties;
- SuDS features;
- New foul water sewer connection including proposed foul sewer diversion; and
- New surface water sewer connection into existing watercourse.

The proposed plan is shown in Appendix A .

3 Existing Flood Risk

3.1 Fluvial Flood Risk (Rivers and Sea)

The EA's latest flood risk data indicates the entirety of the site is within Flood Zone 1, which is considered to be the lowest risk flood zone.

The closest area of flood risk is an area of Flood Zone 3 and 2 located approximately 560m south of the site boundary, associated with a confluence of small drains.

Flood Zone 3 indicates a greater than a 1 in 100 (1%) annual probability of flooding from rivers or the sea in any given year, and Flood Zone 2 indicates a greater than 0.1% (1 in 100 to 1 in 1000) annual probability of flooding from rivers or the sea in any given year, as shown in Figure 6 below. However, no works are proposed outside of Flood Zone 1.

According to the Knowsley Council Local Flood Risk Management Strategy (LFRMS), the site is shown as located in Flood Zone 1.

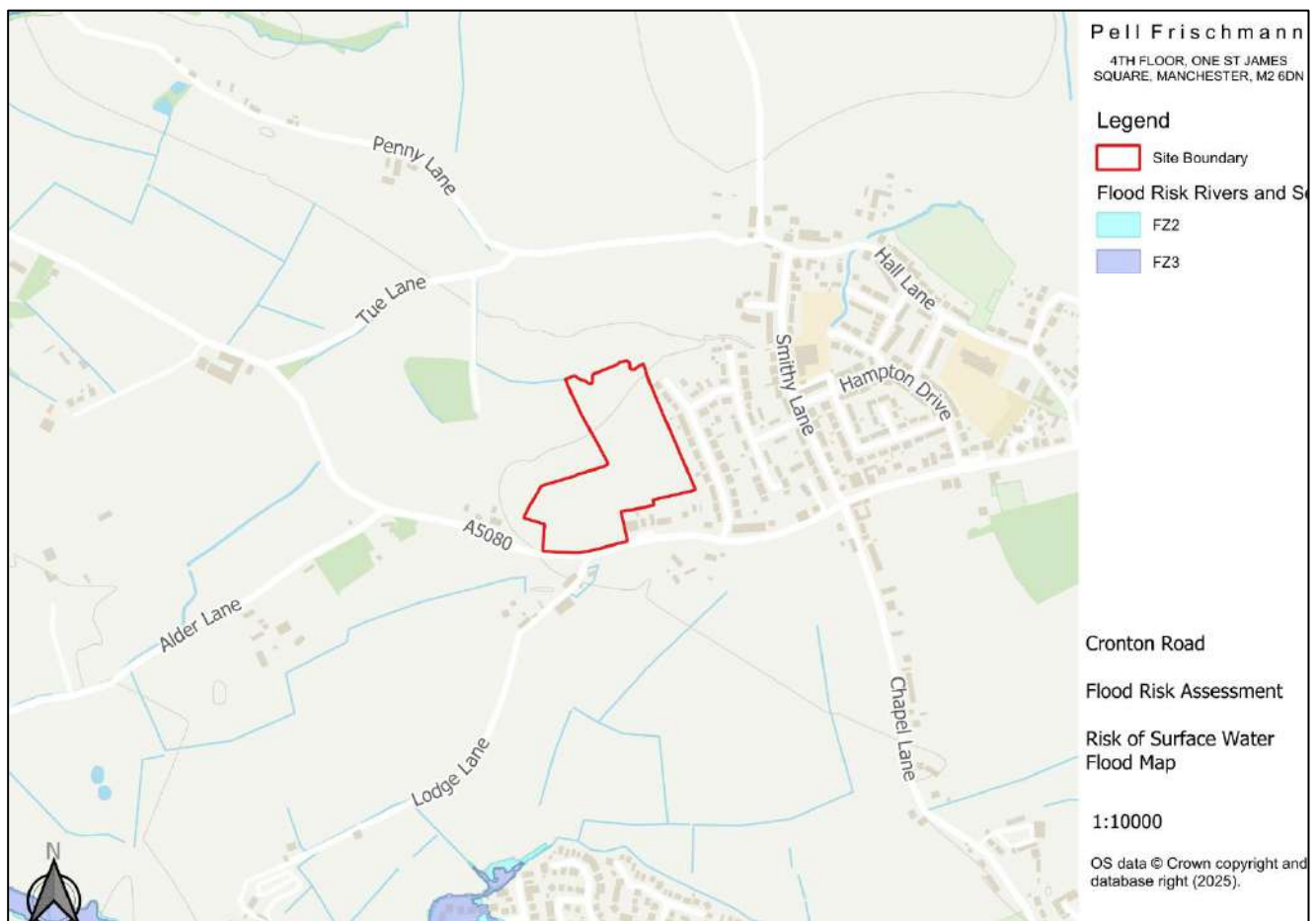


Figure 5 EA Flood Zone Map

3.2 Flood Risk from Surface Water

The risk of surface water flooding has been assessed by viewing the EA's latest Flood Risk from Surface Water mapping (2025). The mapping indicates that sections of the site fall within high, medium and low risk areas to flooding from surface water. A majority of the site is at very low risk. There are areas of high, medium and low flood risk within the site boundary. The flood risk from surface water is illustrated in Figure 7 below.

Areas at high risk of surface water flooding are associated with a >3.3% or 1 in 30 chance of flooding from surface water; land at medium risk is associated with between 3.3% and >1% between 1 in 100 and 1 in 30; land at low risk is associated with between 1 and 0.1% between 1 in 1000 and 1 in 100 chance of surface water flooding in any given year.

The areas of high and medium Surface Water Flood Risk appear associated with topographic depressions linked to the watercourse along the northern boundary, and drainage ditch and pond along the western site boundary. The western site boundary ditch was dry during investigations in May 2025. are likely to be associated with a slight topographic depression associated with the A565. The area of high and low flood risk along the south western corner may be associated manmade surface water runoff flow route from the A5080 Cronton Road. Mapping does not indicate that there is a surface water flow route through the site during any year events.

Proposed properties adjacent to the areas of the site that are of medium and high flood risk will have a minimum FFL which is above the flood level to be confirmed by EA data.

The site's overall surface water flood risk is considered Low.

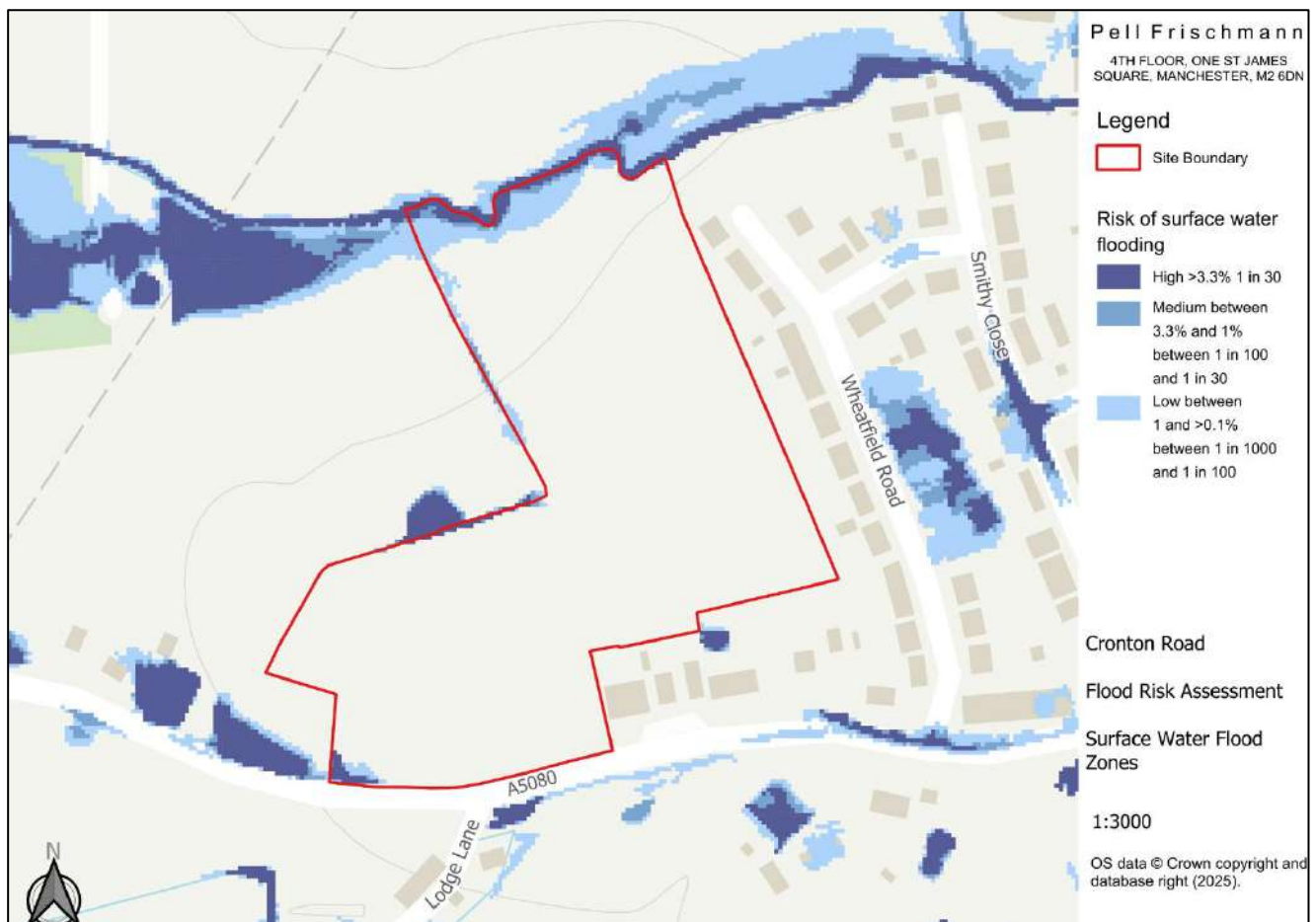


Figure 6 Surface Water Flood Risk Map

3.3 Groundwater Flooding

According to the UK Government's Check Your Long Term Flood Risk states that "*This location is outside of a groundwater flood alert area.*" The Knowsley Metropolitan Council Preliminary Flood Risk Assessment (2011) shows the site as not located within an area at risk of groundwater flooding.

Therefore, it is considered that there is a low potential for groundwater flooding to occur at the site.

3.4 Sewer Flooding

Sewer flooding can occur due to sewer infrastructure failure or due to an increased flow and volume of water entering a sewer system which exceeds its hydraulic capacity, causing the system to surcharge. If sewer outfall points are either blocked or submerged due to high water levels, water can back up in a sewer system and cause flooding.

The Knowsley Metropolitan Council Preliminary Flood Risk Assessment (2011) provides a mapping of postcodes where recorded flood incidents have occurred. The site is not located within any such postcodes where flooding relating to surcharging sewers has been identified, and therefore the site is at low risk of sewer flooding.

3.5 Artificial Sources

The EA's '*Flood Risk from Reservoirs*' dataset indicates that the site is at low risk of flooding related to reservoirs. The site boundary is not within areas at flood risk from reservoirs.

3.6 Historic Flooding

The EA's 'Recorded Flood' dataset shows that there were no recorded flood events in the vicinity of the site. The closest and most recent record of flooding events occurred approximately 900m south of the site in autumn 2000, with the source cited as channel capacity exceeded, linked to the ordinary watercourse of Alder Brook. Due to the barriers of formal flood defences and residential buildings located between the historic flood locations, and the site boundary, this flood risk is negligible.

3.7 Summary

The below table provides a summary of the five sources of flood risk for the site. Overall, the site can be considered to have a low flood risk.

Table 1 Existing Flood Risk Summary

Flood Sources	Flood Risk		
	Low	Medium	High
Fluvial	✓		
Pluvial		✓	
Groundwater	✓		
Sewers	✓		
Artificial	✓		

4 Policy and Guidance

4.1 National Planning Policy Framework

The site has been assessed in accordance with the National Planning Policy Framework (NPPF) in line with best practice and guidance. The NPPF states that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk. Where development is necessary, the development should be made safe and not increase flood risk elsewhere.

4.2 Flood Risk Vulnerability Classification

In line with NPPF guidance, Table 2 below outlines what classification of development is acceptable within each flood zone, what requires further testing and what is not deemed acceptable.

Table 2 Flood Risk Vulnerability Classification

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a	Exception Test required	X	Exception Test required	✓	✓
Zone 3b	Exception Test required	X	X	X	✓

Buildings are classified depending on their uses and are placed in vulnerability classes depending on flood risk sensitivity. The EA's flood risk vulnerability classification guidance places the proposed residential development as '*more vulnerable*' during times of flood.

4.2.1 Sequential Test

The Sequential Test aims to steer development away from zones of high flood risk towards Flood Zone 1. According to Table 2 of the PPG (Flood Risk & Coastal Change), the development is classified as 'More Vulnerable' and the application site is located entirely in Flood Zone 1 according to the current EA Flood Map for Planning. However, the proposed development elements are all appropriate in flood risk terms.

Paragraph 175 of the new NPPF (December 2024) includes an addition which establishes the situations when the sequential test is or is not required.

The LLFA's Application Consultation Response (application no: 25/00023/PREAPP) (May 2025) determines that no sequential test will be required for this development.

4.2.2 Exception Test

If, after undertaking the Sequential Test, it is not feasible for the development to be in a zone at lower risk of flooding, the Exception Test can be applied as appropriate. The Exception Test is not required, however, for this site.

5 Managing Flood Risk

5.1 Drainage and Surface Water Management

The site is currently open, green space and is likely permeable. As mentioned above, the infiltration tests will determine the ground permeability.

Surface Water Management

As stated in the NPPF Planning Practice Guidance Paragraph 08, the aim should be to discharge surface water run-off as high up the drainage hierarchy, as reasonably practicable:

1. Into the ground (infiltration);
2. To a surface water body;
3. To a surface water sewer, highway drain, or another drainage system;
4. To a combined sewer.

5.1.1 Flood Risk due to Surface Water Runoff from the Site

5.1.1.1 Collected for non-potable use

Collection for non-potable use will be explored and utilised where reasonably practicable.

5.1.1.2 Infiltrated to ground

The preferred method for disposal of surface water runoff from the application site would be via infiltration SuDS methods. As shown within the borehole records from beyond the site boundary, there is firm clay located at varying depths. Ground conditions on site, therefore, may be unsuitable for infiltration SuDS methods. Due to this, infiltration is not deemed a viable option at this stage.

Infiltration tests should be carried out in line with BRE 365 Guidelines to determine whether infiltration will be viable.

5.3.2.2 Discharge to Watercourse

It is proposed that surface water will be attenuated via a gravity network into an above-ground SuDS pond, then discharged to the adjacent watercourse.

5.1.1.3 Discharge to Surface Water Sewer

There will not be any surface water discharged to the existing surface water sewer.

5.1.2 Future maintenance responsibilities

Upon completion of the development the drainage system will be adopted by United Utilities (UU) and all future maintenance will be undertaken by them.

6 Sustainable Drainage Systems

A 'SuDS approach' shall be adopted to address the management of surface water by the development and where it should be discharged. The hierarchy is based on revised non-statutory national guidance for SuDS published by DEFRA in June 2025. Runoff shall be treated as a resource and managed in a way that avoids negative impacts of the development on flood risk, the morphology and water quality of receiving waters and the associated ecology. In order to ensure that surface water runoff from the site does not cause an increase in flood risk, the management of runoff has been considered via a sequential approach, in line with Building Regulations.

Runoff from the development shall be discharged to the following final destinations, to the maximum extent practicable, in accordance with the below hierarchy:

- priority 1: collected for non-potable use
- priority 2: infiltrated to ground
- priority 3: discharged to an above ground surface water body
- priority 4: discharged to a surface water sewer, or another piped surface water drainage system
- priority 5: discharged to a combined sewer

Note 1: priority 1 is the highest priority and priority 5 is the lowest. A 'SuDS approach' shall be adopted to address the management of surface water by the development and where it should be discharged. Runoff shall be treated as a resource and managed in a way that avoids negative impacts of the development on flood risk, the morphology and water quality of receiving waters and the associated ecology.

6.1 SuDS and Design Principles

As stated above, where it is possible, it is proposed to incorporate a fully compliant SuDS strategy where economically viable and reasonable in relation to the discharge of surface water drainage from the proposed development.

This section will also seek to identify some of the SuDS systems and techniques which are to be considered and reviewed as part of the proposed detailed surface water drainage design and subsequent planning application for the development site.

6.2 The SuDS Management Train

The overarching principles of a SuDS system are to minimise the impacts arising from the development on the quantity and quality of the development surface water run-off, whilst at the same time replicating the natural drainage from the site before development. SuDS key objectives are to minimise the impacts from the development on the quantity and quality of run-off and to maximise amenity and biodiversity opportunities.

The accepted SuDS management train consists of three elements:

- Source Control
 - Water butts, green roofs, filter drains, pervious surfaces, swales, rainwater harvesting.
- Site Control
 - Swales, ponds, wetlands, infiltration devices
- Regional Control
 - Basins, ponds and wetlands
 - Reservoirs

Error! Reference source not found. presents an illustration of these principles and how they may be applied to a development via a SuDS Management Train.

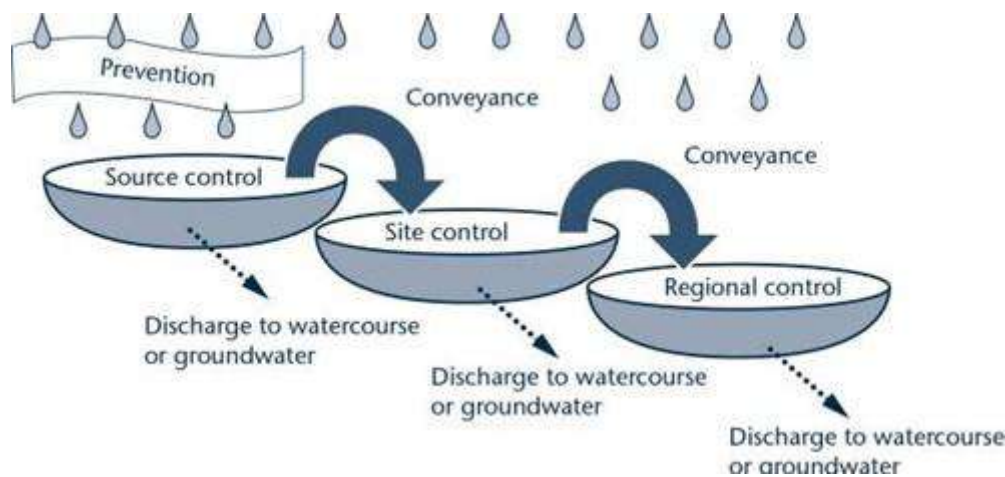


Figure 7 SuDS Management Train

6.3 Proposed Surface Water Drainage Principles

The proposed surface water runoff is being restricted via the proposed attenuation features and flow control device or alternative acceptable SuDS techniques as outlined in Table 4, thereby meeting some of the current SuDS management design guidelines.

Within this site a variety of SuDS techniques can be adopted as it is anticipated that they will be required to comply SuDS standards;

In terms of utilising SuDS infiltration systems, the Geoenvironmental Appraisal (ref: AF/C6114/14159) shows the site has underlying clay, which may indicate that use of SuDS infiltration systems may not be viable at the proposed site. Infiltration tests to BRE 365 method should be undertaken at this site to confirm.

➤ House Drainage

- If ground conditions permit, conventional infiltration techniques (i.e., soakaways) should be adopted to drain the roof and external hard standing areas.
- Water butts and rainwater harvesting could also be considered in order to not only reduce surface water runoff but also to reduce water demand in line with the requirements of the Code for Sustainable Homes.
- Surface water can be drained to an above ground attenuation pond and then discharged at a restricted rate to the existing watercourse. The pond will also support the biodiversity of the site.

6.3.1 Water Quality

The SuDS design should seek to provide an appropriate management train of SuDS components to effectively mitigate the pollution risks associated with the different site users. Within this development, there are two key drivers in respect of pollutant risks to the offsite watercourses, these being pollution from vehicle parking areas and pollution from highways. In accordance with Table 3.3 of The SuDS Manual, the required number of treatment train components required for the development is two.

Reviewing the SuDS options, set out within Section 6.3, it can be demonstrated that three SuDS features providing two levels of treatment may be possible with these being provided by the following systems:

- Lined permeable driveways which drain to the gravity system.
- An offline swale within the green space adjacent to the proposed estate road, which drains to the gravity system but will allow a small amount of infiltration, slow the time of entry and support biodiversity.
- An attenuation pond which discharges at a restricted rate of to the adjacent drainage ditch.

It is recommended that the future detailed surface water drainage design for the development site should provide at least two levels of treatment in respect of water quality where possible. Although possible options have been stated above, alternative SuDS options may also be considered during the detailed design stage which achieves the same water quality objective. Provided that the above two levels of treatment are provided, then there should be no reduction in the overall water quality within the existing watercourses.

7 Conclusions and Recommendations

Bellway Homes has appointed Pell Frischmann to undertake an FRA to support an application for outline planning permission for a residential development of up to 120 dwellings, along with associated infrastructure, and SuDS at land at Cronton Road, Cronton, Widnes. The report concludes the following:

- The entirety of the development site is located in Flood Zone 1.
- Although small areas of the site boundary, and the land adjacent to the site are at medium or high risk of surface water flooding, the majority of the site is considered at low risk of surface water flooding.
- The development site is considered to have a low risk of groundwater flooding and a low risk of sewer flooding, as no groundwater emergence or flooding related to surcharging sewers at the site was identified.
- The site benefits from informal local flood defences of high ground.
- The site is not shown to be at risk of flooding from reservoirs.
- In line with paragraph 175 of the NPPF, a sequential test is not required by the Local Planning Authority.
- Outline drainage plans include an attenuation pond which ties in SuDS features such as lined permeable paving within some driveways and an offline swale. Discharge will be to the existing drainage ditch located adjacent to the western site boundary, which is a tributary of Dog Clog Brook to the north of the site.
- Infiltration tests should be carried out in line with BRE 365 Guidelines to determine whether infiltration will be viable.

8 Uncertainties and Limitations

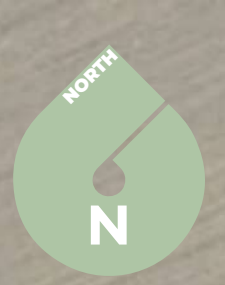
This report has been prepared by Pell Frischmann with reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client in accordance with the agreed scope of services.

This report has been prepared solely for the use of the Client. The report may not be relied upon by other parties without written consent from Pell Frischmann. Pell Frischmann disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

The report details the findings of work carried out by Pell Frischmann during a study period in August 2025. The report has been prepared on the basis of available information obtained during that study period. Information provided by the referenced third parties has been used in good faith and is taken at face value; however, Pell Frischmann cannot guarantee its accuracy or completeness.

Although every reasonable effort has been made to gather all relevant information within the context of the agreed scope of work, all potential flood risk constraints or liabilities associated with the site may not have been revealed. Should additional Information become available (including new legislation and changed practices), after the date of the report submission, Pell Frischmann reserves the right to reconsider the recommendations and alter the report accordingly.

Appendix A Proposed Site Layout



CRONTON ROAD , CRONTON

www.astlepd.co.uk



Key

- Site Boundary
- New Surfaced Footpath in Broad Alignment with Existing PROW
- Existing Sewer and Easement
- Potential Pedestrian Link into Adjacent Dog Walking Field

*Built development not to exceed two stories

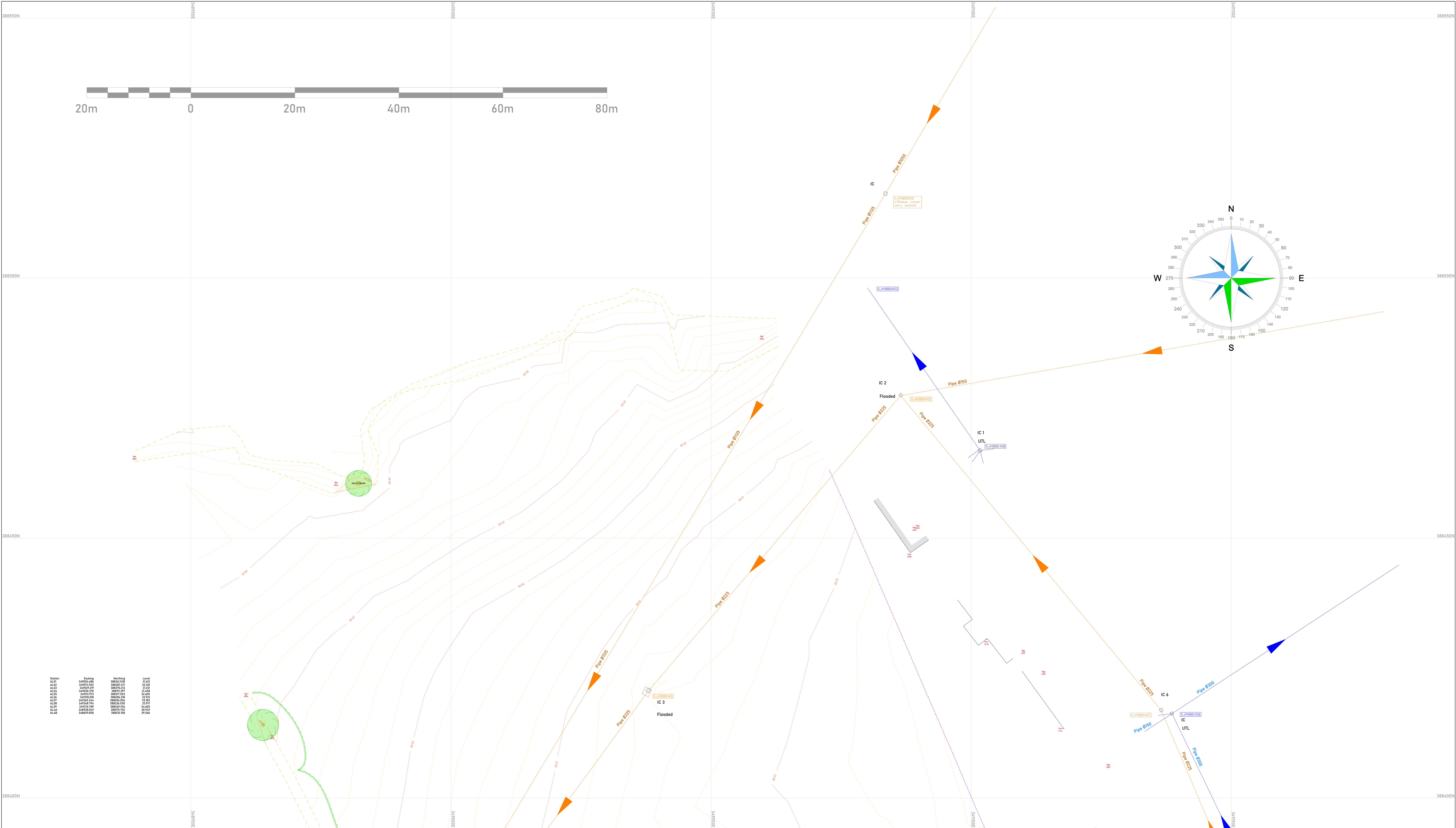
Illustrative Masterplan

Drawing Number - APD/BHNW189/IMP01
Revision - A
Date - 08/12/2025
Scale / Sheet Size - 1:500/A0

URBAN
DESIGN
GROUP

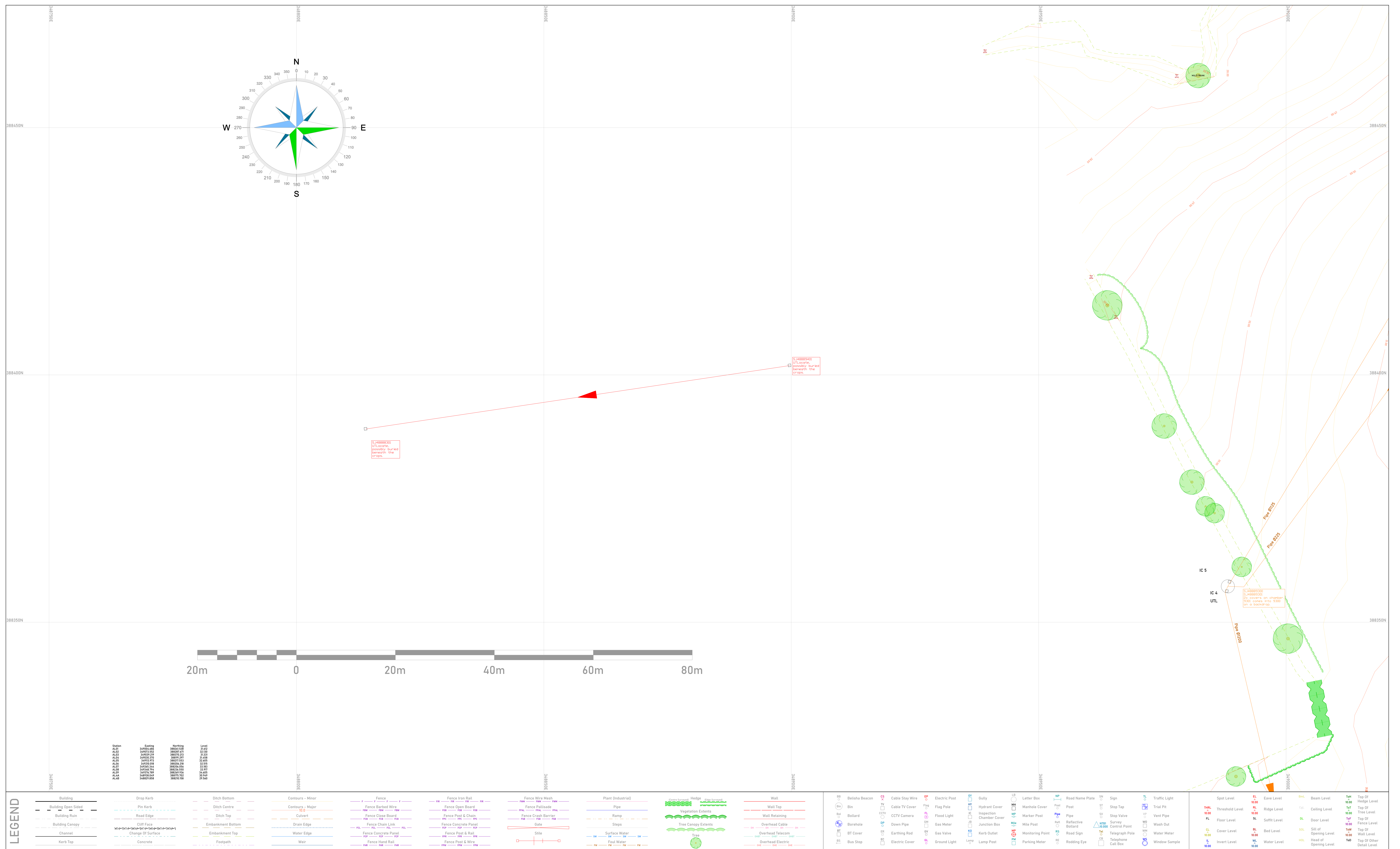


Appendix B Topographical Survey



Station	Easting	Northing	Level
AL01	346751.860	388711.158	31.440
AL02	346751.520	388707.471	31.130
AL03	346752.270	388705.253	31.250
AL04	346753.170	388707.071	31.048
AL05	346755.075	388711.243	31.835
AL06	346755.075	388705.139	31.265
AL07	346755.344	388706.556	31.180
AL08	346754.766	388706.156	30.991
AL09	346755.189	388711.152	31.949
AL10	346752.858	388713.158	31.640

LEGEND	Building		Drop Kerb		Ditch Bottom		Contours - Minor		Fence		Fence Iron Rail		Fence Wire Mesh		Plant (Industrial)		Hedge		Wall		Belisha Beacon		Cable Stay Wire		Electric Post		Gully		Letter Box		Road Name Plate		Sign		Traffic Light		Spot Level		Eave Level		Beam Level		Top Of Hedge Level																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	Building Open Sided		Pin Kerb		Ditch Centre		Contours - Major		Fence Barbed Wire		Fence Open Board		Fence Pallisade		Pipe		Vegetation Extents		Wall Top		Bin		Cable TV Cover		Flag Pole		Hydrant Cover		Manhole Cover		Post		Stop Tap		Trial Pit		Threshold Level		Ridge Level		Ceiling Level		Top Of Tree Level																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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	Building Open		Cliff Face		Embankment Bottom		Drain Edge		Fence Chain Link		Fence Concrete Panel		Gate		Steps				Overhead Cable		Borehole		Down Pipe		Gas Meter		Junction Box		Mile Post		Survey Control Point		Floor Level		Soft Level		Top Of Fence Level		Top Of Detail Level																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	Channel		Change Of Surface		Embankment Top		Water Edge		Fence Concrete Panel		Fence Post & Rail		Slope		Surface Water		Tree Canopy Extents		Overhead Telecom		BT Cover		Earthing Rod		Gas Valve		Monitoring Point		Read Sign		Telegraph Pole		Water Meter		Cover Level		Bad Level		Sill Of Opening Level		Top Of Fence Level		Top Of Detail Level																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	Kerb Top		Concrete		Footpath		Weir		Fence Hand Rail		Fence Post & Wire		Slope		Foul Water		Tree Canopy Extents		Overhead Electric		Bus Stop		Electric Cover		Ground Light		Lamp Post		Parking Meter		Rubbish Eye		Telephone Call Box		Window Sample		Invert Level		Water Level		Opening Level		Top Of Detail Level																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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Project

Cronton Road

Drawing Title

Topographic Survey

Drawing Number

10678_002_2

Revision

-

Scale @ A0

1:250

Client

Bellway

Date

December 2024

Surveyor

AL CT

Drawn by

AL AG

Checked by

AG

Revision Notes

Rev	Date	Comments
-	-	-

Drawing Notes

Survey undertaken on the 12th of December, 2024.

Survey centred upon station AL01 with a true bearing to station AL02.

It should be noted that only features visible at the time of survey will be detailed. Any omissions of data due to excessive vegetation overgrowth, parked vehicles or inaccessible areas, are beyond NTB Survey's control and therefore NTB Survey cannot be held liable.

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Coordinated to National Grid (OSGB36(15)) using GPS via the Smartnet RTK system, levels to OS Datum via geoid OSGM1508.

Sheet Layout

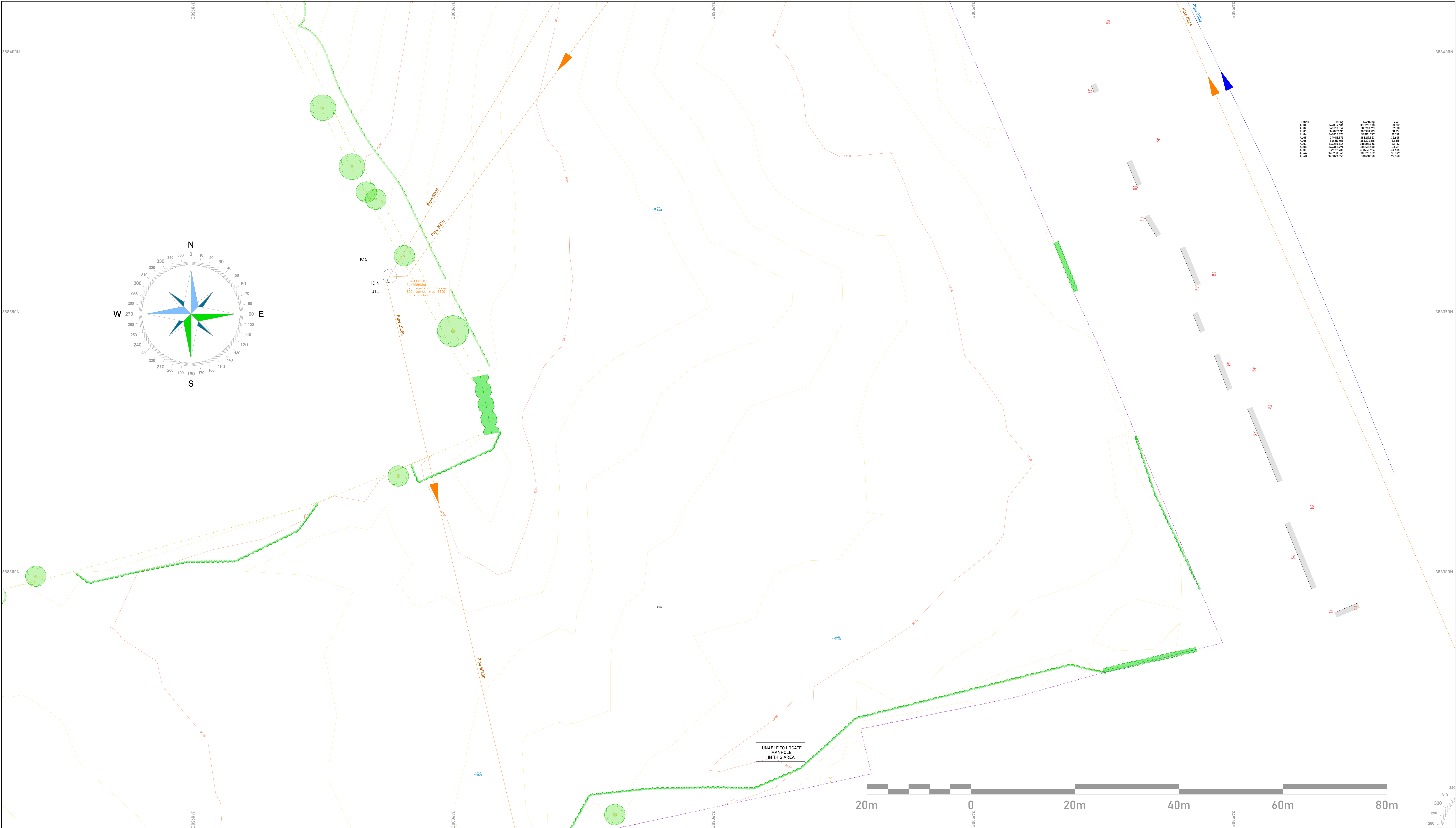
NTB Survey

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www.ntbsurvey.com



LEGEND	Building	Drop Kerb	Ditch Bottom	Contours - Minor	Fence	Fence Iron Rail	Fence Wire Mesh	Plant (Industrial)	Hedge	Wall	Belisha Beacon	Cable Stay Wire	Electric Post	Gully	Letter Box	Road Name Plate	Sign	Traffic Light	Spot Level	Eave Level	Beam Level	Top Of Hedge Level
	Building Open Sided	Pin Kerb	Ditch Centre	Contours - Major	Fence Barbed Wire	Fence Open Board	Fence Pallisade	Pipe	Vegetation Extents	Wall Top	Bin	Cable TV Cover	Flag Pole	Hydrant Cover	Manhole Cover	Post	Stop Tap	Trial Pit	Threshold Level	Ridge Level	Ceiling Level	Top Of Tree Level
	Building Ruin	Road Edge	Ditch Top	Culvert	Fence Close Board	Fence Post & Chain	Fence Crash Barrier	Ramp	Tree Canopy Extents	Wall Retaining	Bollard	CCTV Camera	Flood Light	Inspection Chamber Cover	Marker Post	Pipe	Stop Valve	Vent Pipe	Floor Level	Soffit Level	Door Level	Top Of Fence Level
	Building Canopy	Cliff Face	Embankment Bottom	Drain Edge	Fence Chain Link	Fence Concrete Panel	Gate	Steps		Overhead Cable	Borehole	Down Pipe	Gas Meter	Junction Box	Mile Post	Reflective Bollard	Survey Control Point	Wash Out	Cover Level	Bed Level	Sill of Opening Level	Top Of Wall Level
	Channel	Change Of Surface	Embankment Top	Water Edge	Fence Concrete Panel	Fence Post & Rail	Stile	Surface Water		Overhead Telecom	BT Cover	Earthing Rod	Gas Valve	Kerb Outlet	Road Sign	Telephone Pole	Water Meter	Invert Level	Water Level	Head of Opening Level	Top Of Other Detail Level	
	Kerb Top	Concrete	Footpath	Weir	Fence Hand Rail	Fence Post & Wire		Pool Water		Overhead Electric	Bus Stop	Electric Cover	Ground Light	Lamp Post	Rolling Eye	Call Box	Window Sample					

Project

Cronton Road

Drawing Title

Topographic Survey

Drawing Number

10678_002_3

Revision

-

Scale @ A0

1:250

Client

Bellway

Date

December 2024

Surveyor

AL CT

Drawn by

AL AG

Checked by

AG

Revision Notes

Rev	Date	Comments
-	-	-

Drawing Notes

Survey undertaken on the 12th of December, 2024.

Survey centred upon station AL01 with a true bearing to station AL02.

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Coordinated to National Grid (OSGB36(15)) using GPS via the Smartnet RTK system, levels to OS Datum via geoid OSGM15GB.

Sheet Layout

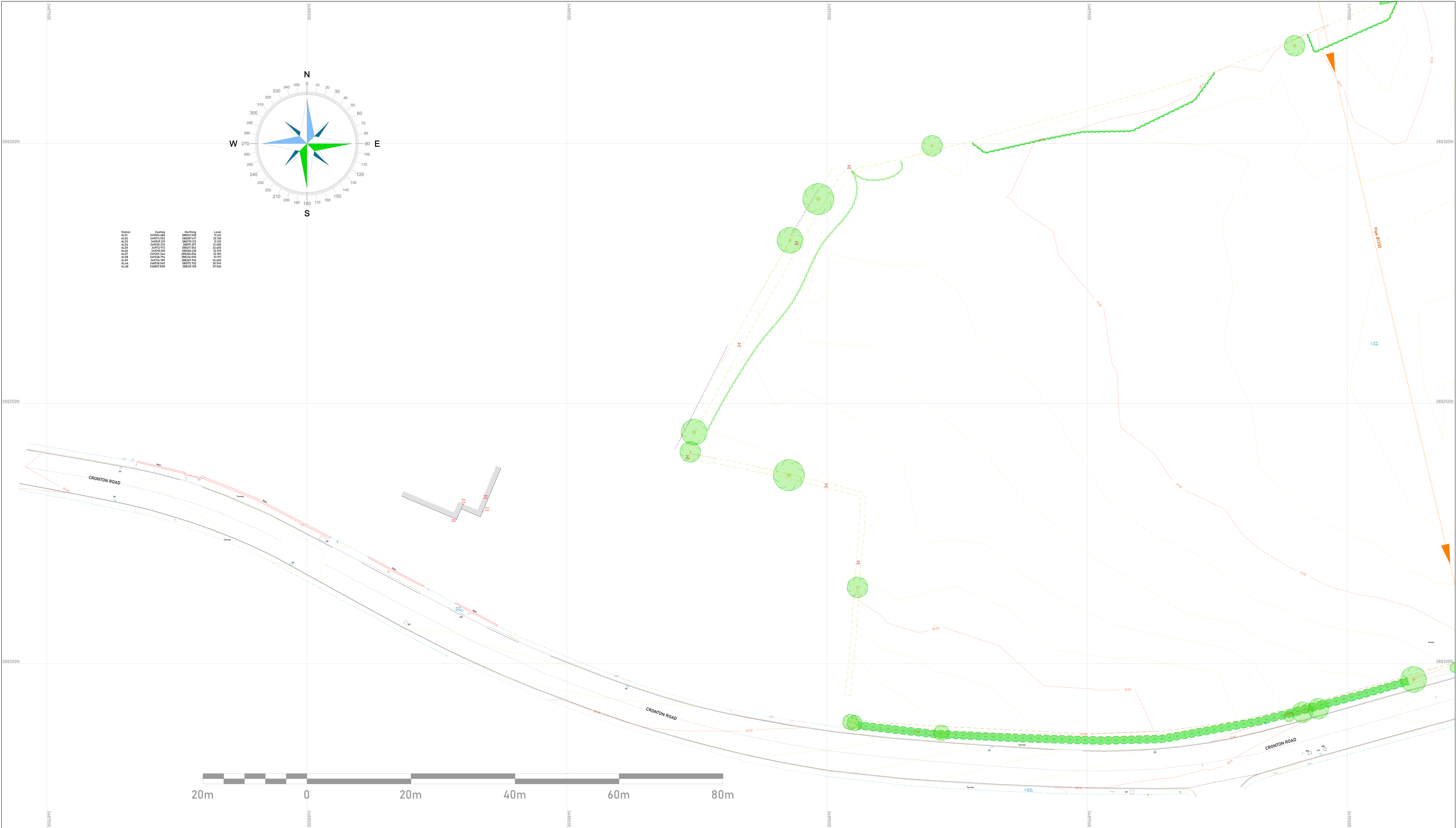
NTB Survey

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LEGEND	Building	Drop Kerb	Ditch Bottom	Contours - Minor	Fence	Fence Iron Rail	Fence Wire Mesh	Plant (Industrial)	Hedge	Wall	Belisha Beacon	Cable Stay Wire	Electric Post	Gully	Letter Box	Road Name Plate	Sign	Traffic Light	Spot Level	Eave Level	Beam Level	Top Of Hedge Level
	Building Open Sided	Pin Kerk	Ditch Centre	Contours - Major	Fence Barbed Wire	Fence Open Board	Fence Pallisade	Pipe	Vegetation Extents	Wall Top	Bin	Cable TV Cover	Flag Pole	Hydrant Cover	Manhole Cover	Post	Stop Tap	Trial Pit	Threshold Level	Ridge Level	Ceiling Level	Top Of Tree Level
Building Rook	Road Edge	Ditch Top	Culvert	Fence Close Board	Fence Chain Link	Fence Concrete Panel	Gate	Ramp	Tree Canopy Extents	Overhead Cable	Bollard	Down Pipe	Gas Meter	Inspection Chamber Cover	Marker Post	Pipe	Reflective Bollard	Vent Pipe	Floor Level	Soft Level	Door Level	Top Of Fence Level
Building Canopy	Cliff Face	Embankment Bottom	Drain Edge	Fence Crash Barrier	Fence Post & Rail	Fence Concrete Panel	Sill	Steps	Surface Water	Overhead Telecom	Borehole	Gas Valve	Junction Box	Kerb Outlet	Mile Post	Road Sign	Survey Control Point	Wash Out	Cover Level	Bed Level	Sill of Opening Level	Top Of Wall Level
Channel	Change Of Surface	Embankment Top	Water Edge	Fence Hand Rail	Fence Post & Wire	Fence Concrete Panel	Pool Water	Overhead Electric	Ground Light	Earthing Rod	BT Cover	Gas Meter	Kerb Outlet	Lamp Post	Monitoring Point	Rolling Eye	Telephone Call Box	Water Meter	Invert Level	Water Level	Head of Opening Level	Top Of Other Detail Level
Kerb Top	Concrete	Footpath	Weir								Bus Stop	Electric Cover										

Project

Cronton Road

Drawing Title

Topographic Survey

Drawing Number

10678_002_4

Revision

-

Scale @ A0

1:250

Client

Bellway

Date

December 2024

Surveyor

AL CT

Drawn by

AL AG

Checked by

AG

Revision Notes

Rev	Date	Comments
-	-	-

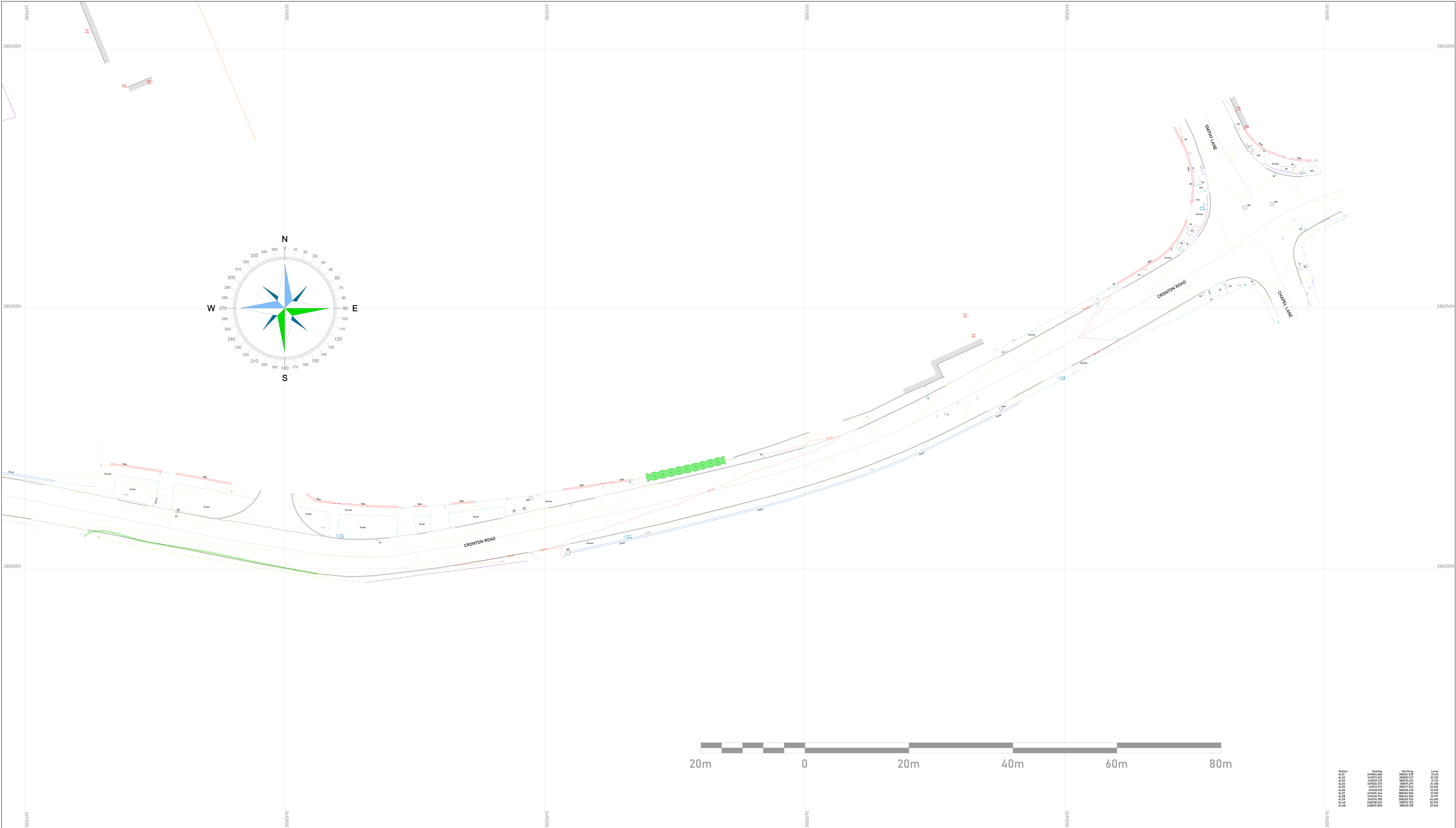
Drawing Notes

Survey undertaken on the 12th of December, 2024.
Survey centred upon station AL01 with a true bearing to station AL02.
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Coordinated to National Grid (OSGB36(15)) using GPS via the Smartnet RTK system, levels to OS Datum via geoid OSGM15GB.

Sheet Layout

NTB Survey
Geodesy Solutions

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LEGEND											
Building	Drop Kerb	Ditch Bottom	Contours - Minor	Fence	Fence Iron Rail	Fence Wire Mesh	Plant (Industrial)	Hedge	Wall	Belisha Beacon	Cable Stay Wire
Building Open Sided	Pin Kerb	Ditch Centre	Contours - Major	Fence Barbed Wire	Fence Post & Chain	Fence Pallisade	Pipe	Vegetation Extents	Wall Top	Bin	Cable TV Cover
Building Rook	Road Edge	Ditch Top	Culvert	Fence Close Board	Fence Post & Chain	Fence Crash Barrier	Ramp	Tree Canopy Extents	Wall Retaining	Bollard	CCTV Camera
Building Canopy	Cliff Face	Embankment Bottom	Drain Edge	Fence Chain Link	Fence Post & Chain	Fence Concrete Panel	Steps		Overhead Cable	Borehole	Down Pipe
Channel	Change of Surface	Embankment Top	Water Edge	Fence Post & Chain	Fence Post & Chain	Fence Post & Chain	Surface Water		Overhead Telecom	BT Cover	Earthing Rod
Kerb Top	Concrete	Footpath	Weir	Fence Hand Rail	Fence Post & Chain	Fence Post & Chain	Pool Water		Overhead Electric	Bus Stop	Electric Cover

Station	Existing	Northings	Level
AL01	346755.686	388220.258	21.012
AL02	346757.152	388221.171	21.030
AL03	346758.172	388221.851	21.040
AL04	346759.210	388222.217	21.050
AL05	346760.244	388222.584	21.060
AL06	346761.278	388222.951	21.070
AL07	346762.312	388223.318	21.080
AL08	346763.346	388223.685	21.090
AL09	346764.380	388224.052	21.100
AL10	346765.414	388224.419	21.110

Project

Cronton Road

Drawing Title

Topographic Survey

Drawing Number

10678_002_6

Revision

-

Scale @ A0

1:250

Client

Bellway

Date

December 2024

Surveyor

AL CT

Drawn by

AL AG

Checked by

AG

Revision Notes

Rev	Date	Comments
-	-	-

Drawing Notes

Survey undertaken on the 12th of December, 2024.

Survey centred upon station AL01 with a true bearing to station AL02.

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Sheet Layout

10581_002_1

10581_002_2

10581_002_3

10581_002_4

10581_002_5

10581_002_6

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Geodesy Solutions

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Appendix C Outline Drainage Strategy



A horizontal timeline bar with a scale from 1:500 to 25m. The scale is marked at 0, 5, 10, 15, and 25m. The bar is divided into segments of different colors: blue, green, yellow, and red. The red segment is the longest, starting at 10m and ending at 25m. The yellow segment is from 5m to 10m. The green segment is from 0 to 5m. The blue segment is from 1:500 to 0. There are also some smaller segments in blue and green before the 0 mark.

Drawing Status			
FOR PLANNING			
Drawn	Name E. PYTHIAN	Date 19.12.25	Status Code S4
Designed	E. PYTHIAN	19.12.25	Scale 1:500
Eng Chk	A. HALL	19.12.25	Revision P01
Approved	A. HALL	19.12.25	

Drawing No.

110840 - PEF - HDG - XX - DR - C - 00001