

# **ENVIRONMENTAL RISK ASSESSMENT**

**SARVAL LIMITED**

**August 2024**

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# **SITE CONDITION REPORT**

**Sarval Limited**

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# ENVIRONMENTAL RISK ASSESSMENT -

## Sarval Limited

### 1 EXECUTIVE SUMMARY

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This Environmental Risk Assessment (“ERA”) has been undertaken in support for an Environmental Permit application for the rendering poultry and feathers processing facility. The Environment Agency guidance stipulated in [Risk assessments for your environmental permit - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit) has been followed (updated November 2023).

This ERA includes an assessment to the risk to the environment and human health from the existing activities at the site. No new activities are proposed. The purpose of this application is a change of regulation from the local authority to the Environment Agency. The theoretical maximum capacity of processing throughput remains unchanged.

Pre application advice was sought from the EA to check for protected sites, species and other wildlife. Heritage conservation screening was undertaken to identify any protected sites, species or other wildlife relevant to the site activities. The information is used for this assessment and is included within.

This document provides the nearby sensitive receptors at the site and relevant risk assessments covering the following aspects:

- Amenity and Accidents;
- Noise and Vibration
- Odour
- Emissions to Air; and
- Emissions to Water.

## 2. SENSITIVE RECEPTORS

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### 2.1 Overview

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The Application is made in support of a rendering activity which processes poultry and feather products. The process involves the removal of water and sterilisation of poultry and feather by-products to produce poultry meal, feather meal and poultry fat for use within the pet food industry.

Sarval Limited owns and operates the facility at Stoke Lane, Stoke Bardolph, Nottinghamshire. The site is situated approximately 700 metres to the east of the village of Stoke Bardolph.

To the northeast, the site is bounded by a Sewage Treatment Works operated by Severn Trent water plc. To the west of the works, approximately 600 metres from the installation boundary, there are playing fields, beyond which lie a railway line and the village of Burton Joyce.

The site is bordered by further developed industrial property (biofuel plant) to the north of the installation boundary. The River Trent is approximately 800 metres from the site at its closest point (Graded as River Quality C by EA).

Access to the site is provided through Stoke Lane to the south. There are some residential dwellings within 130m of the site. Traditionally, rendering plants are notable for odour risk. The proximity to residents and neighbours is of particular importance to Sarval Limited. The nearby residents on Stoke Lane are assessed, as are the further residential developments in Stoke Bardolph village (504m to the southeast at nearest point) and a newer housing estate to the south west (552m at nearest point of streets Berwick Close and Canada Close).

The National Grid Reference used for BGS and Landmark checks for the site is 463900,341660. The site covers an area of approximately 4.3 Ha.

An OS water network line (inland river/ditch) runs closely to the installation boundary; approximately 3m at its nearest point to the northwest. It is likely that the aquifer under the site is hydraulically linked to these ditches and hence, the River Trent.

The Site lies within one designated Nitrate Vulnerable Zones (NVZ). The area is provided with flood defence(s).

The Environment Agency air quality risk assessment guidance advises to check if there are any of the following within 10km of the site:

- Special Protection Areas (SPAs)
- Special areas of conservation (SACs)
- Ramsar sites (protected wetlands)

It also advises to check if there are any of the following within 2km of the site:

- Sites of special scientific interest (SSSIs)
- Local nature sites (ancient woods, local wildlife sites and national and local nature reserves)

The following are identified through search EPR/CP3025SZ/P001, NGR SK6367 4186, undertaken on 19th July 2023. A copy of the full assessment, and associated maps are included in this document as Appendix 2.

The areas identified are:

- Local Nature Reserve (LNR) – within 2km of installation boundary.
  - Gedling House Meadow
  - Gedling House Woods
  - Netherfield Lagoons
  
- Local Wildlife Sites (LWS) – within 2km of installation boundary.
  - The Avenue Pool
  - Trent Bluff Scrub
  - Burton Joyce Grasslands Swallow Plantation
  - Crock Dumble river Trent: Burton Joyce to Lowdham
  
- Ancient Woodlands – within 2km of installation boundary.
  - Malkin Hill Wood.

The area upon which the installation is located, and the surrounding area(s) is newly adopted Green Belt area.

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## 2.2 Environment Agency Conservation Report

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**Please refer to Appendix 2.**

(Further sensitive receptors relating to human health are included within the ADMS in Appendix 6 of the main supporting document).

All findings of this report have been incorporated into any risk assessment undertaken.

### 3 ENVIRONMENTAL RISKS AND EFFECTS: ACCIDENT MANAGEMENT

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#### 3.1 Scope and Assessment

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This section provides an assessment of risks to environmental amenity and from potential accidents/incidents that could arise from the production activities. The assessment has been completed in accordance with the EA's Risk Assessments for your environmental permit.

##### **Discharge Risk Assessment**

- Planned emission and their controls.

##### **Nuisance Risk Assessment**

- Odour from Process
- Odour of external raw materials and waste
- Noise (vehicle movements, vibration from plant, noise from loading and unloading of waste skips; loading and unloading of dry and liquid materials (liquid wastes and products, dry products)).

##### **Fugitive Emissions and Management Plan**

- Release of liquid raw materials to unmade ground
- Accidental release of liquid raw materials from bulk storage tanks
- Loss of drainage/ETP containment
- Litter
- Pests

##### **Emissions to Air/Visible emissions**

- Plume from stacks

##### **Accidents Risk Assessment and Management Plan**

- Operator error (failsafes of ETP, Maintenance checks – look at Table 3.6)
- Loss of Power
- Loss of containment during storage or transfer of raw materials, products, fuel and oils
- Fire/Explosion
- Failure to contain firewater
- Blockage of process drains leading to overflow to unmade ground
- Flooding
- Vandalism

Note – all scenarios are included where relevant. The risk assessment in Tables 1 to 5 may not follow the above in chronological order but all scenarios set within the guidance are included.

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#### 3.2 Scoring

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For each of the above, the approach to the assessment has followed the following four stage process:

1. Identify the hazards.

2. Assess the risks (assuming that any control measures proposed are in place);
3. Choose appropriate further measures to control these risks (if required); and
4. Present the assessment of overall risk.

The risk assessment methodology has used a scoring mechanism whereby scores are assigned to:

- The likelihood of the hazard occurring; and
- The consequence of the hazard to the environment or human health.

Scores are assigned as low, medium or high.

In completing the assessment, prevention and control measures proposed by Sarval Limited Nottingham are assumed to be in place. Where relevant, details of these measures are identified within the assessment.

Scoring the hazard areas outlined above using a risk matrix as shown below:

Sarval Limited - Nottingham  
Risk Matrix - Risk Assessment 2024

		<b>Probability</b>			
		<b>HIGH</b>	<b>MEDIUM</b>	<b>LOW</b>	<b>VERY LOW</b>
<b>Consequence</b>	<b>HIGH</b>	High	Medium	Low	Low
	<b>MEDIUM</b>	Medium	Medium	Low	Not Significant
	<b>LOW</b>	Low	Low	Low	Not Significant
	<b>NOT SIGNIFICANT</b>	Low	Not Significant	Not Significant	Not Significant



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### 3.3 Risk Assessment Tables

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The environmental risk assessment for the site is set out below; and is collated within the following individual risk-based tables:

**Table 1** – Effluent Discharge/Emission and Their Controls.

**Table 2** – Nuisance: Odour, Noise and other unplanned emissions.

**Table 3** – Fugitive Emissions.

**Table 4** – Emissions to Atmosphere.

**Table 5** – Accident Scenario(s).

**Table 1 – Effluent Discharge/Emission and Their Controls**

<b>Hazard</b>	<b>Receptor</b>	<b>Pathway</b>	<b>Risk Management Technique</b>	<b>Probability</b>	<b>Consequence</b>	<b>Overall Risk</b>
<i>Exceedance of COD or TSS loading to effluent</i>	Downstream Severn Trent WWTP	Via sewer discharge S1	Permanent dedicated ETP technician. In house sampling undertaken once daily as minimum. Samples taken for ST monthly for compliance. Any peaks (daily checks) responded to immediately prior to sewerage undertaker samples.	Low	Low	Not significant
<i>Back up of drains/ETP underground collection pit – leading to overflow to yard drains and potentially reach unmade ground or nearby water ditch.</i>	OS Water network line and onto River Trent.	Process water drainage system (collection pit)	Area supervised High effluent production times known (for monitoring – clean down windows) Area is fitted with emergency pumping arrangements in this event – overflow waters pumped from collection area in yard to overflow post S1. Adequate capacity in ETP is ensured for peak demand so no risk of overflow.	Low	Medium (as this has occurred)	Low
<i>Leaking of process effluent collection tank or pipework into ground</i>	Land/Ground beneath the site (aquifer beneath)	Damaged pipework into soil and ground	Drainage system recently undergone full CCTV inspection. Fix schedule in place. No immediate danger or risk of accidental discharge found. Drains will be added to repeat investigation as part of site monitoring plan.	Low	Medium	Low

**Table 2 – Nuisance: Odour, Noise and other unplanned emissions.**

Hazard	Receptor	Pathway	Risk Management Technique	Probability	Consequence	Overall Risk
<p><i>Odour from rendering process</i></p>	<p>Residents in Stoke Lane (131m), Stoke Bardolph Village and larger residential housing estates to SW (over 500m)</p> <p>Businesses to installation boundary (ST WWTP, AD Plant).</p>	<p>Air via discharge stack (via thermal oxidisers or other dedicated abatement unit(s).</p>	<p>All areas of the production site, from incoming to processing are served by negative air arrangements and discharge via odour abatement units.</p> <p>Odour monitoring undertaken daily</p> <p><u>Copy of site Odour Management Plan included in Appendix 3.</u></p> <p>Daily checks of all odour abatement units and supporting chemicals.</p> <p>External odour testing undertaken in frequency of A(2) Permit</p> <p>Regular third party monitoring and checks of all odour abatement units.</p> <p>Strict closed door policy to ensure negative air – and flow to odour abatement across site.</p> <p>Excellent housekeeping in areas where animal by-product residue could collect.</p>	<p>Medium</p>	<p>Medium</p>	<p>Medium</p>
<p><i>Odour from incoming animal by product raw material awaiting processing</i></p>	<p>As above</p>	<p>Air</p>	<p>Incoming product (poultry by-products) are strictly controlled. Not allowed to remain unprocessed on site for longer than 24 hours.</p> <p>Vehicles and deliveries are planned in accordance with above.</p> <p>In times of higher temperatures, processing times would be shortened.</p>	<p>Low</p>	<p>Medium</p>	<p>Medium</p>

<i>Odour from non animal by product(other) waste</i>		Air	There is very little animal by-product waste due to nature of business – all materials are processed into fat or dry material destined for pet food.	Low	Low	Low
<i>Odour from excessive waste storage (i.e. failed collection)</i>		Air	Waste streams consist of dry materials (general waste, scrap metal, plastic, inert). Odour risk minimal.	Low	Low	Not Significant
<i>Odour from emptying product fat tanks /ETP sludge tank</i>	Local residents Local businesses	Air	Potential for risk of intermittent short bursts of odour from tank release – collection vehicles with carbon filters. Product not permitted to sit within tank for extended periods – short turnaround of discharge off site.	Low	Low	Not Significant
<i>Noise from Production</i>	Residents in Stoke Lane (131m), Stoke Bardolph Village and larger residential housing estates to SW (over 500m)  Businesses to installation boundary (ST WWTP, AD Plant).	Air	Site is immediately surrounded by industrial processes. Trees and hedging between site and nearest properties. Equipment located internally, minimising potential for noise to be heard beyond installation boundary. No noted reports or complaints of noise.	Low  <u>The site has not received a noise complaint in several years.</u>	Low	Low
<i>Noise (product collection vehicles, on site FLT's, waste collection vehicles).</i>	As above	Air	Noise from traffic movements linked to the permitted activities has been considered. Most traffic movements are for the delivery of raw materials and the collection of products. These will be periodic and	Low	Low	Not Significant

			<p>only during daytime hours and are therefore not significant.</p> <p>Noise from the road movement (rattling) of the fork lift trucks is likely to be notable in the vicinity of the site but not extend beyond the installation boundary.</p> <p>No horns permitted and speed limit enforced.</p>	<p><u>No vehicle related complaints in several years.</u></p>		
<p><i>Vibration from plant</i></p>	<p>Residents in Stoke Lane (131m), Stoke Bardolph Village and larger residential housing estates to SW (over 500m)</p> <p>Businesses to installation boundary (ST WWTP, AD Plant).</p>	<p>Land</p>	<p>Significant vibration effects are not anticipated from the permitted activities.</p> <p>In the event of a complaint, the complaints procedure will be followed to record and act on the complaint and instigate appropriate action.</p> <p>No noted reports or complaints of vibration.</p>	<p>Low</p> <p><u>No vibration related complaint or incident reported.</u></p>	<p>Low</p>	<p>Not Significant</p>

**Table 3 – Fugitive Emissions**

Hazard	Receptor	Pathway	Risk Management Technique	Probability	Consequence	Overall Risk
<p><i>Litter/ Waste – general waste from workers or from waste storage on site.</i></p>	<p>Residents within close proximity.</p>	<p>Windblown to air</p>	<p>Good housekeeping procedures ensure all waste is contained. Daily checks are undertaken of site for minor issues. Smoke shelters have strict cleanliness policy; and eating and litter rules. Most of site waste is too heavy to be windborne.</p>	<p>Low</p>	<p>Low</p>	<p>Not significant</p>
<p><u>Pests</u> <i>Flies, and other pests or vermin in waste storage areas and process areas.</i></p> <p><i>Potential spread of disease.</i></p>	<p>Residents within close proximity. Pests would be a violation of BRC and all other pet food codes.</p>	<p>Food or waste to ground – attracts them</p>	<p>All incoming materials for processing are covered and in appropriate containers. Any unexpected spillages would be cleaned up immediately and there are strict hygiene measures in place daily for production areas. Outgoing materials which may attract pests (i.e. pet food in dry or liquid form) are in sealed tanks. Good housekeeping procedures ensure all waste is contained within the appropriate sealed bins and these are disposed of regularly to ensure they do not attract pests. Pests and pest control are a measurable KPI from customers and regulation agencies (audits). Pest control measures is applied in accordance with support from a specialist pest control advisor.</p>	<p>Good site management procedures and the nature of the raw materials and waste products kept on site should prevent this occurring.</p>	<p>Low Nuisance</p>	<p>Not significant</p>

**Table 4 – Emissions to Atmosphere**

<b>Hazard</b>	<b>Receptor</b>	<b>Pathway</b>	<b>Risk Management Technique</b>	<b>Probability</b>	<b>Consequence</b>	<b>Overall Risk</b>
<i>Plume from Emission Stack</i>	Local Residents and Businesses	Visible plumes are not anticipated to occur at any time.	Visible plumes are not anticipated to occur at any time.	Low	Low	Not Significant
<i>Dust from Activities (dry product storage and movement)</i>	Employees at Sarval Ltd, Residents.	Unloading and moving of certain materials and waste streams across the installation could result in the occurrence of dust/particulate release.	Unloading of MBM is undertaken under supervision. Site vehicles moving materials around site are covered. Dampening techniques can be used if risk of dust. Regular cleaning of relevant areas.	Medium	Low	Low

**Table 5 – Accident Scenario(s)**

Hazard	Receptor	Pathway	Risk Management Technique	Probability	Consequence	Overall Risk
<i>Operator Error</i>	Air/Water/Land	Variable impact – dependant on error and accident	<p>Maintenance checks are carried out every day for key plant and equipment (such as all odour abatement technology and effluent treatment plant). These will identify any operator error incidents.</p> <p>Alarms and high-level gauges are utilised across the site to minimise risk controlled purely by operator. i.e. high-level alarms on MBM tanks, and cut out functions on some pumps to tanks.</p> <p>Any task requiring an operational procedure (EMS procedure or work instruction/Standard operating procedure) will be fully trained out – and the relevant instructions of what to do in an emergency or protocol to follow in the event of operator error, included.</p> <p>Operator training includes raising awareness of key plant parameters and the potential implications of failure to control operations as designed and any impact on the environment in event of deviance.</p>	Low (Due to checks and engineering failsafes described)	Variable – dependant on scenario	Not significant provided operational controls are followed
<i>Loss of Containment - Unloading</i>	ETP or local watercourse (area dependant)	Site process drains or unmade ground.	<p>Unloading of raw material product for processing has no risk associated with it (no risk of liquid discharge to ground).</p> <p>Some liquid raw materials are decanted from delivery vehicles, i.e. fuel unloading. The fill point is within the double skinned outer wall (self-bunded unit for fuel and liquid tanks).</p> <p>An emergency spillage management plan has been produced.</p> <p>Deliveries are supervised. The unit is locked until Sarval employees' release.</p>	Low	Medium	Low



			Dedicated unloading area for chemicals and liquid IBCs before they are transported across site for use. This area is concreted and there are no drainage points.			
<i>Loss of Containment – Transfer of IBCs liquids across site to their point of use</i>	Potential of access to controlled waters	Surface water drains to controlled waters	<p>Scenario relates to IBCs transferred across some areas where sensitive drains are – i.e. surface water drains in some areas of the site.</p> <p>All site surface water drains near activity areas (i.e. some site roads) are served with interceptors. There are no surface water drains located in designated production or storage areas.</p> <p>Unlikely that 1000 litres (max an IBC can hold) could reach a drain if accidentally dropped.</p> <p>Spill response equipment located across the installation and appropriate training provided to FLT's drivers.</p>	Low	Low	Not significant (due to protection provided by interceptors).
<i>Loss of Containment – Tanks</i>	Land, local watercourse. Site is located above a secondary B aquifer. Potential to reach River Trent.	Unmade ground or surface water drainage	<p>Each bulk tank is fitted with protection.</p> <p>Fat tanks are provided with daily checks. Capability of manually moving storage into another awaiting tank to prevent overfill – one tank is always kept empty for this contingency plan.</p> <p>ETP -float level controls for relevant tanks. Any accidental discharge from this area would be contained by collection pit and or concrete ground.</p>	Low	Low  Medium for fat tanks 1, 2 and 3 – this is increased score to reflect unmade ground nearby.	Not significant  Low
<i>Loss of Containment – Storage of liquids (not bulk)</i>	Land, local watercourse. Site is located above a secondary B aquifer. Potential to reach River Trent.	Ground.	<p>All IBCs are kept on bunded pallets. All areas are provided with contained drainage (to ETP).</p> <p>Some locked bunded chemical containment for IBCs and smaller amounts.</p> <p>Chemical storage areas are checked weekly as minimum.</p> <p>No pathway to ground due to secondary containment.</p>	Low	Low	Not Significant

<i>Loss of Power</i>	N/A	N/A	<p>Maintenance checks are carried out every day for key plant and equipment and will identify any loss of power. In the event of a loss of power to the site it is likely production could not continue.</p> <p>The biggest impact of loss of power would be loss of odour abatement (scrubbers – not boilers). Although this would be minimised by lack of production.</p> <p>There have not been any abatement equipment or containment which could discharge, identified as a risk through this scenario.</p> <p>The boiler has an automatic shut off in the event of loss of power.</p>	N/A	N/A	N/A
<i>Fire/Explosion</i>	Air	Direct release of combustion pollutants (by-product).	<p>All key areas have had a fire risk assessment, fire detection systems are in place and suitable firefighting equipment is located at suitable areas within the buildings.</p> <p>Emergency response and evacuation procedures are in place on the site.</p> <p>The appropriate Safety Data Sheets (SDS) for chemicals used and stored on site will be attached to the relevant areas of use and kept in an accessible location.</p> <p>Following the event, the cause will be investigated, and the EA notified if necessary. Any spillages resulting from the fire will be dealt with as per the site spillage procedure.</p>	Low	Low /Medium Uncontrolled release of combustion gases to air – impacts likely to be short term	Not Significant
<i>Containment of Firewater</i>	Local watercourse (nearby OS network to River Trent)	Surface water drainage system/ Direct run off to nearby ditches	<p>Measures are in place to protect against a fire. Fire response systems should ensure a rapid response thereby addressing the fire at the earliest point to avoid fire spread and therefore minimising the potential volumes of fire waters.</p> <p>Firewater shall be contained on site where possible through the use of bunded areas and blocking drains etc.</p> <p>The majority of the site drains to the ETP. It is likely that this collection sump will overrun in the event of large scale firewater event. Severn Trent would be notified in the event of an emergency.</p>	Low – although plant not designed to contain firewater, the need to contain firewater would be very uncommon.	Medium – firewater would be discharged to surface water but with points described,	Low

			<p>Protection would be afforded to the soakaway via the interceptor chamber(s) prior to site release.</p> <p>In the event of uncontrolled release of firewater to nearby ditches (and entry into Trent) it is estimated the water will be of low pollution quality due to storage protection measures in place. It is unlikely water levels would overrun bund heights etc.</p>			
<i>Flooding</i>	Local water course, structures, services and buildings on site. Neighbouring land	Surface water drainage system/ Local ditches	<p>The EA maps show risk of groundwater flooding. There are no known records of ground water flooding in the vicinity of the site.</p> <p>Information from the Environment Agency shows the site is at 'extreme' risk of flooding from rivers without defences. The risk is automatically increased to 'Medium' to reflect this.</p> <p>The site historically flooded in 1947 and approximately 100m distance from the site, the ditch overflowed the bank in the year 2000 – it did not reach the site.</p> <p>The risk of flooding from Rivers and Seas is listed as 'low'.</p> <p>As part of the site's emergency procedures, the appropriate procedures for responding to, reporting and investigation in the event of a flood will be assessed. A copy of the Environment Agency flood mapping information is included in Appendix 4 of the Risk Assessment, and a full Flood risk assessment undertaken in May 2023 is included in Appendix 5 of this document.</p> <p>There is a flood plan for the site.</p>	Low (no history)	Medium – potential to contaminate flood waters.	Medium
<i>Vandalism – Theft of materials on site. Risk of purposeful release of materials.</i>	Air/Water/Land	Fugitive releases from site	<p>The site has personnel in attendance 24 hours a day. Site is fenced and secured.</p> <p>Minimum amounts of external storage which potential vandals could access.</p> <p>CCTV system</p> <p>Locked chemical and diesel storage.</p>	Low (no history)	Very low environmental risk	Low

## **4 EMISSIONS TO WATER**

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### **4.1 Surface Water Runoff/ Discharge of Clean Surface Water to Soakaway**

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Clean water from the building roofs and some roadways (newer tarmacked roads; in location shown in Site Plan in Appendix 2 of main supporting document SL/SID\_0924, as Zone 1) are serviced by surface water drains or drainage channels.

Some surface water drainage channels have been fitted with hydrocarbon interceptors (NSBP003 – NSBP006 Class 1 Bypass Separator). There are four stages to the interceptor and each stage has an access point. The interceptor is alarmed and is regularly serviced and emptied on a PPM schedule. The clean run-off water joins the discharge point to the main line (from roof rainwater network) into the soakaway. This soakaway was installed in 2021. The interceptors are inspected and cleared quarterly. In accordance with EA guidelines in PP3, uncontaminated run off such as roof water is excluded from the interceptor/separator so as not to overwhelm the function of the unit in periods of high rainfall.

All other drainage routes across the site are discharged to the site effluent treatment plant (“ETP”) and into the sewerage system for treatment by Severn Trent at the Stoke Bardolph Sewage Treatment Works (STW). Treated effluent is subsequently discharged to the River Trent, adjacent to the treatment works.

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### **4.2 Process Water Discharge to Sewerage Undertaker**

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Trade effluent from the Site is discharged into a dedicated sewer under the terms of Discharge Consent No. 11204012001.

The trade discharge consent states that the effluent shall not contain the substances listed in the appendices of the consent in proportions greater than those stated (Table 2).

Prior to discharge to sewer the above parameters are measured periodically (as often as daily) to monitor compliance with the Sewerage Discharge Consent and react swiftly for any adjustments required for on site treatment prior to discharge from site. Monthly averages show effluent discharges from the site are significantly below limits of the discharge consent.

Monitoring information provided from Sarval Limited’s EMS monitoring system for 2023/2024 has provided the relevant values for the Surface Water discharge risk assessment (the calculations of parameters from the Severn Trent treatment works into the receiving body of water – the River Trent).

The nearest gauging station on the River Trent near to the Stoke Bardolph STW is Colwick at SK620399. Data from the NRFA website indicated a volumetric flowrate of 85.86 m<sup>3</sup> s<sup>-1</sup> for the River Trent at Colwick, and this value was used in to follow the calculation stages as outlined in EA guidance Surface Water Pollution Risk Assessment for your Environmental Permit. Please note, the H1

screening of for effluent discharges was not available in a readable form at the time of this report compilation. There was a note on the relevant EA page noting as such.

River information was obtained from NRFA Station Data for 28009 - Trent at Colwick (ceh.ac.uk).

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## 4.2 Further Offsite Effluent Waste Treatment

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The treatment undertaken by Severn Trent has been confirmed as a mix of both biological and mechanical treatment. Effluent entering from the entry point of the works (inlet point) is screened to remove any solids over 6mm in diameter. There are also detritus removers to remove any grit present. Severn Trent have been asked to describe the process of the effluent and discharge arrangements:

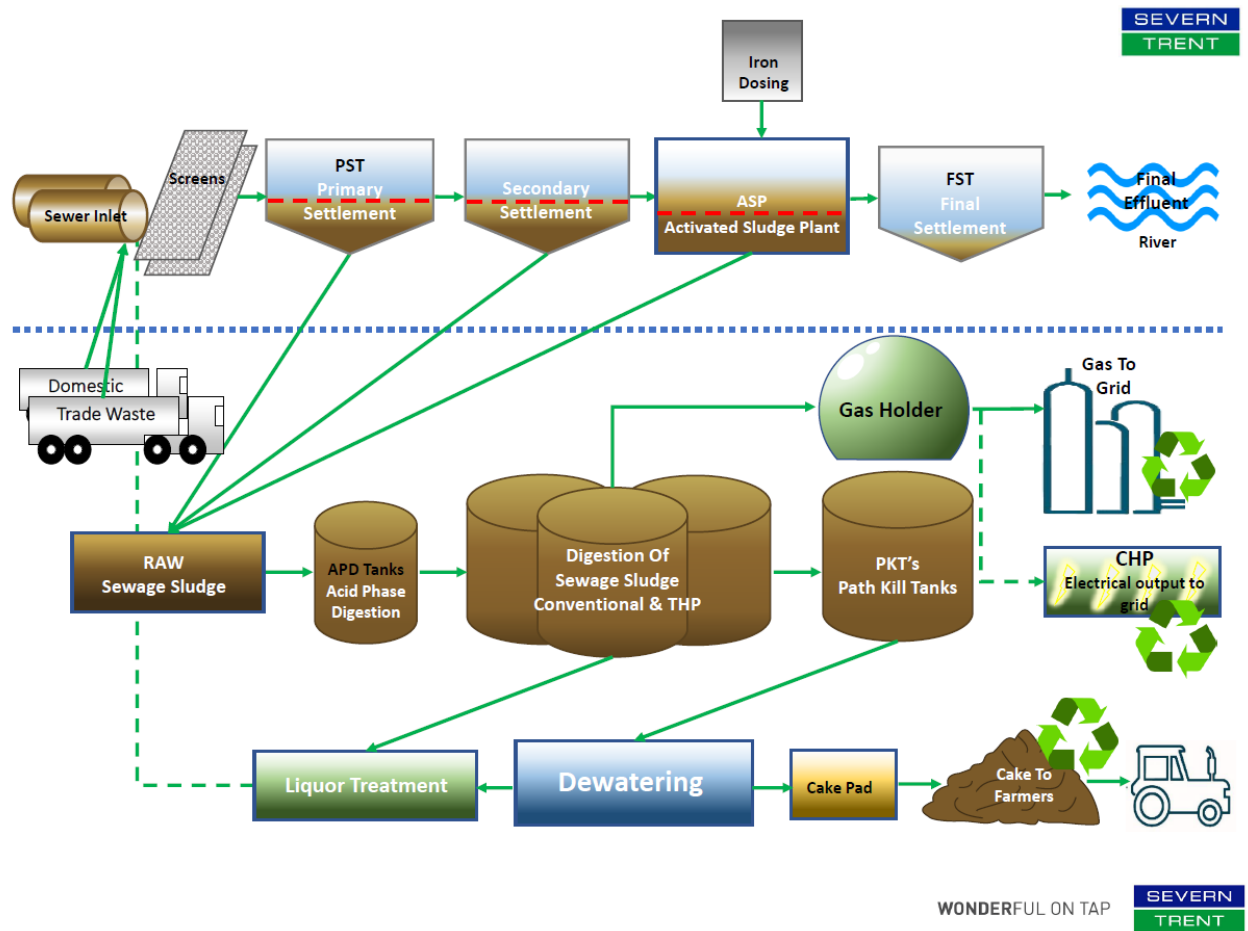
*The combined sewage/effluent is pumped into the PST's where gravity works to allow the organic solids (brown fraction) to settle to the bottom. The sludge is pulled off and onto the raw sewage tank. This also repeated at the secondary settlement tanks. The finer organic solids and any ammonia present, goes into the ASP (activated sludge plant) where the waste is treated biologically.*

*At all stages organic sludge is pulled off and transferred to the raw sewage tank before it goes into the digesters, which is a biological process with an average retention time of circa 12-14 days. Where the sludge is then processed through the following stages: Hydrolysis, Acidogenesis, Acetogenesis and Methanogenesis (Methane gas) captured in the gas holder before feeding the CHP generators and injected into the gas to grid network.*

*After this process the digested sludge is taken out of the digesters, where it's left to sit for a number of days to help kill any pathogens (e coli, salmonella etc)*

*Then it's de-watered, thickened and then goes out to the farmers as an alternative to fossil fuel derived fertilisers.*

The process is illustrated below:



**4.2 Assessment of Discharge to Sewer – Surface Water Pollution Risk Assessment:**

Please see Appendix 1.

## 5 EMISSIONS TO AIR

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### 5.1 Overview

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There are several point source emission points to atmosphere from the installation. As such, a specialist study has been undertaken and is included in Appendix 5 of this document. *“Air dispersion Modelling Report of Releases from an Animal Rendering Process, Nottinghamshire”*. The findings are summarised as:

Environmental Compliance Ltd (“ECL”) were commissioned on behalf of Sarval Limited (“Sarval”) to undertake an air quality assessment (“AQA”) of releases from the emission points associated with their animal carcass and animal waste rendering plant at Stoke Lane, Stoke Bardolph, Nottinghamshire, NG14 5HJ (“the Site”).

The study for emissions of interest are two dual fuel boilers (which can burn either tallow fuel oil or natural gas), a thermal oxidiser (“TOx”) and three scrubbers.

Detailed air quality modelling, using the ADMS dispersion model, was undertaken to predict the impacts associated with stack emissions arising from Sarval’s rendering process at their site at Stoke Bardolph.

As a worst-case, emissions have been assumed to be at the maximum emission concentrations assumed for the assessment. This represents a conservative assessment of the impact since the actual emissions from the Site are likely to be considerably lower during normal operation.

At the point of maximum GLC, with the exception of CO, short-term PM10, NH3 and H2S (both long-term and short-term) which screen out as insignificant, the remaining pollutants have potentially significant impacts and therefore required further assessment. Following further assessment, VOC (as benzene) PCs can be regarded as ‘small’, short-term NO2 and 99.73rd percentile SO2 can be regarded as ‘medium’ and 99.18th and 99.90th percentile SO2 can be regarded as ‘large’. The PECs for the long-term pollutants assessed can be considered ‘moderate’ for NO2 and VOC and ‘negligible’ for PM2.5 and PM10. Following further assessment for OUE, the areas which exceed the odour significance criteria are not considered to be representative of regular human exposure.

At the potentially sensitive human receptor locations, all pollutants except NO2, SO2, VOCs and OUE screen out as insignificant. Following further assessment, 99.73rd percentile SO2 and VOC (as benzene) PCs can be regarded as ‘small’, short-term NO2, 99.18th percentile SO2 and 99.90th percentile can be regarded as ‘medium’ and the vast majority of the impacts for long-term NO2 and VOC (as benzene) can be considered ‘negligible’. Following further assessment for OUE at HR1, for the majority of the time the predicted PCs do not exceed the most stringent odour significance criteria.

For the habitat sites considered, it has been demonstrated that the NOX, SO2 and NH3 emissions from the Site are unlikely to result in a breach of the relevant Critical Levels or Critical Loads or are unlikely to have an adverse effect on local habitat sites – with all predicted PCs well within the acceptable limits.

In summary, therefore, it can be concluded that emissions arising from Sarval's Stoke Bardolph site will not have a detrimental impact on local air quality, human health or the sensitive habitat sites considered as part of this assessment.

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## 5.2 Noise

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Noise is considered within the Risk assessment process (table 2). Although the proximity to some residential properties, the site has not received a noise complaint or communication in some years. As part of the existing Permit, a diary and complaints log is required and can be viewed by the current Regulator at any time.

The site (under the previous name) undertook an environmental noise survey for the current A(2) Permit application. This was in accordance with BS4142. Noise levels were within acceptable parameters for both daytime and night-time activities. No significant changes to operations have occurred during the life of the existing Permit. The lack of complaints or communications regarding noise or nuisance events is supportive of this statement.

Noise as a risk is not considered further in this applicant. Normal noise management activities are included within the site EMS procedures.

For compliance with the guidance for this risk assessment; the appropriate sources and their relevant controls are described in Table 2 (Section 3.3) of this document. The site does not hold a stand alone Noise Management plan but relevant controls are in place with noise prevention in mind:

- There is minimal noisy plant or machinery, and there are no external cooling equipment or fans (often a first culprit of vibration source).
- Noise checks are undertaken as part of the daily recorded environmental walkarounds on Form Sarval/Rec/037.
- Most noisy operations, such as loading and unloading, moving bulk materials are undertaken indoors. This is due to the strict odour prevention methods to remain effective. All production areas must be held in negative pressure to enable air extraction.
- Most activities are undertaken within the buildings. Effluent treatment activity is undertaken outdoors but is not considered noisy.
- Vehicle movement is undertaken within the day.
- Residential sensitive receptors are not within close proximity.



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## 5.3

### Odour

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Odour is a significant risk for an activity such as operated at the Sarval Limited installation. It is considered that all relevant BAT requirements are met (refer to full assessment in Appendix 6 of the main supporting document).

An Odour Management Plan (“OMP”) is in place at the installation and the site has satisfactorily met all existing permitting conditions in relation to their A1(2) Permit regarding odour measurement and monitoring. This has been reviewed for the EA Permit application process and is included with this application (Appendix 3).

In summary, odour control management is provided through technological controls and general management of the installation. Some highlights include:

- The chemical scrubbers (3) have odour efficiency testing undertaken.
- Daily assessments and audits are made for odour emissions when operating normally (there are sniff tubes for each environmental scrubber)
- Odour olfactory checks are made every four hours at nominated points of the site. The site has an onsite weather station to record relevant information - These records are noted in appropriate records to log the time, date, wind direction, weather conditions, the source of the odour, the duration of the odour release, the nature and severity of the odour, and any corrective action taken.

In addition, systems are in place to ensure no process odours are directed to the TO when the combustion chamber temperature is below 850c.

No process odours are directed to a (one of two) boiler when the fire rate is below 30%.

Please refer to the OMP for a comprehensive list of controls. This plan has been collated using the EA template guidance H4.

## 6 GLOBAL WARMING POTENTIAL

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### Overview

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The global warming potential (GWP) of the facility has been calculated in accordance with DEFRA's conversion factors. The total GWP score for the facility is 9,746.4 tCO<sub>2</sub>eq/year which is derived from direct CO<sub>2</sub> emissions from the combustion of natural gas in the boilers/Thermal Oxidisers and grid supplied electricity. There is no standby generator at the installation. The boilers have the ability to be fuelled by tallow but this has not occurred in the previous 12 months.

The emissions of carbon dioxide from the site's 2023 energy usage are summarised in the table below:

Energy Source	Energy Consumption (Primary)	Emission Factors * (CO <sub>2</sub> )	Annual Production (Tonnes) CO <sub>2</sub> –
Grid electricity	5,949 (MWh)	0.207	1,231.4
Natural Gas	47,306 (MWh)	0.18	8,515
Tallow Use	0	0	0
Total			<b><u>9,746.4</u></b>

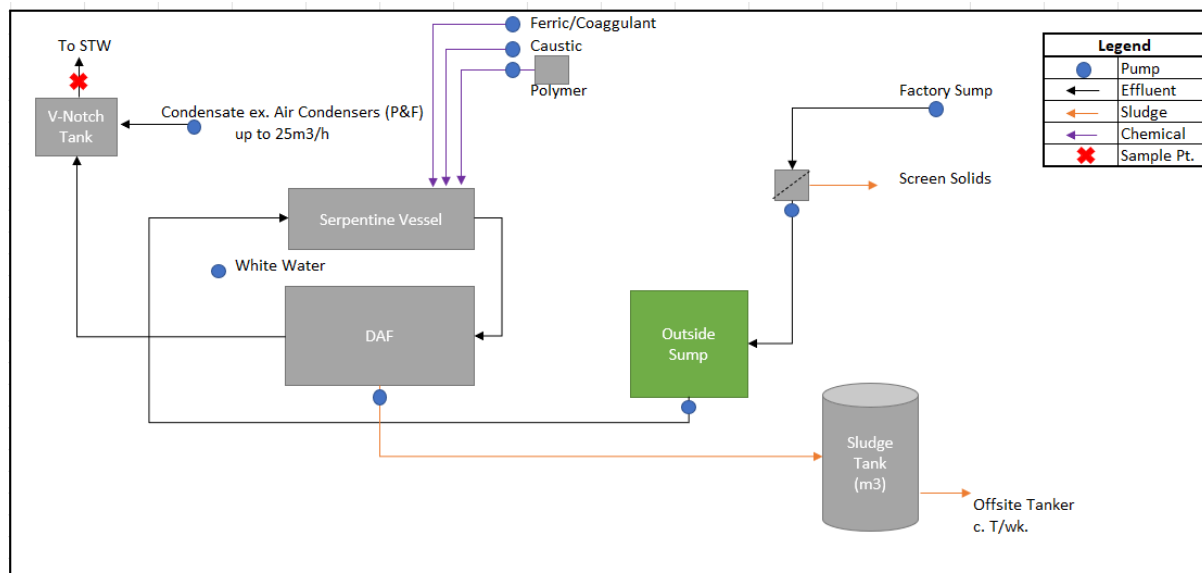
\* Source – Carbon Trust Emission Factors taken from DEFRA's greenhouse gas conversion factors for company reporting, published in September 2023.

## **APPENDIX 1**

# Appendix 1: Surface Water Pollution Risk Assessment for Discharge to Sewer Sarval Limited into Severn Trent

## 1. Introduction

All process/trade effluent is treated on site within a dedicated effluent treatment plant (“ETP”). This plant treats effluent through a combination of screening, dissolved air flotation and balance chemical treatment.



Sarval Limited, as the operator of this plant, has agreed a set of parameters with the sewerage undertaker - Severn Trent Water Ltd at the Stoke Bardolph Sewage Treatment Works (STW), that accurately describe the nature and strength of the discharge requiring treatment as part of the initial characterisation through the formal assessment process. Treated effluent is subsequently discharged to the River Trent, adjacent to the treatment works. This consent has been in place for many years. The effluent is subsequently discharged to the River Trent following further treatment.

The limits are presented below in [Table 1](#).

Parameter	Limit
pH	6 to 10
Chemical Oxygen Demand	6000 mg/l
Total Suspended Solids	1000 mg/l
Phosphorus	25 mg/l
Ammoniacal Nitrogen as N	600 mg/l
Temperature	43 °C
Daily Flow	1200 m3
Maximum flowrate	20 s-1

## 2 DATA COLLECTION

### 2.1 Step 1: Identify the pollutants released from your plant

Only substances limited by the trade effluent consent have been assessed. (Additionally, a Hazardous Materials assessment has been undertaken for this application). The following steps have been undertaken for the full effluent consent figures and against the previous 12 samples from the sewerage undertaker (some inhouse sampling is undertaken to check agreed figures also).

**Table 2a: Summary of Trade Effluent Agreement Values**

Trade Effluent Discharge Consent (mg/l)	Percentage removal rate of substance by activated sludge plant	Proportion remaining in activated sludge plant	RC Value	
			mg/l	ug/l
Suspended Solids 105°C*	1000	1	1000	1000000
COD*	6000	1	6000	6000000
Ammoniacal Nitrogen	600	92	48	48000
Phosphorus Total	25	20	20	20000
* Indicates substances without STRF values.				

**Table 2b: Summary of Trade Effluent Agreement Values (summary of 12 samples)**

Raw Trade Effluent Discharge Consent (mg/l)	Percentage removal rate of substance by activated sludge plant	Proportion remaining in activated sludge plant	RC Value	
			mg/l	ug/l
Suspended Solids 105°C*	104	1	104	104000
COD*	645	1	645	645000
Ammoniacal Nitrogen	111	92	8.88	8800
Phosphorus Total	6	20	4.8	4800
* Indicates substances without STRF values.				

### 3 SCREENING TESTS FRESH WATER

#### Test 1 Part A Freshwater screening test 1: does the concentration of the substance in the discharge exceed 10 percent of the EQS?

This screening test assesses whether the concentrations of the discharged substances exceed 10 percent of the EQS, irrelevant to the quality and flow of the receiving body of water. It purely assesses the quality of the discharged effluent.

As the discharge is to sewer, as Sewage Treatment Reduction Factor (STRF) is applied to the concentration of each substance discharged. The STRF is an Environment Agency defined multiplier to simulate the impact on the concentration from treatment at a sewage treatment works. The resulting concentration after the STRF has been applied is hereafter referred to as the corrected release concentration (RC<sub>corr</sub>). These are presented in Table 3 below.

**Table 3: Corrected Data for STRF**

STEP 1 - is RC > 10% EQS	Rccorr µg/l	EQS µg/l			EQS 10%	Rccorr µg/l > 10% EQS?
		AA	MAC	selected		
Suspended Solids 105°C *	104000	25000		25000	2500	FAIL
COD*	645000	125000	250000	250000	25000	FAIL
Ammoniacal Nitrogen	880	300		300	30	FAIL
Total Oil and Grease*	50					
Phosphorus Total	4800	69		69	6.9	FAIL

In test 2, some parameters exceed 10% of the EQS.

#### Test 2: Does the process contribution (PC) exceed 4 percent of the EQS?

The discharge from the waste treatment facility is to a sewer which flows to Severn Trent Sewage Treatment works, which discharges to the River Trent. Following the assessment methodology of Test 2 – Surface Water Discharges, the process contributions released to the River Trent was calculated as follow:

$$PC = \frac{(EFR+RC_{corr})}{(EFR+RFR)} \quad (1)$$

Where:

- PC = process contribution (µg/l) EFR = effluent flow rate (m<sup>3</sup>/s)

- $RC_{corr}$  = release concentration (with STRF) from Waste Treatment Facility ( $\mu\text{g/l}$ ) RFR= river flow rate ( $\text{m}^3/\text{s}$ )

The Q95 flow was used from the nearest upstream gauging station, found online from the National River Flow Archive\*. This reported:

Gauging Station        28009 – Trent at Colwick  
 Flow:                      0.86  $\text{m}^3/\text{s}$   
 95% Exceedance (Q95): 0.28  $\text{m}^3/\text{s}$

The proposed effluent flow rate from the Sarval S1 discharge point is a mean effluent flow rate of  $500\text{m}^3/\text{day}$  ( $0.00578\text{m}^3/\text{s}$ ) and a maximum effluent flow rate of 5.78 litres/s.

**Table 4: Substances Screened Out at the Freshwater Screening Test 2.**

STEP 2 - is PC<4% EQS	Rccorr $\mu\text{g/l}$	PC	EQS	4% EQS	PC > 4%EQS?
Suspended Solids	104000	601	25000	1000	PASS
COD*	645000	4309	250000	10000	PASS
Ammoniacal Nitrogen	880	58.75	300	12	FAIL
Phosphorus Total	4800	32	69	2.760	FAIL

\* National River Archive Gauging Station

**Test 3: Does your discharge increase the concentration of the pollutant in the river downstream of the discharge by more than 10% of the pollutant’s EQS value.**

Test 3 was unable to be completed as the Environment Agency tool H1 for water framework was not available at the time of this assessment compilation (September 2024). Therefore – the final assessment has been made against whether the PC is 50% of the EQS and both parameters pass by a significant margin.

The calculations are extremely conservative, and it is considered that the onsite effluent treatment, with the STW treatment prior to discharge to the River Trent would deem any parameter insignificant in background levels. It is not proposed to undertake any additional modelling due to the dilute nature of effluent produced by the installation.

## **APPENDIX 2**

### **Environment Agency Screening Assessment *(Nature and Heritage Conservation Screening Report)***



# Nature and Heritage Conservation

## Screening Report: Bespoke Installation

Reference	EPR/CP3025SZ/P001
NGR	SK 6367 4186
Buffer (m)	0
Date report produced	19/07/2023
Number of maps enclosed	3

The nature conservation sites identified in the table below must be considered in your application.

Nature and heritage conservation sites	Screening distance (km)	Further information
Local Nature Reserve (LNR) Gedling House Meadow Gedling House Woods Netherfield Lagoons	2	<a href="#">Natural England</a>
Local Wildlife Sites (LWS) The Avenue Pool Trent Bluff Scrub, Radcliffe Netherfield Pits Netherfield Dismantled Railway Sidings Burton Joyce Grasslands Swallow Plantation Crock Dumble River Trent: Burton Joyce to Lowdham New Plantation, Burton Joyce	2	<a href="#">Appropriate Local Record Centre (LRC)</a>
Ancient Woodland Malkin Hill Wood	2	<a href="#">Woodland Trust</a> <a href="#">Forestry Commission</a> <a href="#">Natural England</a>



The relevant Local Records Centre must be contacted for information on the features within local wildlife sites. A small administration charge may also be incurred for this service.

**Please note** we have screened this application for protected and priority sites, habitats and species for which we have information. It is however your responsibility to comply with all environmental and planning legislation, this information does not imply that no other checks or permissions will be required.

**Please note** the nature and heritage screening we have conducted as part of this report is subject to change as it is based on data we hold at the time it is generated. We cannot guarantee there will be no changes to our screening data between the date of this report and the submission of the permit application, which could result in the return of an application or requesting further information.

customer service line  
03708 506 506

incident hotline  
0800 80 70 60


floodline  
0845 988 1188

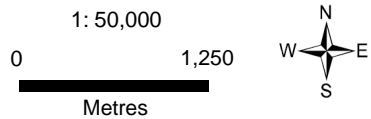
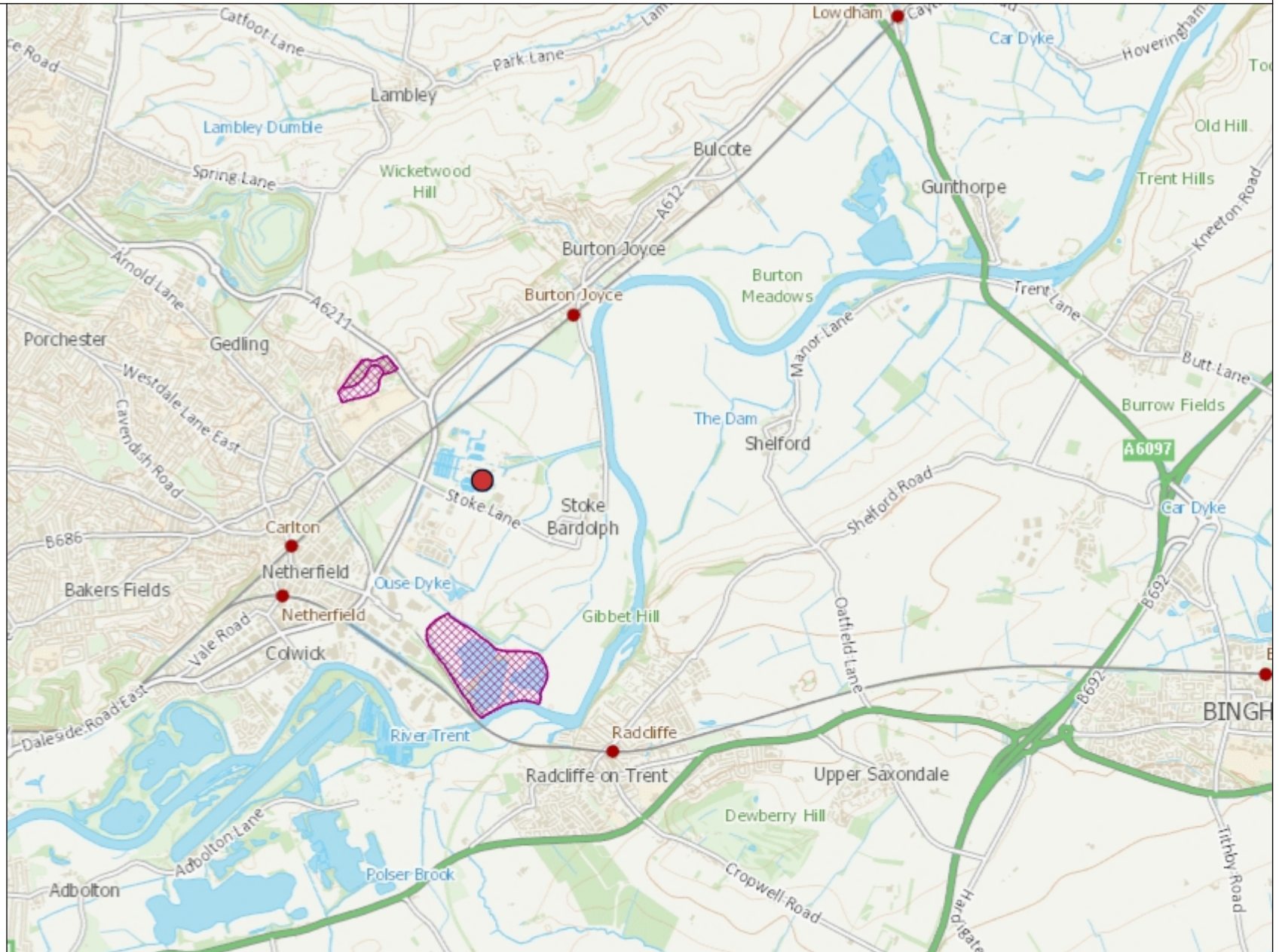
[www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

# Local Nature Reserves



## Legend

 LNR (England)

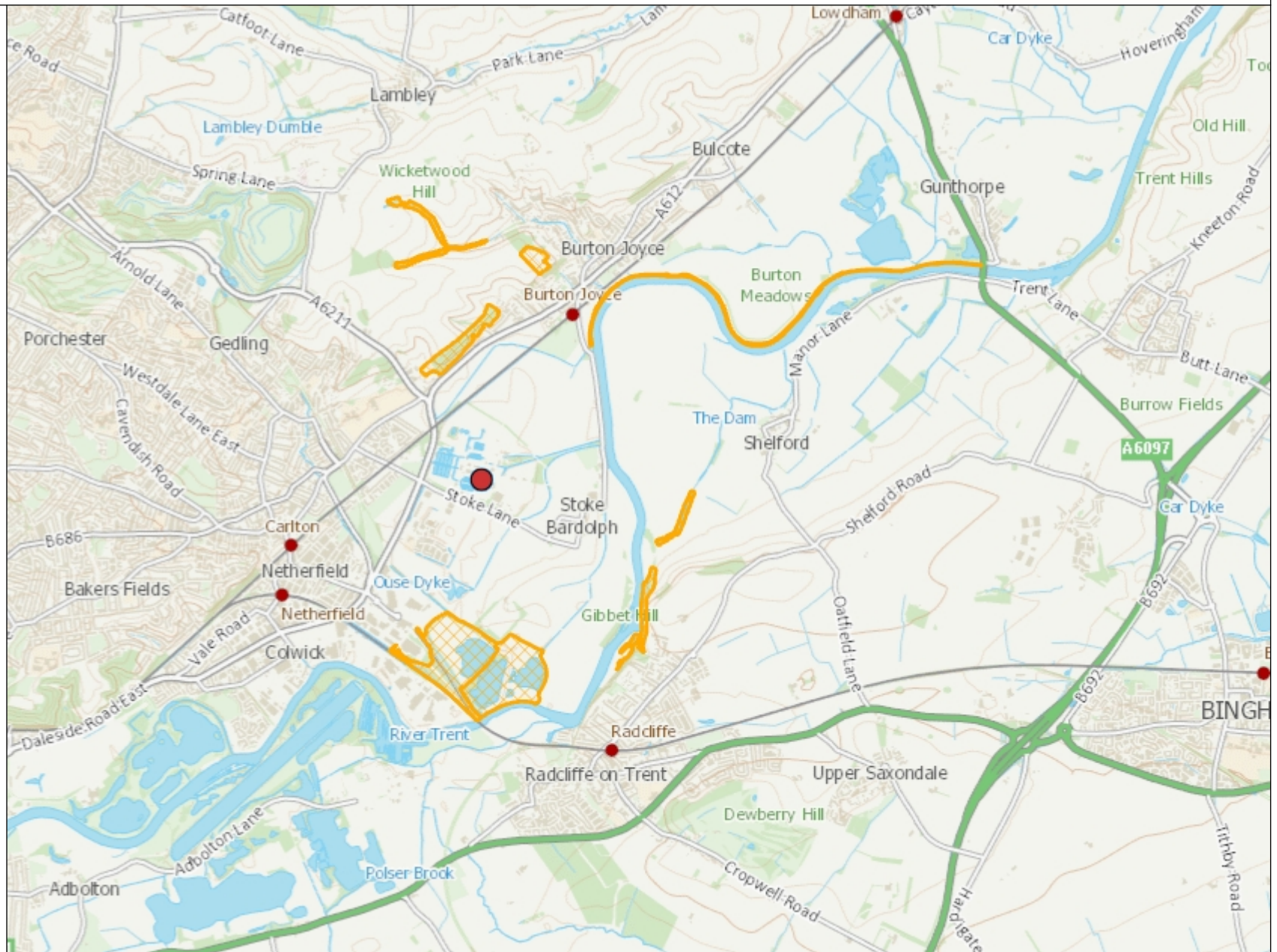


# Local Wildlife Sites



## Legend


 Local Wildlife Sites

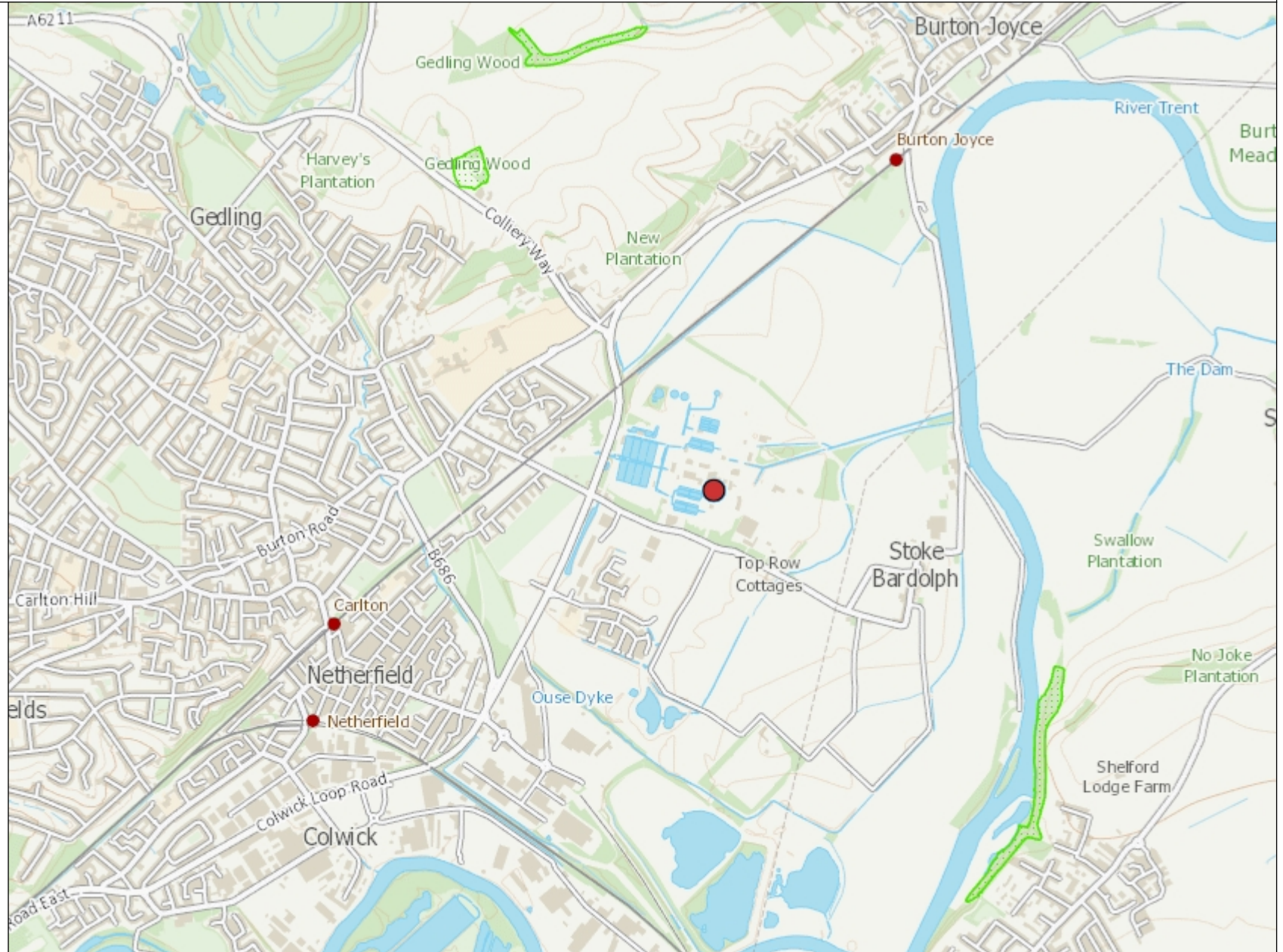


# Ancient Woodland



## Legend

 Ancient Woodland (England)



1: 25,000



## **APPENDIX 3**

**Odour Management Plan  
(Attached Separately)**

## **APPENDIX 4**

### **Flood Mapping Information**

## EANRW Flood Data Map (1:10,000)

### General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

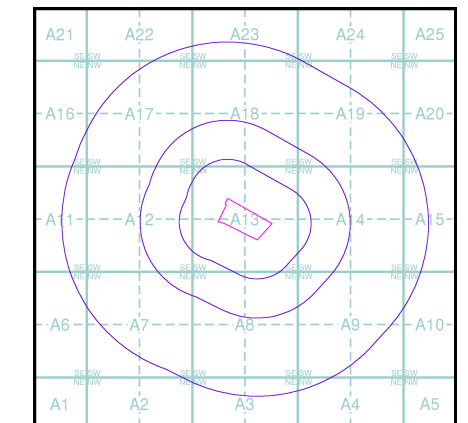
### Flood Data

- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- Area Benefiting from Flood Defence
- Flood Water Storage Areas
- Flood Defence

### Contours (height in metres)

- Standard Contour 105 MLW Mean Low Water
- Master Contour 100 MHW Mean High Water
- Spot Height 167.8

## EANRW Flood Data Map - Slice A

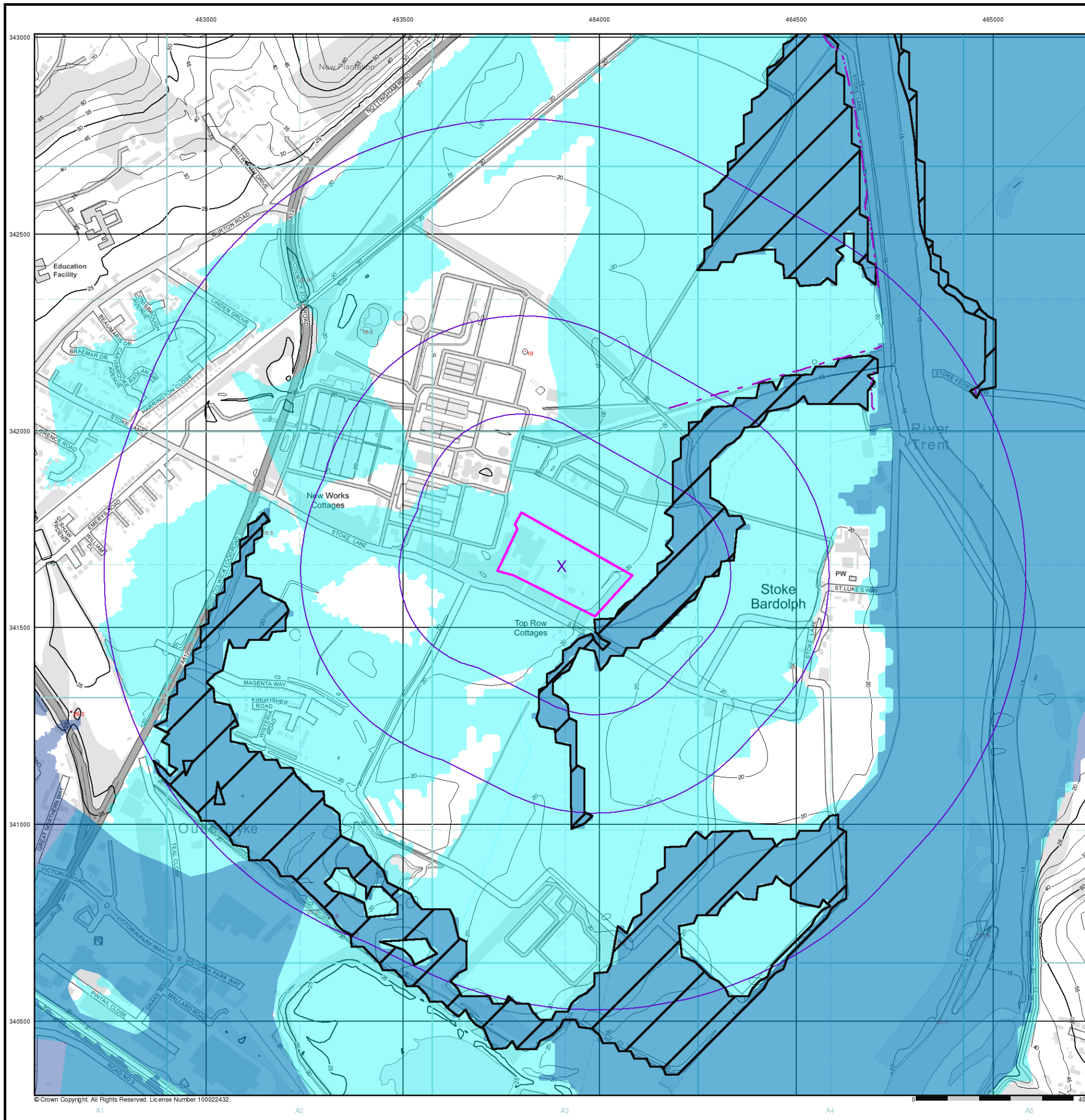


### Order Details

Order Number: 321440174\_1\_1  
 Customer Ref: C050  
 National Grid Reference: 463900, 341660  
 Slice: A  
 Site Area (Ha): 4.3  
 Search Buffer (m): 1000

### Site Details

Site at 463880, 341670



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## JBA 75 Year Return Flood Map (Undefended) (1:10,000)

### General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

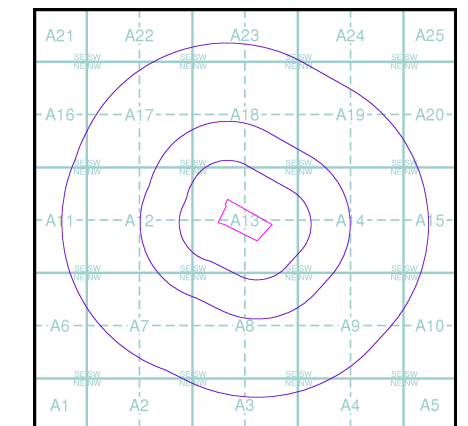
### Modelled Flood Depth

Pluvial Depth	Fluvial Depth	Coastal Depth
0.1m	0.01m - 0.05m	0.01m - 0.05m
0.1m - 0.3m	0.05m - 0.1m	0.05m - 0.1m
0.3m - 1m	0.1m - 0.3m	0.1m - 0.3m
>1m	0.3m - 1m	0.3m - 1m
	>1m	>1m

### Contours (height in metres)

- Standard Contour 105
- Master Contour 100
- Spot Height 107.8
- MLW Mean Low Water
- MHW Mean High Water

## JBA 75 Year Return Flood Map (Undefended) - Slice A

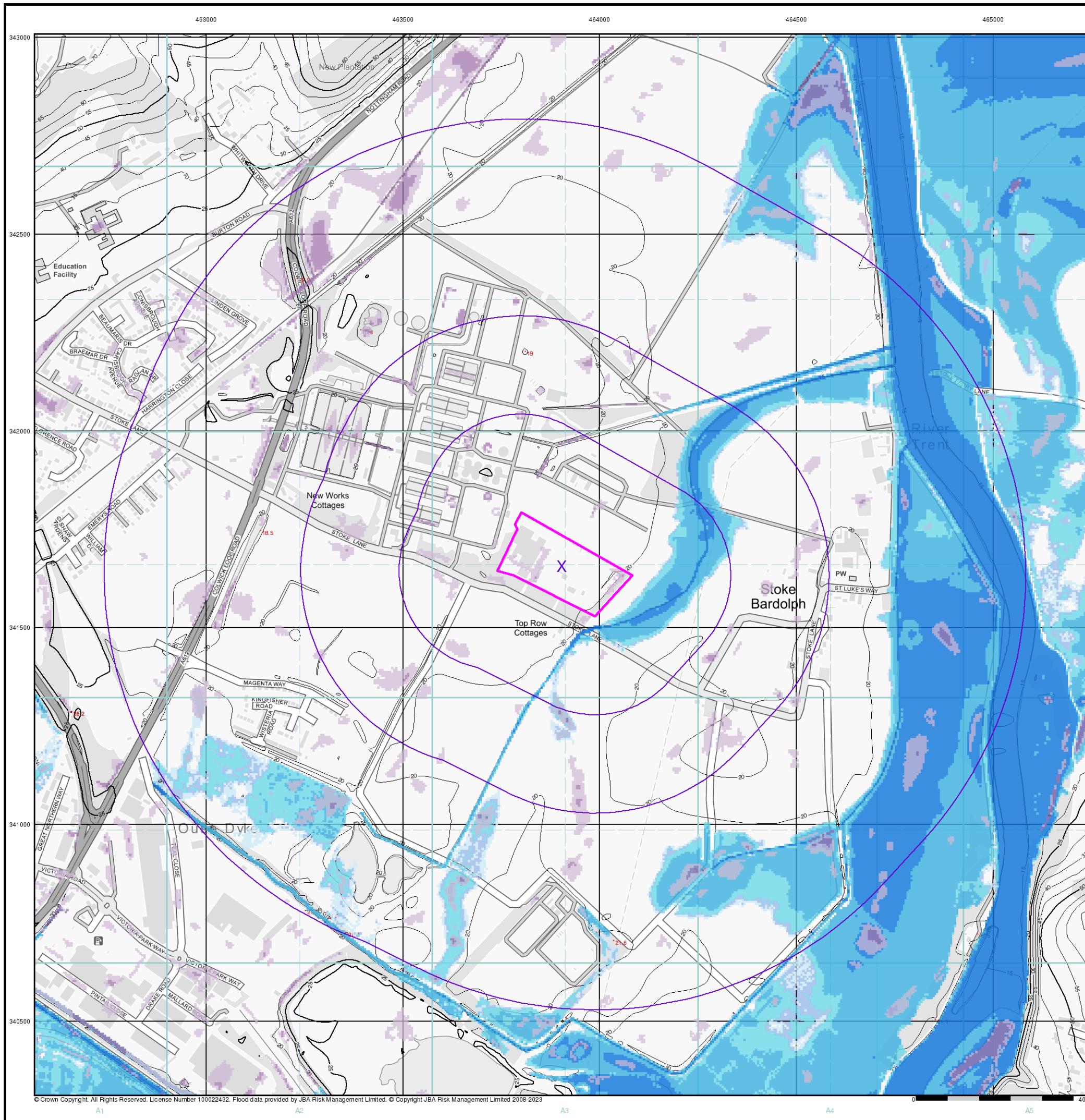


### Order Details

Order Number: 321440174\_1\_1  
 Customer Ref: C050  
 National Grid Reference: 463900, 341660  
 Slice: A  
 Site Area (Ha): 4.3  
 Search Buffer (m): 1000

### Site Details

Site at 463880, 341670



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## JBA 100 Year Return Flood Map (Undefended) (1:10,000)

### General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

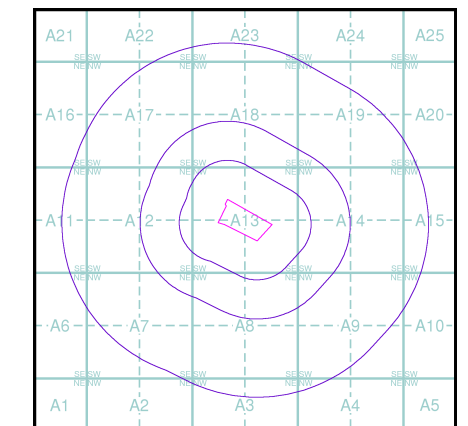
### Modelled Flood Depth

Fluvial Depth	Coastal Depth
0.01m - 0.05m	0.01m - 0.05m
0.05m - 0.1m	0.05m - 0.1m
0.1m - 0.3m	0.1m - 0.3m
0.3m - 1m	0.3m - 1m
>1m	>1m

### Contours (height in metres)

- Standard Contour 105 100 95 MLW Mean Low Water
- Master Contour 100 95 MHW Mean High Water
- Spot Height 167.8

## JBA 100 Year Return Flood Map (Undefended) - Slice A

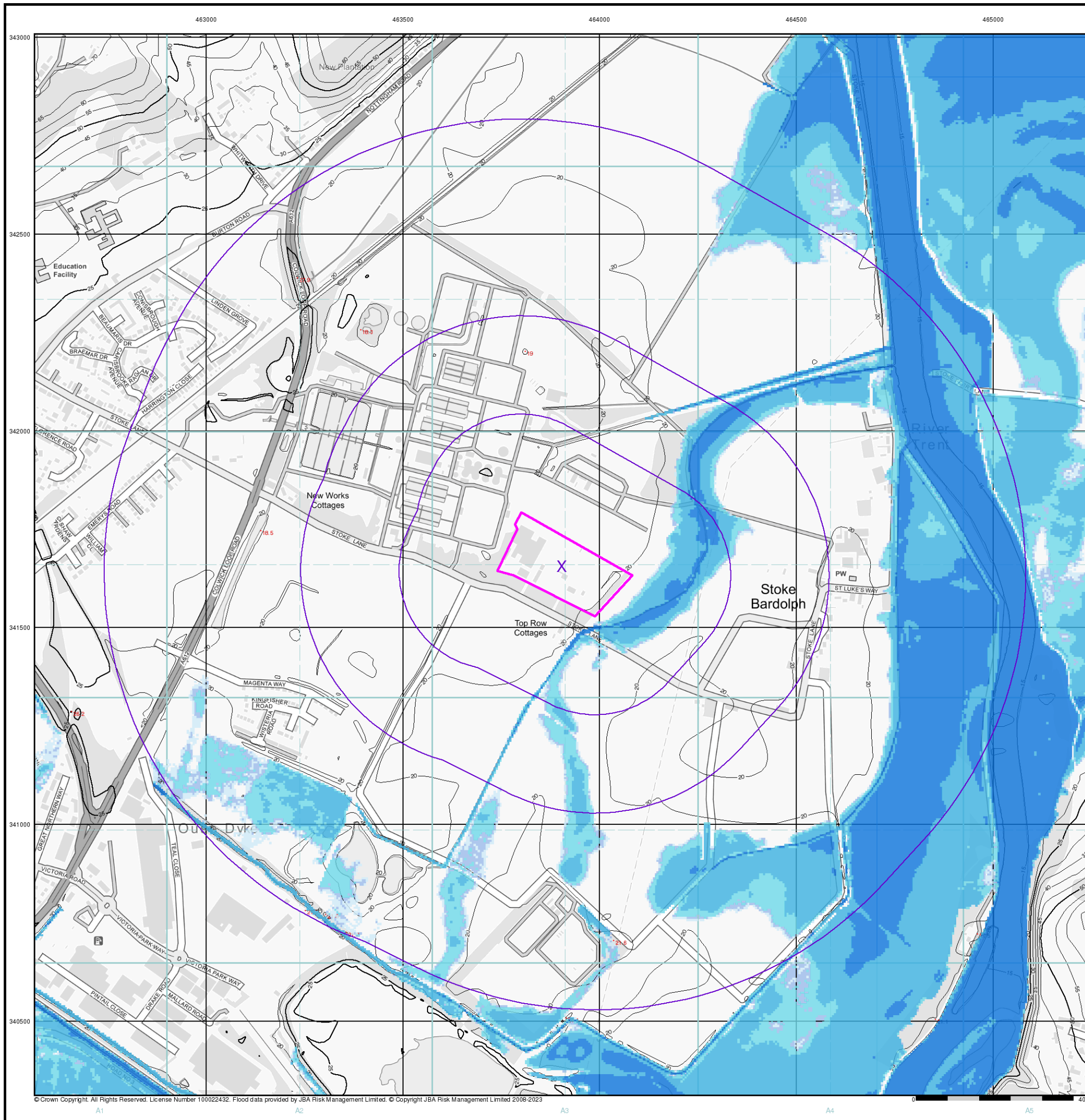


### Order Details

Order Number: 321440174\_1\_1  
 Customer Ref: C050  
 National Grid Reference: 463900, 341660  
 Slice: A  
 Site Area (Ha): 4.3  
 Search Buffer (m): 1000

### Site Details

Site at 463880, 341670



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## JBA 200 Year Return Flood Map (Undefended) (1:10,000)

### General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

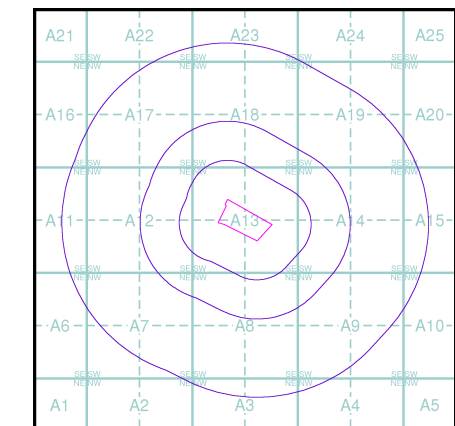
### Modelled Flood Depth

Pluvial Depth	Fluvial Depth	Coastal Depth
0.1m	0.01m - 0.05m	0.01m - 0.05m
0.1m - 0.3m	0.05m - 0.1m	0.05m - 0.1m
0.3m - 1m	0.1m - 0.3m	0.1m - 0.3m
>1m	0.3m - 1m	0.3m - 1m
	>1m	>1m

### Contours (height in metres)

- Standard Contour 105
- Master Contour 100
- Spot Height 107.8
- MLW Mean Low Water
- MHW Mean High Water

## JBA 200 Year Return Flood Map (Undefended) - Slice A

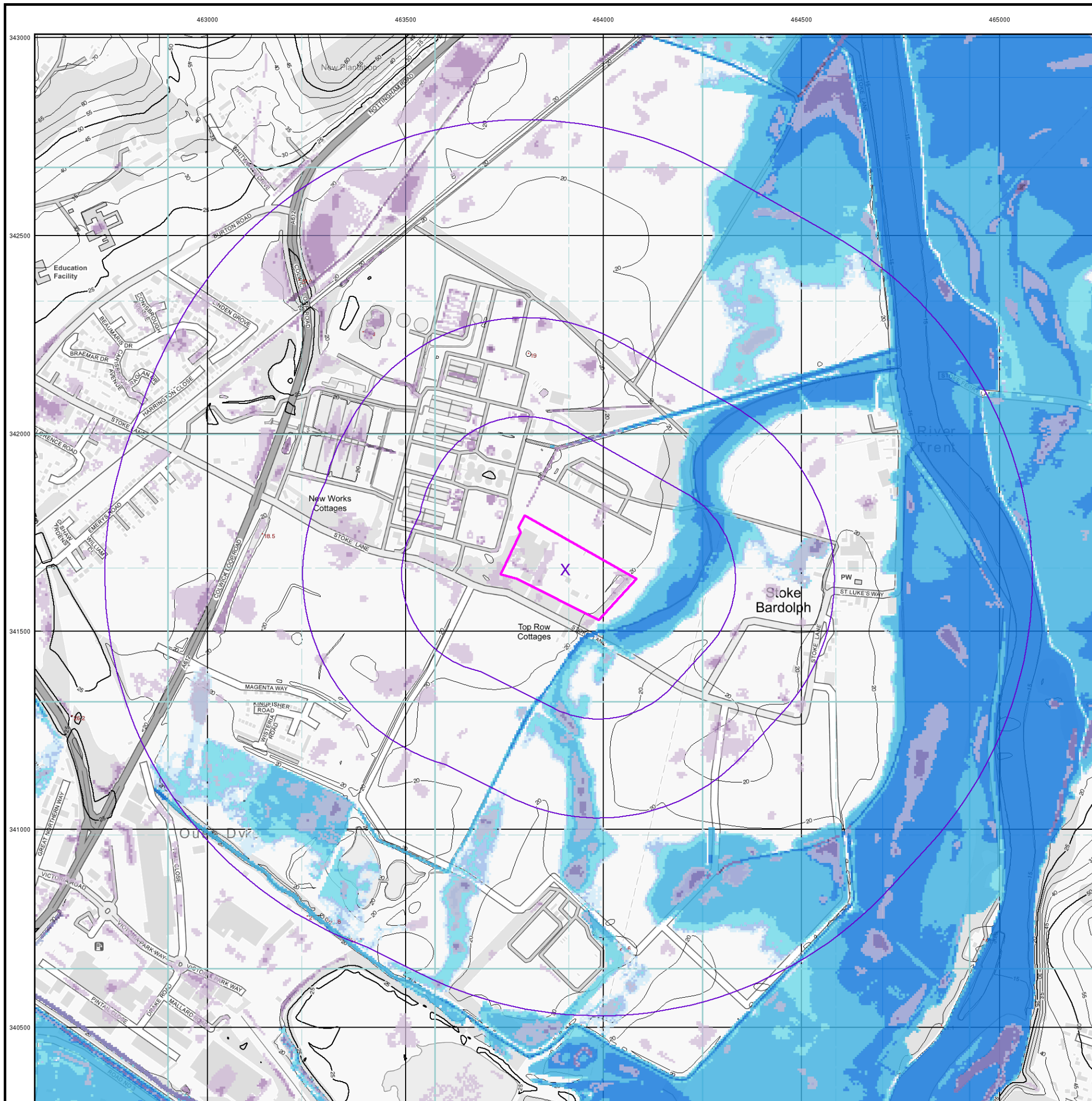


### Order Details

Order Number: 321440174\_1\_1  
 Customer Ref: C050  
 National Grid Reference: 463900, 341660  
 Slice: A  
 Site Area (Ha): 4.3  
 Search Buffer (m): 1000

### Site Details

Site at 463880, 341670



## JBA 1000 Year Return Flood Map (Undefended) (1:10,000)

### General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

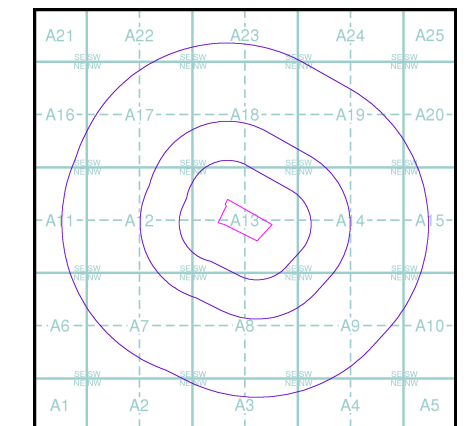
### Modelled Flood Depth

Pluvial Depth	Fluvial Depth	Coastal Depth
0.1m	0.01m - 0.05m	0.01m - 0.05m
0.1m - 0.3m	0.05m - 0.1m	0.05m - 0.1m
0.3m - 1m	0.1m - 0.3m	0.1m - 0.3m
>1m	0.3m - 1m	0.3m - 1m
	>1m	>1m

### Contours (height in metres)

- Standard Contour 105
- Master Contour 100
- Spot Height 167.8
- MLW Mean Low Water
- MHW Mean High Water

## JBA 1000 Year Return Flood Map (Undefended) - Slice A

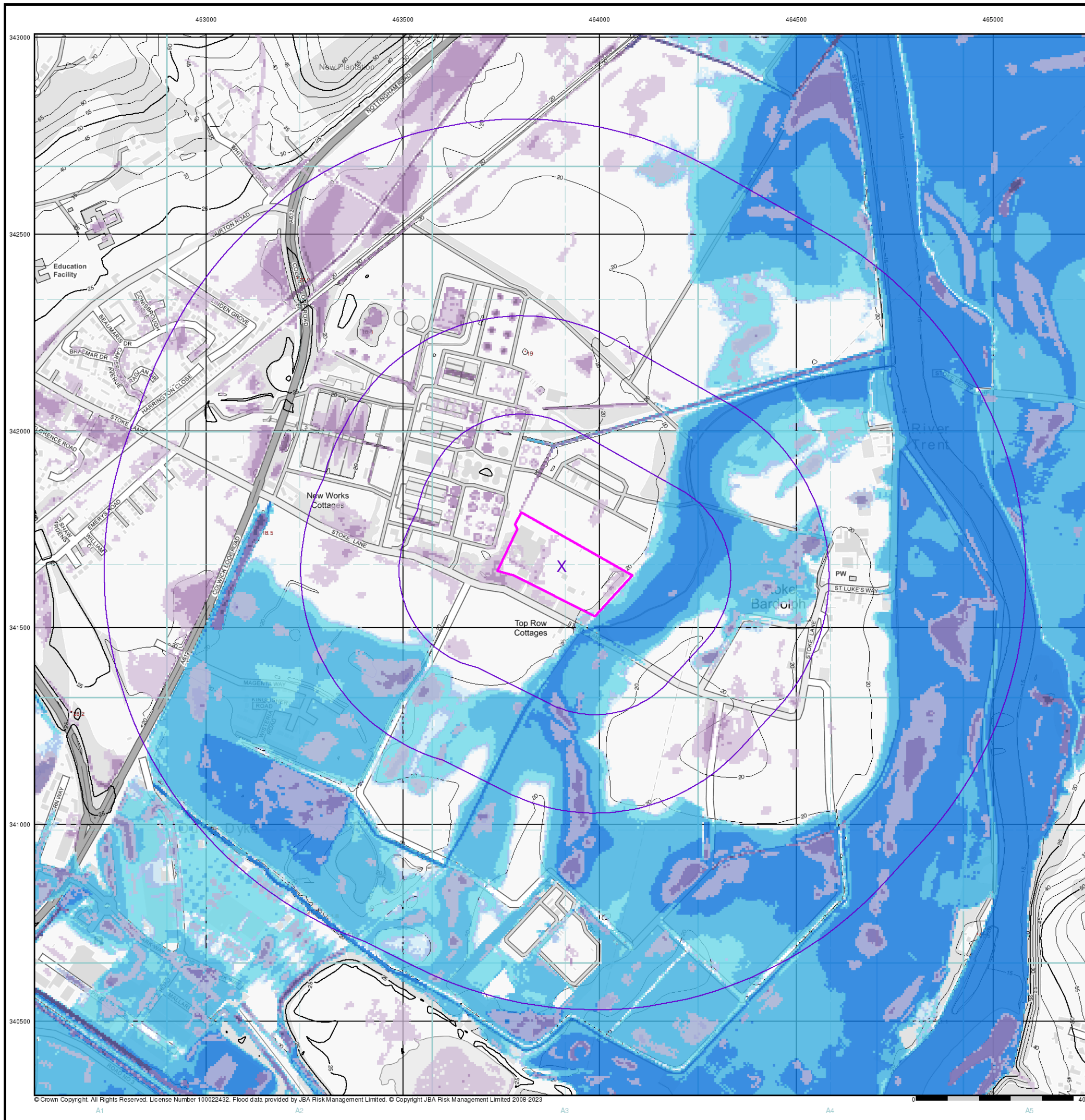


### Order Details

Order Number: 321440174\_1\_1  
 Customer Ref: C050  
 National Grid Reference: 463900, 341660  
 Slice: A  
 Site Area (Ha): 4.3  
 Search Buffer (m): 1000

### Site Details

Site at 463880, 341670





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## JBA Canal Failure Map (1:10,000)






### General

-  Specified Site
-  Specified Buffer(s)
-  Bearing Reference Point

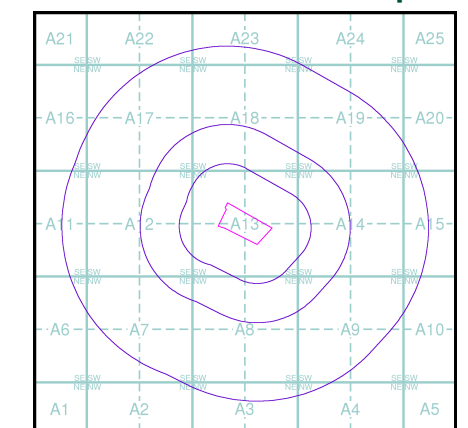
### Flood Data

-  Canal Failure
-  Coverage

### Contours (height in metres)

- Standard Contour  105  MLW Mean Low Water
- Master Contour  100  MHW Mean High Water
- Spot Height  167.8

## JBA Canal Failure Flood Map - Slice A

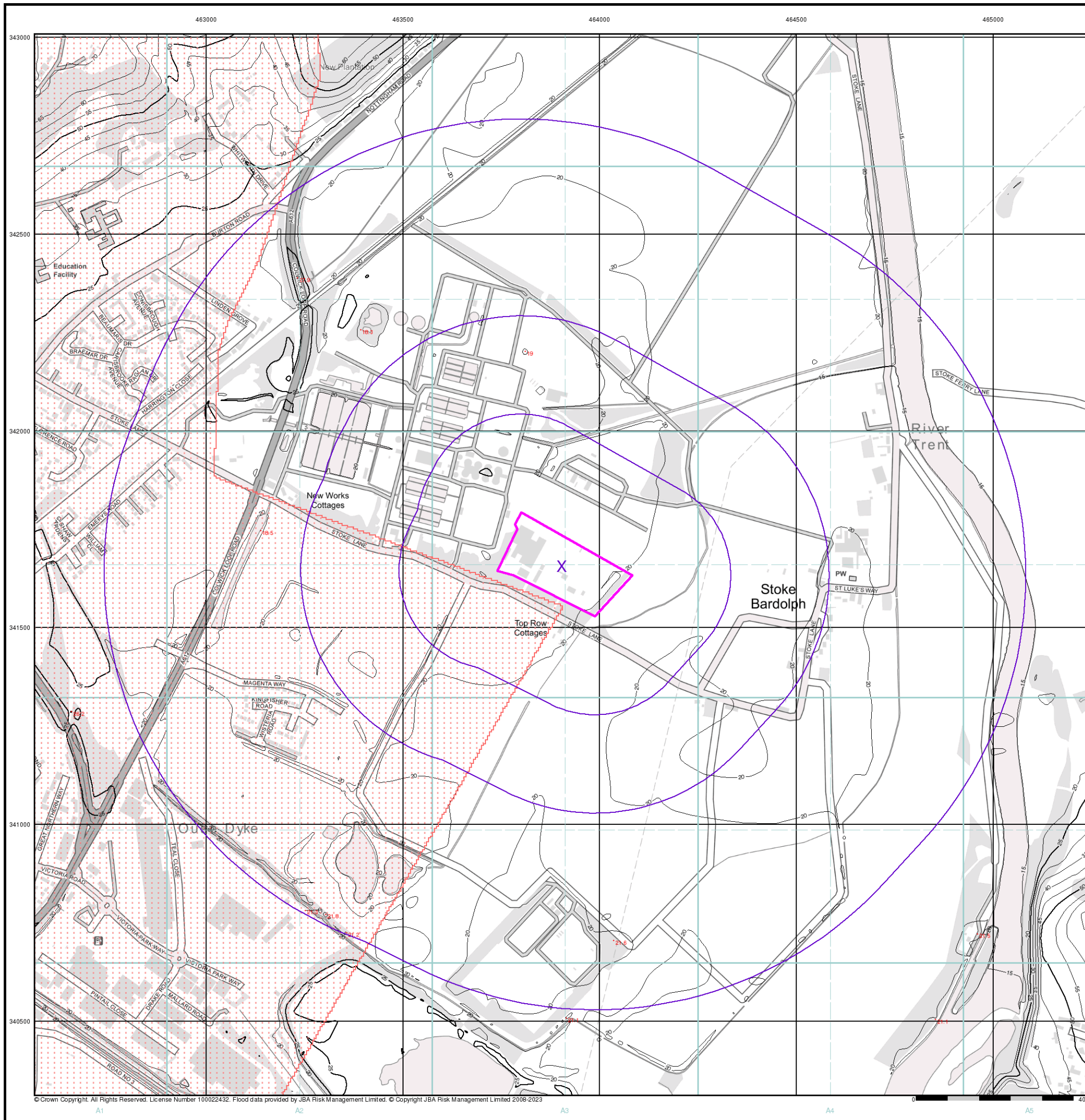


### Order Details

Order Number: 321440174\_1\_1  
 Customer Ref: C050  
 National Grid Reference: 463900, 341660  
 Slice: A  
 Site Area (Ha): 4.3  
 Search Buffer (m): 1000

### Site Details

Site at 463880, 341670



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## E/ANRW Surface Water 30 Year Return Depth Map (1:10,000)

**General**

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

**Surface Water Depth**

- 0 - 0.15m
- 0.15 - 0.30m
- 0.30 - 0.60m
- 0.60 - 0.90m
- 0.90 - 1.20m
- > 1.20m

**Contours (height in metres)**

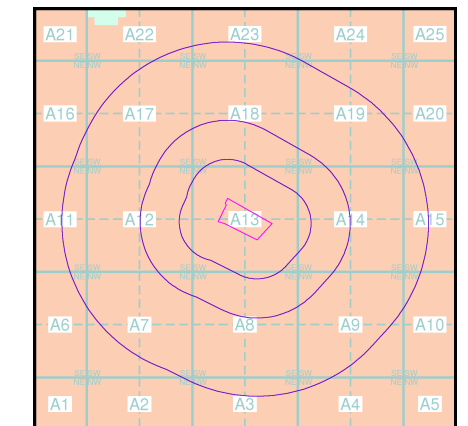
- Standard Contour
- Master Contour
- Spot Height: \*167.8
- MLW - Mean Low Water
- MHW - Mean High Water

**Suitability**

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

### E/ANRW Suitability Map - Slice A

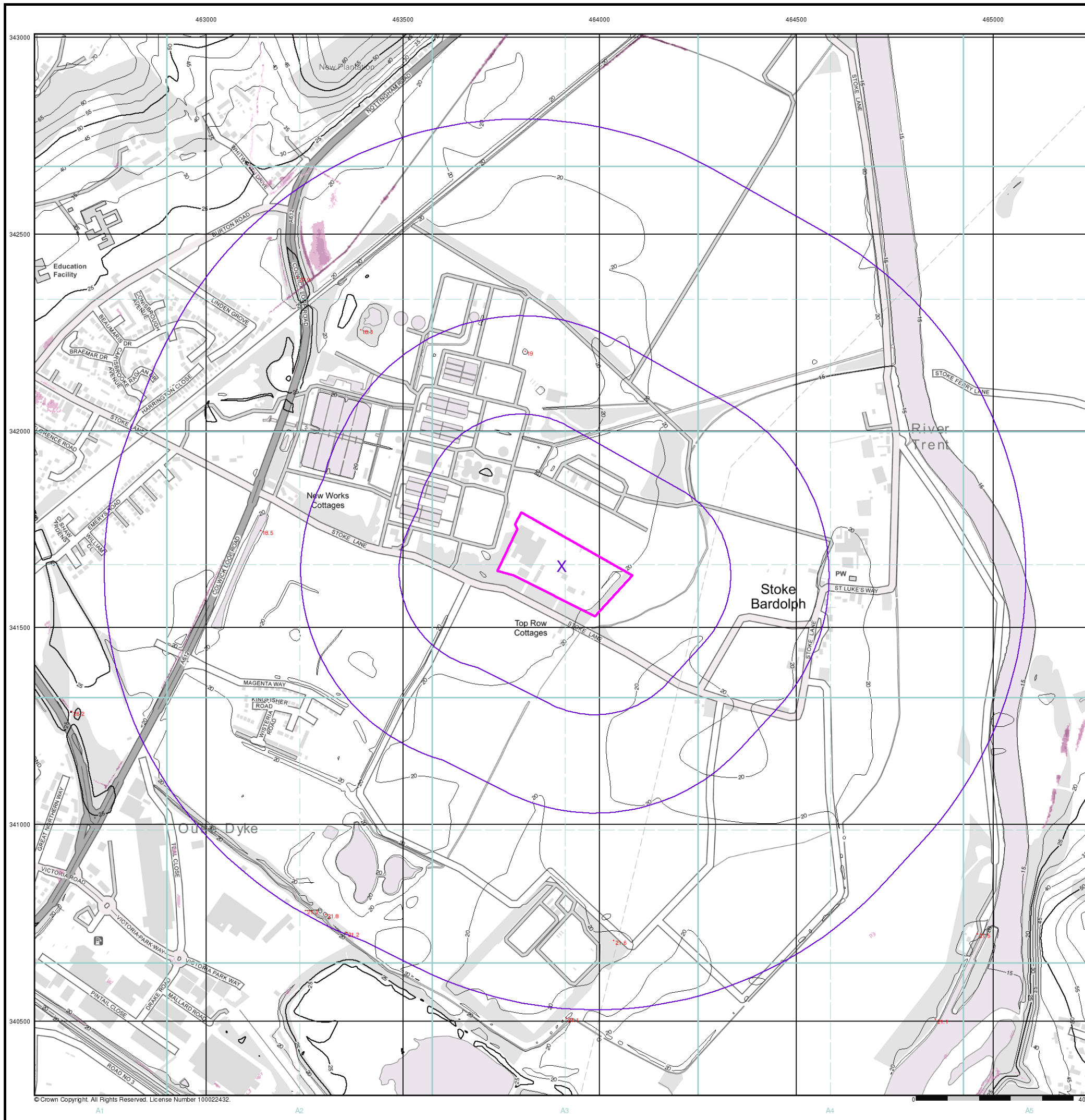


### Order Details

Order Number: 321440174\_1\_1  
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 National Grid Reference: 463900, 341660  
 Slice: A  
 Site Area (Ha): 4.3  
 Search Buffer (m): 1000

### Site Details

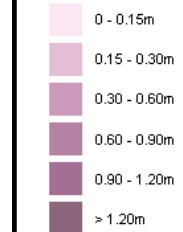
Site at 463880, 341670



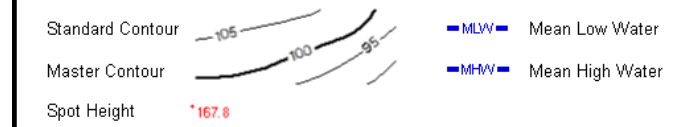
## EANRW Surface Water 100 Year Return Depth Map

**General**  
 Specified Site (pink polygon) Specified Buffer(s) (purple circles) Bearing Reference Point (X)

### Surface Water Depth



### Contours (height in metres)

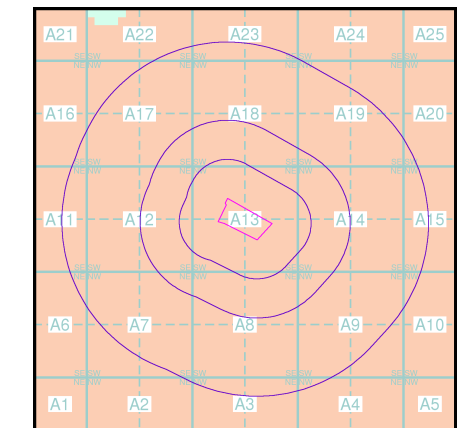


### Suitability

See the suitability map below

- National to county (light green)
- County to town (orange)
- Town to street (blue)
- Street to parcels of land (pink)
- Property (yellow)

### EANRW Suitability Map - Slice A



### Order Details

Order Number: 321440174\_1\_1  
 Customer Ref: C050  
 National Grid Reference: 463900, 341660  
 Slice: A  
 Site Area (Ha): 4.3  
 Search Buffer (m): 1000

### Site Details

Site at 463880, 341670



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## EANRW Surface Water 1000 Year Return Depth Map (1:10,000)

**General**  
 Specified Site (Pink outline) Specified Buffer(s) (Purple circles) Bearing Reference Point (X)

### Surface Water Depth

- 0 - 0.15m
- 0.15 - 0.30m
- 0.30 - 0.60m
- 0.60 - 0.90m
- 0.90 - 1.20m
- > 1.20m

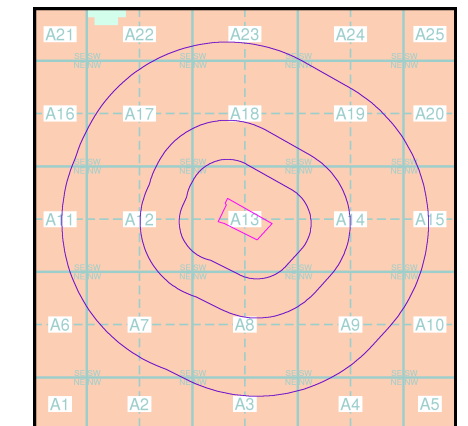
### Contours (height in metres)

- Standard Contour (105, 100, 95)
- Master Contour (100)
- Spot Height (\*167.8)
- MLW Mean Low Water
- MHW Mean High Water

### Suitability

- See the suitability map below
- National to county (Light green)
  - County to town (Orange)
  - Town to street (Blue)
  - Street to parcels of land (Pink)
  - Property (Yellow)

### EANRW Suitability Map - Slice A

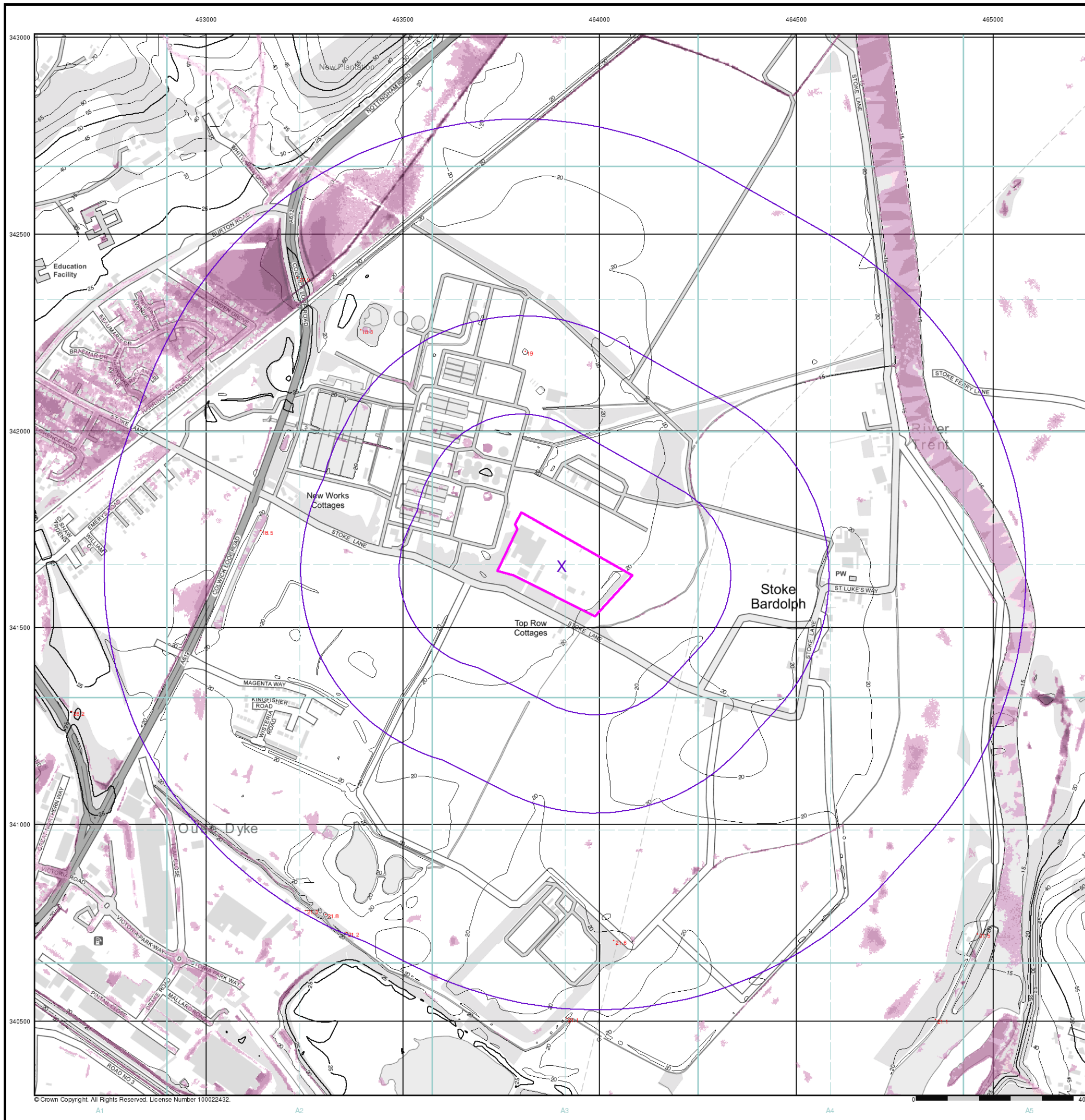


### Order Details

Order Number: 321440174\_1\_1  
 Customer Ref: C050  
 National Grid Reference: 463900, 341660  
 Slice: A  
 Site Area (Ha): 4.3  
 Search Buffer (m): 1000

### Site Details

Site at 463880, 341670



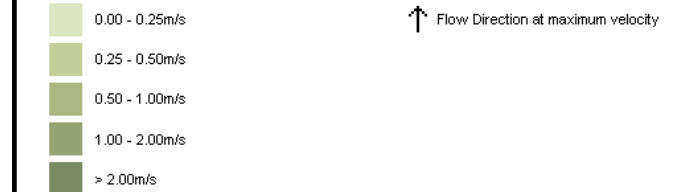
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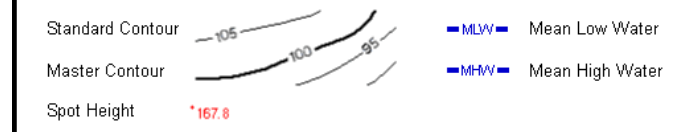
## EANRW Surface Water 30 Year Return Velocity and Flow Direction Map (1:10,000)

**General**  
 Specified Site (Pink outline) Specified Buffer(s) (Purple circles) Bearing Reference Point (X)

### Surface Water Velocity and Direction



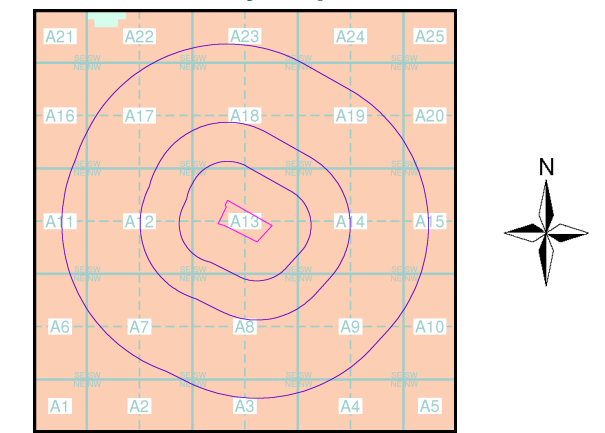
### Contours (height in metres)



### Suitability

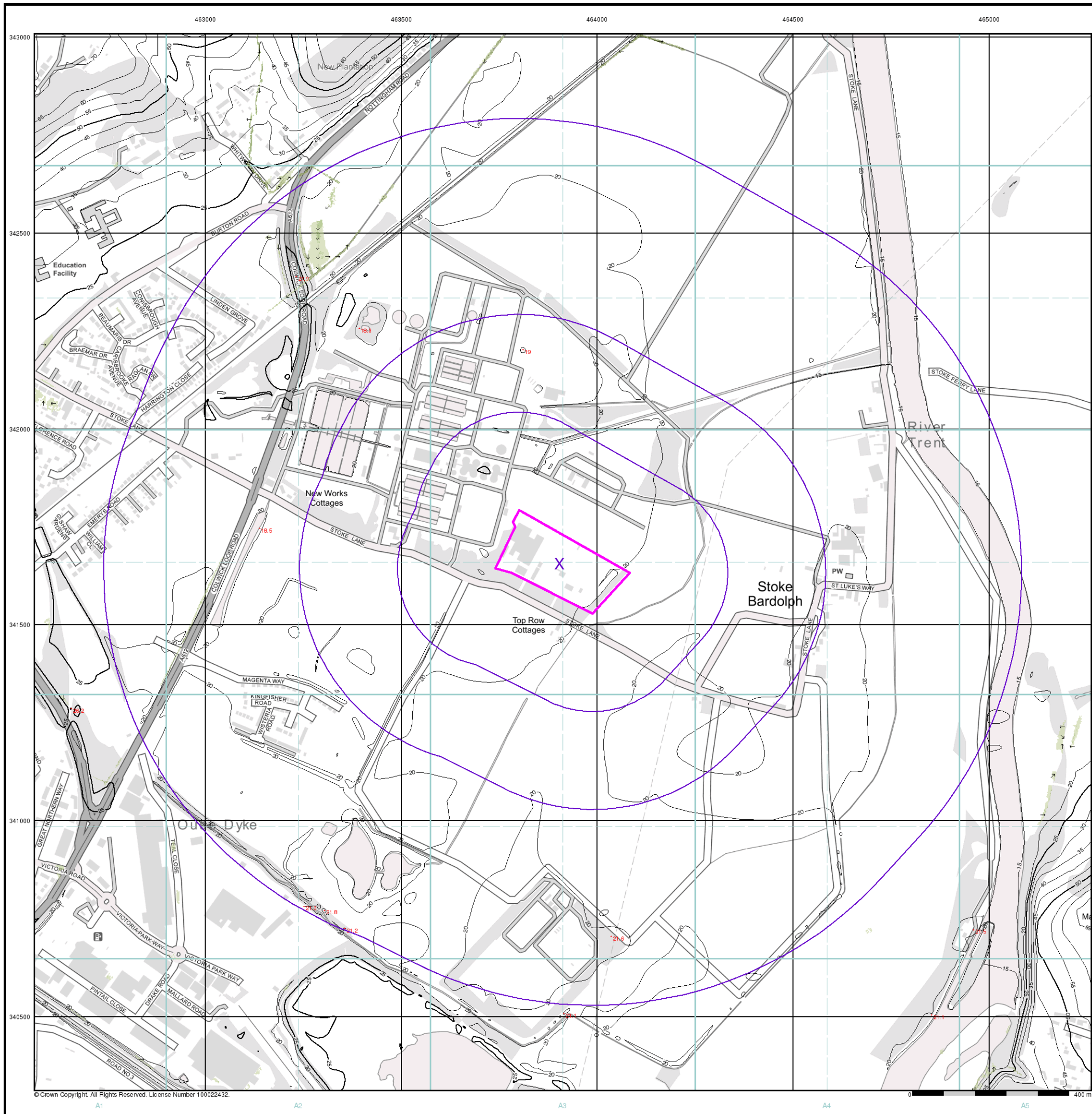


### EANRW Suitability Map - Slice A



**Order Details**  
 Order Number: 321440174\_1\_1  
 Customer Ref: C050  
 National Grid Reference: 463900, 341660  
 Slice: A  
 Site Area (Ha): 4.3  
 Search Buffer (m): 1000

**Site Details**  
 Site at 463880, 341670



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## EANRW Surface Water 100 Year Return Velocity and Flow Direction Map (1:10,000)

**General**

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

**Surface Water Velocity and Direction**

- 0.00 - 0.25m/s
- 0.25 - 0.50m/s
- 0.50 - 1.00m/s
- 1.00 - 2.00m/s
- > 2.00m/s
- Flow Direction at maximum velocity

**Contours (height in metres)**

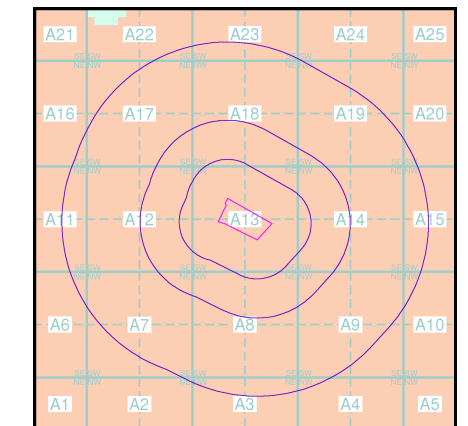
- Standard Contour
- Master Contour
- Spot Height: \*167.8
- MLW - Mean Low Water
- MHW - Mean High Water

**Suitability**

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

### EANRW Suitability Map - Slice A

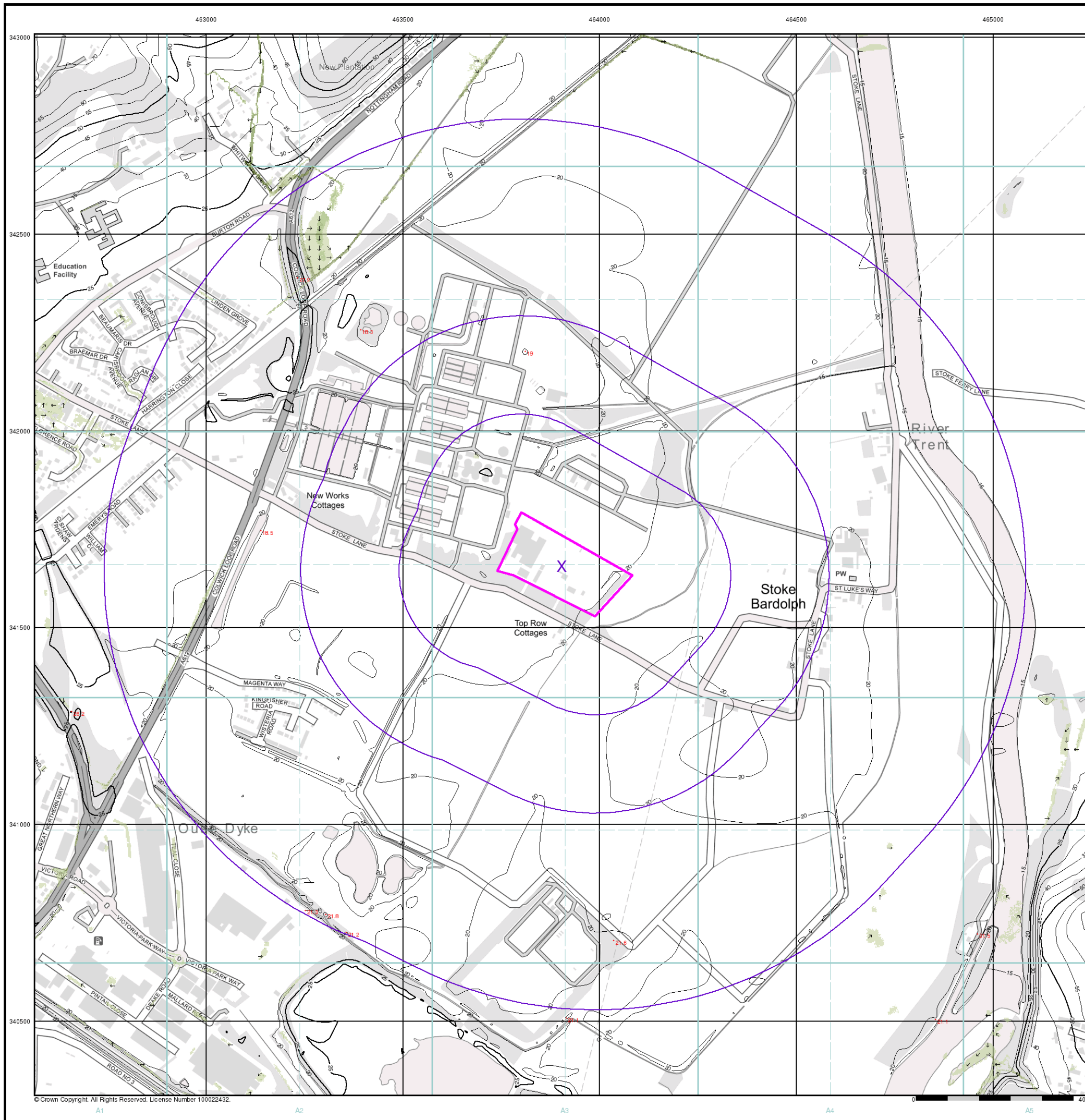


### Order Details

Order Number: 321440174\_1\_1  
 Customer Ref: C050  
 National Grid Reference: 463900, 341660  
 Slice: A  
 Site Area (Ha): 4.3  
 Search Buffer (m): 1000

### Site Details

Site at 463880, 341670



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## E/ANRW Surface Water 1000 Year Return Velocity and Flow Direction Map (1:10,000)

**General**  
 Specified Site (Pink outline) Specified Buffer(s) (Purple circles) Bearing Reference Point (X)

**Surface Water Velocity and Direction**

0.00 - 0.25m/s	Flow Direction at maximum velocity (Arrow)
0.25 - 0.50m/s	
0.50 - 1.00m/s	
1.00 - 2.00m/s	
> 2.00m/s	

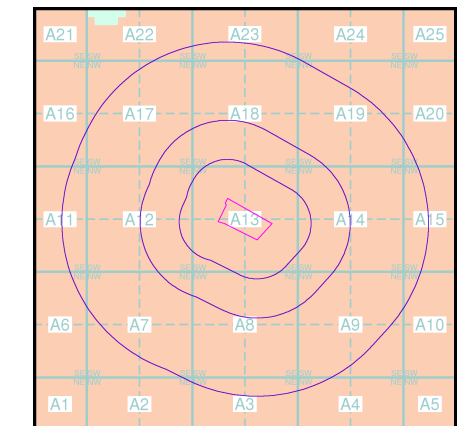
**Contours (height in metres)**

Standard Contour (105, 100, 95) — MLW — Mean Low Water  
 Master Contour — MHW — Mean High Water  
 Spot Height \*167.8

**Suitability**  
 See the suitability map below

National to county	Street to parcels of land
County to town	Property
Town to street	

### E/ANRW Suitability Map - Slice A

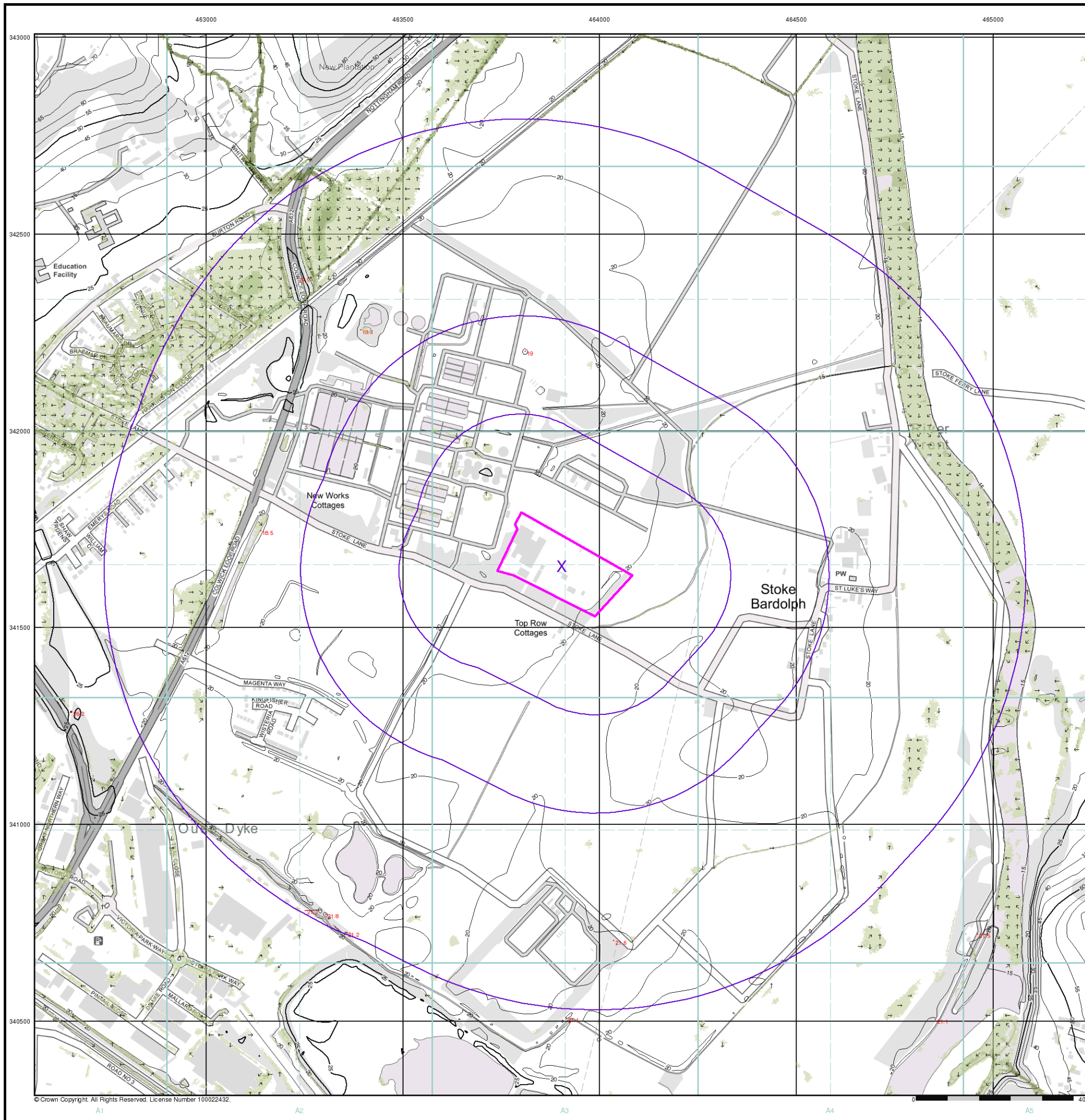


### Order Details

Order Number: 321440174\_1\_1  
 Customer Ref: C050  
 National Grid Reference: 463900, 341660  
 Slice: A  
 Site Area (Ha): 4.3  
 Search Buffer (m): 1000

### Site Details

Site at 463880, 341670



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## EANRW Surface Water 30 Year Return Hazard Rating Map (1:10,000)

**General**  
 Specified Site (pink outline) Specified Buffer(s) (purple circles) Bearing Reference Point (X)

### Surface Water Hazard Rating

- Low (0.5 – 0.75)
- Moderate (0.75 – 1.25)
- Significant (1.25 – 2.0)
- Extreme (>2.0)

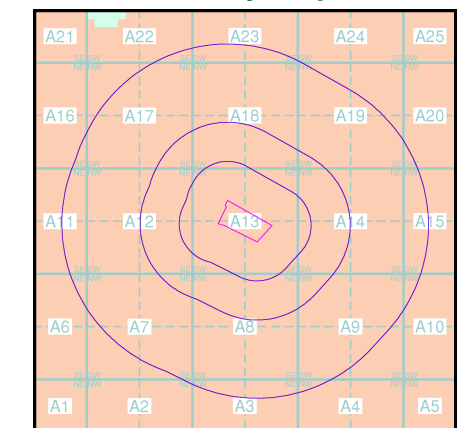
### Contours (height in metres)

- Standard Contour (105, 100, 95)
- Master Contour
- Spot Height (\*167.8)
- MLW Mean Low Water
- MHW Mean High Water

### Suitability

- See the suitability map below
- National to county
  - County to town
  - Town to street
  - Street to parcels of land
  - Property

### EANRW Suitability Map - Slice A

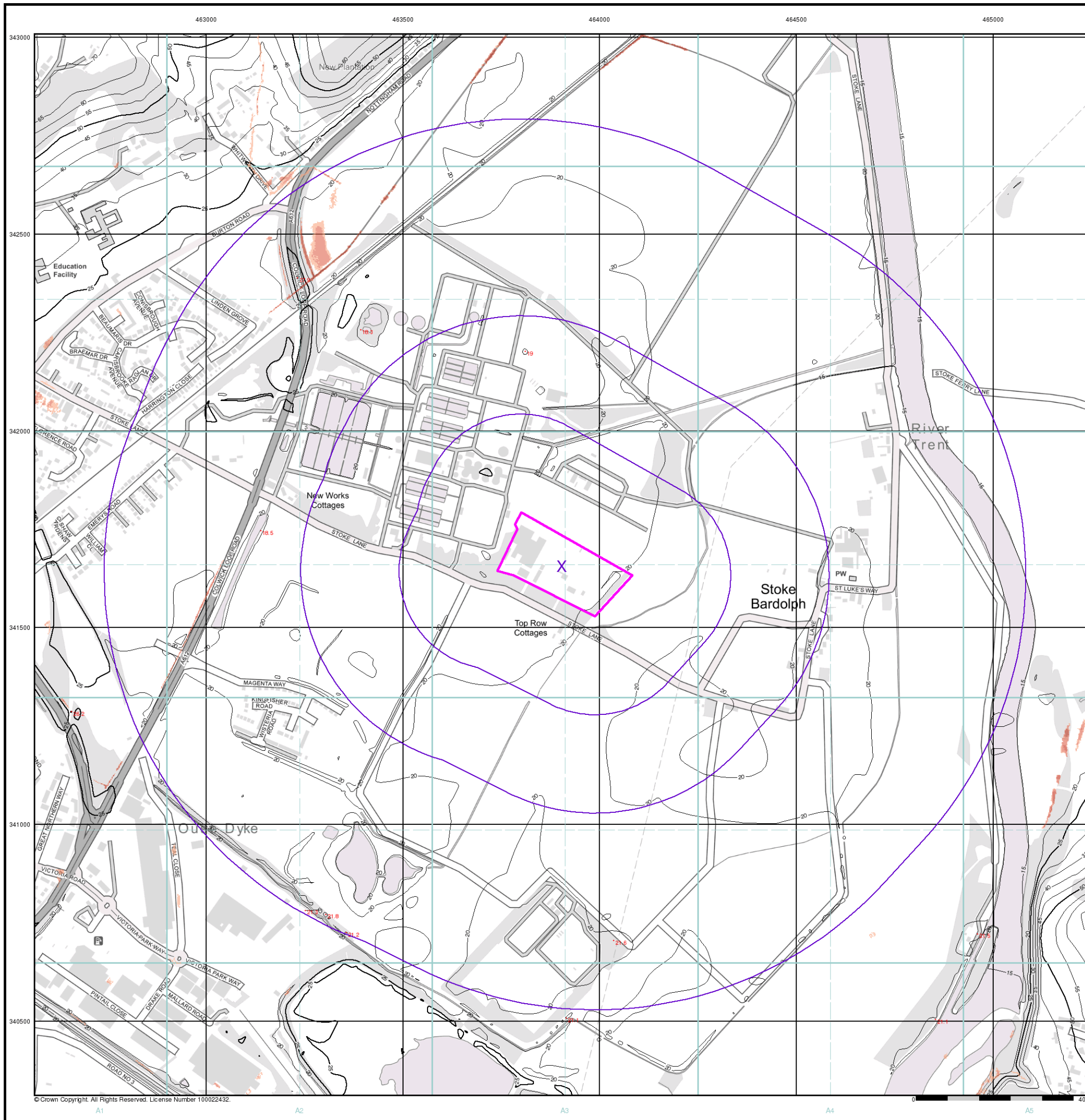


### Order Details

Order Number: 321440174\_1\_1  
 Customer Ref: C050  
 National Grid Reference: 463900, 341660  
 Slice: A  
 Site Area (Ha): 4.3  
 Search Buffer (m): 1000

### Site Details

Site at 463880, 341670



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## E/ANRW Surface Water 100 Year Return Hazard Rating Map (1:10,000)

**General**  
 Specified Site (pink outline) Specified Buffer(s) (purple circles) Bearing Reference Point (X)

### Surface Water Hazard Rating

- Low (0.5 – 0.75)
- Moderate (0.75 – 1.25)
- Significant (1.25 – 2.0)
- Extreme (>2.0)

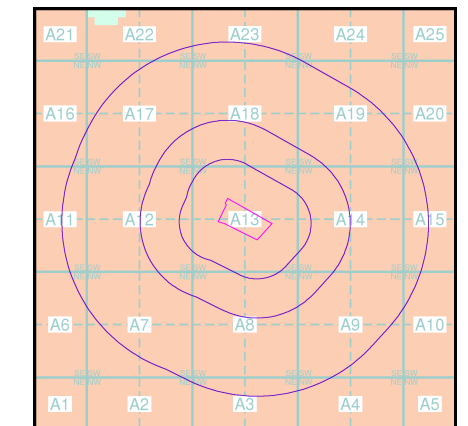
### Contours (height in metres)

- Standard Contour (105, 100, 95)
- Master Contour
- Spot Height (\*167.8)
- MLW Mean Low Water
- MHW Mean High Water

### Suitability

- See the suitability map below
- National to county
  - County to town
  - Town to street
  - Street to parcels of land
  - Property

### E/ANRW Suitability Map - Slice A

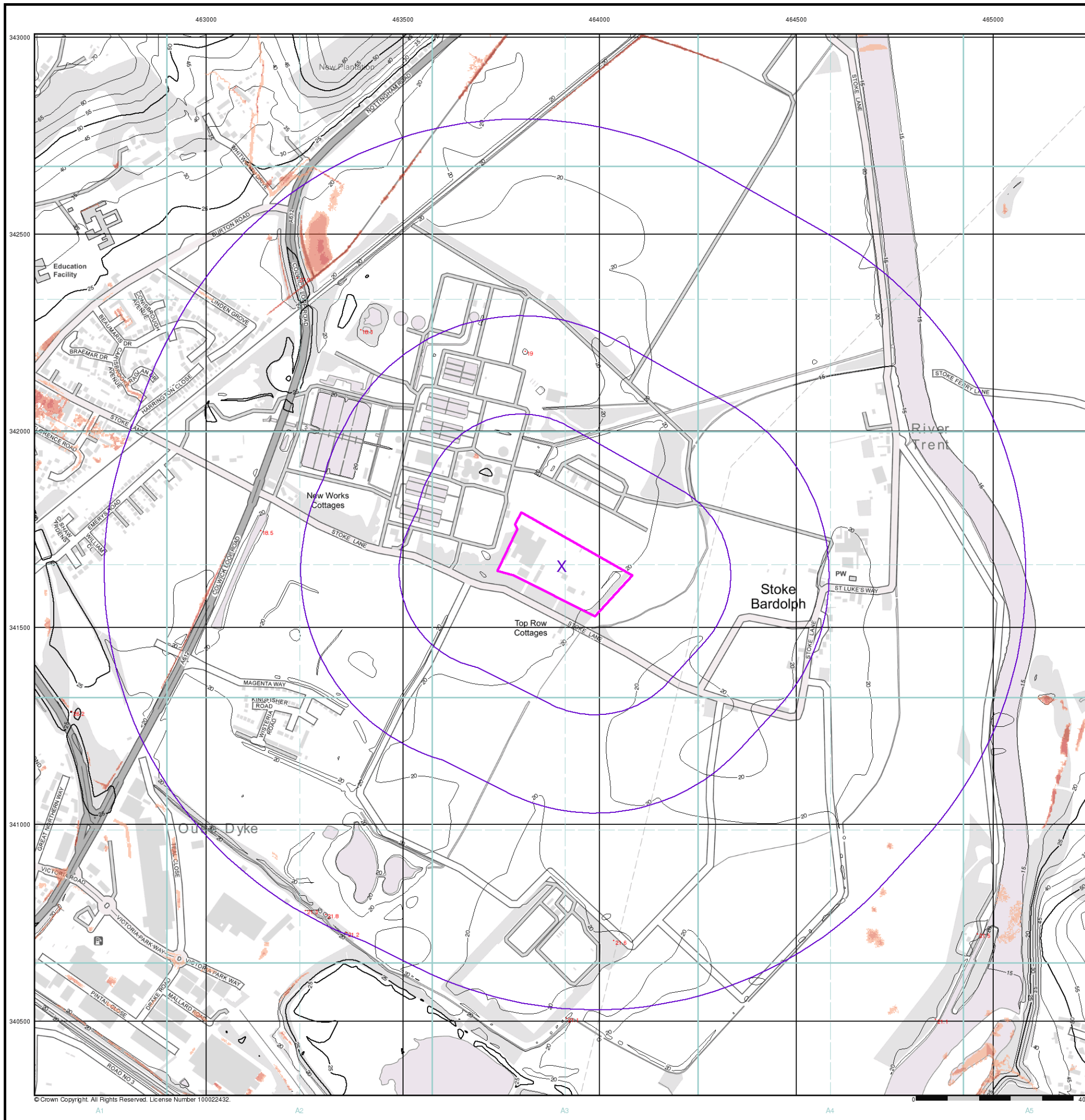


### Order Details

Order Number: 321440174\_1\_1  
 Customer Ref: C050  
 National Grid Reference: 463900, 341660  
 Slice: A  
 Site Area (Ha): 4.3  
 Search Buffer (m): 1000

### Site Details

Site at 463880, 341670



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## EANRW Surface Water 1000 Year Return Hazard Rating Map (1:10,000)

**General**  
 Specified Site (Pink outline) Specified Buffer(s) (Purple circles) Bearing Reference Point (X)

### Surface Water Hazard Rating

- Low (0.5 – 0.75)
- Moderate (0.75 – 1.25)
- Significant (1.25 – 2.0)
- Extreme (>2.0)

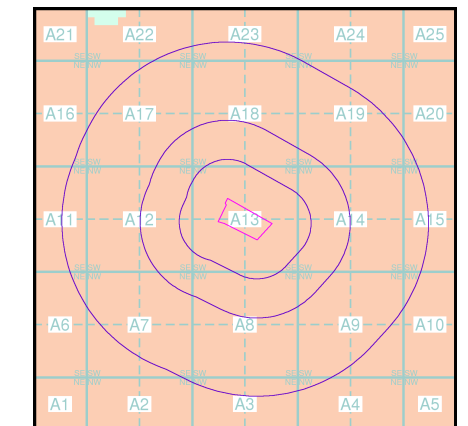
### Contours (height in metres)

- Standard Contour (105, 100, 95)
- Master Contour
- Spot Height (\*167.8)
- MLW (Mean Low Water)
- MHW (Mean High Water)

### Suitability

- See the suitability map below
- National to county (Light Green)
  - County to town (Orange)
  - Town to street (Blue)
  - Street to parcels of land (Pink)
  - Property (Yellow)

### EANRW Suitability Map - Slice A

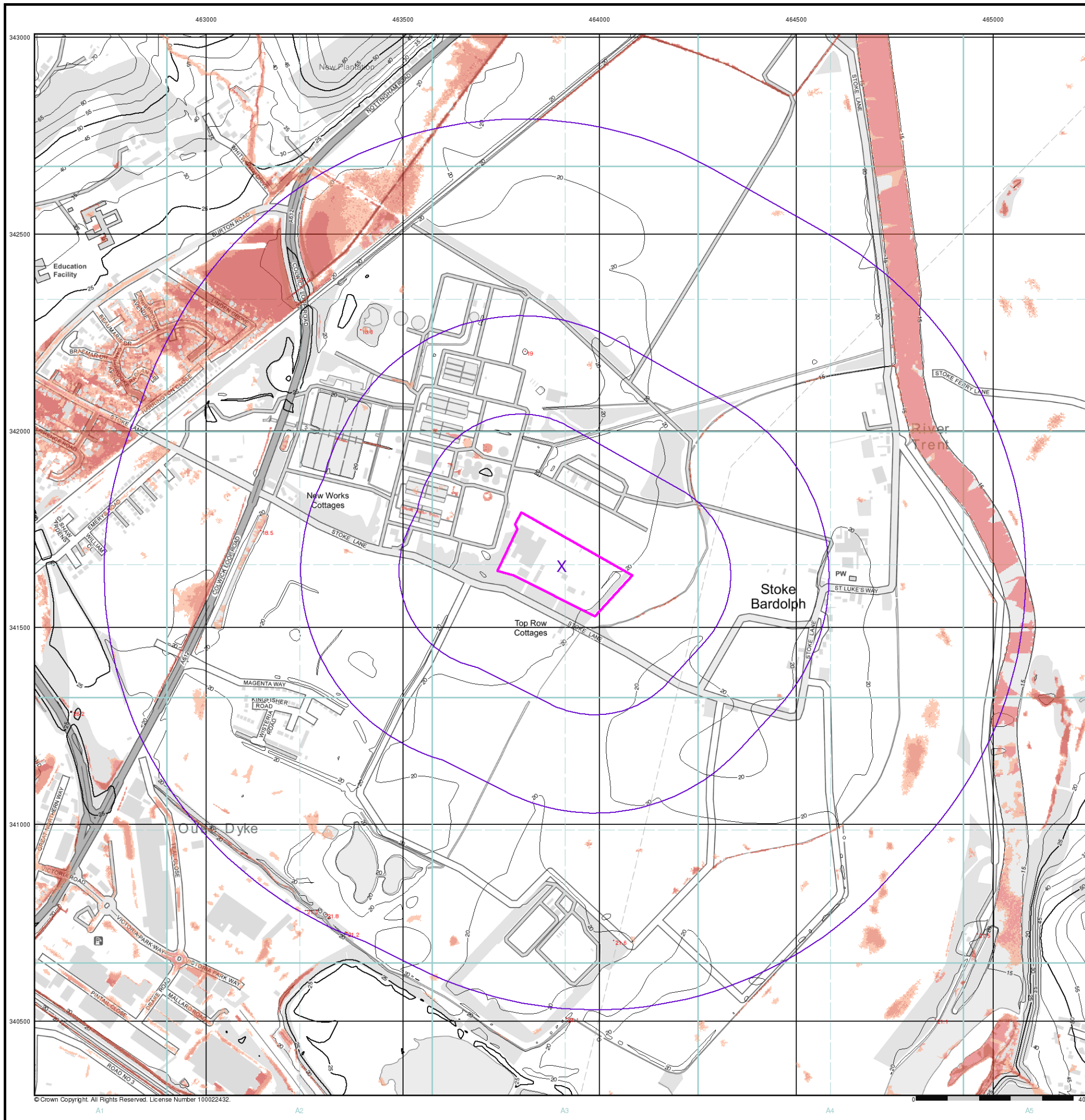


### Order Details

Order Number: 321440174\_1\_1  
 Customer Ref: C050  
 National Grid Reference: 463900, 341660  
 Slice: A  
 Site Area (Ha): 4.3  
 Search Buffer (m): 1000

### Site Details

Site at 463880, 341670



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## OS Water Network Lines Map (1:10,000)

### General

- Specified Site
- Specified Buffer(s)
- ✕ Bearing Reference Point

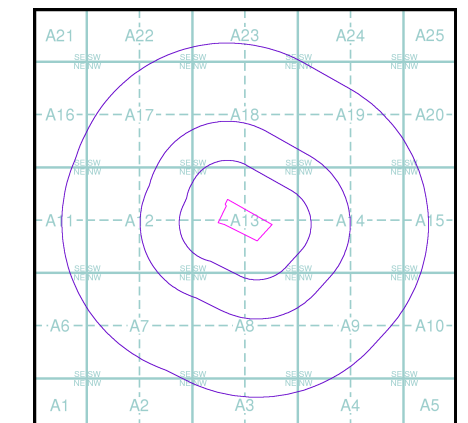
### OS Water Network Data

- |                |                           |
|----------------|---------------------------|
| — Canal        | — Drain                   |
| — Reservoir    | — Other                   |
| — Foreshore    | — Lake                    |
| — Marsh        | — Transfer                |
| — Tidal River  | — Lock Or Flight Of Locks |
| — Inland River | — Sea                     |
| ● Junction     | ● Source                  |
| ● Outlet       | ● Other                   |
| ● Pseudo       |                           |

### Contours (height in meters)

- Standard Contour 105
- Master Contour 100
- Spot Height 167.3
- MLW — Mean Low Water
- MHW — Mean High Water

### OS Water Network Map - Slice A

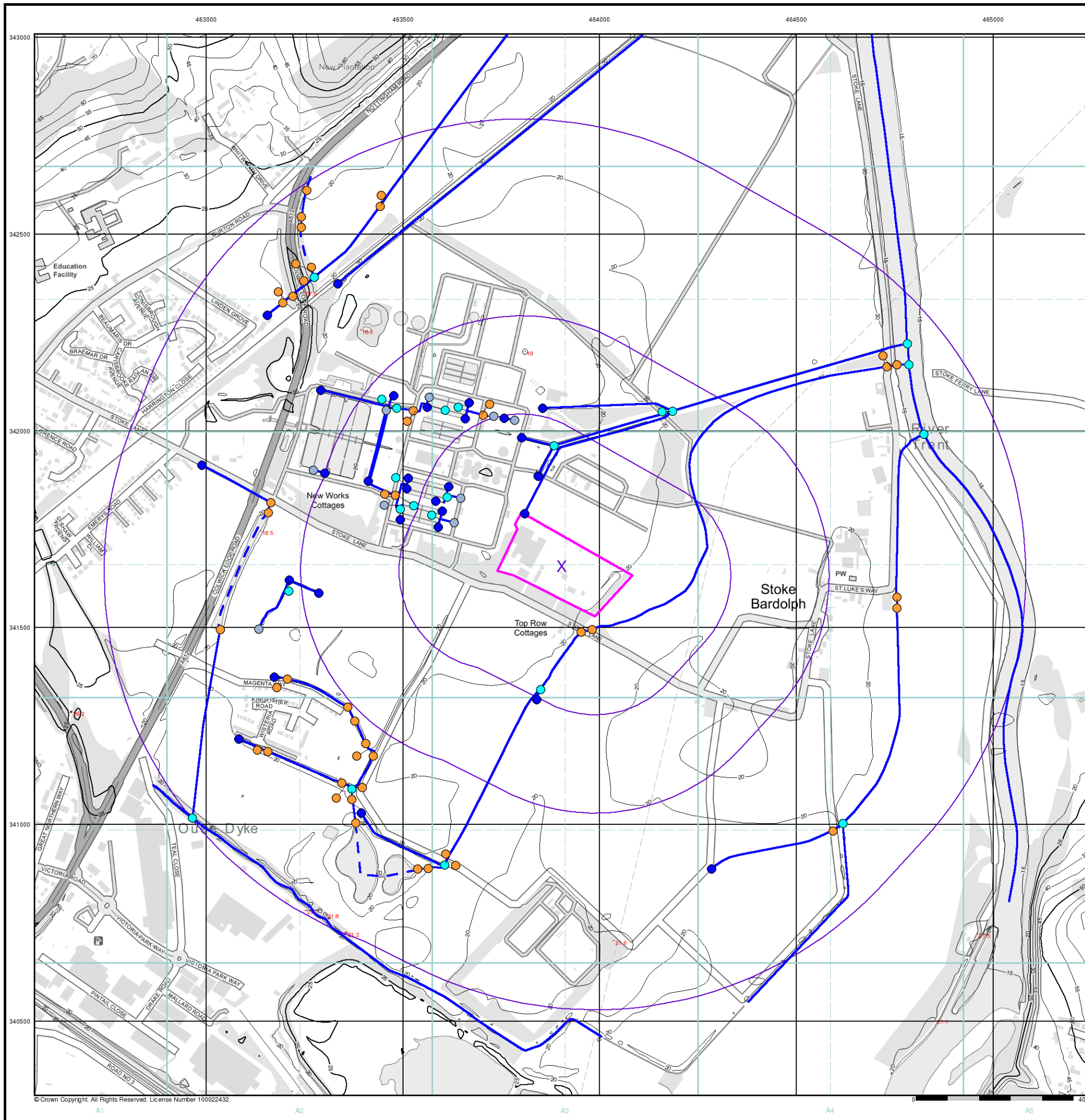


### Order Details

Order Number: 321440174\_1\_1  
 Customer Ref: C050  
 National Grid Reference: 463900, 341660  
 Slice: A  
 Site Area (Ha): 4.3  
 Search Buffer (m): 1000

### Site Details

Site at 463880, 341670



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## EANRW Historic Flood Map (1:10,000)

### General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID

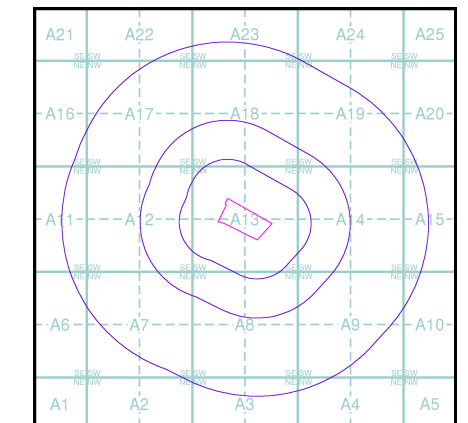
### Historic Flood Events Data

- |  |                                       |
|--|---------------------------------------|
| Channel Capacity Exceeded (no raised defences) | Obstruction/Blockage - Culvert        |
| Channel Capacity Exceeded /Surface Water       | Obstruction/Blockage - Debris Screen  |
| Groundwater/High Water Table                   | Operational Failure/Breach of Defence |
| Local Drainage/Surface Water                   | Other                                 |
| Mechanical Failure                             | Overtopping of Defences               |
| Obstruction/Blockage - Bridge                  | Surface Water                         |
| Obstruction/Blockage - Channel                 | Unknown                               |
| Historical Flood Liabilities                   |                                       |

### Contours (height in metres)

- Standard Contour 105 Mean Low Water
- Master Contour 100 Mean High Water
- Spot Height 167.8

### EANRW Historic Flood Map - Slice A

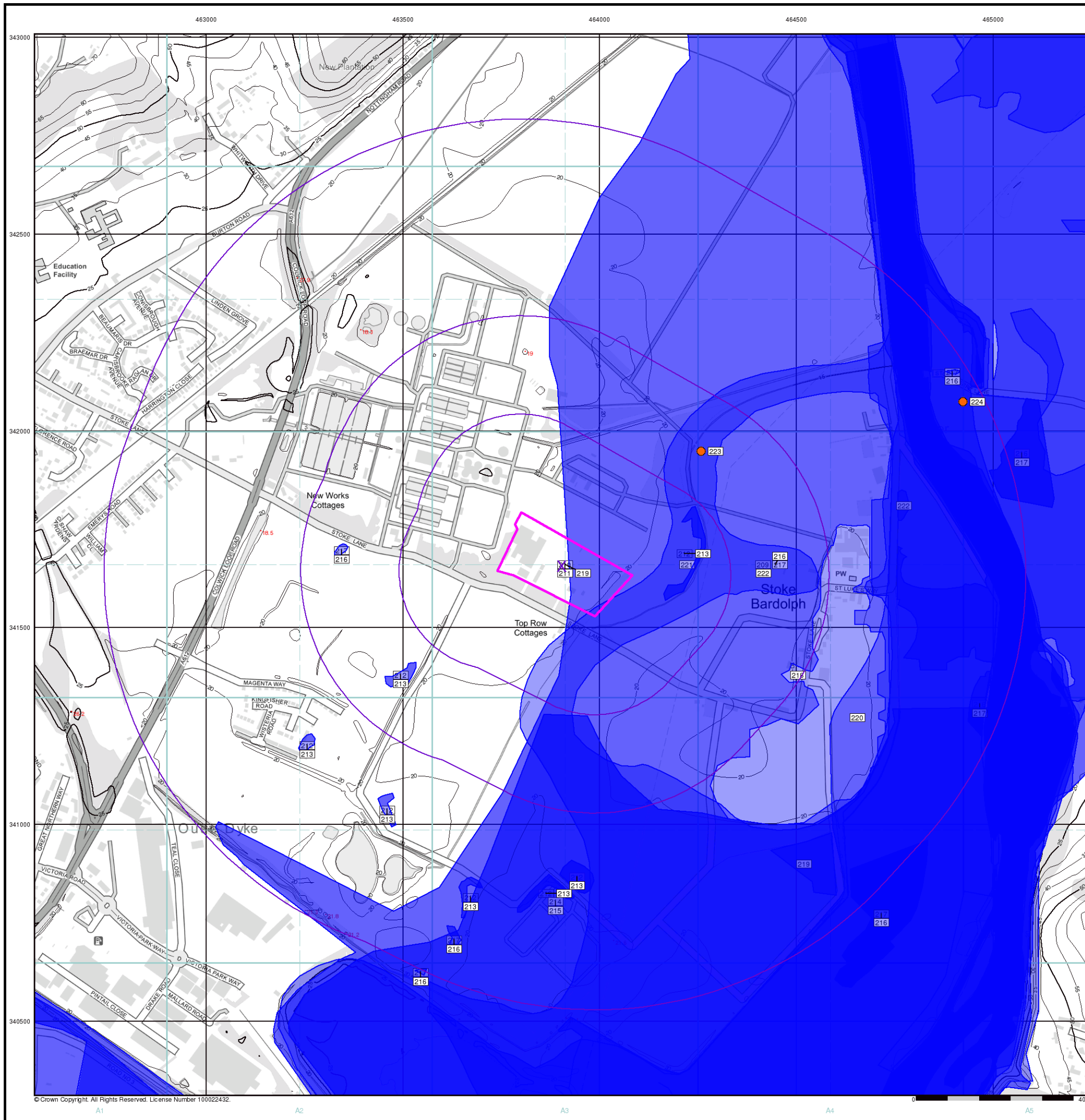


### Order Details

Order Number: 321440174\_1\_1  
 Customer Ref: C050  
 National Grid Reference: 463900, 341660  
 Slice: A  
 Site Area (Ha): 4.3  
 Search Buffer (m): 1000

### Site Details

Site at 463880, 341670



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## **APPENDIX 5**

**ADMS**

**Attached**

**Seperately**