Flood Risk Assessment
In support of Residential Development at

Badsell Park Farm Oast,
Crittenden Road,
Matfield,
Tonbridge
Kent,
TN12 7EW

Jamie Finch FCIHT, FIHE
February 2024
Revision [C]
Job No. 5828

Contents

Amendments

Revision	Date	Description
0	November 2022	Planning Issue
A	12th January 2023	Minor text amendments following client review
B	5th January 2024	Updates to Flood Resilience Measures and Resubmission for Planning.
C	2nd February 2024	Minor text amendments following client review.

References

Reference	Title
A	CIRIA Publication 753 –The SUDS Manual (2015)
B	Sewers for Adoption 7th Edition (Wrc 2012)
C	Part H of the Building Regulations (2015)
D	Planning Practice Guidance (2016
E	Tunbridge Wells County Council –Level 1 SFRA Document
F	The Code of practice for property flood resilience C790(A, B, C and D)
G	RSPD Evacuation Plan –Badsell Park Farm Oast
H	Structural Inspection Report –(BdR 2023)

Introduction

This Flood Risk Assessment has been developed in support of a planning application for the conversion of an existing farm building into a dwelling, located at Badsell Park Farm Oast, Crittenden Road, Matfield, Tonbridge, Kent TN12 7EW. This document aims to identify any flood risk areas, offering suggested mitigation where appropriate. A Location Plan and layout of the proposed scheme can be found in the appendices of this document.

Due to sections of the development site being within Flood Zones 1, 2 & 3, the site is subject to a formal Flood Risk Assessment (FRA), which is to be submitted and approved by the Local Planning Authority in consultation with the Statutory Consultees.

Development Description and Location

The development proposal is for the conversion of an existing farm building to a dwelling, with associated infrastructure. The proposed development works are located at Badsell Park Farm Oast, which is off of Crittenden Road, Matfield, which is in the district of Tunbridge Wells.

The location of the proposed site is at grid reference 565040, 143300 as shown in the location plans in the appendices.

Development Classification

The flood risk vulnerability classification for this type of development in this location is considered as More Vulnerable which is defined in Table 2 of the Technical Guidance to the National Planning Policy Framework, due to the nature of the development being a Residential Dwelling.

Sequential Test

As set out in the National Planning Policy Framework, the aim of the Sequential Test is to direct new development to areas with the lowest probability of flooding. The starting point to the Sequential Test is the Flood Zones, which can be seen in the appendices. The map key clearly shows Zone 2, and 3 whereas Zone 1 is the remainder of the land not hatched.

These flood zones refer to the probability of river and coastal flooding, ignoring the presence of any existing flood defences.

The Strategic Flood Risk Assessments and Surface Water Management Plans for Tunbridge Wells Borough Council, refines the information on the probability of flooding and also takes into account other sources of flooding which have been assessed in more detail further into this flood risk assessment.

The proposed development is situated within Zones 1, 2 & 3 and are classified as More Vulnerable in accordance with Table 2 of the Technical Guidance to the National Planning Policy Framework.

However, as this is a change of use from a farm building to a residential dwelling, the sequential test does not apply in this situation.

Following an assessment of Table 3, of the Technical Guidance to the National Planning Policy Framework, it states that development in this situation would be subject to an Exception test prior to any planning permission being granted.

Table 3: Flood risk vulnerability and flood zone 'compatibility'

Flood risk vulnerability classification (see table 2)		Essential infrastructure	Water compatible	Highly vulnerable	More vulnerable	Less vulnerable
Flood zone (see table 1)	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception Test required	✓	✓
	Zone 3a	Exception Test required	✓	×	Exception Test required	✓
	Zone 3b functional floodplain	Exception Test required	✓	×	×	×

Key: ✓ Development is appropriate.
× Development should not be permitted.

If the application of the Sequential Test is not possible to comply with, a site-specific flood risk assessment must demonstrate that the development will be safe for its lifetime taking account of

the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

Definition of the Flood Hazard

For the preparation of this Flood Risk Assessment, it is necessary to consider all of the potential sources of flooding and how this may affect the site. A checklist has been provided below to help identify these areas which can be discussed in greater detail in this section.

Possible Source of Flooding	Applicable to this Site?
Fluvial Flooding from nearby rivers or streams	P
Coastal Flooding	Θ
Surface Water Runoff from the Site, Adjacent or Nearby Land	P
Flooding from Surface Water Sewers	Θ
Flooding from Foul Water Sewers	Θ
Flooding from Reservoirs	Θ
Flooding from Groundwater	P
Flooding from other Sources	Θ

Flood mapping confirms there is a flood risk to the proposed site from fluvial flooding, from a watercourse that runs along the eastern boundary to the site, which has been identified as the Tudely Brook. The extent of this is shown in the Flood Maps for Planning and also the Product 4 data that was provided by the Environment Agency.

There is no coastal flood risk to the development, as the site is nowhere near the coastline, tidal waterway and is too high in elevation to be at risk.

There is a surface water flood risk shown on the long term flood risk maps, which largely mimic the fluvial flood risk maps. The surface water flood risk maps actually show a medium risk of flooding, rather than a high risk as indicated in the flood maps for planning.

Public sewer asset plans have been obtained which confirm there are no public sewers in the vicinity of the proposed building.

When checking the flood maps for planning in relation to reservoir flooding, the flood maps confirm there is no risk of reservoir flooding to the site.

Local geotechnical mapping has been checked, which confirms the site is underlain by the Wadhurst Clay Formation. However, there is also an abundance of Alluvium overlaying the Wadhurst Clay, which allows a faster flow of groundwater when the water in nearby watercourses rise.

There are no other sources on or off-site that are thought to be a flood risk at this site.

Probability

The proposed development is situated within Flood Zones 1, 2 & 3 which can be seen in the Flood Map for Planning, contained in the appendices

The District Council for this area have prepared a Strategic Flood Risk Assessment which refines the information provided by the Environment Agency and gives an overview of the flood risk in the district.

Based on the information provided in both the Flood Maps for Planning and the Strategic Flood Risk Assessment, the probability of a flood event may be taken as Zone 3 - Land which has a 1% or greater annual probability of river flooding or a 0.5% or greater annual probability of sea flooding.

Climate Change

More recent guidelines have been published by the Environment Agency for new flood risk assessments, which suggests regional climate changes and appropriate freeboard levels for new residential properties.

Development Proposals

The development proposal consists of the conversion of an existing farm building into a dwelling, located at Badsell Park Farm Oast, Crittenden Road, Matfield, Tonbridge, Kent TN12 7EW. The Development Proposals may be seen in the appendices.

As this is the conversion of an existing building, there are limitations of what can be achieved with floor levels, however it is recognised freeboard levels for sleeping accommodation must be adhered to.

The average ground level surrounding the existing building is currently 34.42mAOD, which could be reduced as part of the development proposals to be 0.15m below the current slab level of 34.41mAOD. This slab level is proposed to remain for the final ground floor level in the proposals.

The product 4 data confirms there is no flooding for the 5% AEP event, however, in the 1% AEP + 35% CC, the flood level is estimated at 35.25mAOD, which is 0.84m above the ground floor levels. However, the first floor would be able to be set at 37.11mAOD, which is 1.86m above the 1% AEP + 35% Climate Change. This will enable the sleeping accommodation to be set safely above the predicted flood levels.

In order to deliver the above, this has been considered in conjunction with a Structural Engineers report by BdR (2023), whereby a reinforced concrete flood protection wall can be incorporated sympathetically into the fabric of the building, which would work with the ability to install demountable flood barriers (Nautilus 400) to any door openings.

The Structural Engineers report said the following:

The existing building lies within Flood Zone 3 with a flood level of 35.25m AOD for the 1% AEP with a 35% allowance for climate change. At present the existing slab level is 34.41m and therefore the property is at risk of flooding. To prevent this from occurring, the new floor slab could incorporate an integral external wall, all constructed in waterproof reinforced concrete which would form part of the external cladding of the property (see sketches 23/0532/SK01 and SK02). Demountable Environment Agency approved flood resilient

doors and gates can be accommodated for the doors and larger openings, these would be attached to the slab/walls.

Horizontal water pressure would therefore be transferred to the walls and slab, which are designed to withstand the flood loading pressure for a height of 35.25m and not to the existing concrete frames, which would be independent of any flood loadings.

The layout of the property would ensure that sleeping accommodation was at a raised level of at least 35.85m. All services into and out of the property would need to be flood resistant and suitably sealed.

Due to the slope of the ground, which continues to fall away to the north of the site, any probability flooding will be of a short-term occurrence and the proposed design would ensure that the property does not suffer from flood damage.

This should be read in conjunction with the RSPD Flood Resilience Plans and the BdR sketch showing the proposed cross-section of the wall.

Flood Risk Management Measures

In order to effectively manage any site-specific flood risk, it may be necessary to introduce mitigation measures to help eliminate or reduce the impact of potential flooding. Various methods and systems are available to protect any new buildings from flooding.

The residents of the new development must sign up to flood warning notifications from the Environment Agency to stay up to date about flooding in the local area. This will allow residents to follow the prescribed flood evacuation route which can be reviewed within the appendices of the Flood Evacuation Report.

It has been proposed that the ground levels surrounding the building should be lowered to 150mm below the internal finished floor level, to help manage surface water more effectively.

The new proposals for the building will comprise a flood resilient reinforced concrete floor slab with a reinforced concrete upstand, which will form part of the overall flood resilience of the building. This would be integrated into the external wall and cladding as noted in the structural engineers report.

For any door and window apertures of the building, a Property Flood Resilience (PFR) demountable flood resilience system has been selected, which is the Nautilus 400 flood barrier. This system can be easily erected and dismantled by most people and is easily stored away while not in use. The brochure for the system states that the Nautilus 400 exceeds the requirements of the BSI British Standard PAS 1188-2009 on allowable leakage rates for demountable flood defence systems. Details of the Nautilus 400 system is contained in the appendices. It is also understood that this system is also used by the Environment Agency to deliver property level protection schemes.

The electrical circuitry for the building should also be installed at a minimum of 1200mm above the ground floor slab level to ensure adequate freeboard above the design flood can be achieved.

Full port non-return valves to may be installed in any new ground floor toilets to prevent back flow into the property.

Property owner should consider installing external flood resilience doors in addition to the portable door barriers.

A private flood warning alarm system should also be installed at the east of the building by the Tudley Brook Watercouse. This will warn residents of the rising water level at the earliest opportunity, allowing ample time for the property owners to evacuate the property.

This type of system can provide the occupants of the building a more accurate warning of the rising flood water, providing telephone, text and emailed warnings to multiple devices, which could also benefit neighbours of the existing dwellings in the lane.

An evacuation route plan has been provided in the appendices for the Planning Authorities consideration, as the approval of evacuation routing falls under their remit.

An example of this type of private flood warning system is a product called, the CatsEye II Pixel produced by UDlive. Once installed the sensor will continuously monitor water levels with millimetre accuracy, providing advanced warning of any rise in water level or potential overflow event.

A product data sheet for the CatsEye II Pixel has been included within the appendices of this document however, other similar approved systems may also be used.

Off-Site Impacts

There are no foreseen adverse residual impacts to neighbouring properties or the surrounding area in relation to flood risk as a result of the proposed development scheme.

Conclusion

Roads & Sewers for Planning & Design Ltd (RSPD) have been requested to provide a Flood Risk Assessment and Drainage Strategy in support of a planning application for the conversion of an existing farm building into a dwelling, located at Badsell Park Farm Oast, Crittenden Road, Matfield, Tonbridge, Kent TN12 7EW. This document aims to identify any flood risk areas, offering suggested mitigation where appropriate. A Location Plan and layout of the proposed scheme can be found in the appendices of this document.

Due to the development being in Flood Zones 1, 2 and 3, the site is subject to a formal Flood Risk Assessment (FRA), which is to be submitted and approved by the Local Planning Authority in consultation with the Statutory Consultees.

The flood risk vulnerability classification for this type of development in this location is considered as More Vulnerable which is defined in Table 2 of the Technical Guidance to the National Planning Policy Framework.

Based on the information provided in both the Flood Maps for Planning and the Strategic Flood Risk Assessment, the probability of a flood event may be taken as Zone 3 - Land which has a 1% or greater annual probability of river flooding or a 0.5% or greater annual probability of sea flooding.

The average ground level surrounding the existing building is currently 34.42mAOD, which could be reduced as part of the development proposals to be 0.15m below the current slab level of 34.41mAOD. This slab level is proposed to remain for the final ground floor level in the proposals.

The product 4 data confirms there is no flooding for the 5% AEP event, however, in the 1% AEP + 35% CC, the flood level is estimated at 35.25mAOD, which is 0.84m above the ground floor levels. However, the first floor would be able to be set at 37.11mAOD, which is 1.86m above the 1% AEP + 35% Climate Change. This will enable the sleeping accommodation to be set safely above the predicted flood levels, which was welcomed by the Environment Agency through a pre-application process.

However, whilst it is noted that the Environment Agency has commented that ideally the finished floor level of the entire ground floor should be raised to 600mm above the 1% AEP 35% CC flood event, this would compromise the plans of placing sleeping accommodation at first floor level (as proposed) as it would reduce the amount of available headroom between ground floor and first floor. It would also mean that sufficient daylight and outlook could not be achieved to the living areas with the current design. If the design was amended to reflect the suggestion of the whole ground floor being raised to this level, this would result in a design that does not reflect the rural character of the building, and would therefore be contrary to Policy H13 of the TWBLP.

In order to deliver the scheme in line with the recommendations of the flood risk assessment, this has been considered in conjunction with a Structural Engineers report by BdR (2023), whereby a reinforced concrete flood protection wall can be incorporated sympathetically into the fabric of the building, which would work with the ability to install demountable flood barriers (Nautilus 400) to any door or window apertures. This will enable the scheme to be delivered in line with the

The Nautilus 400 system, discussed earlier in this document, exceeds the requirements of the BSI British Standard PAS 1188-2009 on allowable leakage rates for demountable flood defence systems. Details of the Nautilus 400 system is contained in the appendices.

There are a number of flood mitigation measure suggested within this report, however, specific attention should be given to the opportunity to introduce a private flood warning alarm system.

This will warn residents of the rising water level at the earliest opportunity, allowing ample time for the property owners to evacuate the property.

Architectural finishes should also follow specific recommendations for elements like Plastering and floor screeds, as recommended in CIRIA C790B.

This type of system can provide the occupants of the building a more accurate warning of the rising flood water, providing telephone, text and emailed warnings to multiple devices, which could also benefit neighbours of the existing dwellings in the lane.

Further details of evacuating via the existing lane are contained in the accompanying Flood Evacuation Report. However, it should be noted that the lane up to the barn is fully tarmacked and there is also a proper area of hardstanding where vehicles of all sizes can turn. Further, where the track switches from tarmac, it is laid with a proper stone covering over a layer of sub-base (completed c 2019). The access track is used regularly by a range of agricultural vehicles and over time has been used by full sized (non articulated) HGVs, in particular in relation to the conversion of the disused farm/industrial buildings at the far end of the track into a residential dwelling (c 2018), the re-laying of the track at the same time and also the building of the tennis court in 2012. This demonstrates that the existing access has a well established and safe means of evacuation, should the need arise.

There are no foreseen adverse residual impacts to neighbouring properties or the surrounding area in relation to flood risk as a result of the proposed development scheme.

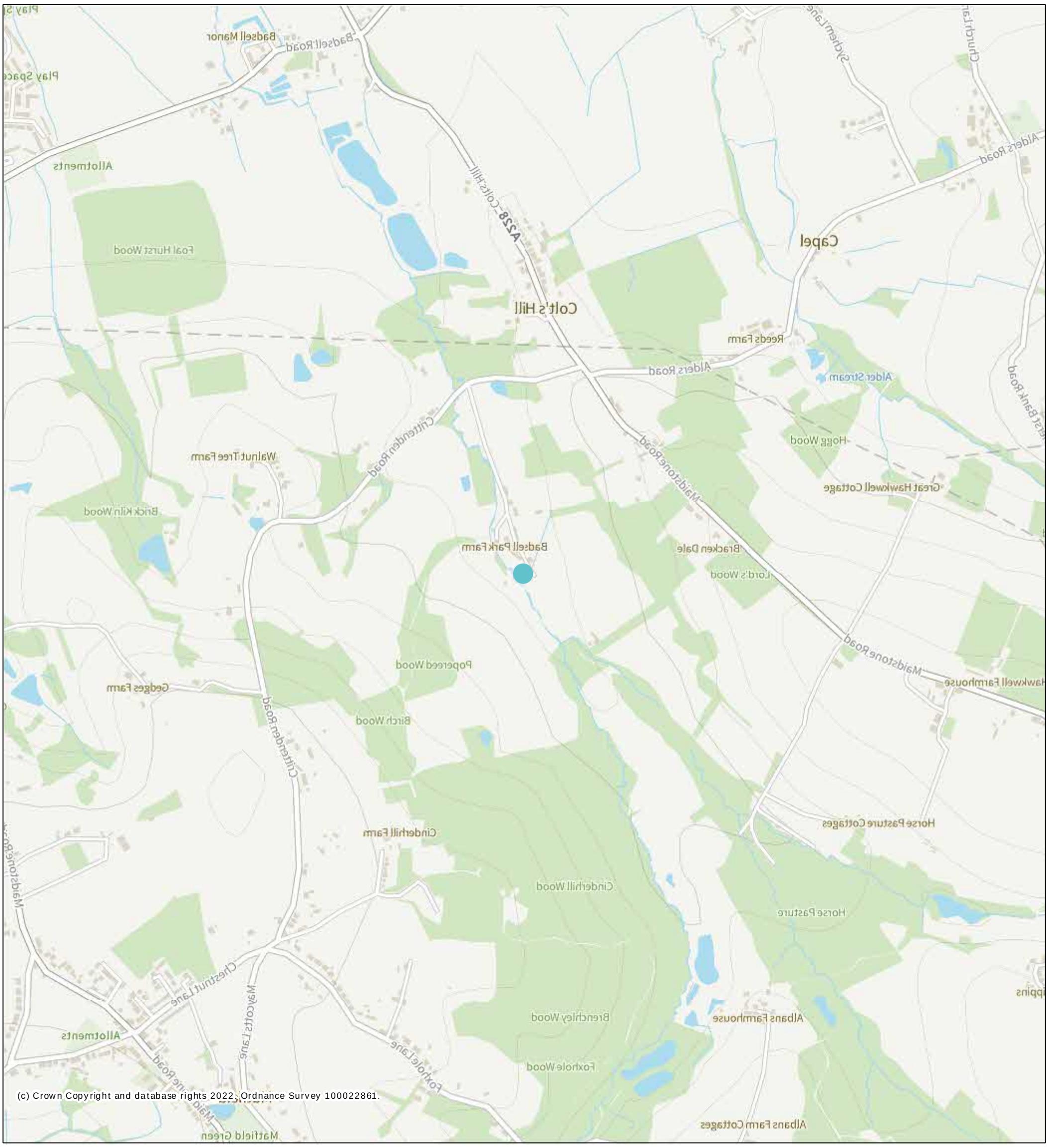
This Flood Risk Assessment has been developed in consultation with the Environment Agency and the mitigation measure proposed has met the requirements as agreed with the EA during our meeting and as contained in their pre-app response.

Based on the findings of this report, it is recommended that no objections should be raised to the development proposals on the grounds of flood risk.

Appendices

- Site Location Plan
- Flood Maps for Planning
- Fluvial Flood Map
- Surface Water Flood Map
- Reservoir Flood Map
- Topographical Survey
- Geology Mapping
- Sewer Asset Plan
- Product 4 Data
- Flood Warning Alarm System
- Flood Risk Assessment Plan
- Flood Defence Plan
- Structural Engineers Sketches
- Nautilus 400 Details

Site Location Plan



0 0.25 0.5

km

Projection = OSGB36

xmin = 561700

ymin = 141600

xmax = 568400

ymax = 145000

Map produced by MAGIC on 29 November, 2022.

Flood map for planning

Your reference	Location (easting/northing)	Created
Badsell Park Farm	**565040/143300**	**29 Nov 2022 12:34**

Your selected location is in flood zone 3, an area with a high probability of flooding.

This means:

- you must complete a flood risk assessment for development in this area
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (see www.gov.uk/guidance/flood-risk-assessment-standing-advice)

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Environment Agency

Flood map for planning

Your reference
Badsell Park Farm

Location (easting/northing)
565040/143300

Scale
1:10000

Created
29 Nov 2022 12:34

- Selected point
- Flood zone 3
- Flood zone 3: areas benefitting from flood defences
- Flood zone 2
- Flood zone 1
- Flood defence
- Main river
- Water storage area

0 100 200 300m

Flood risk

Extent of flooding

Location

TN12 7EN

Extent of flooding from rivers or the sea

High Medium Low Very low

Flood risk

Extent of flooding

Location

TN12 7EN

Extent of flooding from surface water

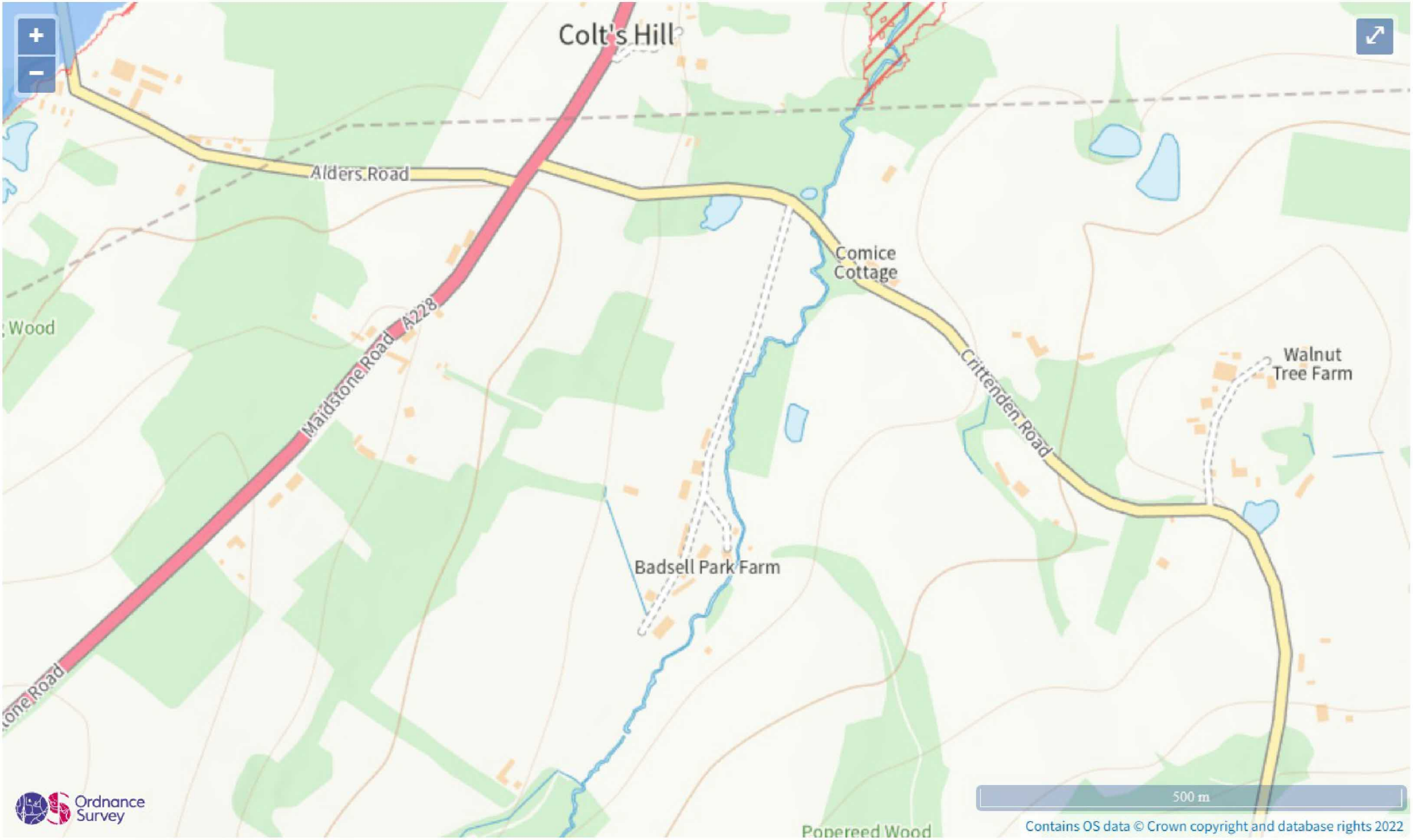
High Medium Low Very low

Flood risk

Extent of flooding

Location

TN12 7EN



Maximum extent of flooding from reservoirs:

when river levels are normal

when there is also flooding from rivers

143340mN

143320mN

143300mN

143280mN

143260mN

564980mE

565000mE

565020mE

565040mE

565060mE

565080mE

565100mE

LEGEND

CATV	CABLE TELEVISION COVER	BD	BACK DROP
EIC	ELECTRIC INSPECTION COVER	BL	BASE/BED LEVEL
EJB	ELECTRIC JUNCTION BOX	CL	COVER LEVEL
EP	ELECTRICITY POLE	CP	CATCH PIT
ER	EARTHING ROD	DC	DRAINAGE CHANNEL
FH	FIRE HYDRANT	DP	DOWN PIPE
GJB	GAS JUNCTION BOX	G	GULLY
GV	GAS VENT	IC	INSPECTION COVER
JB	JUNCTION BOX	IL	INVERT LEVEL
MK(E)	SERVICE MARKER (ELECTRIC)	MH(C)	MANHOLE (COMBINED)
MK(G)	SERVICE MARKER (GAS)	MH(F)	MANHOLE (FOUL)
MK(W)	SERVICE MARKER (WATER)	MH(S)	MANHOLE (SURFACE WATER)
OHW	OVERHEAD WIRE	RE	RODDING EYE
SC(G)	STOP COCK (GAS)	RWP	RAIN WATER PIPE
SC(W)	STOP COCK (W)	SEG	SIDE ENTRY GULLY
STAY	SUPPORT FOR TELEPHONE POLE	SVP	SOIL VENT PIPE
SV	STOP VALVE	UTL	UNABLE TO LIFT
BT	TELEPHONE INSPECTION COVER	VP	VENT PIPE
TJB	TELEPHONE JUNCTION BOX	WO	WASH OUT
TP	TELEPHONE POLE	B	BOLLARD
WIC	WATER INSPECTION COVER	BH	BORE HOLE
WM	WATER METER	BP	BRICK PILLAR
DPC	DAMP PROOF COURSE	BS	BUS STOP
THL	THRESHOLD LEVEL	CPS	CONCRETE PAVING SLABS
T.O.W	TOP OF WALL	FB	FLOWER BED
WL	WATER LEVEL	LB	LITTER BIN
CLG	CEILING LEVEL	LC	LIGHTING COLUMN
DHL	DOOR HEAD LEVEL	P	POST
FL	FLOOR LEVEL	PB	POST BOX
SCLG	SUSPENDED CEILING LEVEL	RNP	ROAD NAME PLATE
US	UNDERSIDE	RS	ROAD SIGN
USB	UNDERSIDE OF BEAM	RW	RETAINING WALL
WCL	WINDOW CILL LEVEL	SP	SIGN POST
WHL	WINDOW HEAD LEVEL	SU	STEP(S) UP
		TCB	TELEPHONE CALL BOX
		TS	TREE STUMP
OSBM	ORDNANCE SURVEY BENCH MARK		
STN	SURVEY STATION		
TBM	TEMPORARY BENCH MARK		

TREE — Species T=trunk C=canopy H=height

SURVEY STATION

GATE - GATES

FENCE — TOP OF BANK

BUILDING — BOTTOM OF BANK

OVER HEAD BUILDING LINE — KERB

FACE OF WALL — DROP KERB

CHANGE OF SURFACE — CONTOUR WITH VALUE

EDGE OF UNDERGROWTH — OVER HEAD CABLE

TREE LINE/HEDGE ROOT LINE — FOOTPATH LINE

ALL LEVELS AND CO-ORDINATES ARE RELATED TO THE ORDNANCE SURVEY NATIONAL GRID OSTN15, UNLESS OTHERWISE NOTED.

CONTOUR INTERVALS SET AT 0.5M WHERE APPLICABLE

TREE SPECIES AND DETAILS ARE QUOTED AS A MEAN SIZE AND SHOWN TO SCALE, HOWEVER NO RESPONSIBILITY CAN BE TAKEN FOR WRONG SPECIES IDENTIFICATIONS.

ANY INVERT LEVEL INFORMATION SHOWN HAVE BEEN MEASURED FROM ABOVE GROUND, LEVELS MAY BE SUBJECT TO CHANGE. ANY PIPE FLOW DIRECTIONS AND LATERALS ARE INDICATIVE POSITION ONLY.

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Site

BADSELL PARK

Drawing

TOPOGRAPHICAL SURVEY

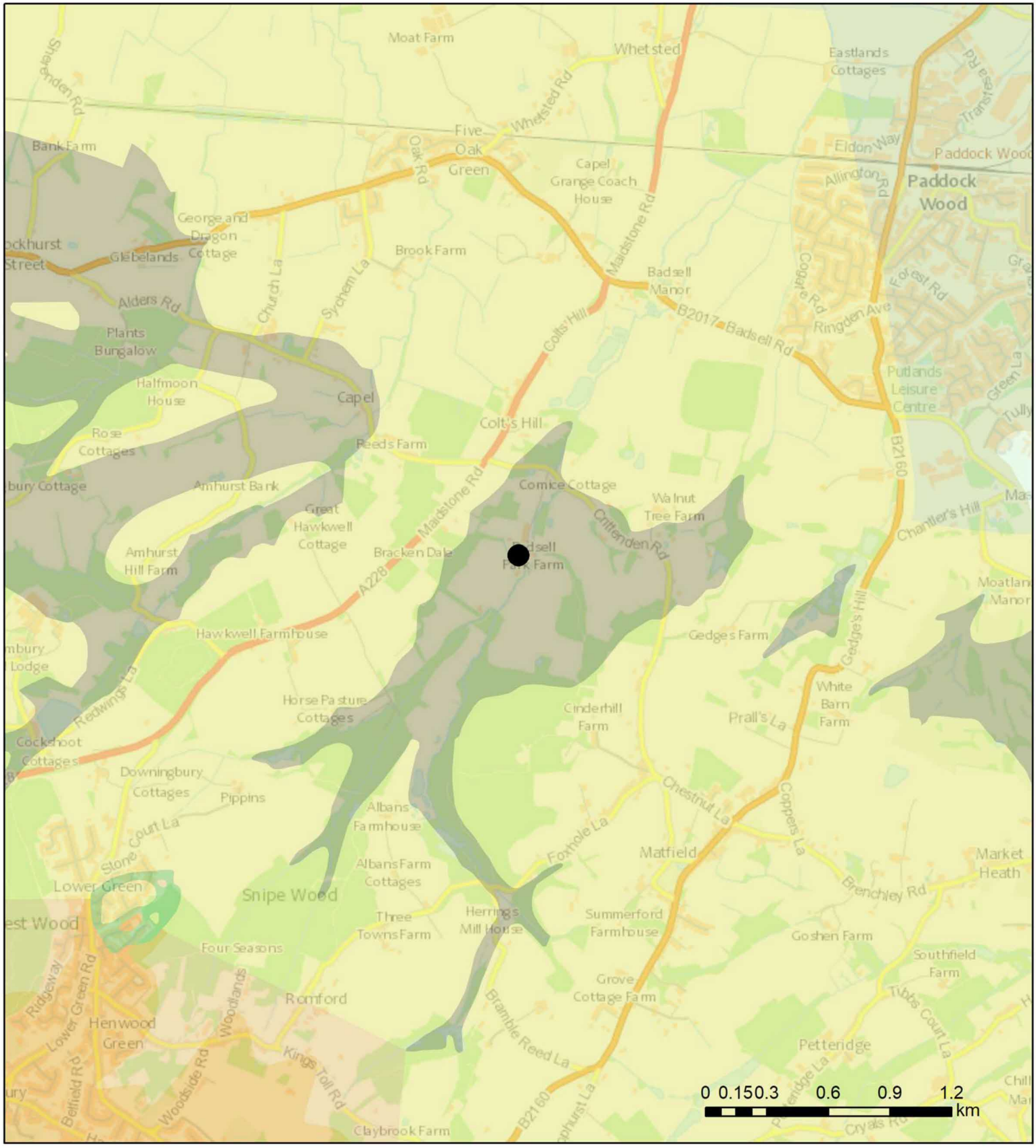
Drawn by	C.H.	Date	29/09/2022
Scale	1/200 @ A1	Revision	

Drawing No.

Oak_22-207

Bedrock Geology

British Geological Survey



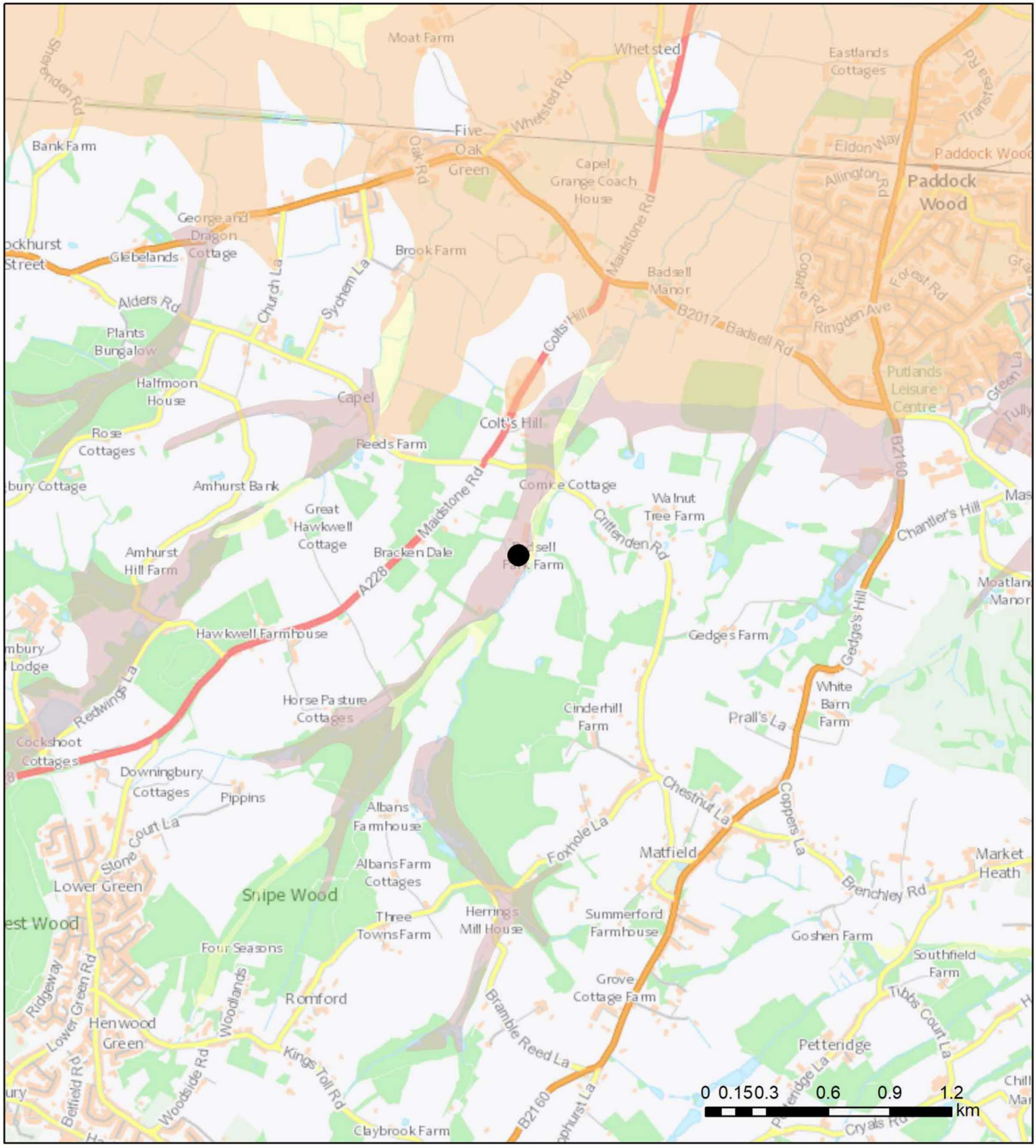
GeoIndex Onshore Data Sources: NERC, Natural England, English Heritage and Ordnance Survey

Map Key

Bedrock geology 1:50,000 scale

Superficial Geology

British Geological Survey



Map Key

Superficial deposits 1:50,000 scale

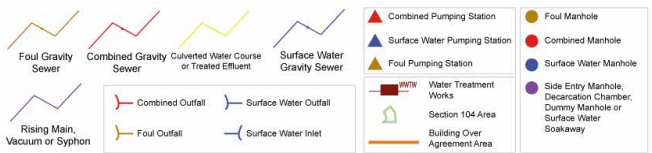
- ALLUVIUM - CLAY, SILT, SAND AND PEAT
- HEAD - CLAY, SILT, SAND AND GRAVEL
- RIVER TERRACE DEPOSITS, 2 - SAND AND GRAVEL

(c) Crown copyright and database rights 2022 Ordnance Survey 100031673 | Date: 29/11/22 | Scale: 1:1250 | Map Centre: 565040,143300 | Data updated: 27/10/22 | Our Ref: 1016277 - 1 | Wastewater Plan A4

The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy. The actual positions should be determined on site. This plan is produced by Southern Water Services Ltd (c) Crown copyright and database rights 2022 Ordnance Survey 100031673 .This map is to be used for the purposes of viewing the location of Southern Water plant only. Any other uses of the map data or further copies is not permitted.

WARNING: BAC pipes are constructed of Bonded Asbestos Cement.

WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement.



jamie.finch@roadsandsewers.co.uk

Badsell Park Farm

WATER for LIFE from Southern Water

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Product 4 (Detailed Flood Risk) for: Badsell Park Farm, Crittenden Road, Matfield, Tonbridge, TN12 7EW
Requested by: Chris Smoker / DHA
Reference: KSL 275944 RL
Date: 22/08/2022

Contents

The information provided is based on the best data available as of the date of this letter.

You may feel it is appropriate to contact our office at regular intervals, to check whether any amendments/ improvements have been made to the data for this location. Should you re-contact us after a period of time, please quote the above reference in order to help us deal with your query.

Please refer to the Open Government Licence which explains the permitted use of this information.

Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH.
Email: kslenquiries@environment-agency.gov.uk

Flood Map Confirmation

The Flood Map:

Our Flood Map shows the natural floodplain for areas at risk from river and tidal flooding. The floodplain is specifically mapped ignoring the presence and effect of defences. Although flood defences reduce the risk of flooding they cannot completely remove that risk as they may be over topped or breached during a flood event.

The Flood Map indicates areas with a 1% (0.5% in tidal areas), Annual Exceedance Probability (AEP) - the probability of a flood of a particular magnitude, or greater, occurring in any given year, and a 0.1% AEP of flooding from rivers and/or the sea in any given year. The map also shows the location of some flood defences and the areas that benefit from them.

The Flood Map is intended to act as a guide to indicate the potential risk of flooding. When producing it we use the best data available to us at the time, taking into account historic flooding and local knowledge. The Flood Map is updated on a quarterly basis to account for any amendments required. These amendments are then displayed on the internet at www.gov.uk/prepare-for-a-flood..

At this Site:

The Flood Map shows that this site lies within the outline of the 1% (Flood Zone 3) chance of flooding from rivers in any given year.

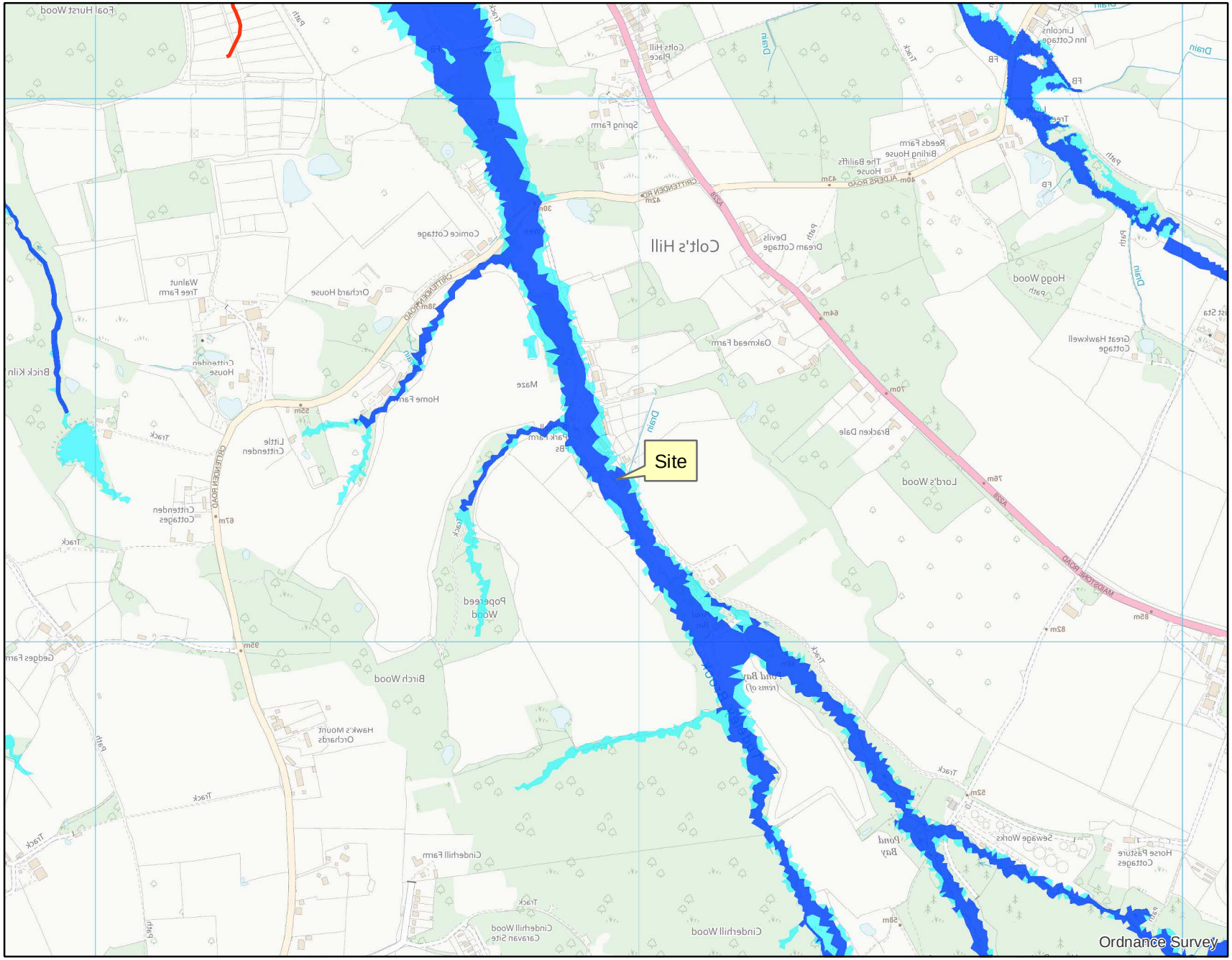
Enclosed is an extract of our Flood Map which shows this information for your area.

Method of production

The Flood Map at this location has been derived using detailed fluvial modelling from the Paddock Wood Flood Risk Model in 2018.

Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH.
Email: kslenquiries@environment-agency.gov.uk

Flood Map centred on Badsell Park Farm, Crittenden Road, Matfield, Tonbridge, TN12 7EW.
Created 22/08/2022 (Ref KSL 275944 RL)



Environment Agency

Legend

- Main River
- Flood Defences
- Flood Storage Area
- Areas Benefiting From Flood Defence
- 1% AEP of Fluvial Flooding
- 0.1% AEP of Flooding

Annual Exceedance Probability (AEP) The probability of a flood of a particular magnitude, or greater occuring in any given year.

Scale 1:10,000

0 200 400

Metres

Contact us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506. Email:enquiries@environment-agency.gov.uk

Model Output Data

You have requested flood levels for various return periods at this location.

The modelled flood levels for the closest most appropriate model grid cells, any additional information you may need to know about the modelling from which they are derived and/or any specific use or health warning for their use are set out below.

Using a 2D TuFLOW model the floodplain has been represented as a grid. The flood water levels have been calculated for each grid cell.

A map showing the location of the points from which the data is taken is enclosed. Please refer to the Open Government Licence which explains the permitted use of this information.

Table 1 : Defended Levels in mAOD

Node Location ID	Modelled Flood levels for Annual Exceedance Probability shown in mAOD						
	National Grid Ref						
	Easting	Northing	5% AEP	1% AEP	1% AEP + 35CC	1% AEP + 70CC	0.1% AEP
1	565034	143265	34.42	35.03	35.31	35.53	35.65
2	565024	143275	34.42	35.02	35.30	35.52	35.65
3	565034	143275	34.39	34.98	35.30	35.47	35.59
4	565044	143275	34.37	34.96	35.22	35.44	35.58
5	565014	143285	0.00	0.00	0.00	35.55	35.68
6	565024	143285	0.00	34.99	35.29	35.50	35.65
7	565034	143285	0.00	34.97	35.25	35.47	35.60
8	565044	143285	34.37	34.97	35.24	35.46	35.58
9	565054	143285	34.35	34.96	35.23	35.45	35.58

Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH.
Email: kslenquiries@environment-agency.gov.uk

10	565014	143295	0.00	0.00	0.00	35.48	35.61
11	565024	143295	0.00	34.96	35.22	35.44	35.56
12	565034	143295	0.00	34.97	35.25	35.47	35.60
13	565044	143295	34.32	34.94	35.21	35.41	35.55
14	565054	143295	34.26	34.86	35.11	35.29	35.40
15	565064	143295	34.22	34.87	35.12	35.32	35.44
16	565024	143305	0.00	34.96	35.22	35.44	35.56
17	565034	143305	0.00	34.96	35.22	35.44	35.56
18	565044	143305	0.00	34.92	35.16	35.37	35.48
19	565054	143305	34.26	34.92	35.21	35.38	35.50
20	565064	143305	34.24	34.86	35.13	35.36	35.49
21	565034	143315	0.00	34.96	35.22	35.44	35.56
22	565044	143315	0.00	0.00	35.22	35.37	35.50
23	565054	143315	0.00	34.89	35.13	35.32	35.43
24	565064	143315	34.23	34.75	34.97	35.16	35.27

Values of 0.00 indicate locations at which the selected points lie outside of a particular modelled flood extent.

Data taken from Paddock Wood Flood Risk Model, completed in 2018.

There are no health warnings or additional information for these levels, or the model from which they were produced.

Flood risk assessments: climate change allowances

On 20/07/2021 the 'Flood risk assessments: climate change allowances' were updated and published on gov.uk. You can view the updated allowances at 'Flood risk assessments: climate change allowances'.

You will need to consider this data and factor in the new allowances to demonstrate the development will be safe from flooding.

It remains the applicant's responsibility to demonstrate through their proposals and flood risk assessments that a new development will be safe in flood risk terms for its lifetime. We will incorporate the new allowances into future modelling studies.

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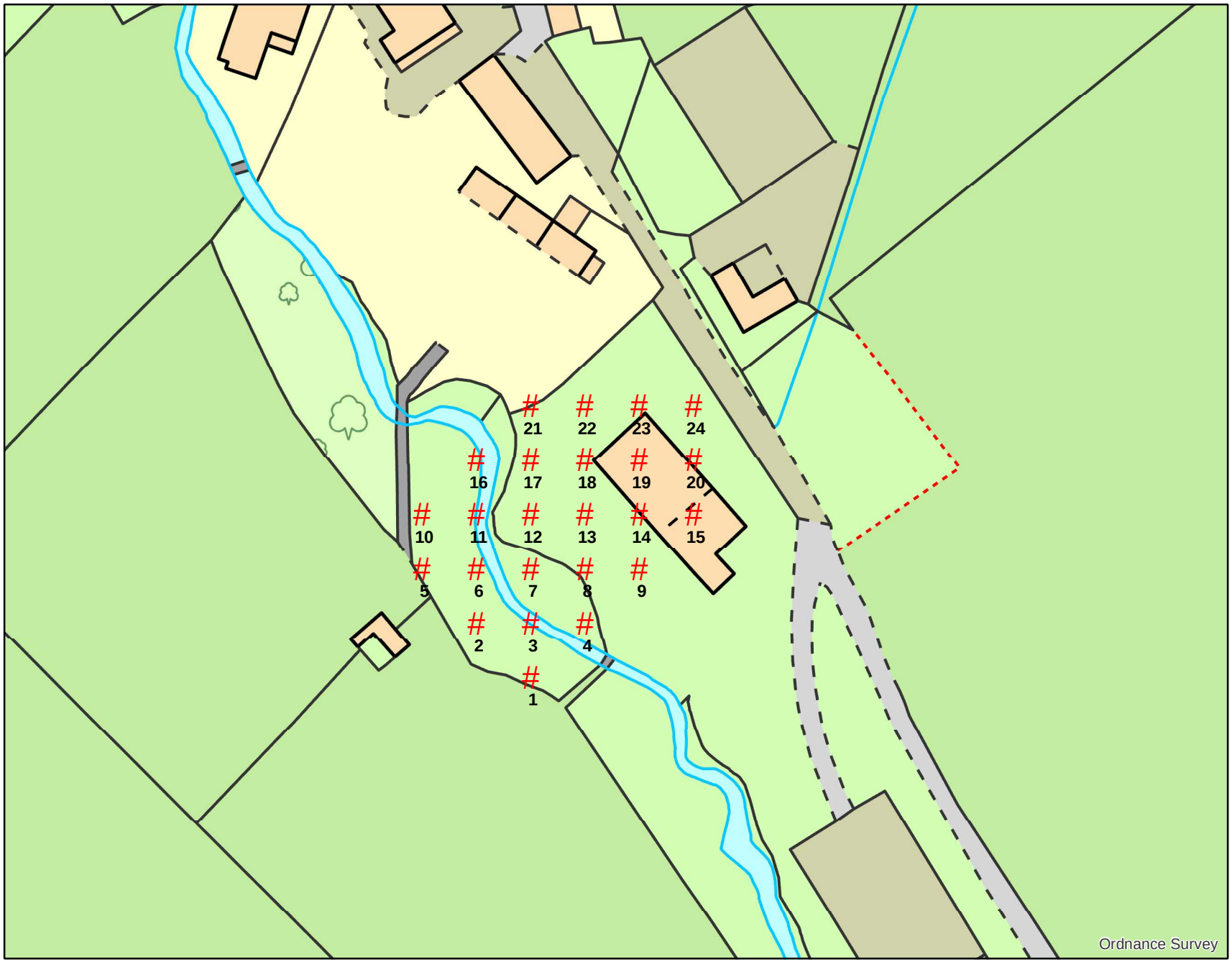
Email: kslenquiries@environment-agency.gov.uk

Node Map centred on Badsell Park Farm, Crittenden Road, Matfield, Tonbridge, TN12 7EW. Created 22/08/2022 (Ref KSL 275944 RL)



Environment Agency

Legend

\# Nodes

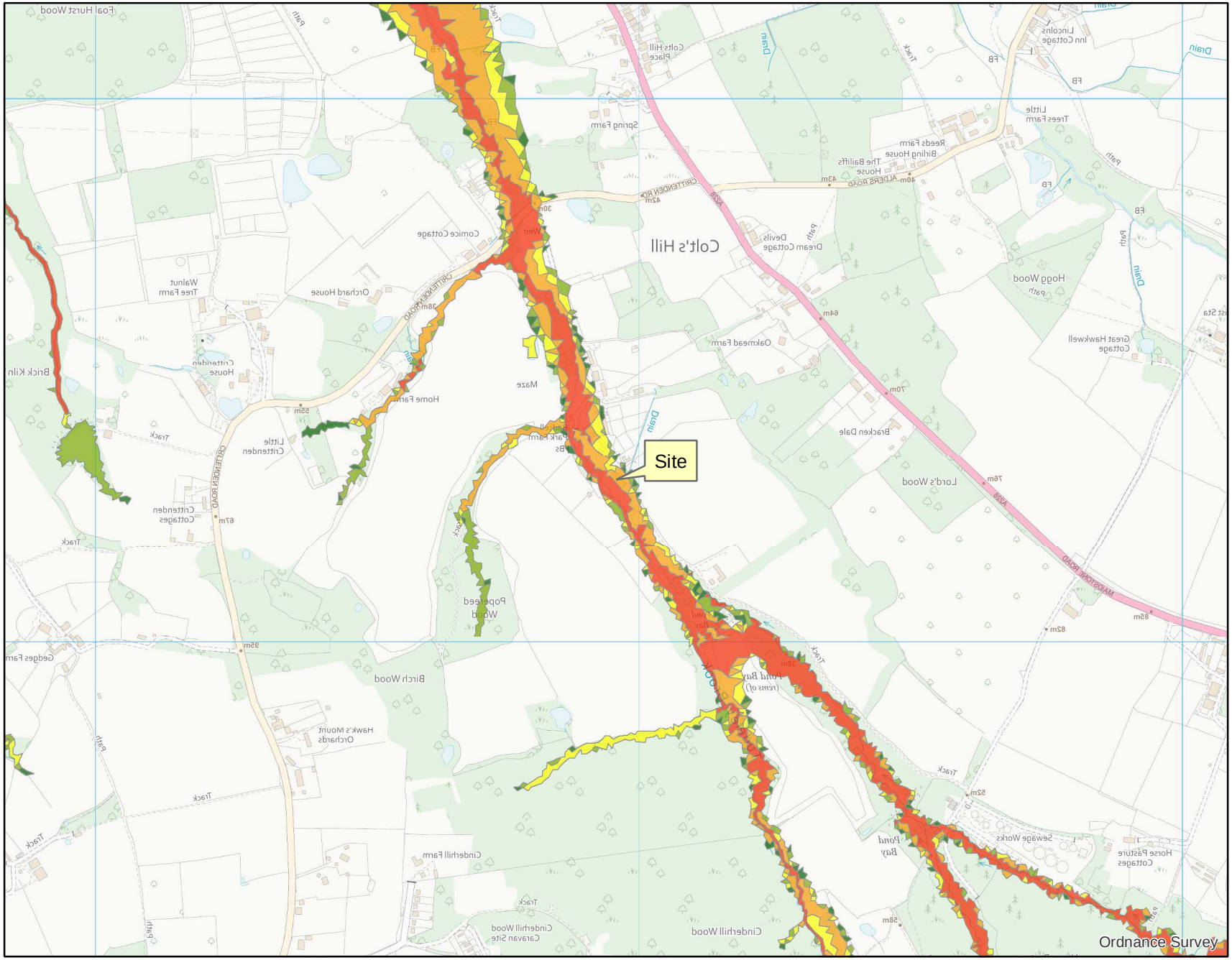
Scale 1:1,000

0 20 40

Metres

Contact us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506. Email:enquiries@environment-agency.gov.uk

Modelled Flood Extents Map centred on Badsell Park Farm, Crittenden Road, Matfield, Tonbridge, TN12 7EW. Created 22/08/2022 (Ref KSL 275944 RL)



Environment Agency

Legend

Flood Extents

AEP (%)

- 5% AEP extent
- 1% AEP extent
- 1% AEP extent + 35%CC
- 1% AEP extent + 70CC
- 0.1% AEP extent

1%CC = 1% Climate Change extent
This is the 1% AEP event with an allowance for climate change (+20% on river flows).

Annual Exceedance Probability (AEP) The probability of a flood of a particular magnitude, or greater occuring in any given year.

Scale 1:10,000

0 200 400

Metres

Contact us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506. Email:enquiries@environment-agency.gov.uk

Defence Details

There are no formal flood defences owned or maintained by the Environment Agency in the area of this site/ property.

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Email: kslenquiries@environment-agency.gov.uk

Historic Flood Data

We hold records of historic flood events from rivers and the sea. Information on the floods that may have affected the area local to your site are provided on the enclosed map (if relevant).

Flood Event Data

We do not hold records of historic flood events from rivers affecting the area local to this property. However, please be aware that this does not necessarily mean that flooding has not occurred here in the past, as our records are not comprehensive.

Please note that our records are not comprehensive. We would therefore advise that you make further enquiries locally with specific reference to flooding at this location. You should consider contacting the relevant Local Planning Authority and/or water/sewerage undertaker for the area.

We map flooding to land, not individual properties. Our historic flood event record outlines are an indication of the geographical extent of an observed flood event. Our historic flood event outlines do not give any indication of flood levels for individual properties. They also do not imply that any property within the outline has flooded internally.

Please be aware that flooding can come from different sources. Examples of these are:

- from rivers or the sea;
- surface water (i.e. rainwater flowing over or accumulating on the ground before it is able to enter rivers or the drainage system);
- overflowing or backing up of sewer or drainage systems which have been overwhelmed,
- groundwater rising up from underground aquifers

Currently the Environment Agency can only supply flood risk data relating to the chance of flooding from rivers or the sea. However you should be aware that in recent years, there has been an increase in flood damage caused by surface water flooding or drainage systems that have been overwhelmed.

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Email: kslenquiries@environment-agency.gov.uk

Additional Information

Information Warning - OS background mapping

The mapping of features provided as a background in this product is © Ordnance Survey. It is provided to give context to this product. The Open Government Licence does not apply to this background mapping. You are granted a non-exclusive, royalty free, revocable licence solely to view the Licensed Data for non-commercial purposes for the period during which the Environment Agency makes it available. You are not permitted to copy, sub-license, distribute, sell or otherwise make available the Licensed Data to third parties in any form. Third party rights to enforce the terms of this licence shall be reserved to OS.

Planning advice and guidance

The Environment Agency are keen to work with partners to enable development which is resilient to flooding for its lifetime and provides wider benefits to communities. If you have requested this information to help inform a development proposal, then we recommend engaging with us as early as possible by using the pre-application form available from our website:
https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion

Complete the form in the link and email back to kslplanning@environment-agency.gov.uk

We recognise the value of early engagement in development planning decisions. This allows complex issues to be discussed, innovative solutions to be developed that both enables new development and protects existing communities. Such engagement can often avoid delays in the planning process following planning application submission, by reaching agreements up-front. We offer a charged pre-application advice service for applicants who wish to discuss a development proposal.
We can also provide a preliminary opinion for free which will identify environmental constraints related to our responsibilities including flooding, waste, land contamination, water quality, biodiversity, navigation, pollution, water resources, foul drainage or Environmental Impact Assessment.

Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH.
Email: kslenquiries@environment-agency.gov.uk

Flood Risk Assessments guidance

Flood risk standing advice for applicants

In preparing your planning application submission, you should refer to the Environment Agency's Flood Risk Standing Advice and the Planning Practice Guidance for information about what flood risk assessment is needed for new development in the different Flood Zones. This information can be accessed via:

https://www.gov.uk/flood-risk-assessment-standing-advice

http://planningguidance.planningportal.gov.uk/

https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications

https://www.gov.uk/guidance/flood-risk-and-coastal-change

You should also consult the Strategic Flood Risk Assessment and flood risk local plan policies produced by your local planning authority.

You should note that:

1. Information supplied by the Environment Agency may be used to assist in producing a Flood Risk Assessment where one is required, but does not constitute such an assessment on its own.
2. This information covers flood risk from main rivers and the sea, and you will need to consider other potential sources of flooding, such as groundwater or overland runoff. You should discuss surface water management with your Lead Local Flood Authority.
3. Where a planning application requires a FRA and this is not submitted or deficient, the Environment Agency may well raise an objection due to insufficient information

Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH.
Email: kslenquiries@environment-agency.gov.uk

Surface Water

We have provided two national Surface Water maps, under our Strategic Overview for flooding, to your Lead Local Flood Authority who are responsible for local flood risk (i.e. surface runoff, ground water and ordinary watercourse), which alongside their existing local information will help them in determining what best represents surface water flood risk in your area.

Your Lead Local Flood Authority have reviewed these and determined what it believes best represents surface water flood risk. You should therefore contact this authority so they can provide you with the most up to date information about surface water flood risk in your area.

You may also wish to consider contacting the appropriate relevant Local Planning Authority and/or water/sewerage undertaker for the area. They may be able to provide some knowledge on the risk of flooding from other sources. We are working with these organisations to improve knowledge and understanding of surface water flooding.

Orchard House, Endeavour Park, London Road, Addington, West Malling, Kent, ME19 5SH.
Email: kslenquiries@environment-agency.gov.uk

CatsEye RTU

Remote Telemetry Unit for Industrial Instrumentation

Remote
IoT
Solutions

The CatsEye RTU (Remote Telemetry Unit) from UDlive is a highly versatile and reliable remote communications solution for a wide range of industrial instrumentation.

By integrating the CatsEye RTU with your existing sensors or instruments, you can enable two-way remote communications, allowing you to:

- **Calibrate and configure your instrumentation remotely, and**
- **Receive all data remotely, including extended functionality, such as diagnostics**

Features

Device fully self-contained (incl. power & comms)

Compatible with 4-20mA analog, HART, Modbus, CAN Bus

Easy to install and replace: typically <5 mins

Data can be viewed live via our web-based portal, or fed directly into exisiting asset management or modelling systems via an API

Configurable data capture and dial-in rate (from 5 min intervals upwards)

Data can be collected either from standalone instruments or as part of a loop

7+ year battery life (assuming hourly dial-ins)

External antenna option for low-signal, subterranean locations

UTILITIES **RAILWAYS** **PUBLIC SECTOR** **RESIDENTIAL** **INDUSTRIAL**

t. (+44) 2394 386157
e. info@udlive.io

Uses cellular (2G, GPRS), and low power cellular (4G, NB-IoT, CAT-M1) comms with all UK networks, so no requirement for additional comms infrastructure

Intuitive online portal maps all your devices. Shows current and historic data, with accompanying diagnostics to verify the reliability of the data

Data is fully encrypted at source, not only complying with current data security guidelines, but future-proofing against more onerous requirements

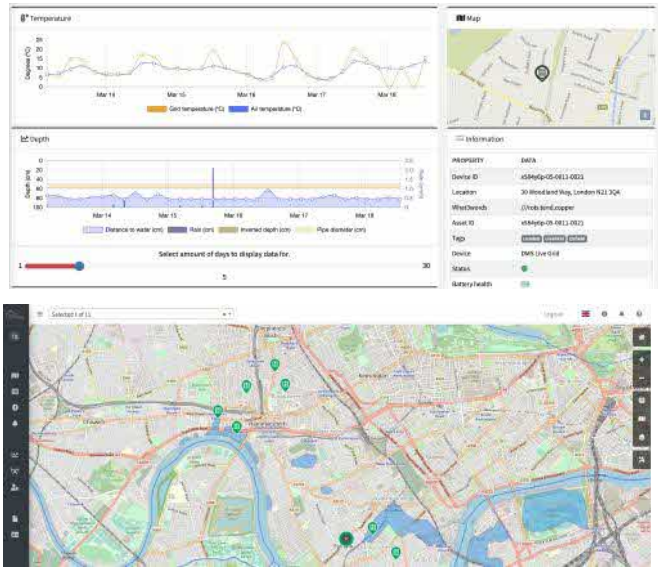
Azure & AWS supported, so data can be fed directly into other asset management or modelling systems if required

Movement sensor alerts when device is moved. Useful for both safety, and confirmation that scheduled activity has been performed

Temperature sensor included. Expansion capability (e.g. gas) also available

Device is extremely durable – doesn't suffer fragility issues

UDlive Portal



Device Specification

Category	Details
Sensors	Accelerometer, MEMS + Wake Thermocouple 0.5°C accuracy BLE Controller Ask for more
Power	7+ year lifetime OTA power plans End of life monitoring 30uA sleep consumption
Battery	Hi grade Li-SoCl2 battery Field replaceable
Environmental	IP68 Encapsulation -20°C to + 70°C ATEX Zone 2
Connectivity	NB-IoT CAT-M1 2G and GPRS Low power Wi-Fi Readings & transmissions available at 5-minute intervals
Security	AES256 encrypted bootloader Digital signing of verified code TLS 1.2 End to End encryption
Compatibility	4-20mA analog HART Modbus CAN Bus
Other	FOTA Updates with delta RFID ID tag included Ultra-low power micro Large internal memory Multi-protocol expansion port

Data & Platforms

Available Options	Details
Platforms	Microsoft Azure AWS PTC Thingworx Ask for others
Interfaces	UD Live Portal UD Live API Confirm® Custom Integrations

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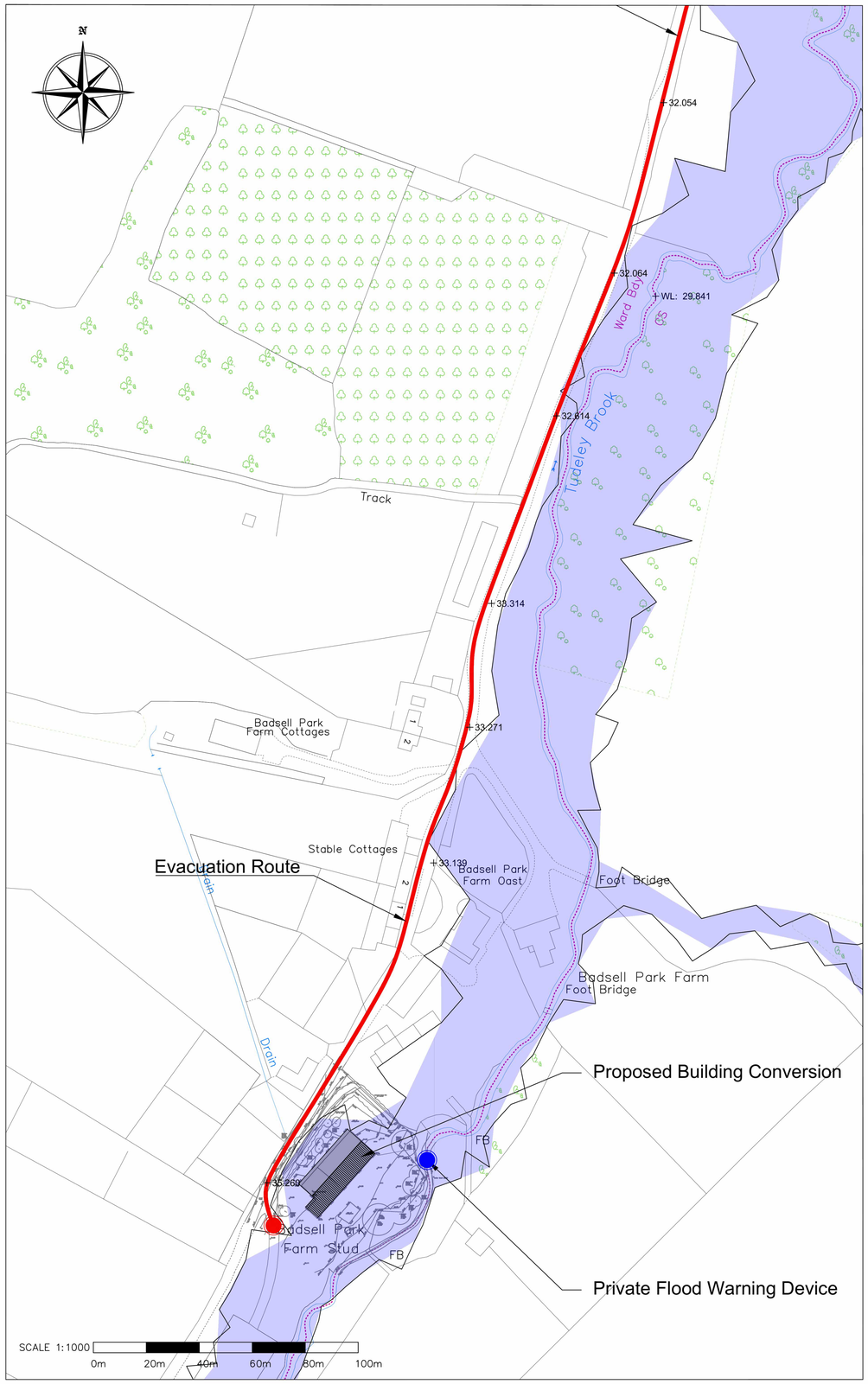
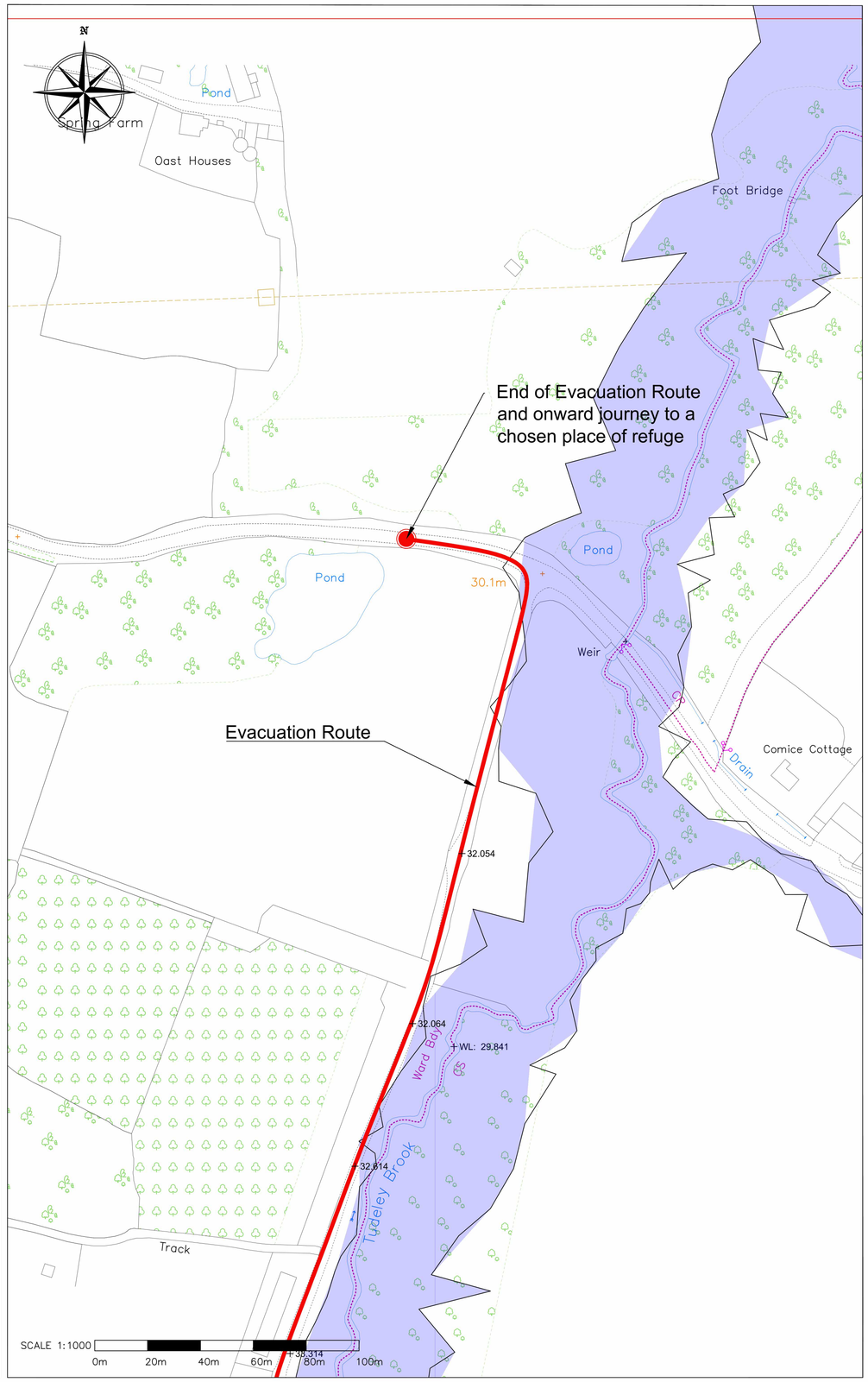
e. info@udlive.io





General Notes

FOR PLANNING

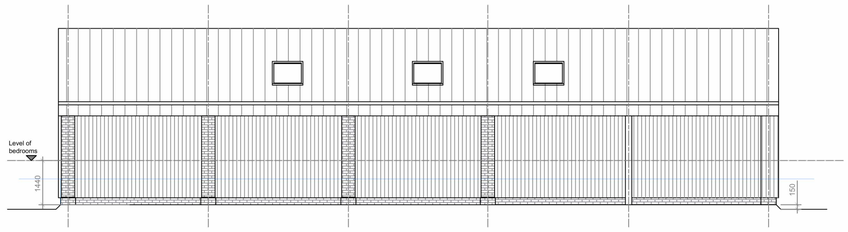
No.	Revision/Issue	Date
Rev A	Additional Spot Heights Added along the Evacuation Route	17/08/23

RSPD
Roads & Sewers for Planning & Design Ltd
www.roadsandsewers.co.uk

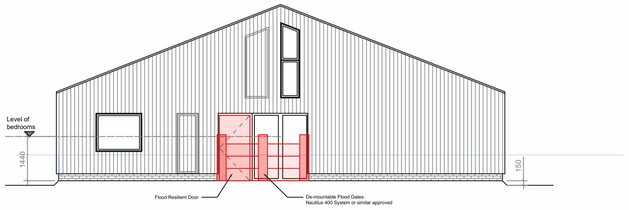
Project Name and Address
BADSELL PARK FARM
CRITTENDEN LANE,
COLTS HILL, KENT.

Description
FLOOD RISK ASSESSMENT PLAN

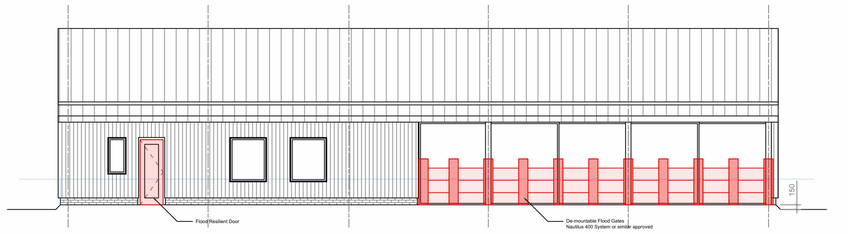
Project	Sheet
5659	01
Date: 29/11/2022	
Scale: 1:1000 @ A1	



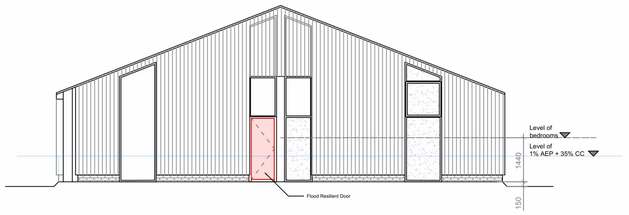
Proposed North West Elevation



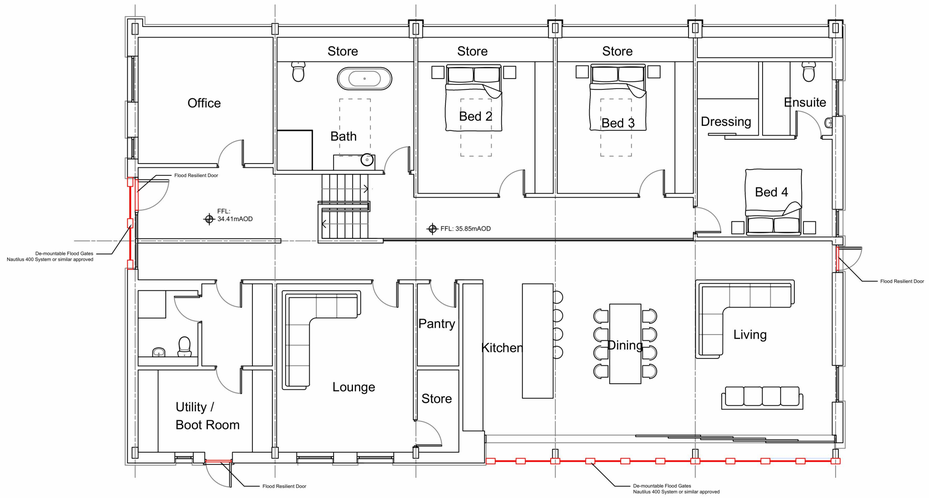
Proposed South West Elevation



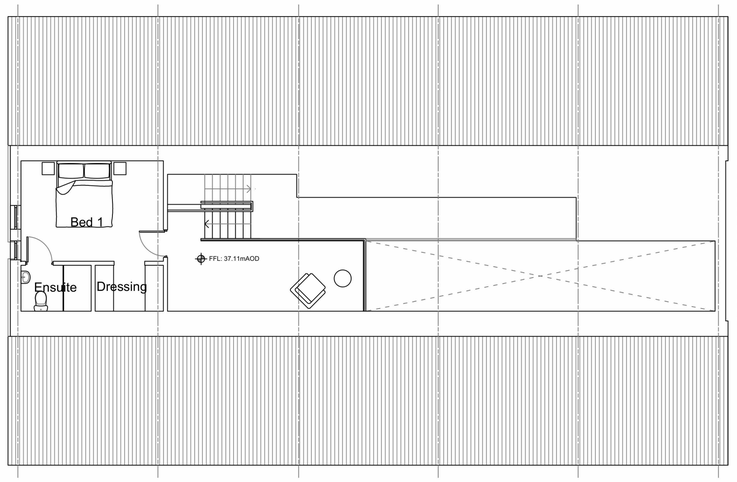
Proposed South East Elevation



Proposed North East Elevation



Proposed Ground Floor Plan



Proposed Mezzanine Floor Plan

SCALE 1:100

0m 2m 4m 6m 8m 10m

Architectural Drawings by Bloomfields

General Notes

FOR PLANNING

No.	Revision/Issue	Date

RSPD

Roads & Sewers for Planning & Design Ltd

www.roadsandsewers.co.uk

Project Name and Address

BADSELL PARK FARM
CRITTENDEN LANE,
COLTS HILL, KENT.

Description

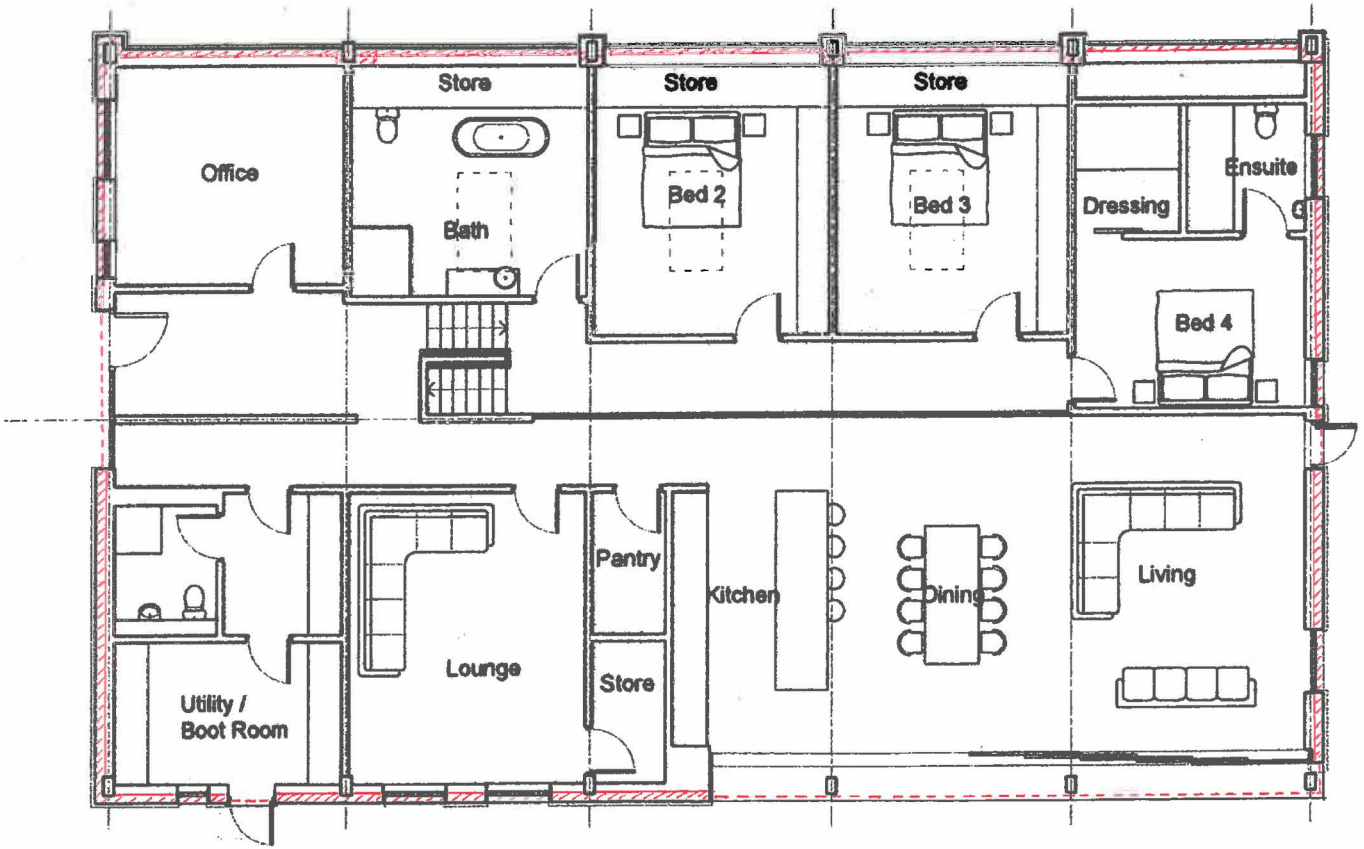
FLOOD DEFENCE PLAN

Project 5659

Date 01/03/2023

Scale 1:100 @ A1

Sheet 02



Proposed Ground Floor Plan

KEY

Demountable Flood Gate

Low Level Waterproof Wall

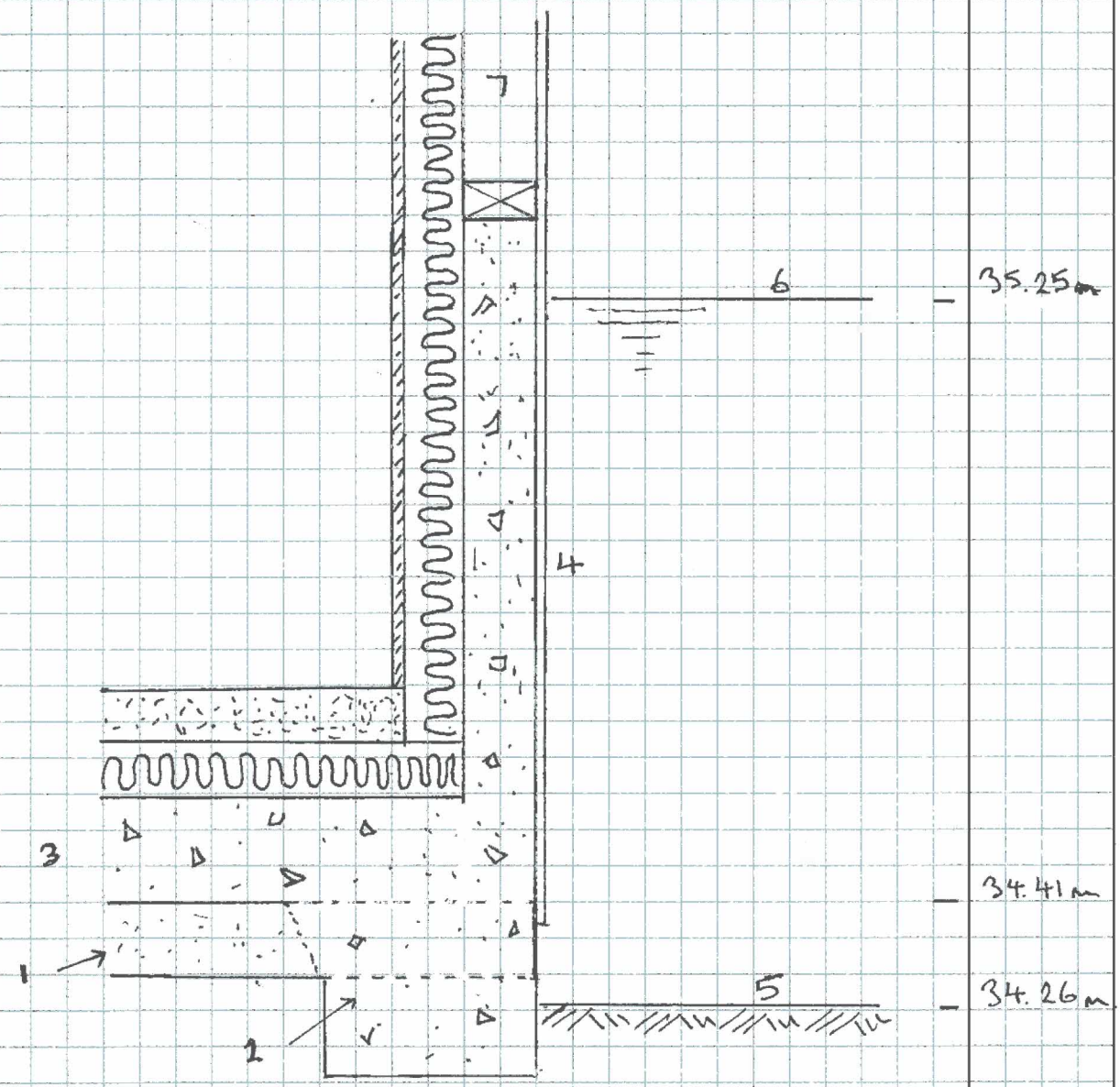
BdR
Civil & Structural Engineering Consultants

The Old Engine House, Goblands Farm Business Park
Court Lane, Hadlow, Tonbridge, Kent TN11 0DP
Telephone: 01732 851416

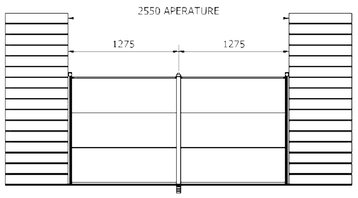
Calculation Sheet

Project: TUDELEY BROOK STABLES, CRITTENDEN ROAD, MATFIELD			
Part of Calcs: EXTERNAL WALL - PROPOSED.			Job Ref: 23-0532
Calcs by: SMB	Checked by:	Date: NOV 2023.	Sheet No: St02

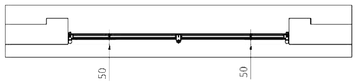
Ref:	Calculations	Output



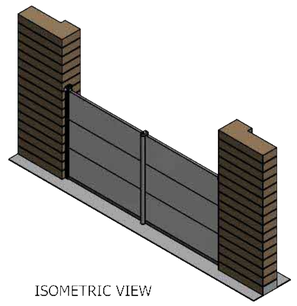
1 Existing concrete slab reused as oversite.
2 New RC key
3 New waterproof concrete slab and wall.
4 External cladding
5 Existing ground level
6 1% AEP + 35% CC
7 Timber frame external wall.



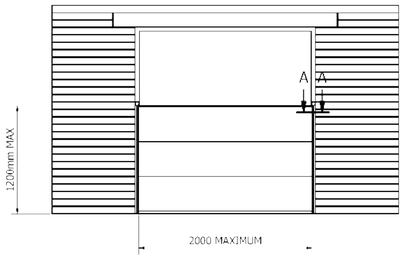
REVEAL FIXING WITH COMPRESSION POST



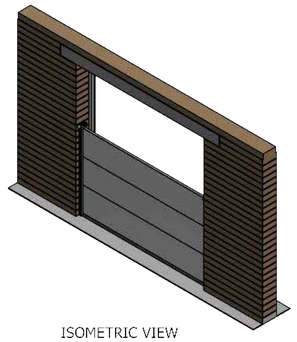
PLAN VIEW



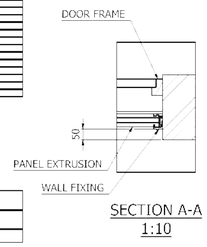
ISOMETRIC VIEW



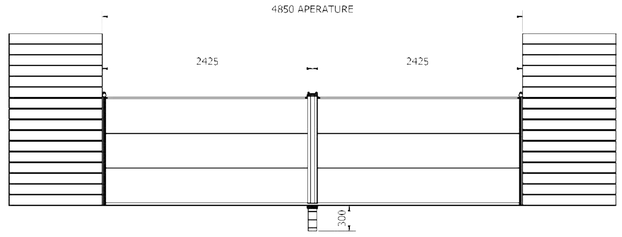
PLAN VIEW



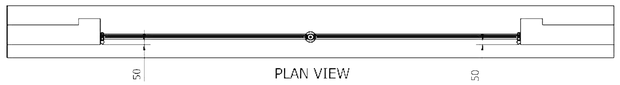
ISOMETRIC VIEW



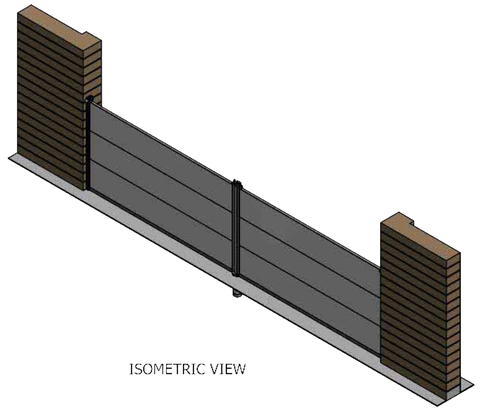
SECTION A-A
1:10



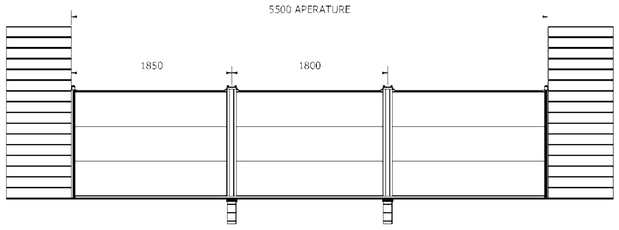
REVEAL FIXING WITH DEMOUNTABLE POST



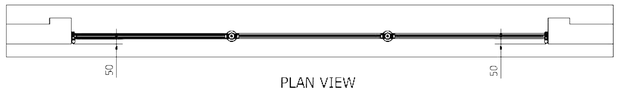
PLAN VIEW



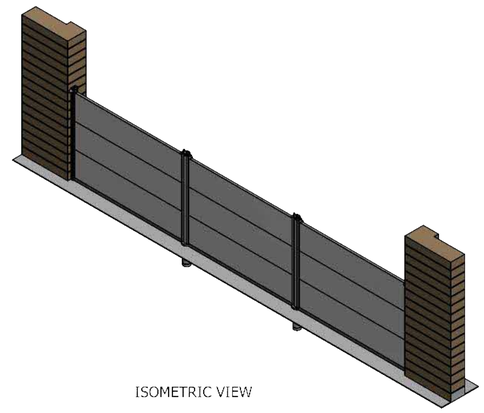
ISOMETRIC VIEW



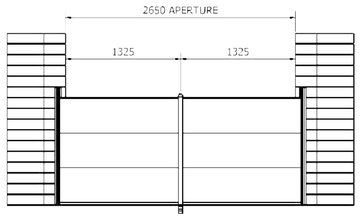
REVEAL FIXING WITH MULTIPUL DEMOUNTABLE POST



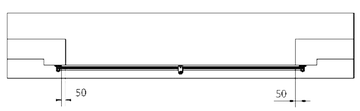
PLAN VIEW



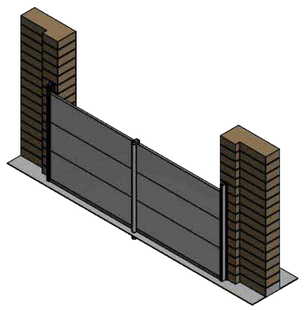
ISOMETRIC VIEW



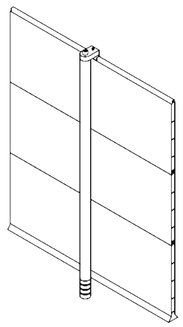
FACE FIXING WITH COMPRESSION POST



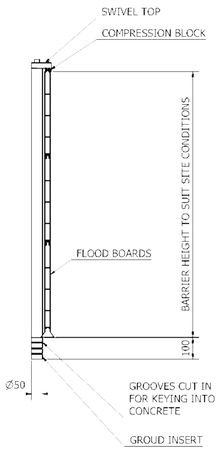
PLAN VIEW



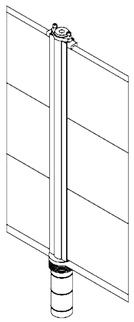
ISOMETRIC VIEW



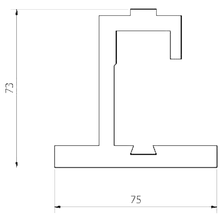
ISOMETRIC VIEW OF COMPRESSION POST



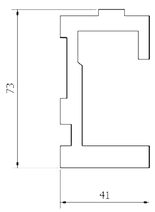
ARRANGEMENT OF COMPRESSION POST



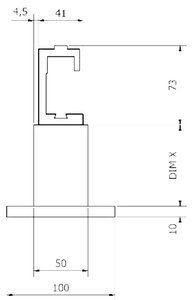
ISOMETRIC VIEW DEMOUNTABLE POST



STANDARD FACE FIXING PROFILE

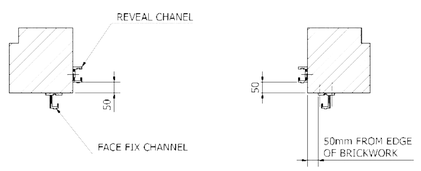


STANDARD REVEAL FIXING PROFILE



PACKING SIZES
DIM X
25mm
50mm
75mm
100mm

PACKING AVAILABLE FOR FACE FIXING



REVEAL & FACE FIX CHANNELS

flood protection solutions

Supplied and installed by

The Ultimate Flood Defence System

Nautilus® 400

Instruction Guide

Flood Technologies Limited
Unit 5 Fullwood Close, Aldermans Green Industrial Estate, Coventry CV2 2SS
www.FloodTec.co.uk action@FloodTec.co.uk +44 (0)2476 610 666

About Us

Flood Technologies Ltd have specialised in bespoke flood protection products since 2001, having built a respectable reputation for raising the industry standards in quality and performance.

You will find us at our dedicated factory, in Coventry, where we have designed, developed and manufacture our range of flood barrier systems that are a quick and convenient method of building a watertight flood barrier that can be easily erected and deployed in the event of a river, sea or flash flood...and then quickly dismantled and stored away, once the flooding has passed.

Our unique, innovative, and patented demountable aluminium barrier systems; Nautilus 400 and Nautilus 200, have been developed for use on either a domestic residential property or a commercial business property. With water protection of up to 1.2 metres in height, they are a quality engineered, robust, lightweight, cost effective and best of breed product with PAS 1188-1 & Part 4 Accreditation and have been installed on 1000+ homes and small businesses right across the UK and Internationally.

Working with us you'll have:

- Aluminium and manufacturing that's practical, light and resilient, to last you a lifetime.
- Quick and easy assembly and dismantling so easy to deploy.
- Competitively priced products with speedy delivery.
- 'Made in Britain' quality manufacturing and design.
- Access to special and bespoke solutions.
- An in-house design team.

The systems exceed the BSI British Standard PAS 1188-2009 on allowable leakage rates for demountable flood defence systems.

'TOP 100 UK Manufacturer 2016' Award Winner

The River Severn rises in Shropshire - UK 2017

Introduction

A pub car park in Warwickshire - UK 2017

The Nautilus® 400 Flood Barrier System was developed as a quick and convenient method of “building” a watertight flood barrier that can be easily deployed in the event of a flood. It’s then easily dismantled and stored away after the danger has passed.

Nautilus® 400 is a robust and strong flood barrier, which means it can span wide distances and can tackle the most hostile and pounding water environments.

The system has been designed and tested to exceed the BSI ‘British Standard’ PAS 1188 (2009) on allowable leakage rates for demountable flood defence systems.

Suitable for installation on both residential and commercial property, Nautilus® 400 makes use of two permanently-fixed vertical side channels fitted either side of the opening to be protected, along with pre-installed unobtrusive ground fixtures to allow the Patented Twist and Lock post system (Patent No. 2371068) to be put in place.

Aluminium flood boards are then dropped into position so that, when deployed, a barrier up to 1,200mm high for any required span is ready to protect your property.

Common components for all Nautilus® 400 applications

Example of single span application

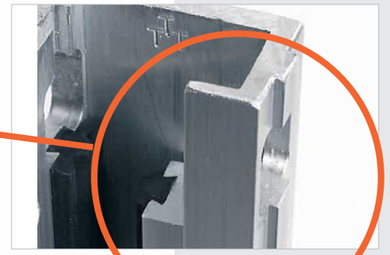
Vertical Side Channel MG_4470/4

Top Compression Grub Screw MG_4312/4
(Long 12mm grub screws which apply the downward compression)

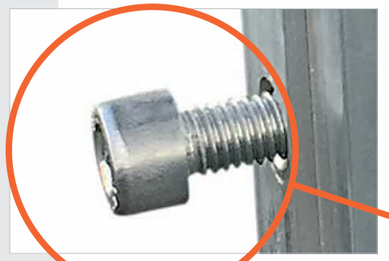
Compression Bar MG_4299/4

Compression Block MG_4303/4

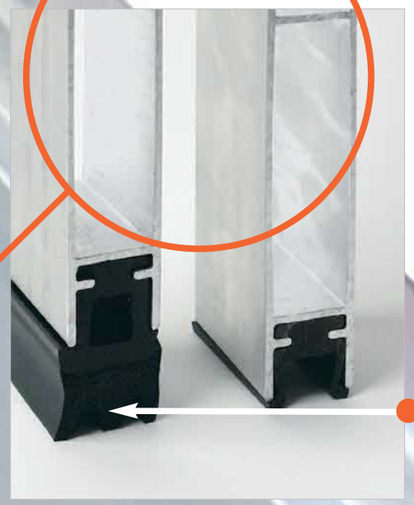
Vertical Clamp Plate MG_4467/4
(Inside the Vertical Side channels)



Cap Head Retainer Screws IMG_6345/4
(**Warning!** Do not adjust these. They hold the vertical clamp plates in position)



Front-Face Compression Grub Screws MG_4307/4
(Short 10mm grub screws which apply the sideward compression)

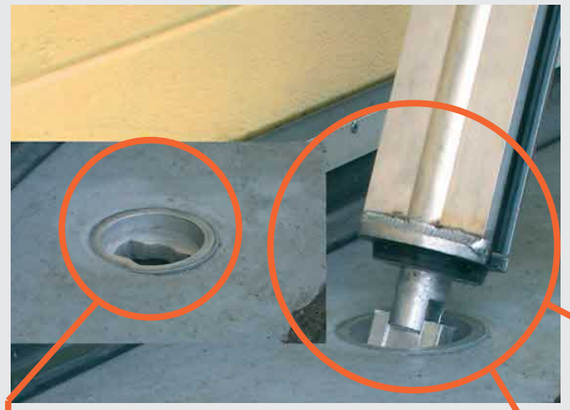


Flood Boards MG_4401/4
Cross section of boards. Each flood board is 400mm high x 25mm thick and is supplied with rubber seals to prevent water ingress.

(Image shows thicker seal which is only fitted to base boards.
Please make sure that this is always the first board used when deploying the system)

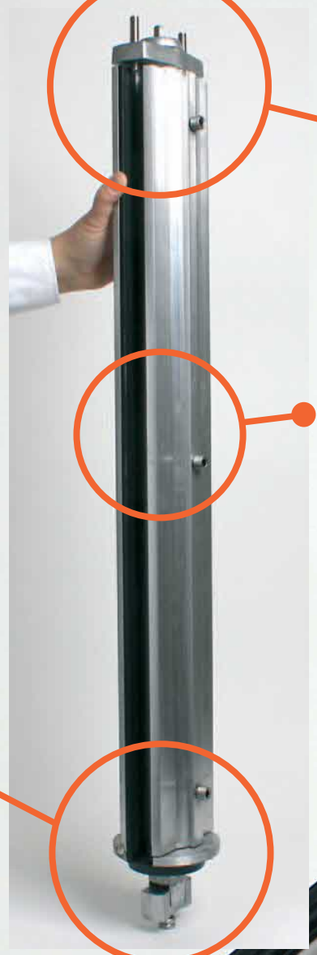
Additional components for use in multi-span applications

Example of multi-span application



Ground Insert Dust Caps MG_4520/4

Dust Caps Screws MG_4522/4
(10mm cap head screws)



Demountable Post
MG_4510/4
Delivered as complete units directly from the factory.
They should only be disassembled for general maintenance purposes and seal replacement when necessary.

Compression Casting MG_4376/4

Bayonet Fitting Assembley

Compression Post MG_4502/4
(when advised)

Compression Post Retainer & Screw MG_4586/4

Compression Post Compression Block MG_4303C/4

Tools

10mm Allen Key

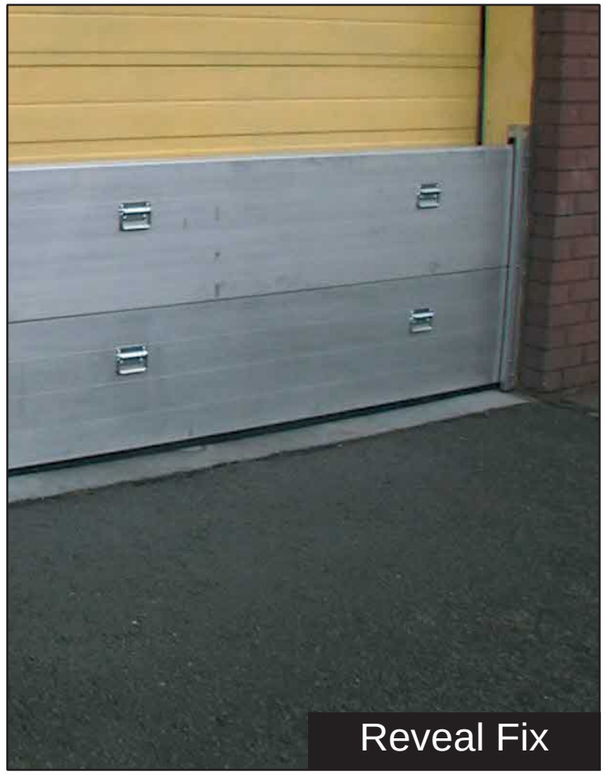
08mm Allen Key

06mm Allen Key

05mm Allen Key

10mm Socket and Torque Wrench

Preparation



1 When the barrier is not deployed, the opening remains unobstructed allowing full and uninterrupted access to any opening, with vertical side channels permanently fixed to both sides of the adjoining walls.

2 When the flood warning arises, commence the deployment process by cleaning out any debris, leaves, etc. from both the permanently fixed vertical side channels and along the ground surface/ baseplate, using a soft brush.

(The rails will either be in the form of a “Reveal Fix” which means they are fixed in between the reveals [brickwork] of the doorway, or they are in the form of a “Face Fix” which means they are fixed onto the outer face of the brickwork.)

3 Gather common components and tools.
You will require between one and three flood boards (each 400mm high) depending on the height of your vertical side channels and demountable posts.

4 If the compression bar and 10mm horizontal grub screws are already in the vertical side channels, please remove them all. This is to ensure they do not obstruct the deployment of the flood boards.

5 If applicable, ensure the demountable posts’ 10mm screws are loose to allow the flood boards to be slotted in easier.

6 If the black rubber seals inside the vertical side channels and/or on the flood boards are very cold, ideally pour warm water on the seals to soften them up.

7 In addition, to make the deployment easier, apply a little Vaseline® on the black rubber seals and the grub screws.

You are now ready to deploy your barrier.

Deployment

Nautilus® 400
Instruction Guide

1 When the threat of flooding becomes apparent, commence the deployment process by unfastening the 120mm diameter ground insert dust caps with the 8mm Allen key provided.

2 Once the caps have been loosened (along the entire barrier span of the opening) lift the caps out to prepare each insert for deployment of the demountable post(s).

3 Before inserting the demountable post, please ensure that the insert, and its immediate surroundings, are free from any debris

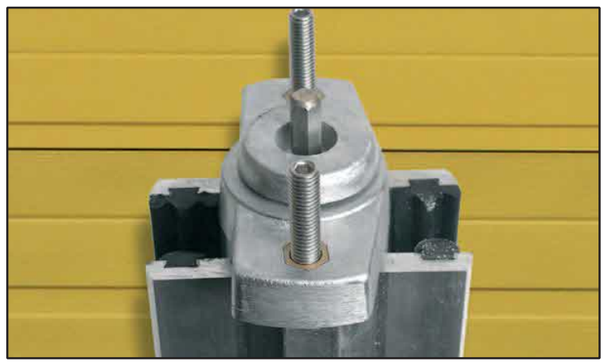
Note: If the ground insert dust caps have been fitted properly, then there should not be any debris inside the ground insert chamber. However, if for some reason there is debris inside, insert a domestic hosepipe into the insert and give it a blast of water to force any debris out.

4 Insert demountable post into ground inserts..

5 Twist demountable post, clockwise, 90-degrees into position to accept the flood board, with the cap head screws facing outwards, the same face as the vertical side channels. Note –there is no need to tighten the posts in place at this stage.

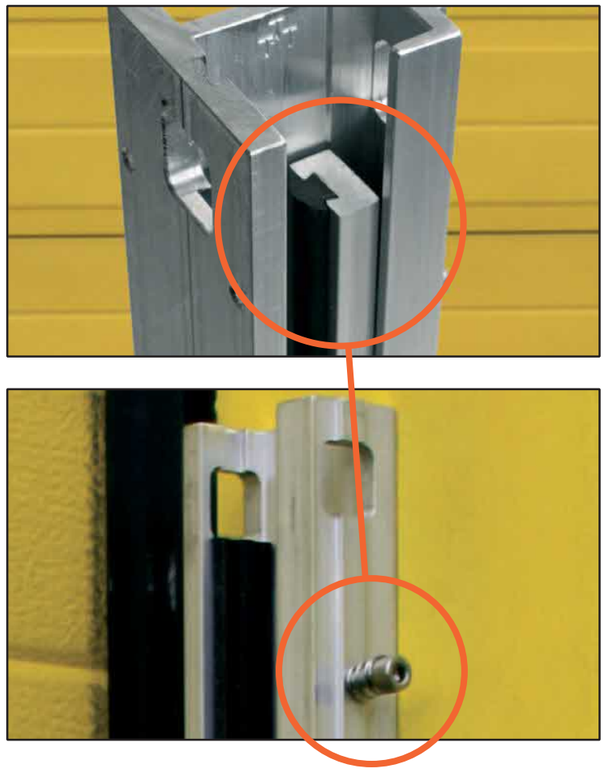
Where applicable, continue this process along the entire barrier span until all posts are deployed.

6 Ensure the compression casting, on top of each demountable post, is 90-degrees to the post's channels so that it does not obstruct slotting in the flood boards.



7 Ensure the vertical clamp plate inside the vertical side channels are pulled to the front of the channel to ensure it does not block the channel, ready to insert the flood board.

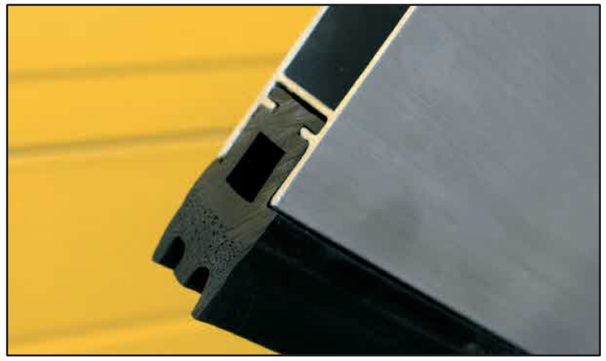
This can be done by pulling the retainer screws towards you.

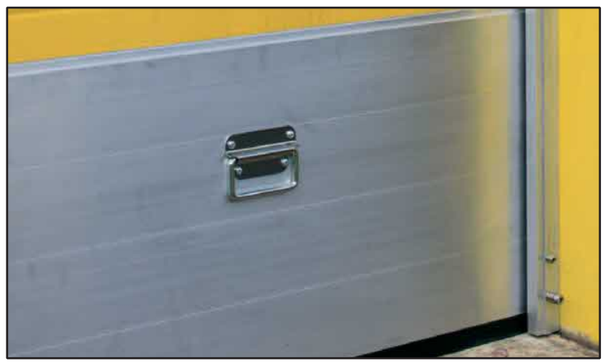


Deployment

SINGLE Height Board: (Height 400mm x 25mm thick)

1 Take your single aluminium flood boards, and with the black rubber seal along the bottom, slot it in between the vertical side channels and demountable posts, until resting against the ground surface/baseplate.





2 Continue this process of inserting all flood boards along the entire barrier span, between each demountable post, until you reach the opposite vertical side channel.

Deployment

Nautilus® 400
Instruction Guide

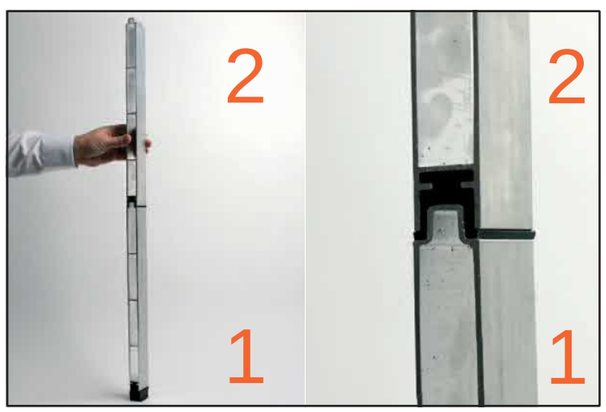
DOUBLE Height Boards: (Height 800mm x 25mm thick)

1 Take your two types of flood boards and identify the ones with the thicker black rubber seal along the bottom.

With the thicker seal along the bottom, slot this in first, between the vertical side channels and demountable posts, until the thicker seal rests against the ground surface/baseplate.

2 Continue this process of inserting all bottom flood boards along the entire barrier span, between each demountable post, until you reach the opposite vertical side channel. Follow with the second type of flood boards, with the thinner black rubber seal along the bottom of the flood board and raised profile along the top.

(Image shows cross section of flood board with thicker seal **(1)** which is only fitted to base boards. Please make sure that this is always the first board used when deploying the system)



Deployment

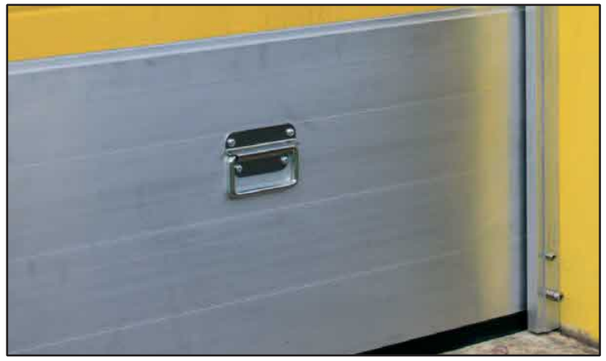
TRIPLE Height Boards: (Height 1,200mm x 25mm thick)

1 Take your three flood boards and identify the ones with the thicker black rubber seal along the bottom.

With the thicker seal along the bottom, slot this in first, between the vertical side channels and demountable posts, until the thicker seal rests against the ground surface/baseplate. Continue this process of inserting all flood boards along the entire barrier span, between each demountable post, until you reach the opposite vertical side channel.

2 Now, take the flood boards with the thinner rubber seals along the bottom, and slot in the second level flood boards, all the way along.

Repeat for the third and final level flood boards, again with the thinner rubber seal along the bottom and with the raised profile along the top.

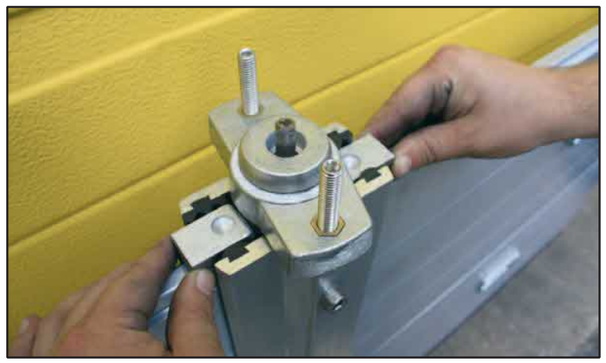


Deployment

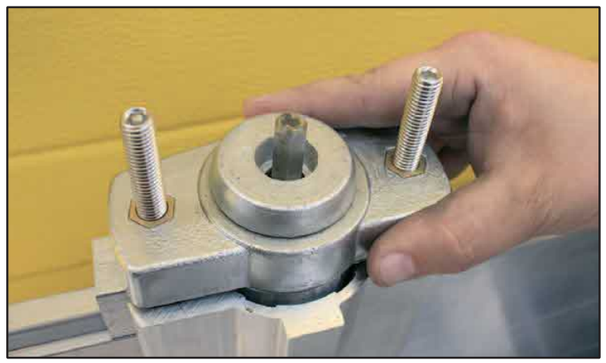
Deployment continued for all barrier heights:

1 When using the demountable post, secure each post by using the 10mm socket and torque wrench provided, by turning the top central hexagon, clockwise, until the post is firmly secured to the ground.

2 Secure the flood board(s) by inserting the compression blocks (on the top of the flood board and inside the vertical side channels), with the profile slot at the bottom (over the flood board) and the countersunk indent on top, towards the outside wall.



3 When using the demountable post, secure the flood board(s) by inserting the compression blocks (on the top of the flood board and inside the demountable post vertical channels), with the profile slot at the bottom (over the flood board) and the countersunk indent on top, towards the centre of the post.

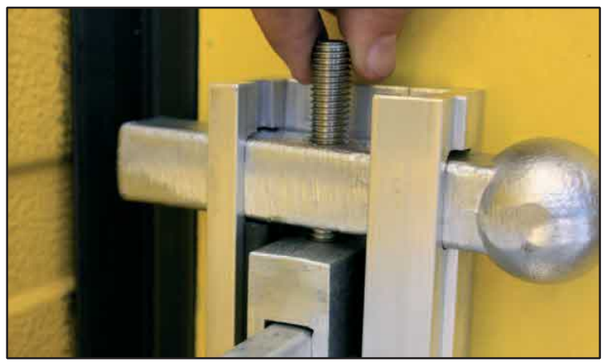


4 Twist the compression casting, on top of each post, 90 degrees, so that the screws are over the channels.

Deployment continued for all barrier heights:

5 Insert the fixed end compression bars horizontally into the top of both vertical side channels, with the screw hole facing up.

6 On top of each compression bar, and top of the post compression casting, by hand, start turning each 12mm grub screw, clockwise, until finger tight.



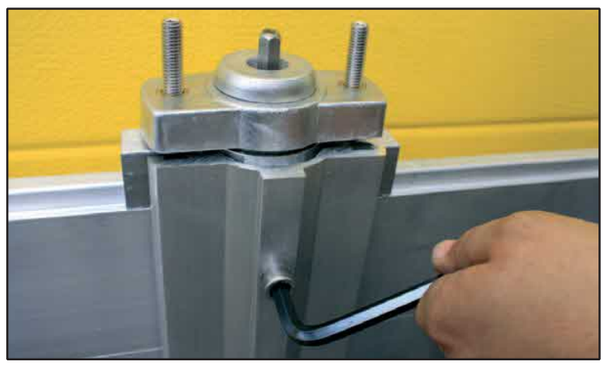
Nautilus® 400
Instruction Guide

Deployment continued for all barrier heights:

7 On the front face of the vertical side channels, by hand, start turning the horizontal 10mm grub screws, clockwise, until they are finger tight.

8 On the front face of the demountable posts, by hand, start turning the 10mm cap head screws, clockwise, until they are finger tight.

9 Using the 5mm Allen Key, turn each grub screw and cap head screw, clockwise, one full turn (360 degrees)..

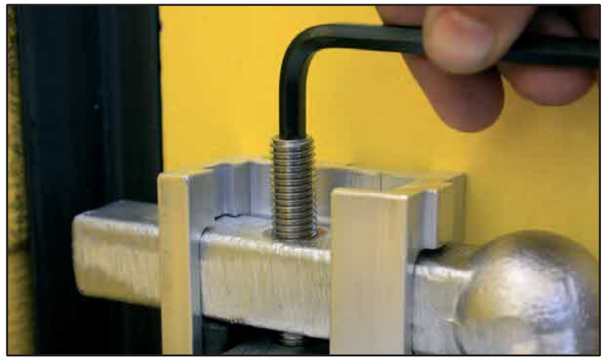


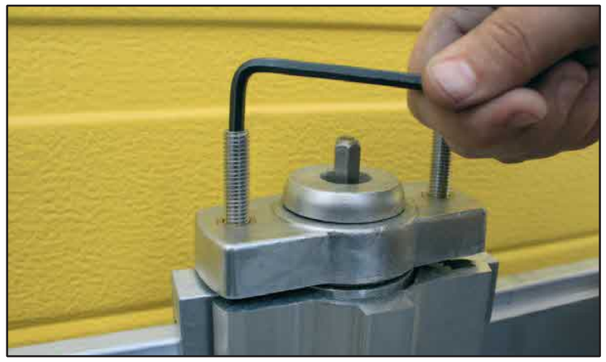
Deployment continued for all barrier heights:

9 Using the 6mm Allen Key, turn each compression bar and compression casting 10mm grub screw about three full 360 degree turns.

(Warning! You do not need to over tighten them)

This seals the flood board's bottom rubber seal against the ground surface/baseplate.





Deployment

Deployment with a Compression Post:

The compression post is utilised for the Nautilus® 400 barriers that spans over 1,500mm but less than 2,500mm for heights up to 1,200mm.
This component ensures that adequate downward pressure is applied in the centre of the flood board and along the entire barrier span.

1 Remove the 12mm nylon grub screw from the compression post ground insert (usually in the centre of the flood board span.)

2 Now, screw the compression post into the same ground insert hole.

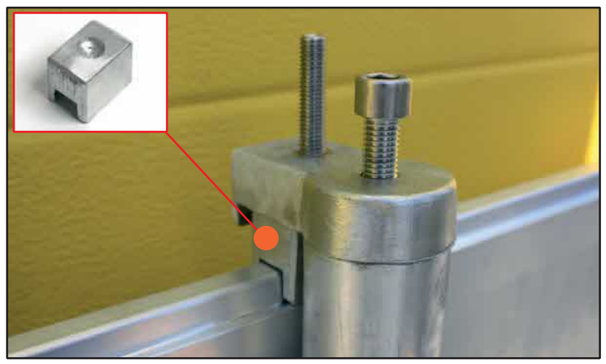
3 Screw the retainer compression block onto the top of the compression post, with the lip covering the flood board

Nautilus® 400
Instruction Guide

Deployment with a Compression Post continued:

4 On top of the compression post retainer, turn the 12mm cap screw, clockwise, by hand, until finger tight.

5 Position the compression block between the top of the board and the compression retainer of the compression post, then turn the 10mm grub screw, clockwise, by hand, until finger tight.



6 Using the 10mm Allen Key, turn the 12mm cap screw, clockwise, three full 360 degree turns.

7 Now, using the 5mm Allen Key, turn the 10mm grub screw, clockwise until tight.

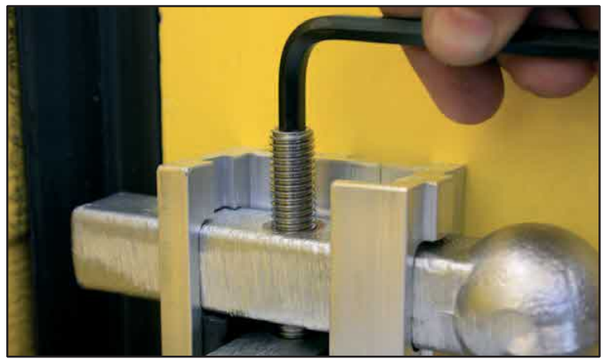
This ensures a strong seal along with entire span of the flood board against the ground surface/base-plate.

Deployment is now complete.

Dismantling

Nautilus® 400
Instruction Guide

After Short Term Use:



Once the flood has subsided, and there are no further flood warnings:

1 Should compression posts have been fitted to your system please reverse the deployment instructions and remove the post assembly completely.

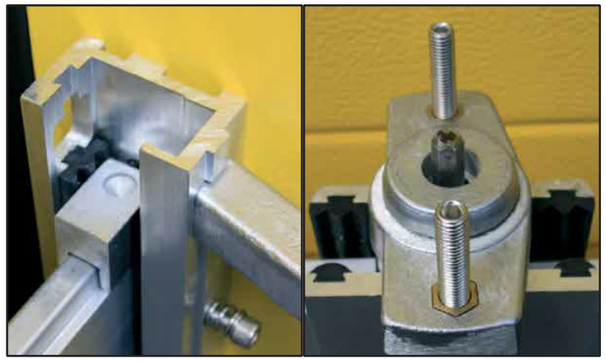
2 Using the 5mm Allen Key, turn and loosen, anti-clockwise, each 10mm grub screw in the top compression bars until the compression is fully relieved.

3 Using the 5mm Allen Key, turn and loosen, anti-clockwise, each 10mm grub screw in the top of the demountable post compression casting until almost fully removed. Twist the compression casting, on top of each post, 90 degrees, so that the channels are open and accessible, with the screws away from the channels.

4 Using the 8mm or 5mm Allen Key (as appropriate), turn each grub screw on the front face of vertical side channels, and each cap head screw on the front face of demountable post/s in an anti-clockwise direction until all side pressure on the boards is released. The grub screws may be removed for safe keeping or retained lightly in position.

Dismantling continued:

5 Now, remove both the compression bars from the top of the vertical side channels and all compression blocks from side channels and demountable post/s.



6 Now, with the flood boards relieved of any retention/compression, remove each of the flood boards by sliding them up through the vertical channels.

If you have followed the short-term usage dismantling instructions and find that the black rubber seals are stuck to the aluminium flood boards, pour warm water onto the seals to soften them and make the boards separate more easily.

7 Once all boards have been removed and secured safely, you may now remove the demountable post/s by using the 10mm socket and torque wrench provided, turning the top central hexagon, anti-clockwise, until the post is loose enough to twist 90-degrees anti-clockwise and be withdrawn from the ground inserts.

8 Replace dust caps and secure with the 8mm Allen key.

Cleaning

Cleaning After Use:

Should the flood barrier equipment, flood boards and vertical side channels be contaminated during use, they will need to be cleaned.

1 Clean using household detergent and warm soapy water.

2 Allow to dry thoroughly

3 Store away.

Storage

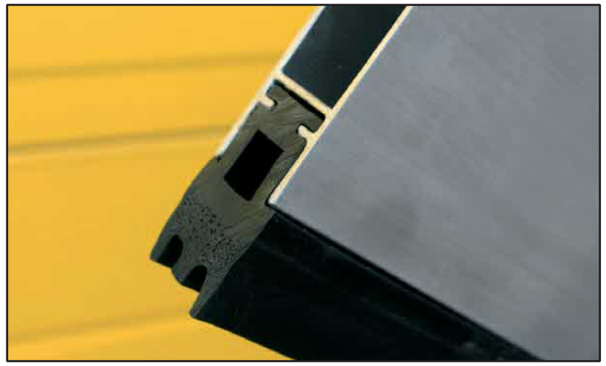
1 Store the flood boards flat, so the board is not resting on the rubber seals either on the floor or against a side wall/surface.

2 Ensure the flood barrier equipment is stored in such a way that it is not a hazard to any persons either by falling on them or as a trip hazard.

Planned Maintenance

The following steps should be undertaken regularly on all barriers:

1 Check all the rubber seals for signs of decay and make sure all the rubber seals are on the barrier, and none have come loose, or been removed.



2 Apply lubricating release spray to all flood boards' seals to ensure ease of installation and dismantling, and to prevent seals from adhering to the aluminium during prolonged deployment.

(Additional cans of silicone lubricant can be obtained online through Amazon).

3 Ensure that all screws, and necessary tools, are present.

Ensure all other barrier components are present (See 'common components' illustration).
If anything is missing, replacement parts can be ordered through your supplier.

Warranty

The Supplier warrants that, for a period of 24 months from the date of delivery ('warranty period'), the metal components of the Goods shall:

Conform in all material respects with the Specification;

Be free from material defects in design, material and workmanship; and

Be of satisfactory quality (within the meaning of the Sale of Goods Act 1979).

The Supplier warrants that, for a period of 12 months from the date of delivery ('seal warranty period'), the rubber components of the Goods shall:

Conform in all material respects with the Specification;

Be free from material defects in design, material and workmanship; and

Be of satisfactory quality (within the meaning of the Sale of Goods Act 1979).