



**David Ian Furniture Unit
Kent Wharf
Dymchurch Road
Hythe
CT21 6LU**

FLOOD RISK ASSESSMENT & DRAINAGE STRATEGY

24-018
Flood Risk Assessment
David Ian Furniture Hythe CT21 6LU

PCS Consulting Engineers
July 2025

DOCUMENT CONTROL

Document Title : Flood Risk Assessment & Drainage Strategy
Document Reference : 24-018-FRA/00

Project Name: David Ian Furniture Unit,
Kent Wharf,
Dymchurch Road,
Hythe,
CT21 6LU

Project Number: 24-018
Client: WBA Hythe

Issue Record

Revision	Date	Status	Comment
0	04.09.2025	Preliminary	Issued for comment
1	12.09.2025	For Planning	Issued for Planning

CONTENTS

- 1 EXECUTIVE SUMMARY**
- 2 DEVELOPMENT DESCRIPTION AND LOCATION**
- 3 FLOOD RISK PLANNING POLICY & GUIDANCE**
- 4 DEFINITION OF POTENTIAL FLOOD HAZARD**
- 5 MANAGING THE RISK OF FLOODING**
- 6 DEVELOPMENT AND PROPOSED FLOOR SLAB LEVELS**
- 7 MITIGATION MEASURES**
- 8 CLIMATE CHANGE**
- 9 FLOOD EVACUATION PLAN**
- 10 SUSTAINABLE DRAINAGE SYSTEMS SuDS**
- 11 METHODS OF DISCHARGE**
- 12 SURFACE WATER DRAINAGE STRATEGY**
- 13 MAINTENANCE AND OPERATION OF THE SUDs SYSTEMS**
- 14 FOUL WATER DRAINAGE STRATEGY**

- Appendix A - Topographical Survey
Appendix B - Existing Drainage System Drawing
Appendix C - Existing Drainage System Calculations
Appendix D - Product 4 Flood Data
Appendix E - Proposed Drainage System Calculations
Appendix F - Proposed Drainage Strategy

1. EXECUTIVE SUMMARY

PCS Consulting Engineers Ltd (PCS) were commissioned by WBA Hythe to carry out a Flood risk assessment and Drainage Strategy design pertaining to a full planning application for the redevelopment of the David Ian Furniture Unit at Kent Wharf, Dymchurch Road, Hythe, CT21 6LU

The assessment indicates that:

- Environment Agency flood maps for planning show the site is located within Flood Zone 3, which is land assessed to be at high risk of tidal flooding. The site has also been established to be generally at low risk of flooding from all other sources.
- Although the site is located in Flood Zone 3 for planning it is protected from sea flooding by flood defence measures along the coast, which provide protection for the 1:200 event including climate change
- The site is therefore effectively within Flood Zone 2, for consideration in terms of planning.
- The development is a 'Less Vulnerable' use when compared against the Technical Guidance to the National Planning Policy Framework (table 2).
- The Technical Guidance to the National Planning Policy Framework (table 3), considers a 'Less Vulnerable' use within Flood Zone 2 to be an appropriate development, without the need for either a sequential test or an exception test.
- The project is for the refurbishment of the existing building with floor slabs and frame retained. Consequently flood resilient measures are considered appropriate to mitigate against residual risks.
- The site is not suitable for infiltration techniques. There are no watercourses available for the discharge of surface water. There are no separate surface water sewers available in the vicinity of the site. Consequently, the only feasible surface water discharge available is to the existing combined sewer in Dymchurch Road.
- A hierarchical assessment has established that it is appropriate to discharge surface water runoff from the development to the existing combined sewer in Dymchurch Road.
- The existing unit on the plot discharges surface water at an un-restricted rate into the existing combined water sewer in Dymchurch Road.
- The existing site is a previously developed brownfield site. The Surface water runoff will be restricted to provide reductions in surface water flows off the site for the 1 in 30 and 1 in 100 plus climate change storm events. The site drainage will comprise a SuDS system with attenuation and treatment provided in accordance with 'The SuDS Manual Ciria C753'. This will ensure that excess surface water is stored on site for all storm return periods up to and including the 1 in 100 year event with 40% allowance for climate change. Therefore, there will be no increased risk of surface water flooding.

- In terms of flood risk and drainage strategy, it is concluded that the development can be occupied and operated safely and that there will be no increase in the level of flood risk to the site or neighbouring sites because of the development thus fulfilling aims of national and local planning policy.
- In the event of flood defences proving to be inadequate in the future, flood resilience measures will be incorporated into the building.

2. DEVELOPMENT DESCRIPTION & LOCATION

PCS Consulting Engineers Ltd (PCS) were commissioned by HBA Hythe to carry out a Flood risk assessment and Drain Strategy design pertaining to a full planning application for the redevelopment of the David Ian Furniture Unit at Kent Wharf, Dymchurch Road, Hythe, CT21 6LU.

The report assesses the flood risk associated with the development proposals, which involve demolition of approximately 1/3 of the existing showroom and refurbishment of the retained section of building with associated parking and landscaping. It also outlines a strategy for the disposal of surface water runoff from the development, following guidance set out in the National Planning Policy Framework (NPPF), the associated Planning Practice Guidance, Water Framework Directive (2000), Flood and Water Management Act (2010), National Flood and Coastal Erosion Risk Management Strategy (2011), Non-Statutory Technical Standards for Sustainable Drainage Systems (2015).

The application site is located in the Kent Wharf trading estate in the Pennypot area of Hythe, located to the north of Dymchurch Road (A259) and lies approximately 0.75km north of the English Channel coastline.

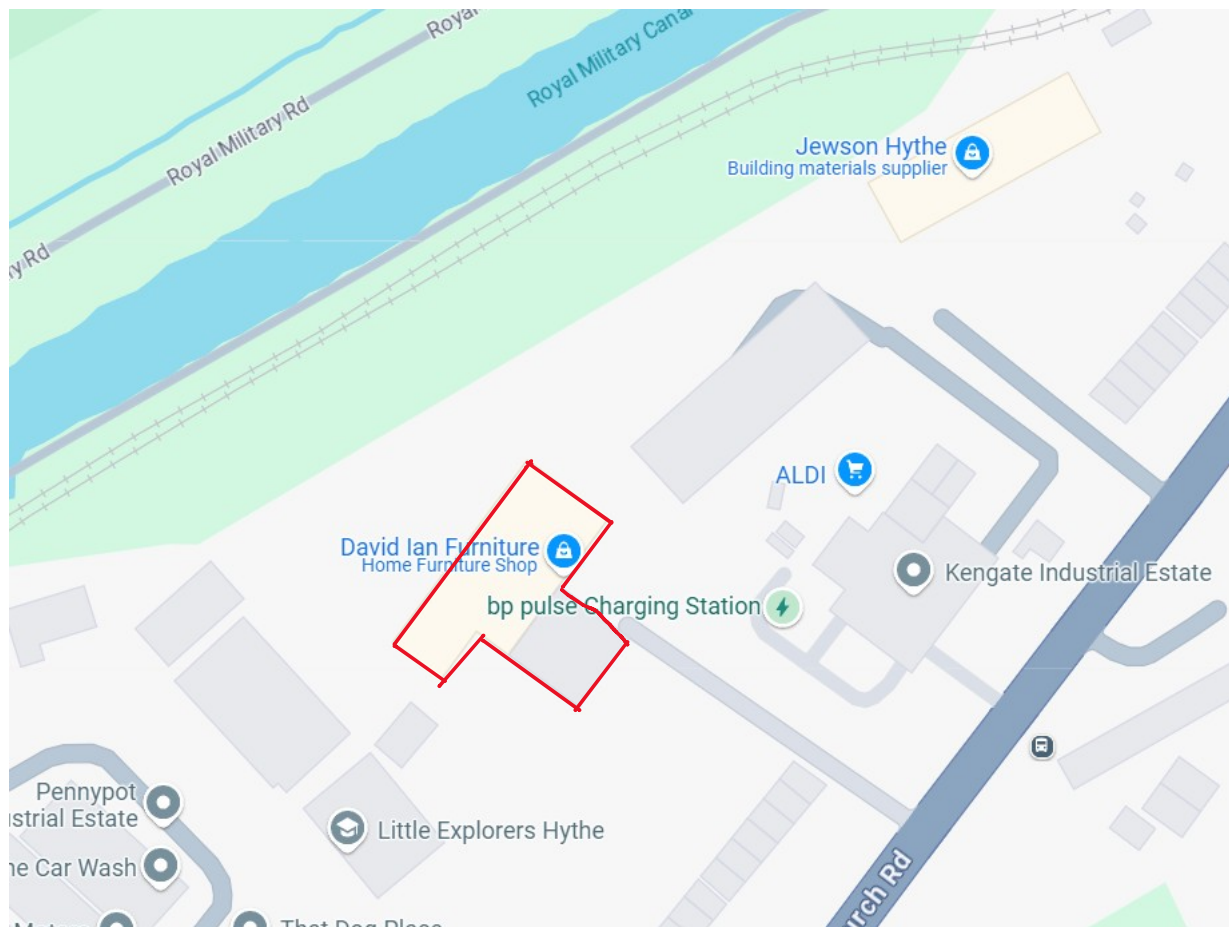


Fig 1 Site location plan

The site is centred on Ordnance Survey grid reference TR 148343 and co-ordinates X: 614851, Y: 13435.



Fig 2 Aerial Photograph of Site

The development site is approximately 0.47 hectares and is bounded to the north by undeveloped grassland. The Royal Military Canal is approximately 50m north with a railway running between the canal and the site.

To the east lie an Aldi supermarket and residential properties and the Fort Road Football Ground.

To the south is Dymchurch Road and a number of residential properties. Between these properties and the coast is an active Ministry of Defence shooting range.

To the west lie further industrial units and more residential properties.

The British Geological Survey map of the area indicates that the site lies upon Weald Clay Formation bedrock, which is a sedimentary bedrock overlain by superficial deposits of Tidal Flat deposits of clay and silt.

The existing drainage is shown in a sewer map from Southern Water and it shows that there are a number of combined sewers present close to the site. A 150mm combined sewer is located at the rear of the residential properties to the south east of the site. Further combined 150mm diameter sewers are located within Pennypot Industrial Estate to the south west of the site. An 800mm brick combined sewer is shown below Dymchurch Road in a south-westerly direction. A 300mm combined sewer is shown running from under the northern verge of Dymchurch Road near to the northerly entrance to the adjacent Aldi site connecting into the 800mm sewer described above. A 975mm concrete combined sewer is present on the opposite side of Dymchurch Road flowing in a north-easterly direction under the firing range.

There are no public sewers on the site, but a private combined drain connects the site to the existing combined sewer in Dymchurch Road.

The existing sewer and private drainage systems on and around the site are shown on PCS drawing in Appendix B.

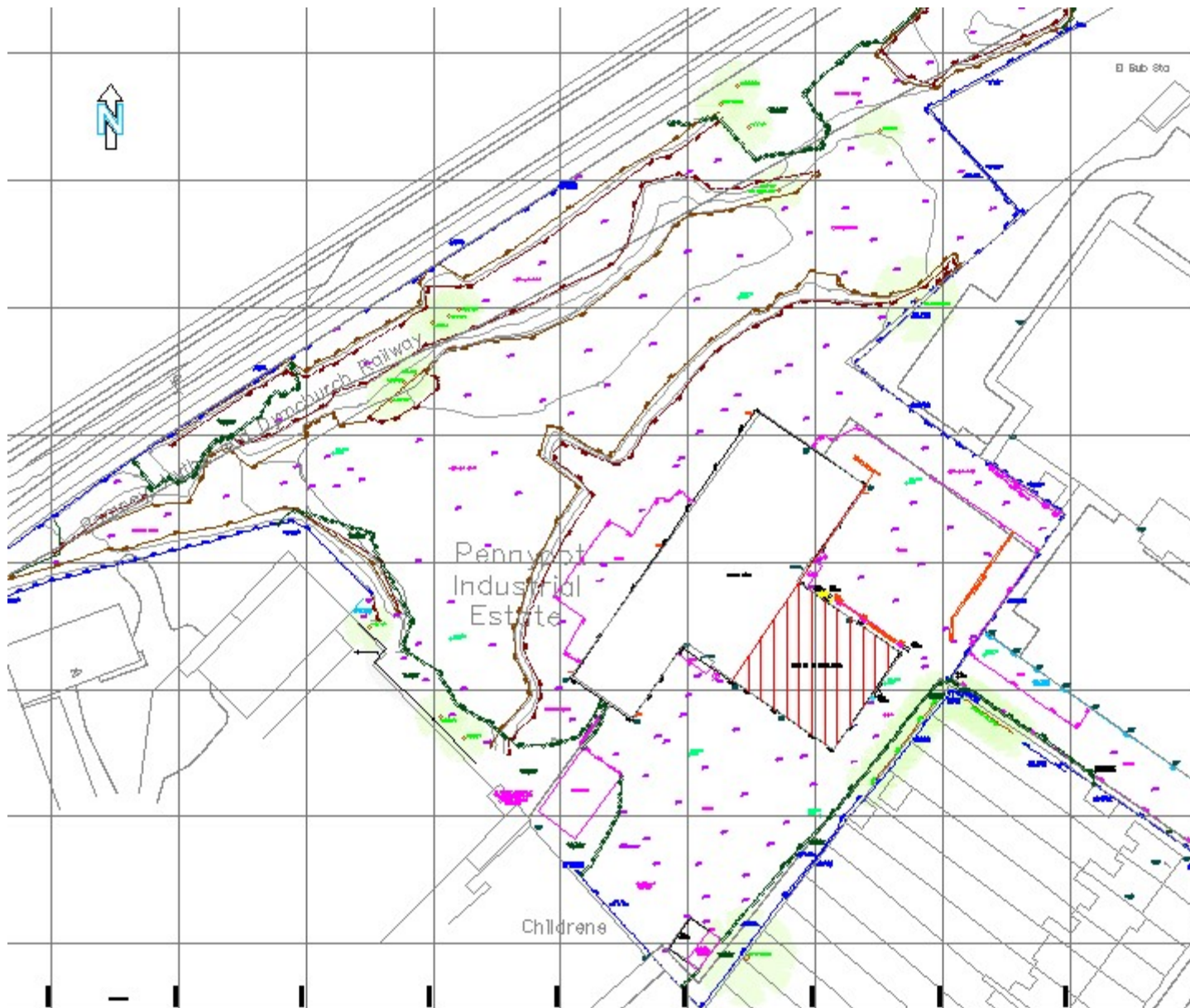


Fig 3 Proposed Site Plan

The proposed development consists of retaining and refurbishing the majority of the property, whilst demolishing the area marked above in Fig 3.

3. FLOOD RISK PLANNING POLICY & GUIDANCE

NATIONAL PLANNING POLICY FRAMEWORK (NPPF)

At a national level, the NPPF and the Planning Practice Guidance (PPG) to the NPPF seek to ensure flood risk is considered at all stages of the planning process, to avoid inappropriate development in areas at risk of flooding and to direct development towards areas of lowest flood risk. The NPPF retains a risk-based approach to the planning process and uses the Flood Zones

as the basis for applying the sequential test, as well as flood risk vulnerability classifications, which define the type of development that is considered appropriate within each zone. It advises local planning authorities to demonstrate that there are no reasonably available sites in areas with lower probability of flooding that would be appropriate to the type of development or land use proposed.

The NPPF establishes the Flood Zones as the starting point for assessment with the overarching aim to steer new development to areas with the lowest probability of flooding. Flood Zone maps are available on the GOV.UK website and the definitions of the Flood Zones extracted from the NPPF are described below:

- Flood Zone 1 – Low probability. This zone comprises land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%).
- Flood Zone 2 – Medium probability. This zone comprises land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% - 0.1%), or between a 1 in 200 and a 1 in 1,000 annual probability of sea flooding (0.5% - 0.1%) in any year.
- Flood Zone 3a – High probability. This zone comprises land assessed as having a less than 1 in 100 or greater annual probability of river flooding (0.1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.
- Flood Zone 3b – The functional floodplain. This zone comprises land where water has to flow or be stored in times of flood. Typically, land which would flood with an annual probability of 1 in 200 (0.5%) or greater in any year, or is designed to flood in an extreme (0.1%) flood.

In areas at risk of flooding, the NPPF advises that preference be given to new development in Flood Zone 1. If there are no reasonably available sites in Flood Zone 1, the flood vulnerability of the development can be considered in locating development in Flood Zone 2 and then 3. Within each flood zone, new development should be directed to sites at the lowest probability of flooding from all sources.

The NPPF advises that when determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk assessment with development only to be allowed in areas at risk of flooding where, in the light of the assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:

- within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;
- the development is appropriately flood resistant and resilient such that, in the event of a flood, it could quickly be brought back into use without significant refurbishment;
- it incorporates Sustainable Drainage Systems (SuDS), unless there is clear evidence that this would be inappropriate;
- any residual risk can be safely managed; and

- safe access and escape routes are included where appropriate, as part of an agreed emergency plan.

Local Planning Authorities (LPAs) determine minor developments where the Lead Local Flood Authorities (LLFAs) and Environment Agency are not statutory consultees. The cumulative flood risk impact to these developments is an important consideration. They must also ensure sequential development to help steer it towards areas with low risk of flooding, as well as considering safe access and egress from sites with flood evacuation and warning plans.

The Environment Agency is a statutory consultee on all planning applications within Flood Zones 2 and 3. They provide detailed flood risk technical advice on applications and associated Flood Risk Assessments, so that the LPA can make informed decisions. They ensure that developments do not negatively impact Flood Defences, Main Rivers and the wider environment through the planning and permitting systems.

The Environment Agency also advises that any development proposed in either Flood Zone 2, Flood Zone 3, or sites over 1ha in Flood Zone 1, or in a dry island (all types of development excluding minor development in a dry island), must be accompanied by a site-specific Flood Risk Assessment, proportionate to the scale of development that demonstrates that all forms of flooding have been taken into account (as detailed in the Council's Strategic Flood Risk Assessment). Managing flood risk over the lifetime of the development must be addressed, taking into account the following:-

- The impacts of climate change, and
- Where practical to do so, it will be expected that developments will be constructed with adequate flood resilience and resistance measures suitable for the lifetime of the development, in line with the Environment Agency advice.

VULNERABILITY CLASSIFICATION

In accordance with Technical Guidance to the National Planning Policy Framework (TGNPPF) table 2: Flood Risk Classification, the proposed building use falls under the category of 'Less Vulnerable'.

SEQUENTIAL TEST

The Sequential test is the process that Local Authorities use to give priority in allocating and permitting sites for development, when drawing up or revising policies or in considering planning applications. In the case of flooding, the risk based Sequential test is meant to steer new development towards those sites with little or no risk of flooding (i.e. the lowest probability of flooding, Flood Zone 1) in preference to areas of higher risk.

Table 3 of TGNPPF gives guidance on appropriate development within different flood zones. A category of 'Less Vulnerable' is considered to be appropriate in Flood Zone 3. The scheme is for partial demolition of part of the existing development and refurbishment of the remainder. As such the sequential test is not relevant to the development, as there is no alternative site available and the vulnerability classification remains unchanged.

4. DEFINITION OF POTENTIAL FLOOD HAZARD

FLUVIAL FLOODING

The Military canal towards the rear of the site is classified as a main river. The Shepway District Council phase 2 Strategic Flood Risk Assessment 2015, considered flooding associated with the Military Canal. Please note that since the SFRA was prepared the Council name has been changed to Folkstone and Hythe District Council.

During the winter of 2002 heavy and prolonged rainfall resulted in high water levels in the canal. The ground within the catchment was also heavily saturated. On the 30th December 2002 an intense rainfall event coincided with high tide, which meant that the canal's outfall at Seabrook was tide-locked and therefore the canal could not discharge to the sea. This caused levels in the canal to exceed the crest of the canal's bank in areas where this was low. The flooding affected the low-lying areas south of the canal in the West Hythe areas of Pennypot and Burmarsh; in particular, The Haven, Shepherds Walk, and Romney Way. Whilst the flooding affected a significant number of properties, the relatively shallow depths meant that internal flooding only affected one or two buildings.

The areas affected by flooding from the Military Canal are all situated to the south west of the development. The development site was not affected by the 2002 military canal flooding.

The site is protected by a section of raised land alongside the north west boundary, and consequently the site is not considered to be at risk of flooding from the military canal.

FLOODING FROM THE SEA

As outlined in the SFRA Folkestone and Hythe is a district of unique contrasts, situated on the East Kent coast, 120 kilometres from London and covering an area of 363 square kilometres. Much of the District is low-lying with approximately 195km (55%) lying within the Environment Agency's Zone 3a flood risk area.

However, it should be noted that these zones are based on modelling that assumes no defences exist. Their purpose is to advise on the risks for planning policy purposes and they do not accurately model the actual flood risk for sites benefitting from defences (Figure 4 below).

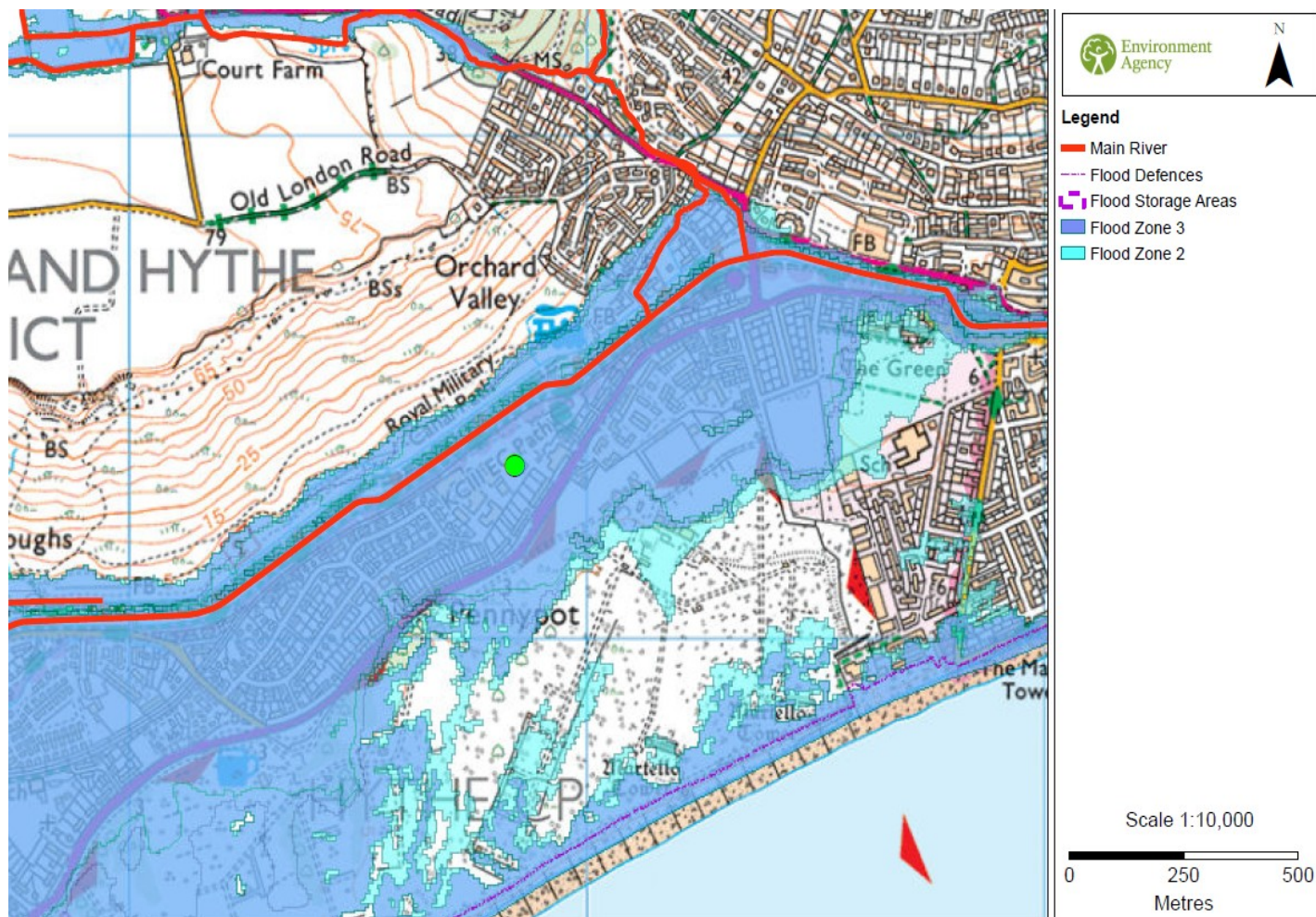


Fig 4 EA Flood Zone Map. This mapping ignores in its entirety the flood defences in place and plots the flooding that would occur if all defences were removed. It is not therefore an accurate representation of the actual flooding risk.

In addition to the EA published flood maps for planning, accurate modelling data has been obtained from the EA. This is presented in Appendix D and models the affects of defences in place, the impact of climate change both in the short and long terms, and the impact of overtopping and breached of the defences in place.

The following data is taken from the EA modelling within Appendix D.

The map shows the site and surrounding area to be in Flood Zone 3a (if defences in place are ignored), which is land assessed to be at high probability of tidal flooding. The flood zone map is consistent with the risk of river / tidal flood maps also taken from the GOV.UK website.

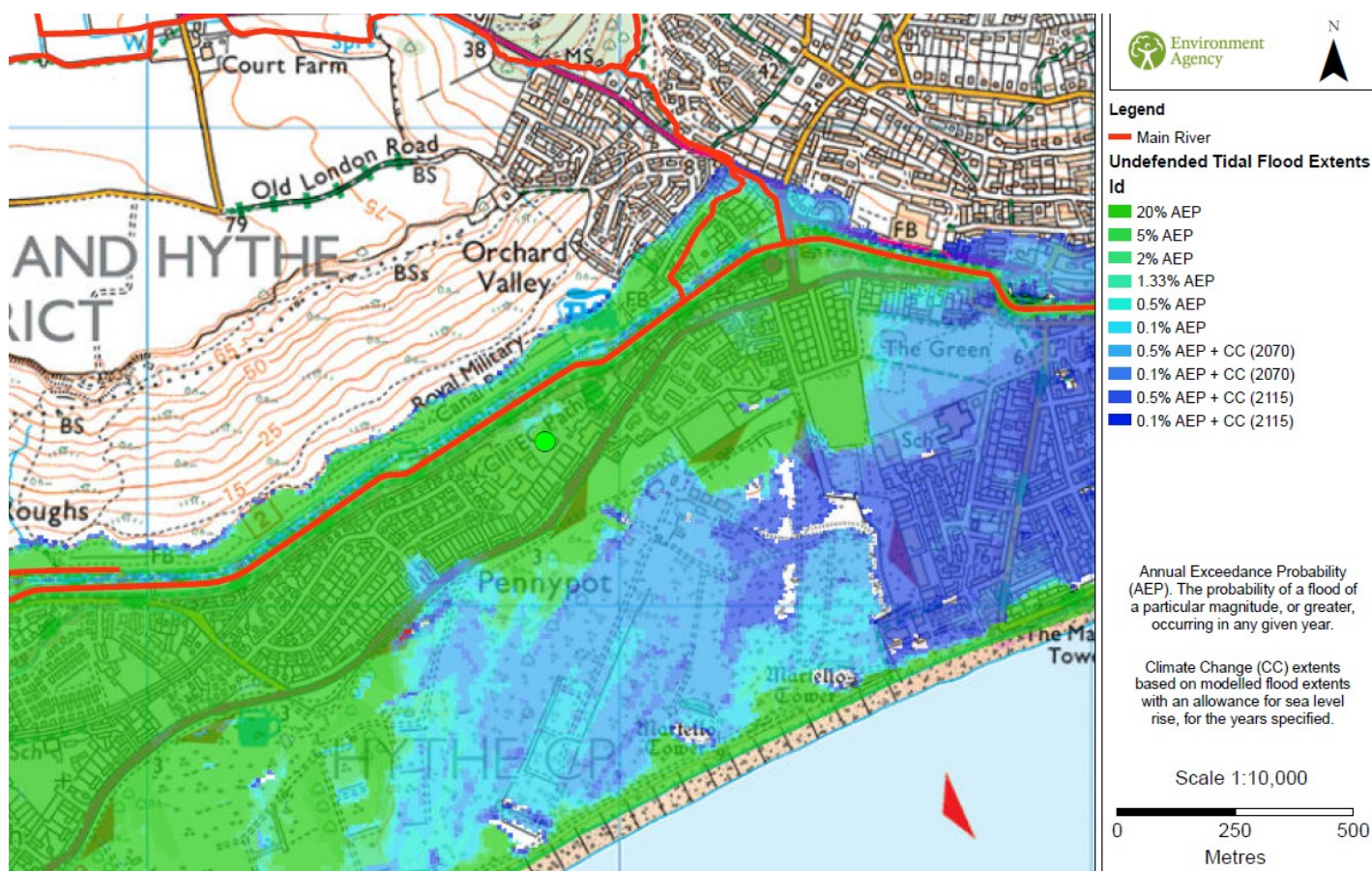


Fig 5 EA Risk of River / Tidal Flooding Map (undefended) This mapping ignores in its entirety the flood defences in place and plots the flooding that would occur if all defences were removed. It is not therefore an accurate representation of the actual flooding risk.

The below figure 6 shows flood defences present to the south of the site predominantly protecting from tidal flooding.

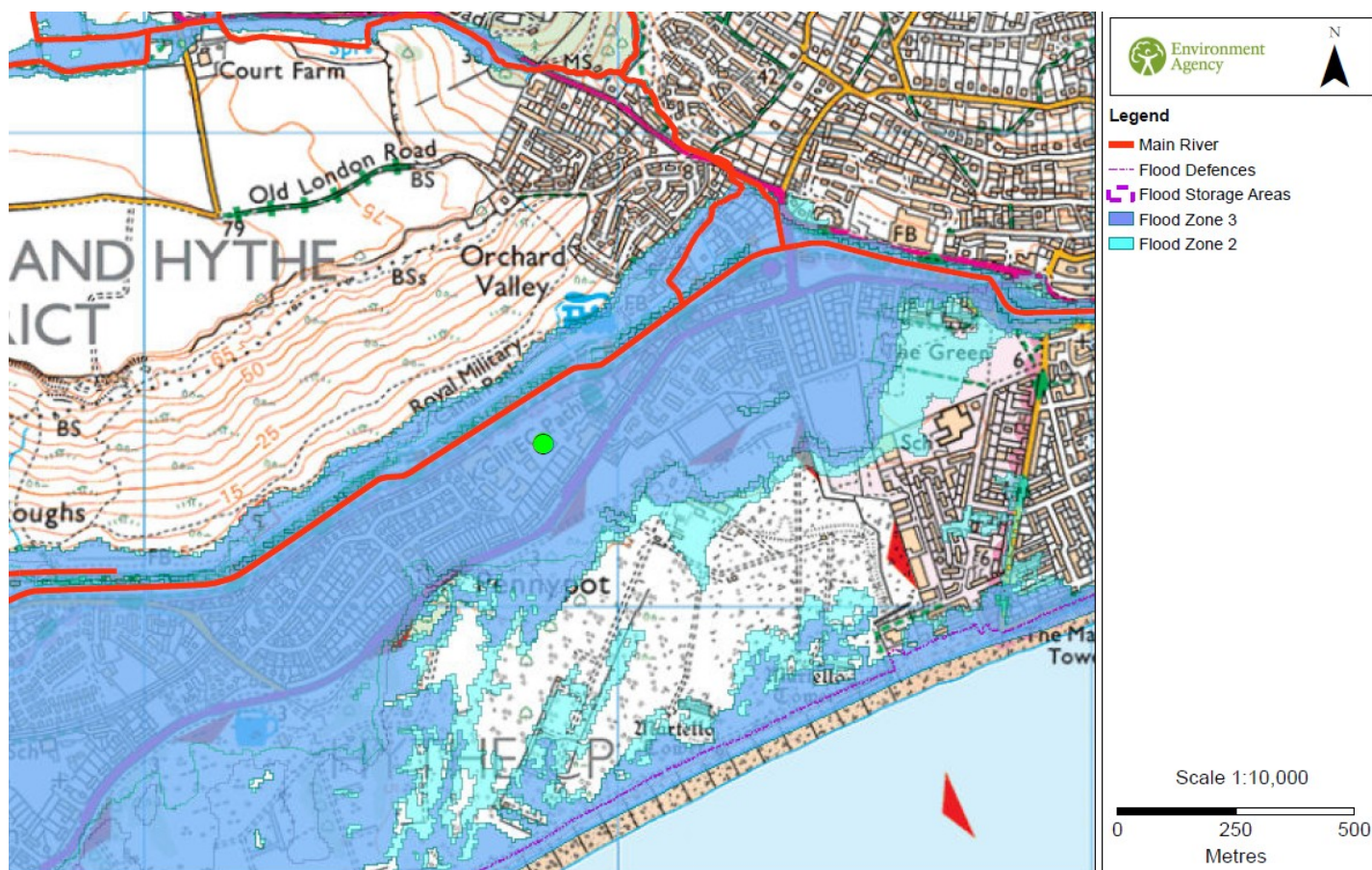


Fig 6 EA Flood Defence Map. This mapping ignores in its entirety the flood defences in place and plots the flooding that would occur if all defences were removed. It is not therefore an accurate representation of the actual flooding risk.

Work was completed in March 2021 to improve the flood defences between the Dymchurch Redoubt and Fisherman's Beach.

'The scheme covers approximately 3.25km of coastline and involved refurbishing and raising the timber groynes and placing approximately 200m of rock revetment around the redoubt and recharging the shingle beach and they are designed to provide a 1 in 200 year(0.5%) standard of protection for flooding from the sea in any given year. The defences are owned by the Ministry of Defence and maintained by the Environment Agency.

Fig 7 below shows defended tidal flood extents for the area around the site.

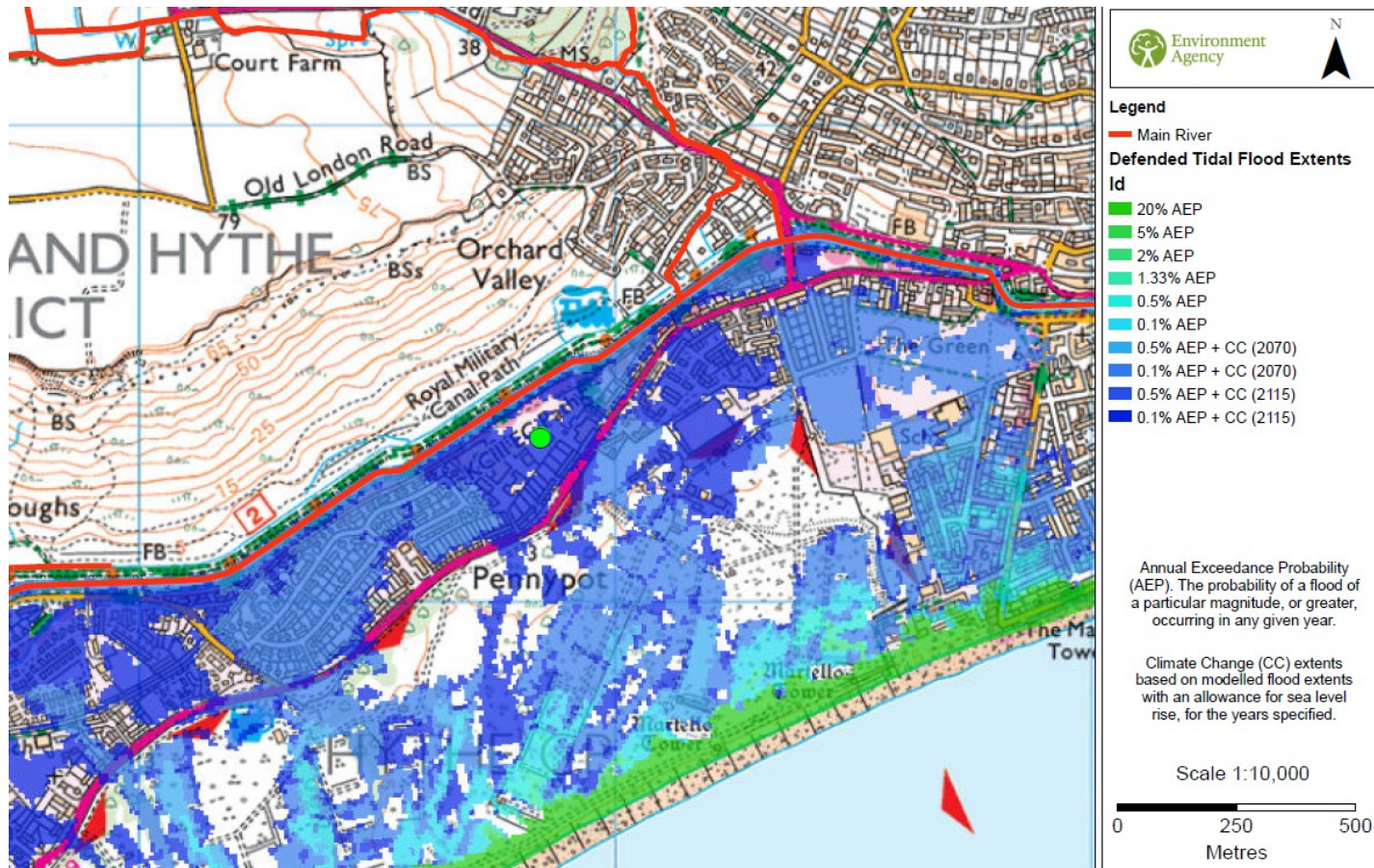


Fig 7 EA Defended Tidal Flood Extents

As shown in figure 8 below, the site is located inside of the Q100+46% / T1 2017 +0.9896m Climate Change to 2100.

The EA data within Appendix D is based on modelling undertaken by JBA directly for the EA in 2020. The JBA modelling report (Romney Marsh Breach and Flood Forecasting report) includes additional mapping not included with the EA Product 4 data.

Fig 8 below shows the current defended flood mapping.

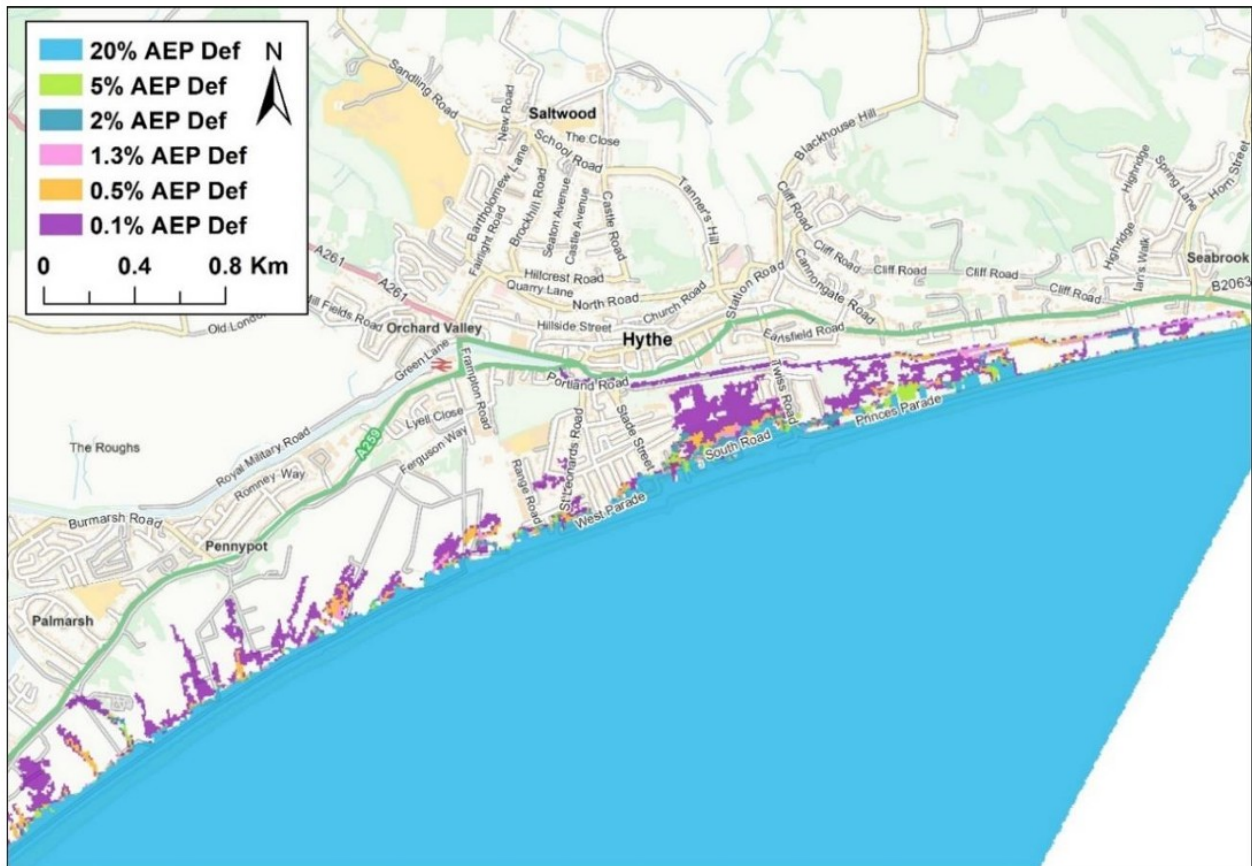


Fig 8 EA Defended Tidal Flood Extents (Current Date)

The defended scenario (current date) is that the entire site is not subject to flooding.

The impact of climate change out to 2115 was also included within the JBA modelling and is presented in Figure 9 below

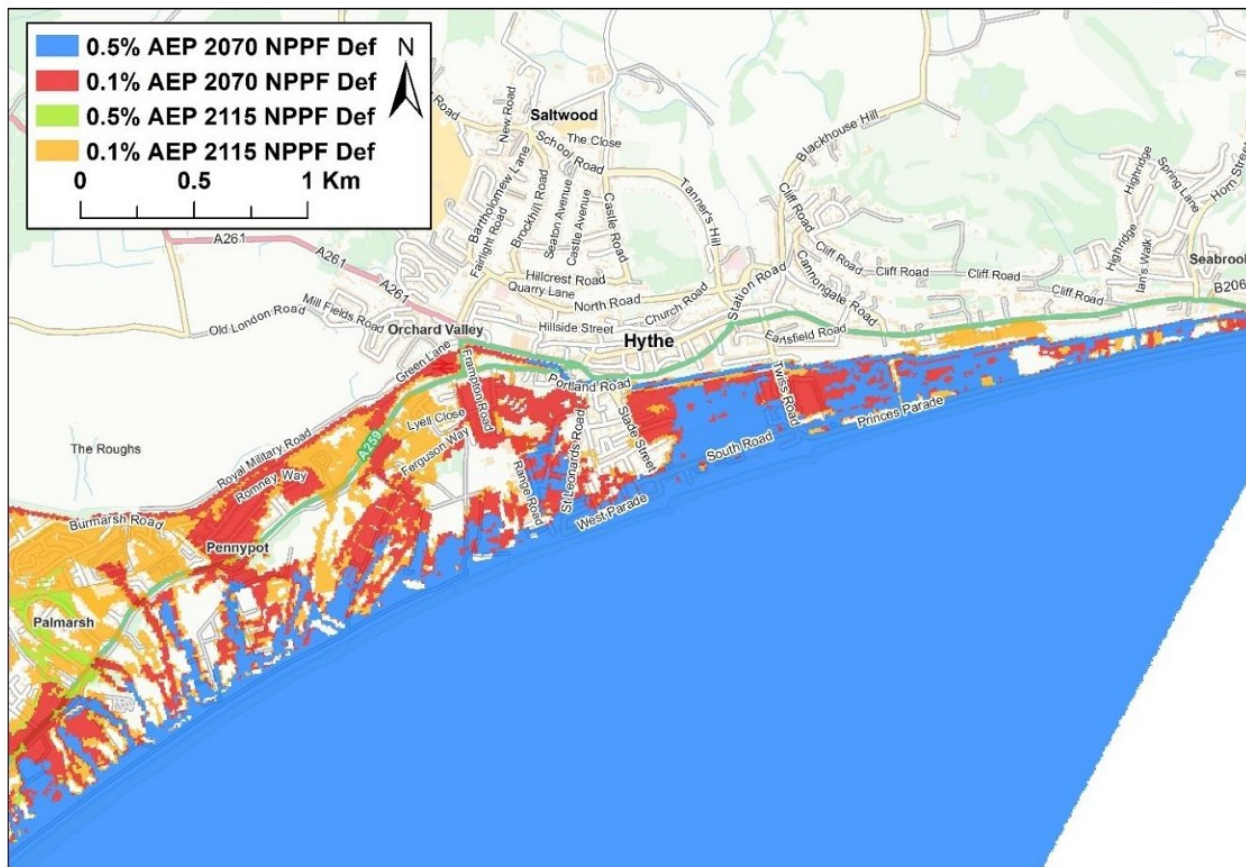


Fig 9 EA Defended Tidal Flood Extents (Climate Change) in 2115

In summary the defences provide for the site protection up to 2115, for all events up to and including the 0.5% AEP (1:200). For a 0.1% AEP (1 in 1000) event including climate change out to 2115, the site would be subject to flooding.

The same data is presented in tabular form below for various data points on the site. Figure 10 shows the site node levels. Table 1 shows the modelled flood depth for those same node points on the site for various flood events for the defended scenario.



Fig 10 EA Site Level Node Map

The site is defended

Point ID	National Grid Reference		Modelled Tidal Flood Depths for Annual Exceedance Probability (AEP) events shown (metres)									
	Easting	Northing	Defended									
			20% AEP	5% AEP	2% AEP	1.33% AEP	0.5% AEP	0.1% AEP	0.5% AEP + CC (2070)	0.1% AEP + CC (2070)	0.5% AEP + CC (2115)	0.1% AEP + CC (2115)
1	614797	134342	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
2	614807	134334	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	614821	134321	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51
4	614835	134309	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49
5	614811	134352	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	614819	134343	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35
7	614833	134330	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.53
8	614844	134317	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51
9	614825	134362	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	614840	134343	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47
11	614850	134334	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50
12	614863	134326	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49
13	614838	134373	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36
14	614872	134338	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.53
15	614847	134382	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23
16	614864	134359	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.55
17	614878	134351	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51
18	614870	134367	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49
19	614882	134361	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.52
20	614866	134380	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.52

Table 1 EA model data from product 4 information. Tidal flood depths defended

Data taken from the Romney Marsh Tidal Mapping Study, completed by JBA Consulting in 2020. Values of 0.00 indicate locations at which the selected points lie outside of a particular modelled flood extent.

In summary the site is defended for all events up to the 0.5% AEP (1 in 200) event plus climate change allowance up to 2115. The site would flood in the 0.1% AEP (1 in 1000) event plus climate change up to 2115. The depths of flooding are based on a 0.1% AEP event in 2115 of 3.17m AOD.

The flood zone 3 definition is the extent of the flooding from the sea for the 0.5%AEP event plus climate change. The flood zone 2 definition is the extent of flooding or the 0.1%AEP event plus climate change.

The site is therefore entirely within Flood Zone 1 (current date), but will fall into Flood Zone 2 in 2115 when climate change is taken into account. External ground levels are currently between 2.6m AOD and 2.9M AOD around the building, with a floor slab level of 2.91m AOD.

SURFACE WATER FLOODING

Surface water flooding occurs when rainfall intensity is greater than the infiltration rate of the soil resulting in overland sheet flow. Flooding from surface water sewers can also be caused, and is influenced by, the capacity and condition of the surface drainage network, and rates of surface runoff are influenced by rainfall and extent of impermeable area. The EA's Risk of Flooding from Surface Water mapping provides an understanding of the areas, which may be at greater risk from surface water flooding, with the maps showing critical flow paths and areas situated in topographic depressions that could flood following an extreme rainfall event. A surface water flood risk map downloaded from the GOV.UK website is shown below.

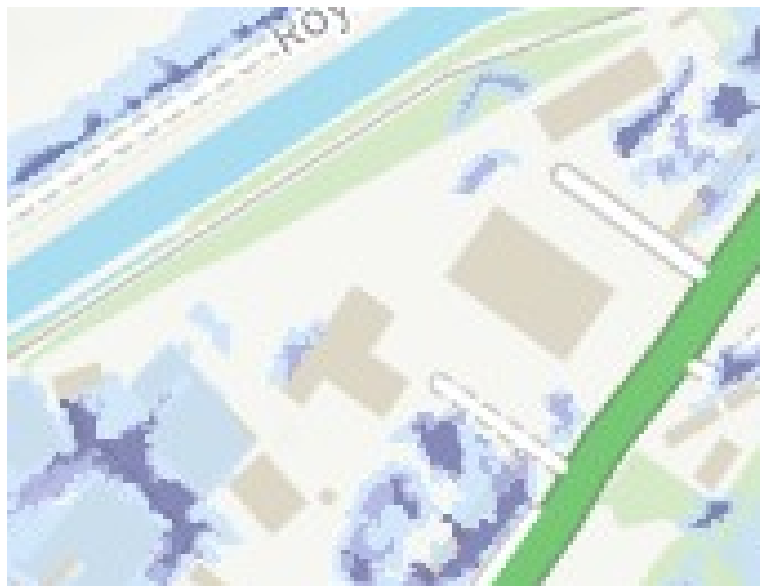


Fig 11 EA Surface Water Flood Risk Map

The map shows the site to be generally at very low risk of surface water flooding with a small part of the site at the rear of the building shown as low risk of surface water flooding. Measures are deemed necessary to manage flood risk from this source. Surface water runoff from the development will need to be managed using Sustainable Drainage Systems (SuDS) to ensure that the development does not alter the risk of surface water flooding to the site and surrounding area.

Any flows generated within the development will be directed towards new existing drainage built at the low points of the car parking areas and roads, and from there into the drainage system. If for any reason the drainage system should fail, the falls on the site will direct overland flows away from the building footprint and towards the eastern boundary of the site where it will then drain into the existing drainage ditches and SUDS system.

GROUNDWATER FLOODING

The Strategic Flood Risk Assessment (SFRA) advises that flooding from groundwater occurs when water stored below ground reaches the surface. It does not have to occur near a river, or even when it is raining, and is often associated with porous ground such as sands, gravels, limestone or chalk. Groundwater flooding can take much longer to dissipate than other forms of flooding, as groundwater flow is much slower than surface flow, thus water levels take longer to fall. Overall, groundwater flooding within much of Hythe and the area surrounding the site is not considered a major problem. There are no records of flooding from groundwater included within the SFRA. However, it is a Planning Policy Statement (PPS) 25 requirement that the potential effect of groundwater flooding must be assessed in any FRA. On this basis, no further assessment of flood risk is required in relation to groundwater flooding and no measures are deemed necessary to manage flood risk from this source.

SEWER FLOODING

The SFRA says that the risk of flooding from the sewerage systems within the catchment areas is generally the responsibility of the sewerage undertaker. In Hythe this is Southern Water. Information on sewer flooding is therefore recorded and held by them. The SFRA has included historical incidents in the Felixstowe and Hythe District. There are no records of flooding from sewers affecting the site.

FLOODING FROM ARTIFICIAL SOURCES

Flooding from artificial sources is most likely to result from burst water mains or from infrastructure failure in an artificial watercourse or water body, i.e., canals or other water features such as reservoirs. These systems are maintained, improved and regularly inspected by British Waterways (canals), Southern Water (water mains) and the EA water bodies, therefore, flood risk from these sources is generally considered to be low.

Flood risk from reservoirs is not applicable.

As no existing surface water flood routes were identified to affect the site, which would be closely linked to patterns associated with burst water mains, and as no water main infrastructure is identified to cross the site, the site is not assessed to be at risk from flooding from the existing water mains and no further assessment of flood risk, or management of flood risk from this source is required for the development, although floor levels of buildings should be generally raised above proposed car parks to protect properties from potential flooding caused by burst water mains as part of the development's service infrastructure.

SUMMARY OF FLOOD RISK FROM SOURCES OF FLOODING

In summary, the site is in Flood Zone 1 (with defences) This zone comprises of land assessed as having a 1 in 200(0.5%) or greater annual probability of tidal flooding and 1 in 100(1%) of river flooding.

When climate change is taken into account out to 2115, the site falls within Flood Zone 2 (with defences).

5. MANAGING THE RISK OF FLOODING

The National Planning Policy Framework (NPPF) Planning Practice Guidance for Flood risk and coastal change National Planning Policy Framework (NPPF) advises that the objectives of a site-specific flood risk assessment are to establish:

- Whether a proposed development is likely to be affected by current or future flooding from any source;
- whether it will increase flood risk elsewhere;
- whether the measures proposed to deal with these effects and risks are appropriate;
- the evidence for the local planning authority to apply (if necessary) the Sequential Test, and;
- whether the development will be safe and pass the Exception Test, if applicable:

Previous sections established the site to be in Flood Zone 1(defended), which is land assessed to be at low risk of tidal / fluvial flooding. The site was also established to be at low risk of groundwater and surface water flooding and at low risk from all other sources considered in the SFRA.

The NPPF advises that climate change is anticipated to cause an increase in overall flood risk. Land should be allocated today in a way, which will be sustainable in the future.

As the site has been established to be generally at low risk of fluvial / tidal flooding and low risk from all other sources considered in the FRA, the landowner of the proposed development is responsible for providing measures to deal with these effects and risks. Any necessary flood risk management measures should be sufficiently funded to ensure that the site can be developed and occupied safely throughout its proposed lifetime. The SFRA advise that it is a requirement for new developments that:

- In designing the site sewerage and layout, developers should demonstrate flow paths and the potential effects of flooding resulting from storm events exceeding the design criteria.
- Flows should be dealt with within the site for events with a return period of up to 1 in 100 years, in a way that does not result in significant risk to users of the site or result in flooding of any buildings.
- Surface water runoff from the development will need to be managed using Sustainable Drainage Systems (SuDS) to ensure that the development does not alter the risk of surface water flooding to the site and surrounding area.
- Floor levels of buildings should be generally raised above proposed road levels to protect properties from potential overland surface water flows caused by exceedance of the surface water drainage systems capacity and to protect properties from potential flooding caused by burst water mains provided as part of the developments service infrastructure.

The National Planning Policy Framework (NPPF) encourages a sequential risk-based approach to determine the suitability of land for development in flood risk areas. It advises local planning authorities to demonstrate that there are no reasonably available sites in areas with a lower probability of flooding that would be appropriate to the type of development or land use proposed.

Previous sections have identified that the proposed building use falls under the category of 'Less Vulnerable' development and therefore it is not necessary to apply the sequential or exception test.

6. DEVELOPMENT AND FLOOR SLAB LEVELS

The site is an existing furniture sales outlet. The building is in urgent need of updating and modernisation to maintain its viability and to continue as a thriving employment business in the area.

The proposals are for the wholesale refurbishment of the existing building. Large sections are to be retained in their entirety but updated internally. The remaining sections are to be remodelled with the existing floor slab and frame retained and then adapted where necessary.

Large sections are being retained and even those areas being remodelled are retaining their floor slabs and steel frame. The project is therefore a refurbishment and new build provisions are not deemed necessary.

The existing building to be refurbished is at a floor slab level of 2.91m AODm, and the site is currently within Flood Zone 1 (defended), however when climate change is taken into account out to 2115, then the site falls within Flood Zone 2. The predicted flood level for the 0.1% event including climate change out to 2115 is 3.17m AOD.

In this case it is not possible to raise floor slab levels and consequently flood resilience measures are proposed as outlined in section 7, to accommodate the long term risks associated with climate change.

7. MITIGATION MEASURES

The existing defences provide protection up to and including the 0.1%AEP (1 in 1000 year) event. Those defences do not at the moment provide protection for the 1 in 1000 plus climate change event. The defence may well be improved in the future to provide protection for the climate change allowance, but in terms of the potential risk we have to assume that defence will not be uprated in the future.

The predicted flood level for the 1 in 100 plus climate change is 3.17m AOD. The existing floor slab levels are 2.91 m AOD.

The potential flood design level is therefore 3.17m AOD and the depth of water that could accumulate is 260mm and up to 500mm externally. On the basis flood waters could enter into the building it is appropriate to design the building so that draining down, cleaning and repairs can be undertaken easily and quickly. This is referred to as 'flood resilience'.

The following flood resilience measures will be undertaken and incorporated into the building:

a) Services:

All service entries will be sealed (e.g. with expanding foam or similar closed cell material). Pipework: Closed cell insulation will be used for pipes which are below the predicted flood level.

Drainage services: Non-return valves will be fitted in the drainage system to prevent back-flow of diluted sewage.

Water, electricity and gas meters: will be located above predicted flood level.

Electrical services: electrical sockets will be installed above flood level for ground floors to minimise damage to electrical services and allow speedy re-occupation.

Electric ring mains will be installed at first floor level with drops to ground floor sockets and switches.

Heating systems: boiler units and ancillary devices will be installed above predicted flood level and preferably on the first floor of two-storey properties.

Conventional heating systems, e.g. hot water pipes will be adopted as they are unlikely to be significantly affected by flood water unless it contains a large amount of salts.

Communications wiring: wiring for telephone, TV, Internet and other services will be protected by suitable insulation in the distribution ducts to prevent damage. Any proposed design solution for flood insulation on all potentially vulnerable will be discussed with the relevant service providers.

The server room will be installed at first floor.

b) Floor Construction:

Existing ground floor slabs are of ground bearing concrete construction with simple finishes. The ground bearing slabs are all to be retained.

Some small areas of carpet may be provided in office areas but these will be laid on the concrete slab and will be easy to remove and replace.

c) Walls:

Internal wall will be of metal stud construction. Plasterboard linings will be used but the bottom 1.2m section will be laid horizontally to enable rapid replacement.

External walls will be a mix of structural class and metal cladding. Insulation will be not be affected by water ingress.

d) First Floor/First Floor:

Mezzanines are not proposed as part of the shell works, but may be fitted by future tenants. They will be far above any predicted flood levels

e) Drain Down and Cleaning:

The ground floor levels are all set 100 to 500mm above surrounding road levels, so that drain down will occur naturally as flood water levels recede, Clean down can then be achieved by simple sweeping.

8. CLIMATE CHANGE

The SFRA and the EA modelling included within Appendix D considered the impact of climate change on the flood zones.

For development considerations, the effects of climate change should be accounted for in the drainage calculations used to model the sustainable drainage systems for the site. The design life of the development should be considered as 40 years.

The Surface water runoff will be restricted to the existing brownfield run off. The use of SuDS will ensure that excess surface water is stored on site for all storm return periods up to and including the 1 in 100 year event with 40% allowance for climate change. Therefore, there will be no increased risk of surface water flooding.

9. FLOOD EVACUATION PLAN

It is proposed to manage the risk of flooding at ground floor level using a flood evacuation plan that ensures this area is vacated on the issue of a flood warning by the EA's Flood Warning Service.

The Flood Warning Service monitors rainfall, River levels, and tides to forecast the possibility of flooding in the area. They aim to provide a minimum of two hours warning prior to the onset of a flood event, which would allow sufficient time for the evacuation of the lower ground floor. Flood warnings are issued by telephone, SMS text, email, fax/pager or through the media on TV or radio bulletins. The office should be registered with this service by calling the EA's Flood line on 0345 988 1188 or by using the link <https://www.fws.environment-agency.gov.uk/app/olr/register>.

Prior to opening the Units, staff awareness training should be carried out with refresher training undertaken annually and on the employment of any new staff. On the issue of a flood warning, Management would receive a notification via the EA's Flood line Warnings Direct service. The EA's Flood Warning Service uses a variety of warnings to help prepare for flooding, which is identified in *Table 2* below:

EA Flood Warnings	Description
ONLINE FLOOD RISK FORECAST	Be aware – Monitor weather situation. Updated on daily basis.
 FLOOD ALERT	Flooding is possible – Be prepared. Used two hours to two days in advance of flooding.
 FLOOD WARNING	Flooding is expected – Immediate Action Required. Used half an hour to one day in advance of flooding.
 SEVERE FLOOD WARNING	Severe flooding – Danger to life. Used when flooding poses a significant risk to life.
	No further flooding is expected. Used when river or sea conditions begin to return to normal.

Table 2 EA Flood Warnings

Management should evacuate the buildings ground floor on issue of a 'Flood Warning'. If no further flooding is expected and conditions in the nearby watercourses have returned to normal, the Flood Warnings Information Service will issue a status 'Warning No Longer in Force'. At this point damage caused by the floodwater should be assessed, the building ventilated and contact the local authority to find out about cleaning up. The building's ground floor should only be re-opened once it has been confirmed as safe to do so.

10. SUSTAINABLE DRAINAGE SYSTEMS SuDS

Development of the site must be undertaken using SUDS that meet EA regulations. Implementation of SuDS for new developments is generally viewed as potentially more beneficial than conventional drainage systems for a number of reasons such as: (1) better control of water discharge rates and volumes; (2) water quality improvements through the reduction of pollutants; (3) recharge of aquifers; and (4) amenity improvement and facilitation of wildlife habitat.

SUDS TECHNIQUES

SOAKAWAYS

Given that a relatively high groundwater table is anticipated and the near surface soils are anticipated to be low permeability clays, soakaways are not considered likely to provide a suitable method of surface water drainage and an alternative drainage solution required.

INFILTRATION TRENCHES AND DITCHES

These are trenches that are filled with permeable material into which surface water flows from the edge of paved areas. A slotted or perforated pipe may be built into the base of the trench to collect or convey the water.

Infiltration trenches can also intercept overland flows from sloping ground.

Infiltration trenches are not a viable option for this site and their use is not proposed due to the impermeable clay below the site, the high groundwater table and the flat site levels.

SWALES

These are vegetated landscape depressions with a shallow gradient to drain water evenly off impermeable surfaces mimicking natural drainage patterns. Swales will normally be dry but during periods of rainfall a swale will fill, slowing and filtering flows through the vegetation, and allowing minor infiltration.

An area has been identified on the site that would be suitable as a swale. The drainage system has been designed to route all the roof and paving drainage to and through the swale prior to final discharge.

BASINS AND PONDS

These are structures designed to attenuate flows by storing runoff during the storm and releasing it at a controlled rate during and after the storm. Ponds are basins that have a permanent standing water level which provide amenity and wildlife benefits in addition to storage.

There is limited green areas on site which would prevent the use of basins and ponds.

POROUS PAVING

These comprise areas of porous block paving, which allow water to permeate through the surface into a porous stone sub-base. The sub-base has a void ratio of circa 30% allowing for attenuation within the stone sub-base. In addition to attenuation the porous sub-base removes pollutants at source and contributes to improvements in the quality of run off from a development.

The use of porous paving to provide attenuation and pollutant removal over and above that already provided by the existing SUDs system is feasible, but is limited to small areas of car parking only. It would also involve removal of large sections of existing parking which are currently suitable for re-use. From an overall 'sustainability' point of view porous paving is not proposed.

ATTENUATION TANKS

Attenuation tanks comprise below ground storage systems that temporarily store runoff associated with extreme rainfall events while it is released at controlled rates. They are normally incorporated beneath areas of hard landscaping, and it is likely that they could be used beneath the car park / service yard area.

11. METHODS OF DISCHARGE

The hierarchy for the discharge of surface water runoff is summarized in the table below with an assessment of each method's suitability.

System	Assessment
Discharge to ground by infiltration	The Ph I ground investigation report identifies ground conditions at the site that are relatively impermeable and with a high groundwater level. Therefore, the discharge of surface water to the ground would not be suitable method for the disposal of surface water runoff from the development
Discharge rainwater direct to a watercourse	There are not any watercourses available locally to the site to be able to connect into.
Discharge rainwater to a surface water sewer / drain	There are no separate existing storm and foul water sewers in Dymchurch Road or in the vicinity of the property.
Discharge rainwater to the combined sewer	There is a combined sewer within Dymchurch Road which currently receives both foul and surface water from the development, This is the only connection available to us for both foul and surface water.

Table 3 Surface Water Runoff Discharge Method Hierarchy

Based on the assessment in the above table, storing rainwater within the site and discharging to the existing combined sewer in Dymchurch Road would be the most suitable method for disposal of the surface water runoff from the development.

12. SURFACE WATER DRAINAGE STRATEGY

The existing surface water system discharges at un-restricted rates into the sewers in Dymchurch Road. To accurately model the existing surface water discharge the sites drainage system has been subjected to a CCTV survey. Where it has not been possible to fully confirm existing drainage by survey, then those areas have not been included. Consequently the existing run off from the site is based on very conservative assumptions. The current discharge rates are calculated within Appendix C.

Proposed surface water discharges are calculated within Appendix E. A summary of both existing and proposed surface water discharge rates are included below.

Event	1 in 1 year	1 in 30 year	1 in 100	1 in 100 + 40%
Existing	4.5 l/sec	8.9 l/sec	9.5 l/sec	
Proposed	4.5l/sec	4.5l/sec		5.1 l/sec

The drainage proposals match the existing brownfield run-off for the 1 in 1 year event and considerable betterment for both the 1 in 30 and 1 in 100 +climate change events

The drainage system comprises a conventional pipes system discharging to the existing outlet adjacent to Dymchurch Road. Flows off the site are restricted via a Hydrobrake prior to final discharge. Attenuation is provided by a combination of surface swale and below ground attenuation is upstream of the hydrobrake. Proposals are shown on drawing 901 within Appendix F.

The water quality has been assessed against the Ciria Suds manual and in particular The Suds Manual, Ciria C753 gives guidance on water quality run off in section 26, via pollution hazard indices for various land use classifications. This ensures that sufficient treatment is provided by the drainage system for the pollutants likely to be discharged for a particular land use. In this case the pollution hazard level is defined as medium, and the mitigation scores achieved by the proposed drainage meet and exceed the requirements. Full details of the hazard levels, treatment solutions and scores achieved are included on drg 900 in Appendix F.

13. MAINTENANCE AND OPERATION OF THE SUDS SYSTEMS

The new drainage system and SUDs features all fall within common parts of the development. As such the maintenance and operation of the drainage and suds features will fall under a management company or landlord.

The O&M manuals for each building will include the following maintenance regime:

SUDS Element	Porous Paving	
Maintenance Issues	Porous surfaces are susceptible to silt blockage	
Maintenance Period	Maintenance Task	Frequency
Regular	Surface brushing of paved surfaces to reduce silt accumulation.	Quarterly
	Brushing and suction sweep or jet wash and suction sweep in autumn after leaf fall.	Annually
	Mow grass edges to paving at 35-50mm and remove weeds and leaves.	As required
	Remove silt from silt pits and inspect control structures.	Annually

SUDS Element	Gulleys, silt pits, catchpits, hydrobrakes and below ground pipework	
Maintenance Issues	Siltation, blockages.	
Maintenance Period	Maintenance Task	Frequency
Regular	Litter and debris removal from site	Quarterly
	Inspect hydrobrakes for correct operation	Every six months
	Petrol Interceptor maintenance and inspection by specialist contractor, under maintenance contract	Annually
	Inspect gulleys, silt pits, catch pits, inlets, outlets and overflows.	Annually
Occasional tasks	Remove leaf accumulation.	As required
	Remove silt from gulleys, silt pits and hydrobrake chambers	As required but a minimum of annually
Remedial Work	Repair erosion, level uneven surfaces or damage by re-turfing or seeding.	As required
	Jet any debris build up within pipes to clear blockages	As required
Occasional tasks	Jetting and suction where silt has accumulated in joints or voids. Replace grit	As required

Table 4 SuDS Maintenance Regime

14. FOUL DRAINAGE

The existing foul drainage system runs from the unit, down the private access road and discharges to the existing combined sewer in Dymchurch Road. The existing surface water system connects to the same system on the site.

The condition of the existing foul system is very poor and has come to the end of its useful life.

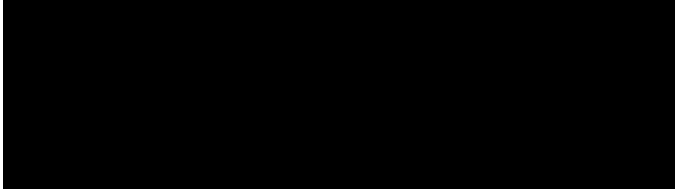
It is proposed to replace the entire foul drainage system on the site, and use the same outfall into the existing sewer in Dymchurch Road.

Full details of the proposed foul drainage system are included on PCS drawing 900 within Appendix F.

24-018
Flood Risk Assessment
David Ian Furniture Hythe CT21 6LU

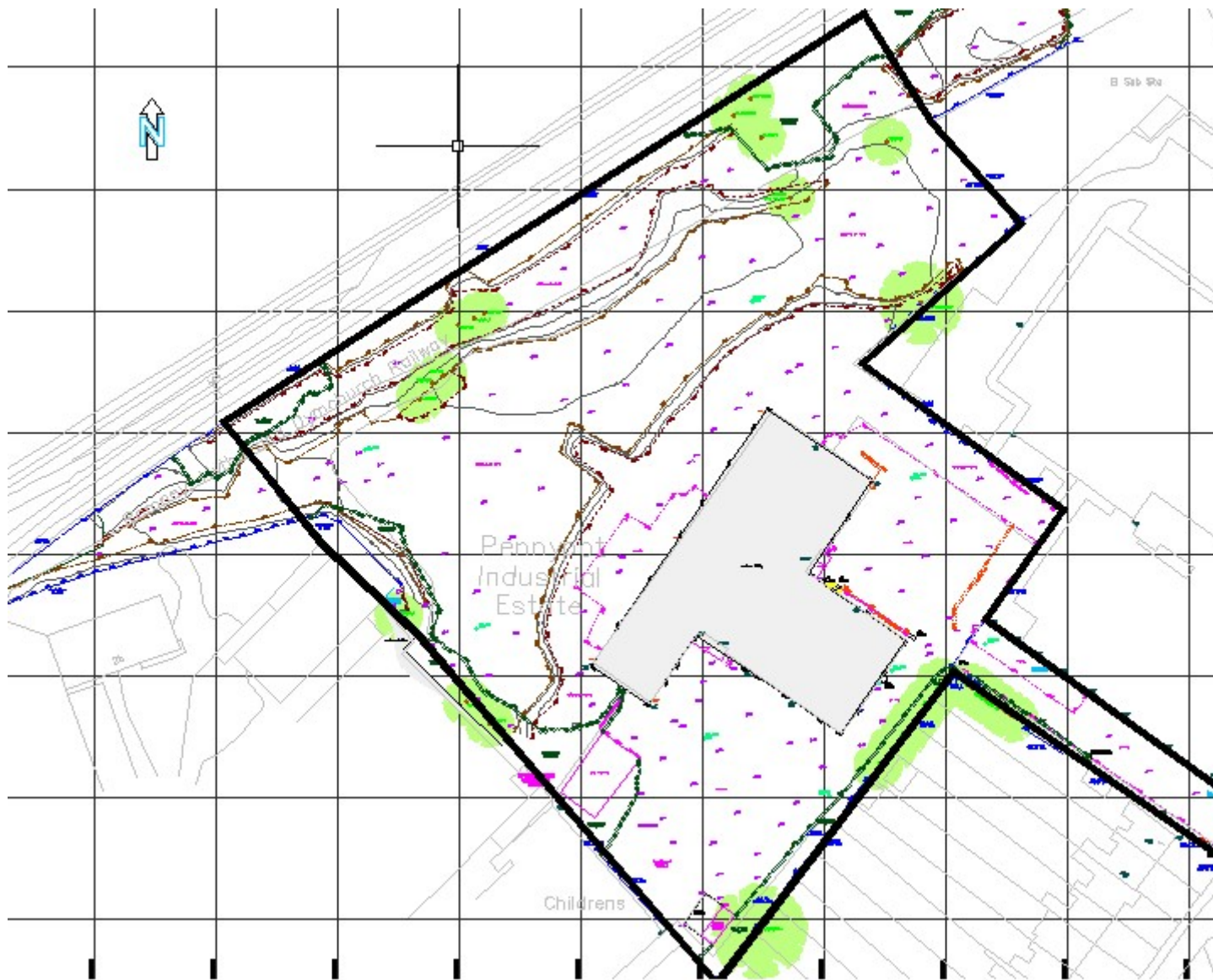
PCS Consulting Engineers
July 2025

Prepared by



Mark Allerton
BEng, MSc, CEng, MIStructE, DIC
Director

APPENDIX A - TOPOGRAPHICAL SURVEY



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July 2025

APPENDIX B - EXISTING DRAINAGE SYSTEM DRAWING



- COPYRIGHT © THE CONTENTS OF THIS DRAWING MAY NOT BE REPRODUCED IN WHOLE OR IN PART WITHOUT THE WRITTEN PERMISSION OF PCS CONSULTING ENGINEERS
- NOTES:
1. THIS DRAWING IS NOT TO BE SCALED.
 2. THE CONTRACTOR SHALL CHECK ALL DIMENSIONS AND LEVELS ON SITE PRIOR TO COMMENCING WORKS & REPORT ANY ANY DISCREPANCIES TO THE ENGINEER
 3. 'AS-BUILT' DRAWINGS ARE TO BE PROVIDED TO THE ENGINEER FOR COMMENT UPON COMPLETION IN ACCORDANCE WITH CONSTRUCTION DESIGN & MANAGEMENT 2007.
 4. SHOULD ANY SURPLUS EXCAVATED MATERIAL REQUIRE DISPOSAL OFFSITE IT SHOULD BE TAKEN TO A SUITABLY LICENSED LANDFILL SITE.
 5. THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE SITE INVESTIGATION REPORT. THE CONTRACTOR MUST REFER TO THE SITE INVESTIGATION REPORT AND TAKE DUE COGNISANCE AND ALLOWANCE FOR ITS CONTENTS.

rev.	date	description	chk.



client:
WBA HYTHE

job title:
DAVID IAN FURNITURE UNIT
DYMCHURCH ROAD
HYTHE

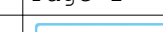
drawing title:
EXISTING DRAINAGE LAYOUT

scale:	date:	drawn by:	checked by:
1:200	JULY 2025	AM	MA
job number:	drawing number:	revision:	
24-018	900		

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APPENDIX C - EXISTING DRAINAGE SYSTEM CALCULATIONS

PCS Consulting Engineers		Page 1
62 Reservoir Road Solihull West Midlands B92 8AN	refurbishment of unit dymchurch road, Hythe EXISTING SW DISCHARGE TO SEWER	
Date 02/09/2025 15:27	Designed by pcs	
File ex sw discharge to sewer...	Checked by	
Micro Drainage	Network 2018.1	

STORM SEWER DESIGN by the Modified Rational Method

Pipe Sizes STANDARD Manhole Sizes STANDARD

Designed with Level Soffits

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.023	4-8	0.007

Total Pipe Volume (m³) = 0.707

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section	Type	Auto Design
1.000	6.600	0.100	66.0	0.030	4.00	0.0	0.600	o	100	Pipe/Conduit		
1.001	52.400	1.100	47.6	0.000	0.00	0.0	0.600	o	100	Pipe/Conduit		
1.002	13.800	1.000	13.8	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit		

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	76.42	4.12	2.160	0.030	0.0	0.0	0.0	0.95	7.5	6.2
1.001	71.32	4.90	2.060	0.030	0.0	0.0	0.0	1.12	8.8	6.2
1.002	70.82	4.98	0.910	0.030	0.0	0.0	0.0	2.73	48.2	6.2

PCS Consulting Engineers		Page 3
62 Reservoir Road Solihull West Midlands B92 8AN	refurbishment of unit dymchurch road, Hythe EXISTING SW DISCHARGE TO SEWER	
Date 02/09/2025 15:27 File ex sw discharge to sewer...	Designed by pcs Checked by	
Micro Drainage Network 2018.1		

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	0	Number of Storage Structures	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.386
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	20.500	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	15 Summer	1	+0%	30/15 Summer				2.220
1.001	2	15 Winter	1	+0%	30/15 Summer				2.111
1.002	3	15 Winter	1	+0%					0.942

PN	US/MH Name	Depth (m)	Surcharged		Flooded		Pipe		Level Exceeded
			Volume (m³)	Flow / Cap.	Flow / (l/s)	Overflow (l/s)	Status		
1.000	1	-0.040	0.000	0.67		4.5	OK		
1.001	2	-0.049	0.000	0.52		4.5	OK		
1.002	3	-0.118	0.000	0.10		4.5	OK		

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62 Reservoir Road Solihull West Midlands B92 8AN	refurbishment of unit dymchurch road, Hythe EXISTING SW DISCHARGE TO SEWER	
Date 02/09/2025 15:27 File ex sw discharge to sewer...	Designed by pcs Checked by	
Micro Drainage Network 2018.1		

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm

Simulation Criteria

Areal Reduction Factor 1.000	Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0	MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0	Inlet Coefficient 0.800
Manhole Headloss Coeff (Global) 0.500	Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000	

Number of Input Hydrographs 0	Number of Offline Controls 0	Number of Time/Area Diagrams 0
Number of Online Controls 0	Number of Storage Structures 0	Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R 0.386
Region England and Wales	Cv (Summer) 0.750	
M5-60 (mm)	20.500	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status OFF
Analysis Timestep	Fine	Inertia Status OFF
DTS Status	ON	

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	15 Winter	30	+0%	30/15 Summer				2.400
1.001	2	15 Winter	30	+0%	30/15 Summer				2.215
1.002	3	15 Winter	30	+0%					0.956

PN	US/MH Name	Depth (m)	Surcharged Volume (m³)	Flooded Flow / Cap. (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1	0.140	0.000	1.44	9.6	SURCHARGED	
1.001	2	0.055	0.000	1.03	8.9	SURCHARGED	
1.002	3	-0.104	0.000	0.20	8.9	OK	

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62 Reservoir Road Solihull West Midlands B92 8AN			refurbishment of unit dymchurch road, Hythe EXISTING SW DISCHARGE TO SEWER				
Date 02/09/2025 15:27			Designed by pcs				
File ex sw discharge to sewer...			Checked by				
Micro Drainage			Network 2018.1				
<u>100 year Return Period Summary of Critical Results by Maximum Level (Rank 1)</u> <u>for Storm</u>							
<u>Simulation Criteria</u>							
Areal Reduction Factor		1.000		Additional Flow - % of Total Flow		0.000	
Hot Start (mins)		0		MADD Factor * 10m³/ha Storage		2.000	
Hot Start Level (mm)		0		Inlet Coefficient		0.800	
Manhole Headloss Coeff (Global)		0.500		Flow per Person per Day (l/per/day)		0.000	
Foul Sewage per hectare (l/s)		0.000					
Number of Input Hydrographs		0		Number of Offline Controls		0	
Number of Online Controls		0		Number of Storage Structures		0	
				Number of Time/Area Diagrams		0	
				Number of Real Time Controls		0	
<u>Synthetic Rainfall Details</u>							
Rainfall Model		FSR		Ratio R		0.386	
Region England and Wales Cv (Summer)		0.750					
M5-60 (mm)		20.500 Cv (Winter)		0.840			
Margin for Flood Risk Warning (mm)		300.0		DVD Status		OFF	
Analysis Timestep		Fine		Inertia Status		OFF	
DTS Status		ON					
Profile(s)				Summer and Winter			
Duration(s) (mins)		15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440					
Return Period(s) (years)		1, 30, 100					
Climate Change (%)		0, 0, 0					

24-018
Flood Risk Assessment
David Ian Furniture Hythe CT21 6LU

PCS Consulting Engineers
July 2025

APPENDIX D - PRODUCT 4 FLOOD DATA

Product 4 (Detailed Flood Risk) for: David Ian Furniture, Kent Wharf, Dymchurch Road, Hythe, CT21 6LU
Requested by: Mark Allerton / PCS Consulting Engineers
Reference: KSL 375570 RL
Date: 26 September 2024

Contents

- Flood Map Confirmation
- Flood Map Extract
- Model Output Data
- Modelled Flood Outlines Map
- Defence Details
- Historic Flood Data
- Historic Flood Event Map
- Site Node Location Map
- Additional Information

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 contact us again, 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.

Flood Map Confirmation

The Flood Map:

Our Flood Map shows the natural floodplain for areas at risk from fluvial and tidal flooding. The floodplain is specifically mapped ignoring the presence and effects of flood defences. Although flood defences reduce the risk of flooding they cannot completely remove that risk as they may be overtopped 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. In addition, 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 and also take 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:

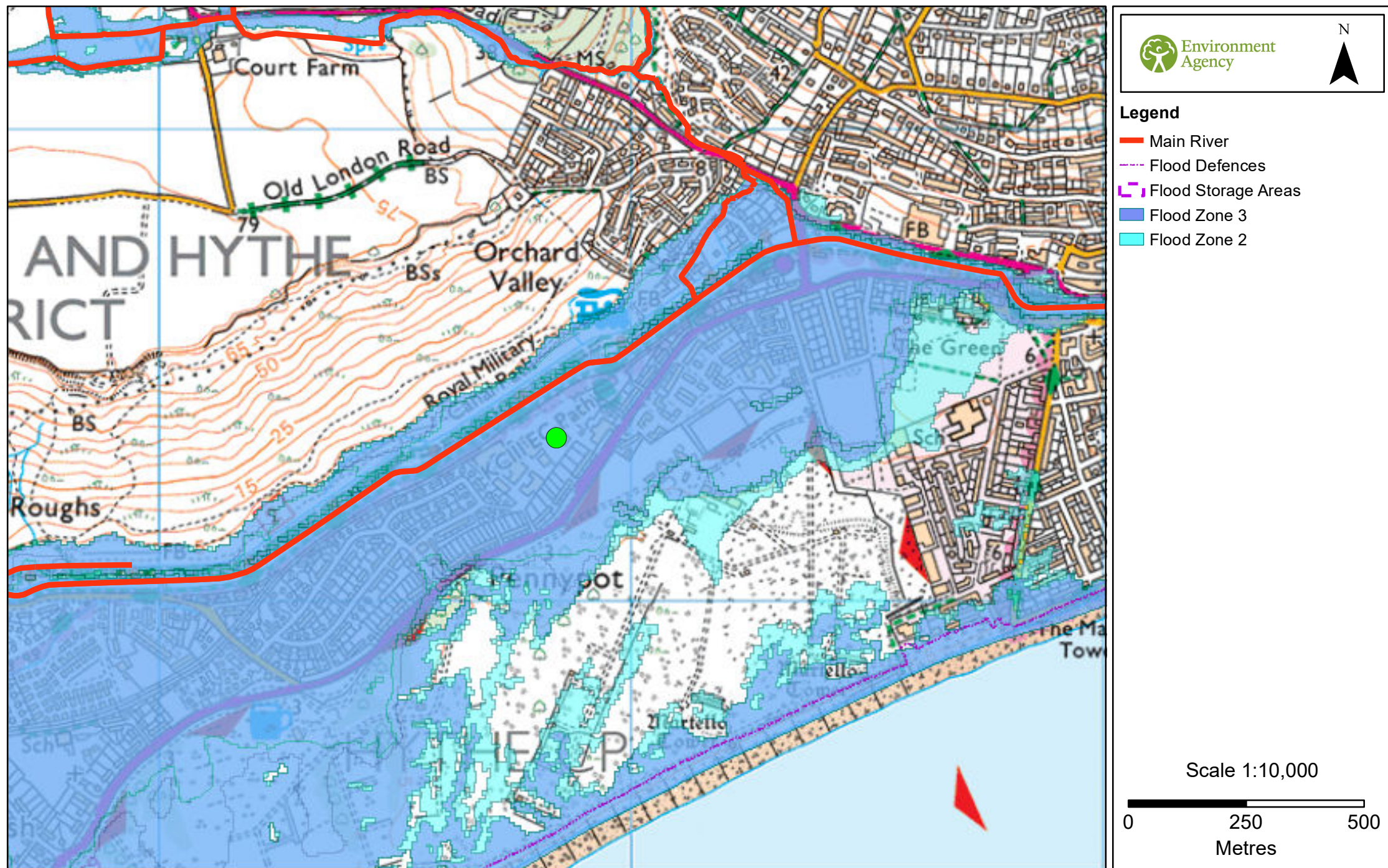
The Flood Map shows that this site lies within the outline of Flood Zone 3. This zone comprises land assessed as having a 1 in 200 (0.5%) or greater annual probability of tidal flooding.

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 tidal modelling of Romney Marsh, completed by JBA Consulting in 2020. The defended and undefended modelled outputs have been combined to produce the Flood Zones in order to capture the full flood risk from still water and wave overtopping.

Flood Map centred on David Ian Furniture, Kent Wharf, Dymchurch Road, Hythe, CT21 6LU
Created 26 September 2024 [Ref: KSL 375570 RL]



Model Output Data

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

A 2D TuFLOW model has been used to represent the floodplain as a grid. The flood water levels and/or depths have been calculated for each grid cell. The modelled flood levels / depths presented here are 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 any specific health warnings for their use are set out below.

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.

This model has been designed for catchment wide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites.

Romney Marsh baseline tidal mapping and data

Coastal flood boundary data set

The extreme sea levels used in the model were derived from the 'Coastal flood boundary conditions for UK mainland and islands' (Defra; SEPA; The Scottish Government; Environment Agency, 2011). The coastal flood boundary dataset was uplifted to a base year of 2018.

Model limitations

The flood inundation model has not considered infiltration losses into the ground. Additionally, no surface water drainage systems or sewer networks are included in the model. All wave overtopping calculations assume a static beach profile.

Undefended outputs

The undefended model scenarios are still water only and did not include any inflow boundaries for wave overtopping.

Climate change

The 0.5% AEP and 0.1% AEP climate change scenarios projected to 2070 and 2115 were modelled using National Planning Policy Framework (NPPF) 2016 guidance. The increases in sea level are shown in the table below.

NPPF sea level rise (SLR) estimates, metres per year (2008 base year)

Guidance	SLR projected to 2070	SLR projected to 2115
NPPF	0.521	1.166

In addition to sea level rise, the model applied an increase of 10% to both offshore wind speed and wave height for the 2070 and 2115 epochs. This is in line with NPPF 2016 guidance. Please note climate change allowances have been updated since this model was produced. Please refer to the following website for the latest guidance: <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>.

Data Points Map centred on David Ian Furniture, Kent Wharf, Dymchurch Road, Hythe, CT21 6LU
Created 26 September 2024 [Ref: KSL 375570 RL]

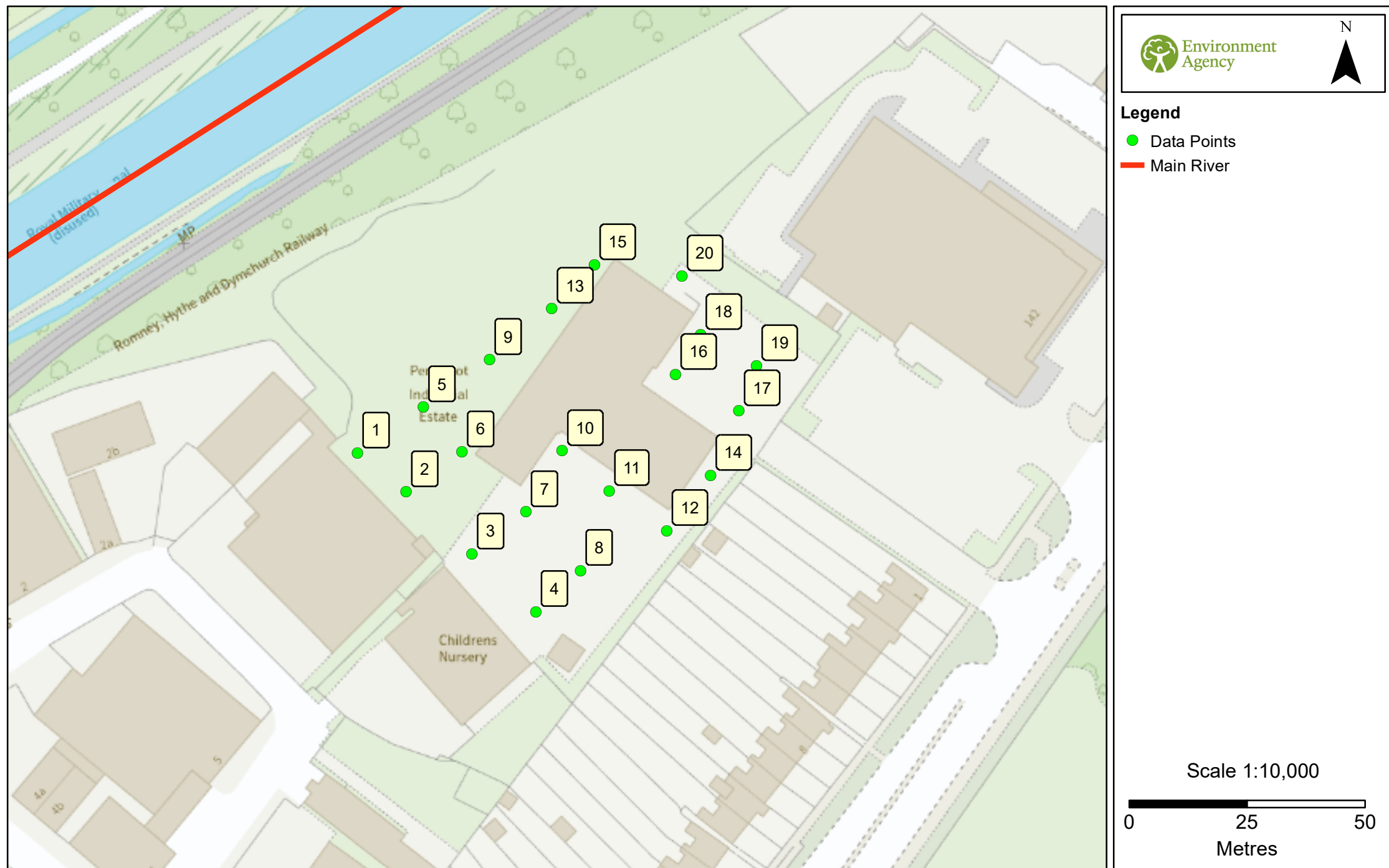


Table 1: Modelled undefended tidal flood levels for Annual Exceedance Probability (AEP) events shown (mAOD)

Point ID	National Grid Reference		Modelled Tidal Flood Levels for Annual Exceedance Probability (AEP) events shown (metres AOD)									
			Undefended									
	Easting	Northing	20% AEP	5% AEP	2% AEP	1.33% AEP	0.5% AEP	0.1% AEP	0.5% AEP + CC (2070)	0.1% AEP + CC (2070)	0.5% AEP + CC (2115)	0.1% AEP + CC (2115)
1	614797	134342	3.76	4.06	4.25	4.33	4.50	4.76	5.19	5.40	5.90	6.05
2	614807	134334	3.76	4.06	4.25	4.33	4.50	4.76	5.19	5.40	5.90	6.05
3	614821	134321	3.75	4.06	4.25	4.33	4.50	4.76	5.19	5.40	5.90	6.05
4	614835	134309	3.76	4.06	4.25	4.33	4.50	4.76	5.19	5.40	5.90	6.05
5	614811	134352	0.00	4.06	4.25	4.33	4.50	4.76	5.19	5.40	5.90	6.05
6	614819	134343	3.75	4.06	4.25	4.33	4.50	4.76	5.19	5.40	5.90	6.05
7	614833	134330	3.75	4.06	4.25	4.33	4.50	4.76	5.19	5.40	5.90	6.05
8	614844	134317	3.75	4.06	4.25	4.33	4.50	4.76	5.19	5.40	5.90	6.05
9	614825	134362	3.75	4.06	4.25	4.33	4.50	4.76	5.19	5.40	5.90	6.05
10	614840	134343	3.75	4.06	4.25	4.33	4.50	4.76	5.19	5.40	5.90	6.05
11	614850	134334	3.75	4.06	4.25	4.33	4.50	4.76	5.19	5.40	5.90	6.05
12	614863	134326	3.75	4.06	4.25	4.33	4.50	4.76	5.19	5.40	5.90	6.05
13	614838	134373	3.75	4.06	4.25	4.33	4.50	4.76	5.19	5.40	5.90	6.05
14	614872	134338	3.75	4.06	4.25	4.33	4.50	4.76	5.20	5.40	5.90	6.05
15	614847	134382	3.75	4.06	4.25	4.33	4.50	4.76	5.20	5.40	5.90	6.05
16	614864	134359	3.75	4.06	4.25	4.33	4.50	4.76	5.20	5.40	5.90	6.05
17	614878	134351	3.75	4.06	4.25	4.33	4.50	4.76	5.20	5.40	5.90	6.05
18	614870	134367	3.75	4.06	4.25	4.33	4.50	4.76	5.20	5.40	5.90	6.05
19	614882	134361	3.75	4.06	4.25	4.33	4.50	4.76	5.20	5.40	5.90	6.05
20	614866	134380	3.75	4.06	4.25	4.33	4.50	4.76	5.20	5.40	5.90	6.05

Data taken from the Romney Marsh Tidal Mapping Study, completed by JBA Consulting in 2020.

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

Climate change (CC) data represents modelled levels with an allowance for sea level rise for the years specified. In addition to sea level rise, the model applied an increase of 10% to both offshore wind speed and wave height for the 2070 and 2115 epochs. This is in line with 2016 NPPF guidance which has since been updated.

See Model Output Data section for health warnings and further information.

Table 2: Modelled defended tidal flood levels for Annual Exceedance Probability (AEP) events shown (mAOD)

Point ID	National Grid Reference		Modelled Tidal Flood Levels for Annual Exceedance Probability (AEP) events shown (metres AOD)									
			Defended									
	Easting	Northing	20% AEP	5% AEP	2% AEP	1.33% AEP	0.5% AEP	0.1% AEP	0.5% AEP + CC (2070)	0.1% AEP + CC (2070)	0.5% AEP + CC (2115)	0.1% AEP + CC (2115)
1	614797	134342	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.17
2	614807	134334	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	614821	134321	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.17
4	614835	134309	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.17
5	614811	134352	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	614819	134343	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.17
7	614833	134330	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.17
8	614844	134317	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.17
9	614825	134362	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	614840	134343	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.17
11	614850	134334	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.17
12	614863	134326	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.17
13	614838	134373	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.17
14	614872	134338	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.17
15	614847	134382	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.17
16	614864	134359	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.17
17	614878	134351	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.17
18	614870	134367	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.17
19	614882	134361	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.18
20	614866	134380	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.17

Data taken from the Romney Marsh Tidal Mapping Study, completed by JBA Consulting in 2020.

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

Climate change (CC) data represents modelled levels with an allowance for sea level rise for the years specified. In addition to sea level rise, the model applied an increase of 10% to both offshore wind speed and wave height for the 2070 and 2115 epochs. This is in line with 2016 NPPF guidance which has since been updated.

See Model Output Data section for health warnings and further information.

Table 3: Modelled undefended tidal flood depths for Annual Exceedance Probability (AEP) events shown (m)

Point ID	National Grid Reference		Modelled Tidal Flood Depths for Annual Exceedance Probability (AEP) events shown (metres)									
			Undefended									
	Easting	Northing	20% AEP	5% AEP	2% AEP	1.33% AEP	0.5% AEP	0.1% AEP	0.5% AEP + CC (2070)	0.1% AEP + CC (2070)	0.5% AEP + CC (2115)	0.1% AEP + CC (2115)
1	614797	134342	0.71	1.01	1.20	1.28	1.45	1.71	2.14	2.35	2.85	3.00
2	614807	134334	0.07	0.36	0.56	0.64	0.80	1.06	1.50	1.70	2.21	2.36
3	614821	134321	1.10	1.40	1.60	1.67	1.84	2.10	2.54	2.74	3.25	3.40
4	614835	134309	1.07	1.37	1.57	1.64	1.81	2.07	2.51	2.71	3.22	3.37
5	614811	134352	0.00	0.65	0.84	0.92	1.09	1.35	1.78	1.99	2.49	2.64
6	614819	134343	0.89	1.18	1.37	1.45	1.62	1.88	2.32	2.52	3.02	3.18
7	614833	134330	1.11	1.41	1.61	1.69	1.85	2.11	2.55	2.75	3.26	3.41
8	614844	134317	1.10	1.40	1.59	1.67	1.84	2.10	2.54	2.74	3.24	3.39
9	614825	134362	0.02	0.24	0.42	0.49	0.64	0.87	1.26	1.46	1.96	2.11
10	614840	134343	1.05	1.35	1.55	1.63	1.80	2.06	2.49	2.70	3.20	3.35
11	614850	134334	1.08	1.39	1.58	1.66	1.83	2.09	2.53	2.73	3.23	3.38
12	614863	134326	1.07	1.37	1.57	1.65	1.81	2.07	2.51	2.71	3.22	3.37
13	614838	134373	0.94	1.24	1.44	1.52	1.68	1.95	2.38	2.59	3.09	3.24
14	614872	134338	1.11	1.42	1.61	1.69	1.86	2.12	2.56	2.76	3.26	3.41
15	614847	134382	0.81	1.12	1.31	1.39	1.56	1.82	2.26	2.46	2.96	3.11
16	614864	134359	1.13	1.44	1.63	1.71	1.88	2.14	2.57	2.78	3.28	3.43
17	614878	134351	1.09	1.39	1.59	1.67	1.83	2.10	2.53	2.74	3.24	3.39
18	614870	134367	1.08	1.38	1.58	1.65	1.82	2.08	2.52	2.72	3.22	3.38
19	614882	134361	1.09	1.40	1.60	1.67	1.84	2.10	2.54	2.74	3.24	3.39
20	614866	134380	1.10	1.41	1.61	1.68	1.85	2.11	2.55	2.75	3.25	3.41

Data taken from the Romney Marsh Tidal Mapping Study, completed by JBA Consulting in 2020.

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

Climate change (CC) data represents modelled depths with an allowance for sea level rise for the years specified. In addition to sea level rise, the model applied an increase of 10% to both offshore wind speed and wave height for the 2070 and 2115 epochs. This is in line with 2016 NPPF guidance which has since been updated.

See Model Output Data section for health warnings and further information.

Table 4: Modelled defended tidal flood depths for Annual Exceedance Probability (AEP) events shown (m)

Point ID	National Grid Reference		Modelled Tidal Flood Depths for Annual Exceedance Probability (AEP) events shown (metres)									
			Defended									
	Easting	Northing	20% AEP	5% AEP	2% AEP	1.33% AEP	0.5% AEP	0.1% AEP	0.5% AEP + CC (2070)	0.1% AEP + CC (2070)	0.5% AEP + CC (2115)	0.1% AEP + CC (2115)
1	614797	134342	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17
2	614807	134334	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	614821	134321	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51
4	614835	134309	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49
5	614811	134352	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	614819	134343	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35
7	614833	134330	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.53
8	614844	134317	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51
9	614825	134362	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	614840	134343	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47
11	614850	134334	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50
12	614863	134326	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49
13	614838	134373	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36
14	614872	134338	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.53
15	614847	134382	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23
16	614864	134359	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.55
17	614878	134351	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51
18	614870	134367	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.49
19	614882	134361	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.52
20	614866	134380	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.52

Data taken from the Romney Marsh Tidal Mapping Study, completed by JBA Consulting in 2020.

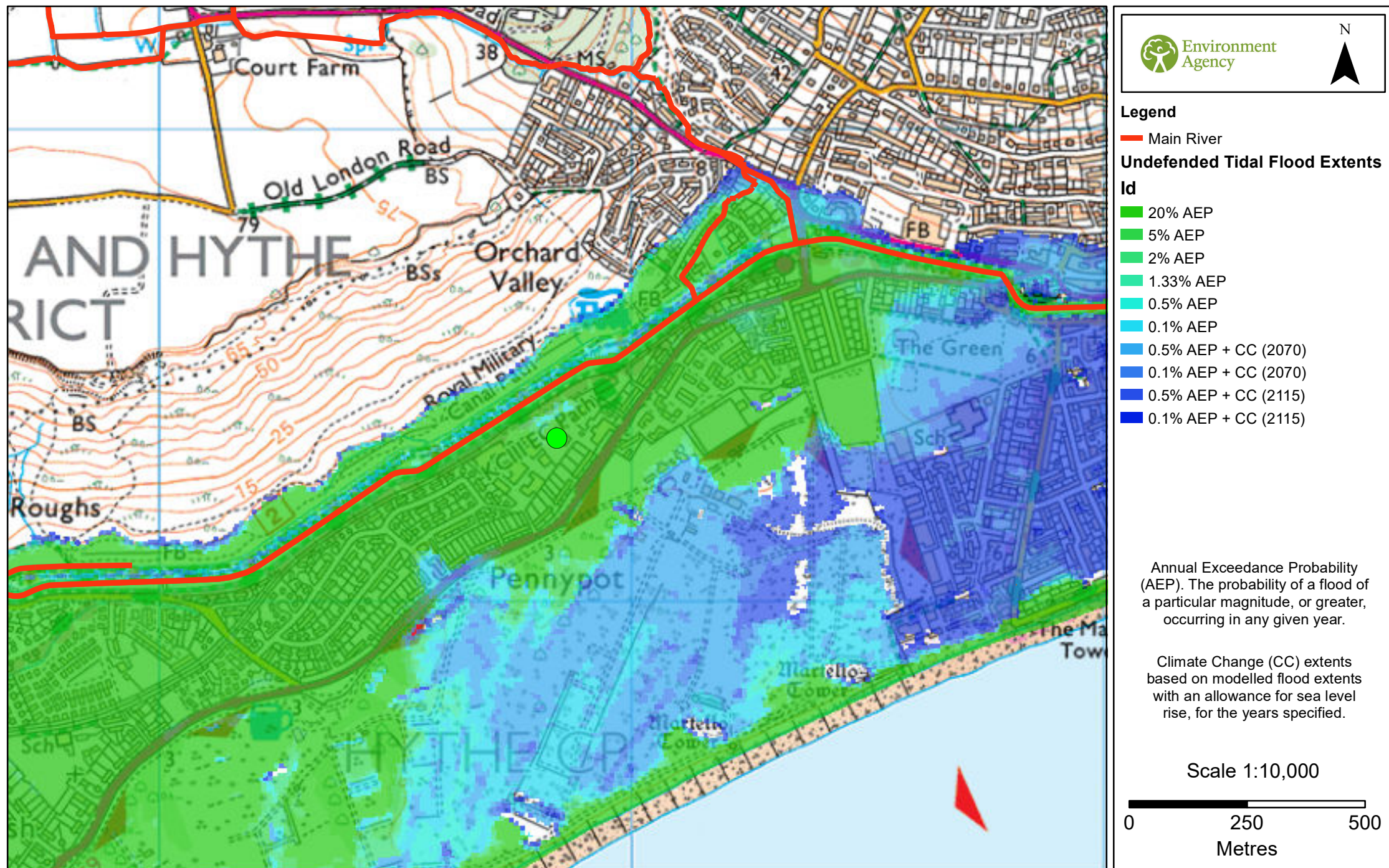
Values of 0.00 indicate locations at which the selected points lie outside of a particular modelled flood extent.

Climate change (CC) data represents modelled depths with an allowance for sea level rise for the years specified. In addition to sea level rise, the model applied an increase of 10% to both offshore wind speed and wave height for the 2070 and 2115 epochs. This is in line with 2016 NPPF guidance which has since been updated.

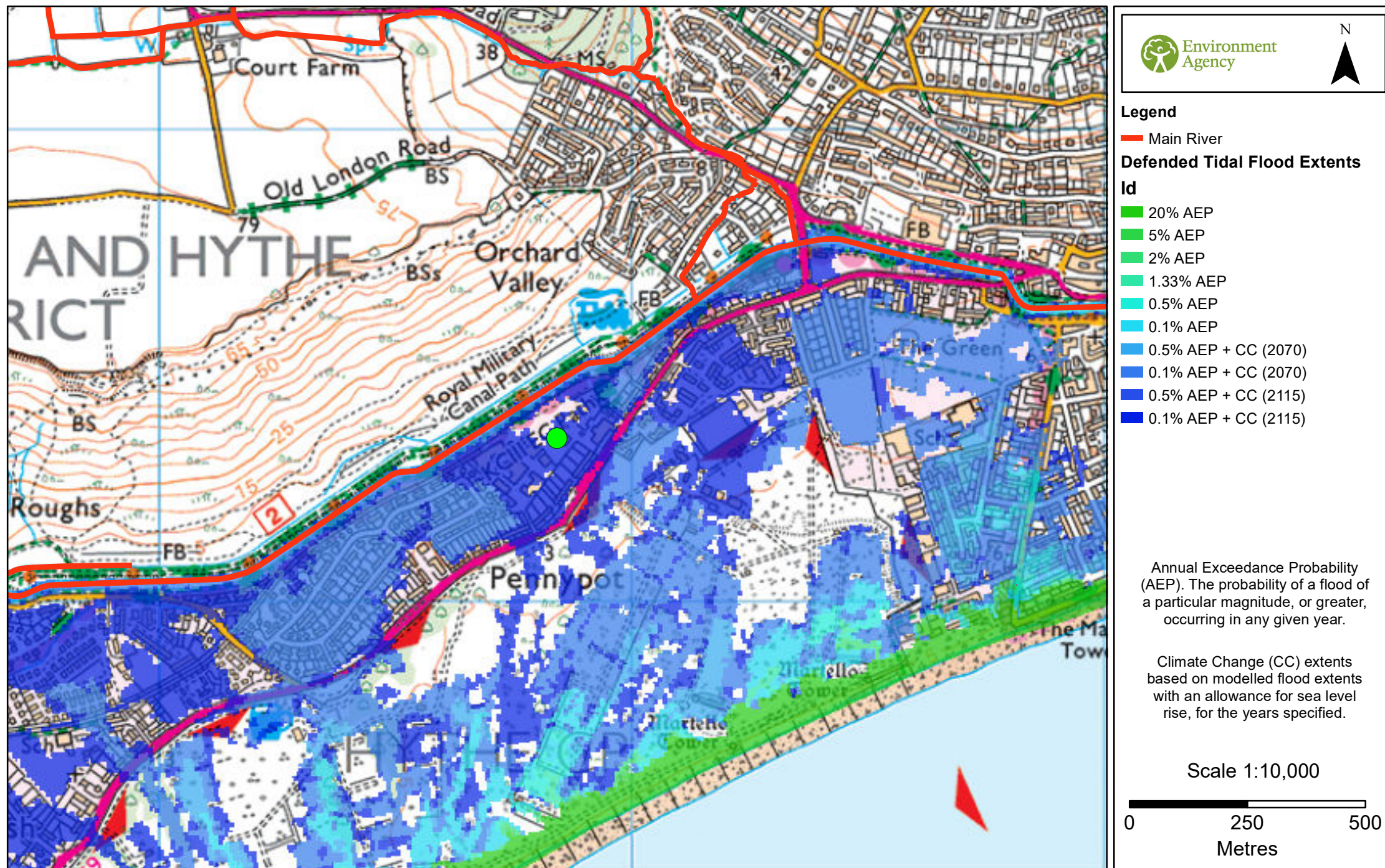
See Model Output Data section for health warnings and further information.

Undefended Tidal Flood Extents centred on David Ian Furniture, Kent Wharf, Dymchurch Road, Hythe, CT21 6LU

Created 26 September 2024 [Ref: KSL 375570 RL]



Defended Tidal Flood Extents centred on David Ian Furniture, Kent Wharf, Dymchurch Road, Hythe, CT21 6LU
Created 26 September 2024 [Ref: KSL 375570 RL]



Defence Details

Hythe Ranges

Work was completed in March 2021 to improve the flood defences between the Dymchurch Redoubt and Fisherman's Beach. This involved refurbishing and raising the timber groynes, placing a rock revetment around the Redoubt and recharging the shingle beach. These improvements are designed to provide a 0.5% AEP (1 in 200 year) standard of protection for flooding from the sea in any given year. The defences are owned by the Ministry of Defence and maintained by the Environment Agency.

Historic Flood Data

We do not hold records of historic flood events from rivers and/or the sea 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.

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.

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

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.

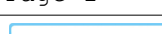
Your Lead Local Flood Authority have reviewed these and determined what it believes best represents surface water flood risk. You should therefore contact this authority so they can provide you with the most up to date information about surface water flood risk in your area.

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.

24-018
Flood Risk Assessment
David Ian Furniture Hythe CT21 6LU

PCS Consulting Engineers
July 2025

APPENDIX E - PROPOSED DRAINAGE SYSTEM CALCULATIONS

PCS Consulting Engineers		Page 1
62 Reservoir Road Solihull West Midlands B92 8AN	refurbishment of ex building Dymchurch Road, Hythe, CT21 6L Proposed SW System	
Date 02/09/2025 15:19	Designed by pcs	
File PROPOSED SW.MDX	Checked by	
Micro Drainage	Network 2018.1	

STORM SEWER DESIGN by the Modified Rational Method

Pipe Sizes STANDARD Manhole Sizes STANDARD

Return Period (years)	2	PIMP (%)	100
M5-60 (mm)	20.500	Add Flow / Climate Change (%)	0
Ratio R	0.386	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	225	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Time Area Diagram for Storm

Total Area Contributing (ha) = 0.403

Network Design Table for Storm

Network Results Table

PCS Consulting Engineers								Page 3			
62 Reservoir Road Solihull West Midlands B92 8AN					refurbishment of ex building Dymchurch Road, Hythe, CT21 6L Proposed SW System						
Date 02/09/2025 15:19					Designed by pcs						
File PROPOSED SW.MDX					Checked by						
Micro Drainage					Network 2018.1						
<u>Manhole Schedules for Storm</u>											
MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	
1	2.800	0.700	Open Manhole	1200	1.000	2.100	225				
2	2.800	1.050	Open Manhole	1200	1.001	1.750	225	1.000	1.750	225	
3	2.750	1.100	Open Manhole	1200	1.002	1.650	225	1.001	1.650	225	
3	2.800	0.800	Open Manhole	1200	2.000	2.000	225				
4	2.750	1.050	Open Manhole	1200	2.001	1.700	225	2.000	1.700	225	
5	2.750	1.200	Open Manhole	1800	1.003	1.550	300	1.002	1.550	225	
								2.001	1.550	225	
6	2.900	1.396	Open Manhole	1800	1.004	1.504	300	1.003	1.504	300	
7	2.900	1.746	Open Manhole	1200	1.005	1.154	300	1.004	1.154	300	
8	2.900	1.977	Open Manhole	1200	1.006	0.923	300	1.005	0.923	300	
ex demarcation manhole	2.900	1.998	Open Manhole	0		OUTFALL		1.006	0.902	300	
<u>Free Flowing Outfall Details for Storm</u>											
Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D, L (mm)	W (mm)					
1.006	ex demarcation manhole	2.900	0.902	0.880	0	0					
<u>Simulation Criteria for Storm</u>											
Volumetric Runoff Coeff		0.750	Additional Flow - % of Total Flow		0.000						
Areal Reduction Factor		1.000	MADD Factor * 10m³/ha		Storage 2.000						
Hot Start (mins)		0	Inlet Coefficient		0.800						
Hot Start Level (mm)		0	Flow per Person per Day (l/per/day)		0.000						
Manhole Headloss Coeff (Global)		0.500	Run Time (mins)		60						
Foul Sewage per hectare (l/s)		0.000	Output Interval (mins)		1						
Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0											
Number of Online Controls 1 Number of Storage Structures 2 Number of Real Time Controls 0											
<u>Synthetic Rainfall Details</u>											
Rainfall Model		FSR	Ratio R		0.386						
Return Period (years)		2	Profile Type		Summer						
Region		England and Wales	Cv (Summer)		0.750						
M5-60 (mm)		20.500	Cv (Winter)		0.840						
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PCS Consulting Engineers		Page 4
62 Reservoir Road Solihull West Midlands B92 8AN	refurbishment of ex building Dymchurch Road, Hythe, CT21 6L Proposed SW System	
Date 02/09/2025 15:19 File PROPOSED SW.MDX	Designed by pcs Checked by	
Micro Drainage Network 2018.1		
Synthetic Rainfall Details Storm Duration (mins) 30		
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PCS Consulting Engineers			Page 5																																																																																																																	
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Micro Drainage		Network 2018.1																																																																																																																		
<u>Online Controls for Storm</u> <u>Hydro-Brake® Optimum Manhole: 8, DS/PN: 1.006, Volume (m³): 6.1</u> <table><tr><td>Unit Reference</td><td>MD-SHE-0100-4500-1000-4500</td></tr><tr><td>Design Head (m)</td><td>1.000</td></tr><tr><td>Design Flow (l/s)</td><td>4.5</td></tr><tr><td>Flush-Flo™</td><td>Calculated</td></tr><tr><td>Objective</td><td>Minimise upstream storage</td></tr><tr><td>Application</td><td>Surface</td></tr><tr><td>Sump Available</td><td>Yes</td></tr><tr><td>Diameter (mm)</td><td>100</td></tr><tr><td>Invert Level (m)</td><td>0.923</td></tr><tr><td>Minimum Outlet Pipe Diameter (mm)</td><td>150</td></tr><tr><td>Suggested Manhole Diameter (mm)</td><td>1200</td></tr></table> <table><tr><td>Control Points</td><td>Head (m)</td><td>Flow (l/s)</td><td>Control Points</td><td>Head (m)</td><td>Flow (l/s)</td></tr><tr><td>Design Point (Calculated)</td><td>1.000</td><td>4.5</td><td>Kick-Flo®</td><td>0.630</td><td>3.6</td></tr><tr><td>Flush-Flo™</td><td>0.292</td><td>4.5</td><td>Mean Flow over Head Range</td><td>-</td><td>3.9</td></tr></table> The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated <table><tr><td>Depth (m)</td><td>Flow (l/s)</td><td>Depth (m)</td><td>Flow (l/s)</td><td>Depth (m)</td><td>Flow (l/s)</td><td>Depth (m)</td><td>Flow (l/s)</td></tr><tr><td>0.100</td><td>3.3</td><td>1.200</td><td>4.9</td><td>3.000</td><td>7.5</td><td>7.000</td><td>11.2</td></tr><tr><td>0.200</td><td>4.4</td><td>1.400</td><td>5.3</td><td>3.500</td><td>8.1</td><td>7.500</td><td>11.6</td></tr><tr><td>0.300</td><td>4.5</td><td>1.600</td><td>5.6</td><td>4.000</td><td>8.6</td><td>8.000</td><td>12.0</td></tr><tr><td>0.400</td><td>4.4</td><td>1.800</td><td>5.9</td><td>4.500</td><td>9.1</td><td>8.500</td><td>12.3</td></tr><tr><td>0.500</td><td>4.2</td><td>2.000</td><td>6.2</td><td>5.000</td><td>9.6</td><td>9.000</td><td>12.7</td></tr><tr><td>0.600</td><td>3.8</td><td>2.200</td><td>6.5</td><td>5.500</td><td>10.0</td><td>9.500</td><td>13.0</td></tr><tr><td>0.800</td><td>4.1</td><td>2.400</td><td>6.8</td><td>6.000</td><td>10.4</td><td></td><td></td></tr><tr><td>1.000</td><td>4.5</td><td>2.600</td><td>7.0</td><td>6.500</td><td>10.8</td><td></td><td></td></tr></table>					Unit Reference	MD-SHE-0100-4500-1000-4500	Design Head (m)	1.000	Design Flow (l/s)	4.5	Flush-Flo™	Calculated	Objective	Minimise upstream storage	Application	Surface	Sump Available	Yes	Diameter (mm)	100	Invert Level (m)	0.923	Minimum Outlet Pipe Diameter (mm)	150	Suggested Manhole Diameter (mm)	1200	Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)	Design Point (Calculated)	1.000	4.5	Kick-Flo®	0.630	3.6	Flush-Flo™	0.292	4.5	Mean Flow over Head Range	-	3.9	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	0.100	3.3	1.200	4.9	3.000	7.5	7.000	11.2	0.200	4.4	1.400	5.3	3.500	8.1	7.500	11.6	0.300	4.5	1.600	5.6	4.000	8.6	8.000	12.0	0.400	4.4	1.800	5.9	4.500	9.1	8.500	12.3	0.500	4.2	2.000	6.2	5.000	9.6	9.000	12.7	0.600	3.8	2.200	6.5	5.500	10.0	9.500	13.0	0.800	4.1	2.400	6.8	6.000	10.4			1.000	4.5	2.600	7.0	6.500	10.8		
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PCS Consulting Engineers		Page 6
62 Reservoir Road Solihull West Midlands B92 8AN	refurbishment of ex building Dymchurch Road, Hythe, CT21 6L Proposed SW System	
Date 02/09/2025 15:19 File PROPOSED SW.MDX	Designed by pcs Checked by	
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Storage Structures for Storm

Swale Manhole: 6, DS/PN: 1.004

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	24.0
Infiltration Coefficient Side (m/hr)	0.00000	Side Slope (1:X)	2.0
Safety Factor	2.0	Slope (1:X)	0.0
Porosity	1.00	Cap Volume Depth (m)	1.200
Invert Level (m)	1.504	Cap Infiltration Depth (m)	0.000
Base Width (m)	1.0	Include Swale Volume	Yes

Tank or Pond Manhole: 7, DS/PN: 1.005

Invert Level (m) 1.154

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	160.0	1.000	160.0	1.001	0.0

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PCS Consulting Engineers		Page 8
62 Reservoir Road Solihull West Midlands B92 8AN	refurbishment of ex building Dymchurch Road, Hythe, CT21 6L Proposed SW System	
Date 02/09/2025 15:19 File PROPOSED SW.MDX	Designed by pcs Checked by	
Micro Drainage Network 2018.1		

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged	Flooded	Flow / Cap.	Overflow (l/s)	Pipe	Status	Level
		Depth (m)	Volume (m³)			Flow (l/s)		Exceeded
1.000	1	-0.164	0.000	0.16		6.6	OK	
1.001	2	-0.161	0.000	0.18		6.7	OK	
1.002	3	-0.159	0.000	0.17		6.7	OK	
2.000	3	-0.150	0.000	0.24		10.2	OK	4
2.001	4	-0.083	0.000	0.71		38.8	OK	4
1.003	5	-0.172	0.000	0.39		44.3	OK	
1.004	6	-0.189	0.000	0.30		41.4	OK	
1.005	7	-0.112	0.000	0.13		8.9	OK	
1.006	8	0.112	0.000	0.09		4.5	SURCHARGED	

PCS Consulting Engineers		Page 9
62 Reservoir Road Solihull West Midlands B92 8AN	refurbishment of ex building Dymchurch Road, Hythe, CT21 6L Proposed SW System	
Date 02/09/2025 15:19 File PROPOSED SW.MDX	Designed by pcs Checked by	
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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coefficient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	1	Number of Storage Structures	2	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.386
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	20.500	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	OFF
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	15 Winter	30	+0%					2.200
1.001	2	15 Winter	30	+0%	100/15 Summer				1.861
1.002	3	15 Winter	30	+0%	100/15 Summer				1.828
2.000	3	15 Winter	30	+0%	30/15 Summer	100/15 Summer			2.386
2.001	4	15 Winter	30	+0%	30/15 Summer	100/15 Summer			2.311
1.003	5	15 Winter	30	+0%	100/15 Summer				1.800
1.004	6	180 Winter	30	+0%	100/15 Winter				1.707
1.005	7	180 Winter	30	+0%	30/15 Summer				1.710
1.006	8	180 Winter	30	+0%	1/15 Summer				2.056

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PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Water Level																																																																																																			
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24-018
Flood Risk Assessment
David Ian Furniture Hythe CT21 6LU

PCS Consulting Engineers
July 2025

APPENDIX F - PROPOSED DRAINAGE STRATEGY

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NOTES:

1. THIS DRAWING IS NOT TO BE SCALED.
2. THE CONTRACTOR SHALL CHECK ALL DIMENSIONS AND LEVELS ON SITE PRIOR TO COMMENCING WORKS & REPORT ANY ANY DISCREPANCIES TO THE ENGINEER
3. 'AS-BUILT' DRAWINGS ARE TO BE PROVIDED TO THE ENGINEER FOR COMMENT UPON COMPLETION IN ACCORDANCE WITH CONSTRUCTION DESIGN & MANAGEMENT 2007.
4. SHOULD ANY SURPLUS EXCAVATED MATERIAL REQUIRE DISPOSAL OFFSITE IT SHOULD BE TAKEN TO A SUITABLY LICENSED LANDFILL SITE.
5. THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE SITE INVESTIGATION REPORT. THE CONTRACTOR MUST REFER TO THE SITE INVESTIGATION REPORT AND TAKE DUE COGNISANCE AND ALLOWANCE FOR ITS CONTENTS.

EXISTING COMBINED SEWERS.

PROPOSED SURFACE WATER DRAINAGE.

PROPOSED FOUL WATER DRAINAGE.

RESIDUAL LAND

ALDI

142

EXISTING YARD
RETAINED

Childrens
Nursery

5

8

rev.	date	description	chk.



client:
WBA HYTHE

job title:
DAVID IAN FURNITURE UNIT
DYMCHURCH ROAD
HYTHE

drawing title:
PROPOSED DRAINAGE LAYOUT

scale:	date:	drawn by:	checked by:
1:200	JULY 2025	AM	MA
job number:	drawing number:	revision:	
24-018	901		