



1A Hathaway Street, Newport, NP19 0FQ

TAN15: Flood Consequence Assessment

For Mr David Perry

KRS.0645.001.R.001.A

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1A Hathaway Street, Newport, NP19 0FQ

Project	TAN15: Flood Risk Assessment
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CONTENTS

CONTENTS	i
TABLES & FIGURES	iii
EXECUTIVE SUMMARY	iv
1.0 INTRODUCTION.....	1
1.1 Background	1
1.2 Technical Advice Note 15 (TAN15)	1
2.0 LOCATION & DEVELOPMENT DESCRIPTION	3
2.1 Site Location.....	3
2.2 Existing Development	3
2.3 Proposed Development	3
2.4 Ground Levels.....	3
2.5 Catchment Hydrology	4
2.6 Ground Conditions	4
3.0 FLOOD RISK.....	5
3.1 Sources of Flooding	5
3.2 Natural Resources Wales	5
3.3 Climate Change	5
3.4 Flood Map for Planning	6
3.5 Flood Vulnerability	8
3.6 Historic Flooding.....	8
3.7 Existing and Planned Flood Defence Measures	9
3.8 Fluvial (river) Flooding	9
3.9 Tidal (coastal) Flooding.....	9
3.10 Groundwater Flooding.....	15
3.11 Surface Water (pluvial) Flooding	15
3.12 Sewer Flooding.....	15
3.13 Flooding from Artificial Drainage Systems/Infrastructure Failure	16
3.14 Effect of the Development on Flood Risk	16
3.15 Summary of Site Specific Flood Risk	17
4.0 RISK MANAGEMENT	20
4.1 Introduction	20
4.2 Sequential Approach	20
4.3 Finished Floor Levels.....	20
4.4 First Floor Accommodation.....	20
4.5 Flood Resilience and Resistance.....	21
4.6 Flood Warning and Evacuation	22
4.7 Flood Warning and Evacuation Plan.....	22
4.8 Safe Access and Egress Routes.....	22
4.9 Flooding Consequences	24
5.0 JUSTIFYING THE LOCATION OF THE DEVELOPMENT	25
5.1 Assessment Framework.....	25
5.2 Application to the Proposed Development	25
5.3 Risk Management Measures.....	25
6.0 SUMMARY AND CONCLUSIONS	26
6.1 Introduction	26
6.2 Flood Risk	26
6.3 Risk Management.....	27
6.4 Justifying the Location of the Development	30

6.5 Conclusion.....	30
APPENDICES.....	31
APPENDIX 1 – Proposed Site Layout.....	32
APPENDIX 2 – Topographical Survey	33
APPENDIX 3 – Natural Resources Wales Correspondence	34
APPENDIX 4 – Flood Warning and Evacuation Plan	35

TABLES & FIGURES

Figure 1 - Site Location	3
Table 1 - Peak River Flow Allowances by River Catchment	5
Table 2 - Sea Level Rise by 2100 and 2120	6
Figure 2 - Flood Map for Planning: Rivers.....	6
Figure 3 - Flood Map for Planning: Sea.....	7
Figure 4 - Flood Map for Planning: Surface Water and Small Watercourses	7
Table 3 - Flood Map for Planning Flood Zones.....	8
Figure 5 - Natural Resources Wales Historic Flood Outline	9
Table 4 - Natural Resources Wales Modelled Defended Data	10
Figure 6 - Defended 1 in 200 Year Flood Extent.....	10
Figure 7 - Defended 1 in 1000 Year Flood Extent.....	11
Figure 8 - Defended 1 in 200 Year in 2096 Flood Extent	11
Figure 9 - Defended 1 in 1000 Year in 2096 Flood Extent	12
Table 5 - Natural Resources Wales Modelled Undefended Data	13
Figure 10 - Undefended 1 in 200 Year Flood Extent.....	13
Figure 11 - Undefended 1 in 1000 Year Flood Extent.....	13
Figure 12 - Undefended 1 in 200 Year in 2096 Flood Extent	14
Figure 13 - Undefended 1 in 1000 Year in 2096 Flood Extent	14
Figure 14 - Natural Resources Wales Reservoir Flood Map.....	16
Table 6 - Risk Posed by Flooding Sources	17
Figure 15 - Safe Access and Egress Route	24

EXECUTIVE SUMMARY

Commercial units would be expected to remain dry in all but the most extreme conditions. Providing the recommendations made in this Flood Consequence Assessment (FCA) are instigated, flood risk from all sources would be minimised, the consequences of flooding are acceptable, and the development would be in accordance with the requirements of Technical Advice Note 15 Development and Flood Risk (TAN15).

This FCA demonstrates that the proposed development would be operated with minimal risk from flooding, would not increase flood risk elsewhere and is compliant with the requirements of TAN15. The development should not therefore be precluded on the grounds of flood risk.

1.0 INTRODUCTION

1.1 Background

This Flood Consequence Assessment (FCA) has been prepared by KRS Environmental Limited at the request of Mr David Perry to support a planning application for the proposed development at 1A Hathaway Street, Newport, NP19 0FQ.

This FCA has been carried out in accordance with guidance contained in the Technical Advice Note 15 Development and Flood Risk (TAN15) and associated Flood Map for Planning (FMfP). This FCA identifies and assesses the risks of all forms of flooding to and from the development and demonstrates how these flood risks will be managed so that the development remains safe throughout the lifetime, taking climate change into account.

It is recognised that developments which are designed without regard to flood risk may endanger lives, damage property, cause disruption to the wider community, damage the environment, be difficult to insure and require additional expense on remedial works. The development design should be such that future users will not have difficulty obtaining insurance or mortgage finance, or in selling all or part of the development, as a result of flood risk issues.

1.2 Technical Advice Note 15 (TAN15)

One of the key aims of TAN15 is to ensure that flood risk is taken into account at all stages of the planning process; to avoid inappropriate development in areas at risk of flooding and to direct development away from areas of highest risk.

It advises that where new development is exceptionally necessary in areas of higher risk, this should be safe, without increasing flood risk elsewhere, and where possible, reduce flood risk overall. A risk-based approach is adopted at stages of the planning process, applying a source pathway receptor model to planning and flood risk. To demonstrate this, an FCA is required and should include:

- whether a proposed development is likely to be affected by current or future flooding from all sources;
- whether it will increase flood risk elsewhere;
- whether the measures proposed to deal with these effects and risks are appropriate; and
- satisfy the justification test, including the acceptability of consequences.

A revised TAN15 has now been implemented. This is supported by the new FMfP, which includes climate change information to show how this will affect flood risk extents over the next century. It shows the potential extent of flooding assuming no defences are in place

1.4 Report Structure

This FCA has the following report structure:

- Section 2 describes the location and the existing and Proposed Development;
- Section 3 outlines the flood risk to the existing and Proposed Development;

- Section 4 outlines mitigation measures used to reduce the overall level of flood risk;
- Section 5 provides details for justifying the location of the development; and
- Section 6 presents a summary and conclusions.

2.0 LOCATION & DEVELOPMENT DESCRIPTION

2.1 Site Location

The site is located at 1A Hathaway Street, Newport, NP19 0FQ (see Figure 1). The National Grid Reference (NGR) of the Site is 332644, 187644 .

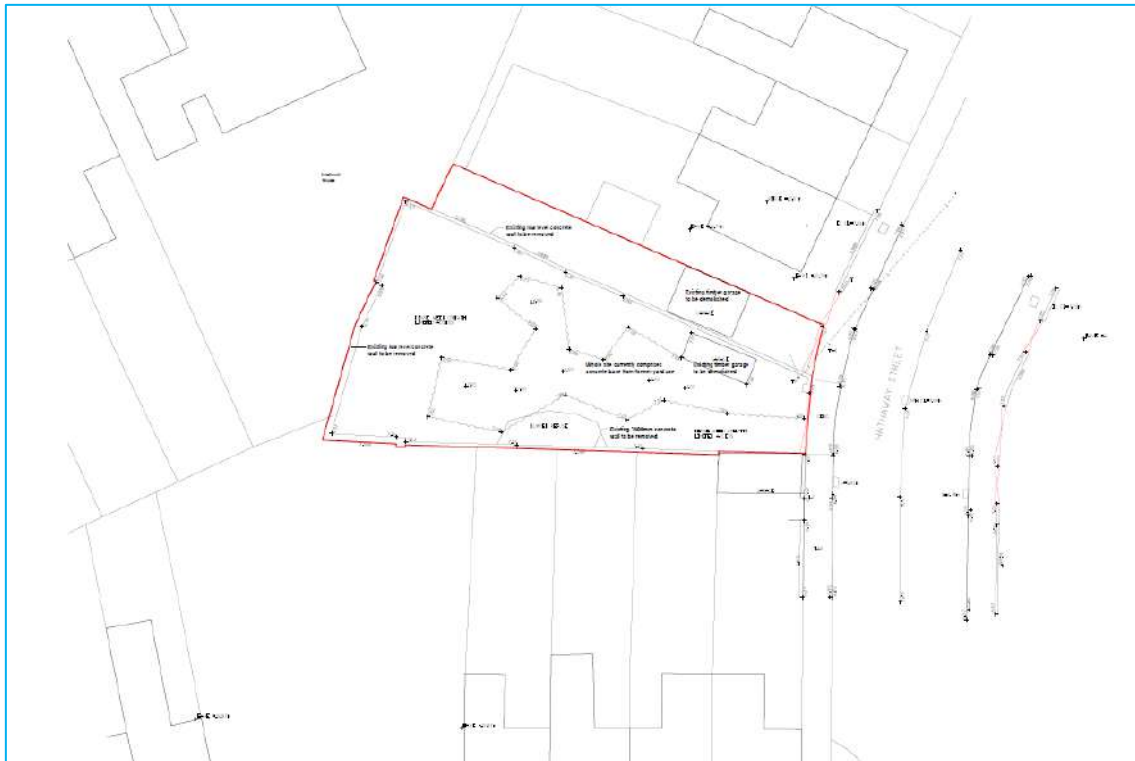


Figure 1 - Site Location

2.2 Existing Development

The site is a former coal yard and existing historical commercial use and currently has a construction office (metal container type) located on it with palisade perimeter fencing.

2.3 Proposed Development

The proposed development is for two commercial units (see Appendix 1). Further details with regard to the proposed development can be found in the accompanying information submitted with the planning application.

2.4 Ground Levels

A site topographical survey has recently been undertaken (see Appendix 2). The site rises from north to south. The site minimum ground level is 6.81 metres Above Ordnance Datum (mAOD) on the northern boundary of the site and the site maximum ground level is 7.16mAOD on the southern boundary of the site. The ground levels where the commercial units are to be located, to the south west of the site, are between 7.16mAOD and 6.90mAOD. The ground level at the site entrance is 7.00mAOD. Hathaway Street rises to the north of the site from 7.04mAOD to 7.09mAOD and the ground levels of Hathaway Street to the south of the site are 6.97mAOD. The majority of the site ground levels are above 7.00mAOD.

2.5 Catchment Hydrology

The River Usk is located approximately 600m to the south west of the site and the Spyttt Pill is located approximately 750m to the south east of the site. It is noted that the River Usk is tidal at this location. The Spyttt Pill is a tributary of the River Usk and joins the River Usk approximately 500m to the south west of the site. There are no other watercourses evident either on, or within the vicinity of the site.

The area has a higher average rainfall figure of 1400mm. Derived from the Flood Studies Report (FSR) rainfall ratio, the typical rainfall profile for the region, in common with much of South Wales, is a low intensity, long duration event commensurate with frontal weather systems. However, short duration high intensity rainfall events can also be experienced, particularly during the summer months.

2.6 Ground Conditions

The British Geological Survey (BGS) Map indicates that the bedrock underlying the site consists of the Maughans Formation - argillaceous rocks and [subequal/subordinate] sandstone, interbedded. Sedimentary bedrock formed approximately 393 to 419 million years ago in the Devonian Period in a local environment previously dominated by rivers. The superficial deposits consist of Tidal Flat Deposits - Clay and Silt. Superficial Deposits formed up to 2 million years ago in the Quaternary Period. Local environment previously dominated by shorelines.

Information from the National Soil Resource Institute¹ details the site area as being situated on loamy and clayey soils of coastal flats with naturally high groundwater. In low-lying sites, permeable soils are often affected by high groundwater that has drained from the surrounding landscape. They are described as naturally wet.

The Flood Studies Report WRAP soil map classification is Type 3: i) Relatively impermeable soils in boulder and sedimentary clays, and in alluvium, especially in eastern England; ii) Permeable soils with shallow groundwater in low-lying areas; iii) Mixed areas of permeable and impermeable soils, in approximately equal proportions.

Natural Resources Wales has designated the bedrock deposits as a Secondary B Aquifer - predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.

The superficial deposits are designated as a Secondary A Aquifer - permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers. The site is not located within a Source Protection Zone.

¹ <https://www.landis.org.uk/soilscapes/>

3.0 FLOOD RISK

3.1 Sources of Flooding

All sources of flooding have been considered, these are; fluvial (river) flooding, tidal (coastal) flooding, groundwater flooding, surface water (pluvial) flooding, sewer flooding and flooding from artificial drainage systems/infrastructure failure.

3.2 Natural Resources Wales

Information regarding the current flood risk at the application site, local flood defences and flood risk has been obtained from Natural Resources Wales, which is the most up to date at the time of this FCA.

The flood levels and hazard classification referenced within this assessment are derived from the Natural Resources Wales Newport Model (Version 8, 2022), which incorporates updated extreme sea levels, QMED fluvial inflows and as-built defence survey information. The model confirms that tidal flooding represents the dominant flood mechanism in Newport and that defended outputs form the basis of NRW's current flood mapping products. Model stability and mass balance were confirmed within acceptable limits during the v8 update.

3.3 Climate Change

Projections of future climate change, in the UK, indicate more frequent, short-duration, high intensity rainfall and more frequent periods of long duration rainfall. Guidance included within TAN15 recommends that the effects of climate change are incorporated into FCA. Recommended precautionary sensitivity ranges for peak rainfall intensities, peak river flows and sea level rise are outlined in the following documents CL-03-16 - Climate Change Allowances for Planning Purposes, Flood Consequence Assessments: Climate change allowances and Adapting to Climate Change: Guidance for Flood and Coastal Erosion Risk Management Authorities in Wales.

The 9th of January 2014 Welsh Government letter to all Chief Planning Officers (CPO) in Wales and CL-03-16 - Climate Change Allowances for Planning Purposes clarifies and refers to the Natural Resources Wales recommendations that the lifetime of development for commercial developments is 75 years. Table 3 show the peak river flow allowances by river catchment therefore, the fluvial design event for the Site is the 1 in 100 year (+35%) event.

Table 1 - Peak River Flow Allowances by River Catchment

River Catchment	Allowance Category	2020s	2050s	2080s
Severn	Upper	+20%	+40%	+70%
	Central	+10%	+20%	+35%

Projections of relative mean sea level rise for each epoch (period of time) is provided for the Welsh coastline in Table 4. These projections are consistent with the latest global predictions for sea level rise. The rate of change is projected to increase in each epoch. The design tidal event for the site is the 1 in 200 year in 2101 event.

Table 2 - Sea Level Rise by 2100 and 2120

Local Authority Area	Allowance (percentile)	Mean Sea Level Rise (m) by 2100*	Mean Sea Level Rise (m) by 2120*
Newport	95th	1.11	1.33
	70th	0.85	1.01

3.4 Flood Map for Planning

The FMfP represents the best available information on flood risk. The FMfP shows that the site is located within the following flood zones:

- Rivers: Flood Zone 1 (see Figure 2).
- Sea: Flood Zone 3 (see Figure 3).
- Surface water and small watercourses: Flood Zone 1 and 2 (see Figure 4).

While the site is mapped within Flood Zone 3 for sea flooding, flood risk characteristics vary spatially across the floodplain, and consequences at the site are influenced by local topography. Table 3 provides details of the FMfP Flood Zones.

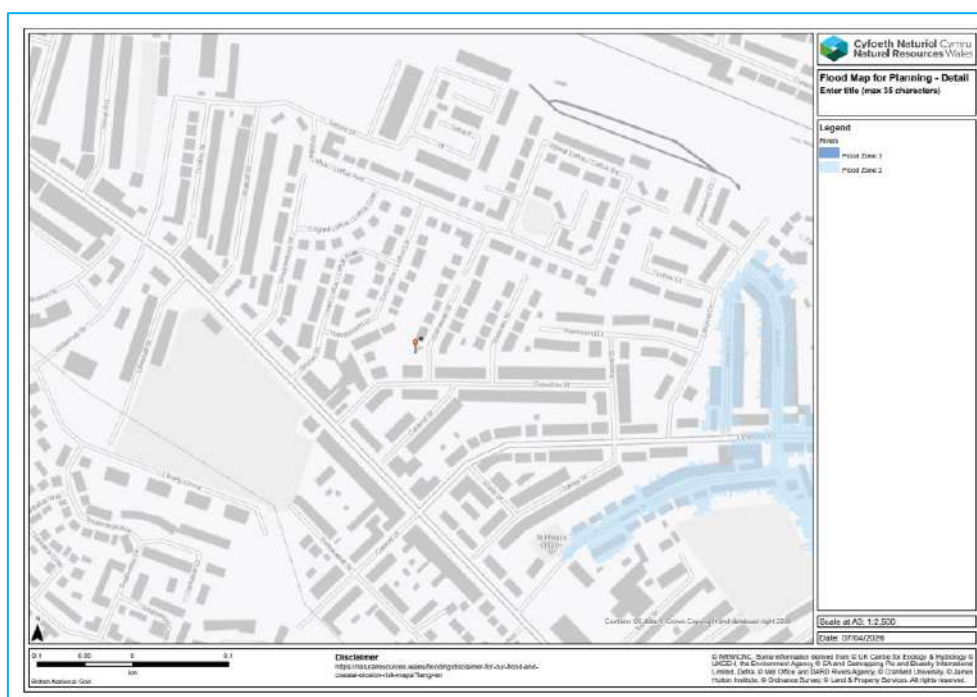
**Figure 2 - Flood Map for Planning: Rivers**



Table 3 - Flood Map for Planning Flood Zones

Flood Zone	Explanation
Rivers - Flood Zone 2	Areas with 0.1% to 1% (1 in 1000 to 1 in 100) chance of flooding from rivers in a given year, including the effects of climate change.
Rivers - Flood Zone 3	Areas with more than 1% (1 in 100) chance of flooding from rivers in a given year, including the effects of climate change.
Sea - Flood Zone 2	Areas with 0.1% to 0.5% (1 in 1000 to 1 in 200) chance of flooding from the sea in a given year, including the effects of climate change.
Sea - Flood Zone 3	Areas with more than 0.5% (1 in 200) chance of flooding from the sea in a given year, including the effects of climate change.
Surface Water and Small Watercourses - Flood Zone 2	Areas with 0.1% to 1% (1 in 1000 to 1 in 100) chance of flooding from surface water and/or small watercourses in a given year, including the effects of climate change.
Surface Water and Small Watercourses - Flood Zone 3	Areas with more than 1% (1 in 100) chance of flooding from surface water and/or small watercourses in a given year, including the effects of climate change.

3.5 Flood Vulnerability

Applying the Flood Risk Vulnerability Classification in Figure 4 of TAN15, the existing and proposed use of the site is classified as 'less vulnerable'. The proposed development will not change the vulnerability of the site to flooding or introduce a new vulnerable use into the floodplain.

3.6 Historic Flooding

The Natural Resources Wales historic flood outline shows that the site has not historically flooded, as shown in Figure 5. The British Hydrological Society "Chronology of British Hydrological Events" has no information on flooding within the vicinity of the site. No other historical records of flooding for the site have been recorded. Data from the BGS indicates that the types of deposits in the locality of the site are of the type associated with coastal floodplains. This normally relates to flooding which happened many thousands of years ago.



Figure 5 - Natural Resources Wales Historic Flood Outline

3.7 Existing and Planned Flood Defence Measures

The site is protected against tidal flooding by flood defence measures which provide a 1 in 200 year Standard of Protection (SoP). The flood defences take the form of flood embankments and flood walls and are all maintained by Natural Resources Wales. Natural Resources Wales inspects the flood defences twice a year to ensure they remain fit for purpose therefore; it is unlikely that a breach in the flood defences would occur. Further mitigated by using a number of risk management measures to manage and reduce the overall flood risk at the site these are discussed in Section 5.0.

3.8 Fluvial (river) Flooding

The FMfP shows that the site is located within Flood Zone 1 for rivers. The site is not located within the vicinity of the fluvial flooding therefore, the risk of flooding from fluvial sources is considered to be **not significant**.

3.9 Tidal (coastal) Flooding

River Usk

The River Usk is located approximately 600m to the south west of the site. In an extreme event, which is highly unlikely, the River Usk may overtop its banks and inundate the site with floodwater. The River Usk poses the primary flood risk to the site.

Defended Actual Risk

Table 4 and Figures 6 to 9 show the Natural Resources Wales defended modelled data for the site. Flood defences protect the site from flooding from the River Usk with a SoP of 1 in 200 years. Natural Resources Wales modelled data shows the site has a very low risk of tidal flooding with a chance of flooding of less than 1 in 1000 (0.1%) years. The site is shown to be flood free during the 1 in 1000 year event, the actual flood risk posed to the site is less than 1 in 1000 years.

It is only when climate change until 2096 is taken into account that the site may be inundated with floodwater during the defended scenarios. However, it is reasonable to assume that the existing flood defences will not only be maintained but will be upgraded in the future to maintain the standard of flood protection.

Figure 8 shows that the site may be inundated with floodwater during the defended 1 in 200 year in 2096 event, to a depth of less than 0.29m, with a water level of 7.12mAOD. The 5 years of additional climate change from 2096 to 2001 will result in an increase in the water levels of 0.055m (i.e. 0.011m per year) and will therefore, have a minimal impact on the modelled scenarios, with a depth of less than 0.35m, with a water level of 7.18mAOD.

Figure 9 shows that the site may be inundated with floodwater during the defended 1 in 1000 year in 2096 event, to a depth of less than 0.67m, with a water level of 7.50mAOD. The 5 years of additional climate change from 2096 to 2001 will result in an increase in the water levels of 0.055m (i.e. 0.011m per year) and will therefore, have a minimal impact on the modelled scenarios, with a depth of less than 0.73m, with a water level of 7.56mAOD.

Table 4 - Natural Resources Waled Modelled Defended Data

Parameter	1 in 200	1 in 1000	1 in 200 in 2096	1 in 1000 in 2096
Water Level (mAOD)	Null	Null	7.12	7.50
Water Depth (m)	Null	Null	0.29	0.67
Velocity (m)	Null	Null	0.18	0.29
Hazard Rating	Null	Null	<0.73	<1.35

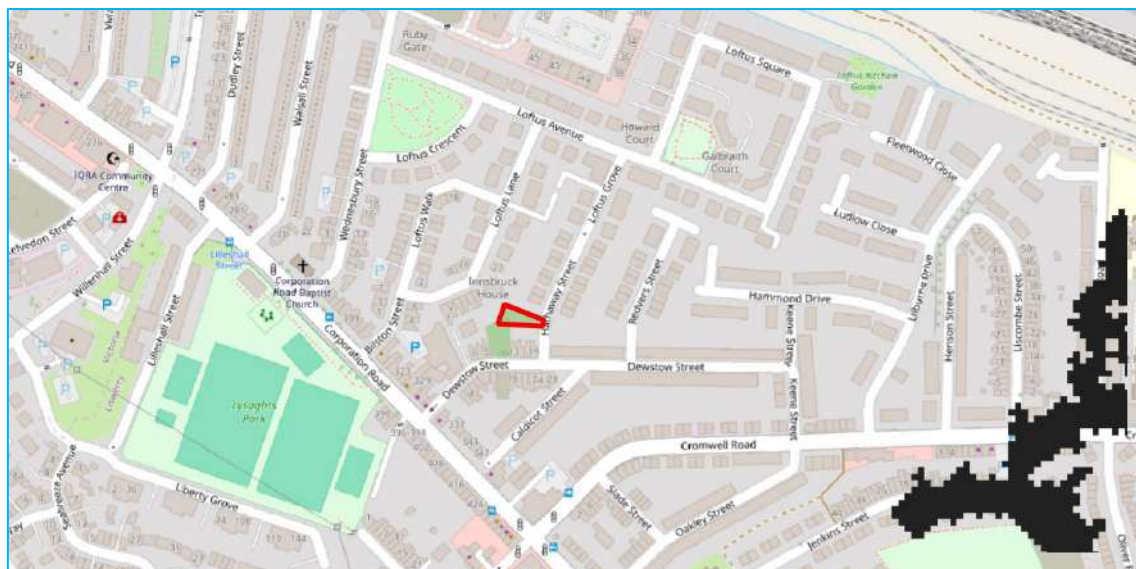


Figure 6 - Defended 1 in 200 Year Flood Extent

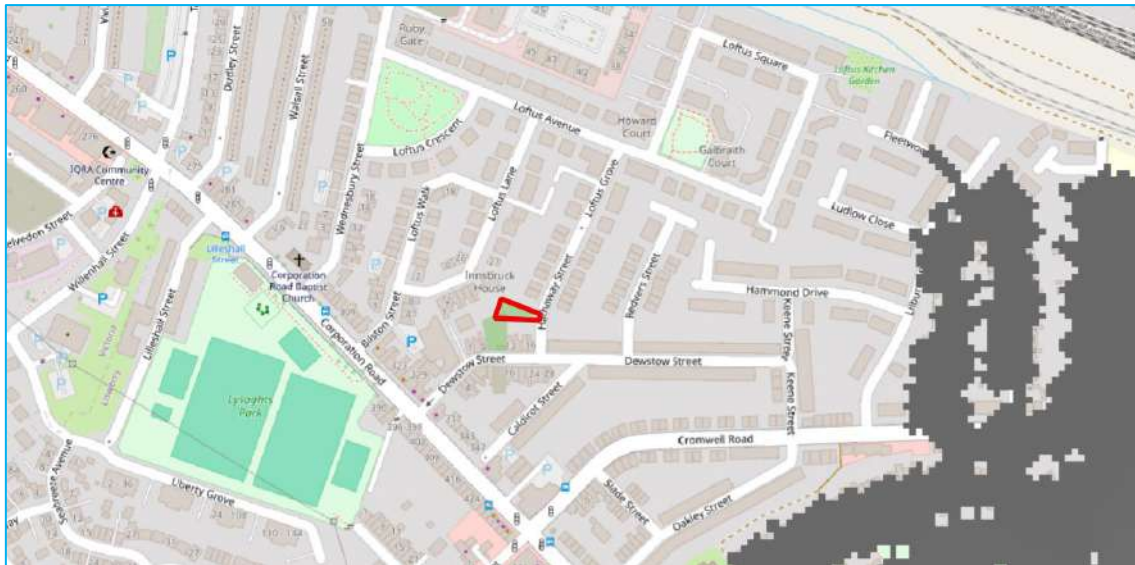


Figure 7 - Defended 1 in 1000 Year Flood Extent

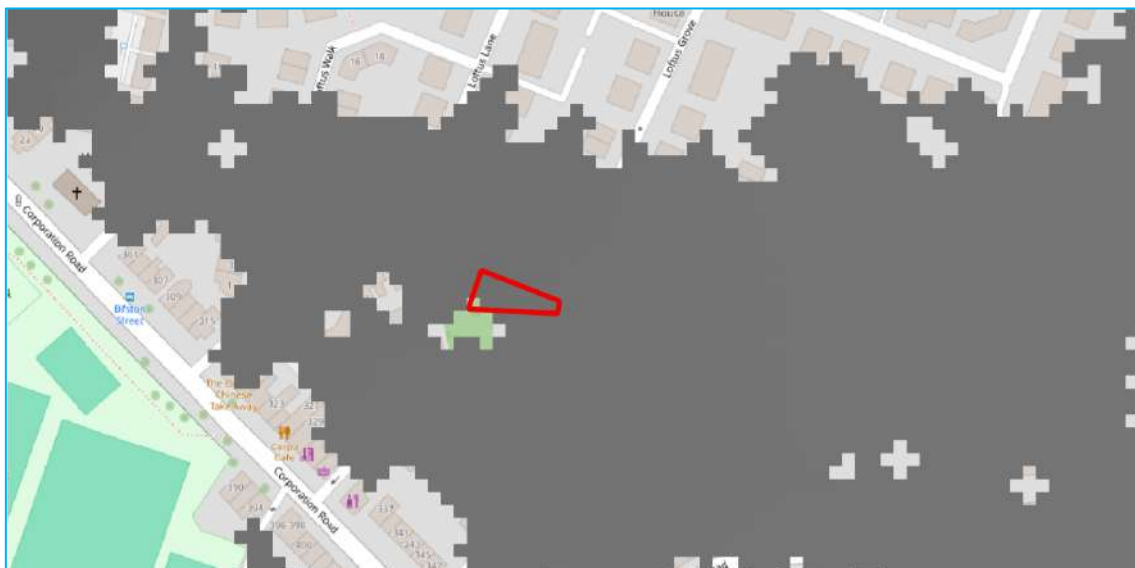


Figure 8 - Defended 1 in 200 Year in 2096 Flood Extent

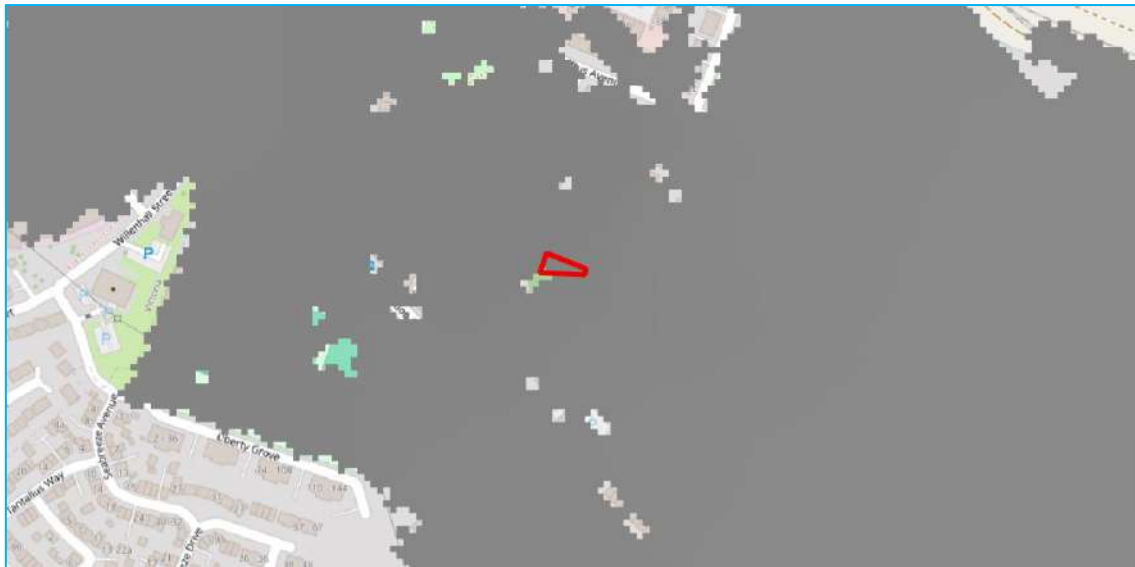


Figure 9 - Defended 1 in 1000 Year in 2096 Flood Extent

Undefended Residual Risk

Considerable investment has been made in the provision of the flood defences to protect this stretch of river from tidal flooding. However, the flood defences can only protect up to a point, they may malfunction, can be breached and have a finite structure life. Therefore, there is a residual risk of tidal flooding. Although it is unlikely that a breach in the flood defences would occur.

If the flood defences were not there, the area would be flooded. However, as area of land may benefit from the presence of flood defences even if the flood defences are overtopped, the presence of the flood defences means that the floodwater does not extend as far as it would if the flood defences were not there.

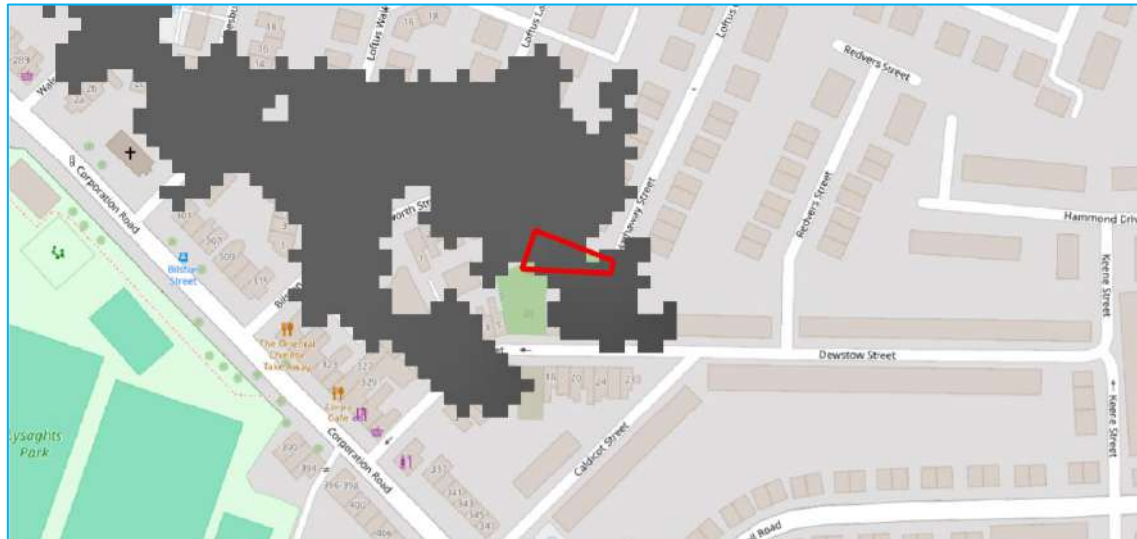
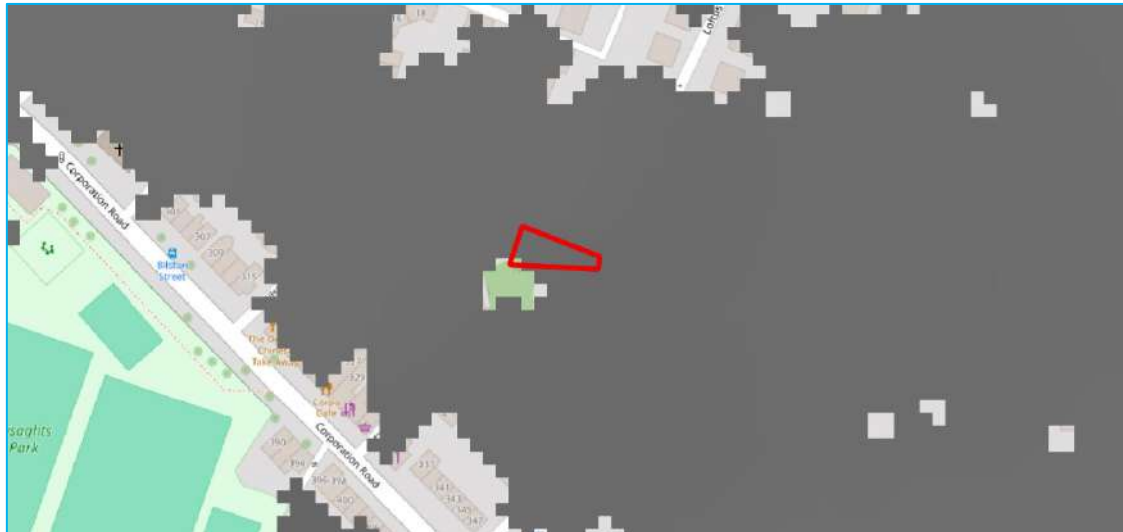
Table 5 and Figures 10 to 13 show the Natural Resources Wales undefended modelled data for the site. The site may be inundated with floodwater during the undefended scenarios. However, it is reasonable to assume that the existing flood defences will not only be maintained but will be upgraded in the future to maintain the standard of flood protection.

Figure 12 shows that the site may be inundated with floodwater during the undefended 1 in 200 year in 2096 event, to a depth of less than 1.21m, with a water level of 8.04mAOD. The 5 years of additional climate change from 2096 to 2001 will result in an increase in the water levels of 0.055m (i.e. 0.011m per year) and will therefore, have a minimal impact on the modelled scenarios, with a depth of less than 1.27m, with a water level of 8.10mAOD.

Figure 13 shows that the site may be inundated with floodwater during the defended 1 in 1000 year in 2096 event, to a depth of less than 1.92m, with a water level of 8.75mAOD. The 5 years of additional climate change from 2096 to 2001 will result in an increase in the water levels of 0.055m (i.e. 0.011m per year) and will therefore, have a minimal impact on the modelled scenarios, with a depth of less than 1.98m, with a water level of 8.81mAOD.

Table 5 - Natural Resources Waled Modelled Undefended Data

Parameter	1 in 200	1 in 1000	1 in 200 in 2096	1 in 1000 in 2096
Water Level (mAOD)	6.98	7.28	8.04	8.75
Water Depth (m)	0.15	0.45	1.21	1.92
Velocity (m)	0.004	0.45	0.33	0.55
Hazard Rating	<0.58	<1.22	<1.62	<2.01

**Figure 10 - Undefended 1 in 200 Year Flood Extent****Figure 11 - Undefended 1 in 1000 Year Flood Extent**

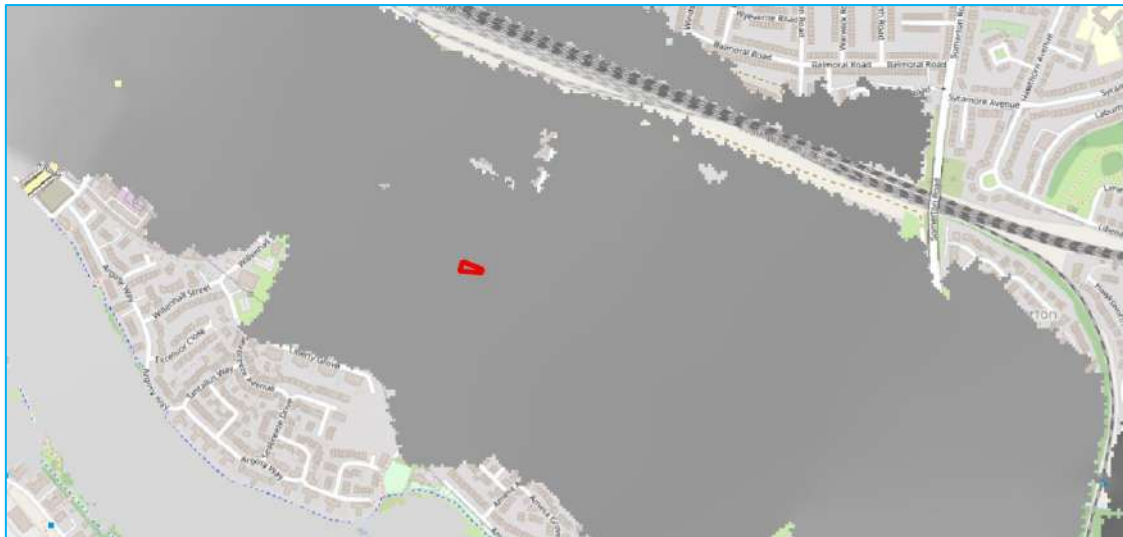


Figure 12 - Undefended 1 in 200 Year in 2096 Flood Extent



Figure 13 - Undefended 1 in 1000 Year in 2096 Flood Extent

Summary

Tidal flooding from the River Usk represents the primary flood risk to the site. Under defended conditions, the site remains unaffected during the majority of events throughout the lifetime of the development. The defended and undefended model scenarios represent the design basis for assessment in accordance with TAN15. A separate breach assessment is not considered proportionate given the nature and scale of development and the absence of any ground level residential accommodation.

Where inundation is shown under extreme climate change scenarios, flooding would develop gradually over many hours, with low hazard ratings during the design event. The mechanism for flooding from tidal flooding is generally prolonged episodes of high sea levels, which affords good time for flood warnings to be issued. The likelihood of a rapid water level rise and possible rapid inundation of urban areas posing a risk to life is considered to be minimal with a forewarning of two (2) days of a pending flood event.

The site is located within a low risk area where the onset of flooding is very gradual (many hours) as per Flood Risk Assessment Guidance for New Development Phase 2, R&D Technical Report FD2320/TR2. It can be concluded that tidal flooding from the River Usk poses a low risk to the site. Therefore, the risk of tidal flooding from the River Usk is considered to be of **medium significance**. The risk of tidal flooding will be further mitigated by using a number of risk management measures to manage and reduce the overall flood risk at the Site (see Section 5.0).

3.10 Groundwater Flooding

Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

Groundwater flooding tends to occur sporadically in both location and time. When groundwater flooding does occur, it tends to mostly affect low-lying areas, below surface infrastructure and buildings (for example, tunnels, basements and car parks) underlain by permeable rocks (aquifers).

Site conditions suggest a low probability of groundwater flooding. The Newport City Council PFRA confirms that groundwater is not considered to a significant flood risk and is considered to rise and fall relatively slowly. In addition, the local geology is not considered to yield significant volumes of groundwater. No below surface infrastructure and buildings are located or are proposed for the site. The risk of flooding from groundwater flooding is considered to be **not significant**.

3.11 Surface Water (pluvial) Flooding

The site is not situated near to large areas of poor permeability or areas with the geology and/or topography which may result in surface water flooding. The soil conditions at the site and within the vicinity of the site indicate that the site may be at risk of surface water flooding. Surface water flooding tends to occur sporadically in both location and time such surface water would tend to be confined to the streets around the development.

The FMfP for surface water and small watercourses shows that the majority of the site is located within Flood Zone 1 however, a small proportion of the site, on the western boundary, is located within Flood Zone 2 with an annual probability of 1 in 1000 to 1 in 100 years (0.1% to 1%) of flooding from surface water and/or small watercourses in a given year, including the effects of climate change.

Surface flooding poses a flood risk to the site therefore, the risk of flooding from surface water flooding is considered to be of **low significance**. The risk from this source will be further mitigated by using a number of risk management measures to manage and reduce the overall flood risk at the site (see Section 5.0).

3.12 Sewer Flooding

Sewer flooding occurs when urban drainage networks become overwhelmed and maximum capacity is reached. This can occur if there is a blockage in the network causing water to back up behind it or if the sheer volume of water draining into the system is too great to be handled. Sewer flooding tends to occur sporadically in both location and time such flood flows would tend to be confined to the streets around the development.

It has been assumed that there are existing sewers located within the vicinity of the site and these will inevitably have a limited capacity so in extreme conditions there would be surcharges, which may in turn cause flooding. Flood flows could also be generated by burst water mains, but these would tend to be of a restricted and much lower volume than weather generated events and so can be discounted for the purposes of this assessment.

Given the design parameters normally used for drainage design in recent times and allowing for some deterioration in the performance of the installed systems, which are likely to have been in place for many years, an appropriate flood risk probability from this source could be assumed to have a return period in the order of 1 in 10 to 1 in 20 years. The provision of adequate level difference between the ground floors and adjacent ground level would reduce the annual probability of damage to property from this source to 1 in 100 years or less. Therefore, the risk of flooding from sewer flooding is considered to be of **low significance**. The risk from this source will be further mitigated by using a number of risk management measures to manage and reduce the overall flood risk at the site (see Section 5.0).

3.13 Flooding from Artificial Drainage Systems/Infrastructure Failure

There are no other nearby artificial water bodies, water channels and artificial drainage systems that could be considered a flood risk to the site. The Natural Resources Wales Reservoir flood map shows that the site is not at risk of reservoir flooding (see Figure 14). The risk of flooding from artificial drainage systems/infrastructure failure is considered to be **not significant**.



Figure 14 - Natural Resources Wales Reservoir Flood Map

3.14 Effect of the Development on Flood Risk

The site is occupied by an existing building structure and no land raising will occur within the site. Compensatory flood storage is typically not required for tidal flooding. When the extent of flooding from a tidal source is considered, it can be seen that the floodplain is not confined and does in fact extend for some considerable distance. It is therefore concluded that development proposed in the tidal floodplain is unlikely to have an adverse impact on maximum surrounding flood levels and therefore, compensatory flood storage is not required.

Furthermore, the Site is currently protected by tidal flood defences. There is therefore currently no presence of flood flow routes or floodplain storage on site. The proposed development would

therefore not result in any impedance of flood flows or displacement of existing floodplain with the existing flood defences to be maintained and improved in the future to further ensure the development is not within an area susceptible to flood flows and floodplain in normal operation.

In the context of a catastrophic failure of existing defences, the built area associated with the development would have no material adverse impact on flood flow routes or floodplain displacement in any case given the significant flooding which would be present in the immediate area in this breach scenario. The site proposals have been shown to be in accordance with TAN15.

3.15 Summary of Site Specific Flood Risk

A summary of the sources of flooding and a review of the risk posed by each source at the site is shown in Table 6.

Table 6 - Risk Posed by Flooding Sources

Sources of Flooding	Potential Flood Risk	Potential Source	Probability/Significance
Fluvial Flooding	No	None Reported	None
Tidal Flooding	Yes	River Usk	Medium
Groundwater Flooding	No	None Reported	None
Surface Water Flooding	Yes	Low Spots	Low
Sewer Flooding	Yes	Local Sewers	Low
Flooding from Artificial Drainage Systems/Infrastructure Failure	No	None Reported	None

The primary, but unlikely, flood risk posed to the site is from tidal flooding from the River Usk. The FMfP shows that the site is located within Flood Zone 3 for sea flooding. The site is protected against tidal flooding by flood defence measures which provide a 1 in 200 year SoP and the site has no recent history of flooding.

The existing and proposed use of the site is classified as 'less vulnerable'. The proposed development will not change the vulnerability of the site to flooding or introduce a new vulnerable use into the floodplain.

Defended Actual Risk

The flood defence measures identified are expected to afford the site significant protection from fluvial flooding. Natural Resources Wales modelled data shows the site has a very low risk of tidal flooding with a chance of flooding of less than 1 in 1000 (0.1%) years. The site is shown to be flood free during the 1 in 1000 year event, the actual flood risk posed to the site is less than 1 in 1000 years.

It is only when climate change until 2096 is taken into account that the site may be inundated with floodwater during the defended scenarios. However, it is reasonable to assume that the existing flood defences will not only be maintained but will be upgraded in the future to maintain the standard of flood protection.

During the defended 1 in 200 year in 2096 event, to a depth of less than 0.29m, with a water level of 7.12mAOD. The 5 years of additional climate change from 2096 to 2001 will result in an increase in the water levels of 0.055m (i.e. 0.011m per year) and will therefore, have a minimal impact on the modelled scenarios, with a depth of less than 0.35m, with a water level of 7.18mAOD.

During the defended 1 in 1000 year in 2096 event, to a depth of less than 0.67m, with a water level of 7.50mAOD. The 5 years of additional climate change from 2096 to 2001 will result in an increase in

the water levels of 0.055m (i.e. 0.011m per year) and will therefore, have a minimal impact on the modelled scenarios, with a depth of less than 0.73m, with a water level of 7.56mAOD.

Undefended Residual Risk

The site may be inundated with floodwater during the undefended scenarios. However, it is reasonable to assume that the existing flood defences will not only be maintained but will be upgraded in the future to maintain the standard of flood protection.

During the undefended 1 in 200 year in 2096 event, to a depth of less than 1.21m, with a water level of 8.04mAOD. The 5 years of additional climate change from 2096 to 2001 will result in an increase in the water levels of 0.055m (i.e. 0.011m per year) and will therefore, have a minimal impact on the modelled scenarios, with a depth of less than 1.27m, with a water level of 8.10mAOD.

During the defended 1 in 1000 year in 2096 event, to a depth of less than 1.92m, with a water level of 8.75mAOD. The 5 years of additional climate change from 2096 to 2001 will result in an increase in the water levels of 0.055m (i.e. 0.011m per year) and will therefore, have a minimal impact on the modelled scenarios, with a depth of less than 1.98m, with a water level of 8.81mAOD.

Summary

Tidal flooding from the River Usk represents the primary flood risk to the site. Under defended conditions, the site remains unaffected during the majority of events throughout the lifetime of the development. The defended and undefended model scenarios represent the design basis for assessment in accordance with TAN15. A separate breach assessment is not considered proportionate given the nature and scale of development and the absence of any ground level residential accommodation.

Where inundation is shown under extreme climate change scenarios, flooding would develop gradually over many hours, with low hazard ratings during the design event. The mechanism for flooding from tidal flooding is generally prolonged episodes of high sea levels, which affords good time for flood warnings to be issued. The likelihood of a rapid water level rise and possible rapid inundation of urban areas posing a risk to life is considered to be minimal with a forewarning of two (2) days of a pending flood event.

The site is located within a low risk area where the onset of flooding is very gradual (many hours) as per Flood Risk Assessment Guidance for New Development Phase 2, R&D Technical Report FD2320/TR2. It can be concluded that tidal flooding from the River Usk poses a low risk to the site. Therefore, the risk of tidal flooding from the River Usk is considered to be of **medium significance**. A number of secondary flooding sources have been identified which may pose a **low significant** risk to the site. These are:

- Surface Water Flooding
- Sewer Flooding

The risk of tidal flooding will be further mitigated by using a number of risk management measures to manage and reduce the overall flood risk at the site (see Section 5.0).

The site is occupied by an existing building structure and no land raising will occur within the site. The development will not impede the movement of floodwater across the site. The proposed development will have no impact on the movement of floodwater across the site. The overall direction of the movement of water will be maintained within the developed site and surrounding area. The conveyance routes (flow paths) will not be blocked or obstructed. There will be no increase

in the floodwater levels due to the Proposed Development. The Site proposals have been shown to be in accordance with TAN15.

4.0 RISK MANAGEMENT

4.1 Introduction

In this flood zone, developers and local authorities should seek opportunities to reduce the overall level of flood risk in the area through the layout and form of the development and the use of flood mitigation measures.

A number of techniques and mitigation strategies to manage and reduce the overall flood risk in the area will be used. This will ensure the development will be safe and there is:

- Minimal risk to life;
- Minimal disruption to people living and working in the area;
- Minimal potential damage to property;
- Minimal impact of the proposed development on flood risk generally; and;
- Minimal disruption to natural heritage.

The flood risk at the site will be reduced by using a number of risk management measures to manage and reduce the overall flood risk at the site.

4.2 Sequential Approach

The sequential approach has been applied within the site by locating the most vulnerable elements of the development in the lowest risk areas. The proposed commercial units will be located to the west of the site where ground levels are higher. Furthermore, the office uses will be located on the first floor well above any floodwater with the lower vulnerability uses i.e. the storage will be located on the ground floor.

4.3 Finished Floor Levels

The finished floor levels will be set as a minimum at the existing ground levels of the site. It is recognised however that owing to limited headroom constraints, massing, planning policy and Building Regulations it is considered impractical to raise the finished floor levels further. Therefore, in order to mitigate against this, it is recommended that the occupants of the Site sign up to receive flood warnings from Natural Resources Wales and a Flood Plan to a safe area away from the building during times of flood is developed.

A combination of resistance (proofing) and resilience measures will be included to provide further protection. This is discussed below.

4.4 First Floor Accommodation

Accommodation will be located on the first floor as well as the ground floor of the commercial units. This will allow occupants to retreat to higher floor levels if needed. The levels of the first floor are located well above any floodwater levels. This provides a 'safe haven' above any floodwater levels assuming the flood defences are overtopped/breached.

This will enable rapid escape should flooding occur which is unlikely. The upper floors are accessed via internal stairs and are sufficient in size to safely house all occupants of the commercial units. The 'safe haven' will only be required in very extreme events or if a flood warning has not been received.

4.5 Flood Resilience and Resistance

The development of the layout should always consider that the site is potentially at risk from an extreme event and as such the implementation of flood resilience and resistance methods should be assessed.

Flood risk can be mitigated through the design of the commercial units. Flood resistance measures are measures that help resist floodwaters entering a property (airbrick covers are an example of a flood resistance measure). Flood resistant measures will be used, including:

- Flood doors (i.e. passive protection) will be used on external doors which protect to a minimum of 600mm above external ground levels.
- Where windows are less than 600mm above the external ground levels, flood windows (i.e. passive protection) will be used.
- The walls of the building will be thick.
- Sealant will be used around external doors and windows.
- All external doors and windows will be constructed from hard wearing materials with flood seals.
- Cavity walls with polyisocyanurate (PIR) rigid closed-cell insulation that retains structural integrity and have low moisture take will be used.
- Mortar joints will be thoroughly filled to reduce the risk of water penetration.
- If frogged bricks are used, they will be laid frog up so that filling becomes easier and coverage more certain.
- Bricks manufactured with perforations will not be used. Low-water-absorbing blocks/bricks and mortar mixes will be used up to the predicted 1 in 200 year flood level, plus one course of blocks/bricks to provide freeboard (up to a maximum depth of 600 mm above floor level). This increases resistance to water penetration.
- Fixings will be galvanized/stainless steel/copper (no mild steel to be used - cause rust/staining or walls).
- Hardcore and binding will have good compaction to reduce the risk of settlement and consequential cracking.
- A proprietary damp-proof membrane system will be used that is bonded to the slab rather than below the insulation and installed in accordance with the manufacturer's requirements will be used.
- All electrics wiring, switches, sockets, socket outlets etc. to be located a minimum of 450mm above the finished floor level of 8.50mAOD at 8.95mAOD which provides a freeboard of 1.05m above the 1 in 200 year in 2122 water level of 7.90mAOD.
- A non-return valves/anti flow valves will be used at the last inspection chamber before connection to the public sewers.
- Ensure that external paving's slope away from the building and not towards it.
- All other below ground service penetrations will be sealed.

4.6 Flood Warning and Evacuation

The site is located in a flood risk area therefore; the site will participate in Natural Resources Wales flood warning telephone service. The site will register contact details with the Natural Resources Wales Flood Warnings Service in order to receive Flood Warnings for the following Flood Warning area:-

- Usk Estuary at Maindee, North Liswerry and Liswerry Pill.

Natural Resources Wales operate a free flood warning service providing alerts by phone, text or email when flooding is anticipated providing an opportunity for owners to take necessary precautions, giving enough time for the buildings to be safely evacuated and mitigation measures to be put in place.

All occupants of the site will be made aware of the Natural Resources Wales Floodline telephone number and the Flood Warning Codes and their meaning. The owner of the properties will carry out the role of Flood Warden for the site and ensure they have an understanding of the flood mechanisms of the site and will ensure that the safety of the occupants and visitors will not be compromised.

Natural Resources Wales uses Flood Warnings Codes. They can be issued in any order, usually ending with an 'all clear'. They are issued by Natural Resources Wales through their website and Floodline Warning Direct. The flood warning will be passed onto the occupiers and visitors of the site verbally, by telephone and/or in person. It will be ensured that everyone receives the flood warnings when required.

4.7 Flood Warning and Evacuation Plan

A Flood Warning and Evacuation Plan (FWEP) outlining the precautions and actions you should take when a flood event is anticipated to help reduce the impact and damage flooding may cause has been developed (see Appendix 4). Sensible precautions would include raising electrical items, irreplaceable items and sentimental items off the ground or where possible moving them to a higher floor, rolling up carpets and rugs and turning off utilities. In addition, consider what actions you would take should the property need to be evacuated including access and egress routes and preparing a flood kit in advance containing warm clothing, medication, a torch, food and wellingtons.

The FWEP is a 'living' document and therefore should be periodically reviewed and updated to provide advice and guidance to occupants in the event of an extreme flood. The Flood Plan will therefore reduce the vulnerability of the occupants to flooding and makes them aware of the mechanisms of flooding at the site. The Flood Warden will monitor flood levels and keep occupants and visitors informed and will decide whether to initiate the Flood Plan.

4.8 Safe Access and Egress Routes

Access routes should be such that occupants can safely access and exit their property in design flood conditions. These routes must also provide the emergency services with access to the development during a flood event and enable flood defence authorities to carry out any necessary duties during the period of flood.

The site is one of the last places in the area to flood and remains flood free when other areas close by are flooded. The site is at such a ground level that it would only flood in the most extreme flood events; the site will remain flood free for the vast majority of flood events during the lifetime of the proposed development.

Safe access and egress routes, including emergency access can be maintained for vehicles and/or by foot via Hathaway Street. The flood defence measures identified are expected to afford the site

significant protection from fluvial flooding. Natural Resources Wales modelled data shows the site has a very low risk of tidal flooding with a chance of flooding of less than 1 in 1000 (0.1%) years. The site is shown to be flood free during the 1 in 1000 year event, the actual flood risk posed to the site is less than 1 in 1000 years.

It is only when climate change until 2096 is taken into account that the site may be inundated with floodwater during the defended scenarios. However, it is reasonable to assume that the existing flood defences will not only be maintained but will be upgraded in the future to maintain the standard of flood protection.

The likelihood of a rapid water level rise and possible rapid inundation of urban areas posing a risk to life is considered to be minimal with a forewarning of two (2) days of a pending flood event. The site is located within a low risk area where the onset of flooding is very gradual (many hours) as per Flood Risk Assessment Guidance for New Development Phase 2, R&D Technical Report FD2320/TR2.

The flood risk is tidal in nature. As such it is predictable and cyclical, meaning that there would be advanced warning of such an event, and there would be alleviation from floodwaters after the 6 hour cycle of high to low tides. Given that the site is located within a flood warning area, site users would be aware of the flood risk and should have more than sufficient time to evacuate the site before flooding of the access road would be expected. Therefore, the lead time of the flooding will provide site users with more than ample time to evacuate the site and seek safe refuge outside the floodplain. People should make their way to areas outside of the flood zone. In the event of a Flood Warning, vital belongings, including waterproof clothing, necessary medication and essentials for infants and children will be collected. It should be ensured that all occupiers and visitors to the site are accounted for, and then exit the site.

The emergency services should be contacted if floodwater has reach the site entrance and the occupants are unable to evacuate the site. Once on Hathaway Street the most appropriate routes are identified in Figure 15. Facilities such as community centres, shops etc. are located to the north east of the site which may be used in the event of a flood event. It should be ensured that all occupiers and visitors to the site are accounted for, and then exit the site using the Safe Access and Egress Route shown in Figure 15.

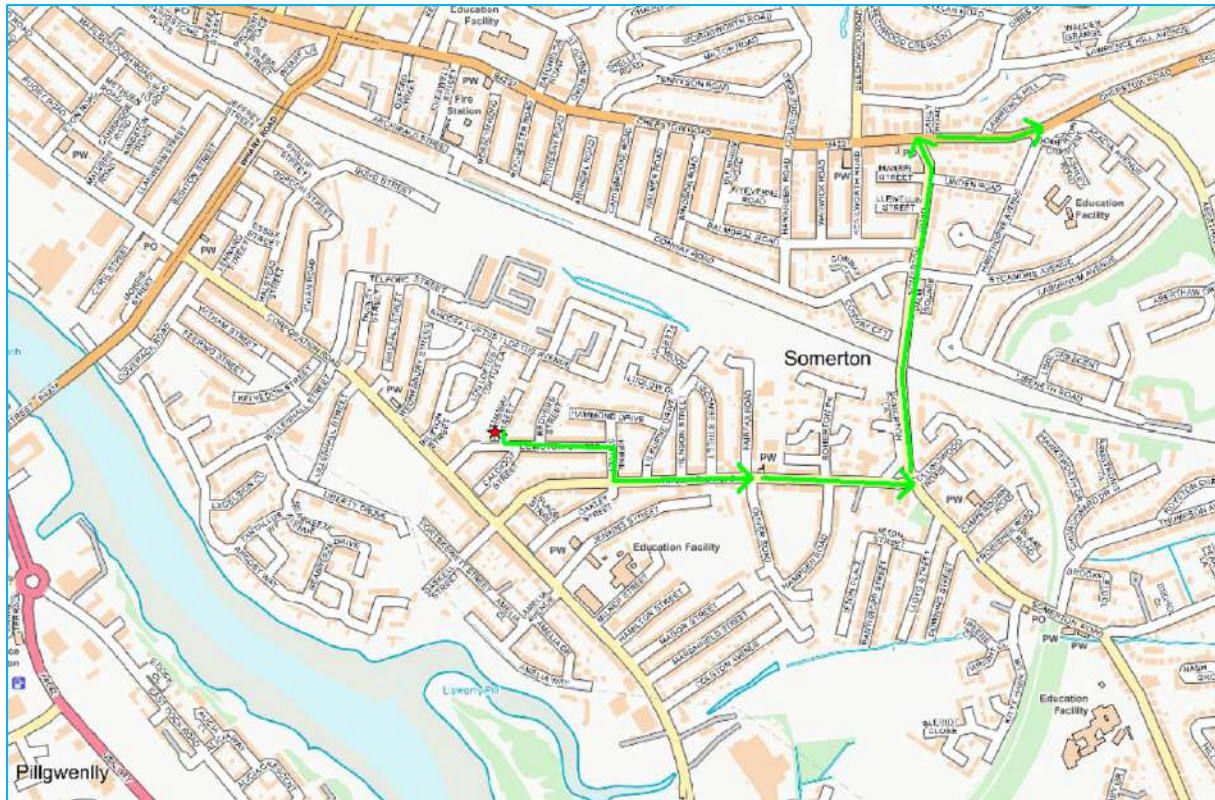


Figure 15 - Safe Access and Egress Route

4.9 Flooding Consequences

The site is unlikely to flood except in extreme conditions. The overall risk of flooding at the site, assuming flood defence measures fail and/or are overtopped is medium however, there are existing flood defence measures that protect the site and further mitigated by using a number of risk management measures to manage and reduce the overall flood risk at the site therefore the consequences of flooding are acceptable.

5.0 JUSTIFYING THE LOCATION OF THE DEVELOPMENT

5.1 Assessment Framework

TAN15 seeks to direct new development away from areas of highest flood risk, while recognising that development within Flood Zone 3 may, in certain circumstances, be considered subject to a proportionate assessment of flood consequences. Where development is proposed within Flood Zone 3, TAN15 requires that the potential consequences of flooding are assessed to inform decision-making, rather than determining acceptability in isolation, having regard to site-specific flood behaviour and mitigation.

TAN15 provides indicative criteria relating to flood frequency and flood consequences during extreme events (refer to Figures 5 and 6 of TAN15). These criteria are intended to support a structured consideration of flood hazard and vulnerability and are not absolute thresholds.

5.2 Application to the Proposed Development

This FCA has considered the indicators set out in TAN15, including flood depth, velocity, rate of onset, duration, access and egress arrangements, and the vulnerability of receptors. Occupants will be made aware of the nature of flood risk affecting the Site, flood warning arrangements, and appropriate response procedures through implementation of the Flood Warning & Evacuation Plan (see Appendix 3).

As set out in Section 4, flood risk at the site is influenced by local topography. Flood consequences at the site are associated with extreme fluvial events from the River Usk and are characterised by shallow flood depths, low velocities, and a gradual rate of onset, based on available modelling, historical records, and observed flood behaviour.

5.3 Risk Management Measures

Measures relevant to the management of flood consequences have been identified within this FCA, including:

- Location of accommodation above ground floor level;
- Availability of flood warning services;
- Preparation of a Flood Plan to inform occupant response during flood events;
- Consideration of access and egress arrangements during extreme flood conditions.

Taking account of the nature of the proposed development, the characteristics of fluvial flooding affecting the Site, the absence of any increase in flood risk elsewhere, and the mitigation and management measures identified (including flood warning registration, evacuation planning, and re-occupation controls), the consequences of flooding have been assessed against the criteria set out in Section 11 of TAN15.

On this basis, the assessment indicates that the flood consequences associated with the Proposed Development are consistent with the indicators and criteria set out in Section 11 of TAN15 for 'less vulnerable' development within Flood Zone 3. These considerations inform the LPA's assessment of flood consequences in accordance with TAN15

6.0 SUMMARY AND CONCLUSIONS

6.1 Introduction

This report presents a FCA in accordance with TAN15 for the proposed development at 1A Hathaway Street, Newport, NP19 0FQ.

This FCA identifies and assesses the risks of all forms of flooding to and from the development and demonstrates how these flood risks will be managed so that the development remains safe throughout the lifetime, taking climate change into account.

6.2 Flood Risk

The primary, but unlikely, flood risk posed to the site is from tidal flooding from the River Usk. The FMfP shows that the site is located within Flood Zone 3 for sea flooding. The site is protected against tidal flooding by flood defence measures which provide a 1 in 200 year SoP and the site has no recent history of flooding.

The existing and proposed use of the site is classified as 'less vulnerable'. The proposed development will not change the vulnerability of the site to flooding or introduce a new vulnerable use into the floodplain.

Defended Actual Risk

The flood defence measures identified are expected to afford the site significant protection from fluvial flooding. Natural Resources Wales modelled data shows the site has a very low risk of tidal flooding with a chance of flooding of less than 1 in 1000 (0.1%) years. The site is shown to be flood free during the 1 in 1000 year event, the actual flood risk posed to the site is less than 1 in 1000 years.

It is only when climate change until 2096 is taken into account that the site may be inundated with floodwater during the defended scenarios. However, it is reasonable to assume that the existing flood defences will not only be maintained but will be upgraded in the future to maintain the standard of flood protection.

During the defended 1 in 200 year in 2096 event, to a depth of less than 0.29m, with a water level of 7.12mAOD. The 5 years of additional climate change from 2096 to 2001 will result in an increase in the water levels of 0.055m (i.e. 0.011m per year) and will therefore, have a minimal impact on the modelled scenarios, with a depth of less than 0.35m, with a water level of 7.18mAOD.

During the defended 1 in 1000 year in 2096 event, to a depth of less than 0.67m, with a water level of 7.50mAOD. The 5 years of additional climate change from 2096 to 2001 will result in an increase in the water levels of 0.055m (i.e. 0.011m per year) and will therefore, have a minimal impact on the modelled scenarios, with a depth of less than 0.73m, with a water level of 7.56mAOD.

Undefended Residual Risk

The site may be inundated with floodwater during the undefended scenarios. However, it is reasonable to assume that the existing flood defences will not only be maintained but will be upgraded in the future to maintain the standard of flood protection.

During the undefended 1 in 200 year in 2096 event, to a depth of less than 1.21m, with a water level of 8.04mAOD. The 5 years of additional climate change from 2096 to 2001 will result in an increase in the water levels of 0.055m (i.e. 0.011m per year) and will therefore, have a minimal impact on the modelled scenarios, with a depth of less than 1.27m, with a water level of 8.10mAOD.

During the defended 1 in 1000 year in 2096 event, to a depth of less than 1.92m, with a water level of 8.75mAOD. The 5 years of additional climate change from 2096 to 2001 will result in an increase in the water levels of 0.055m (i.e. 0.011m per year) and will therefore, have a minimal impact on the modelled scenarios, with a depth of less than 1.98m, with a water level of 8.81mAOD.

Summary

Tidal flooding from the River Usk represents the primary flood risk to the site. Under defended conditions, the site remains unaffected during the majority of events throughout the lifetime of the development. The defended and undefended model scenarios represent the design basis for assessment in accordance with TAN15. A separate breach assessment is not considered proportionate given the nature and scale of development and the absence of any ground level residential accommodation.

Where inundation is shown under extreme climate change scenarios, flooding would develop gradually over many hours, with low hazard ratings during the design event. The mechanism for flooding from tidal flooding is generally prolonged episodes of high sea levels, which affords good time for flood warnings to be issued. The likelihood of a rapid water level rise and possible rapid inundation of urban areas posing a risk to life is considered to be minimal with a forewarning of two (2) days of a pending flood event.

The site is located within a low risk area where the onset of flooding is very gradual (many hours) as per Flood Risk Assessment Guidance for New Development Phase 2, R&D Technical Report FD2320/TR2. It can be concluded that tidal flooding from the River Usk poses a low risk to the site. Therefore, the risk of tidal flooding from the River Usk is considered to be of **medium significance**. A number of secondary flooding sources have been identified which may pose a **low significant** risk to the site. These are:

- Surface Water Flooding
- Sewer Flooding

The risk of tidal flooding will be further mitigated by using a number of risk management measures to manage and reduce the overall flood risk at the site.

The site is occupied by an existing building structure and no land raising will occur within the site. The development will not impede the movement of floodwater across the site. The proposed development will have no impact on the movement of floodwater across the site. The overall direction of the movement of water will be maintained within the developed site and surrounding area. The conveyance routes (flow paths) will not be blocked or obstructed. There will be no increase in the floodwater levels due to the Proposed Development. The Site proposals have been shown to be in accordance with TAN15.

6.3 Risk Management

The flood risk at the site will be reduced by using a number of risk management measures to manage and reduce the overall flood risk at the site.

Sequential Approach: The sequential approach has been applied within the site by locating the most vulnerable elements of the development in the lowest risk areas. The proposed commercial units will be located to the west of the site where ground levels are higher. Furthermore, the office uses will be located on the first floor well above any floodwater with the lower vulnerability uses i.e. the storage will be located on the ground floor.

Finished Floor Levels: The finished floor levels will be set as a minimum at the existing ground levels of the site. It is recognised however that owing to limited headroom constraints, massing, planning policy and Building Regulations it is considered impractical to raise the finished floor levels further. Therefore, in order to mitigate against this, it is recommended that the occupants of the Site sign up to receive flood warnings from Natural Resources Wales and a Flood Plan to a safe area away from the building during times of flood is developed.

A combination of resistance (proofing) and resilience measures will be included to provide further protection. This is discussed below.

First Floor Accommodation: Accommodation will be located on the first floor as well as the ground floor of the commercial units. This will allow occupants to retreat to higher floor levels if needed. The levels of the first floor are located approximately 3.00m above the ground floor finished floor level well above any flood water levels.

This provides a 'safe haven' above any floodwater levels assuming the flood defences are overtopped/breached. This will enable rapid escape should flooding occur which is unlikely. The upper floors are accessed via internal stairs and are sufficient in size to safely house all occupants of the buildings. The 'safe haven' will only be required in very extreme events or if a flood warning has not been received.

Flood Resilience and Resistance: Flood risk can be mitigated through the design of the commercial units. Flood resistance measures are measures that help resist floodwaters entering a property (airbrick covers are an example of a flood resistance measure). Flood resistant measures will be used, including:

- Flood doors (i.e. passive protection) will be used on external doors which protect to a minimum of 600mm above external ground levels.
- Where windows are less than 600mm above the external ground levels, flood windows (i.e. passive protection) will be used.
- The walls of the building will be thick.
- Sealant will be used around external doors and windows.
- All external doors and windows will be constructed from hard wearing materials with flood seals.
- Cavity walls with polyisocyanurate (PIR) rigid closed-cell insulation that retains structural integrity and have low moisture take will be used.
- Mortar joints will be thoroughly filled to reduce the risk of water penetration.
- If frogged bricks are used, they will be laid frog up so that filling becomes easier and coverage more certain.
- Bricks manufactured with perforations will not be used. Low-water-absorbing blocks/bricks and mortar mixes will be used up to the predicted 1 in 200 year flood level, plus one course of blocks/bricks to provide freeboard (up to a maximum depth of 600 mm above floor level). This increases resistance to water penetration.
- Fixings will be galvanized/stainless steel/copper (no mild steel to be used - cause rust/staining or walls).

- Hardcore and binding will have good compaction to reduce the risk of settlement and consequential cracking.
- A proprietary damp-proof membrane system will be used that is bonded to the slab rather than below the insulation and installed in accordance with the manufacturer's requirements will be used.
- All electrics wiring, switches, sockets, socket outlets etc. to be located a minimum of 450mm above the finished floor level.
- A non-return valves/anti flow valves will be used at the last inspection chamber before connection to the public sewers.
- Ensure that external paving's slope away from the building and not towards it.
- All other below ground service penetrations will be sealed.

Flood Warning and Evacuation: The site is located in a flood risk area therefore; the site will participate in Natural Resources Wales flood warning telephone service. The site will register contact details with the Natural Resources Wales Flood Warnings Service in order to receive Flood Warnings.

Flood Warning and Evacuation Plan: A Flood Warning and Evacuation Plan (FWEP) outlining the precautions and actions you should take when a flood event is anticipated to help reduce the impact and damage flooding may cause has been developed.

Safe Access and Egress Route: The site is one of the last places in the area to flood and remains flood free when other areas close by are flooded. The site is at such a ground level that it would only flood in the most extreme flood events; the site will remain flood free for the vast majority of flood events during the lifetime of the proposed development.

Safe access and egress routes, including emergency access can be maintained for vehicles and/or by foot via Hathaway Street. The flood defence measures identified are expected to afford the site significant protection from fluvial flooding. Natural Resources Wales modelled data shows the site has a very low risk of tidal flooding with a chance of flooding of less than 1 in 1000 (0.1%) years. The site is shown to be flood free during the 1 in 1000 year event, the actual flood risk posed to the site is less than 1 in 1000 years.

It is only when climate change until 2096 is taken into account that the site may be inundated with floodwater during the defended scenarios. However, it is reasonable to assume that the existing flood defences will not only be maintained but will be upgraded in the future to maintain the standard of flood protection.

The likelihood of a rapid water level rise and possible rapid inundation of urban areas posing a risk to life is considered to be minimal with a forewarning of two (2) days of a pending flood event. The site is located within a low risk area where the onset of flooding is very gradual (many hours) as per Flood Risk Assessment Guidance for New Development Phase 2, R&D Technical Report FD2320/TR2.

The flood risk is tidal in nature. As such it is predictable and cyclical, meaning that there would be advanced warning of such an event, and there would be alleviation from floodwaters after the 6 hour cycle of high to low tides. Given that the site is located within a flood warning area, site users would be aware of the flood risk and should have more than sufficient time to evacuate the site before flooding of the access road would be expected. Therefore, the lead time of the flooding will provide site users with more than ample time to evacuate the site and seek safe refuge outside the floodplain. People should make their way to areas outside of the flood zone. In the event of a Flood Warning, vital belongings, including waterproof clothing, necessary medication and essentials for infants and

children will be collected. It should be ensured that all occupiers and visitors to the site are accounted for, and then exit the site.

6.4 Justifying the Location of the Development

The development proposals should be considered by the LPA to satisfy the Justification Test and the Assessment of Acceptability Criteria as set out in TAN15.

6.5 Conclusion

In conclusion, commercial units, would be expected to remain dry in all but the most extreme conditions. Providing the recommendations made in this FCA are instigated, flood risk from all sources would be minimised, the consequences of flooding are acceptable, and the development would be in accordance with the requirements of TAN15.

This FCA demonstrates that the proposed development would be operated with minimal risk from flooding, would not increase flood risk elsewhere and is compliant with the requirements of TAN15. The development should not therefore be precluded on the grounds of flood risk.

APPENDICES

APPENDIX 1 – Proposed Site Layout

1A HATHAWAY STREET, NEWPORT
AS PROPOSED



SITE LOCATION PLAN
SCALE 1:1250



SITE LAYOUT - AS PROPOSED

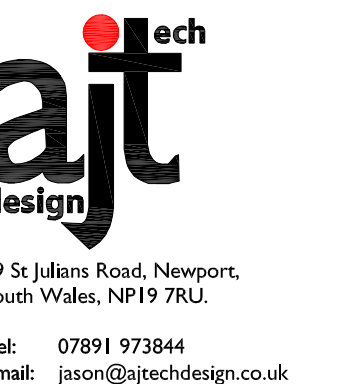
SCALE THIS DRAWING ONLY FOR
PLANNING PURPOSES CHECK ALL
DIMENSIONS ON SITE

This drawing is to establish design intent. The contractor is responsible for quantities, dimensions, verification of site conditions, compliance with contract documents for information that pertains to the fabrication processes or techniques of construction and for the co-ordination of work with all trades. All errors or omissions are to be reported to the designers.

Original drawing size A1
this drawing is copyright, all rights reserved.

A	260115	Internal layout amended.	jmt	-
Rev	Date	Description	By	Checked

Client	AJY CONSTRUCTION				
Project	NEW UNITS AT 1A HATHAWAY STREET, NEWPORT.				
Title	SITE PLAN AS PROPOSED			Scale	1:50 @ A1 1:100 @ A3
Status	PRELIMINARY	Checked	pmc	Date	Jan 2026
Job No.	2025.562	Disc.	SK01	Rev	A
				Appr'd	_____
				Checked	_____

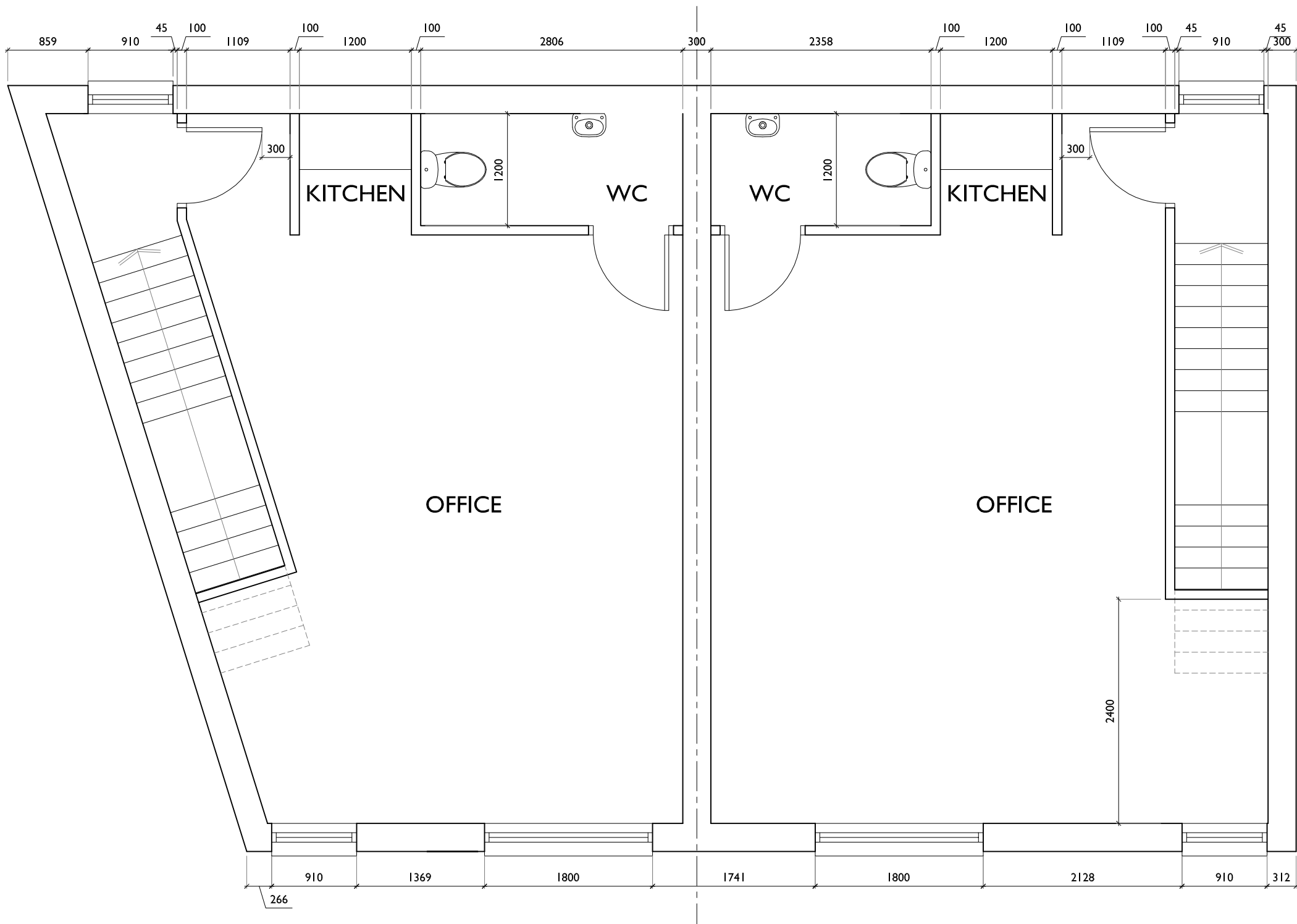


1A HATHAWAY STREET, NEWPORT

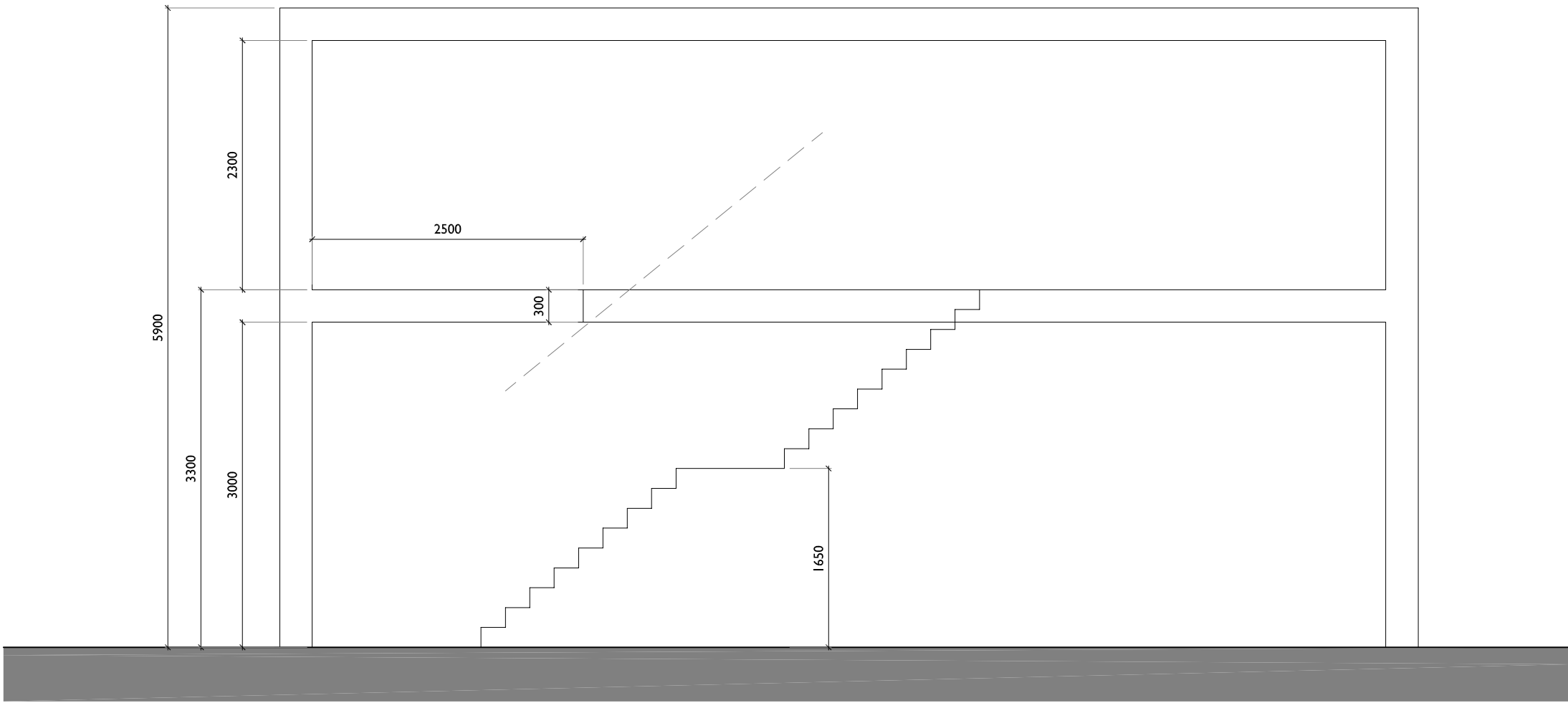
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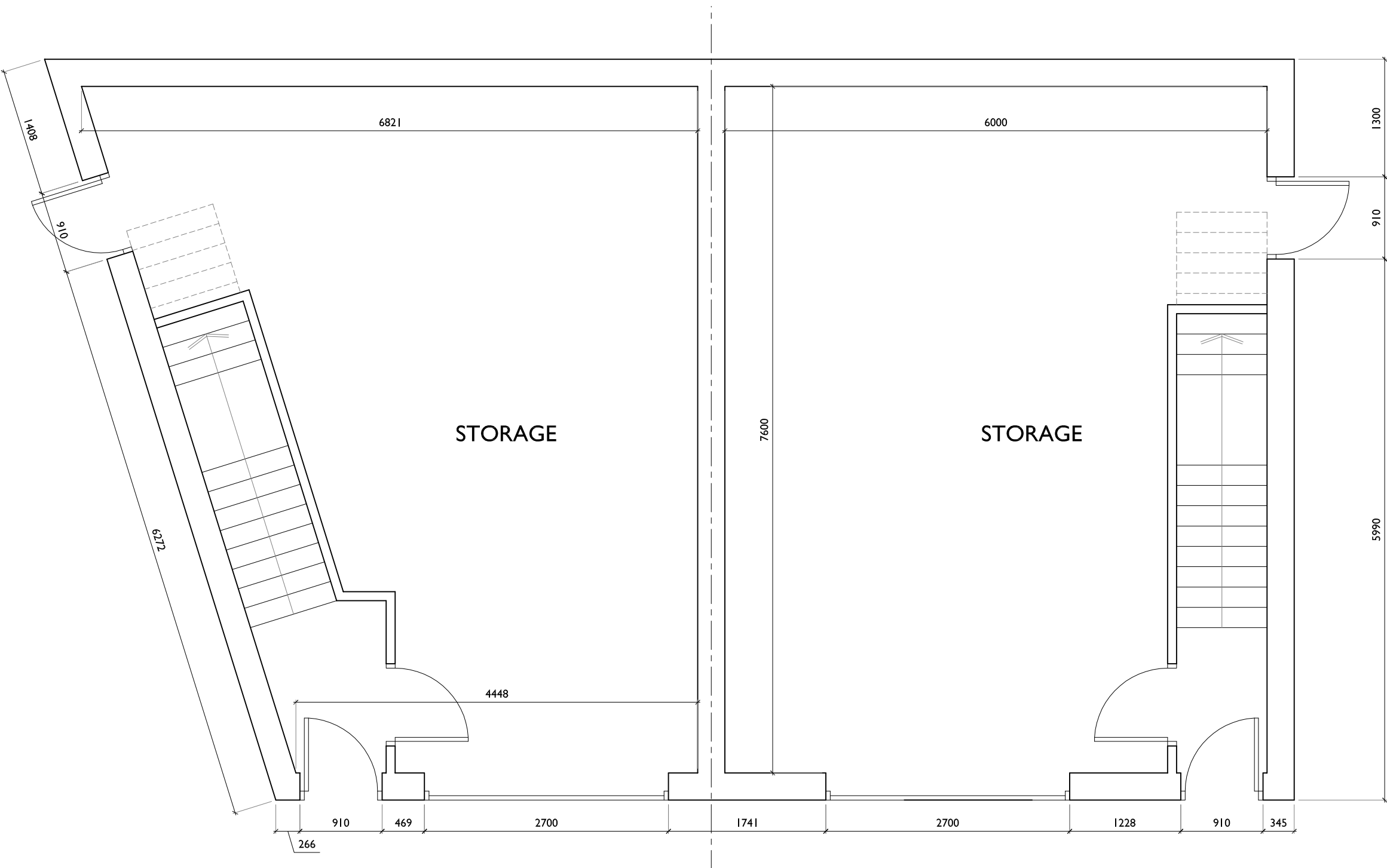
FRONT ELEVATION



FIRST FLOOR PLAN



SECTION



GROUND FLOOR PLAN

SCALE THIS DRAWING ONLY FOR PLANNING PURPOSES CHECK ALL DIMENSIONS ON SITE

This drawing is to establish design intent. The contractor is responsible for quantities, dimensions, verification of site conditions, compliance with contract documents for information that pertains to the fabrication processes or techniques of construction and for the co-ordination of work with all trades. All errors or omissions are to be reported to the designers.

Original drawing size A1
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Rev	Date	Description	By	Checked
A	260115	Internal layout amended.	jmt	-

Client	AJY CONSTRUCTION		
Project	NEW UNITS AT 1A HATHAWAY STREET, NEWPORT.		
Title	PLANS AND ELEVATIONS AS PROPOSED	Scale	1:50 @ A1 1:100 @ A3
Status	PRELIMINARY	Drawn	jmt
Job No	2025.562	Drawn	SK02
Rev	A	Drawn	SK02

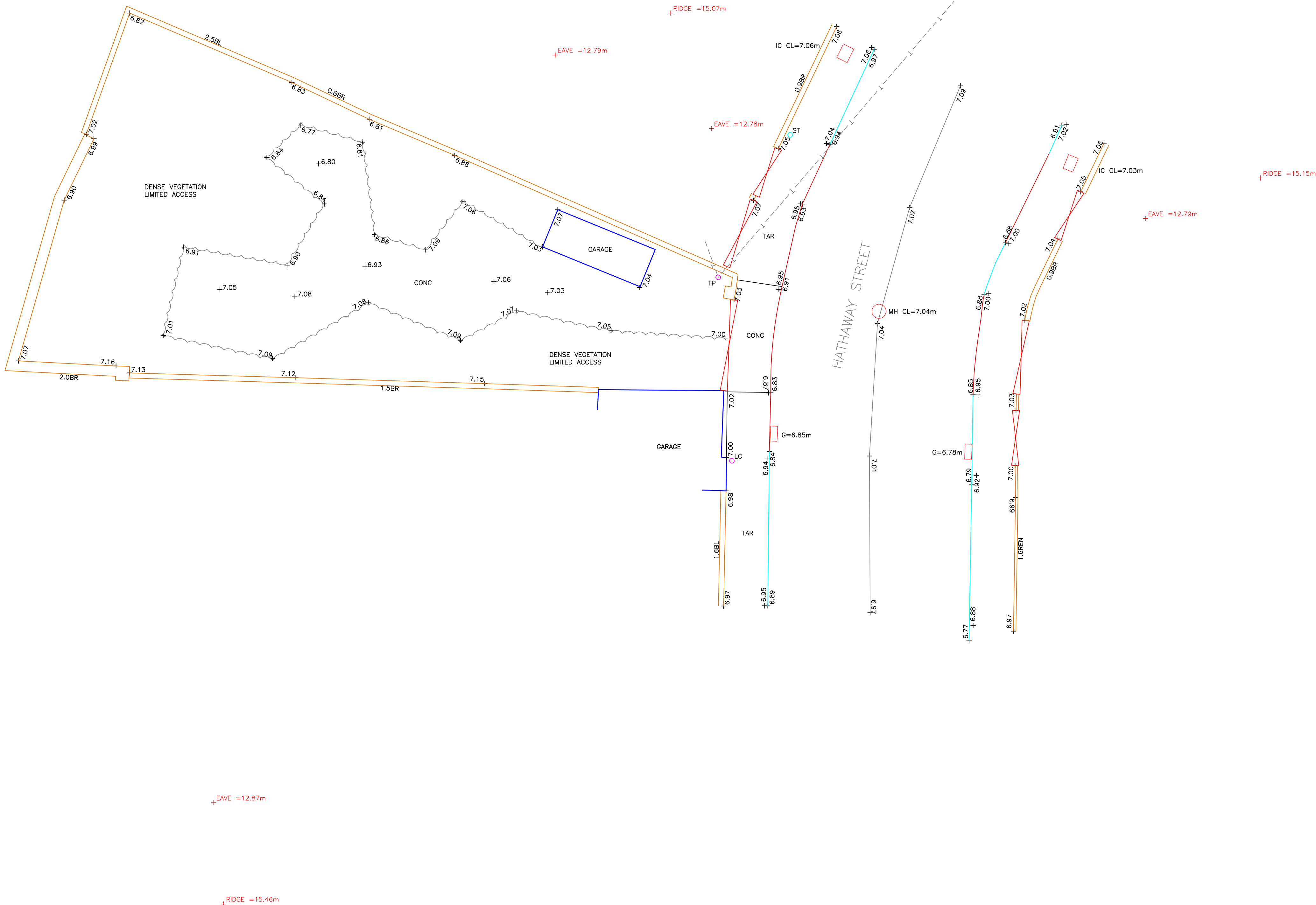
ajt^{tech}
design

69 St Julians Road, Newport,
South Wales, NP19 7RU.

Tel: 07991 973844
Email: jason@ajttechdesign.co.uk

APPENDIX 2 – Topographical Survey

Notes:
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2. Due to unavoidable inaccuracies during the reproduction process these drawings should not be scaled. Where dimensions are critical PM Consultants (UK) Ltd should be requested to confirm dimensions based on survey information. Scales appearing at the base of this plan are for indicative purposes only.
3. This plan has been prepared in accordance with B.S. 1192, Part 1 in relation to scale and dimension. Tolerances permitted within the British Standard should be observed.
4. All dimensions and particulars should be checked on site. Any discrepancies should be reported to PM Consultants (UK) Ltd before any work commences.



KEY

38.32	SPOT LEVEL	TS	TRAFFIC SIGNAL	CONC	CONCRETE
TAR	TARMAC	TSC	TRAFFIC SIGNAL CONTROLLER	RWP	RAINWATER PIPE
FB	FLOWER BED	IC	INSPECTION COVER	SVP	SOIL VENT PIPE
H/S	HARDSTANDING	MH	MANHOLE	FW	FOUL WATER
BOL	BOLLARD	MP	MARKER POST	SW	STORM/SURFACE WATER
TW	TOP OF WALL	TP	TELEGRAPH POLE	W	WATER/STOP TAP
RS	ROAD SIGN	LC	LIGHTING COLUMN	STAY	STAYWIRE
TWL	TOP WATER LEVEL	G	GULLY	SNP	STREET NAMEPLATE
IL	INVERT LEVEL	WM	WATER METER		
FH	FIRE HYDRANT	SV	SLUICE VALVE		
BT	BRITISH TELECOM	ST	STOP TAP		
CATV	CABLE TV	GV	GAS VALVE		
TACT	TACTILE PAVING	FFL	FINISHED FLOOR LEVEL		

1.0 BR	WALL (WITH DESCRIPTION & HEIGHT)
2.0 PR	FENCE (WITH DESCRIPTION & HEIGHT)
	HEDGEROW/TREE CANOPY
	BUILDING LINE
	CHANNEL/KERB LINE
	TOP/BOTTOM OF BANK
	SOFT EDGE OR VERGE EDGE
	HARD EDGE
	OVERHEAD LINE
	GATE



NOTES:

LEVELS AND CO-ORDINATE GRID ARE RELATED TO GPS SURVEY DATUM DERIVED FROM ORDNANCE SURVEY DATUM VIA OSTN15
ALTHOUGH O.S. CO-ORDINATES ARE SHOWN ON THIS PLAN THE GRID IS TO BE TREATED AS ARBITRARY.
NO SCALE FACTOR HAS BEEN APPLIED TO THE SURVEY THEREFORE THE CO-ORDINATES SHOWN ARE NOT TRUE O.S. CO-ORDINATES.

ISSUE	REVISION	DATE

Job:	TOPOGRAPHICAL SURVEY COAL YARD, HATHAWAY STREET NEWPORT				
Scale:	1/100	Date:	29/08/18	Drawn By:	KR
		Checked By:	NM	Job Ref:	KRS/CYN/001
Client:	KRS Environmental Ltd 3 Princes Square Princes Street Montgomery, Powys, SY15 6PZ				



PMCONSULTANTS (UK) LTD
48 Park Avenue, Abergavenny
Monmouthshire, NP7 5SP

Web: pmconsultants.co.uk Tel: (01873) 850667
E-Mail: surveys@pmconsultants.co.uk



APPENDIX 3 – Natural Resources Wales Correspondence

Keelan

From: Data Distribution <datadistribution@cyfoethnaturiolcymru.gov.uk>
Sent: 06 February 2026 13:59
To: Ruth Evans
Subject: RE: 29540a, KRSEnviro, P5&6, Land southwest of 1A Hathaway Street, Newport, NP19 0FQ (332640, 187643)
Attachments: 29540a FLOOD FLOWS ESTIMATE Licence.pdf

Dear Ruth,

Thank you for providing your signature.

Further to this please find attached finalised licence and data as below:

P5

<https://naturalresourceswales.sharefile.eu/d-s772183699b7a43ff87b5c9f52e5d5210>

P6

<https://naturalresourceswales.sharefile.eu/d-sc070f8f6cbdc4114b3e5909b0df5a988>

The flood model report for re-use with the attached licence and for the raw flood product data, please re-use with the licence below:

Please find a link to our Open Government Licence (OGL) here

- <http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

Please also include the attribution statement: "Contains Natural Resources Wales information © Natural Resources Wales and database right. All rights reserved."

Please note that the model was built for specific NRW requirements and might not meet your needs. In addition, since the time of modelling, there may have been changes that can impact the suitability of the model which means the model might no longer comply with present day standards. For example, there may have been changes to:

- The methodology for calculating hydrological flows,
- Hydraulic modelling software (e.g. improvements in the way that in channel structures such as bridges and weirs are represented in the hydraulic model),
- Tidal boundary,
- LIDAR,
- OS MasterMap®,
- Changes to the channel or within the floodplain,
- Climate change allowances.

This is not an exhaustive list, and it is the responsibility of the user to ensure the model is suitable for their use.

I trust this is of use,
Kind regards,

Catryn Court

Teitl Swydd / Job title Data Licensing Officer

Adran / Department Customer, Communications and Commercial

Dyddiau Gweithio (os yn berthnasol) / Working Days Mon-Fri

E-bost / E-mail: datadistribution@cyfoethnaturiolcymru.gov.uk

Yn Ardystiedig o ran Llythrennedd Carbon / Certified Carbon Literate

[Cyfoeth Naturiol Cymru](#) / [Natural Resources Wales](#)



Croesewir gohebiaeth yn Gymraeg a byddwn yn ymateb yn Gymraeg, heb i hynny arwain at oedi.

Correspondence in Welsh is welcomed, and we will respond in Welsh without it leading to a delay.



From: Ruth Evans <Ruth@krsenviro.com>

Sent: 06 February 2026 13:44

To: Data Distribution <datadistribution@cyfoethnaturiolcymru.gov.uk>

Subject: RE: 29540a, KRSenviro, P5&6, Land southwest of 1A Hathaway Street, Newport, NP19 0FQ (332640, 187643)

Rhybudd: Deilliodd yr e-bost hwn o'r tu allan i'r sefydliad. Peidiwch â chlicio dolenni, atodiadau agored nac sganio codau QR oni bai eich bod yn cydnabod yr anfonwr ac yn gwybod bod y cynnwys yn ddiogel.

Caution: This email originated from outside of the organisation. Do not click links, open attachments or scan QR Codes unless you recognise the sender and know the content is safe.

Hi Catryn,

Please find attached signed Section 3 Agreement and look forward to receiving the data links.

With kind regards

Ruth Evans
Assistant Flood Risk and Drainage Consultant
T: 01686 668957 M : 07525 926333



www.krsenviro.com

KRS Enviro is a trading name of KRS Environmental Limited. Company No: 08364003. Registered Office: 3 Princes Square, Princes Street, Montgomery, Powys, SY15 6PZ.

From: Data Distribution <datadistribution@cyfoethnaturiolcymru.gov.uk>

Sent: 06 February 2026 11:44

To: Ruth Evans <Ruth@krsenviro.com>

Subject: RE: 29540a, KRSenviro, P5&6, Land southwest of 1A Hathaway Street, Newport, NP19 0FQ (332640, 187643)

Dear Ruth,

Further to your recent email, please note that as all flood model reports, (old Product 5); contain flood flow estimates data, there is a licensing requirement to cover the re-use. Therefore, please find attached a draft licence for this.

Once happy, please sign the Section 3 Agreement, by means of a scanned signature, and return to me, I can then finalise your licence and send the report and raw flood model output data to you.

Many Thanks,

Catryn Court

Teitl Swydd / Job title Data Licensing Officer

Adran / Department Customer, Communications and Commercial

Dyddiau Gweithio (os yn berthnasol) / Working Days Mon-Fri

E-bost / E-mail: datadistribution@cyfoethnaturiolcymru.gov.uk

Yn Ardystiedig o ran Llythrennedd Carbon / Certified Carbon Literate

[Cyfoeth Naturiol Cymru /](#) [Natural Resources Wales](#)



Croesewir gohebiaeth yn Gymraeg a byddwn yn ymateb yn Gymraeg, heb i hynny arwain at oedi.

Correspondence in Welsh is welcomed, and we will respond in Welsh without it leading to a delay.



**Cyfoeth
Naturiol
Cymru**
**Natural
Resources
Wales**

Byd natur a phobl yn
ffynnu gyda'n gilydd

Nature and people
thriving together



cyfoethnaturiol.cymru
naturalresources.wales

From: Ruth Evans <Ruth@krsenviro.com>

Sent: 03 February 2026 10:39

To: Data Distribution <datadistribution@cyfoethnaturiolcymru.gov.uk>

Subject: Land to the southwest of 1A Hathaway Street, Newport, NP19 0FQ. – Grid Ref: 332640, 187643

Rhybudd: Deilliodd yr e-bost hwn o'r tu allan i'r sefydliad. Peidiwch â chlicio dolenni, atodiadau agored nac sganio codau QR oni bai eich bod yn cydnabod yr anfonwr ac yn gwybod bod y cynnwys yn ddiogel.

Caution: This email originated from outside of the organisation. Do not click links, open attachments or scan QR Codes unless you recognise the sender and know the content is safe.

Dear Sir/Madam,

Re: Land to the southwest of 1A Hathaway Street, Newport, NP19 0FQ – Grid Ref: 332640, 187643

I have been commissioned by my client to undertake a Flood Consequence Assessment for the site shown above. I have attached a site location plan with site outlined in red.

I wish to obtain Model Reports and Output data for the site.

If you have any queries do not hesitate to contact me.

With kind regards

Ruth Evans

Assistant Flood Risk and Drainage Consultant

T: 01686 668957 M : 07525 926333



www.krsenviro.com

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APPENDIX 4 – Flood Warning and Evacuation Plan



**1A Hathaway Street, Newport, NP19 0FQ
Flood Warning and Evacuation Plan**

**For Mr David Perry
KRS.0645.002.R.002.A**

June 2026

www.krsenvironmental.com

CONTACT DETAILS

Registered Office:
KRS Environmental Ltd
3 Princes Square
Princes Street
Montgomery
Powys
SY15 6PZ

Tel: 01686 668957
Mob: 07857 264 376

Email: keelan@krsenvironmental.com
Web: www.krsenvironmental.com
LinkedIn: uk.linkedin.com/in/keelanserjeant/

1A Hathaway Street, Newport, NP19 0FQ

Project	Flood Warning and Evaluation Plan
Client	Mr David Perry
Status	Final
Prepared by	Emma Serjeant LL.B, MSc
Reviewed by	Keelan Serjeant BSc (Hons), MSc, MCIWEM
Date	June 2026

Disclaimer:

This report has been produced by KRS Environmental Limited within the terms of the contract with the client and taking account of the resources devoted to it by agreement with the client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.

CONTENTS

CONTENTS	i
TABLES & FIGURES	iii
FLOOD WARNING AND EVACUATION PLAN DOCUMENT CONTROL.....	iv
1.0 INTRODUCTION.....	5
1.1 Aims and Objectives	5
1.2 Assumptions.....	5
1.3 Plan Structure.....	5
2.0 SITE LOCATION.....	7
2.1 Site Location.....	7
3.0 Flood Warden Roles and Responsibilities	8
3.1 Flood Warden.....	8
4.0 Flood Risk.....	9
4.1 Flooding	9
5.0 PREVENT, PROTECT, PREPARE.....	10
5.1 Flood Prevention	10
5.2 Flood Protection	10
5.3 Preparation for Flooding.....	11
6.0 FLOOD WARNINGS.....	13
6.1 Flood Warning Service	13
6.2 Floodline	14
6.3 How to Register	14
6.4 Floodline by Telephone	14
6.5 Updates.....	14
6.6 Estimated Flood Warning Time	15
7.0 FLOOD WARNING TRIGGERS	16
7.1 Overview of Action Levels.....	16
7.2 General Conditions.....	17
7.3 Flood Alert Status Issued	18
7.4 Flood Warning Status Issued.....	18
7.5 Severe Flood Warning Status Issued – Evacuate if appropriate	18
7.6 Warning No Longer in Force	19
8.0 EVACUATION	20
8.1 Overview of Effects on Access.....	20
8.2 Personal Safety in a Flood Event	20
8.3 Evacuation Procedure.....	20
9.0 SAFE REFUGE.....	22
9.1 Safe Refuge Area	22
10.0 TRAINING	23
10.1 Flood Training.....	23
11.0 SITE REOCCUPATION	24
11.1 Returning to the Premises	24
11.2 First Steps.....	24
11.3 Things to be Aware of When Clearing up after a Flood.....	24
12.0 THE ROLE OF OTHER BODIES.....	26
12.1 Organisations involved in a Flood Event.....	26
12.2 The Police.....	26
12.3 The Fire and Rescue Service.....	26
12.3.1 Newport City Council as the Local Authority & the Lead Local Flood Authority.....	26

12.4	Natural Resources Wales	27
12.5	Utilities Companies.....	27
13.0	CONTACT DETAILS.....	28
13.1	General Contact List	28
13.2	Key Locations	29
13.3	Equipment and Materials for Flood Wardens.....	30
APPENDICES.....		31
APPENDIX 1 – Review Record		32
APPENDIX 2 – Natural Resources Wales Flood Warning Information.....		34

TABLES & FIGURES

Figure 1 - Site Location	7
Figure 2 - Flood Map for Planning: Sea.....	9
Table 1 - Natural Resources Wales Flood Warning Codes.....	13
Table 2 - Monitoring Procedures	17
Figure 3 - Safe Access and Egress Route.....	21

FLOOD WARNING AND EVACUATION PLAN DOCUMENT CONTROL

The site is owned by **Mr David Perry**.

This Flood Warning and Evacuation Plan (FWEP) is owned, maintained and updated by **Mr David Perry**. All stakeholders of the plan are asked to inform the above of any changes in circumstances that may materially affect the plan in anyway. Details of any changes should be sent to **Mr David Perry**.

This plan should be reviewed:

- On first occupation;
- Every year following first occupation or;
- As a result of lessons identified following a flood event or exercise, or;
- Following changes of ownership of the property or;
- Following changes to any of the names / positions held within the plan; and
- Following changes to the Flood Warning process.

All updates/reviews shall be documented, recorded and will be communicated to the occupants and visitors of the site. The review shall be held within Appendix 1 of the FWEP.

Signed:

Dated:

Version No:

*A copy of the completed FWEP will be held by **Mr David Perry** and shall be made available for inspection by the Natural Resources Wales/Emergency Planners as and if required.*

1.0 INTRODUCTION

1.1 Aims and Objectives

The Flood Warning and Evacuation Plan (FWEP) sets out the flood risk of the site, identifies the roles and responsibilities of the Flood Wardens, provides details of the proposed flood actions and sets out the roles and responsibilities of other bodies as well as providing contact details.

The FWEP is a 'living' document and therefore should be periodically reviewed and updated to provide advice and guidance to occupants and visitors in the event of an extreme flood. The advice of the emergency services should be followed at all times and on the ground decisions will supersede this FWEP. Where information is not available from the relevant authorities this FWEP is intended to provide action points to protect property and allow early, safe evacuation from this site.

Aim

- To minimise the risk of harm to the occupiers and visitors during an extreme flood event.

Objectives

- To safely evacuate occupants and visitors from the site in the event of a major flood event.
- To ensure safety by raising awareness of the flood risk.
- To define the areas of responsibility for those participating in the FWEP.
- To establish procedures for implementing the FWEP.
- To reduce the risk to life.

1.2 Assumptions

In order for the following evacuation procedures to be effective:

- The site will participate in the Natural Resources Wales flood warning service. The site will register contact details with the Natural Resources Wales Flood Warnings Service (Floodline 0345 988 1188) in order to receive flood warnings by telephone, text or email.
- The flood warning will be passed onto the occupiers/visitors of the site verbally, by telephone and/or in person. It will be ensured that everyone receives the flood warnings when required.
- The Safe Access and Egress Route (see Figure 3) will be made available to the occupiers and visitors.

1.3 Plan Structure

This FWEP has the following structure:

- Section 2 shows the location of the site;
- Section 3 details the flood wardens roles & responsibilities;
- Section 4 describes the flood risk posed to the site;
- Section 5 details the flood risk management methods used to reduce the flood risk;
- Section 6 describes the flood warnings that are available for the site;
- Section 7 provides details of the flood warning trigger levels;

- Section 8 provides of the evacuation of the site and safe exit route;
- Section 9 describes the safe refuge area;
- Section 10 provides information on training;
- Section 11 provides information on reoccupation of the site;
- Section 12 discuss the role and responsibilities of organisation involved in a flood event; and
- Section 13 provides a list of useful telephone numbers, websites, radio and TV stations.

2.1 Site Location

[illegible]

Figure 1 - Site Location

3.0 FLOOD WARDEN ROLES AND RESPONSIBILITIES

3.1 Flood Warden

A Flood Warden for the site will be appointed from the staff of the site. The Flood Warden will have an understanding of the flood mechanisms of the site and will ensure that the safety of the occupants and visitors will not be compromised. The Flood Warden will:

- Inform staff of the existence of the FWEP where required.
- Ensure that the site is registered with the Natural Resources Wales Floodline service.
- Ensure that flood protection equipment and materials, if required, are installed and maintained including any flood boards and pumps.
- Co-ordinate with the emergency services.
- Identify equipment or possessions that require special protective measures and co-ordinate the action required to prevent their damage in the event of a flood.
- Monitor flood levels and keep, occupants and visitors informed.
- Review the FWEP annually.
- To further manage the flood risk and to confirm that the exit route is safe an on-the-spot risk assessment will be undertaken by the Flood Warden, if required.
- Liaise with the Natural Resources Wales on a regular basis.
- The needs of disabled, people who have reduced mobility or pregnant visitors will also need to be taken into account by the Flood Warden.

The FWEP will be passed onto the occupants and visitors of the site who will be made aware of the Safe Access and Egress Route, Natural Resources Wales Floodline and Flood Warning Codes. Any flood warnings will be passed onto the occupants and visitors of the site verbally, by telephone and/or in person. It will be ensured that everyone receives the flood warnings when required.

4.0 FLOOD RISK

4.1 Flooding

The River Usk is located approximately 600m to the south west of the site and the Spytyt Pill is located approximately 750m to the south east of the site. It is noted that the River Usk is tidal at this location. The Spytyt Pill is a tributary of the River Usk and joins the River Usk approximately 500m to the south west of the site. There are no other watercourses evident either on, or within the vicinity of the site.

The Flood Map for Planning (FMfP) represents the best available information on flood risk and shows that the site is located within Flood Zone 3 for sea flooding - areas with more than 0.5% (1 in 200) chance of flooding from the sea in a given year, including the effects of climate change (see Figure 2).

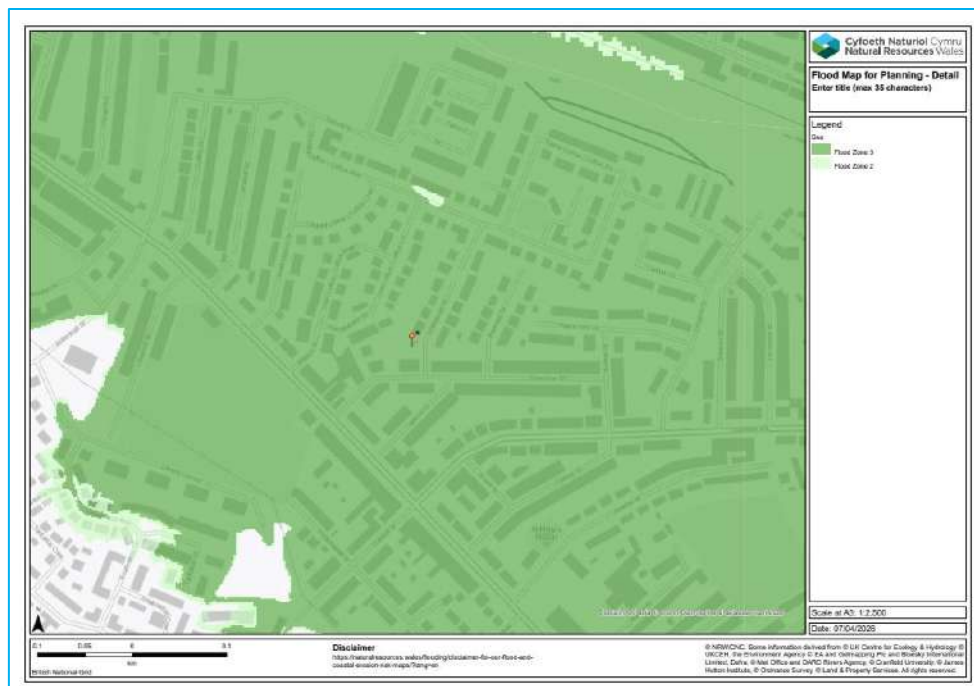


Figure 2 - Flood Map for Planning: Sea

5.0 PREVENT, PROTECT, PREPARE

5.1 Flood Prevention

The site is not protected against flooding by flood defence measures.

5.2 Flood Protection

The flooding sources will be managed and mitigated on the site by using a number of techniques, and mitigation strategies to manage and reduce the overall flood risk at the site. This will ensure the development will be safe. Measures used:

Sequential Approach: The sequential approach has been applied within the site by locating the most vulnerable elements of the development in the lowest risk areas. The proposed commercial units will be located to the west of the site where ground levels are higher. Furthermore, the office uses will be located on the first floor well above any floodwater with the lower vulnerability uses i.e. the storage will be located on the ground floor.

Finished Floor Levels: The finished floor levels will be set as a minimum at the existing ground levels of the site. It is recognised however that owing to limited headroom constraints, massing, planning policy and Building Regulations it is considered impractical to raise the finished floor levels further. Therefore, in order to mitigate against this, it is recommended that the occupants of the Site sign up to receive flood warnings from Natural Resources Wales and a Flood Plan to a safe area away from the building during times of flood is developed.

A combination of resistance (proofing) and resilience measures will be included to provide further protection. This is discussed below.

First Floor Accommodation: Accommodation will be located on the first floor as well as the ground floor of the commercial units. This will allow occupants to retreat to higher floor levels if needed. The levels of the first floor are located well above any floodwater levels. This provides a 'safe haven' above any floodwater levels assuming the flood defences are overtopped/breached.

This will enable rapid escape should flooding occur which is unlikely. The upper floors are accessed via internal stairs and are sufficient in size to safely house all occupants of the commercial units. The 'safe haven' will only be required in very extreme events or if a flood warning has not been received.

Flood Resilience and Resistance: Flood risk can be mitigated through the design of the commercial units. Flood resistance measures are measures that help resist floodwaters entering a property (airbrick covers are an example of a flood resistance measure). Flood resistant measures will be used, including:

- Flood doors (i.e. passive protection) will be used on external doors which protect to a minimum of 600mm above external ground levels.
- Where windows are less than 600mm above the external ground levels, flood windows (i.e. passive protection) will be used.
- The walls of the building will be thick.
- Sealant will be used around external doors and windows.

- All external doors and windows will be constructed from hard wearing materials with flood seals.
- Cavity walls with polyisocyanurate (PIR) rigid closed-cell insulation that retains structural integrity and have low moisture take will be used.
- Mortar joints will be thoroughly filled to reduce the risk of water penetration.
- If frogged bricks are used, they will be laid frog up so that filling becomes easier and coverage more certain.
- Bricks manufactured with perforations will not be used. Low-water-absorbing blocks/bricks and mortar mixes will be used up to the predicted 1 in 200 year flood level, plus one course of blocks/bricks to provide freeboard (up to a maximum depth of 600 mm above floor level). This increases resistance to water penetration.
- Fixings will be galvanized/stainless steel/copper (no mild steel to be used - cause rust/staining or walls).
- Hardcore and binding will have good compaction to reduce the risk of settlement and consequential cracking.
- A proprietary damp-proof membrane system will be used that is bonded to the slab rather than below the insulation and installed in accordance with the manufacturer's requirements will be used.
- All electrics wiring, switches, sockets, socket outlets etc. to be located a minimum of 450mm above the finished floor level.
- A non-return valves/anti flow valves will be used at the last inspection chamber before connection to the public sewers.
- Ensure that external paving's slope away from the building and not towards it.
- All other below ground service penetrations will be sealed.

Flood Warning and Evacuation: The site is located in a flood risk area therefore; the site will participate in Natural Resources Wales flood warning telephone service. The site will register contact details with the Natural Resources Wales Flood Warnings Service in order to receive Flood Warnings.

Flood Warning and Evacuation Plan: A Flood Warning and Evacuation Plan (FWEP) outlining the precautions and actions you should take when a flood event is anticipated to help reduce the impact and damage flooding may cause has been developed. This report is the FWEP for the site.

Safe Access and Egress Route: Safe access and egress routes, including emergency access can be maintained for vehicles and/or by foot via Hathaway Street.

5.3 Preparation for Flooding

The owner of the site should consider the following actions prior to occupation:

- Distribute a copy of this FWEP to the Emergency Planning department at Newport City Council.
- Distribute a copy of this FWEP to the relevant occupants.

- Train staff in the procedures to be followed in response to receipt of the flood warning (see Section 10.0).
- Assemble a flood kit for use by staff in an emergency – including important documents, torch, waterproof high visibility jacket, first aid kit and blankets.
- Complete the list of useful contacts (see Section 13.0).
- Ensure that occupants have been shown how to turn off electricity, gas and water in an emergency.
- Acquire any flood protection items (e.g. flood boards, air brick covers etc.). The National Flood Forum lists some of the products available at <http://bluepages.org.uk/>
- Confirm that the insurance policy is adequate.

6.0 FLOOD WARNINGS

6.1 Flood Warning Service

In Wales, Natural Resources Wales operates a Flood Warning service in areas at risk of flooding from rivers and the sea, which relies on direct measurement of rainfall, river levels, tide levels and in-house flood forecasting models, as well as rainfall data and information from the Met Office. This service operates 24 hours a day, 365 days a year.

Natural Resources Wales uses three Flood Warnings Codes (see Table 1). They can be issued in any order, usually ending with an 'all clear'. They are issued by the Natural Resources Wales through Floodline Warning Direct which is a free service. This provides flood warning via their website, telephone, mobile, email, SMS text message and fax.

Table 1 - Natural Resources Wales Flood Warning Codes

Flood Warning Code	Key Message	What it means	Timing
	'Flooding of low-lying land and roads is expected. Be aware, be prepared, watch out!'	Warn people of the possibility of flooding and encourage them to be alert, stay vigilant and to make early preparations for flooding	2 days to 2 hours in advance of flooding
	'Flooding of homes and businesses is expected. Act now!'	Warn people flooding is expected and encourage them to take immediate action to protect themselves and their property	1 day to ½ hour in advance of flooding
	'Severe Flooding is expected. There is extreme danger life and property. Act now!'	Warn people of significant risk to life or significant disruption to communities caused by widespread or prolonged flooding, and encourage them to take immediate action to protect themselves and follow the advice of the emergency service	When flooding poses a significant threat to life
<i>Warning No Longer in Force</i>	'Flood warnings and flood alerts that have been removed in the last 24 hours!'	Warnings are removed to inform people that the threat has now passed	When river or sea conditions begin to return to normal

It should be noted that such warnings are issued in respect of the flood risk within the wider catchment area and may not specifically apply to the site itself and its immediate neighbourhood; in other words, the Natural Resources Wales's Flood Warning Service may issue a Flood Alert which may not be applicable to the site. The site therefore should not solely rely on the Flooding Warning Service and should make use of other sources of information regarding severe weather such as the Met Office

(www.metoffice.gov.uk) the National Flood Forum (<https://nationalfloodforum.org.uk/>) and the Natural Resources Wales website (<https://flood-warning.naturalresources.wales/>) and local radio/TV.

Flood warnings identify a potential rather than an actual threat. It is therefore noted that not all events will result in an automatic progression from one warning to another with the end result being flooding of the site. It is possible for smaller events to trigger initial warnings with water levels dropping before flooding of the site occurs. However, in the very unlikely event of a breach there may be a limited flood warning.

Natural Resources Wales has provided a useful leaflet, see Appendix 2, which highlights the key actions to take before, during and after a flood. When a flood is expected, Newport City Council and the local emergency services will be responsible for public care and safety.

6.2 Floodline

The site is located in a flood risk area; therefore, the site will participate in the Natural Resources Wales Flood Warning service in order to receive flood warnings by telephone, text or email. The site will register contact details with the Natural Resources Wales' Flood Warnings Service (Floodline 0345 988 1188) in order to receive Flood Warnings.

The occupants of the site will be made aware of the Natural Resources Wales Floodline telephone number (on 0345 988 1188) and the flood warning meaning.

6.3 How to Register

1. Internet using the Natural Resources Wales's website:

<https://flood-warning.naturalresources.wales/>

2. Telephone

Calling Floodline on 0345 988 1188

6.4 Floodline by Telephone

During a heavy rainfall event, call Floodline on 0345 988 1188.

6.5 Updates

The Natural Resources Wales website contains regular updates and information (<https://flood-warning.naturalresources.wales/>).

The Natural Resources Wales also actively provides updates of flood warnings on Twitter (<https://twitter.com/natreswales>).

The Met Office issues weather forecast for the UK, including severe weather warnings (www.metoffice.gov.uk/weather/uk/se/se_forecast_warnings.html).

The Met Office regularly updates weather warnings on both Twitter (www.twitter.com/metoffice) and Facebook (www.facebook.com/metoffice).

To view and receive flood alerts via Facebook, you can use the FloodAlerts Facebook app (<https://www.facebook.com/FloodAlerts>).

Each river gauge is also available to follow via Twitter (<https://twitter.com/gaugemap>).

Social media sites are also useful sources of information.

During times of heavy rainfall, occupants should check TV/radio stations for information regarding flood risk. This may allow extra preparation time, enabling the property, contents and people to be better protected against the effects of flooding. Updates and news on flooding for the local area can be obtained from local television news reports and from local radio stations, including the following sources.

Radio Stations

- BBC Radio Wales
- BBC Radio Cymru
- Gwent Radio
- Capital FM
- Real Radio

Television Stations Issuing Flood Alerts and Warnings

- BBC News Channel
- BBC One/Two
- ITV News Channel
- ITV1
- S4C
- Sky News Channel

6.6 Estimated Flood Warning Time

The likelihood of a rapid river/sea level rise and possible rapid inundation of urban areas within this area and posing a risk to life is considered to be minimal. The Natural Resources Wales, with its current flood warning system, to provide forewarning of two (2) days of a pending flood event. However, in the very unlikely event of a breach there may be a limited flood warning. A more accurate estimation will be provided when the flood warning is made.

7.0 FLOOD WARNING TRIGGERS

7.1 Overview of Action Levels

In the event of a serious flood event the competent warning authority is Natural Resources Wales. When a flood is expected, Newport City Council and the local emergency services will be responsible for public care and safety. The responsibility leading up to, during and after the flood event lies with the Flood Warden as does evacuating the site although the advice of the emergency services may override this. A list of the Flood Warden key responsibilities is set out in Section 3.0.

Table 2 provides a summary of the key triggers that have been identified for the development, each followed by an action that should be taken once the trigger event has occurred. It should be noted that the triggers may not always occur in the same order and residents, through the Flood Warden, should always take appropriate actions when instructed to do so by Newport City Council, Natural Resources Wales or the Emergency Services. Further details on the triggers and actions are available below. All contacts required within this Section will be listed in the contacts in Section 13.0.

The actions that need to be followed as part of the FWEP are given below. They should be read in conjunction with all the information within this plan. The strategy in this FWEP is for evacuation to take place before flooding of the site occurs, people should take immediate action to protect themselves and also follow the advice of the emergency service'. Where possible you should make arrangements with family or friends for shelter.

Based on the likely flood risk and associated warning time that is feasible, it is considered likely that there would be sufficient time to evacuate in dry conditions however, if this is not possible due to flooding of the access and egress route (e.g. breach in the flood defences), safe refuge is possible. Accommodation will be located on the first floor as well as the ground floor of the buildings. This provides a 'safe haven' above any floodwater levels. This will enable rapid escape should flooding occur which is unlikely. In the very unlikely event of a breach there may be a limited flood warning.

You should not assume that the emergency services will be able to assist you with the evacuation; their focus will be directed to those in greatest need.

Table 2 - Monitoring Procedures

Trigger	Key Message	What it means	Timing
	‘Flooding of low-lying land and roads is expected. Be aware, be prepared, watch out!’	Warn people of the possibility of flooding and encourage them to be alert, stay vigilant and to make early preparations for flooding	2 days to 2 hours in advance of flooding (in the very unlikely event of a breach there may be a limited flood warning)
	‘Flooding of homes and businesses is expected. Act now!’	Warn people flooding is expected and encourage them to take immediate action to protect themselves and their property	1 day to ½ hour in advance of flooding (in the very unlikely event of a breach there may be a limited flood warning)
	‘Severe Flooding is expected. There is extreme danger life and property. Act now!’	Warn people of significant risk to life or significant disruption to communities caused by widespread or prolonged flooding, and encourage them to take immediate action to protect themselves and follow the advice of the emergency service	When flooding poses a significant threat to life (in the very unlikely event of a breach there may be a limited flood warning)
Warning No Longer in Force	‘Flood warnings and flood alerts that have been removed in the last 24 hours!’	Warnings are removed to inform people that the threat has now passed	When river or sea conditions begin to return to normal

7.2 General Conditions

Staff should be to be aware of the FWEP and the Safe Access and Egress Route and procedures that may need to be put in place in the event of flooding. Staff should be aware of changes in flood warning status such as forecasted bad weather. Staff should ensure flood kits are stocked and ready at all times.

7.3 Flood Alert Status Issued

'Flooding is possible - be prepared!'

A **'Flood Alert'** will be given 2 days to 2 hours in advance of flooding.

In the event of the area being placed on **'Flood Alert'**, people should prepare themselves to evacuate, and make arrangements to vacate the premises at short notice if required. Vehicles should be moved to higher ground in preparation for a more severe flood warning.

The Flood Warden, occupiers and visitors should monitor the situation closely by calling the Natural Resources Wales on 0345 988 1188 for regular updates, follow the Met Office website or alternatively through local and national media.

7.4 Flood Warning Status Issued

'Flooding expected – Immediate action is required!'

A **'Flood Warning'** will be given 1 day to ½ hour in advance of flooding.

Should the flood warning code be escalated to **'Flood Warning'**, people should get ready to evacuate the site.

It is possible that the Flood Warning would be triggered by Natural Resources Wales, although this depends on a number of factors rather than simply the water level and may not accurately reflect the risk to individual properties.

The Flood Warden and staff should monitor the situation closely by calling Natural Resources Wales on 0345 988 1188 for regular updates, follow the Met Office website or alternatively through local and national media.

7.5 Severe Flood Warning Status Issued – Evacuate if appropriate

'Flooding poses a significant danger to life!'

Should the Natural Resources Wales's flood warning code be escalated to the highest level, **'Severe Flood Warning'** and, if evacuation has not already been completed, the safest course of action is to evacuate the site. An appropriate Safe Access and Egress Route are identified in Section 8.0.

Should floodwater be present on Hathaway Street prior to evacuation of the premises, it is considered unsafe to evacuate. People should remain in the buildings as the design floodwater level is not expected to internally flood the buildings.

The Flood Warden and staff should monitor the situation closely by calling the Flood Warning Service on 0345 988 1188 for regular updates or alternatively through local and national media. Note that there is a risk this may occur before the Natural Resources Wales issues their Severe Flood Warning status. In the very unlikely event of a breach there may be a limited flood warning.

People should co-operate with the emergency services and call 999 if immediately in danger. At this stage the Newport City Council Emergency Team, the emergency services and Natural Resources Wales should be managing the situation, with widespread flooding potentially over a large area, and will endeavour to provide advice on an evacuation route, shelter and assistance to evacuees.

An appropriate Safe Refuge Area is identified in Section 9.0 if evacuation from the site has not been possible.

7.6 Warning No Longer in Force

Reoccupation can be considered once approval has been given by the emergency services after a **'Warning No Longer in Force'** has been issued. More details of the reoccupation procedure is given in Section 11.0.

8.0 EVACUATION

8.1 Overview of Effects on Access

Access routes should be such that occupants can safely access and exit their buildings in design flood conditions. These routes must also provide the emergency services with access to the development during a flood event and enable flood defence authorities to carry out any necessary duties during the period of flood.

A safe access and egress routes, including emergency access can be maintained for vehicles and/or by foot via Hathaway Street.

8.2 Personal Safety in a Flood Event

The following should be considered carefully by occupants and visitors before evacuation the premises during a flood event:

1. Do not put yourself at risk in the event of a flood, personal safety is paramount.
2. Be aware that floods bring their own unique hazards, the majority of which will be hidden from view.
3. Never try to swim through fast flowing water as you could be swept away or struck with an object from the floodwater.
4. Avoid wading through floodwater as this is likely to be contaminated with raw sewage as drains and sewers overflow.
5. Stay safe in a flood event.

8.3 Evacuation Procedure

Occupants and visitors should initially undertake a visual check to ensure that no floodwater is present within Hathaway Street prior to evacuation. If the visual check determines that the floodwater is yet to reach Hathaway Street, occupiers and visitors should exit via the main access to the site. Occupants and visitors should proceed swiftly but calmly onto Hathaway Street and then proceed to Dewstow Street to the east, then Keene Street to the south, then via Cromwell Road to the east, turn onto Somerton Road to the north and then to the east along Chepstow Road. Occupiers and visitors should not take from the property any bulky items that may impede their evacuation. Occupiers and visitors should provide assistance to those who may need it, such as children, the elderly or disabled.

The emergency services should be contacted if floodwater has reach the site entrance and the occupants are unable to evacuate the site. As this point they should consider safe refuge, as detailed within Section 9.0.

Once on Hathaway Street the most appropriate routes are identified in Figure 3. Facilities such as community centres, shops etc. are located to the north east of the site which may be used in the event of a flood event. It should be ensured that all occupiers and visitors to the site are accounted for, and then exit the site using the Safe Access and Egress Route shown in Figure 3. Vital belongings, including waterproof clothing, necessary medication and essentials for infants and children will be collected.

If occupants are going to be evacuated to an off-site place of refuge via the Safe Access and Egress Route, an easily accessible “grab-bag” / flood Kit will be prepared and kept in a safe and dry place. The kit should include:

- Torch (windup or spare batteries)
- Blankets
- Waterproof clothing
- Wellington boots
- Water
- Non-perishable food (such as biscuits, crackers, cereal bars, dried fruit, sweets, tinned meats/fruits/vegetables and bottled water etc.)
- Portable radio (windup or spare batteries)
- Rubber gloves
- Medications
- Mobile phone
- A copy of this FWEP



Figure 3 - Safe Access and Egress Route

9.0 SAFE REFUGE

9.1 Safe Refuge Area

In the event that evacuation of the site is not possible, due to flooding of the access and egress route, then safe refuge is possible within the site. Accommodation will be located on the first floor as well as the ground floor of the building. This will allow occupants to retreat to higher floor levels if needed. This will provide a 'safe haven' should flooding occur which is unlikely. The 'safe haven' will only be required in very extreme events or if a flood warning has not been received.

Remember to take with you any important documents, bottled water, essential medicines and food sufficient to support you until rescue (see information related to "grab-bag" / flood Kit).

If required further facilities located within the vicinity of the site are available. The primary responsibility of Newport City Council during a flood is to provide temporary accommodation to any displaced people until such time that they are in a position to return to their homes or their insurance companies can arrange temporary accommodation for them. This shelter is provided in the form of reception centres, and provides a warm dry place to sleep and basic facilities including shower, food, etc.

10.0 TRAINING

10.1 Flood Training

Occupiers of the site shall be trained as part of the site induction prior to occupation. Relevant occupiers shall be informed of the potential flood risk and requirements of FWEP.

Occupiers and visitors with increased needs or vulnerability may require support during a potential evacuation/refuge situation. These needs must be assessed on an individual basis and specific Flood Wardens may need to be appointed to provide individual support.

In addition, the site owner will ensure that the FWEP is exercised on an annual basis, where exercising would involve an evacuation drill as well as a Table-Top exercise to ensure all occupants are aware of their duties and responsibilities.

The Flood Warden and occupants should prepare a flood Kit and kept in a safe and dry place. The kit should include:

- Torch (windup or spare batteries)
- Blankets
- Waterproof clothing
- Wellington boots
- Water
- Non-perishable food (such as biscuits, crackers, cereal bars, dried fruit, sweets, tinned meats/fruits/vegetables and bottled water etc.)
- Portable radio (windup or spare batteries)
- Rubber gloves
- Medications
- Mobile phone
- A copy of this FWEP

11.0 SITE REOCCUPATION

11.1 Returning to the Premises

It is likely that it will not be possible to access the site for a number of days. Do not attempt to enter the site until such a time as the Emergency Services/Natural Resources Wales have given the 'all clear'.

Once the rainfall event has passed, and the flood warning has been removed, it may be possible to return to the property if it has been evacuated or it may be possible to vacate the property if people remained inside. Only return to the buildings once it is safe to do so and once permission has been granted by any emergency services in attendance.

11.2 First Steps

Floodwater may be still around and could be contaminated. Take care as there may be hidden dangers in the flood water like sharp objects, raised manhole covers and pollution. Flood water could have caused structural damage to the building.

Upon returning to the site it will be important to consider some of the hazards that may be present on the site following a flood event, including:

- Standing water remaining on the site.
- Transported debris from within the watercourse or from elsewhere on the site that could be a tripping hazard.
- Silt or residue deposited on the site that may be slippery.
- Potentially contaminated water.

As a priority, insurance companies should be contacted, and the structural condition of the property should be visually inspected from the outside by a competent professional prior to reoccupation. This is to identify if there has been any damage to the integrity of the building.

In almost all cases the insurance company will send a loss adjuster to look at the building. They will confirm what repairs and replacements are needed and covered by your policy.

11.3 Things to be Aware of When Clearing up after a Flood

Flood water can contain sewage, chemicals and animal waste. Always wear:

- Waterproof outerwear, including gloves.
- Wellington boots.
- Face mask.

If the electricity supply is not already switched off at the mains, get a qualified person to do this. DO NOT touch sources of electricity when standing in flood water. Upon entering the premises, a clean-up operation can commence. Occupiers may need to:

- Commission immediate emergency pumping/repair work if necessary, to prevent further damage.
- Open doors and windows to ventilate the property.
- Contact local authority or health service to find out where you can get help to clean up.

- Contact utility providers to have them check services before re-use.
- Dispose of all food that may have been in contact with floodwater as contamination could have occurred. For further assistance, contact your local authority Environmental Health department for advice.
- Keep comprehensive records of flood damage (photographs, videos etc.).
- Contact your insurance broker (24 hour) Emergency Helpline. They will be able to provide information on dealing with compensation claims.

Get an advice guide to repairing damaged property from Floodline (0345 988 1188).

12.0 THE ROLE OF OTHER BODIES

12.1 Organisations involved in a Flood Event

The response to a major flood event will involve a number of organisations working together at a local level, including the emergency services, the local authority, utilities companies and Natural Resources Wales. The general roles of the main bodies in relation to a major flood event in the County are summarised below. It should be noted that this is a general list and specific duties may vary between different bodies.

12.2 The Police

- Coordination of the emergency services at a major flood event, as well as helping to save lives and protect property.
- Establish cordons where practicable to facilitate the work of the other emergency services in saving lives, protecting the public and caring for the vulnerable.

12.3 The Fire and Rescue Service

- Saving life and rescuing trapped persons.
- Provide monitoring procedures in respect of health and safety of those persons operating within an established cordon.
- Carry out essential damage control measures on a risk assessment basis, including pumping out flood water and salvage work.
- Assist other relevant agencies, particularly the local authority, to minimise the effects of major flooding on the community.

12.3.1 Newport City Council as the Local Authority & the Lead Local Flood Authority

- As the Local Authority they will warn and inform the public in relation to their response. They will provide assistance and support in conjunction with their other welfare partners. They will clear blockages where there is Local Authority control. Sandbags will be deployed in line with their current sandbag policy.
- Emergency care, if necessary, including feeding, accommodation and welfare for those who have been evacuated from the flooded area.
- Emergency transport for people, equipment and materials (note – this is on a risk-based approach to the most vulnerable residents only), and if necessary, evacuation.
- Information services for liaison with the media on the local authority response and for information to the public and to relatives of evacuees.
- Emergency environmental health advice for action relating to environmental problems caused by flooding.
- Coordination of the voluntary response.

12.4 Natural Resources Wales

- Issue flood warnings.
- Responsibility for maintenance and operation of Natural Resources Wales owned flood defences. Checking defences and undertaking essential repairs and maintenance of Natural Resources Wales owned flood defences and advising other owners of their maintenance responsibilities.
- Monitor water levels and flows, assessing the risk, clearing obstructions from known pinch points and advising the emergency services and local authority.
- Once its own systems and flood defences are secure support the police and local authority by providing materials, equipment and manpower as far as resources and other duties permit.

12.5 Utilities Companies

- In the event of a flood, will secure their services and equipment to ensure continuity of supply.
- Repair services disrupted by flood.
- Provide alternative means of supply during service disruption if life and health risks are identified.

13.0 CONTACT DETAILS

This information is to be completed and periodically reviewed.

13.1 General Contact List

In an emergency only call 999.

Contact	Company name	Telephone	Website
Floodline	Natural Resources Wales	03845 988 1188	https://flood-warning.naturalresources.wales/
Natural Resources Wales Incident	Natural Resources Wales	0300 065 3000	https://naturalresources.wales/about-us/contact-us/report-an-environmental-incident/?lang=en
Electricity Provider	Power Loss and Emergencies	105	
	SP Energy Networks	0800 001 5400	
Gas Provider	Transco Gas Emergency	0800 111 999	
Water Company	Welsh Water	0800 052 0145	https://contact.dwrcymru.com/en
Telephone Provider			
Local Authority	Newport City Council	0800 328 4432	https://www.newport.gov.uk/en/Care-Support/How-social-services-can-help/Contact-Us.aspx
Fire (non-emergency)	South Wales Fire Service		https://www.southwales-fire.gov.uk/
Ambulance (non-emergency)	Welsh Ambulance Service		https://www.ambulance.wales.nhs.uk/

Police	Gwent Police	999 101 – for non- emergenc	https://www.gwent.police.uk/
Local Public Transport			
Insurance Company			
Met Office			http://www.metoffice.gov.uk

13.2 Key Locations

Locations of cut-off points for services that may require attention during a flood event.

Service cut-off	Description
Electricity	
Gas	
Water	

13.3 Equipment and Materials for Flood Wardens

Note equipment and materials required, e.g. Torch.

Item	Used for	Items to protect / where to us	Storage Location	Done
Torch	Light	Use in darkness		
Batteries	Torch	When torch fails		
First Aid Kit	Non series injuries	Do not use to treat serious injuries unless qualified		
Bottled Water	Drinking	In case of disruption to mains supply		

APPENDICES

APPENDIX 1 – Review Record

Amendment Number	Amendment Location	Amendments	Amendment Effective Date

APPENDIX 2 – Natural Resources Wales Flood Warning Information

[Search site](#)
[Flooding](#)

[Permits and
permissions](#)

[Evidence and
data](#)

[Guidance and
advice](#)

[Days
out](#)

[About
us](#)

[Report an
incident](#)

[Home](#) > [Flooding](#)

Preparing for a flood

Skip navigation links

In this section

- 1. [Check your flood risk](#)
- 2. [Sign up for flood warnings](#)
- 3. [Plan what to do in an emergency](#)
- 4. [Pack a flood kit](#)
- 5. [Check your insurance](#)
- 6. [How to turn off gas, electricity and water](#)
- 7. [Protect your property](#)
- 8. [Sandbags](#)
- 9. [If you live near a watercourse](#)
- 10. [Advice for caravan and campsite owners and operators](#)
- 11. [Extra precautions for farms and agricultural land](#)
- 12. [Protecting gardens and allotments](#)

Check your flood risk

[Find out if there is a risk of flooding in your area](#)

Sign up for flood warnings

[Sign up online for free flood warnings](#)

Plan what to do in an emergency

Plan where you could move people, pets and valuables to safety.

You must consider the needs of everyone on your property and make sure everyone knows the escape plan:

- it might be safest to move to a room upstairs, ideally with a window that could be a potential escape route
- if you are in a basement or bungalow, think about where else you could move to for safety
- think about where you could move belongings, upstairs, on top of pieces of furniture or in your car
- store valuable or sentimental items up high all year round

Write a flood plan

Write a flood plan so you, your family, or your workforce know what to do during a flood.

This will help you plan what to do with valuable items, where you would go, and who you need to call in an emergency.

- **[Personal flood plan](#)**

- [Business flood plan](#)
- [Community flood plan](#)
- [School flood plan](#)

Find how to keep your pets safe via the [RSPCA](#) and [Blue Cross](#).

Pack a flood kit

Prepare a flood kit of essential items.

Keep it handy in case you are evacuated and make sure people know where to find it.

This should include:

- copies of your home insurance documents
- a phone charger and battery pack
- a list of important telephone numbers
- a torch with spare batteries
- a radio – on your phone or battery operated
- warm, waterproof clothing and blankets
- a first aid kit and prescription medication
- bottled water and non-perishable food
- baby food and baby care items
- pet supplies
- rubber gloves and wellington boots
- face masks and hand sanitiser

Keep a list of important phone numbers in your flood kit, this should include:

- Floodline 0345 988 1188
- Local authority emergency helpline
- insurance company 24-hour number and your policy number
- local radio station frequency for news alerts and weather updates
- family and neighbours
- work phone numbers
- doctor's surgery
- local police station
- vet/kennel/cattery
- local hotel or B&B
- gas supplier and meter number
- electricity supplier and meter number
- water supplier and meter number
- electrician
- plumber
- builder

Check your insurance

- Confirm you are covered for flooding (ask your insurer, landlord or letting agent).
- Find out if the policy covers alternative accommodation if needed.
- Find out if the policy replaces new for old, and if it has a limit on repairs.
- Don't underestimate the value of your contents.
- Take photos of your property and make a list of your belongings to help with future insurance claims.
- Check your car insurance and what your policy classes as avoidable and unavoidable flood damage.

Looking for specialist flood insurance

- Contact the [British Insurance Brokers Association](#) for specialist cover.
- [Check if you qualify for the Flood Re scheme](#) for affordable home insurance.

The [Association of British Insurers](#) have more information about flooding and insurance.

Policies that include Build Back Better

Build Back Better (BBB) offers householders the chance to install property flood resilience measures up to the value of £10,000 when repairing their properties after a flood. This way, the next time the area floods their home will be better prepared to keep as much of the water out as possible.

If you want your home insurance policy to include BBB speak to your broker or insurer before committing to purchase your policy. [Check which insurers are currently offering BBB.](#)

How to turn off gas, electricity and water

During a flood, you should turn off gas, electricity, and water.

- The gas valve is usually located next to your gas meter.
- Your electricity main is usually a red switch on your fuse box.
- Your water stopcock is usually under a kitchen sink or where the water pipe enters your home.

Contact [your supplier](#) if you don't know how to do this.

Protect your property

If you live in a flood risk area, or you have flooded before, consider getting a [chartered surveyor](#) to carry out a flood survey. This will tell you where flood water might enter your property, how fast it will flow and where it could cause the worst damage.

The surveyor can then use this information to help you choose the best flood protection for your property. Installing the wrong flood protection products could mean they are ineffective, or even cause more damage in a flood.

Choosing the right flood protection products

Choose [BSI kitemark certified flood protection products](#) that meet the British standard for quality and safety.

You can also follow the guidance and checklists in the [property resilience Code of Practice](#) to make sure the surveys, installations or building work are completed to the correct standard.

Some flood protection products can be in place permanently, while others need to be installed when flooding is expected.

For example:

- flood doors
- air bricks
- hydrosacks

Find out about the different flood protection products and where to get them on the [National Flood Forum Blue Pages website](#). Not all products listed on the blue pages are BSI Kitemark certified products.

Make changes to your property

You can also make changes to your property that will make it easier and cheaper to clean up if you do flood:

- lay ceramic tiles on your ground floor and use rugs instead of fitted

lay ceramic tiles on your ground floor and use rugs instead of fitted carpets

- raise the height of electrical sockets to at least 1.5 metres above the ground floor level
- use lime plaster instead of gypsum on walls
- fit stainless steel or plastic kitchens instead of chipboard ones, or have freestanding units you can move
- position any main parts of a heating or ventilation system, like a boiler, upstairs or raised well above the ground floor
- fit non-return valves to all drains and water inlet pipes
- replace wooden window frames and doors with synthetic ones because they are easier to clear

Slow the flow of water around your property

Consider how you might be able to slow the flow of water around your property:

- Avoid concreting outside areas. Use permeable materials like gravel instead.
- Think about drainage for areas that are prone to standing water.
- Land owners could think about planting trees and bushes to help slow or reduce rainfall reaching the ground, encourage infiltration and stabilise steep slopes.
- Look at [Sustainable Drainage Solutions](#).

More information about reducing the risk of flooding in your home or business is available on the [National Flood Forum website](#).

Sandbags

We do not supply sandbags. Use the 'protect your property' section above to help you choose the right products for your property.

If you need sandbags, contact your local authority. They may have some available during a flood. If they do not supply sandbags, you can buy your own from DIY stores and builder's merchants.

If you live near a watercourse

Find out about the [rights and responsibilities of riverside property owners](#).

Advice for caravan and campsite owners and operators

Find out how to [protect your campsite and visitors](#) in a flood.

Extra precautions for farms and agricultural land

Find out about [extra precautions to help protect farms and agricultural land](#) from flooding.

Protecting gardens and allotments

The Royal Horticultural Society (RHS) have [information about waterlogging and flooding in gardens](#) and what techniques promote drainage and prevent damage.

Related content

[What to do in a flood](#)

[What to do after a flood](#)

[Flood advice leaflets](#)

Explore more

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