



Land adjacent 10 Thompson Avenue, Newport,  
NP19 4LY

**Flood Consequence Assessment**

For Mr Howard Sully  
KRS.0786.001.R.001.C  
February 2025

[www.krsenviro.com](http://www.krsenviro.com)

## CONTACT DETAILS

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

Tel: 01686 668957  
Mob: 07711 257466

Email: [keelan@krsenviro.com](mailto:keelan@krsenviro.com)  
Web: [www.krsenviro.com](http://www.krsenviro.com)  
LinkedIn: [uk.linkedin.com/in/keelanserjeant/](https://uk.linkedin.com/in/keelanserjeant/)

Office also at:  
KRS Environmental Ltd  
The Media Centre  
7 Northumberland Street  
Huddersfield  
West Yorkshire  
HD1 1RL

Tel: 01484 437420  
Mob: 07711 257466

### Land adjacent 10 Thompson Avenue, Newport, NP19 4LY

Project	Flood Consequence Assessment
Client	Mr Howard Sully
Status	Final
Prepared by	Emma Serjeant LL.B, MSc
Reviewed by	Keelan Serjeant BSc (Hons), MSc, MCIWEM
Date	February 2025

## 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.

This FCA contains Natural Resources Wales information © Natural Resources Wales and database right. All rights reserved. Additional third-party rights are also be acknowledged - Wallingford Hydrosolutions Ltd. UKCEH and NERC, (UKRI).

# CONTENTS

<b>CONTENTS</b> .....	<b>ii</b>
<b>TABLES &amp; FIGURES</b> .....	<b>iv</b>
<b>EXECUTIVE SUMMARY</b> .....	<b>1</b>
<b>1.0 INTRODUCTION</b> .....	<b>2</b>
1.1 Background .....	2
1.2 Technical Advice Note 15 (TAN15) .....	2
1.3 Report Structure.....	2
<b>2.0 LOCATION &amp; DEVELOPMENT DESCRIPTION</b> .....	<b>4</b>
2.1 Site Location.....	4
2.2 Existing Development.....	4
2.3 Proposed Development .....	4
2.4 Ground Levels .....	4
2.5 Catchment Hydrology.....	5
2.6 Ground Conditions .....	5
<b>3.0 FLOOD RISK</b> .....	<b>6</b>
3.1 Sources of Flooding .....	6
3.2 Natural Resources Wales.....	6
3.3 Climate Change .....	6
3.4 Historic Flooding.....	7
3.5 Existing and Planned Flood Defence Measures.....	7
3.6 Flood Vulnerability .....	8
3.7 Development Advice Map .....	8
3.8 Flood Map for Planning .....	9
3.9 Fluvial (River) Flooding .....	11
3.10 Tidal (Coastal) Flooding.....	11
3.11 Groundwater Flooding.....	14
3.12 Surface Water (Pluvial) Flooding.....	14
3.13 Sewer Flooding.....	14
3.14 Flooding from Artificial Drainage Systems/Infrastructure Failure.....	15
3.15 The Effect of the Development on Flood Risk.....	16
3.16 Summary of Site Specific Flood Risk.....	16
<b>4.0 RISK MANAGEMENT</b> .....	<b>19</b>
4.1 Introduction.....	19
4.2 Finished Floor Levels.....	19
4.3 First Floor Accommodation .....	19
4.4 Flood Resistance .....	19
4.5 Flood Resilience .....	20
4.6 Flood Warning and Evacuation.....	20
4.7 Safe Access and Egress Route.....	22
4.8 Residual Risk .....	23
<b>5.0 JUSTIFYING THE LOCATION OF THE DEVELOPMENT</b> .....	<b>24</b>
5.1 Justification Test.....	24
5.2 Assessment of Acceptability Criteria.....	25
<b>6.0 SUMMARY AND CONCLUSIONS</b> .....	<b>30</b>
6.1 Introduction.....	30
6.2 Flood Risk.....	30
6.3 Risk Management.....	30
6.4 Justifying the Location of the Development .....	33
6.5 Conclusion .....	33
<b>APPENDICES</b> .....	<b>34</b>



APPENDIX 1 – Existing and Proposed Site Layout..... 35

## TABLES & FIGURES

Figure 1 - Site Location.....	4
Table 1 - Peak River Flow Allowances by River Catchment.....	6
Table 2 - Sea Level Allowances (m).....	7
Figure 2 - Natural Resources Wales Historic Flood Map.....	7
Table 3 - Development Advice Map Zones.....	8
Figure 3 - Development Advice Map.....	9
Figure 4 - Flood Map for Planning: Rivers and Sea .....	10
Figure 5 - Flood Map for Planning: Surface Water and Small Watercourses .....	10
Table 4 - Flood Map for Planning Flood Zones .....	11
Figure 6 - Natural Resources Wales Defended Modelled 1 in 1000 Year Flood Outline (v8 of the Newport Model).....	12
Figure 7 - Natural Resources Wales Defended Modelled 1 in 200 Year in 2096 Flood Outline (v8 of the Newport Model).....	12
Figure 8 - Natural Resources Wales Undefended Modelled 1 in 200 Year Flood Outline (v8 of the Newport Model).....	13
Figure 9 - Natural Resources Wales Reservoir Flood Map .....	15
Table 5 - Risk Posed by Flooding Sources .....	16
Figure 10 - Safe Access and Egress Route.....	23

## EXECUTIVE SUMMARY

The Site 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 Enviro at the request of Mr Howard Sully to support a planning application for the demolition of garages and the construction of two semi-detached houses (“the Proposed Development”) at Land adjacent 10 Thompson Avenue, Newport, NP19 4LY (“the Site”).

This FCA has been carried out in accordance with guidance contained in the Technical Advice Note 15 Development and Flood Risk (TAN15) and associated Development Advice Maps (DAMs). 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 is due to be implemented in the near future. This will be supported by the new Flood Map for Planning, 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.

### 1.3 Report Structure

This FCA has the following report structure:

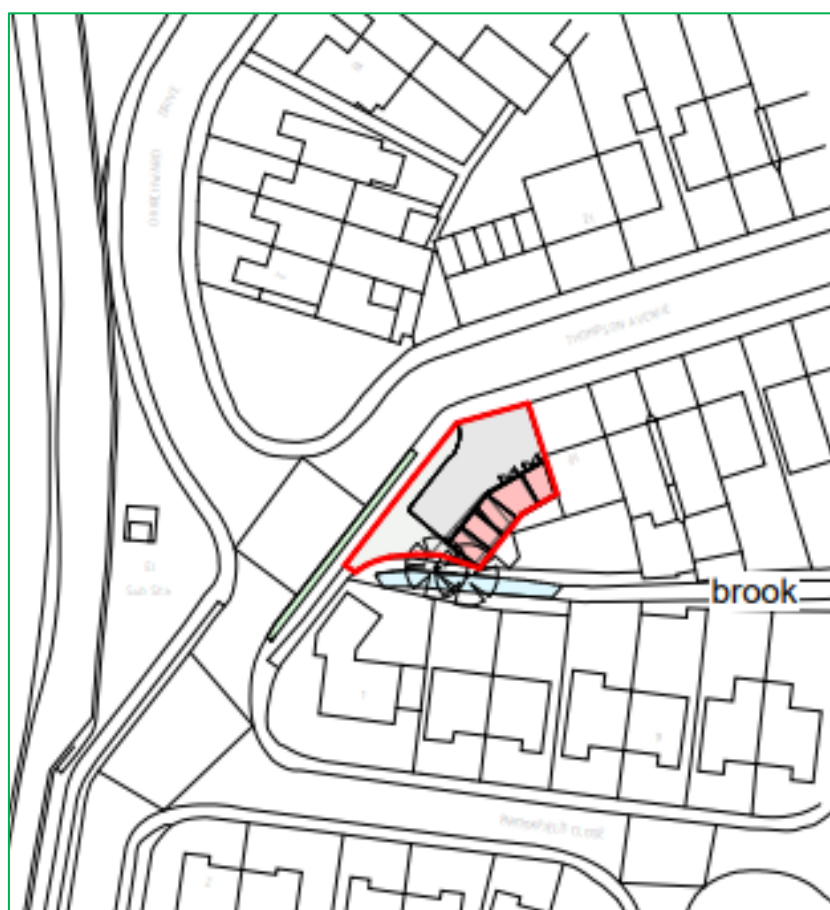
- [Section 2 describes the location and the existing and Proposed Development;](#)

- 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 of the Justification Test and the Acceptability Criteria; and
- Section 6 presents a summary and conclusions.

## 2.0 LOCATION & DEVELOPMENT DESCRIPTION

### 2.1 Site Location

The Site is located on land adjacent to 10 Thompson Avenue, Newport, NP19 4LY (see Figure 1).



**Figure 1 - Site Location**

### 2.2 Existing Development

The existing Site currently comprises 5 derelict garages (see Appendix 1).

### 2.3 Proposed Development

The Proposed Development is for the demolition of the existing garages and construction of to semi-detached houses (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

The Site is relatively flat with an approximate ground level of 6.78 metres Above Ordnance Datum (mAOD).

## 2.5 Catchment Hydrology

There is an unnamed watercourse located adjacent to the southern boundary of the Site and the Liswerry Pill is located approximately 145m to the south of the Site. The River Usk is located approximately 1.20km to the west of the Site. It is noted that the River Usk is tidal at this location.

## 2.6 Ground Conditions

The British Geological Survey (BGS)<sup>1</sup> map shows that the bedrock deposits consist of the St Mary's Well Bay Member - limestone and mudstone, interbedded. Sedimentary bedrock formed between 209.50 and 199.30 million years ago during the Triassic and Jurassic periods. The superficial deposits consist of Tidal Flat Deposits - clay and silt. Superficial deposits formed between 11.80 thousand years ago and the present during the Quaternary Period.

Information from the National Soil Resource Institute<sup>2</sup> details the Site area as being situated on loamy and clayey soils of coastal flats with naturally high groundwater.

---

<sup>1</sup> [https://geologyviewer.bgs.ac.uk/?\\_ga=2.66736489.617109230.1694767835-1467391725.1694767835](https://geologyviewer.bgs.ac.uk/?_ga=2.66736489.617109230.1694767835-1467391725.1694767835)

<sup>2</sup> <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.

In their letter dated 4<sup>th</sup> July 2024 (ref: CAS-258233-K9X8), Natural Resources Wales has suggested that the flood data used within this FCA has not been obtained from the hydraulic modelling available for this area. This is incorrect, the hydraulic model has been obtained from the Natural Resources via data request and from the Newport\_5\_v8.0\_2022 model as per the licence at the front of this FCA.

### 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<sup>3</sup>, Flood Consequence Assessments: Climate change allowances<sup>4</sup> and Adapting to Climate Change: Guidance for Flood and Coastal Erosion Risk Management Authorities in Wales<sup>5</sup>.

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 residential development is 100 years, and for other development it is considered to be 75 years. Table 1 show the peak river flow allowances by river catchment.

**Table 1 - Peak River Flow Allowances by River Catchment**

River Basin	Allowance Category	2020s	2050s	2080s
Severn	Upper	+25%	+40%	+70%
	Central	+10%	+20%	+25%

Projections of relative mean sea level rise for each epoch (period of time) is provided for the Welsh coastline in Table 2. These projections are consistent with the latest global predictions for sea level rise. The rate of change is projected to increase in each epoch.

<sup>3</sup> <https://gov.wales/sites/default/files/publications/2018-11/cl0316-climate-change-allowances.pdf>

<sup>4</sup> <https://gov.wales/sites/default/files/publications/2018-11/flood-consequence-assessments.pdf>

<sup>5</sup> <https://gov.wales/sites/default/files/publications/2021-09/adapting-to-climate-change-guidance-for-flood-and-coastal-erosion-risk-management-authorities-in-wales.pdf>

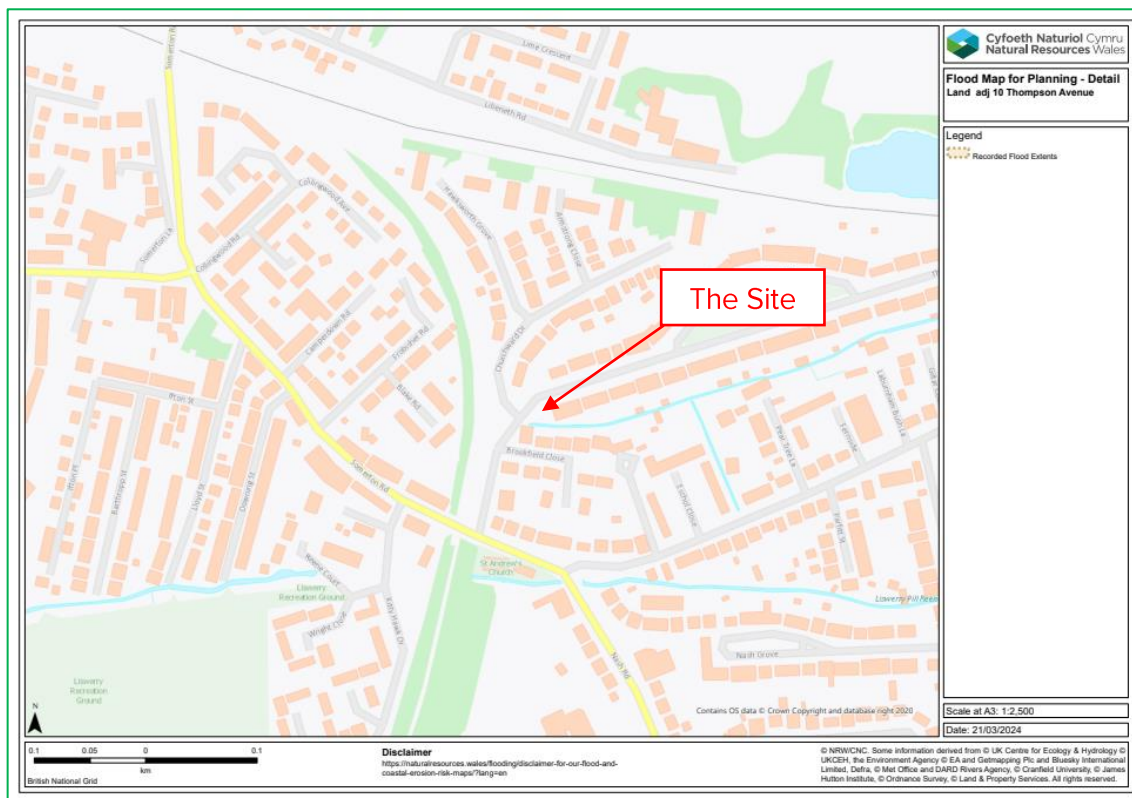
**Table 2 - Sea Level Allowances (m)**

Local Authority Area	Allowance Category	Mean Sea Level Rise (m) by 2100*	Mean Sea Level Rise (m) by 2120*
Newport	95 <sup>th</sup>	1.11	1.33
	70 <sup>th</sup>	0.85	1.01

\* (UKCP18 baseline 1981-2000)

### 3.4 Historic Flooding

The Natural Resources Wales historic flood map shows that the Site has not historically flooded (see Figure 2). The British Hydrological Society “Chronology of British Hydrological Events<sup>6</sup>” has no information on flooding within the vicinity of the Site. No other historical records of flooding for the Site have been recorded. Therefore, it has been concluded that the Site has not historically flooded in the recent past.



**Figure 2 - Natural Resources Wales Historic Flood Map**

### 3.5 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 which are all maintained by Natural Resources Wales. The flood risk will be further mitigated by using a number of risk management measures to manage the overall flood risk at the Site, these are discussed in Section 4.0.

<sup>6</sup> <https://cbhe.hydrology.org.uk/>

### 3.6 Flood Vulnerability

Table 3 describes the composition and use of the DAM Zones to control and manage development. Applying the Flood Risk Vulnerability Classification in Figure 3 of TAN15, the Proposed Development is classified as 'highly vulnerable'.

### 3.7 Development Advice Map

The DAM which accompanies TAN15 shows that the Site is located within Zone C1 - Areas of the floodplain which are developed and served by significant infrastructure, including flood defences (see Figure 3). This indicates that development can take place subject to application of justification test, including acceptability of consequences. The Proposed Development is appropriate for this location.

**Table 3 - Development Advice Map Zones**

Description of Zone	Zone	Use with the Precautionary Framework
Considered to be at little or no risk of fluvial or tidal/coastal flooding.	A	Used to indicate that justification test is not applicable and no need to consider flood risk further.
Areas known to have been flooded in the past evidenced by sedimentary deposits.	B	Used as part of a precautionary approach to indicate where site levels should be checked against the extreme (0.1%) flood level. If site levels are greater than the flood levels used to define adjacent extreme flood outline there is no need to consider flood risk further.
Based on Environment Agency extreme flood outline, equal to or greater than 0.1% (river, tidal or coastal).	C	Used to indicate that flooding issues should be considered as an integral part of decision making by the application of the justification test including assessment of consequences.
Areas of the floodplain which are developed and served by significant infrastructure, including flood defences.	C1	Used to indicate that development can take place subject to application of justification test, including acceptability of consequences.
Areas of the floodplain without significant flood defence infrastructure.	C2	Used to indicate that only less vulnerable development should be considered subject to application of justification test, including acceptability of consequences. Emergency services and highly vulnerable development should not be considered.



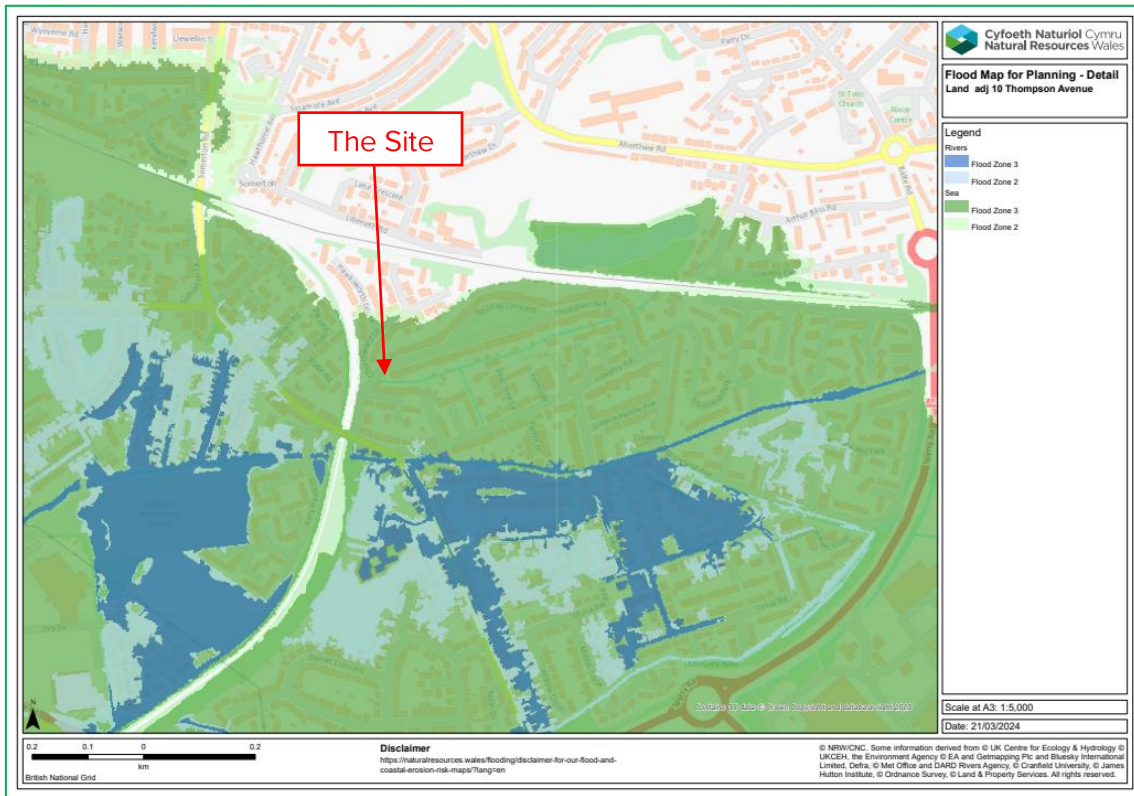
**Figure 3 - Development Advice Map**

### 3.8 Flood Map for Planning

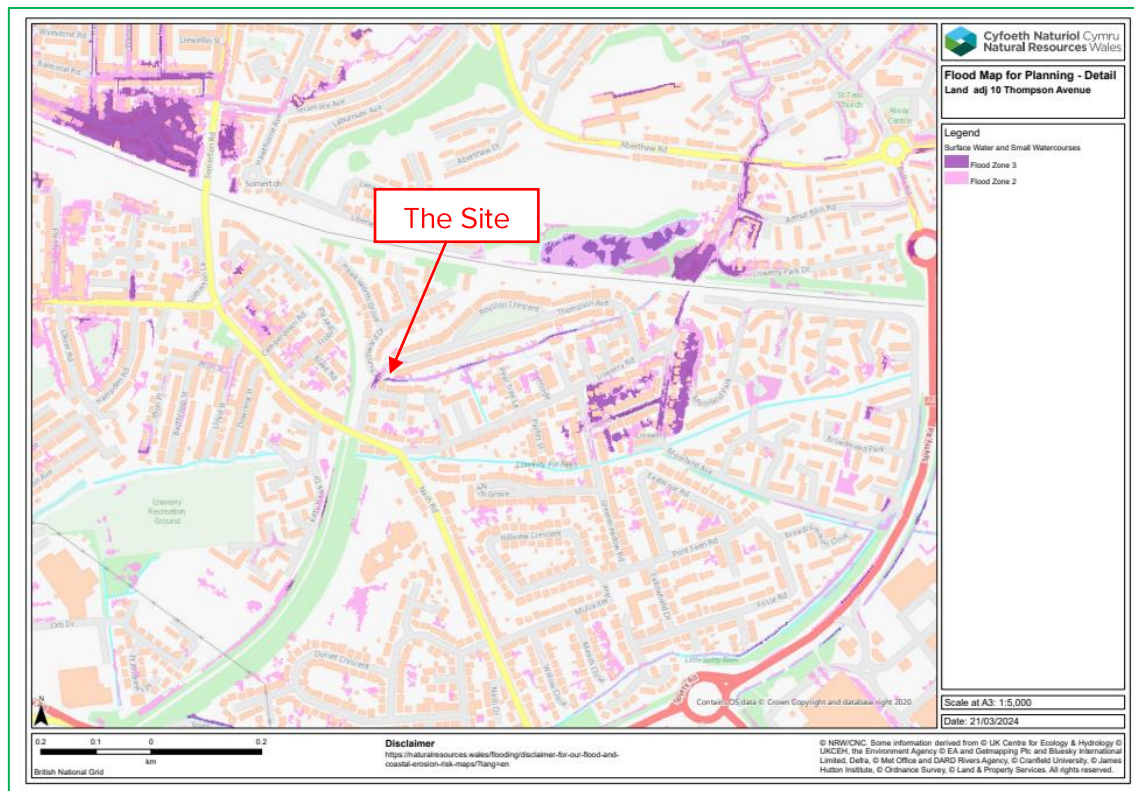
The Flood Map for Planning (FMfP) has no official status for planning purposes. However, Natural Resources Wales may use the FMfP data as the ‘best available information’ on flood risk to inform their planning advice. The FMfP shows that the Site is located within the following flood zones:

- Rivers: Flood Zone 1 with less than a 1 in 1000 (0.1%) annual probability of flooding from rivers in a given year, including the effects of climate change (see Figure 4).
- Sea: Flood Zone 3 with a 1 in 200 (0.5%) annual probability of flooding from the sea in a given year, including the effects of climate change (see Figure 4).
- Surface water and small watercourses: The majority of the Site is located within Flood Zone 1 with less than a 1 in 1000 (0.1%) annual probability of flooding from surface water and/or small watercourses in a given year, including the effects of climate change. However, a very small proportion of the Site, to the southern boundary, is located within Flood Zones 2 and 3 with a 1 in 1000 to 1 in 100 (0.1% to 1%) to a 1 in 100 (1%) annual probability of flooding from surface water and/or small watercourses in a given year, including the effects of climate (see Figure 5). Flood Zone 3 is confined to the channel corridor of the unnamed watercourse and does not affect the Site.

Table 4 provides details of the FMfP Flood Zones. The Proposed Development is appropriate for this location.



**Figure 4 - Flood Map for Planning: Rivers and Sea**



**Figure 5 - Flood Map for Planning: Surface Water and Small Watercourses**

**Table 4 - 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.

### 3.9 Fluvial (River) Flooding

The River Usk is tidally influenced at this location and the Site is not at risk of fluvial flooding. The FMfP for rivers shows that the Site is not at risk of fluvial flooding (see Figure 4), this is also confirmed within the FMfP for surface water and small watercourses (see Figure 5). Flood Zone 3 is confined to the channel corridor of the unnamed watercourse and does not affect the Site. Therefore, the risk of flooding from fluvial sources is considered to be **not significant**.

### 3.10 Tidal (Coastal) Flooding

In an extreme event, which is highly unlikely, the River Usk may overtop its banks and inundate the Site with floodwater. Tidal flooding from the River Usk poses the primary flood risk to the Site.

#### *Defended Scenario*

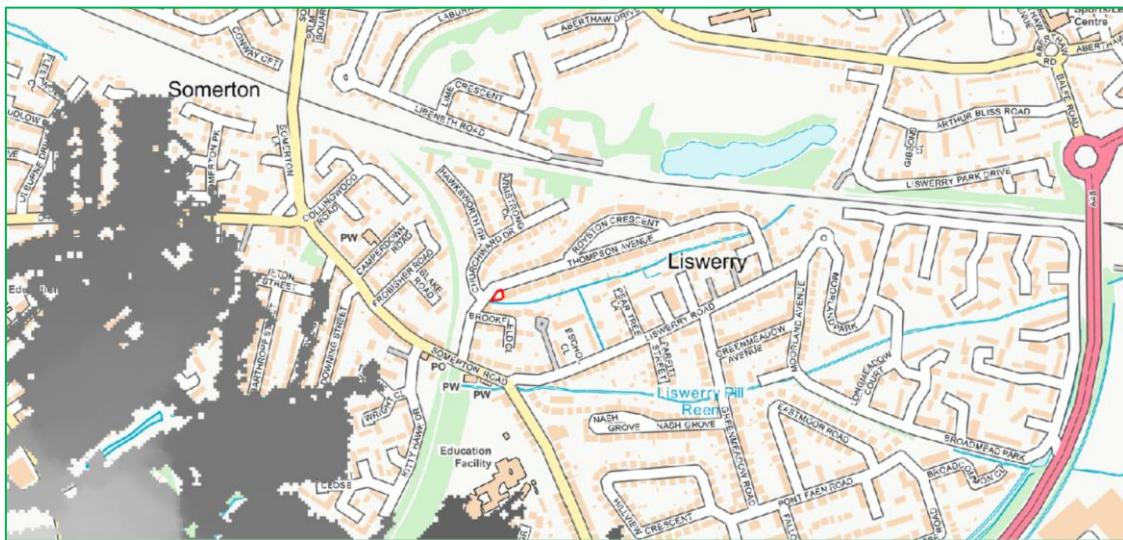
Flood defences protect the Site from flooding from the River Usk with a SoP of 1 in 200 years. Natural Resources Wales data shows the Site has a very low risk of tidal flooding with a chance of flooding of less than 1 in 1000 (0.1%) years. The Site is shown to be flood free during the 1 in 1000 year event, the actual flood risk posed to the Site is less than 1 in 1000 years, as shown in Figure 6.

When climate change is taken into account the flood defences provide an SoP of 1 in 200 years in 2096, as shown in Figure 7. The Site would be flood free during the defended 1 in 200 year in 2096 event. It is only when climate change to 2121, within the Natural Resources Wales data, is considered that the Site may be inundated with floodwater. Table 5 shows the Natural Resources Wales defended data for the Site. To account for an additional 3 years of climate change from 2121 to 2124, 0.033m (0.011m per year) has been used as per Table 2.

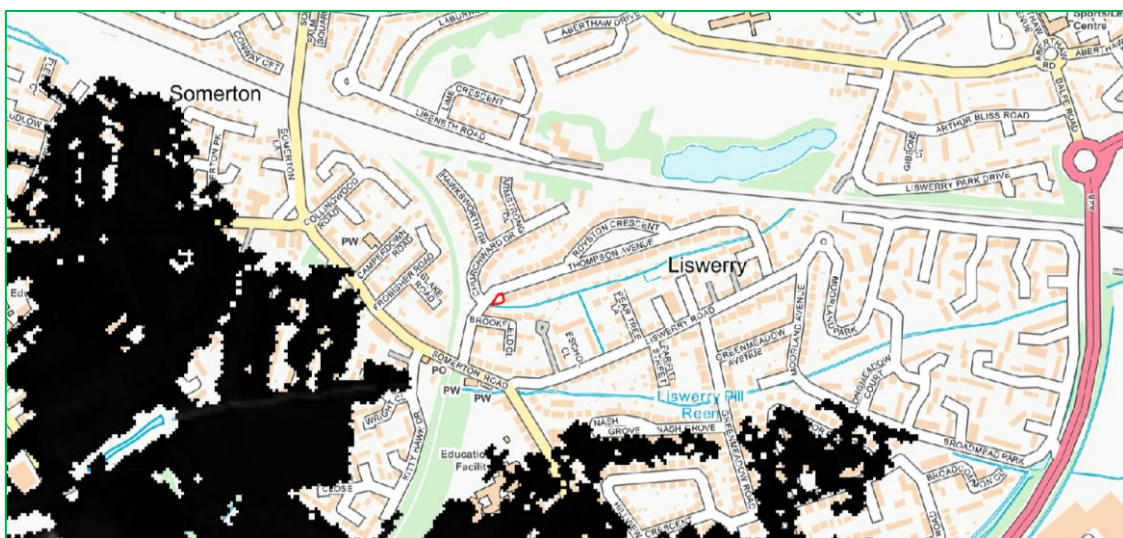
During the defended 1 in 200 year in 2124 event the Site may be inundated with floodwater to a depth of 0.30m. During the defended 1 in 1000 year in 2124 event, the Site may be inundated with floodwater to a depth of 0.70m with a water velocity of less than 0.19m/s, the time to reach the maximum water level is over 16 hours and the maximum rate of rise of floodwaters is greater than 0.10m/hr.

**Table 5 - Natural Resources Wales Defended Modelled Data**

Return Period (yrs)	Water Level (mAOD)	Water Depth (m)
1 in 200 Year in 2121	7.05	<0.27
1 in 200 Year in 2124	7.08	<0.30
1 in 1000 Year in 2121	7.48	<0.70
1 in 1000 Year in 2124	7.51	<0.73



**Figure 6 - Natural Resources Wales Defended Modelled 1 in 1000 Year Flood Outline (v8 of the Newport Model)**



**Figure 7 - Natural Resources Wales Defended Modelled 1 in 200 Year in 2096 Flood Outline (v8 of the Newport Model)**

*Undefended Scenario*

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.

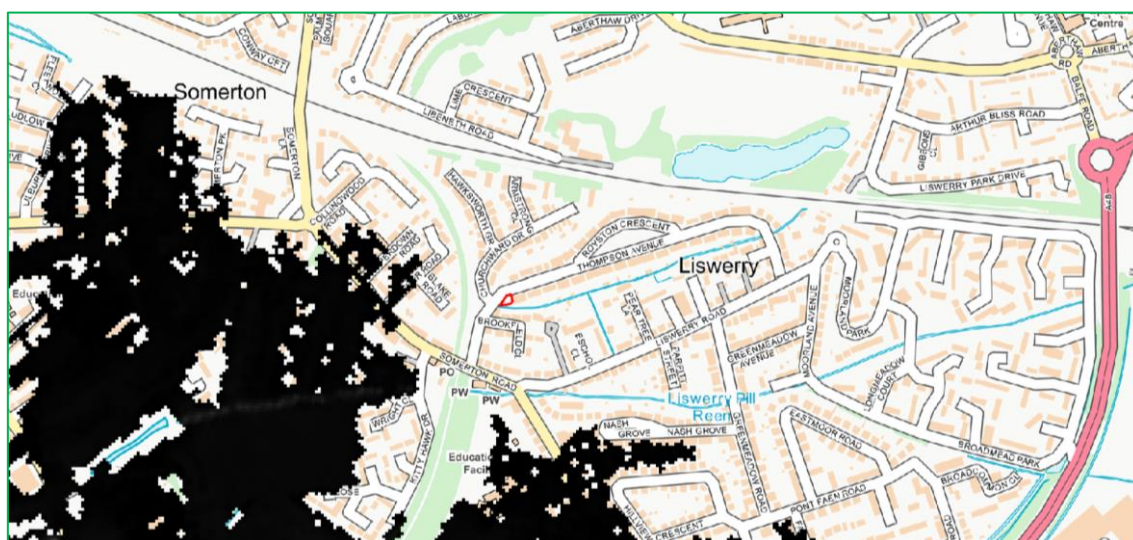
If the flood defences were not there, the area would be flooded. However, as area of land may benefit from the presence of flood defences even if the flood defences are overtopped, the presence of the flood defences means that the floodwater does not extend as far as it would if the flood defences were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

Natural Resources Wales data shows that the Site will not be inundated with floodwater during the undefended 1 in 200 year in 2021 event, as shown in Figure 8 and the undefended 1 in 1000 year event. It is only when climate change to 2121 is considered that the area may be inundated with floodwater during the undefended 1 in 200 year event and 1 in 1000 year event.

Table 6 shows the Natural Resources Wales undefended data for the Site. To account for an additional 3 years of climate change from 2121 to 2124, 0.033m (0.011m per year) has been used as per Table 2. During the undefended 1 in 200 year in 2124 event the Site may be inundated with floodwater to a depth of less than 0.83m. During the undefended 1 in 1000 year in 2124 event, the Site may be inundated with floodwater to a depth of less than 1.05m.

**Table 6 - Natural Resources Wales Undefended Modelled Data**

Return Period (yrs)	Water Level (mAOD)	Water Depth (m)
1 in 200 Year in 2121	7.58	<0.80
1 in 200 Year in 2124	7.61	<0.83
1 in 1000 Year in 2121	7.83	<1.05
1 in 1000 Year in 2124	7.86	<1.08



**Figure 8 - Natural Resources Wales Undefended Modelled 1 in 200 Year Flood Outline (v8 of the Newport Model)**

### Summary

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 flooding from the River Usk is considered to be of **medium significance**. The risk from the River Usk 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 4.0).

## 3.11 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 Preliminary Flood Risk Assessment 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**.

## 3.12 Surface Water (Pluvial) Flooding

The Site is not situated near to large areas of poor permeability which may result in surface water flooding. The FMfP shows that the majority of the Site is located within Flood Zone 1 with less than a 1 in 1000 (0.1%) annual probability of flooding from surface water and/or small watercourses in a given year, including the effects of climate change. However, a very small proportion of the Site, on the southern boundary, is located within Flood Zones 2 and 3 with a 1 in 1000 to 1 in 100 (0.1% to 1%) to a 1 in 100 (1%) annual probability of flooding from surface water and/or small watercourses in a given year, including the effects of climate (see Figure 5). Flood Zone 3 is confined to the channel corridor of the unnamed watercourse and does not affect the Site.

Given the scale and nature of the Proposed Development and the size and location of the surface water flooding sources it has been concluded that surface water flooding poses a low flood risk to the Site and the risk of surface water flooding is considered to be of **low significance**.

## 3.13 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. Sewer flooding poses a flood risk to the Site therefore, the risk of flooding from sewer flooding is considered to be **not significant**.

### 3.14 Flooding from Artificial Drainage Systems/Infrastructure Failure

There are no nearby artificial water bodies, water channels, reservoirs 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 9). The risk of flooding from artificial drainage systems/infrastructure failure is considered to be **not significant**.

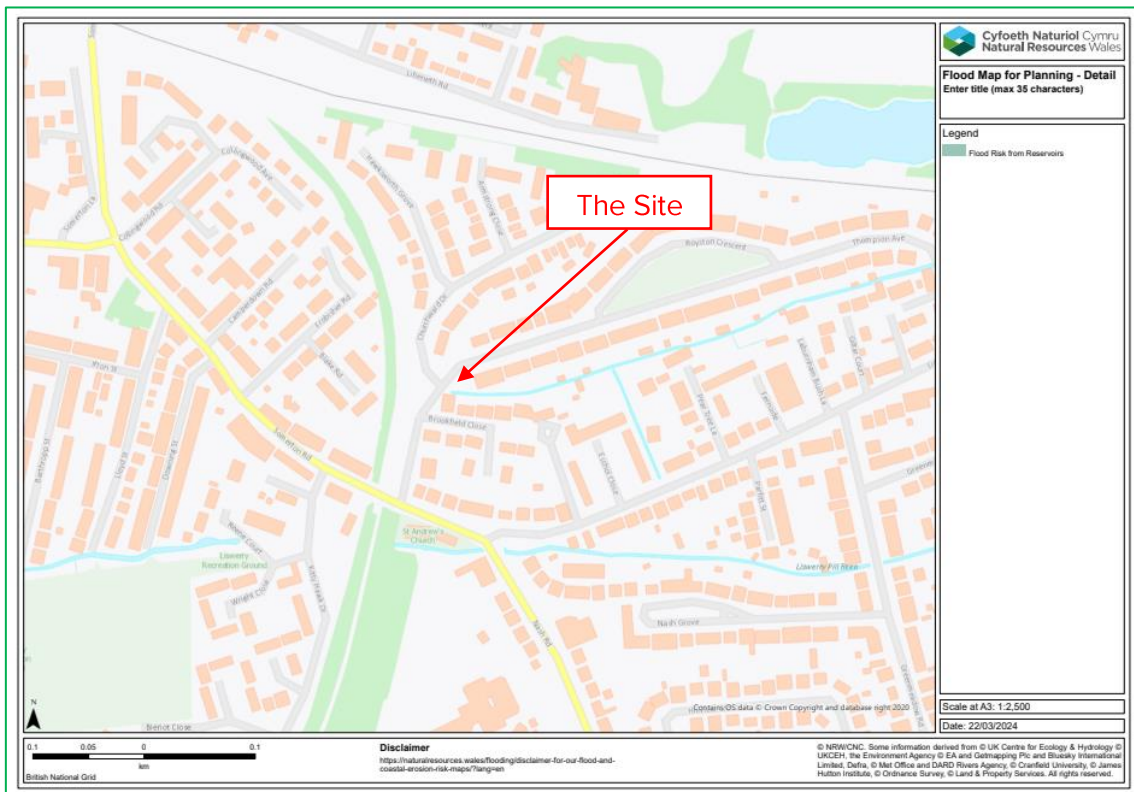


Figure 9 - Natural Resources Wales Reservoir Flood Map

### 3.15 The Effect of the Development on Flood Risk

Existing buildings are located on the Site 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 A1.12 of TAN15.

### 3.16 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 7.

**Table 7 - Risk Posed by Flooding Sources**

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

The Site is unlikely to flood except in extreme conditions. The primary, but unlikely, flood risk to the Site is from tidal flooding from the River Usk. The Site is located within Zone C1 - Areas of the floodplain which are developed and served by significant infrastructure, including flood defences. This indicates that development can take place subject to application of justification test, including acceptability of consequences. The Site is located within FMfP Flood Zone 3 for tidal flooding, with a 1 in 200 (0.5%) annual probability of flooding from the sea in a given year, including the effects of climate change.

The Site is protected against tidal flooding by flood defence measures which provide a 1 in 200 year SoP. The Site also has no history of flooding. The Proposed Development is classified as 'highly vulnerable'.

### *Defended Scenario*

Flood defences protect the Site from flooding from the River Usk with a SoP of 1 in 200 years. Natural Resources Wales 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.

When climate change is taken into account the flood defences provide an SoP of 1 in 200 years in 2096. The Site would be flood free during the defended 1 in 200 year in 2096 event. It is only when climate change to 2121 is considered that the Site may be inundated with floodwater.

During the defended 1 in 200 year in 2124 event the Site may be inundated with floodwater to a depth of 0.30m. During the defended 1 in 1000 year in 2124 event, the Site may be inundated with floodwater to a depth of 0.70m with a water velocity of less than 0.19m/s, the time to reach the maximum water level is over 16 hours and the maximum rate of rise of floodwaters is greater than 0.10m/hr.

### *Undefended Scenario*

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.

Natural Resources Wales data shows that the Site will not be inundated with floodwater during the undefended 1 in 200 year in 2021 event and the undefended 1 in 1000 year event. It is only when climate change to 2121 is considered that the area may be inundated with floodwater during the undefended 1 in 200 year event and 1 in 1000 year event.

During the undefended 1 in 200 year in 2124 event the Site may be inundated with floodwater to a depth of less than 0.83m. During the undefended 1 in 1000 year in 2124 event, the Site may be inundated with floodwater to a depth of less than 1.05m.

### *Summary*

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 flooding from the River Usk is considered to be of **medium significance**. A secondary flooding source has been identified which may pose a **low significant** risk to the Site. This is:

- Surface Water Flooding

The flooding sources will only inundate the Site to a relatively low water depth and water velocity, will only last a short period of time, in very extreme cases and will not have an impact on the whole of the Proposed Development Site. The risk from all sources 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 4.0).

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 A1.12 of TAN15.

We would also draw your attention to Paragraph 6.1 of TAN15, which states the following:

*“Much urban development in Wales has taken place alongside rivers and in the coastal plain. It is therefore inevitable, despite the overall aim to avoid flood risk areas, that some existing development will be vulnerable to flooding and fall within zone C. Some flexibility is necessary to enable the risks of flooding to be addressed whilst recognizing the negative economic and social consequences if policy were to preclude investment in existing urban areas, and the benefits of reusing previously developed land. Further development in such areas, whilst possibly benefiting from some protection, will not be free from risk and could in some cases exacerbate the consequences of a flood event for existing development and therefore a balanced judgement is required.”*

It is challenging, and very often impossible to design flood mitigation solutions in accordance with Natural Resources Wales’s own interpretation of TAN15. This is true for sites located within the Newport floodplain owing to the significant flood volumes expected in the extremely unlikely event that a breach/overtopping of the flood defences was to occur. Refusing the Proposed Development on this basis will set a precedent for future applications within this area, making it almost impossible for future development to take place. We would therefore urge the weight of the objection on flooding grounds to be measured against the potential adverse impact on future investment in this location, in both economic and social terms.

In conclusion, the flood risk to the Site can be considered to be limited and the Site is unlikely to flood except in very extreme conditions and the Proposed Development is appropriate for this location.

## 4.0 RISK MANAGEMENT

### 4.1 Introduction

It is 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 mitigate and reduce the overall flood risk at the Site.

### 4.2 Finished Floor Levels

The finished floor levels will be set 400mm above the existing ground level. 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.

### 4.3 First Floor Accommodation

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. The levels of the first floor are located a minimum of 2.50m above the ground floor finished floor level well above any floodwater levels. This provides a 'safe haven' above any floodwater levels.

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

### 4.4 Flood Resistance

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

- Flood barriers will be used on external doors which protect to a maximum of 600mm above external ground levels.
- Windows are a minimum of 1000mm above the external ground levels.
- The walls of the house will be thick.
- Sealant will be used around all external doors and windows.
- All windows will be located above ground levels.
- All external doors and windows are constructed from hard wearing materials.

These factors will prevent water entering the property and make the property more resistant to seepage.

## 4.5 Flood Resilience

Flood resilience measures are designed in such a way as to reduce the cost and time required to reinstate the property should it be flooded (tiled floors are an example of a flood resilience measure). The building will be constructed in such a way that although floodwater may enter the building, elements that are damaged by floodwater can be easily repaired or replaced. This is a form of flood resilience. They are suitable as no other measure is practicable.

Robust materials and finishes will be used within the extension, including:

- laying 1 or 2 layers of plasterboards at base of internal studwork construction to ground floors;
- fixings to be galvanised/stainless steel or copper - no mild steel to be used - cause rust/staining or walls;
- water resistant render;
- low permeability paints to be used rather than emulsion - allows walls to dry out quickly;
- cavities insulated with Polyisocyanurate (PIR) closed cell type insulation (e.g. celotex); and
- all electrics wiring, switches, sockets, socket outlets, gas meters etc. to be located a minimum of 450mm above the finished floor levels (there will be no plant room/s).

## 4.6 Flood Warning and Evacuation

The Site is located in a flood risk area therefore; the development will participate in Natural Resources Wales flood warning telephone service. The Site will register contact details with the Natural Resources Wales Flood Warnings Service (Floodline 0345 988 1188) in order to receive Flood Alerts.

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 building to be safely evacuated and mitigation measures to be put in place.

The owners 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 the Flood Warning Service. It will be ensured that everyone receives the flood warnings when required.

The likelihood of a rapid floodwater level rise and possible rapid inundation 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. 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 speed of inundation and rate of floodwater rise would be low.

In order for the following evacuation procedures to be effective:

- The Site will register contact details with the Natural Resources Wales Flood Warning Service (Floodline 0345 988 1188) in order to receive Flood Warnings/Alerts.
- The flood warning 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.

A Flood Plan 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 and will be made available to occupants/visitors of the Site and will include the safe access and egress route. Suitable warning notices will be erected to inform the occupants/visitors of the flood risk and evacuation procedures.

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 Flood Plan 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 levels will be monitored and the occupants/visitors informed when the Flood Plan is to be initiated.

#### *Flood Alert*

'Flooding of low-lying land and roads is expected. Be aware, be prepared, watch out!'. The Natural Resources Wales will issue a Flood Alert status when flooding is possible, based upon weather and river/sea conditions.

Be prepared to act on your flood plan. At this stage occupants and visitors should make themselves aware of the Flood Plan and evacuation routes. Prepare a flood kit of essential items. Monitor local water levels and the flood forecast.

Contact Natural Resources Wales Floodline on 0345 988 1188 to get more information should be contacted to get more information, periodically and listen to and watch for weather and flood warnings on local radio and television stations.

### *Flood Warning*

'Flooding of homes and businesses is expected. Act now!'. The Flood Warning alert will be issued when water levels are rising and further rain is expected. The site will be evacuated. Move family, pets and valuables to a safe place.

Safe access and egress, including emergency access can be maintained for vehicles and/or by foot. Water, electricity and gas supplies should be located and switched off before evacuating. Contact Natural Resources Wales Floodline on 0845 988 1188 to get more information should be contacted to get more information, periodically and listen to and watch for weather and flood warnings on local radio and television stations.

### *Severe Flood Warning*

'Severe Flooding is expected. There is extreme danger life and property. Act now!'. If the Site has not already been evacuated it will be evacuated immediately. Co-operate with the emergency services and call 999 if immediately in danger. Safe access and egress, including emergency access can be maintained for vehicles and/or by foot.

Contact Natural Resources Wales Floodline on 0845 988 1188 to get more information should be contacted to get more information, periodically and listen to and watch for weather and flood warnings on local radio and television stations.

### *Warning No Longer in Force*

'Flood Watches or Flood Warnings are no longer in force for this area'. Occupants and visitors should contact the LPA to check that it is safe to return to the Site. Please be careful water may be around for several days. If there is any doubt that appliances may be water damaged they must be checked before switching the power or gas back on. Contact your insurance company as soon as possible to get their approval before arranging any clean-up or repairs.

## **4.7 Safe Access and Egress Route**

Access routes should be such that occupants can safely access and exit their dwellings 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.

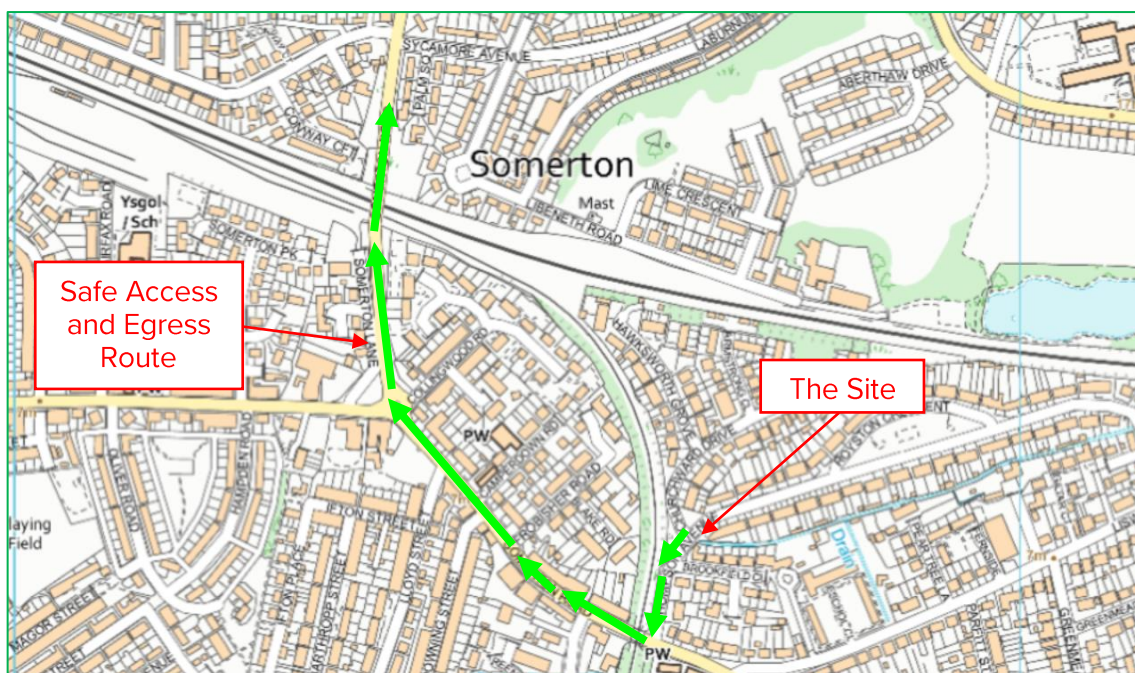
The Site is one of the last places in the area to flood and remains flood free when other areas close by are flooded. The Site is at such a ground level that it would only flood in the most extreme flood events; the Site will remain flood free for the vast majority of flood events during the lifetime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

Safe access and egress routes, including emergency access can be maintained for vehicles and/or by foot via Thompson Avenue to the south and then along Somerton Road to the northwest and then south, as shown in Figure 10. Flood defences protect the Site from flooding from the River Usk with a SoP of 1 in 200 years in 2096. The area would be flood free during the 1 in 200 year in 2096 event. It is only when climate change to 2121 is considered that the area may be inundated with floodwater.

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. This would allow safe access and egress from the site as per Natural Resources Wales guidance using the route shown in Figure 10.

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.



**Figure 10 - Safe Access and Egress Route**

## 4.8 Residual Risk

The Site can be justified in accordance with TAN15 as it can be demonstrated that the consequences of flooding can be managed down to a level which is acceptable for the nature and type of Site. The mitigation measures detailed above show that the flood risk can be effectively managed and therefore the consequences of flooding are acceptable.

## 5.0 JUSTIFYING THE LOCATION OF THE DEVELOPMENT

### 5.1 Justification Test

The Justification Test sets out the details required to justify siting a new development in an area believed to be at risk of flooding and is defined in Section 6 of TAN15. The required criteria a site / development must fulfil are:

- i) its location in zone C is necessary to assist, or be part of, a local authority regeneration initiative or a local authority strategy required to sustain an existing settlement; or
- ii) its location in zone C is necessary to contribute to key employment objectives supported by the local authority, and other key partners, to sustain an existing settlement or region;

and

- iii) it concurs with the aims of PPW and meets the definition of previously developed land; and,
- iv) the potential consequences of a flooding event for the particular type of development have been considered, and in terms of the criteria contained in sections 5 and 7 and appendix 1 found to be acceptable.

The Proposed Development has been assessed against the requirements of the Justification Test.

#### *Criterion i*

*TAN15 states that a development will be justified if it complies with either criteria (i) or (ii). The proposed development complies with criterion (ii) it is not necessary to consider criterion (i).*

The Site is located within DAM Zone C1 - Areas of the floodplain served by significant infrastructure, including flood defences. Used to indicate that development can take place subject to application of justification test, including acceptability of consequences.

The Site has been designated as suitable in size and location to accommodate the Proposed Development. The Proposed Development will provide an improved residential use compared to the existing situation and will help encourage economic impetus that will in turn help deliver a stronger service function and mix of housing. The Site proposals remain consistent with the relevant planning policies and are not at odds with the current use of the Site and can only enhance and preserve the situation which currently exists.

The Council's objectives are to sustain and enhance the vitality and viability of the region, and to ensure a wide range of residential uses to which people have easy access by a range of transport therefore, improving the overall quality of life. This is underpinned by the quality of the physical environment, social well-being and economic and environmental improvements. The Council seeks to grant permission for developments that add to the vitality and viability of the region.

The Proposed Development will improve the Sites resilience, resistance to flooding and by using property level protection measures to protect the Site from flooding, the vulnerability of the Site will be improved (see Section 4.0).

The wider area surrounding the Proposed Development Site is affected by a very similar, and in many cases, higher risk of flooding. The application is for a new, suitable flood-resilient design which is preferable to the existing Site. The exposure of people and property will be minimised. From the above it is shown that there are overriding sustainability reasons for the development to be granted planning permission.

#### *Criterion ii*

*TAN15 states that a development will be justified if it complies with either criteria (i) or (ii). The Proposed Development complies with criterion (i) it is not necessary to consider criterion (ii).*

#### *Criterion iii*

Previously developed land is defined in Planning Policy Wales (PPW) as:

*“...that which is or was occupied by a permanent structure (excluding agricultural or forestry buildings) and associated fixed surface infrastructure.”*

The Site is designated as previously developed land.

#### *Criterion iv*

The potential consequences of a flooding event for the particular type of development have been considered within this FCA. This FCA details the potential consequences of flooding from all sources taking into account the Proposed Development type has been considered and has been found to be acceptable.

#### *Conclusion*

The development proposals should be considered by the LPA to satisfy the Justification Test as set out in TAN15.

## **5.2 Assessment of Acceptability Criteria**

New development should be directed away from Zone C and towards suitable land in Zone A, otherwise to Zone B, where river or coastal flooding will be less of an issue. However, in some areas where developable land is in short supply, there can be an overriding need to build in areas that are at risk of flooding.

#### *A1.14 Criteria*

There is an indicative frequency threshold of flooding below which flooding of developed may not be allowed. Table A1.14 of TAN15 provides indicative guidance as to what frequency thresholds could be and suggests that for the Proposed Development that the tidal 1 in 200 year event should be used with climate change.

Previously for Newport Natural Resources Wales interpretation of A1.14 of TAN15 has been that the Site (including the houses, gardens and parking) has to be designed to be flood free in the design event, this being the 1 in 200 year breach event with an allowance for climate change. This interpretation of A1.14 of TAN15 is incorrect, A1.14 of TAN15 does not state that the Site must be flood free or that the entire Site should be flood free. A1.14 of TAN15 is clear that the

frequency threshold is indicative and does not require the Site (including external areas) to be flood free during the 1 in 200 year in 2124 event.

TAN15 makes it clear that the frequency threshold of flooding is indicative “*should not be regarded as prescriptive, provides indicative guidance as to what that frequency threshold could be*”. TAN15 goes on to state “*Each site must therefore be considered individually and a judgement taken in context of the particular circumstances which could prevail at that site*”.

This approach is supported by Planning Appeal APP/G6935/A/20/325800 which confirms that the external ground levels do not need to be raised to be flood free and the Planning Inspector stated the following: “*I agree with the appellant that it would be unfeasible to raise the entire to this height, not least as the front parking area would need to tie into the existing site access*”.

Natural Resources Wales have previously suggested that their approach to require the Site to be flood free is supported by APP/H6955/A/21/3277 (Central Building and Adjoining Brook Street, Wrexham). In the appeal decision (dated 19/01/2022), the inspector makes no mention of the requirement for the entire Site to be flood free during the design flood event. The main point of discussions by the Planning Inspector is with regards to the difference in definition of ‘highly vulnerable’ development by Natural Resources Wales and the appellant and whether ‘highly vulnerable’ uses should be allowed in Zone C2. Our Site is not located within Zone C2 and is located within Zone C1, the flood risk posed to our Site is of a residual nature and would only occur due to overtopping/breaching of the flood defences.

Furthermore, recent precedent has been set by Natural Resources Wales, when they have granted planning permission for residential uses within Zone C1 within which it has been shown that the car parking and access areas of sites will flood to significant depths during the design flood event. A recent planning application for 25 apartments at Site of King Hotel, 76 Somerton Road, Newport (reference: 17/1120) was granted planning permission in 2018 even though the car parking and access into the development was not to be raised above the 1 in 200 year (plus climate change) event. During the 1 in 200 year (plus climate change) event the car parking and access has been shown to flood to depths of 0.53 to 0.83m. The reasons given by the application for not raising the car parking and access to site was as follows: “*In short, we could physically raise the car park to be flood free (albeit this would have a cost implication which would kill the deliverability of the scheme).*”

*Raising the car park would not, however, result in with the access point being flood free and the access would remain at 6.9m AOD. We do not control of the access to enable us to raise the levels and, as you can appreciate, even if we did could not raise the access point to the site on Somerton Road to be flood free since it would not serve any benefit if the road itself floods. As such, raising the car park would offer no benefit in terms of flood impact.*

*Given the lack of any benefit raising the car park would have in terms of flood risk and the cost implications the applicant has no intention of carrying this out.”*

It should also be considered that the proposed development at Site of King Hotel, 76 Somerton Road, Newport (reference: 17/1120) was for 25 apartments which will be much more vulnerable to flooding due to the number of occupants/visitors to the development compared to the proposals for the application Site.

Planning permission has also recently been granted for 8 houses at the Blackhorse Inn, Newport (reference: 22/0384), where it was shown that the external areas of the site would be flooded during the 1 in 200 year (plus climate change) event. Only the houses will be raised above this flood event with the external areas of the site being allowed to flood.

Planning permission has been recently granted at the former Victoria Public House, Nash Road, Liswerry, Newport (reference: 21/1088) and Land To North Of The Villa Somerton Lane Newport South Wales (reference: 21/0136) even though the external areas of the site are shown to flood.

It would be unfeasible to ensure that the Site is flood free given the topography of the Site and surrounding area, the need to tie into the existing road infrastructure, and the widespread nature of such a flood event.

In summary, it can be concluded that the Proposed Development has been elevated as far as is practicable, accounting for Site constraints and is in accordance with the indicative requirements of A1.14 of TAN14. The mitigation measures detailed in the FCA show that the flood risk can be effectively managed and therefore the consequences of flooding are acceptable. Therefore, it has been shown that the Site proposals are compliant with A1.14 of TAN15.

#### *A1.15 Criteria*

There are indicative flood consequences during an extreme flood (see Table A1.15 of TAN15). A1.15 of TAN15 suggests that the indicative flood consequences during the 1 in 1000 year event for the Proposed Development should be less than 600mm

Natural Resources Wales interpretation of A1.15 of TAN15 is that the Site (including the houses, gardens and parking) to flood to a depth of less than 600mm in the extreme event, this being the 1 in 1000 year breach event with an allowance for climate change. This interpretation of A1.15 of TAN15 is incorrect, nowhere within A1.15 of TAN15 or the whole of TAN15 does it state that the Site must flood to less than 600mm. A1.15 of TAN15 does not require the Site (including external areas) to have flood depths of less than 600mm during the 1 in 1000 year in 2124 event.

TAN15 makes it clear that the values *“should not be regarded as prescriptive, provides indicative guidance as to what that frequency threshold could be”*. TAN15 goes on to state *“Each site must therefore be considered individually and a judgement taken in context of the particular circumstances which could prevail at that site”*.

This approach is supported by Planning Appeal APP/G6935/A/20/325800 which confirms that the external ground levels do not need to be raised to be flood free and the Planning Inspector stated the following: *“I agree with the appellant that it would be unfeasible to raise the entire to this height, not least as the front parking area would need to tie into the existing site access”*.

Planning Appeal APP/G6935/A/20/325800 also states the following: *“The TAN makes it clear that the guideline maxima provided in table A1.15 are not prescriptive and that a judgement should be taken in the context of a particular site’s circumstances”*.

It would be unfeasible to ensure that the whole Site (garden and parking area) is flood free given the topography of the Site and surrounding area, the need to tie into the existing road infrastructure, and the widespread nature of such a flood event.

Recent precedent has been set by Natural Resource Wales, for proposed development Zone C1 when it has been shown that sites will flood to significant depths during the extreme flood event.

A recent planning application for 25 apartments at Site of King Hotel, 76 Somerton Road, Newport (reference: 17/1120) was granted planning permission in 2018 even though the buildings will experience flood depths of 1.08m, maximum velocities of 0.73m/s during the 1 in 1000 year (plus climate change) event.

At the former Victoria Public House, Nash Road, Liswerry, Newport (reference: 21/1088) during the 1 in 1000 year and 1 in 1000 year (plus climate change) events, flood depths surrounding the proposed building were shown to reach a maximum of 1.52m on the site's northern boundary and 0.85m on the ramp and access road to the site.

In summary, it can be concluded that the proposed development has been elevated as far as is practicable, accounting for site constraints and is in accordance with A1.15 of TAN14, precedent has been set by Natural Resources Wales for residential developments within Zone C1. The mitigation measures detailed in the FCA show that the flood risk can be effectively managed and therefore the consequences of flooding are acceptable. Therefore, it has been shown that the Site proposals are compliant with A1.15 of TAN15.

### *Summary*

It should be taken into account that flooding of the Site would only occur as a result of overtopping of the defences, causing tidal inundation, which is highly unlikely. The flood defences in the vicinity of the Site are significant structures that protect Newport from flooding. Although the defences have a 1 in 200 year SoP, as with any flood defences have been they designed to be structurally sound during an exceedance event and this is the purpose of the Natural Resources Wales inspection and maintenance programme to maintain structures to their target condition grade. Therefore, overtopping and/or breaching of the defences is very unlikely.

It is considered that the Proposed Development has been elevated as far as is practicable, accounting for Site constraints. The finished floor levels will be set at the existing finished floor levels. The Site is anticipated to experience tidal flooding during the 1 in 200 year in 2124 event, assuming no improvements in to the flood defences, which is very unlikely.

A review of the anticipated flood depths during the 1 in 200 year in 2124 event throughout Newport, indicates that any proposed development with the majority of Newport would have to be raised by 1 to 2m to be wholly compliant with A1.14 of TAN15. This level of raising is not considered feasible and/or appropriate in this case.

Newport benefits from the existing tidal flood defences. The Site is protected against tidal flooding by existing flood defence measures. The flood defences take the form of flood embankments and flood walls, it is unlikely that a breach in the flood defences would occur. It is reasonable to assume that the flood defences would be maintained and improved in line with sea level rise in the future.

The flood defences provide a 1 in 200 year SoP. Assuming the flood defences are improved in line There is no reason to assume that the flood defences will not be maintained in the future. Natural Resources Wales have previously suggested otherwise without providing any evidence to support their case, in fact in as stated above, it is reasonable to assume that the flood defences would be maintained and improved in line with sea level rise in the future.

If the flood defences are not improved, the vast majority of Newport will be at risk and will not be strictly compliant with TAN15 and will effectively prohibit all development within Newport, especially residential developments.

The finished floor levels have been raised as much as possible and the consequences of flooding are low and acceptable when assessed against the criteria within Sections 5 and 7 of Appendix 1 of TAN15.

A1.14 of TAN15 should be read in the context of the TAN and national flood risk policy, and not in isolation. For example, we draw your attention to the Dear CPO letter from 9 January 2014

which states “Consequently, in order to ensure that insurance cover will be obtainable, new developments should only be permitted in a flood risk area where it can be made safe, resistant and resilient to flooding for a given flood event (e.g. 1 in 100 chance or 1 in 200 chance of occurring in any year), and does not increase flood risk elsewhere.”

It can be confirmed that the Proposed Development has been developed taking into account the context of TAN and national flood risk policy, and not in isolation. The proposed development has been shown to be safe, resistant and resilient to flooding for given flood event, as per the guidance contained within the Dear CPO letter from 9 January 2014.

The values provided within TAN15 are not definitive; that they are indicative and reflect conditions in which, given the presence of adequate warnings and preparation, appropriately equipped personnel could undertake emergency activities. It has been suggested previously by Natural Resources Wales that within TAN15 it is stated that the that the design event is the breach or overtopping event, this incorrect, TAN15 makes no mention of the breach or overtopping event.

It should also be considered that a precedent for residential developments within DAM C1 and Flood Zone 3 within north Wales has been set recently. Planning permission was recently granted for 77 dwellings in Llandudno, within DAM C1 and Flood Zone 3, on Land Adjacent to Llandudno train station Oxford Road / Builder Street Llandudno LL30 2AF<sup>7</sup>. This site is very similar to the subject Site and is protected against flooding by existing flood defences with a SoP of 1 in 200 year and it is proposed to maintain and improve the flood defences in line with sea level rise in the future. The site in Llandudno, much like the subject Site, would only flood if the flood defences were to be overtopped/breached.

As the site in Llandudno was granted planning permission for residential uses in DAM C1 and Flood Zone 3 and therefore, is compliant with TAN15 the subject Site should also be found to be compliant with TAN15. Therefore, in summary and taking the above into account, the Site is compliant with A1.14 and A1.15 of TAN15 to suggested otherwise has serious ramifications for any development within Newport and Wales as a whole.

---

<sup>7</sup> <https://npe.conwy.gov.uk/Northgate/EnglishPlanningExplorer/Generic/StdDetails.aspx?PT=Planning%20Applications%20On-Line&TYPE=PL/PlanningPK.xml&PARAM0=509268&XSLT=/Northgate/EnglishPlanningExplorer/SiteFiles/Skins/Conwy/xslt/PL/PLDetails.xslt&FT=Planning%20Application%20Details&PUBLIC=Y&XMSLIDE=/Northgate/EnglishPlanningExplorer/SiteFiles/Skins/Conwy/Menus/PL.xml&DAURI=PLANNING>

## 6.0 SUMMARY AND CONCLUSIONS

### 6.1 Introduction

This report presents an FCA in accordance with TAN15 for the Proposed Development on land adjacent to 10 Thompson Avenue, Newport, NP19 4LY.

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 Site is unlikely to flood except in extreme conditions. The primary, but unlikely, flood risk to the Site is from tidal flooding from the River Usk. The Site is located within Zone C1 - Areas of the floodplain which are developed and served by significant infrastructure, including flood defences. This indicates that development can take place subject to application of justification test, including acceptability of consequences. The Site is located within FMfP Flood Zone 3 for tidal flooding, with a 1 in 200 (0.5%) annual probability of flooding from the sea in a given year, including the effects of climate change.

The Site is protected against tidal flooding by flood defence measures which provide a 1 in 200 year SoP. The Site also has no history of flooding. The Proposed Development is classified as 'highly vulnerable'.

#### *Defended Scenario*

Flood defences protect the Site from flooding from the River Usk with a SoP of 1 in 200 years. Natural Resources Wales 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.

When climate change is taken into account the flood defences provide an SoP of 1 in 200 years in 2096. The Site would be flood free during the defended 1 in 200 year in 2096 event. It is only when climate change to 2121 is considered that the Site may be inundated with floodwater.

During the defended 1 in 200 year in 2124 event the Site may be inundated with floodwater to a depth of 0.30m. During the defended 1 in 1000 year in 2124 event, the Site may be inundated with floodwater to a depth of 0.70m with a water velocity of less than 0.19m/s, the time to reach the maximum water level is over 16 hours and the maximum rate of rise of floodwaters is greater than 0.10m/hr.

#### *Undefended Scenario*

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.

Natural Resources Wales data shows that the Site will not be inundated with floodwater during the undefended 1 in 200 year in 2021 event and the undefended 1 in 1000 year event. It is only when climate change to 2121 is considered that the area may be inundated with floodwater during the undefended 1 in 200 year event and 1 in 1000 year event.

During the undefended 1 in 200 year in 2124 event the Site may be inundated with floodwater to a depth of less than 0.83m. During the undefended 1 in 1000 year in 2124 event, the Site may be inundated with floodwater to a depth of less than 1.05m.

### Summary

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 flooding from the River Usk is considered to be of **medium significance**. A secondary flooding source has been identified which may pose a **low significant** risk to the Site. This is:

- Surface Water Flooding

The flooding sources will only inundate the Site to a relatively low water depth and water velocity, will only last a short period of time, in very extreme cases and will not have an impact on the whole of the Proposed Development Site. The risk from all sources will be further mitigated by using a number of risk management measures to manage and reduce the overall flood risk at 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 A1.12 of 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. Measures used:

**Finished Floor Levels:** The finished floor levels will be set 400mm above the existing ground level. 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 building. This will allow occupants to retreat to higher floor levels if needed. The levels of the first floor are located a minimum of 2.50m above the ground floor finished

floor level well above any floodwater levels. This provides a 'safe haven' above any floodwater levels.

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

**Flood Resistance:** Flood resistant measures will be used, including:

- Flood barriers will be used on external doors which protect to a maximum of 600mm above external ground levels.
- Windows are a minimum of 1000mm above the external ground levels.
- The walls of the building are thick.
- Sealant will be used around all external doors and windows.
- All windows will be located above ground levels.
- All external doors and windows are constructed from hard wearing materials.

These factors will prevent water entering the property and make the property more resistant to seepage.

**Flood Resilience:** Robust materials and finishes will be used within the building, including:

- For new walls laying 1 or 2 layers of plasterboards at base of internal studwork construction to ground floors;
- any new fixings to be galvanised/stainless steel or copper - no mild steel to be used - cause rust/staining or walls;
- low permeability paints to be used rather than emulsion - allows walls to dry out quickly;
- any new cavities insulated with Polyisocyanurate (PIR) closed cell type insulation (e.g. celotex); and
- all electrics wiring, switches, sockets, socket outlets, gas meters etc. to be located a minimum of 450mm above the finished floor levels (there will be no plant room/s).

**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 Direct Service (Floodline 0845 988 1188) in order to receive Flood Warnings. A Flood Plan outlining the precautions and actions you should take when a flood event is anticipated to help reduce the impact and damage flooding may cause will be 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 Thompson Avenue to the south and then along Somerton Road to the northwest and then south. Flood defences protect the Site from flooding from the River Usk with a SoP of 1 in 200 years in 2096. The area would be flood free during the 1 in 200 year in 2096 event. It is only when climate change to 2121 is considered that the area may be inundated with floodwater.

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. This would allow safe access and egress from the Site as per Natural Resources Wales guidance.

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 Acceptability Criteria as set out in TAN15.

## **6.5 Conclusion**

In conclusion, the Proposed Development 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.

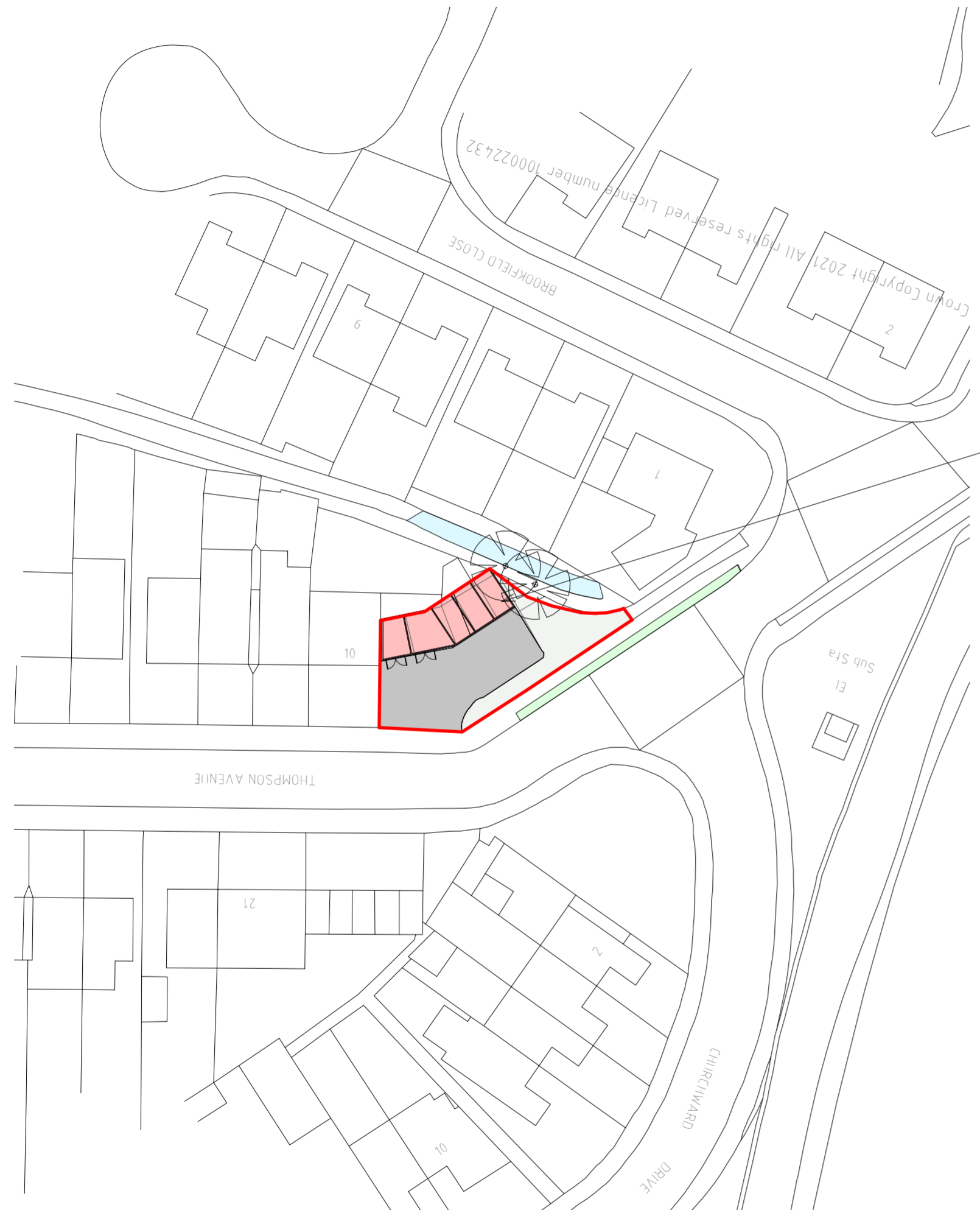
This FCA demonstrates that the Proposed Development would be operated with minimal risk from flooding, would not increase flood risk elsewhere and is compliant with the requirements of TAN15. The development should not therefore be precluded on the grounds of flood risk.



## APPENDICES

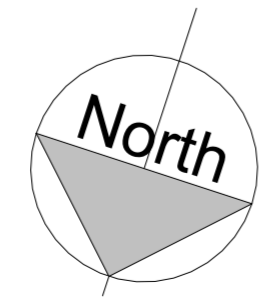


## **APPENDIX 1 – Existing and Proposed Site Layout**

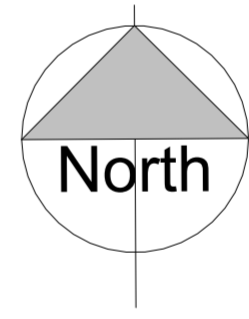


5 existing garages shown shaded pink

2 Site Project North  
1 : 500



1 Site True North  
1 : 1000



Dwg at A2  
0 1 2 3 4  
5m long scale at 1:100

rev	date	description

Planning	Building Regs
----------	---------------

**Maison Design**  
architectural practice  
25 Caldicot Road Rogiet Monmouthshire NP26 3SE  
tel 01291 422712  
E mail mark@maisondesign.biz  
WEB www.maisondesign.biz

Copyright of this drawing or part thereof is by Maison Design and not to be copied	
Project	Existing Site Plan
Name	Howard Sully Plot next to 10 Thompson Ave Liswerry NP19 4LY

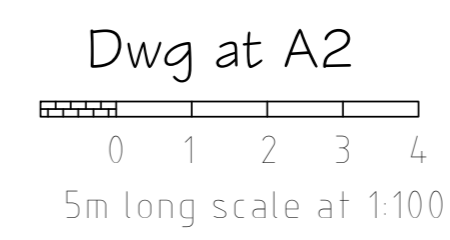
Date	January 2024	MH-9865
------	--------------	---------



1 Site True North  
1 : 200



2 Site Project North  
1 : 1000



B 30-12-24 Now a pair of Semi  
A 15-7-24 sight lines shown as per highways comments

rev	date	description
Planning	24/0502	Building Regs

**Maison Design**  
architectural practice  
25 Caldicot Road tel 01291 422712  
Rogiet E mail  
Monmouthshire mark@maisondesign.biz  
NP26 3SE WEB www.maisondesign.biz

Copyright of this drawing or part thereof is by Maison Design and not to be copied

Project Proposed Site Plan

Name Howard Sully Plot next to 10 Thompson Ave Liswerry NP19 4LY

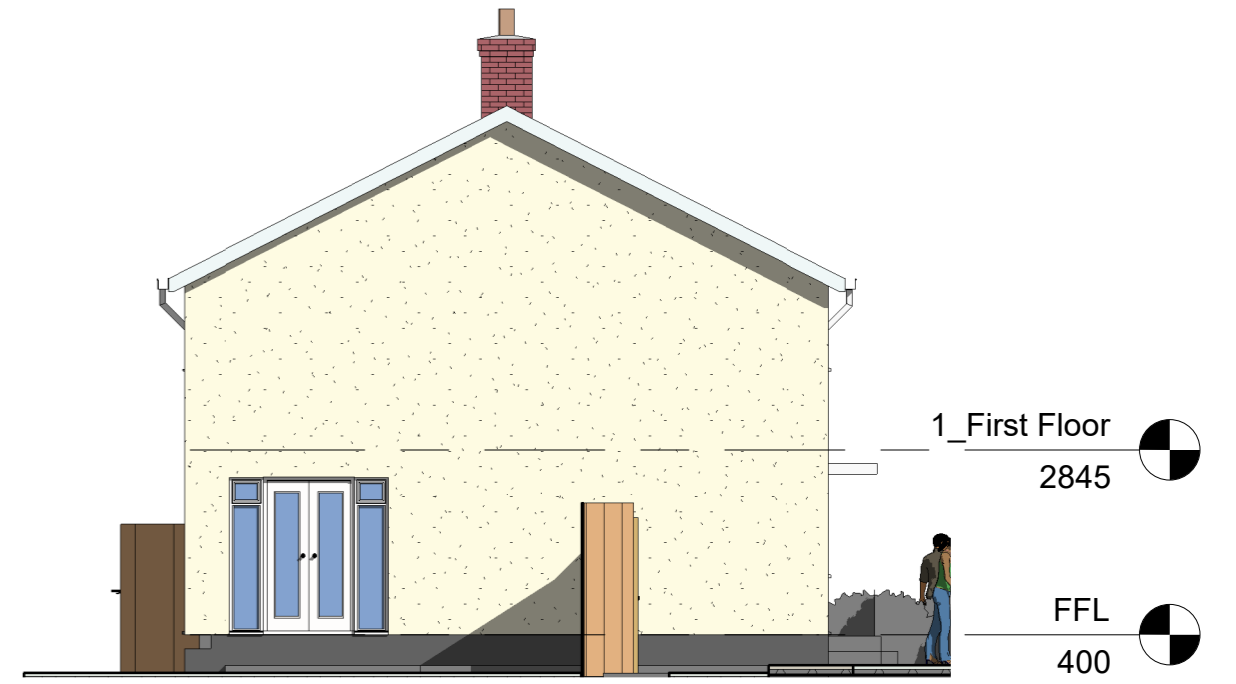
Date January 2024 MH-9867



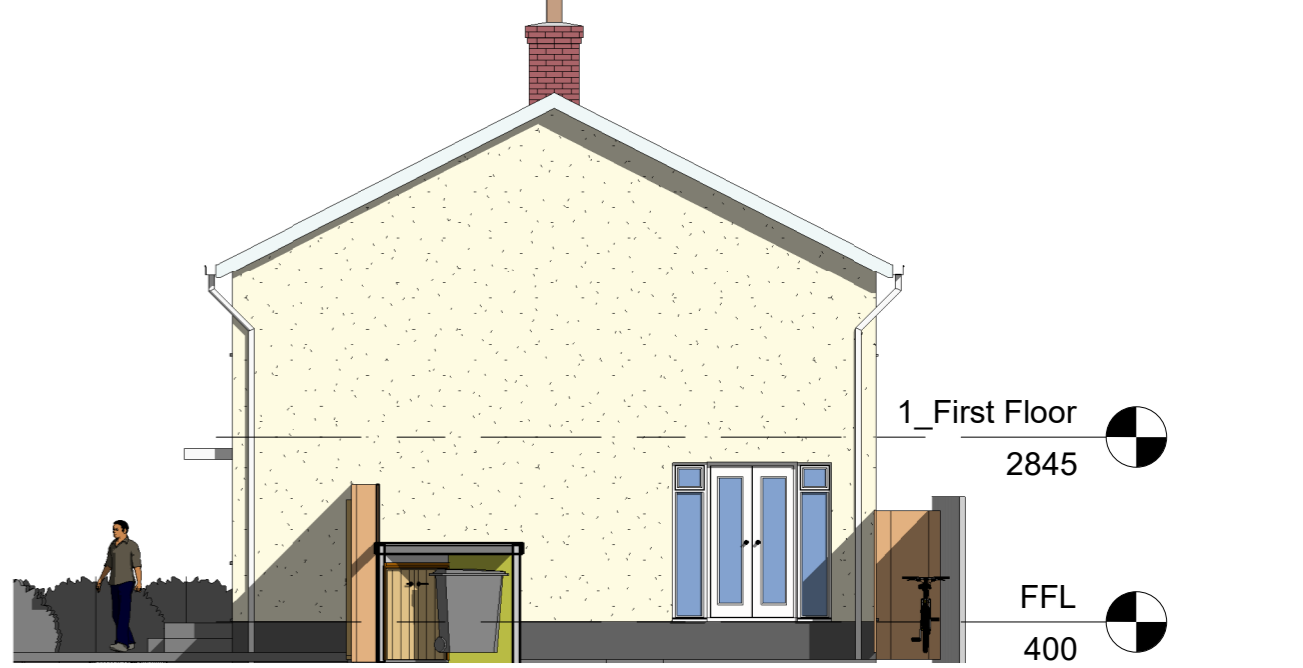
3 FRONT  
1 : 100



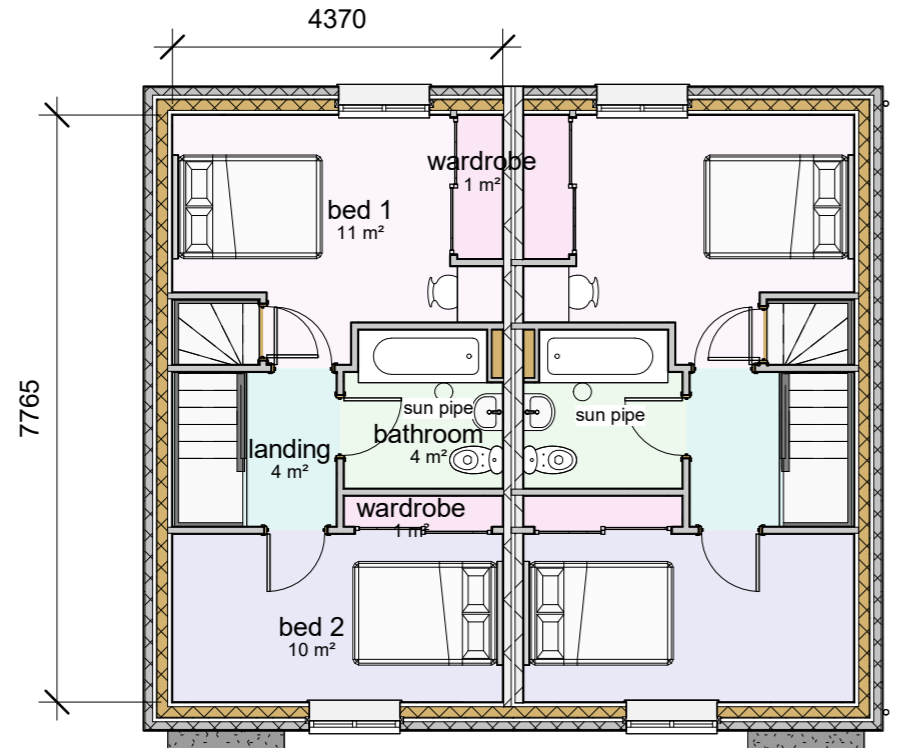
4 REAR  
1 : 100



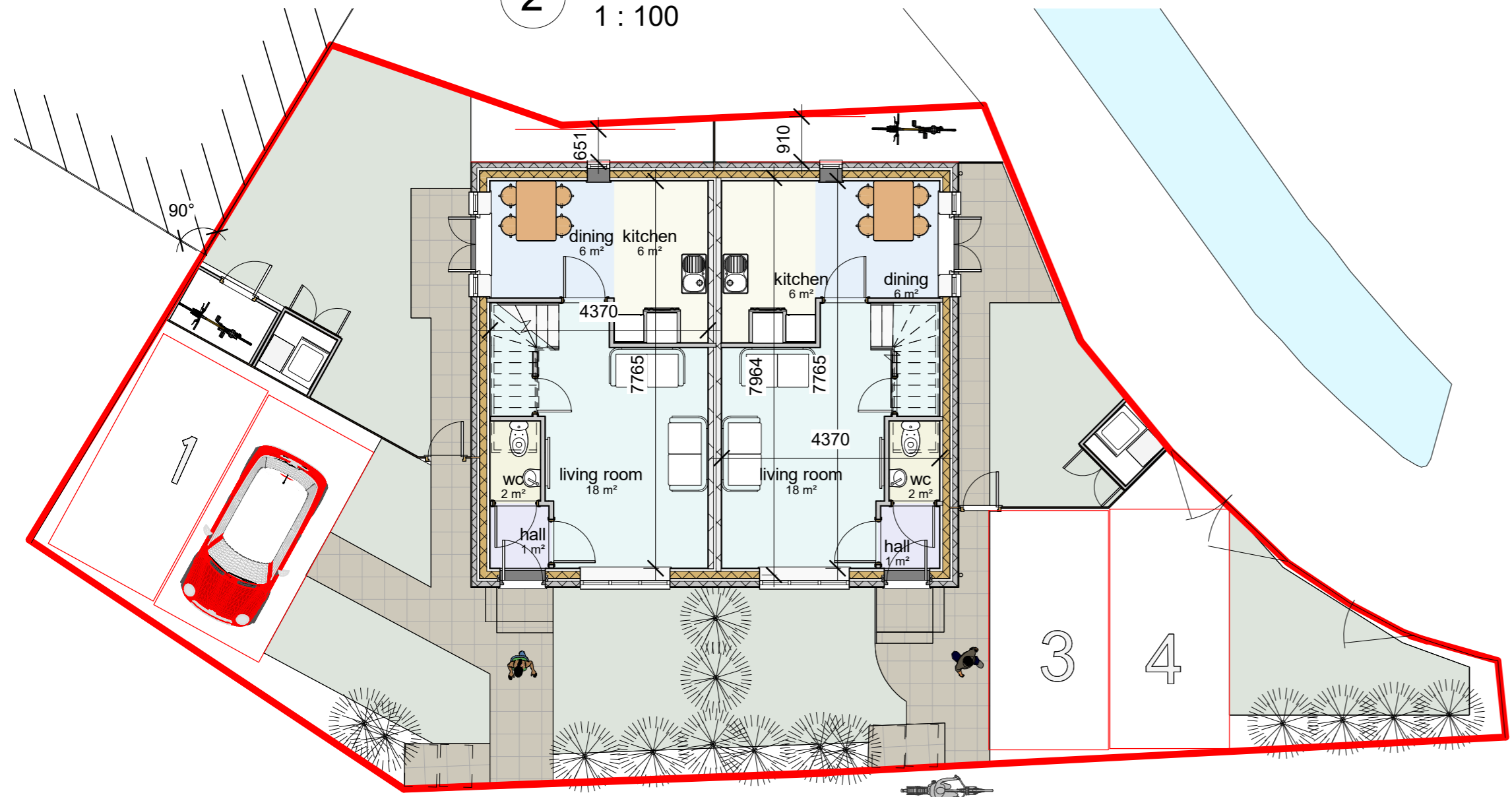
5 SIDE  
1 : 100



6 SIDE GARAGE  
1 : 100



2 1\_First Floor  
1 : 100



1 0\_grd FFL Proposed  
1 : 100

Dwg at A2  
0 1 2 3 4  
5m long scale at 1:100

**Bicycle Storage**  
3 off. Each one 1800 x 1200 x 1350h to have double doors and locked. Each to have Sheffield style rack 500 from back wall. External timber to match house

**Bins and recycling**  
4 off bin and waste storage as Bellus units 1200w x 1200 x 1350h. External timber to match house

- Roof Tiles Marley Modern Brown
- Walls Smooth render colour Cream
- Windows White upvc d.g
- RW Goods White pvc deepflow

B	30-12-24	Now a pair of Semi
A	15-7-24	Parking, bike and bin storage amended to comments by highways
rev	date	description

Planning	24/0502	Building Regs
----------	---------	---------------

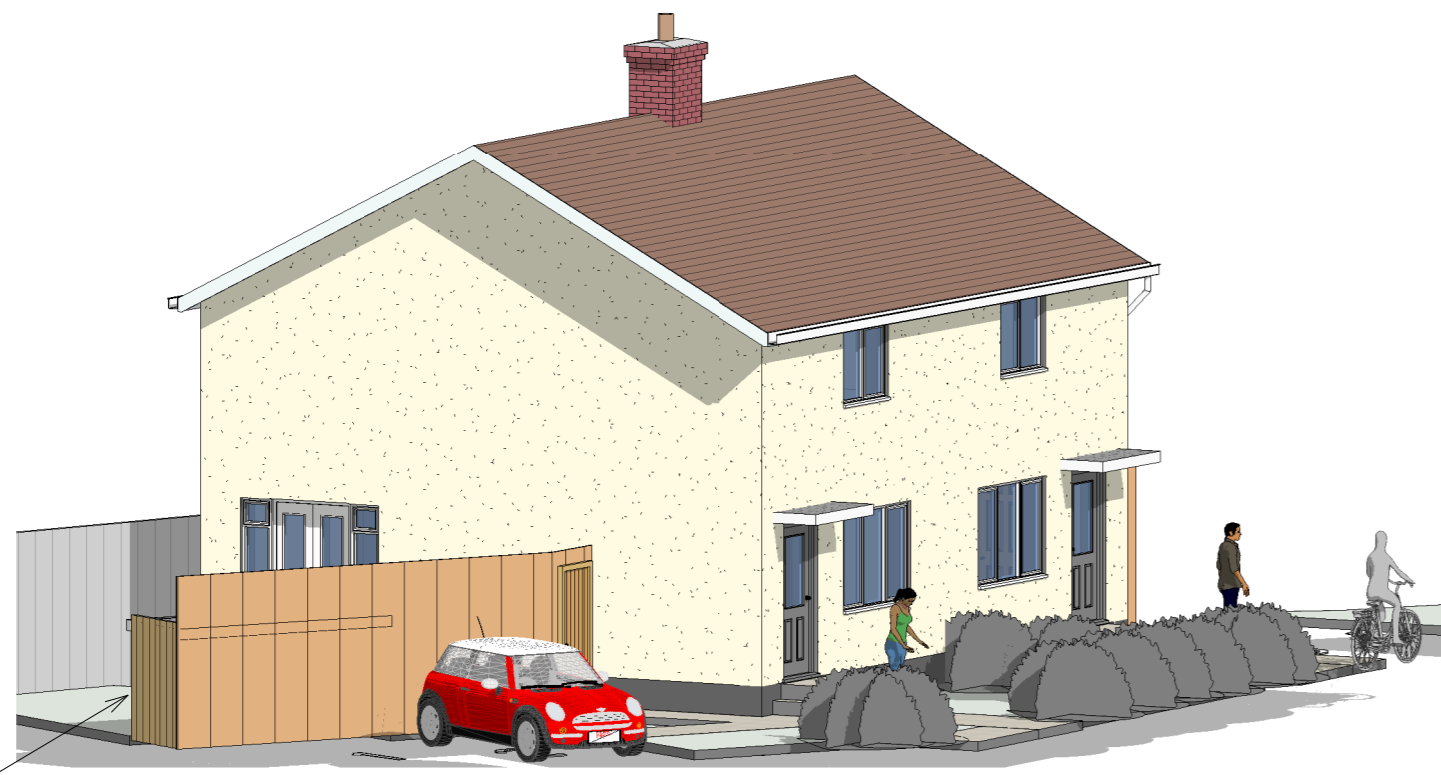
**Maison Design**  
architectural practice  
25 Caldicot Road tel 01291 422712  
Rogiet E mail  
Monmouthshire mark@maisondesign.biz  
NP26 3SE WEB www.maisondesign.biz

Copyright of this drawing or part thereof is by Maison Design and not to be copied

Project Proposed Layout

Name Howard Sully Plot next to 10 Thompson Ave Liswerry NP19 4LY

Date January 2024 MH-9868

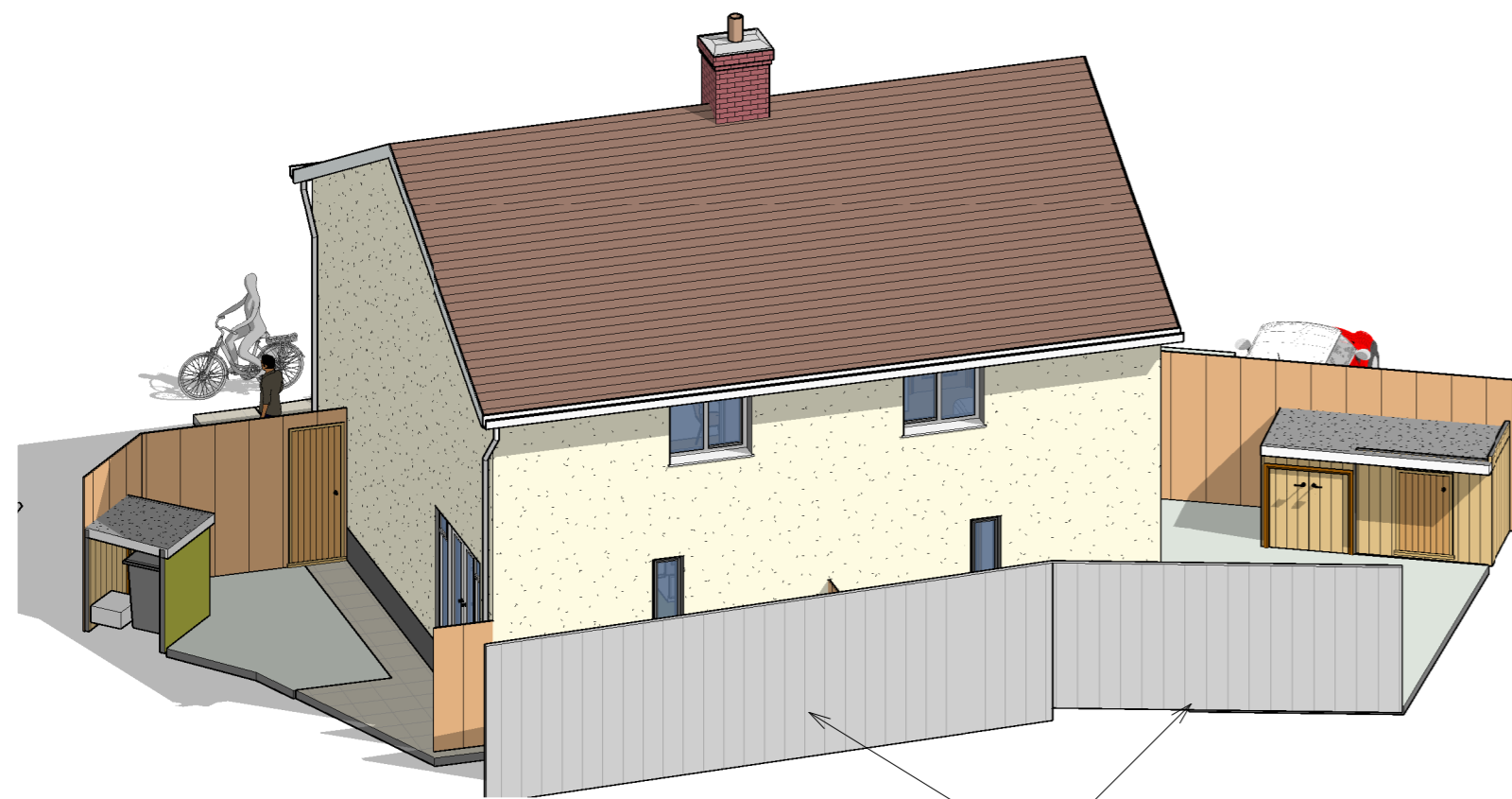


1 Front 3D

vertical timber boards to bin storage and bike storage max height 1350

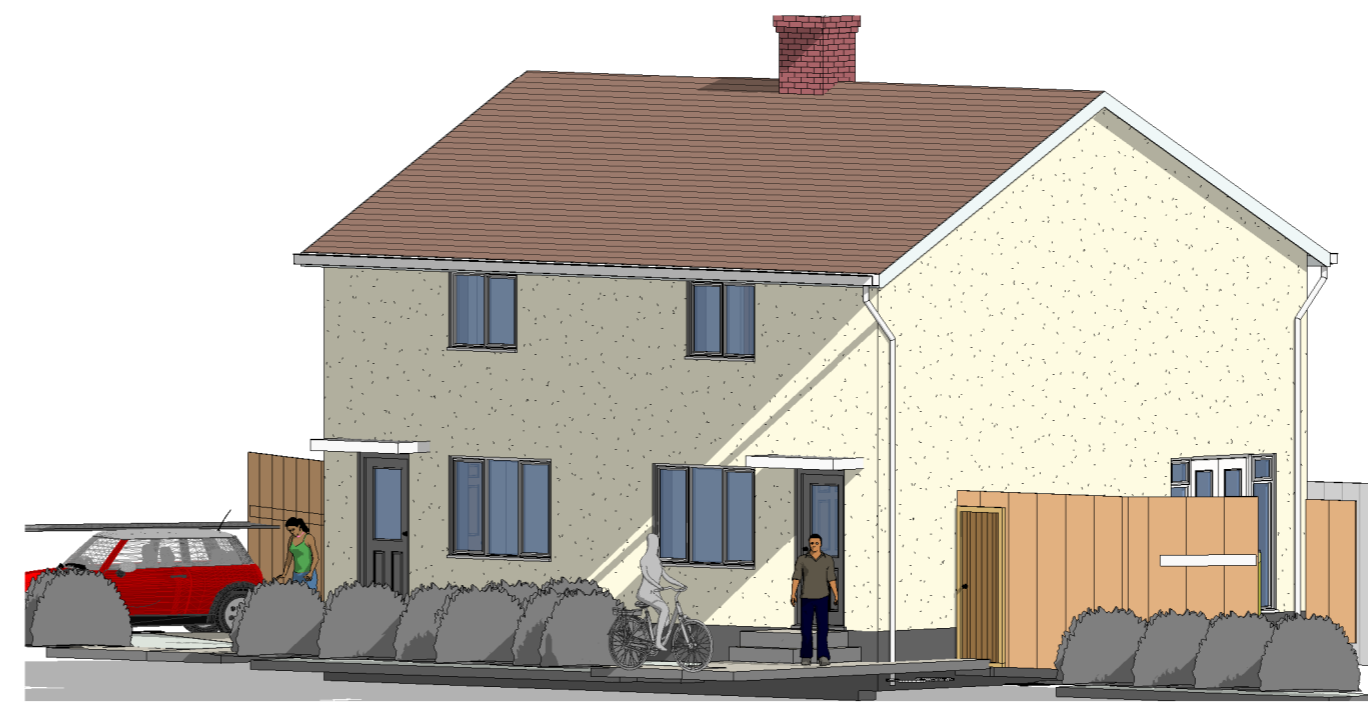


4 3D View 1



3 3D Rear

demolish garages and erect on rear boundary wall of garages an 1800 high treated vertical timber boarded fence



2 Side 3D

B 30-12-24 Now a pair of Semi  
 A 15-7-24 Parking, bike and bin storage amended to comments by highways  
 rev date description

Planning 24/0502 Building Regs

**Maison Design**  
 architectural practice  
 25 Caldicot Road tel 01291 422712  
 Rogiet E mail  
 Monmouthshire mark@maisondesign.biz  
 NP26 3SE WEB www.maisondesign.biz

Copyright of this drawing or part thereof is by Maison Design and not to be copied

Project 3D VIEWS

Name Howard Sully Plot next to 10 Thompson Ave Liswerry NP19 4LY

Date January 2024 MH-9869

