



52-54 Clarence Place, Newport, NP19 0AH

Flood Consequence Assessment

For Copper Kite Developments 2.0 Limited

KRS.0844.001.R.001.D

March 2025

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
Web: www.krsenviro.com
LinkedIn: 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

52-54 Clarence Place, Newport, NP19 0AH

Project	Flood Consequence Assessment
Client	Copper Kite Developments 2.0 Limited
Status	Final
Prepared by	Ruth Evans
Reviewed by	Keelan Serjeant BSc (Hons), MSc, MCIWEM
Date	March 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

CONTENTS	ii
TABLES & FIGURES.....	iii
EXECUTIVE SUMMARY	1
1.0 INTRODUCTION	2
1.1 Background	2
1.2 Technical Advice Note 15 (TAN15).....	2
1.3 Report Structure	2
2.0 LOCATION & DEVELOPMENT DESCRIPTION	4
2.1 Site Location.....	4
2.2 Existing Development.....	4
2.3 Proposed Development.....	4
2.4 Ground Levels.....	4
2.5 Catchment Hydrology.....	4
2.6 Ground Conditions.....	5
3.0 FLOOD RISK.....	6
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.....	17
3.12 Surface Water (Pluvial) Flooding	18
3.13 Sewer Flooding.....	18
3.14 Flooding from Artificial Drainage Systems/Infrastructure Failure	18
3.15 The Effect of the Development on Flood Risk	19
3.16 Summary of Site Specific Flood Risk	19
4.0 RISK MANAGEMENT.....	22
4.1 Introduction.....	22
4.2 Finished Floor Levels.....	22
4.3 First and Second Floor Accommodation	22
4.4 Flood Resilience and Resistance.....	22
4.5 Flood Warning and Evacuation Plan.....	23
4.6 Safe Access and Egress Route	25
4.7 Residual Risk	26
5.0 JUSTIFYING THE LOCATION OF THE DEVELOPMENT.....	27
5.1 Justification Test.....	27
5.2 Assessment of Acceptability Criteria.....	28
6.0 SUMMARY AND CONCLUSIONS	30
6.1 Introduction.....	30
6.2 Flood Risk.....	30
6.3 Risk Management.....	31
6.4 Justifying the Location of the Development.....	32
6.5 Conclusion	32
APPENDICES.....	34
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
Table 5 - Natural Resources Wales Defended Modelled Data.....	12
Figure 6 - Natural Resources Wales Defended Modelled Flood Outlines (v8 of the Newport Model).....	13
Figure 7 - Natural Resources Wales Defended Modelled 1 in 200 Year in 2096 Flood Outline (v8 of the Newport Model).....	14
Figure 8 - Natural Resources Wales Defended Modelled 1 in 1000 Year in 2096 Flood Outline (v8 of the Newport Model).....	14
Figure 9 - Natural Resources Wales Defended Modelled 1 in 200 Year in 2121 Flood Outline (v8 of the Newport Model).....	14
Figure 10 - Natural Resources Wales Defended Modelled 1 in 1000 Year in 2121 Flood Outline (v8 of the Newport Model).....	15
Table 6 - Natural Resources Wales Undefended Modelled Data.....	15
Figure 11 - Natural Resources Wales Undefended Modelled 1 in 200 Year Flood Outline (v8 of the Newport Model).....	16
Figure 12 - Natural Resources Wales Undefended Modelled 1 in 1000 Year Flood Outline (v8 of the Newport Model).....	16
Figure 13 - Natural Resources Wales Undefended Modelled 1 in 200 Year in 2121 Flood Outline (v8 of the Newport Model).....	16
Figure 14 - Natural Resources Wales Undefended Modelled 1 in 1000 Year in 2121 Flood Outline (v8 of the Newport Model).....	17
Figure 15 - Natural Resources Wales Reservoir Flood Map.....	19
Table 6 - Risk Posed by Flooding Sources.....	21
Figure 16 - Safe Access and Egress Route.....	26

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 Copper Kite Developments 2.0 Limited to support a planning application to repurpose part of the building on the ground floor and first floor which has already been converted as a 11 bedroom hostel (“the Proposed Development”) at 52-54 Clarence Place, Newport, NP19 0AH (“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 at 52-54 Clarence Place, Newport, NP 19 0AH (see Figure 1). The National Grid Reference (NGR) of the Site is 331516, 188477.



Figure 1 - Site Location

2.2 Existing Development

The existing Site currently comprises an 11 bedroom hostel (see Appendix 1).

2.3 Proposed Development

The Proposed Development is to repurpose part of the building on the ground floor and first floor of the existing 11 bedroom hostel (see Appendix 1). The proposed repurposing works also includes the waterproofing and insulating of the frontage of number 52. 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 minimum ground level of 7.43 metres Above Ordnance Datum (mAOD), as per the Ordnance Survey Digital Terrain Model (DTM).

2.5 Catchment Hydrology

The River Usk is located approximately 230m to the west of the Site. It is noted that the River Usk is tidal at this location. There are no other watercourses evident either on, or within the vicinity of the Site.

2.6 Ground Conditions

The British Geological Survey (BGS)¹ map shows that the bedrock deposits consist of the St Maughans Formation - argillaceous rocks and sandstone, interbedded. Sedimentary bedrock formed between 419.02 and 393.30 million years ago during the Devonian period. 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 Institute² 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.

¹ https://geologyviewer.bgs.ac.uk/?_ga=2.66736489.617109230.1694767835-1467391725.1694767835

² <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.

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 Purposes³, Flood Consequence Assessments: Climate change allowances⁴ and Adapting to Climate Change: Guidance for Flood and Coastal Erosion Risk Management Authorities in Wales⁵.

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 Catchment	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.

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

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

⁵ <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>

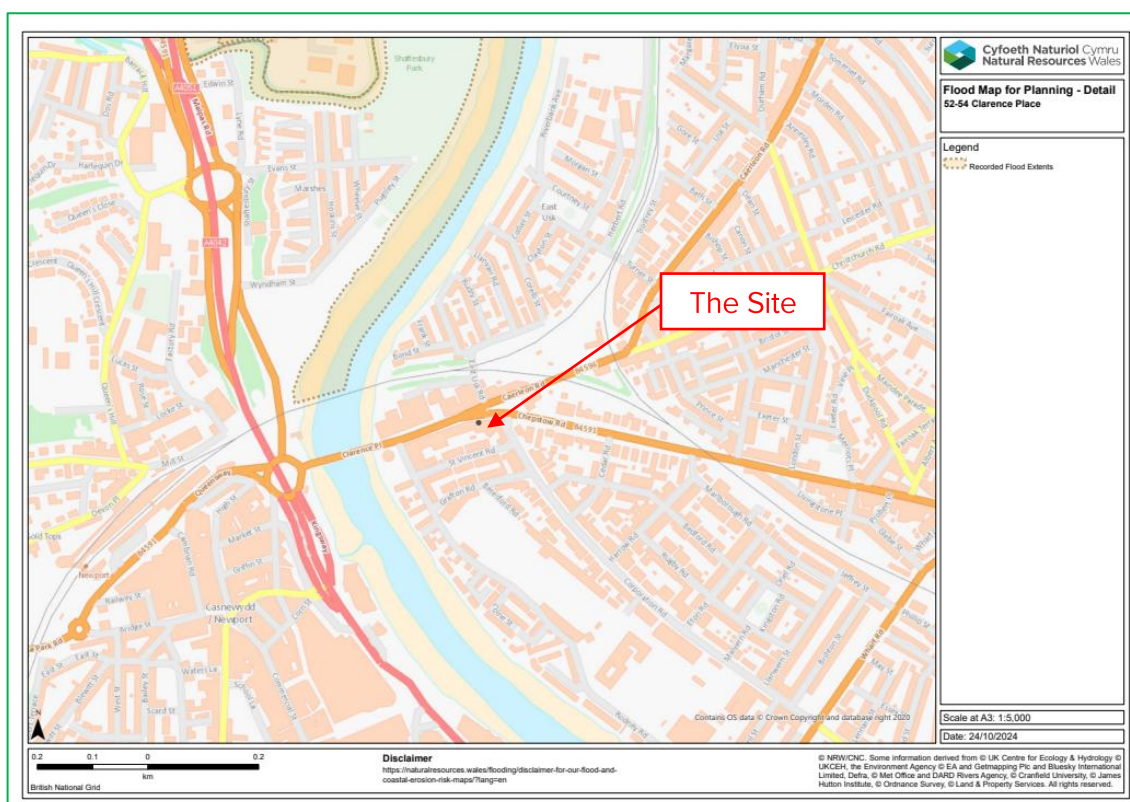
Table 2 - Sea Level Allowances (m)

Local Authority Area	Allowance Category	Mean Sea Level Rise (m) by 2100*	Mean Sea Level Rise (m) by 2120*
Newport	95 th	1.11	1.33
	70 th	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 Events⁶” 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.

⁶ <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 existing and proposed use of the Site is 'highly vulnerable'. The Proposed Development will not change the vulnerability of the Site to flooding or introduce a new 'highly vulnerable' use into the floodplain. The Proposed Development is deemed appropriate for this location.

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.

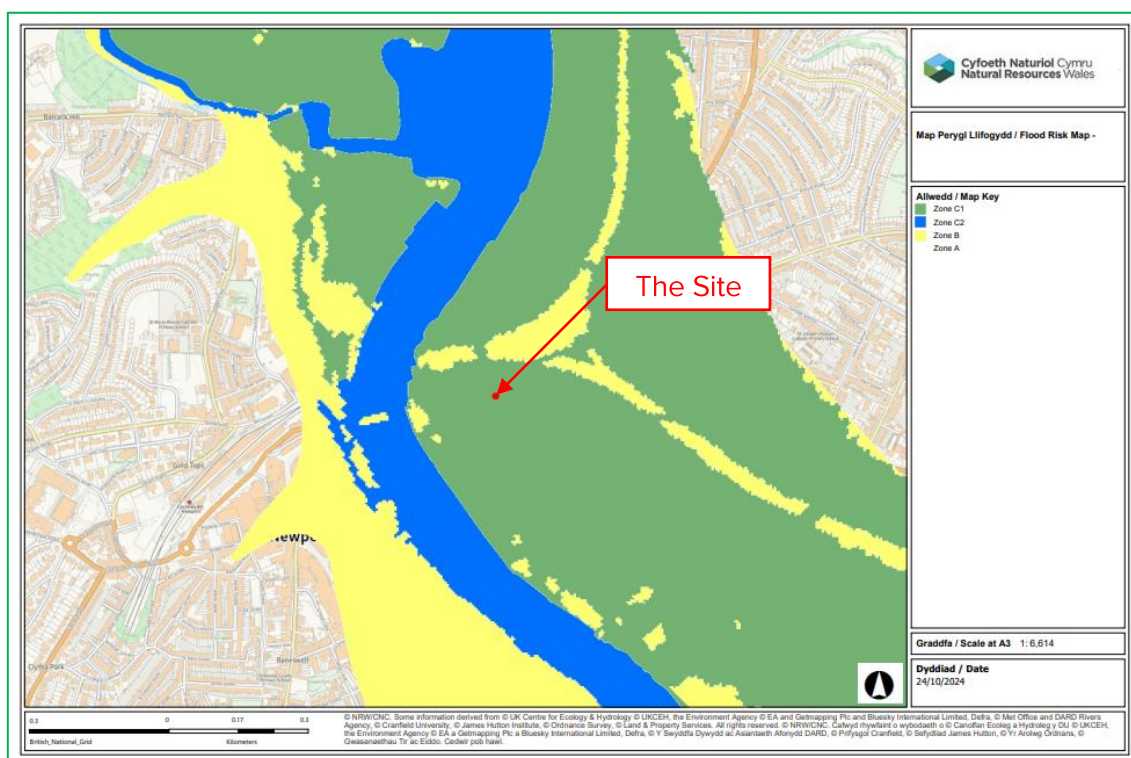


Figure 3 - Development Advice Map

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: 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 (see Figure 5).

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

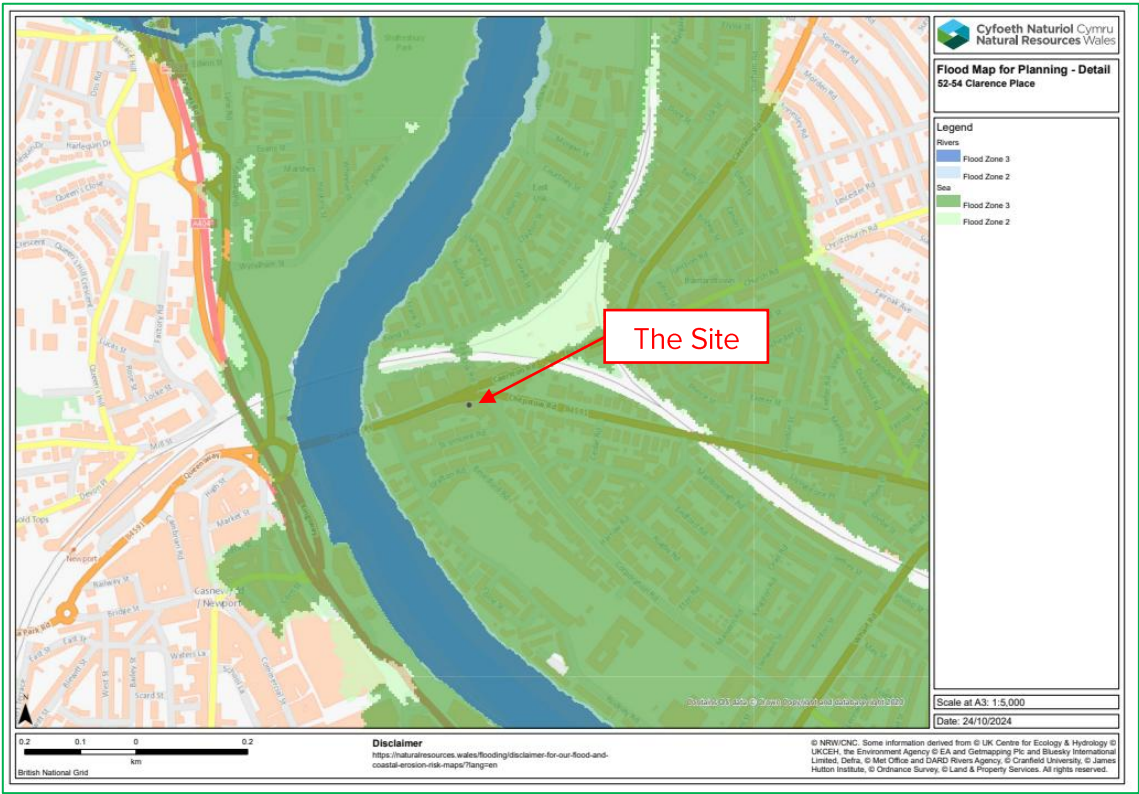


Figure 4 - Flood Map for Planning: Rivers and Sea

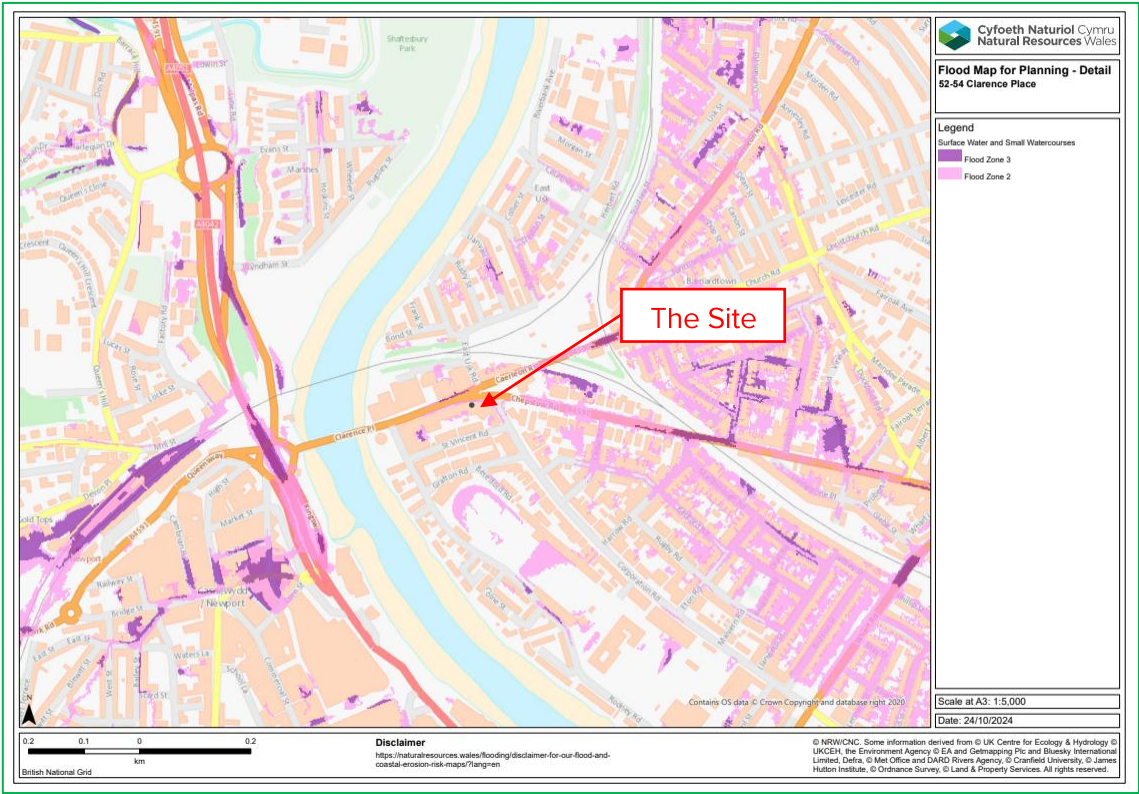


Figure 5 - Flood Map for Planning: Surface Water and Small Watercourses

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 (see Figure 4). 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. Table 5 shows the Natural Resources Wales defended modelled data. Climate change has been taken into account to 2125 as per Table 2 using the 95th percentile (1.33-1.11/20=0.011m per year or 0.044 per 4 years).

The Natural Resources Wales data shows the Site has a very low actual 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, as shown in Figures 6 and 7. The Site would be flood free during the defended 1 in 200 year in 2096 event. It is only when climate change to 2125 is considered that the Site may be inundated with floodwater during the 1 in 200 year event. Figures 7 to 10 show the defended modelled flood outlines.

Table 5 - Natural Resources Wales Defended Modelled Data

Return Period (yrs)	Water Level (mAOD)	Water Depth (m)	Water Velocity (m/s)	Hazard Rating
200	NULL	NULL	NULL	NULL
1000	NULL	NULL	NULL	NULL
200 in 2096	NULL	NULL	NULL	NULL
1000 in 2096	8.25	<0.66	<0.60	<1.60
200 in 2121	8.34	<0.90	<0.50	<1.58
1000 in 2121	9.61	<2.11	<0.68	<2.36
200 in 2125	8.38	<0.94	<0.50	<1.58
1000 in 2125	9.65	<2.15	<0.68	<2.36

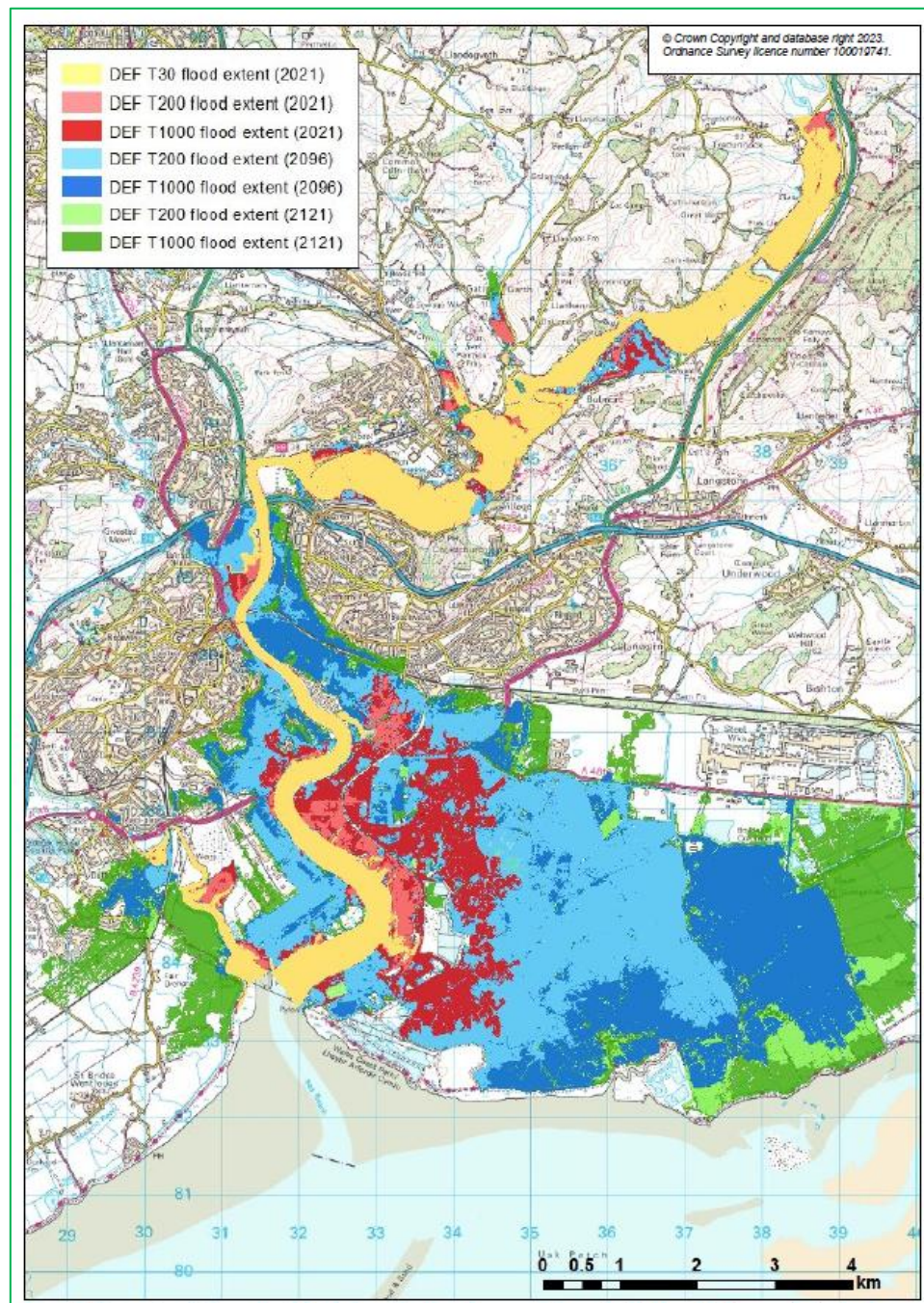


Figure 6 - Natural Resources Wales Defended Modelled Flood Outlines (v8 of the Newport Model)



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



Figure 8 - Natural Resources Wales Defended Modelled 1 in 1000 Year in 2096 Flood Outline (v8 of the Newport Model)



Figure 9 - Natural Resources Wales Defended Modelled 1 in 200 Year in 2121 Flood Outline (v8 of the Newport Model)

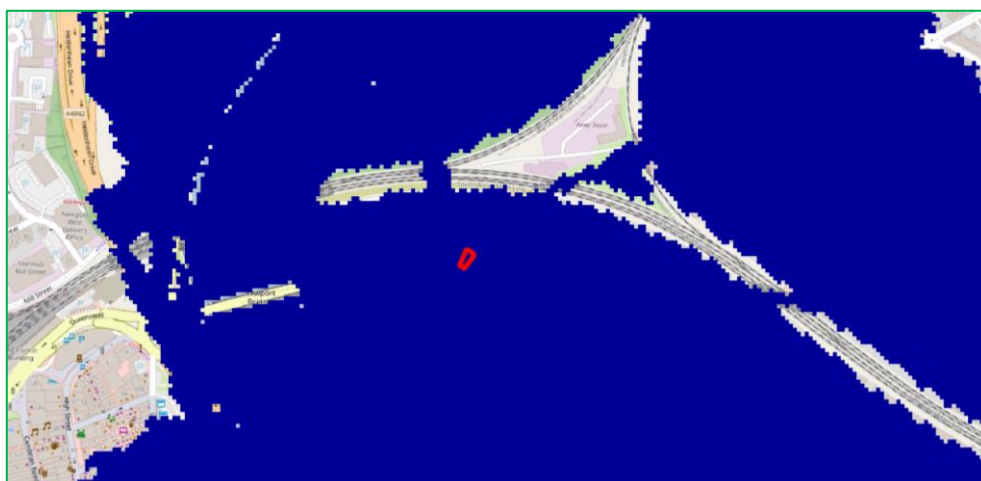


Figure 10 - Natural Resources Wales Defended Modelled 1 in 1000 Year in 2121 Flood Outline (v8 of the Newport Model)

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.

Table 6 shows the Natural Resources Wales undefended modelled data. Climate change has been taken into account to 2125 as per Table 2 using the 95th percentile ($1.33-1.11/20=0.011\text{m}$ per year or 0.044 per 4 years).

Figures 11 to 14 show the undefended modelled flood outlines. Natural Resources Wales data shows that the Site will not be inundated with floodwater during the undefended 1 in 200 year event, as shown in Figure 11. It is only when climate change to 2125 is considered that the area may be inundated with floodwater during the undefended 1 in 200 year event. The Site is shown to be located within the other undefended modelled flood outlines.

Table 6 - Natural Resources Wales Undefended Modelled Data

Return Period (yrs)	Water Level (mAOD)	Water Depth (m)	Water Velocity (m/s)	Hazard Rating
200	NULL	NULL	NULL	NULL
1000	7.88	<0.33	<0.61	<1.24
200 in 2121	9.47	<1.96	<0.50	<2.08
1000 in 2121	9.83	<2.32	<0.54	<2.32
200 in 2125	9.51	<2.00	<0.50	<2.08
1000 in 2125	9.87	<2.36	<0.54	<2.32





Figure 14 - Natural Resources Wales Undefended Modelled 1 in 1000 Year in 2121 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.

Therefore, 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 Site surroundings are relatively flat and there are no large catchments that would tend to generate surface water runoff towards the Site. Surface water flow flooding tends to occur sporadically in both location and time such surface water flows would tend to be confined to the streets around the Site.

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 (see Figure 5).

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 **not significant**.

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 15). The risk of flooding from artificial drainage systems/infrastructure failure is considered to be **not significant**.

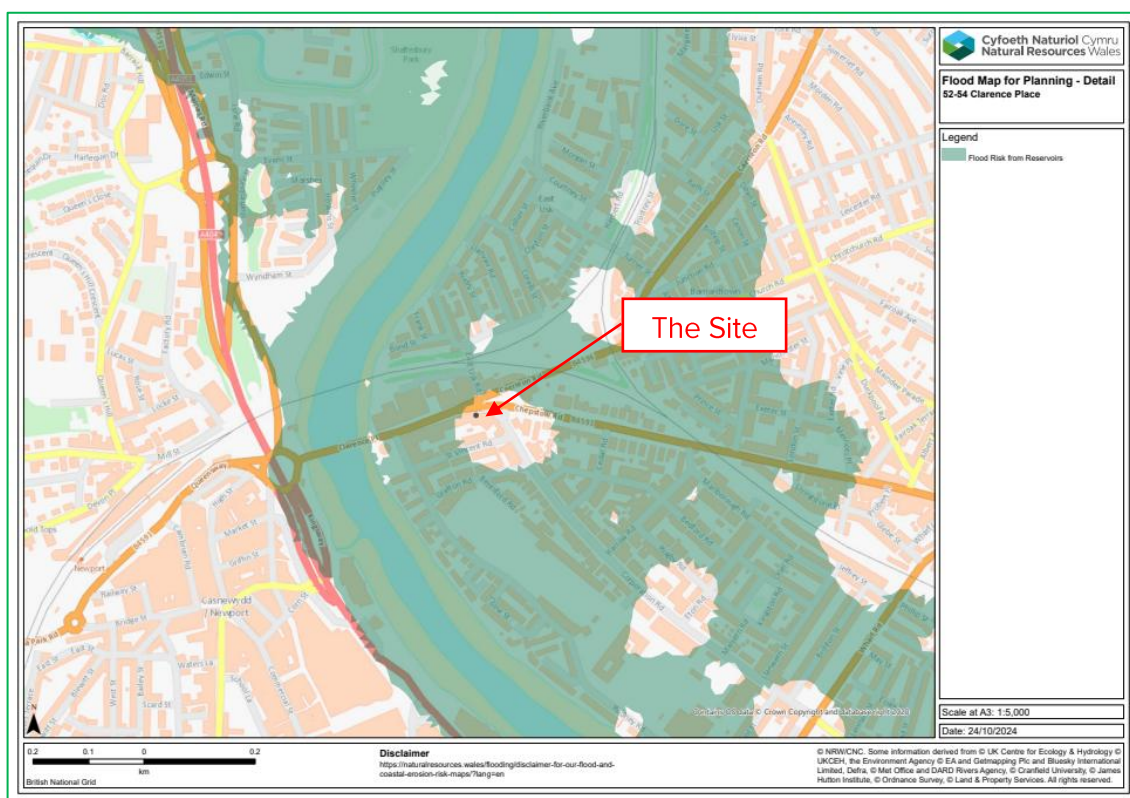


Figure 15 - Natural Resources Wales Reservoir Flood Map

3.15 The Effect of the Development on Flood Risk

The building is existing and no land raising will occur within the Site therefore, the Proposed Development will not impede the movement of floodwater across the Site. This will ensure no detriment to the flood storage capacity of 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. There will be no loss in flood storage capacity and no change in the on-site and off-site flood risk. 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 6.

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. However, it should be noted that there is no history of 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 history of flooding. The existing and proposed use of the Site is

'highly vulnerable'. The Proposed Development will not change the vulnerability of the Site to flooding or introduce a new 'highly vulnerable' use into the floodplain. The Proposed Development is deemed appropriate for this location.

Defended Scenario

The Natural Resources Wales data shows the Site has a very low actual 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 2125 is considered that the Site may be inundated with floodwater during the 1 in 200 year event.

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 event. It is only when climate change to 2125 is considered that the area may be inundated with floodwater during the undefended 1 in 200 year event. The Site is shown to be located within the other undefended modelled flood outlines.

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.

Therefore 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 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 building is existing and no land raising will occur across the Site and 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.

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	No	None Reported	None
Sewer Flooding	No	None Reported	None
Flooding from Artificial Drainage Systems/Infrastructure Failure	No	None Reported	None

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 at the existing floor levels. 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 are 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 and Second Floor Accommodation

Accommodation will be located on the first and second 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 internal 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 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 building. Flood resistance measures are measures that help resist floodwaters entering a property (airbrick covers are an example of a flood resistance measure). Flood resilient and resistant measures will be used, including:

- Windows are a minimum of 1000mm above the external ground levels.
- Sealant will be used around external doors and windows.
- All external doors and windows will be constructed from hard wearing materials with flood seals.
- All electrics wiring, switches, sockets, socket outlets etc. to be located a minimum of 450mm above the finished floor levels.

4.5 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 will be developed. 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. A Flood Warden will be designated from the occupants of the Site who will monitor flood levels and keep occupants and visitors informed and will decide whether to initiate the FWEP.

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.

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.

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.

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. 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.

The following flood evacuation procedures have been developed for the Site, so that the Site is safe during a flood.

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.

4.6 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 Clarence Place to the east and then along Caerleon Road to the northeast, as shown in Figure 16. Flood defences protect the Site from flooding from the River Usk with a SoP of 1 in 200 years in 2096. The Proposed Development will be located on the first and second floors as well as the ground floor which will allow occupants to retreat to higher floor levels if needed. This provides a 'safe haven' above any floodwater levels.

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 as per Natural Resources Wales guidance using the route shown in Figure 16.

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.

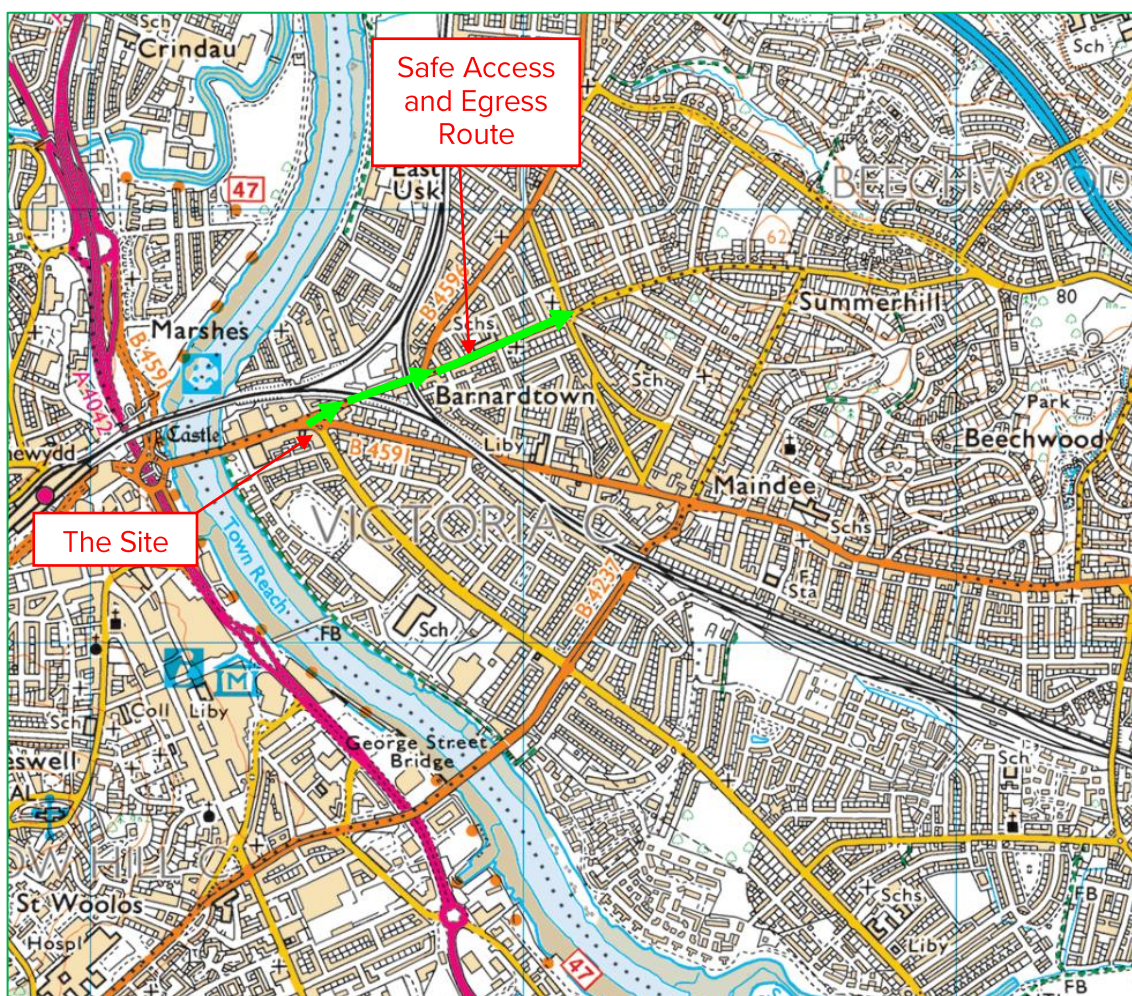


Figure 16 - Safe Access and Egress Route

4.7 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

- The Site is located within Zone C1 - Areas of the floodplain which are developed and 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 improved residential uses 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 uses. 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.

- This Site will help to regenerate the region and will help to deliver these objectives. This Site will help encourage economic impetus that will in turn help deliver a stronger service function and mix of residential uses.
- The Site proposals cannot be located in another site elsewhere. There are no alternative sites available to develop. 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 within Zone C1.

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.

There are indicative frequency threshold of flooding below which flooding of developed may not be allowed (see Table A1.14 of TAN15) and flood consequences during an extreme flood (see Table A1.15 of TAN15). Planning Appeal Reference: APP/G6935/A/20/3258002 confirms that the these should only be taken as indicative and are not prescriptive.

Flood defences protect the Site from flooding from the River Usk with a SoP of 1 in 200 years in 2096 and 1 in 1000 year 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 2125 is considered that the Site may be inundated with floodwater. The Proposed Development will be located on the first and second floors as well as the ground floor which will allow occupants to retreat to higher floor levels if needed. This provides a ‘safe haven’ above any floodwater levels.

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.

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 the area 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 can be confirmed that the Proposed Development has been developed taking into account the context of TAN and national flood risk policy. 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 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 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. The Proposed Development will be located on the first and second floors as well as the ground floor which will allow occupants to retreat to higher floor levels if needed. This provides a 'safe haven' above any floodwater levels.

Therefore, the indicative requirements of A1.14 and A1.15 of TAN15 are passed. The development proposals should therefore be considered by the LPA to satisfy the Acceptability Criteria as set out in TAN15. 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.

6.0 SUMMARY AND CONCLUSIONS

6.1 Introduction

This report presents an FCA in accordance with TAN15 for the Proposed Development at 52-54 Clarence Place, Newport, NP19 0AH.

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. However, it should be noted that there is no history of 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 history of flooding. The existing and proposed use of the Site is 'highly vulnerable'. The Proposed Development will not change the vulnerability of the Site to flooding or introduce a new 'highly vulnerable' use into the floodplain. The Proposed Development is deemed appropriate for this location.

Defended Scenario

The Natural Resources Wales data shows the Site has a very low actual 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 2125 is considered that the Site may be inundated with floodwater during the 1 in 200 year event.

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 event. It is only when climate change to 2125 is considered that

the area may be inundated with floodwater during the undefended 1 in 200 year event. The Site is shown to be located within the other undefended modelled flood outlines.

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.

Therefore 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 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 building is existing and no land raising will occur across the Site and 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 at the existing floor levels. 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 and Second Floor Accommodation: Accommodation will be located on the first and second 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 internal 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 Resilience and Resistance: Flood resilient and resistant measures will be used, including:

- Windows are a minimum of 1000mm above the external ground levels.
- Sealant will be used around external doors and windows.
- All external doors and windows will be constructed from hard wearing materials with flood seals.
- All electrics wiring, switches, sockets, socket outlets etc. to be located a minimum of 450mm above the finished floor levels.

Flood Warning and Evacuation Plan: A Flood Warning and Evacuation 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 Clarence Place to the east and then along Caerleon Road to the northeast, as shown in Figure 16. Flood defences protect the Site from flooding from the River Usk with a SoP of 1 in 200 years in 2096. The Proposed Development will be located on the first and second floors as well as the ground floor which will allow occupants to retreat to higher floor levels if needed. This provides a 'safe haven' above any floodwater levels.

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 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.

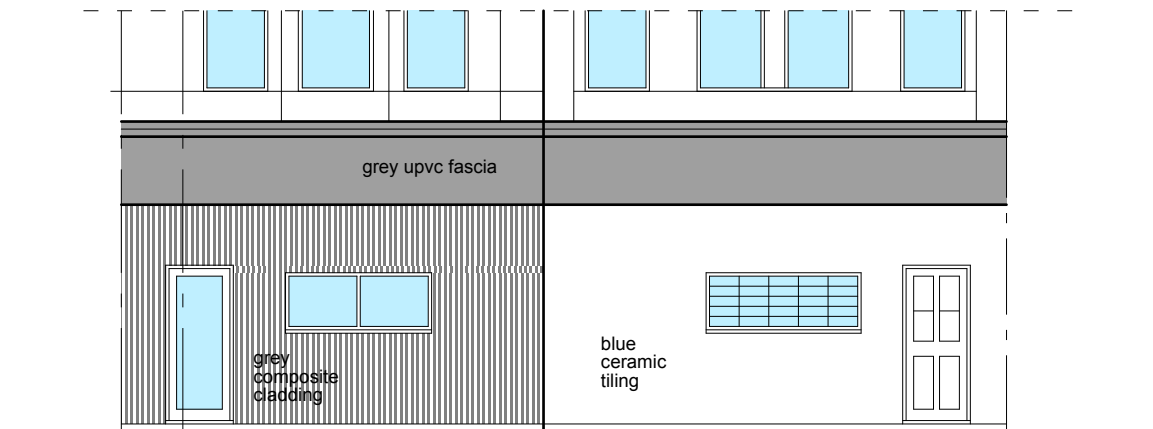
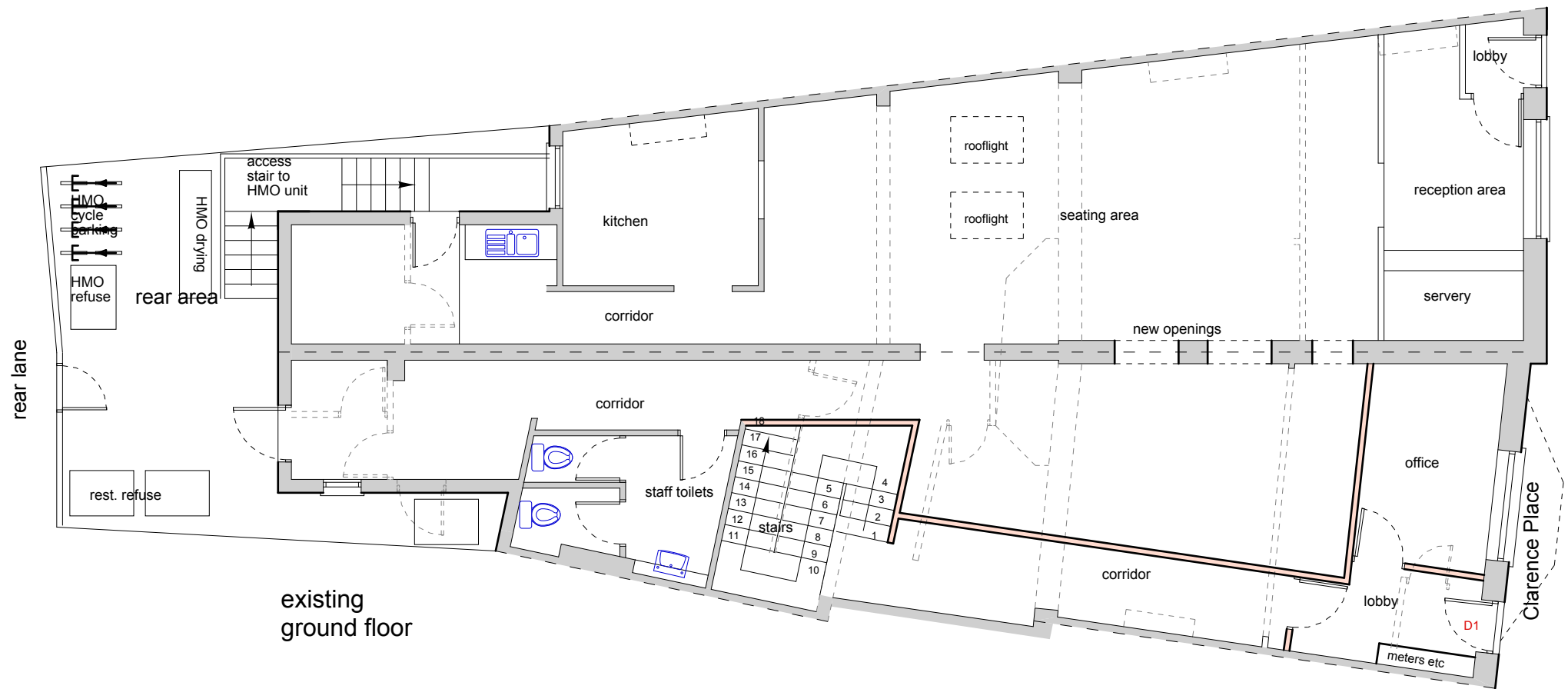
6.5 Conclusion

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



Trewent Designs Ltd

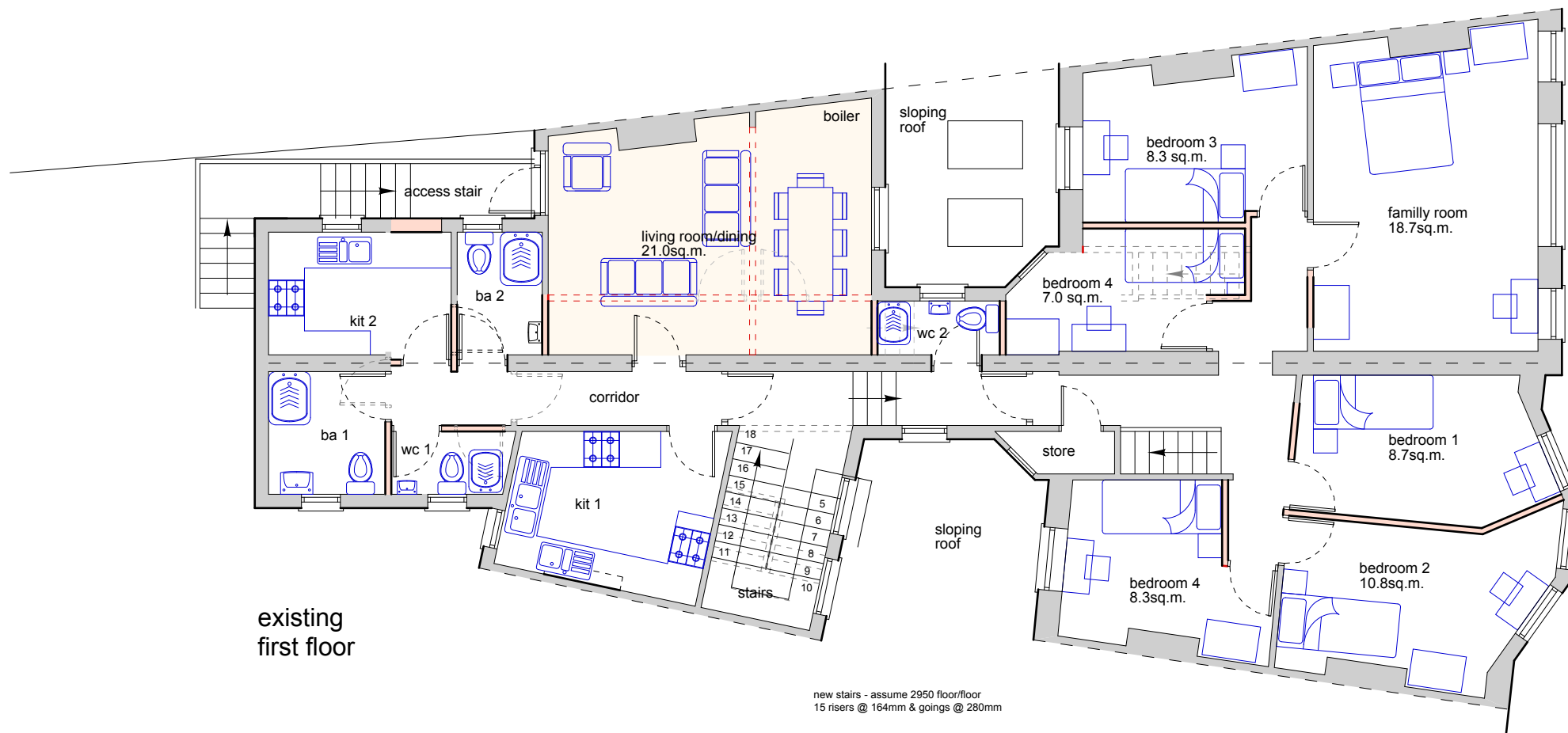
client - Copper-Kite 2.0 Ltd

proj: 52/54 Clarence Place,
Newport, NP19 0AH

Existing ground floor/site plan

scale - 1:100 @ A4

dwg no. - 2093-27



Trewent Designs Ltd

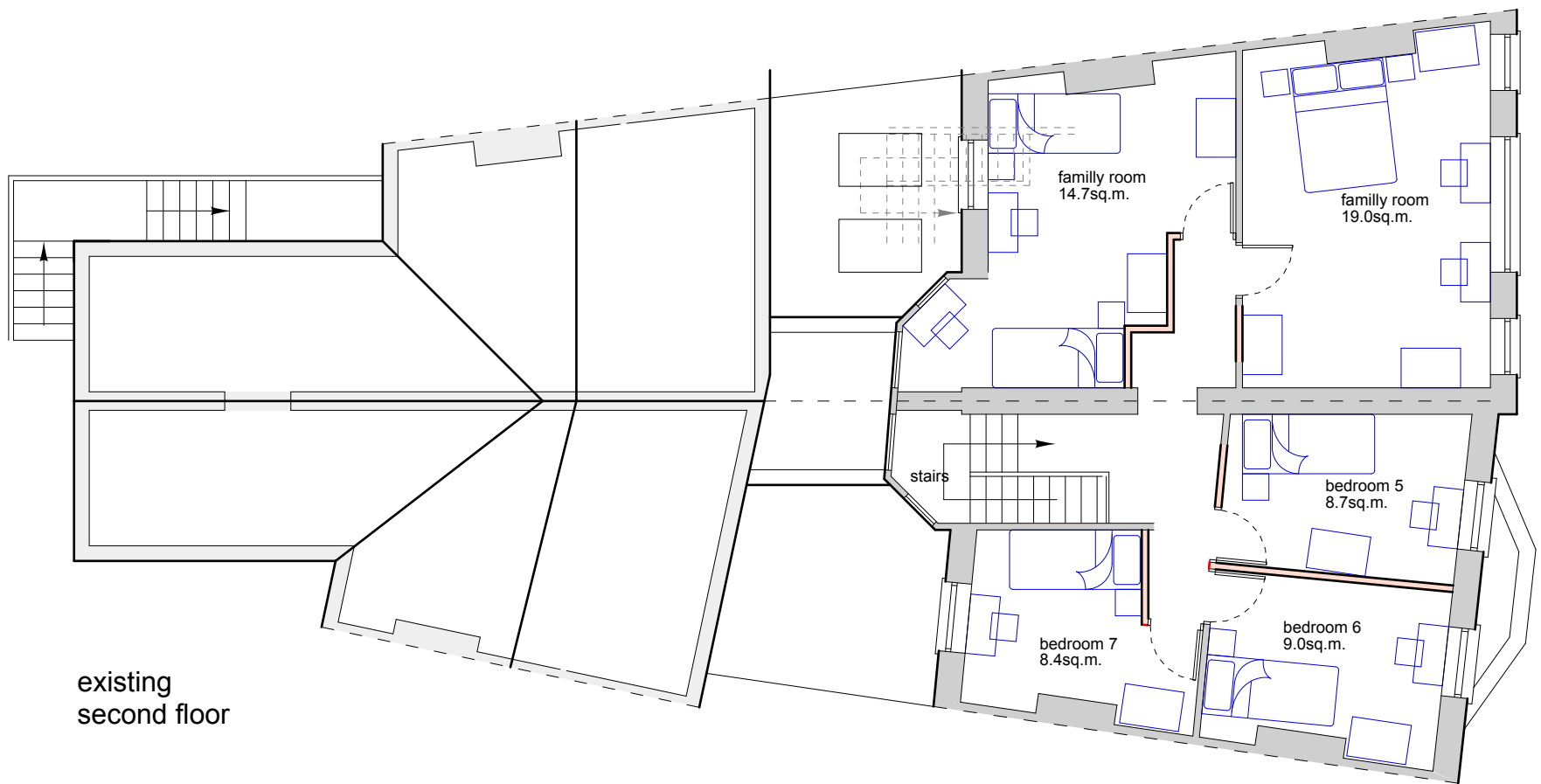
client - Copper-Kite 2.0 Ltd

proj: 52/54 Clarence Place,
Newport, NP19 0AH

Existing first floor plan

scale - 1:100 @ A4

dwg no. - 2093-28



Trewent Designs Ltd

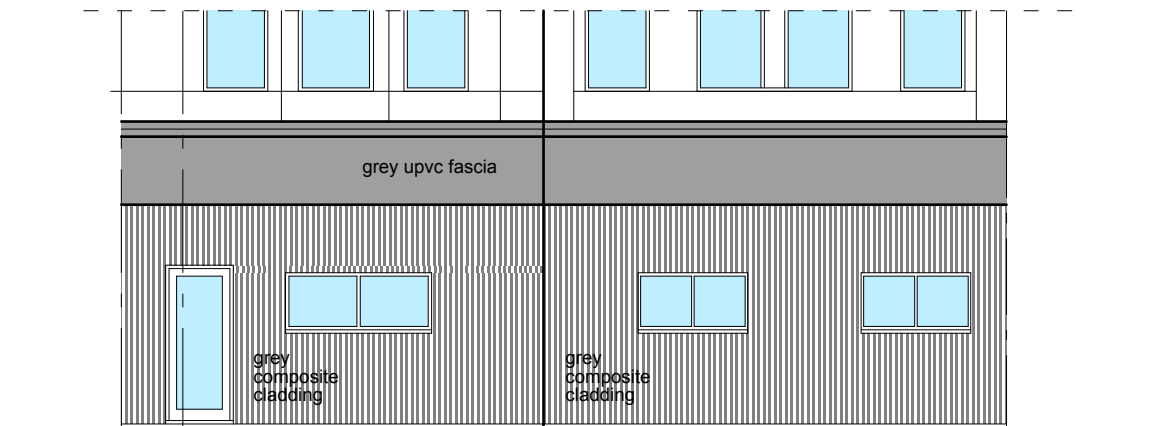
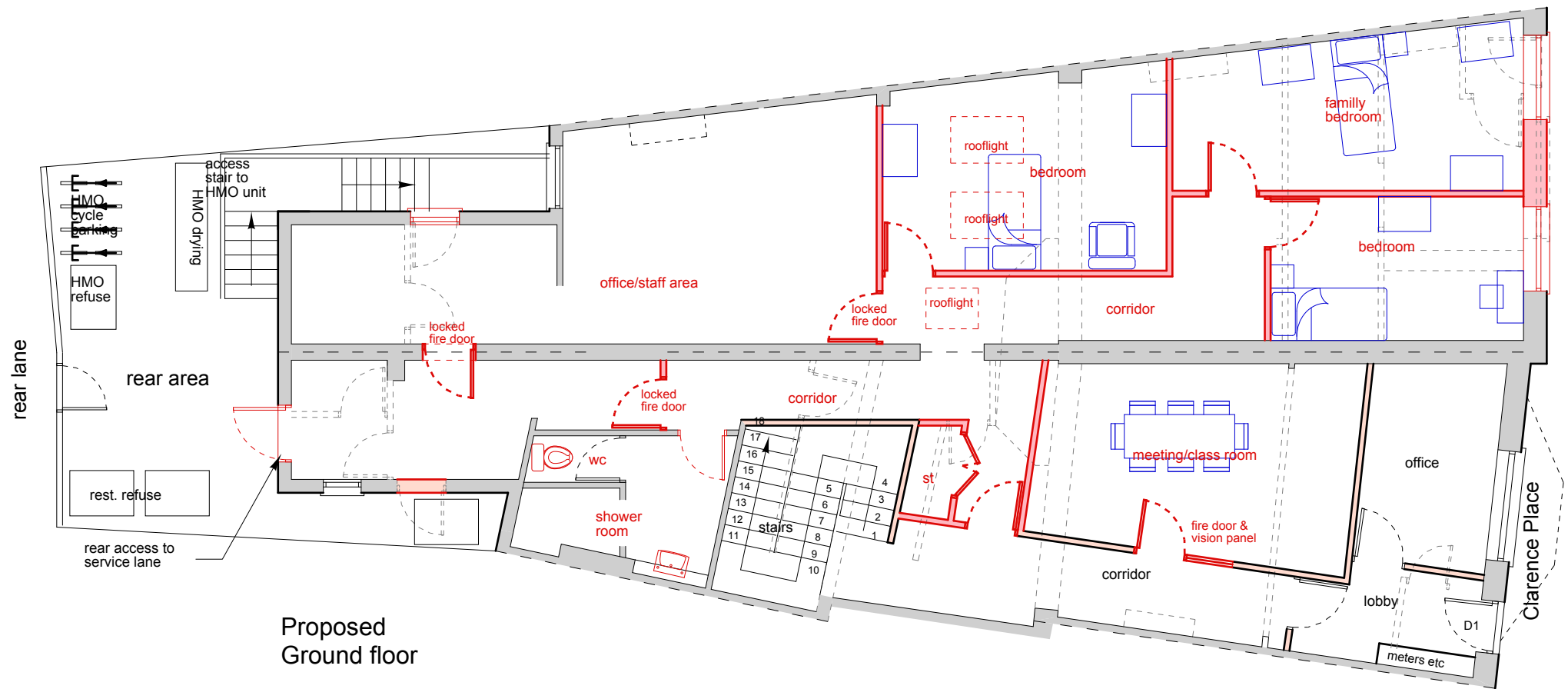
client - Copper-Kite 2.0 Ltd

proj: 52/54 Clarence Place,
Newport, NP19 0AH

Existing second floor plan

scale - 1:100 @ A4

dwg no. - 2093-29



Trewent Designs Ltd

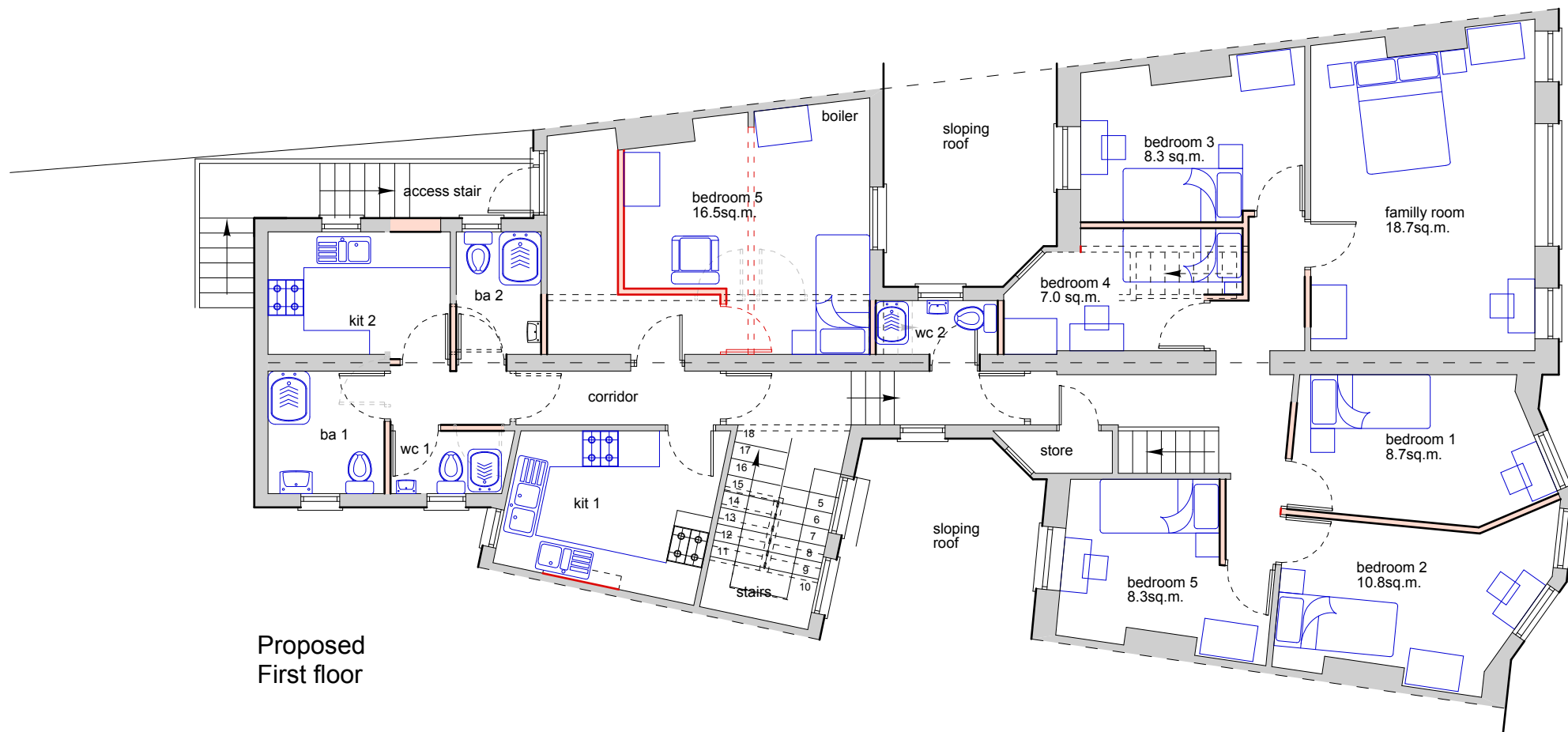
client - Copper-Kite 2.0 Ltd

proj: 52/54 Clarence Place,
Newport, NP19 0AH

Proposed ground floor/site plan

scale - 1:100 @ A4

dwg no. - 2093-30 C



Proposed
First floor

Trewent Designs Ltd

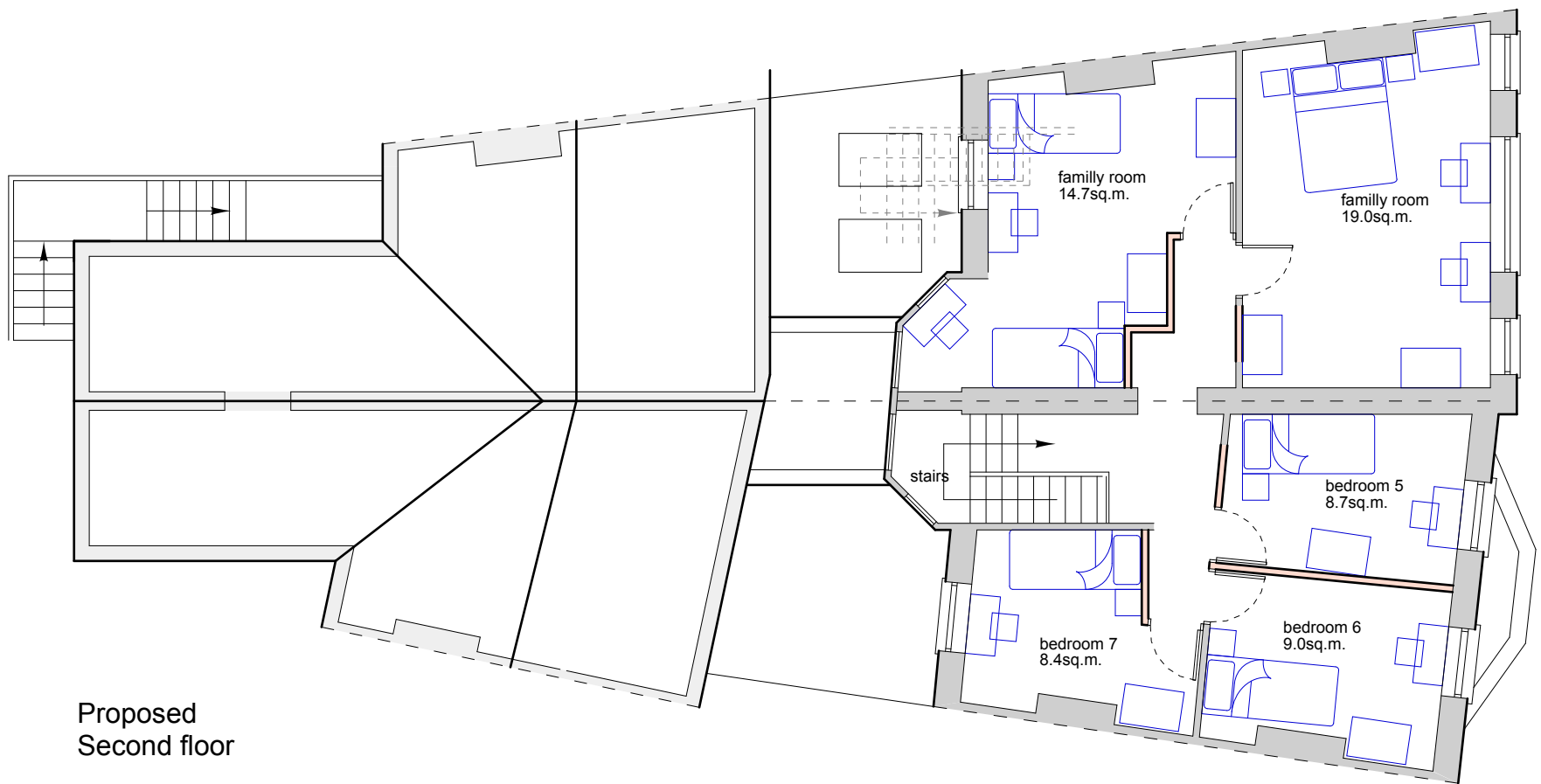
client - Copper-Kite 2.0 Ltd

proj: 52/54 Clarence Place,
Newport, NP19 0AH

Proposed first floor plan

scale - 1:100 @ A4

dwg no. - 2093-31



Proposed
Second floor

Trewent Designs Ltd

client - Copper-Kite 2.0 Ltd

proj: 52/54 Clarence Place,
Newport, NP19 0AH

Proposed second floor plan

scale - 1:100 @ A4

dwg no. - 2093-32

