

**Proposed Residential Accommodation,
East Bay Close, Cardiff.**

Flood Consequence Assessment

C7032-RVW-XX-XX-RP-C-FCA01

Document Reference:	FCA01
Job Number:	C7032
Report Author:	OP
Checked:	ABP
Date:	October 2021
Revision	P02

DOCUMENT CONTROL SHEET

Project Number: - C7032

Project: - East Bay Close, Cardiff

Client: - CNM Estates Ltd.

Document Title: - Flood Consequence Assessment

Author: - Olga Pavlidou – Barney Procter

Revision: - P02

Status: - Planning issue

REVISION STATUS			
Revision	Date	Details	Author
P0	09/11/2021	First issue - Draft	OP/BP
P01	10/11/2021	Amended to Huw's comments	OP/BP
P02	16/11/2021	Information added	OP/BP

Contents

1.0	INTRODUCTION	4
2.0	BRIEF	4
3.0	GENERAL	5
4.0	JUSTIFICATION	8
5.0	ACCEPTABILITY CRITERIA	8
6.0	CONCLUSION.....	9

Appendices

Appendix A - Planning Drawings

Appendix B – Developemnt Advice Maps & Flood Level Information

1.0 INTRODUCTION

RVW Consulting Limited has been commissioned by CNM Estates Ltd to undertake a flood consequence assessment for a project at East Bay Close, Cardiff.

The assessment has been undertaken to support a planning application to construct a residential accommodation development at the site.

Where possible, the assessment has been developed in conjunction with Natural Resources Wales.

This assessment has been prepared broadly in line with the recommendations set out in the new Technical Advice Note 15 (TAN 15) Development and Flood Risk, published by the National Assembly for Wales in December 2021.

2.0 BRIEF

We have been instructed to provide an initial assessment of the flood risks associated with the site, and whether the development can be justified in terms of TAN 15. As part of the assessment we have visited the site to consider the likely implications of the proposed development.

We have also contacted Natural Resources Wales to seek their views regarding the flood risks associated with sites in this area.

In addition, this assessment contains specific flood level information for the site that has been provided by Natural Resources Wales.

3.0 GENERAL

Background

CNM Estates Ltd are promoting a project to construct a residential accommodation development at East Bay Close, Cardiff.

A similar scheme has been previously permitted by the Local Planning Authority under planning application Ref. 17/01300/MJR. This report reflects the proposed new residential accommodation.

Site Location

The site is located to the east of Cardiff centre, and part of the site is located beneath the A4234 Central Link.

The site is currently a vacant, cleared brownfield site.

History

The site currently is vacant.

The site was previously operating as a car sales premise and commercial garage since the early 1990s.

Development Proposals

The development proposals for the project comprise the construction of a 15 storey residential accommodation with 1, 2, 3, and 4 people apartments with associated access roads, car parking, and hard and soft landscaped areas. The total number of people that can be hosted is 911.

These details are illustrated in the planning drawings contained in **Appendix A**.

Drainage

The development proposals will result in a minor decrease of the impermeable area offered by the site. To ensure that there will be no flood risk due to surface water generation; SuDS will be used to dispose of all new surface water flows from the proposed development site.

The proposed SuDS design is indicated within RVW Drainage Strategy Report C6622-DR-REP01. The proposals will be investigated in more detail during the detail design phase, and will comply with the sustainability aspirations of the LPA and Client.

Foul flows generated by the existing site premises connect to the adjacent public combined sewerage system.

Foul flows generated by the development proposals will also connect to the adjacent public combined sewerage system, using new foul drainage from the site. As the public combined sewerage network is maintained by Dwr Cymru WelshWater, the risk of foul drainage flooding at the site is considered to be very low.

Flood Defences (DAM / TAN 15)

There are formal flood defences in place that protect the Cardiff area.

The Cardiff Flood Alleviation Scheme was constructed between 1980 and 1983, following the floods of December 1979. It consists of defences along the banks of the River Taff, from Llandaff Weir to Clarence Bridge.

The Cardiff Scheme was designed and constructed prior to the implementation of the Cardiff Bay Barrage Scheme, when tidal influence directly affected river levels as far upstream as Blackweir.

Flood levels over this length of the river were determined by a combination of fluvial flows and tide level. Upstream of Blackweir flood levels are only dependent upon river flow. At the downstream end, in the vicinity of Grangetown, even for extreme river flows, highest flood levels were influenced by the tide. The highest recorded tide in Cardiff at the time was 7.8m, and defences were set at a minimum of 8.3m AOD, which provided a 0.5m freeboard on the highest tide. Flood defence levels are then increased upstream determined by the design flood flow in the river.

Since construction of the Cardiff Bay Barrage the direct tidal influence on river levels has effectively been removed. Flood levels downstream of Clarence Bridge are now determined by the water level in Cardiff Bay. The Cardiff Bay Barrage is a total exclusion barrage, in that seawater is prevented from entering at any time. The bay water levels during a flood are determined by river flows from the River Taff and River Ely entering the bay during a tide-lock scenario, when the sluice gates are closed to prevent ingress of seawater. Even for extreme combinations of surge tide and river floods, the maximum level in the bay is calculated to be lower than the 7.8m tide level used for the design of the scheme.

The Cardiff Bay Barrage Scheme provides a minimum standard of tidal flood protection for the 0.5% flood event scenario (1 in 200-year return period).

Site Topography

The proposed site is generally flat, with an average ground level of 7.90m AOD. The site possesses existing ground levels ranging from circa 7.60m to 8.40m AOD.

Proposed Levels

Due to the risk of flooding from coastal processes, the proposed FFL of the residential accommodation building will be set at 8.850m AOD. This will ensure that the building will remain flood free for the lifetime of the development (up to the year 2117) and this FFL also includes an element of freeboard (250mm).

It is anticipated that proposed levels would be similar to existing levels, for the main body of the external site, to ensure that the proposals tie-in with existing features, boundaries, and access roads already constructed to service the development.

Flood Levels

The main source of flood risk to this area is coastal flooding from the Cardiff Flats to the south-east during a breach of the sea defences.

Based on the predicted sea levels at the Cardiff Flats, the site could be at risk of flooding for the 0.5% and 1% flood event scenarios.

Over the course of the development lifetime (100 years), this risk will increase due to the effects of climate change.

This information is illustrated on the Natural Resources Wales flood map and flood level information for the area, a copy of which is contained in **Appendix B**.

The predicted extreme sea level at the closest tidal node for the 0.1% flood event scenario for 2117 is 10.2m AOD, and this figure includes a climate change allowance for sea level rise over the lifetime of the development.

As the coastal defences that protect the Cardiff Flats are maintained by Natural Resources Wales, and the development site is approximately 2,500m from the coastline the risk of flooding at the site is considered to be very low.

Flood History

There is no record of flooding at the site.

TAN 15 Classification

The specific guidance with regards to the classification of residential accommodation contained in the TAN 15 Document (Figure 2) confirms that the proposed development could be classified as **“highly vulnerable development”**.

The TAN 15 Development Advice Map for the area indicates that part of the site would be categorised as a **“Zone 3”** area.

Zone 3 classifies the site to be **“served by significant infrastructure, including flood defences.”**

Flood Risk

The main source of flood risk to this area is coastal flooding from the Cardiff Flats to the south-east during a breach of the sea defences.

Over the course of the development lifetime (100 years), this flood risk will increase due to the effects of climate change.

As the coastal defences that protect the Cardiff Flats are maintained by Natural Resources Wales, and the development site is approximately 2,500m from the coastline the risk of flooding at the site is considered to be very low.

If required, the flood risk could be further mitigated by establishing a flood management plan for the development site.

This could include the preparation of formal flood plans and procedures as part of an operating plan for the premises.

In addition, this may include the erection of suitable warning signs to inform people entering the site, and the development of safe and effective flood warning and evacuation plans agreed with the local authority and emergency services, including subscription to Floodline Warnings Direct (as itemised in Appendix 6 of TAN 15).

Flood warnings are usually issued by the Natural Resources Wales with an effective lead-time of between 12 and 24 hours before the onset of flooding around the site. Natural Resources Wales provides a comprehensive flood warning service for the River Ely. Warnings are issued to the Emergency Services, the Media and, other than for Flood Watch, to individual properties within Flood Risk Areas via the Floodline Warnings Direct service.

Floodline Warnings Direct is a free 24-hour service to registered users providing automated

warnings to telephone, mobile, fax or pager. The 24 hour **Floodline 0845 988 1188 number** is a telephone information service operated by the Natural Resources Wales in Wales. Trained operators provide a 24/7 service to provide immediate advice on flood risk. They also provide a Quickdial number that allows direct access to any recorded flood warnings for the local area.

4.0 JUSTIFICATION

This is a previously developed site therefore the development will not be adding to the flood risk in this area.

The potential consequences of a flooding event for the particular type of development have been considered, and found to be acceptable in accordance with the criteria contained in section 11 of TAN 15.

This is a highly vulnerable development, however it is within a flood defended zone where safe access, egress or sanctuary can be achieved in the event of a flood.

5.0 ACCEPTABILITY CRITERIA

1. Minimal risk to life.

Escape routes onto adjacent higher land and buildings, which are deemed to be outside the extent of the flood risk zone, are available

2. Minimal disruption to people living and working in the area.

Flood defences are those that currently exist, and are deemed adequate for existing usage

3. Minimal potential damage to property.

The Client is aware of the limited potential for flooding in this area and will implement flood management procedures.

4. Minimal impact of the proposed development on flood risk generally.

There will be no loss of flood storage

5. Minimal disruption to the sustainable management of natural resources

The proposed development will generate no flood risk, due to increased surface water run-off, as SuDS will be used to safely manage surface water disposal.

In addition to the assessed Acceptability Criteria above:

- A. If considered necessary, end users and occupiers will be informed of the potential flood risk at the site so that they are aware of their duties under the Health and Safety at Work legislation and can be duly made aware of any appropriate procedures to protect people and property.
- B. If considered necessary, formal flood plans and procedures can be established as part of an operating plan for the premises. This could include the erection of suitable warning signs to inform people entering the site, and the preparation of safe and effective flood warning and evacuation plans agreed with the local authority and emergency services.
- C. Flood proofing and mitigation will be considered within the design of the development, if considered necessary namely: raising electrical sockets/appliances, using hard flooring and rugs instead of carpets, lime plaster instead of gypsum, non-return valves fitted to pipes etc. This could be undertaken in accordance with the guidance that is available from the Environment Agency using their online publication "*Prepare your property for flooding*".

6.0 CONCLUSION

The size and nature of the proposed development can be categorised as “**highly vulnerable development**” in accordance with TAN 15.

Due to the nature of the development, the proposals do not aggravate or increase the risk of flooding to the existing site or to surrounding properties.

The Client has been advised of the very limited potential for flooding in this area and is aware of the residual risk.

In summary, based upon the published guidelines and relevant provisions of the technical advice note, the proposed development meets the acceptability criteria.

APPENDICIES

APPENDIX B

NRW Development Advice Maps & Flood Level Information



