

Mayfield Park

Flood Warning and Evacuation Plan

MAY101-WSB-EXT-BUR-DC-7000-0002

0046688

4 March 2022

Revision 01

Revision	Description	Issued by	Date	Checked
00	Issue for planning	JF	10.12.2021	DKP
01	Update for planning	JF	04.03.2022	DKP

[https://burohappold.sharepoint.com/sites/046688/05_Discipline Specific/34_Water/03 Reports/211111_Park Flood Warning and Evacuation Plan/Rev 01/220304 JF 0046688 Mayfield Park Flood Warning and Evacuation Plan 01.docx](https://burohappold.sharepoint.com/sites/046688/05_Discipline%20Specific/34_Water/03_Reports/211111_Park%20Flood%20Warning%20and%20Evacuation%20Plan/Rev%2001/220304%20JF%200046688%20Mayfield%20Park%20Flood%20Warning%20and%20Evacuation%20Plan%2001.docx)

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author **Jack Foster**

date **4th March 2022**

approved **David Palmer**

signature 

date **4th march 2022**

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Abbreviations

Term	Definition
CC	Climate change
EA	Environment Agency
FFL	Finished floor level
FRA	Flood Risk Assessment
FWEP	Flood Warning and Evacuation Plan
NPPF	National Planning Policy Framework

1 Introduction

This Flood Warning and Evacuation Plan (FWEP) has been prepared by Buro Happold to provide details of the flood emergency response actions for the Mayfield Park development, hereafter referred to as the 'development'.

This FWEP has been informed by the following flood risk management reports associated with the Mayfield Park development, also prepared by Buro Happold:

- Mayfield Site Wide and Phase 1 Flood Risk Assessment (Rev. 00, dated 13/09/2019);
- Hydraulic Modelling – Mayfield Park Enabling Works (Rev. 01, dated 05/02/2021);
- Hydraulic Modelling – Mayfield Park Full Build Out (Rev. 02, dated 20/04/2021); and
- Flood Risk Assessment Statement of Conformity (Rev. 00, dated 07/10/2021).

This FWEP has been prepared in accordance with the guidance provided in the Manchester City, Salford City and Trafford Councils Hybrid Strategic Flood Risk Assessment (SFRA), and is intended to be a 'live' document, to be updated as required when new information becomes available or a change in circumstances that may affect it occurs.

1.1 Site Location

The development is centred on grid reference SJ851976 (Figure 1-1), to the south of Manchester Piccadilly station, bounded by the Mayfield depot to the north, Mancunian Way to the south, Hoyle Street to the east and Baring Street to the west



Figure 1-1: Site location plan

1.2 Development Description

Mayfield Park is a 2.4ha public park that includes hard and soft landscaping and new bridges across the River Medlock. The works include the removal of a culvert and the reduction or removal of the vertical river walls to open up the channel and create natural river edges.

Integrated flood storage has been provided within the park by reprofiling the river corridor and floodplain to allow some parts of the park to flood during higher order flood events. This has been verified through detailed hydraulic modelling that demonstrates that the development does not increase flood risk elsewhere.

All of the proposed uses within the public park are considered to be classified as *Less Vulnerable* in accordance with the National Planning Policy Framework (NPPF).



Figure 1-2: Landscape General Arrangement drawing (Source: Gillespies drawing MAY101-WSL-EXT-GIL-DR-7060-0100, Rev. B02)

1.3 Planning Context

The original Flood Risk Assessment (FRA) for the Mayfield Park development was prepared in September 2019 and submitted as part of the planning application under application ref. 124972/FO/2019. The planning application was approved, with a number of conditions regarding flood risk management.

Detailed hydraulic modelling was carried out between November 2020 and February 2021, as part of the work to discharge Condition 22 of planning application ref. 124972/FO/2019. The hydraulic modelling covers the construction phase, referred to as the Enabling Works model, as well as the complete development, referred to as the Full Build Out model. The modelling was approved by the EA in March 2021 and Condition 22 was discharged in May 2021.

The purpose of this FWEP is to support the discharge of Condition 19 of planning application ref. 124972/FO/2019, which is worded as follows:

Before any development hereby approved is first occupied confirmation that a flood evacuation plan (including provision for pedestrian and vehicular access in the event of flood) is in place and has been agreed with the relevant authorities and that the development is signed up to EA's Flood warnings direct alert system shall be submitted to and approved in writing by the City Council as Local Planning Authority.

1.4 Scope and Objectives

The purpose of this FWEP is to summarise the risk of flooding to the development, provide details of how flood warnings will be issued, and outline the actions that users will take before and during a flood event to ensure their safety, including identification of access escape routes to safe refuge areas. These details are provided within the following key sections of this report:

- Section 2 – Summarises the risk of flooding to the development
- Section 3 – Provides detail of flood warnings and the associated actions for users of the development
- Section 4 – Provides detail on the evacuation procedure and location of safe refuges
- Section 6 – Contains a record of updates to this report
- Section 6 – Summarises actions to be taken in the event of a Flood Warning

It should be noted that this FWEP report covers the public park parts of the Mayfield Park development only, as shown in Figure 1-2, since the maximum flood extent is contained fully within the park.

All buildings covered by the 124972/FO/2019 application, including the proposals within Plots M, N and O, are outside the maximum flood extent for the 100 year plus climate change event. There is therefore no need to provide flood warnings or identify escape routes for these buildings.

2 Summary of Flood Risk

2.1 Background

This section summarises the key conclusions from the site-specific Flood Risk Assessment and detailed hydraulic modelling for the Mayfield Park development.

2.2 Fluvial Flooding

Fluvial flooding occurs when sustained or intense rainfall events increase the flow in rivers causing the water level to rise above the level of the bank and into the surrounding areas.

The design flood event for the Mayfield Park development is the 1 in 100 year event plus a 35% increase in river flow to allow for the predicted effects of climate change (100 year + 35% CC). The maximum modelled flood extent for the 100 year + 35% CC event is given in Figure 1-2, which shows that the majority of the park would be inundated.

Under the NPPF, an area with a probability of fluvial flooding of greater than 1 in 100 is classified as Flood Zone 3, which is defined by the EA as having a *high* probability of flooding.

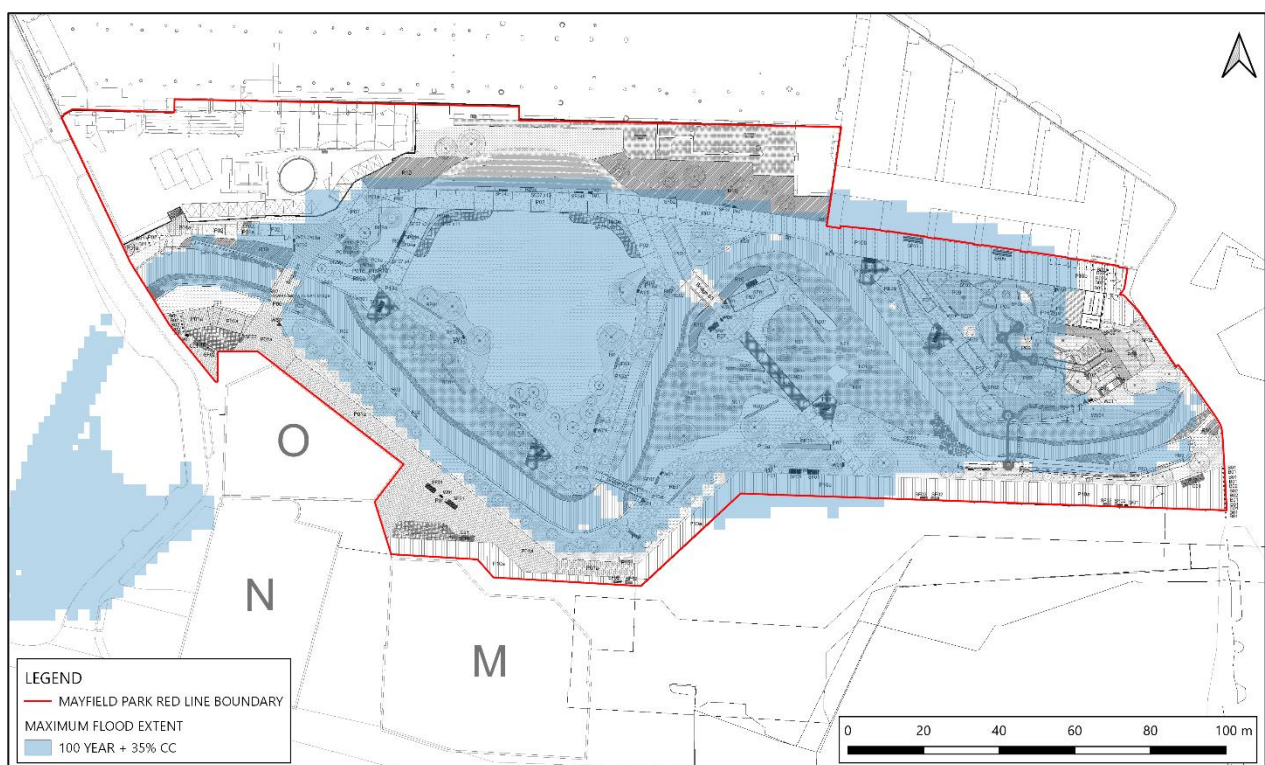


Figure 2-1: Maximum flood extent for 100 year + 35% CC event (Source: Buro Happold hydraulic modelling)

The maximum modelled flood depth for the 100 year + 35% CC event is given in Figure 2-2, which shows the flood depths vary across the publicly accessible parts of the park. The Mayfield Lawn and Wildscape areas are shown to have particularly deep flood water, as these are the areas that provide the majority of the flood storage within the site.

The hazard to users of the park is a function of flood depth and flow velocity, and is defined by the following equation as set out in the Defra and Environment Agency Technical Report FD2321¹:

$$HR = d (v + 0.5) + DF$$

Where: HR = (flood) hazard rating

d = depth of flooding (m)

v = velocity of floodwater (m/s)

DF = debris factor (0, 0.5, 1 depending on probability that debris will lead to significantly greater hazard)

Given the development is in an urban area with flood depths greater than 0.25m, the debris factor has been taken as 1, in accordance with the guidance provided in Table 3.1 of report FD2321.

The hazard classification is defined according to Table 2-1:

Table 2-1: Flood hazard rating and classification

Hazard Rating	Definition
<0.75	Very Low Hazard
0.75-1.25	Danger for Some
1.25-2.50	Danger for Most
>2.50	Danger for All

The flood hazard rating for the 100 year + 35% CC event is given in Figure 2-3, which shows that the majority of the park is defined as having a flood hazard classified as "Danger for All".

Mitigation is therefore required in order to keep users of the park safe in the event of a flood. Further details are provided in Section 3.

2.3 Other Sources of Flooding

The 2019 FRA concludes that flood risk from all other sources, including groundwater, surface water, reservoirs and canals, is considered to be low. The risk of flooding from these sources is therefore not considered further in this FWEP.

¹ Defra and Environment Agency (2006) *The Flood Risks to People Methodology, Flood Risks to People Phase 2, FD2321 TR1*.

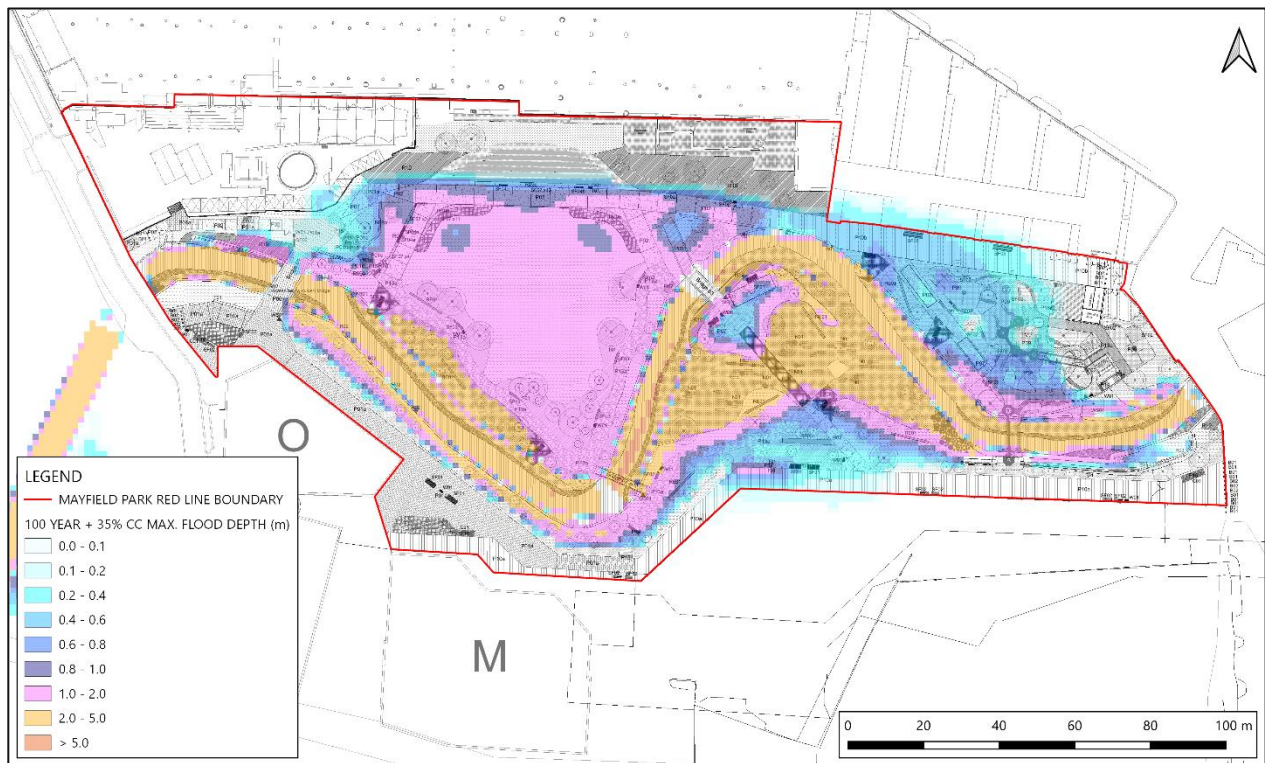


Figure 2-2: Maximum flood depth for 100 year + 35% CC event (Source: Buro Happold hydraulic modelling)

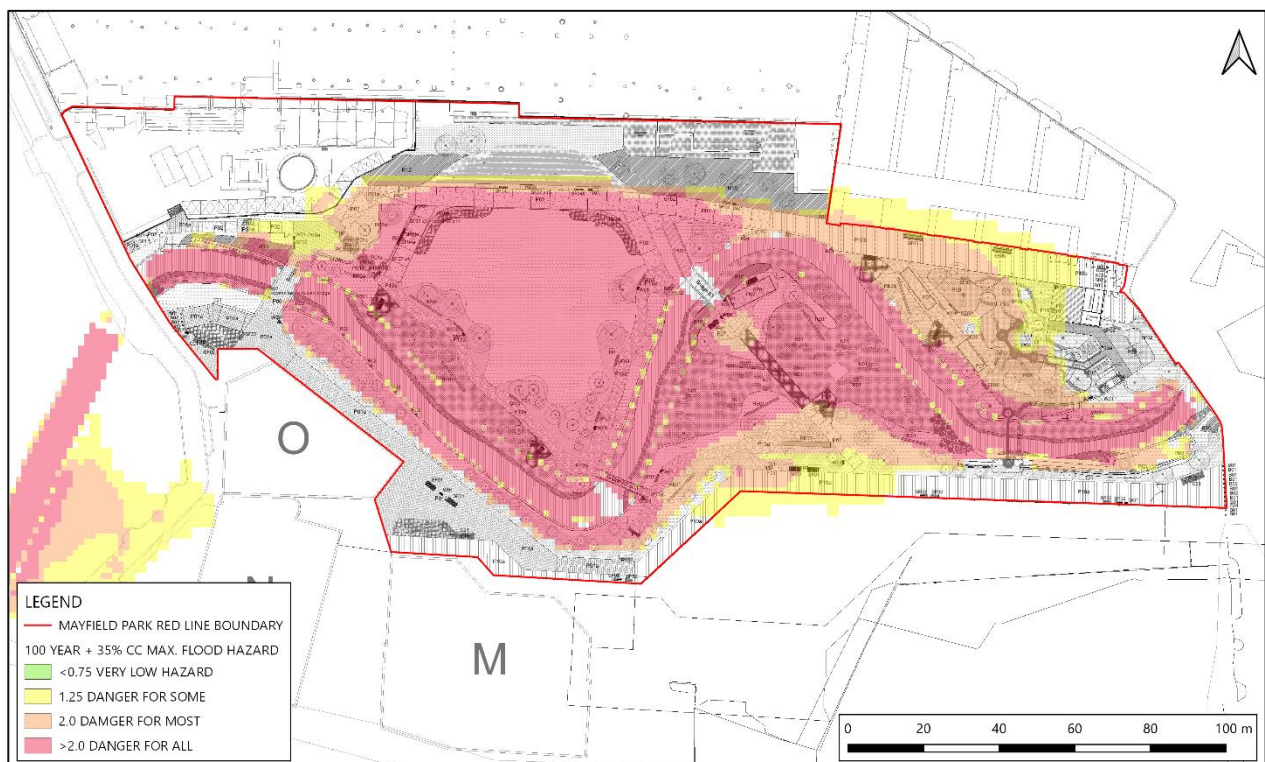


Figure 2-3: Maximum flood hazard for 100 year + 35% CC event (Source: Buro Happold hydraulic modelling)

2.4 Mitigation

The following measures were recommended in the 2019 FRA as mitigation for the risk of flooding from the River Medlock:

- Set finished floor level (FFL) of residential units at least 600mm above the 100 year + 35% climate change water level, or the 100 year + 70% CC water level (with no freeboard), whichever is higher;
- Avoid basements throughout the development; and
- Put in place a Flood Warning and Evacuation Plan prior to the opening of Mayfield Park to the public, including details of safe egress routes and measures to Prevent public access to Mayfield Park during design flood event.

3 Flood Warnings and Associated Actions

The Environment Agency (EA) operate a flood warning service covering all areas at risk of flooding from tidal and fluvial sources. More information is available from www.environment-agency.gov.uk.

Flood Warnings Direct is a free service that provides flood warnings by phone, text or email. It is recommended that the facilities management organisation for the operational development signs up to receive flood warnings from Flood Warnings Direct.

It is further recommended that a designated Flood Marshall is appointed within the facilities management organisation, with responsibility for receiving flood warnings from the EA and passing these and the associated actions on to the staff and users of the development.

In addition to Flood Warnings Direct, the EA operates a 24-hour Floodline service, which anyone can call at any time to get up to date information on the level of flood risk.

Floodline: 0345 988 1188

The development is located in the 'River Medlock at Manchester City Centre' flood warning area.

Quick-dial code: 143068

To use the quick-dial code, call Floodline (0345 988 1188), press 1, then when requested enter 143068.



Figure 3-1: EA flood warning area

Table 3-1 provides a summary of the different levels of flood warning that may be issued by the EA, and the recommended actions for users of the development.

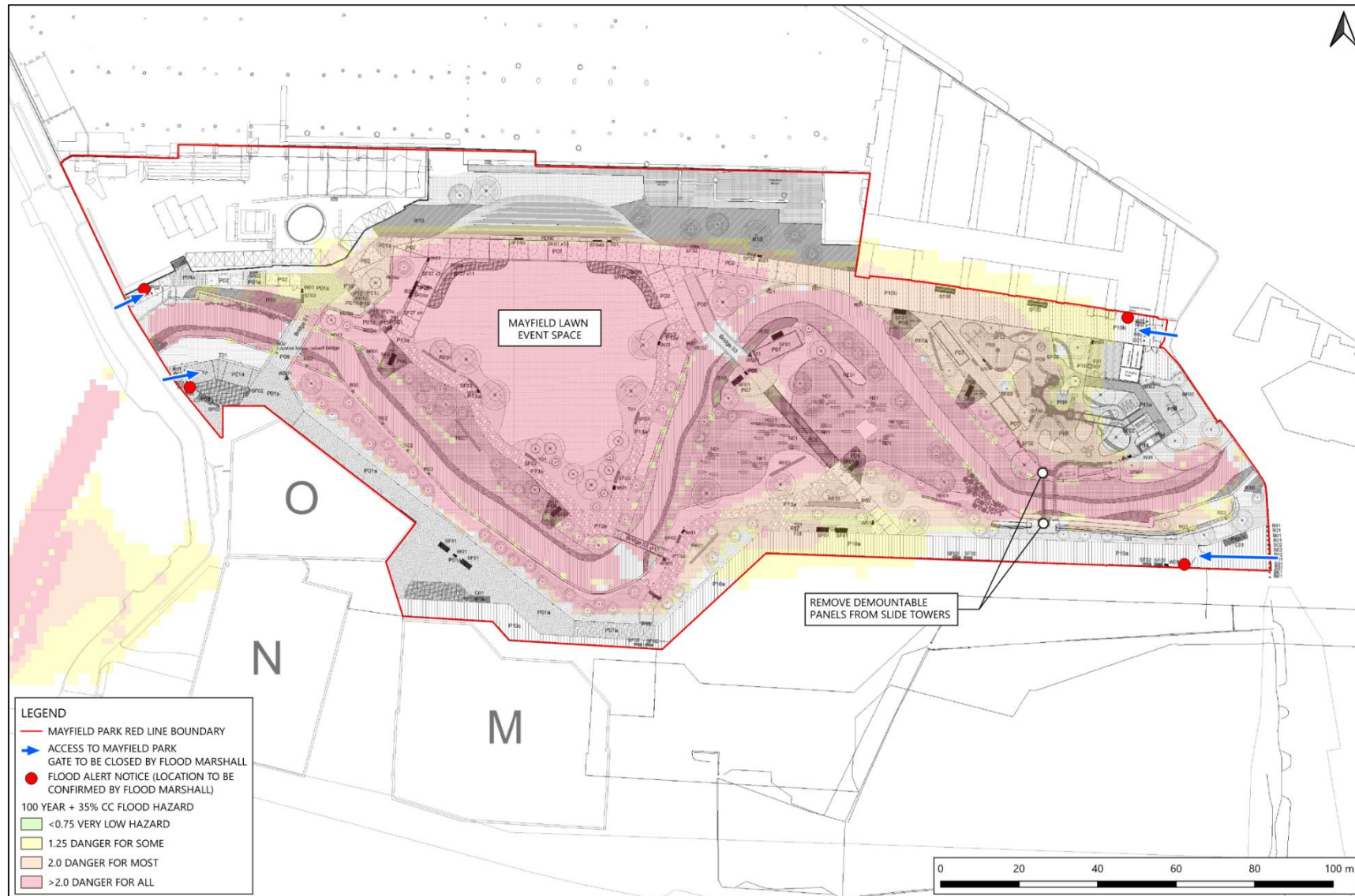
Table 3-1: Flood warnings and associated actions

Flood Warning Level	Meaning	Triggers	Response Actions	
			Flood Marshall ¹	Park Users ²
 Flood Alert	What it means Flooding is possible. Be prepared. When it's used Two hours to two days in advance of flooding.	- Forecasts that indicate that flooding from rivers may be possible. - Forecast intense rainfall for rivers that respond very rapidly. - Forecasts of high tides, surges or strong winds.	- Issue Flood Alert notice³ to park users and staff - Speak to your local EA Flood Warning Duty Officer for the latest forecast information - Advise the public to call Floodline on 0845 988 1188 for up-to-date flood information - Consider making provision to cancel or postponing events planned for duration of Flood Alert period - Report any flooding to local EA office	- Be prepared to receive further instructions from Flood Marshall - Monitor local news and local water levels on the EA website: www.environment-agency.gov.uk - Call Floodline on 0845 988 1188 for up-to-date flood information, or follow @EnvAgency and #floodaware on Twitter
 Flood Warning	What it means Flooding is expected. Immediate action required. When it's used Half an hour to one day in advance of flooding.	- High tides, surges coupled with strong winds. - Heavy rainfall forecast to cause flash flooding of rivers. - Forecast flooding from rivers.	- Issue Flood Warning to park users and staff via in-house warning system - Close public access to park (refer to Figure 3-2) - Cancel any events planned for predicted duration of Flood Warning - Remove demountable panels from slide towers - Remove any loose items from park - Install any local flood protection measures - Report any flooding to local EA office	- Follow instructions from Flood Marshall to evacuate park via safe egress routes (Figure 4-1) - Be prepared to receive further instructions from Flood Marshall - Call Floodline on 0845 988 1188 for up-to-date flood information, or follow @EnvAgency and #floodaware on Twitter
 Severe Flood Warning	What it means Severe flooding. Danger to life. When it's used When flooding poses a risk to life or significant disruption to communities.	- Actual flooding where the conditions pose a significant risk to life and/or widespread disruption to communities. - On-site observations from flooded locations. - A breach in defences or failure of a barrier that is likely to cause significant risk to life.	- Issue Severe Flood Warning to park users and staff via in-house warning system - Close public access to park (refer to Figure 3-2) - Cancel any events planned for predicted duration of Severe Flood Warning - Remove demountable panels from slide towers - Remove any loose items from park - Co-operate with the emergency services - Activate flood alarm if flooding is observed	- Follow instructions from Flood Marshall to evacuate park via safe egress routes (Figure 4-1) - Co-operate with the emergency services - Call 999 if you are in immediate danger or if flooding is occurring without warning
 Warning no longer in force	What it means No further flooding is currently expected. When it's used When a flood warning or severe flood warning is no longer in force.	- Risk of flooding has passed. - River or sea levels have dropped back below severe flood warning or flood warning levels. - No further flooding is expected. - Professional judgment and discussions with partners agree that a severe flood warning status is no longer needed.	- If evacuation has occurred and park has been closed, check that it is safe to reopen park with the Local Authority, and by carrying out review of site conditions - Control access to park for users and staff until it is safe to return	- If evacuation has occurred, check with the Flood Marshall that it is safe to return to the park - Be careful as flood water may still be around for a few days and could be contaminated

Notes ¹ A designated Flood Marshall should be appointed within the facilities management company for Mayfield Park

² Staff or members of the public using Mayfield Park

³ Flood Alert Notice template provided in Appendix A



4 Evacuation Procedure and Safe Refuge

4.1 Overview

This section provides guidance on the access routes to be used in the event of a flood, to reach areas that are outside the maximum flood extent.

This Flood Warning and Evacuation Plan will be overridden by any advice given by competent authorised staff including the Emergency Services or Local Authority responders on the ground in the event of a serious flood event.

4.2 Safe Access and Egress

If a Flood Warning or Severe Flood Warning is given by the EA, the Flood Marshall, the Emergency Services or a representative from the Local Authority, safe egress routes to areas outside the maximum flood extent are available, as shown in Figure 4-1.

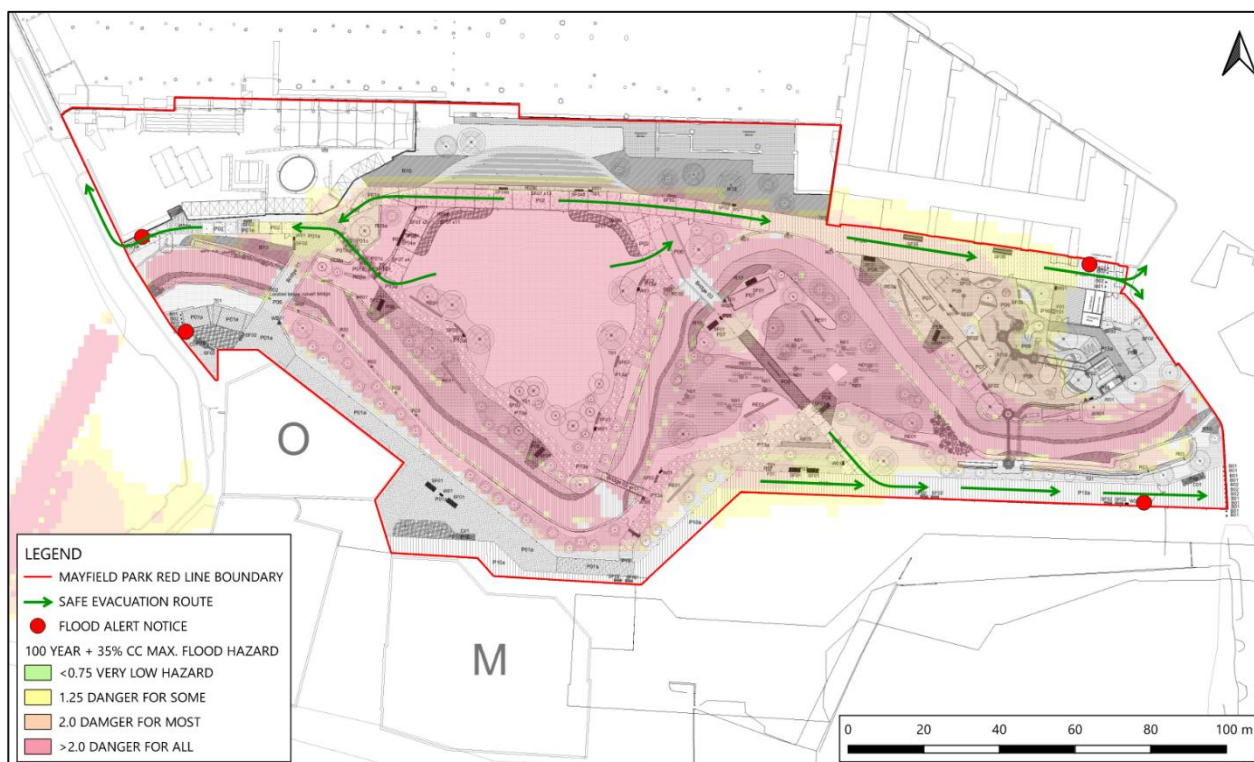


Figure 4-1: Safe escape routes from Mayfield Park to areas outside maximum flood extent

5 Maintenance Access

Vehicular and pedestrian access to the river banks is provided throughout the park, for maintenance purposes only, as shown in Figure 5-1. The full river maintenance access drawing (MAY101-WSB-EXT-BUR-SK-7060-0001) is included in Appendix B.

Where balustrades prevent direct pedestrian access to the river banks, gates are provided within the balustrading, as shown in drawing MAY101-WSL-EXT-LYR-DR-7060-800 included in Appendix B. The Mayfield Estates Team will be present on site at all times and will provide access via the balustrade gates to any emergency response teams who may need it in order to carry out emergency maintenance activities.

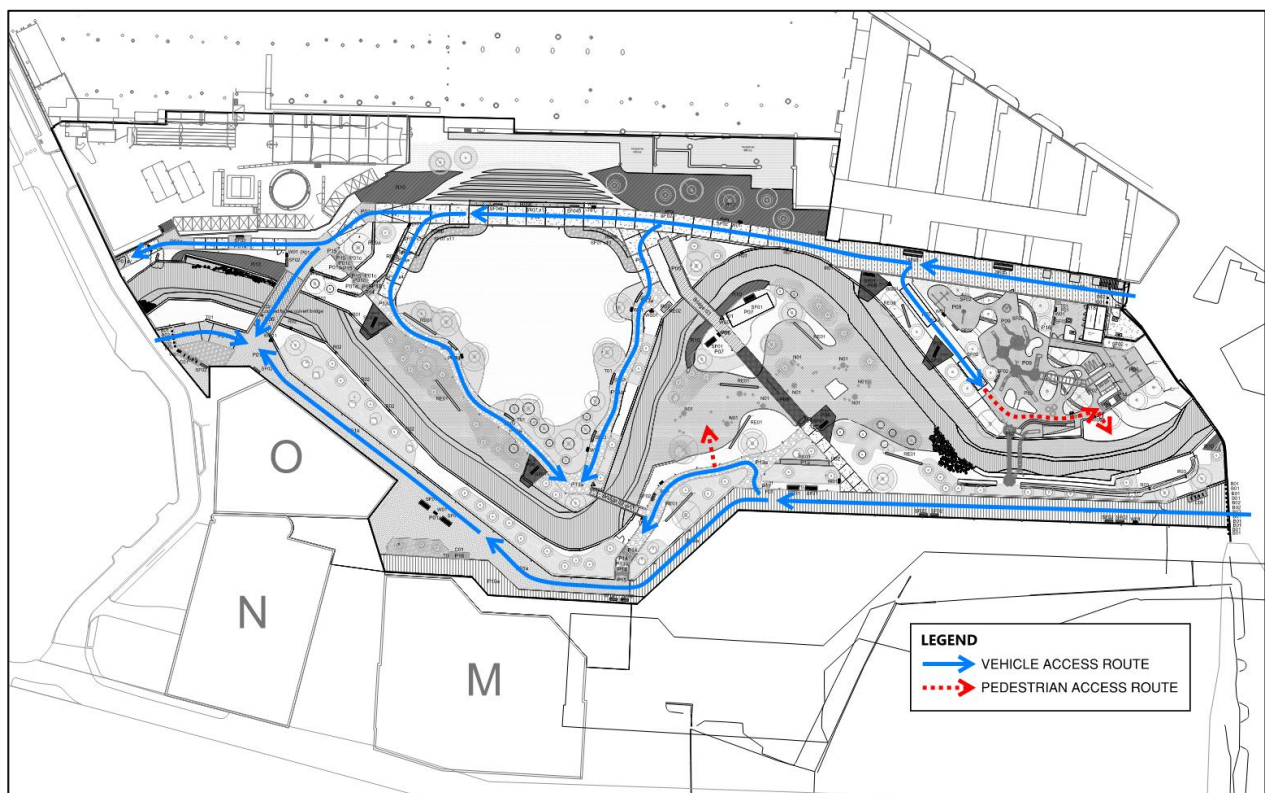


Figure 5-1: River maintenance access routes (Source: Adapted from MAY101-WSB-EXT-BUR-SK-7060-0001 Rev. S1.3)

6 Document Control

It is important that the Flood Warning and Evacuation Plan is kept up-to-date and accurate.

It is the responsibility of the representative of the facilities management company for Mayfield Park, given in Table 6-1, to maintain and update this report according to the following:

- At least every three years;
- When new information becomes available; or
- When a change in circumstances occurs that may affect the content of this report.

Table 6-1: Flood Warning and Evacuation Plan owner

Name	Position and Company	Telephone Number	Email Address

When this report is updated, Table 6-2 should be completed to record the changes made.

Table 6-2: Flood Warning and Evacuation Plan document control

Revision No.	Date	Prepared By	Checked By	Reasons for Revision
00	10/12/2021	JF	DKP	Issue to MCC for planning approval
01	04/03/2022	JF	DKP	Addition of Section 5 to include access for maintenance activities

7 Summary

This Flood Warning and Evacuation Plan identifies a number of emergency response actions that are recommended to be taken by Mayfield Park staff and members of the public before, during and after a flood event.

It is recommended that the facilities management organisation for the operational development signs up to receive flood warnings from the EA Flood Warnings Direct service. A designated Flood Marshall shall be appointed, with responsibility for receiving flood warnings and passing these on to the staff and users of Mayfield Park.

The actions to be taken in the event of a Flood Warning are summarised as follows:

Flood Marshall

- Issue Flood Warning to park users and staff via in-house warning system
- Close public access to park (refer to Figure 3-2)
- Cancel any events planned for predicted duration of Flood Warning
- Remove demountable panels from slide towers
- Remove any loose items from park
- Install any local flood protection measures
- Activate flood alarm if flooding is observed
- Report any flooding to local Environment Agency office
- Facilitate access to the river for emergency response teams to carry out emergency maintenance, if required

Park Users

- Follow instructions from Flood Marshall to evacuate park via safe egress routes (Figure 4-1)
- Co-operate with the emergency services
- Call 999 if you are in immediate danger or if flooding is occurring without warning

Full details of the flood warnings and associated actions are given in Table 3-1 of this report.

Appendix A Flood Alert Notice Template

Flood Alert Notice

This park is located in an area at risk of flooding.

Flooding may occur when river levels rise during or following periods of heavy rainfall.

The current flood warning status issued by the Environment Agency is:

* * * * *INSERT THE APPROPRIATE CODE HERE* * * * *

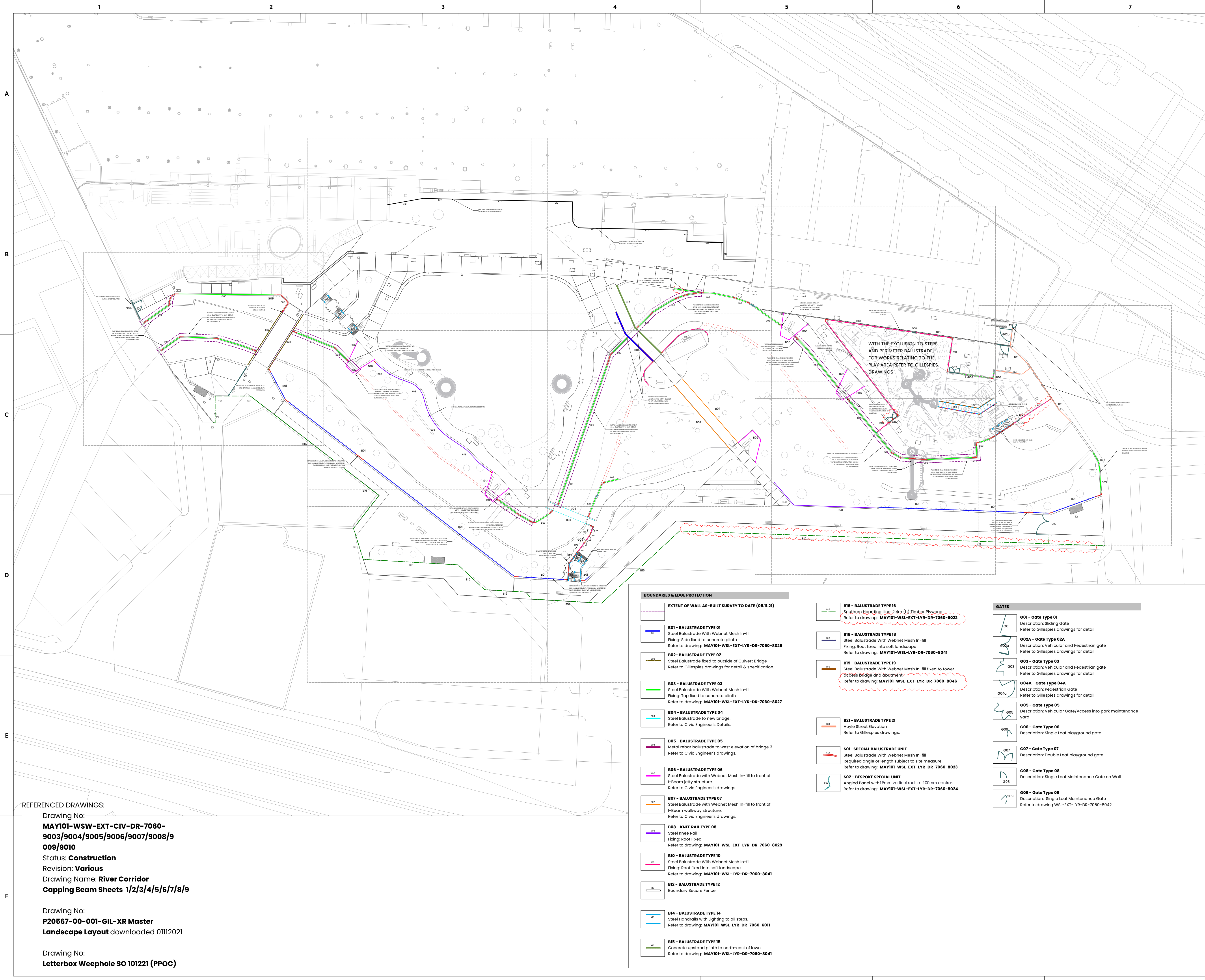
Up-to-date flood warning information and advice can be obtained from:

Floodline on **0845 988 1188** (24 hours a day)

Or alternatively visit the Environment Agency's website:

www.environment-agency.gov.uk/floodline

Appendix B Maintenance Access Drawings



NOTES:

- DO NOT SCALE FROM THIS DRAWING. ALWAYS WORK TO NOTED DIMENSIONS.
- ALL SETTING OUT, LEVELS AND DIMENSIONS TO BE CHECKED ON SITE PRIOR TO THE INSTALLATION OF MATERIALS AND ANY DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE CONTRACT ADMINISTRATOR IMMEDIATELY.
- THIS DRAWING MUST BE READ WITH THE RELEVANT SPECIFICATION DOCUMENTS AND DETAIL DRAWINGS. ANY DISCREPANCIES MUST BE BROUGHT TO THE ATTENTION OF THE CONTRACT ADMINISTRATOR IMMEDIATELY.
- THIS DRAWING IS COPYRIGHT PROTECTED AND MAY NOT BE REPRODUCED IN WHOLE OR PART WITHOUT WRITTEN AUTHORITY.
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.

THIS DRAWING WAS PLOTTED ON:
15/02/2022

REVISION HISTORY				
DATE	REV	ZONE	DESCRIPTION	CHK
22/12/2021	S4.1		ISSUED FOR APPROVAL	MW
20/01/2022	B1		ISSUED FOR APPROVAL	MW
15/02/2022	B2		ISSUED FOR APPROVAL	HF

NOTE:

1. BALUSTRADE LAYOUT OUTSIDE OF 'WALL AS-BUILT SURVEY' AREA IS DRAWN FROM CIVIC WALL SETTING OUT DRAWINGS AND CURRENT GILLESPIES GA (P20567-00-001-GIL-XR Master)

2. ALL DIMENSIONS ARE SUBJECT TO FABRICATOR'S DETAILS AND DETAILED SITE SURVEY

3. ALL JUNCTIONS / INTERFACES WITH OTHER ELEMENTS MUST BE MEASURED ON SITE - PRIOR TO FABRICATION.

4. REFER TO MAY101-WSL-EXT-LYR-DR-7060-8047 FOR BALUSTRADE INTERFACES

This drawing supersedes previous iteration by Gillespies:

Drawing Number:
MAY101-WSL-EXT-GIL-DR-7060-0107

Status: **B**

Revision: **B03**

Drawing Name: **Boundaries and Edge Protection GA**

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Project
**Mayfield Park
Manchester**

Drawing Title
Balustrading General Arrangement - Site Wide

Created By HF	Checked By MW	Scale 1:500	Sheet Size A1
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