

Key

-  County Boundaries
-  EA Historic Flood Map
-  June 2007
-  Goole 2011
-  Burton Fleming 2012
-  Cottingham 2014
-  Pocklington 2012
-  Tidal Surge 2013
-  Hurricane Bertha 2014
-  Market Weighton and South Cave 2014
-  Storm Eva 2015
-  Winter Surge Overtopping

Available online:
www.eastriding.gov.uk

Project:
 East Riding of Yorkshire Council
 Strategic Flood Risk Assessment
 Level 1

Map:
 Appendix H: Historic Flooding

Scale @ A3: 1:250,000
 Date: 12/11/2019 Drawn: CCole



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Appendix K

AMA FLOOD EMERGENCY AND EVACUATION PLAN



DELTA ENTERPRISE PARK

FLOOD EVACUATION & EMERGENCY PLAN

JANUARY 2024

DELTA ENTERPRISE PARK

FLOOD EVACUATION & EMERGENCY PLAN

Dewar Planning Associates

Flood Evacuation and Emergency Plan

CONFIDENTIAL

Project no: 22565-FEP-001

Date: January 2024

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1 INTRODUCTION

1.1.1 This Flood Evacuation and Emergency Plan (FEP) has been provided at the request of Dewar Planning Associates, hereafter referred to as “the client”, to provide an emergency and evacuation plan in the event of a flood associated with the proposed development of Delta Enterprise Park, Goole, hereafter referred to as “the site”.

1.1.2 The purpose of this FEP is to:

- ▶ Identify the possible hazards posed from all major sources of flooding (fluvial, surface water, groundwater, infrastructural and coastal sources);
- ▶ Provide a qualitative assessment of the probability of each potential flood hazard representing a constraint on the proposed development, based on the proposed land use type for the development and likelihood of flood occurrence;
- ▶ Recommend appropriate and necessary emergency measures and additional assessments that may be required to progress the sustainable development of the site.

1.1.3 The FEP comprises the following:

- ▶ A desktop review of publicly available information, including information from the Environment Agency (EA) and East Riding of Yorkshire Council (ERYC) who are the Lead Local Flood Authority (LLFA) for the proposed development area; and
- ▶ An assessment and outline design of hydraulic controls and drainage requirements and drainage elements required to support the development of the site.

1.1.4 This report further details the methodologies employed within this study and provides recommendations as to any further work or investigations required to support the development of the site through the planning application process.

1.2 REGULATORY POLICY AND LEGISLATION

1.2.1 This assessment has been carried out in line with the current Government legislation, the National Planning Policy Framework (NPPF) 2023.

1.2.2 It has been assessed with reference to the following documents and legislative guidelines:

- ▶ CIRIA 753 The SUDS Manual V6 (2016);
- ▶ DEFRA “Flood Risk Assessment Guidance for New Developments” (2006);
- ▶ DEFRA “Surface Water Management Plan Technical Guidance” (2010);
- ▶ BS 8533 2011 Assessing & Managing Flood Risk in Development Code of Practice (2011);
- ▶ BS 8582:2013 Code of practice for surface water management for development Sites (2013);
- ▶ National Planning Practice Guidance (2012 – updated 2016);
- ▶ C624 Development and Flood Risk – Guidance for the Construction Industry’ (2004);
- ▶ Design and Construction Guidance for Sewage Sector (DCGSS) (2020);
- ▶ Planning Policy Guidance – Flood Risk and Climate Change (2014 and as amended).

1.2.3 In addition to the above, this report has also been informed by the following documents:

- ▶ East Riding Local Plan 2012 – 2029 Strategy Document
- ▶ East Riding of Yorkshire Council Strategic Flood Risk Assessment: Level 1 (2019)
- ▶ East Riding of Yorkshire Council Strategic Flood Risk Assessment: Level 2: Goole (2020)

1.3 SCOPE OF FLOOD RISK ASSESSMENT

- 1.3.1 The objective of this analysis and report is to provide an FRA in accordance with local and national guidance.
- 1.3.2 The detail and complexity of the FRA will reflect the level of risk to the site and consider the appropriateness of the proposed development type. This will also include assessment of potential risk to property and livelihoods, consideration of climate change, and the definition of appropriate flood risk mitigations required to satisfy the planning process.
- 1.3.3 Based on the assessment of requirements for a site-specific FRA as defined within NPPF 2023 technical guidance, the site is indicated as being located within Flood Zone 3, therefore it is necessary to provide a site-specific FRA. Flood Zone 3 refers to an area assessed as having a 1 in 100 or greater annual probability (>1%) of river flooding, or a 1 in 200 or greater annual probability (>0.5%) of sea flooding in any one year.
- 1.3.4 Similarly, as the site is indicatively located in an area that may be subject to other assessable sources of flooding, such as pluvial (surface water) flooding, it is necessary to undertake a further site-specific assessment to verify the proposals for development.
- 1.3.5 Policy ENV6 of the East Riding Local Plan states that all future development must ensure that:
- ▶ B. The risk of flooding to development will be managed by applying a Sequential Test to ensure that development is steered towards areas of lowest risk, as far as possible. The Sequential Test will, in the first instance, be undertaken on the basis of the East Riding of Yorkshire *Strategic Flood Risk Assessment (SFRA)* and the Environment Agency's *Flood Map*, within appropriate search areas. Where development cannot be steered away from Flood Zone 3, the sub-delineation of Zone 4a, detailed within the relevant *SFRA*, will be used to apply the Sequential Test, with preference given to reasonably available sites that are in the lower risk/hazard zones. Where necessary, development must also satisfy the Exception Test.
 - ▶ C. If, following application of the Sequential Test, it has not been possible to successfully steer development to Flood Zone 1 or a sequentially preferable site, a Sequential Approach will be taken to site layout and design, aiming to steer the most vulnerable uses towards the lowest risk parts of the site and upper floors.
 - ▶ D. Flood risk will be proactively managed by:
 - 1. Ensuring that new developments:
 - i. limit surface water run-off to existing run-off rates on greenfield sites, and on previously developed land reduce existing run-off rates by a minimum of 30%, or to greenfield run-off rate;
 - ii. do not increase flood risk within or beyond the site;
 - iii. incorporate Sustainable Drainage Systems (SuDS) into major development proposals and proposals at risk of flooding, unless demonstrated to be inappropriate;
 - iv. do not culvert or otherwise build over watercourses, unless supported by the Risk Management Authority;

- v. have a safe access/egress route from/to Flood Zone 1 or establish that it will be safe to seek refuge at a place of safety within a development;
 - vi. Incorporate high levels of flood resistant and resilient design if located in a flood risk area;
 - vii. are adequately set-back from all watercourses including culverted stretches; and
 - viii. adhere to other relevant *SFRA* recommendations.
- 2. Supporting proposals for sustainable flood risk management, including the creation of new and/or improved flood defences, water storage areas and other schemes, provided they would not cause unacceptable adverse environmental, social, or economic impacts.
 - 3. Supporting the removal of existing culverting and returning these sections to open watercourse.
 - 4. Designating areas of Flood Zone 3b (Functional Floodplain) and safeguarding land for current and future flood risk management, on the *Policies Map*.

1.3.6 Potential flood risk at the site has been assessed against the site layout plan, which has been provided as Appendix A to this report. Significant changes to the site's developable area may necessitate a further review of this document to ensure that risk of flooding is not exacerbated and has been satisfactorily addressed within the development proposal.

2 METHODOLOGY

2.1 INTRODUCTION

- 2.1.1 This report aims to demonstrate that the proposed development is sustainable and provide an emergency evacuation plan in the event of the site flooding. This assessment will account for the effects of the worst-case flooding scenario, as well as identifying further opportunities to reduce the consequences of flooding within the site locality.
- 2.1.2 This report aims to identify constraints and opportunities for the site based on the development proposals provided by the client (Appendix A) and provide recommendations for the evacuation and emergency plan upon flooding of the site.
- 2.1.3 The assessment methodology is as follows:
- ▶ Desktop review of the topography, hydrology, and other pertinent environmental characteristics of the site, and how these affect flood risk of the proposed development and site drainage.
 - ▶ Obtain and review existing baseline flood risk and drainage guidance information from relevant environmental authorities (EA, LLFA, etc.) as to site specific flood risk from all applicable sources.
 - ▶ Review the findings from the above and advise on the actions to be taken regarding evacuation and refuge following the receipt of a flood alert from the EA.

3 PROJECT BACKGROUND

3.1 DEVELOPMENT DESCRIPTION AND LOCATION

- 3.1.1 Andrew Moseley Associates (AMA) was appointed by Dewar Planning Associates to provide a Flood Risk Assessment and Drainage Strategy in support of a storage container development, located at Delta Enterprise Park, Goole, Rawcliffe Road, Airmyn, East Riding of Yorkshire, DN14 8JU at NGR: SE 71243 24107.
- 3.1.2 The proposed development is located in the area of Airmyn approximately 2 miles to the west of Goole. Proposals for the site are for commercial use, consisting of 92 self-storage shipping containers (B8) with associated hardstanding and infrastructure. A site layout plan can be found in Appendix A.
- 3.1.3 The Local Planning Authority for this development is East Riding of Yorkshire Council, who are also the Lead Local Flood Authority for the area.
- 3.1.4 This report has been prepared in accordance with the National Planning Policy Framework (NPPF) and the accompanying technical guidance to assess all forms of flooding including the management of surface water on-site.
- 3.1.5 The site is referenced in Table 3-1 and Figure 1 below.

Table 3-1. Site Context

Site Name	Holt Business Park
Location	East Riding
NGR (approx.)	SE 71243 24107
Application Site Area (ha)	0.4
General Locality	The site is location on undeveloped greenfield land and borders an agricultural development to the north, an unnamed road to the east, undeveloped land to the south, and a commercial yard to the west. Pedestrian and vehicular access to the site is provided via the unnamed road to the east of the site, which connects to the A614 to the south of the site.
Development Type	Commercial
EA Flood Zone	Flood Zone 1
EA Office	Yorkshire
Local Planning Authority	East Riding of Yorkshire Council

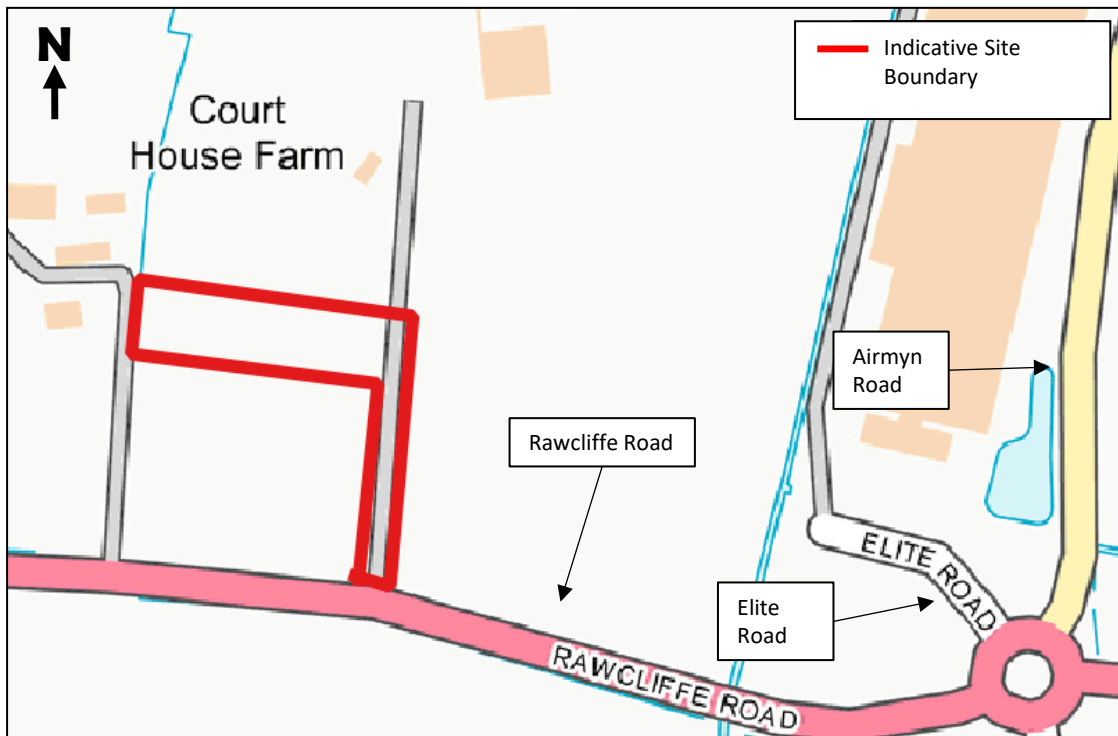


Figure 1. Site Location

3.2 CURRENT SITE CONDITIONS

Ground Cover and Topography

- 3.2.1 A topographic survey provided by Dewar Planning Associates and undertaken by MT Surveys (Ref: 1485-105_2D (A0)) shows ground levels at the site are shown to be in the region of 1.82 to 2.90m Above Ordnance Datum (m AOD). The topographic survey can be found in Appendix B.
- 3.2.2 Further review of topographical data shows site levels to be lowest towards the south centre of the site while the access has the greatest elevations. A general fall in gradient from south to north is observed across the site. As indicated by aerial imagery, the site consists of grass land consisting of light vegetation.

3.3 HYDROLOGY

- 3.3.1 The site is situated in between the Township Drain. At its closest point the site borders an arm of the Township Drain. The watercourse is located in the Goole & Airmyn IDB and therefore falls under their jurisdiction.
- 3.3.2 The EA's Catchment Data Explorer website¹ indicates that the site resides within the Aire Lower Operational Catchment.

¹ Available at: <https://environment.data.gov.uk/catchment-planning/> , accessed on 10/01/2024

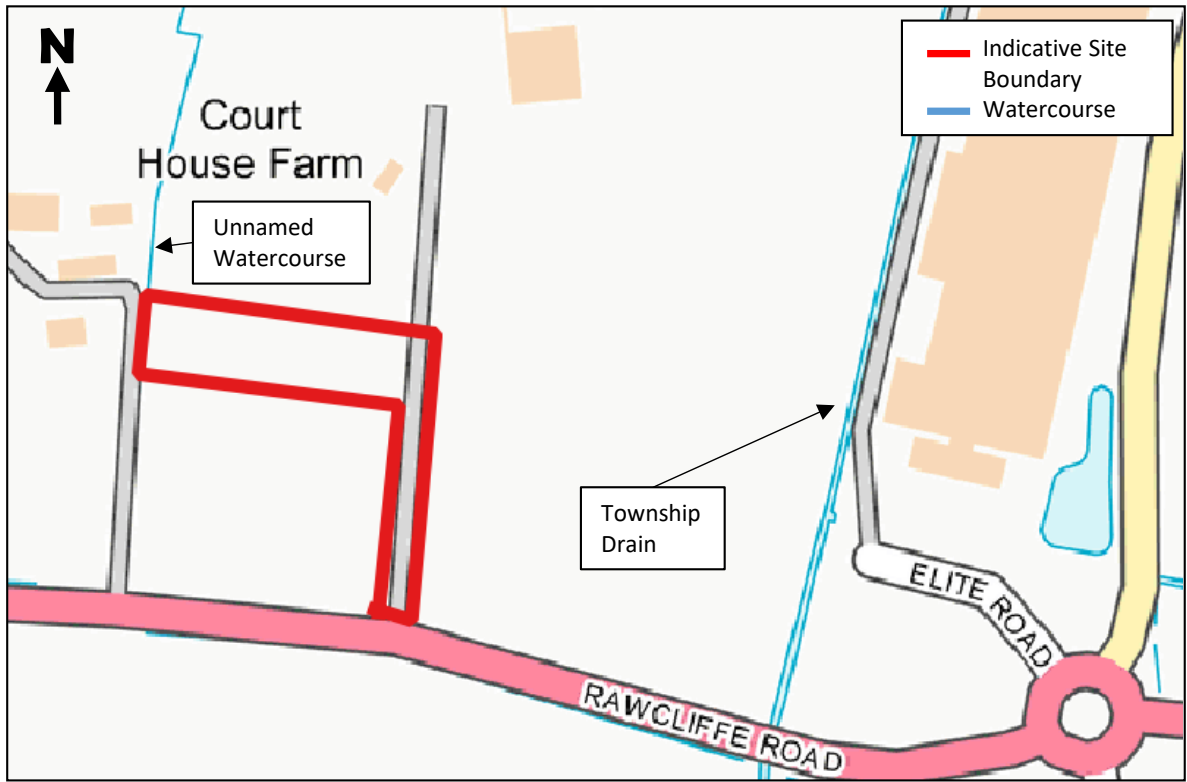


Figure 2. Watercourse Location

4 FLOOD EVACUATION PLAN AND EMERGENCY PROCEDURES

4.1 SCOPE OBJECTIVES AND BACKGROUND

4.1.1 A flood evacuation plan is critical in protecting the workers, and the property from flooding events. This Flood Emergency and Evacuation Plan produced for the site at Delta Enterprise Park, Goole will ensure the safety of both people and the property.

4.1.2 This Flood Emergency and Evacuation Plan will support the Flood Risk Assessment produced by AMA in January 2024, which discusses the flood risk associated with the site at Delta Enterprise Park, Goole, along with mitigation measures recommended for the worst-case flood scenario.

4.2 FLOOD WARNINGS


4.2.1 The Environment Agency issues warnings to the public, the media, and partner agencies of impending flooding. The Flood Alert and Flood Warning areas are based on the likelihood and timing of different levels of flood threat within a specific community or catchment. Severe Flood Warnings are based on the likelihood and/or impact of flooding. The client should sign up to these warnings to best protect against damage to property and life.

4.2.2 The main sources of flooding for the site are fluvial, tidal and a breach event. The EA's flood warnings are only in relation to fluvial and tidal flooding, and do not cover other sources of flooding, such as surface water or groundwater flooding.

4.2.3 There are three sources where you are able to get different types of warnings for fluvial flood events and the EA provides a number of methods for receiving flood warnings. These include:

- ▶ EA Three Day Flood Risk Forecast: <http://www.environment-agency.gov.uk/homeandleisure/floods/125305.aspx>
- ▶ ¾ EA Flood Warnings in Force by Region (updated every 15 minutes): <http://www.environment-agency.gov.uk/homeandleisure/floods/31618.aspx>
- ▶ EA Floodline Warnings Direct (phone, text, or email): <https://fwd.environment-agency.gov.uk/app/olr/home>

Table 4-1. Environment Agency Codes

<p>Flood Alert</p> 	<p>Key: Flooding is possible. Be prepared</p> <p>Message: 2 hours to 2 days in advance of flooding</p> <p>Timing: Be prepared for flooding</p> <p>Actions: Prepare a flood kit of essential items Monitor local water levels and flood forecasts</p>
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Flood Alerts are to warn people of the possibility of flooding and encourage them to be alert, stay vigilant and to make early preparations for flooding.

Flood Warning



Key: Flooding is expected. Immediate Action Required
Message: Half an hour to 1 day in advance of flooding
Timing: Act now to protect your property
Actions: Block doors with flood boards or sandbags and cover airbricks and other ventilation holes
 Move family, pets and valuables to a safe place
 Turn off gas, electricity and water supplies if safe to do so
 Keep a flood kit ready
 Move cars, pets, food, valuables and important documents to safety

Flood Warnings are to warn people flooding is expected and encourage them to take immediate action to protect themselves and their property.

Severe Flood Warning



Key: Severe flooding. Danger to life
Message: When flooding poses a significant threat to life and different
Timing: actions are required
 Stay in a safe place with a means of escape
Actions: Be ready should you need to evacuate from your home
 Co-operate with the emergency services
 Call 999 if you are in immediate danger

Severe Flood Warnings are to warn people of a significant risk to life or significant disruption to communities caused by widespread or prolonged flooding and encourage them to take immediate action to protect themselves and follow the advice of the emergency services.

Warnings no longer in force

(no icon)

Key: No further flooding is currently expected for your area
Message: When river or sea conditions begin to return to normal
Timing: Be Careful. Flood water may still be around for several days and could be contaminated
Actions: If you've been flooded, ring your insurance company as soon as possible

Warnings are removed to inform people that the threat has now passed.

- 4.2.4 Other sources of warning include flood wardens, sirens, and the media. Call the EA Floodline for advice on what is available for the proposed development site.
- 4.2.5 Furthermore, you should contact the EA to understand the lead time for flood warnings. This is the time between the issuing of a warning to when flooding will occur. For the Ouse and Aire, which is the main source of flooding, there is a lead time of between 2 hours. The EA aim to produce a Flood Alert between 2 and 12 hours prior to a flood occurring.
- 4.2.6 The organisation that will operate within Delta Enterprise Park, Goole should sign up to the EA Flood Alert and Warning system to ensure safety of staff is ensured.

4.3 FLOOD ALERT NOTICE

The occupiers of the site should display a notice in a prominent, clearly visible place, or places, on the premises and/or site to indicate to everyone the current flood alert status issued by the Environment Agency. Below is an example of a Flood Alert Notice.

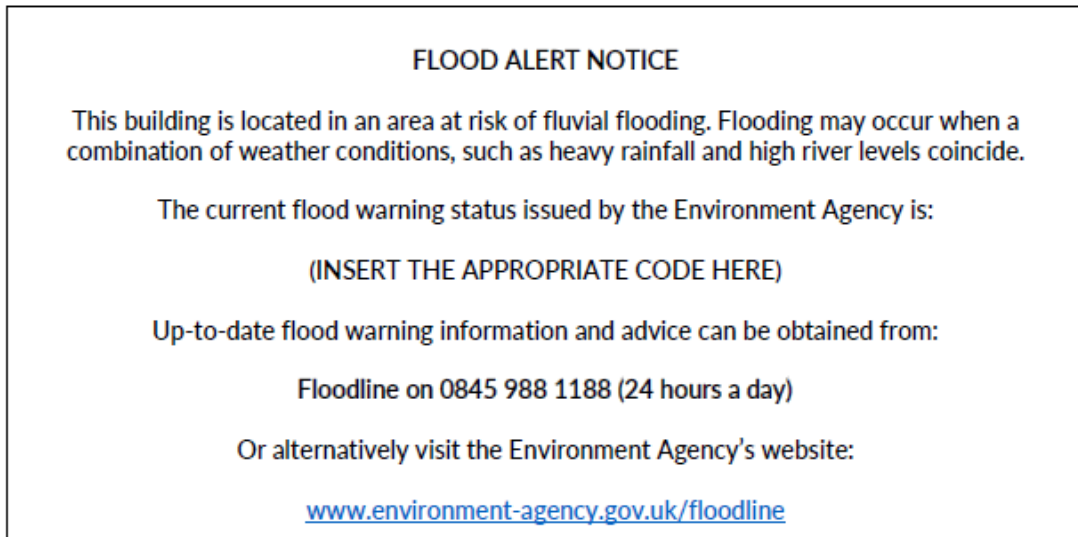


Figure 3. Flood Alert Notice

4.4 ACTIONS UPON RECEIVING ALERTS AND WARNINGS

- 4.4.1 Once a flood alert or warning has been made, the occupiers of the site must take action based upon the alert given. Provided in Table 4-1 are the types of alerts which can be given by the EA along with the action the occupiers must undertake to reduce the risk to life and the property.
- 4.4.2 The proposed development is for a commercial unit consisting of 92 self-storage shipping containers. Flood data from the ERYC Level 2 SFRA, indicates a worst-case flood depth at the site of up 4.0m during a breach event.
- 4.4.3 The recommended finished floor level for this development is set at 0.15m above existing ground levels, meaning that during a breach event the site would flood. Therefore, a water entry strategy is adopted.
- 4.4.4 As the development will be commercial, the business and events should be closed down in an orderly fashion so that people and assets can be safeguarded, and that the site can be made safe and secure, and the premises evacuated well within the time afforded by the warning.
- 4.4.5 In addition, as a business will be operating within the proposed development, the future occupiers should develop a business continuity plan (BCP) in the event of a flood, or in the event of any emergency or disruption to activities. A BCP anticipates disruptions to normal activities and identifies critical activities that need to be maintained to deliver services, run the business, and survive the crisis. The building occupiers should also create a unique plan on what will be done to protect the development and its contents, based on how easily items (i.e., furniture, other equipment, etc.) can be relocated or flood barriers across doors deployed.

4.5 SAFE EGRESS PROCEDURE & EVACUATION ROUTES

- 4.5.1 There should be safe access to and from the development. Planning a safe route of egress is important to ensure that people are safe in the event of a flood. Minimising the risk to life is the most important goal of flood management.
- 4.5.2 Once a flood warning has been implemented by the EA, the evacuation procedures must follow – this can be implemented by an alarm system, or a text message sent out by the owner of the site. If the client or manager of the site feels the site is becoming at risk, they should make the decision to evacuate the site as well. This could include ‘if water is entering the unit’.
- 4.5.3 The organisation occupying the building must have a flood warden who will organise each business response and evacuation of the site, following the egress route shown in Figure 4. A flood evacuation point should be created outside of the flood alert and warning area, preferably to the east of the site, on Airmyn Road. The occupiers of the building should follow the route given in Figure 4 as it follows a main road, which will increase safety and visibility. A map of the route to take should be provided to the organisation occupying the site once trading has begun in the new development.
- 4.5.4 If the evacuation procedure is followed, there should be no need for a rescue by emergency services however, as the site is located along a main road, accessing the site by emergency services should not be difficult.
- 4.5.5 It is important to identify, in advance of flooding, where individuals can go instead of a local Emergency Rest Centre, if safe to do so. Time should be allowed for this to occur before any routes become affected by the flooding. Consideration should be given to the road network around the site, especially if these are more likely to flood first and therefore affect evacuation time.
- 4.5.6 The evacuation procedures should include options for the evacuation of ALL people on site, including those with restricted mobility. It should be assumed that visitors will not have local knowledge and will need to be guided to a safe route/location.

4.6 ON SITE AND/OR TEMPORARY REFUGE

- 4.6.1 Any place of refuge within the development should be clearly identified within the building. All staff should be made aware of this location. It is further suggested that Flood Kits are stored and kept at the on-site refuge to support a short-term stay. The EA has a suggested Flood Kit list; depending on the location of the development and the needs of the occupants, additional items other than suggested in the EA’s list may also be required.

4.7 ACTIONS POST-EVACUATION

- 4.7.1 This section should offer site specific guidance on post-evacuation procedures. The Floodline (0845 988 1188) will be an important resource.
- 4.7.2 The EA have published advice on how to react when a flood event occurs: <http://www.environment-agency.gov.uk/homeandleisure/floods/31632.aspx>.
- 4.7.3 In the event of flooding, it is the duty of the Council to coordinate authority responses. An important task that the Council undertakes is to set up Rest Centres. A Rest Centre is a temporary, short-term emergency accommodation (up to 48 hours) where evacuated people can rest and obtain refreshments and information about the flood.

- 4.7.4 Returning to site should only be permitted when advised by emergency services or local authority officials that is safe to do so.
- 4.7.5 Guidance on how to clean up after a flood can be aided using Environment Agency instructions: http://www.direct.gov.uk/en/HomeAndCommunity/WhereYouLive/FloodingInYourArea/DG_180028.

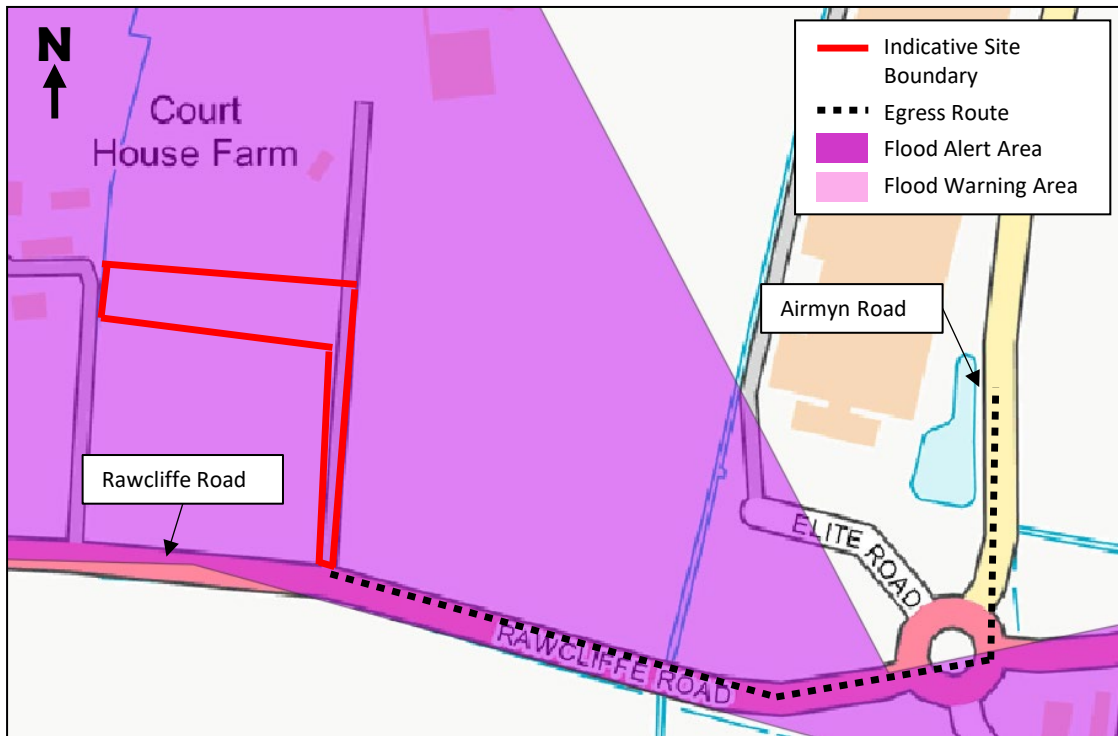


Figure 4. Safe Access and Egress Route from the Site

5 SUMMARY & CONCLUSION

- 5.1.1 The site is in an area identified as having a high probability of flooding on the EA Flood Map and is located in Flood Zone 3.
- 5.1.2 There is a risk of up to 4.0m of flooding at the site in accordance with a breach flooding event. The proposed finished floor levels for the site are set at 0.15m above existing ground level.
- 5.1.3 The proposed development is located within a Flood Alert and Warning Area, and as such the organisation occupying the site should sign up to receive EA flood warnings in order to protect against damage to property and life.
- 5.1.4 As the proposed development is located within a Flood Warning and Alert area, planning for the evacuation of the users and staff is required.
- 5.1.5 The organisation within the proposed development should develop a BCP in the event of a flood.
- 5.1.6 Flood wardens should be allocated within the organisation to aid in the evacuation of ALL people on site, including those with restricted mobility.
- 5.1.7 In the event of flooding, it is the duty of the Council to coordinate authority responses. An important task that the Council undertakes is to set up Rest Centres. A Rest Centre is a temporary, short-term emergency accommodation (up to 48 hours) where evacuated people can rest and obtain refreshments and information about the flood. Returning to the site should only be permitted when advised by emergency services or local authority officials that it is safe to do so.
- 5.1.8 A safe egress route has been proposed within Section 4.5, leading to a flood evacuation point on Airmyn Road to the east of the site.

6 LIMITATIONS

6.1 LIMITATIONS

- 6.1.1 This report has been prepared for exclusive use by Dewar Planning Associates for the purpose of assisting them in evaluating the potential constraints imposed by flood risk and drainage in making a Planning Application.
- 6.1.2 AMA accepts no liability for any use of this document other than by its client and only for the purposes, stated in the document, for which it was prepared and provided. No person other than the client may copy (in whole or in part) use or rely on the contents of this document, without the prior written permission of AMA. Any advice, opinions or recommendations within this document should be read and relied upon only in the context of the document as a whole.
- 6.1.3 AMA has endeavoured to assess all information provided to them during this appraisal. The report summarises from several external sources and cannot offer any guarantees or warranties for the completeness or accuracy of information relied upon.
- 6.1.4 This report has been undertaken with the assumption that the site will be developed in accordance with the above proposals without significant change. The conclusions resulting from this study are not necessarily indicative of future conditions or operating practices at or adjacent to the site.
- 6.1.5 A topographic survey has been completed for the site and was supplied to AMA by the client. AMA accepts no liability for the accuracy of this survey, and it is recommended that it is verified on-site prior to the commencement of any construction work.

APPENDICES

APPENDIX A – PROPOSED SITE LAYOUT

Appendix A

PROPOSED SITE LAYOUT