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Development Technical
Consultants

FLOOD RISK & DRAINAGE



Barton Lane, Congerstone
Flood Risk Assessment
September 2023

Report Ref: 28212-FLD-0101

Barton Lane, Congerstone

Flood Risk Assessment

September 2023

REPORT REF: 28212-FLD-0101

CLIENT: Naylor's Estate Agents

ENGINEER: Mewies Engineering Consultants Ltd
The Old Chapel
Station Road
Hugglescote
Leicestershire
LE67 2GB

Tel: 01530 264 753
Email group@m-ec.co.uk

REGISTRATION OF AMENDMENTS

Date	Rev	Comment	Prepared By	Checked By	Approved By
September 2023	-	First issue	Zoe Jordan, BSc (Hons) Assistant Flood Risk Engineer	Ryan Chafer BSc (Hons) Flood Risk Engineer	Tim Rose BA (Hons), MTPS Director

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EXECUTIVE SUMMARY

Site Address	Barton Lane, Congerstone, CV13 6NB, E:437018, N:305645
Site Description and Setting	The site currently consists of greenfield land and is bordered to the north and east by agricultural fields and the River Sence, to the south by Barton Lane, and to the west by Chapel Lane and associated dwellings.
Proposed Development	The proposed development will comprise of approximately 20 dwellings with associated infrastructure, parking and access to Barton Lane.
Fluvial Flood Risk and Mitigation Measures	91% of the proposed development is located within Flood Zone 1. The remaining 9% of the site is located within Flood Zone 2 and 3. In lieu of Product 4 information, the Flood Map for Planning extents have been plotted against the topographical survey. Using the 0.1% AEP flood extent, an assessment of the proposed 1% AEPCC flood level was made for the site. Flooding for the 0.1% AEP would likely reach levels of up to 88.0m AOD on site and as such, it is estimated that the flood level for the 1% AEPCC will reach up to 88.0m AOD. Finished floor levels should be set to a minimum of 88.30m AOD (300mm above the 1% AEPCC event) with flood resilience measures set 300mm the finished floor level above, i.e., 88.60m AOD. It is recommended that property owners sign up for flood alerts with the Environment Agency.
Surface Water Flood Risk and Mitigation Measures	The Environment Agency Flood Risk from Surface Water Map indicates that the site is generally at very low risk of surface water flooding. There is an area at low to high flood risk towards the northern boundary of the site due to the unnamed drain flowing into the River Sence. Flooding on site would reach depths of up to 900mm with a velocity of up to 1m/s. The maximum hazard rating is 'danger to some'. It is recommended that the proposed development is located out of areas at high risk of surface water flooding. Safe access and egress should also be considered when appraising the residual risk posed by all sources of flooding. The proposed development will have one access road in and out of the site, which is unaffected by fluvial or surface water flooding. However, Barton Lane is affected by surface water flooding from the 0.1%, 1% and 3.3% AEP flood events. It is recommended that access and egress is taken from the south during flood events, as the hazard rating is lower. Emergency vehicles can travel in flood waters up to 1m deep, and fire engines remain controllable in depths of 0.5m. Therefore, in an emergency, the local emergency services would be able to reach the proposed development, from the south of the development. Land to the north may become impassible during high surface water flooding events.
Flood Risk and Mitigation Measures for all other sources of flooding	Ashby de la Zouch Canal is located 205m southeast of the site. Canals do not generally pose a direct flood risk as they are a regulated waterbody, which usually plays a pivotal role in reducing flood risk. However, there is a residual risk from lower probability events such as overtopping or embankment failure. There is a medium risk of groundwater flooding within the development site. Groundwater monitoring should be undertaken prior to development and if groundwater is discovered, attenuation features should be lined to prevent groundwater seepage.
Conclusions	With the above measures in place, the development of the site will not create any flood risk issues for the wider area.
This summary should be read in conjunction with the full report and reflects an assessment of the site based on information received by M-EC at the time of production.	

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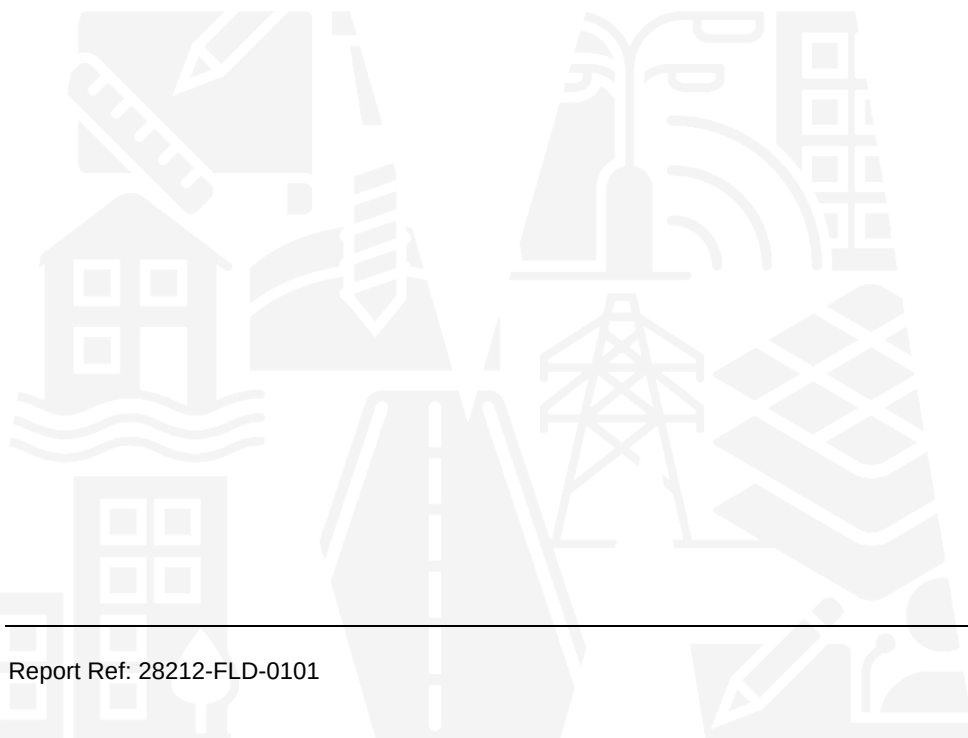
A.	SITE LOCATION
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1.0 INTRODUCTION

- 1.1 Mewies Engineering Consultants Ltd (M-EC), has been commissioned by Naylor's Estate Agents (hereafter referred to as 'the Client') to undertake a Flood Risk Assessment for a proposed residential development at Barton Lane, Congerstone (hereafter referred to as 'the Site'). A site location plan is provided in Appendix A and a sketch masterplan is contained within Appendix B.
- 1.2 The proposed development will comprise of approximately 20 dwellings with associated infrastructure, parking and access to Barton Lane. The proposed development will take place on existing greenfield land and is centred on OS grid reference E:437018, N:305645. The total site measures 1.18ha.
- 1.3 The assessment has been undertaken to ascertain the constraints of the development to the site and to assess the impact of the design, concerning flood risk.
- 1.4 The Flood Risk Assessment has been carried out in accordance with the requirements of the documents below. See Appendix C for additional policies and references.
- National Planning Policy Framework (NPPF)
 - National Planning Practice Guidance on Flood Risk & Coastal Change (PPG)
 - Environment Agency Flood Risk Standing Advice
 - Leicestershire and Leicester City Level 1 Strategic Flood Risk Assessment (October 2017)
 - Strategic Flood Risk Assessment for Hinckley and Bosworth Borough Council (July 2019)
- 1.5 The Local Planning Authority (LPA) is Hinckley and Bosworth Borough Council and the Lead Local Flood Authority is Leicestershire County Council. The site falls within the Severn Trent Water (STW) Catchment.
- 1.6 The assessment has been prepared using our best engineering judgement however there are levels of uncertainty implicit in the historical data and methods of analysis. The report is based on the following information:
- British Geological Survey (BGS);
 - Flood Map for Planning and the Long-Term Flood Risk Map from the Environment Agency and .gov.uk websites;
 - Topographical Survey
 - Leicestershire and Leicester City Level 1 Strategic Flood Risk Assessment (October 2017)
 - Strategic Flood Risk Assessment for Hinckley and Bosworth Borough Council (July 2019)
 - Hinckley and Bosworth Borough Council Level 2 Strategic Flood Risk Assessment (2020)
 - Environment Agency and HR Wallingford: Supplementary Note on Flood Hazard Ratings and Thresholds for Development Planning and Control Purpose (May 2008)

Disclaimer

- 1.7 M-EC has completed this report for the benefit of the individuals referred to in paragraph 1.1 and any relevant statutory authority which may require reference in relation to approvals for the proposed development. Other third parties should not use or rely upon the contents of this report unless explicit written approval has been gained from M-EC.
- 1.8 M-EC accepts no responsibility or liability for:
- The consequence of this documentation being used for any purpose or project other than that for which it was commissioned;
 - The issue of this document to any third party with whom approval for use has not been agreed.

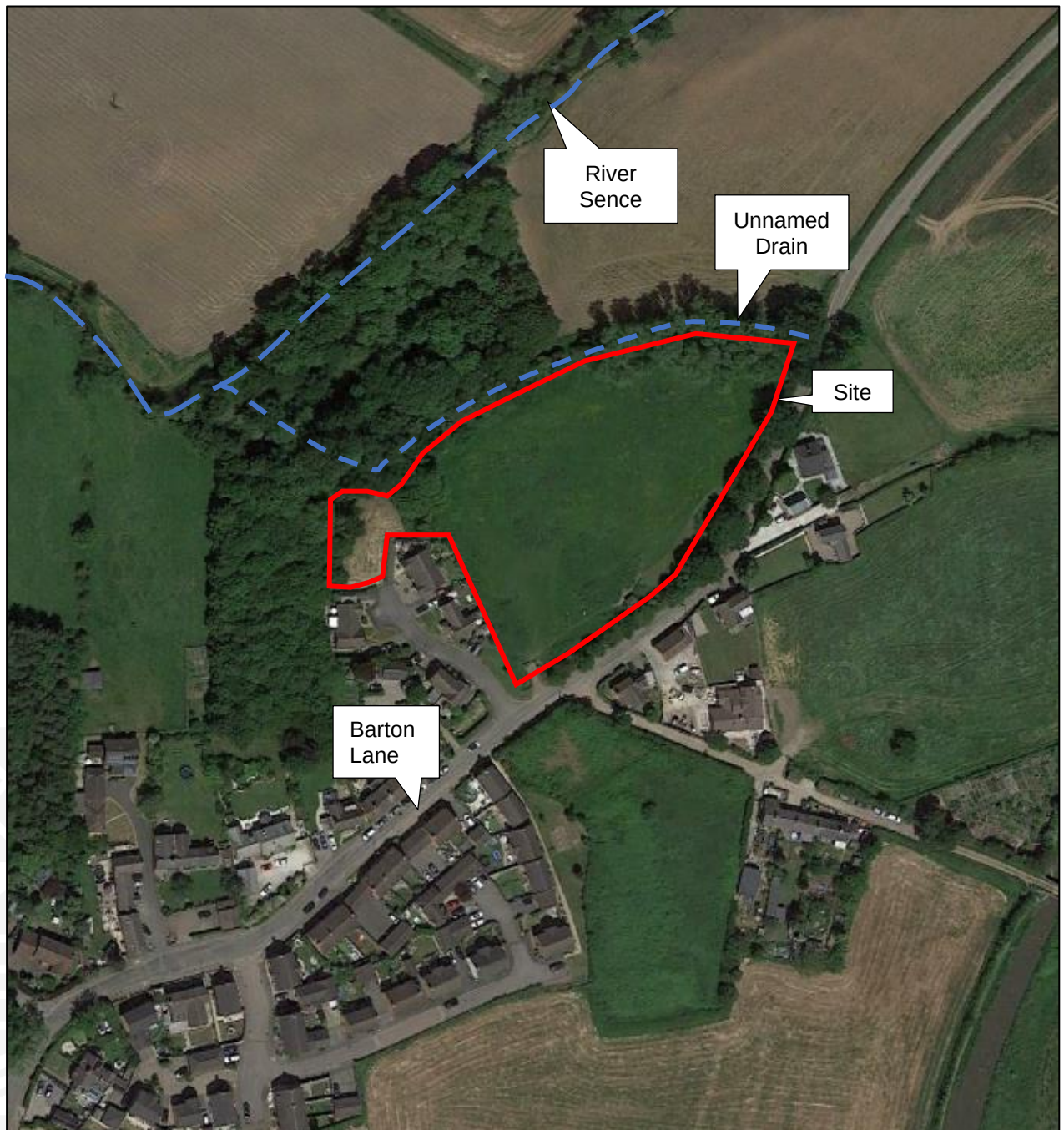


2.0 SITE DESCRIPTION

Site Location and Features

- 2.1 The Ordnance Survey National Grid Reference (NGR) for the centre of the site is E:437018, N:305645. The site currently consists of greenfield land and is bordered to the north and east by agricultural fields and the unnamed drain that outfalls into the River Sence, to the south by Barton Lane, and to the west by Chapel Lane and associated dwellings. The site location is shown in Figure 2.1.

Figure 2.1: Site Location Plan



Topographic Data

- 2.2 Full details of the topographical survey are included in Appendix D. The information indicates the site slopes gently from south to north with levels ranging from 90.87m AOD to approximately 87.35m AOD.

Flood Zone Maps & Flood Defence Data

- 2.3 Information relating to the current flood risk to the application site has been obtained from the Environment Agency and .gov.uk websites. The site is not protected by any formal flood defences.

Watercourses & Hydrology

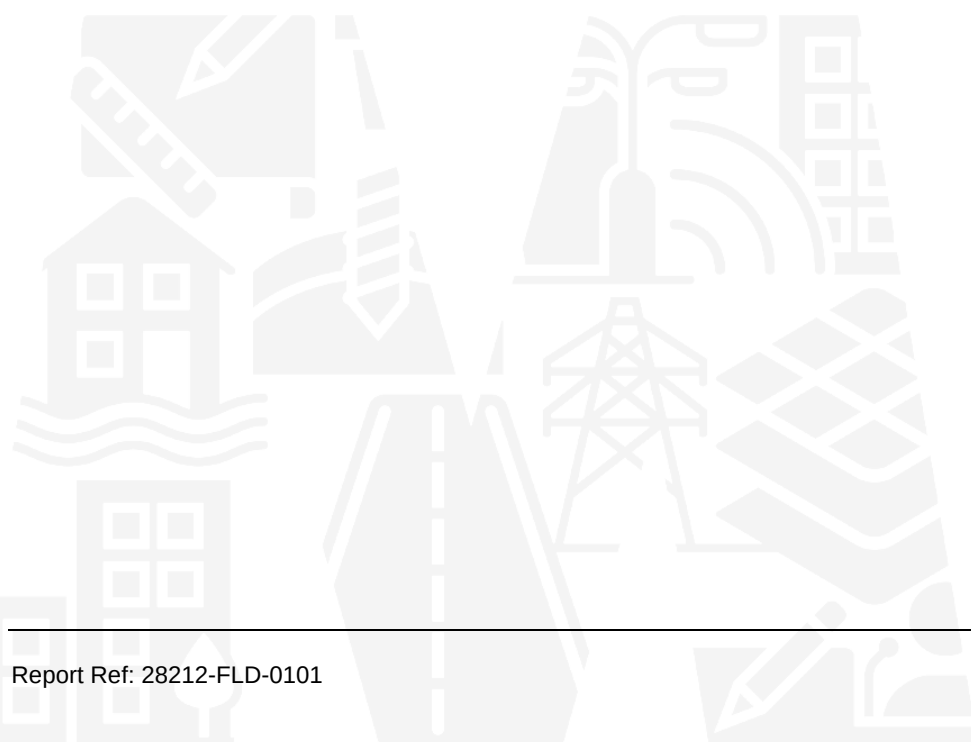
- 2.4 The closest designated Main River is the River Sence, located 75m north of the site.
- 2.5 An unnamed drain flowing into the River Sence runs along the northern boundary of the site.

Historic Flooding

- 2.6 Information published from the Environment Agency Historic Flood Map, the Leicestershire County Council SFRA (2017) and the Hinckley and Bosworth SFRA (2019) indicates there is no evidence of flooding occurring within the vicinity of the site.

Geological Data

- 2.7 The 1:50,000 British Geological Survey (BGS) viewer shows the whole of the site is underlain by the Gunthorpe Member consisting of mudstone, siltstone and dolomitic. Superficial river terrace deposits overlie the bedrock consisting of sand and gravel.

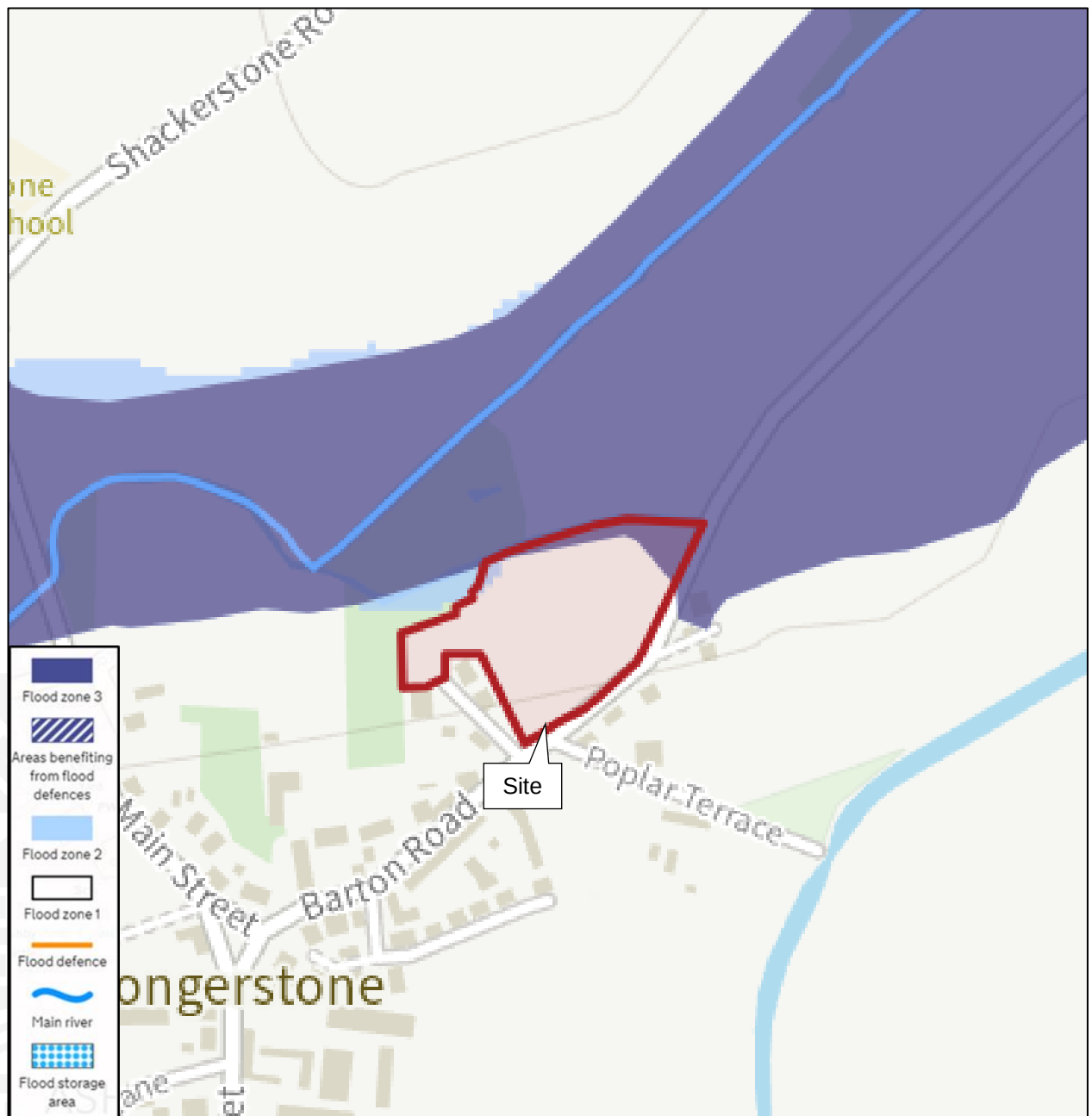


3.0 FLOOD RISK TO SITE

Flood Zone Allocation

- 3.1 The Flood Map for Planning is shown in Figure 3.1. According to the Hinckley and Bosworth Borough Council Level 2 SFRA (2020) 91% of the site is located within Flood Zone 1. Flood Zone 1 (FZ1) is defined as land assessed as having an annual probability of river flooding less than 0.1%. 9% of the site is located within Flood Zone 2 and Flood Zone 3. Flood Zone 2 (FZ2) is defined as land assessed as having an annual probability of river flooding between 0.1% - 1%. Flood Zone 3 (FZ3) is defined as land assessed as having an annual probability of river flooding greater than 1% if there are no flood defences.

Figure 3.1: Environment Agency's Flood Map for Planning (Rivers and Seas)



Surface Water Flooding Risk

- 3.2 The Environment Agency Flood Risk from Surface Water Map, refer to Figure 3.2, indicates that the site is generally at very low risk of surface water flooding. There is an area at low to high flood risk towards the northwest of the site due to the location of the River Sence. Barton Lane is at low to high risk of surface water flooding.

Figure 3.2: Environment Agency's Flood Risk from Surface Water Map



Artificial Waterbodies Flood Risk

- 3.3 Ashby de la Zouch Canal is located 205m southeast of the site. Canals do not generally pose a direct flood risk as they are a regulated waterbody. However, there is a residual risk from lower probability events such as overtopping or embankment failure.
- 3.4 According to the Hinckley and Bosworth SFRA (2019), there have been five recorded incidents of canal breaches from 1981 to 1990, and three recorded incidents of canal overtopping from 2012 to 2016. The canal breaches have occurred in primarily rural locations on the stretch of the canal between Congerstone and Shenton. The canal overtopping incidents occurred in Stoke Golding and Hinckley. However, all of the canal breaches have occurred to the south of the development.
- 3.5 The Environmental Agency Reservoir Map indicates the site is not at risk of reservoir flooding. Therefore, the risk of flooding from artificial waterbodies is low.

Groundwater Flood Risk

- 3.6 The Areas Susceptible to Groundwater Flooding Map and the Level 2 SFRA show that areas around the River Sence, including Congerstone, have a medium risk of groundwater flooding.
- 3.7 The site is not located within a Groundwater Source Protection Zone.

Sewer Flood Risk

- 3.8 The Leicestershire and Leicester City SFRA (2017) states that the Severn Trent Water DG5 register has identified three recorded incidents within the CV13 6 postcode within Hinckley and Bosworth Borough. However, this represents a 'snap-shot' in time and is not necessarily a reflection of the current or future flood risk from sewers, as maintenance work may have been undertaken by STW for areas with reoccurring issues. Therefore, the flood risk from public sewers can be considered low.

4.0 FLOOD RISK ASSESSMENT

Flood Risk Assessment Methodology & Objectives

4.1 It is recognised that developments that 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. Current guidance on development and flood risk identifies several key aims for development to ensure that it is sustainable in flood risk terms.

4.2 These aims are as follows:

- The development should not be at significant risk of flooding and should not be susceptible to damage due to flooding;
- The development should not be exposed to flood risk such that the health, safety and welfare of the users of the development, or the population elsewhere, are threatened;
- Safe access to and from the development should be possible during flood events;
- The development should not increase flood risk elsewhere;
- The development should not prevent safe maintenance of watercourses or maintenance and operation of flood defences;
- The development should not be associated with an onerous or difficult operation and maintenance regime to manage flood risk. The responsibility for any operation and maintenance required should be clearly defined;
- Future users of the development should be made aware of any flood risk issues relating to the development;
- The development should not lead to the degradation of the environment; and
- The development should meet all of the above criteria for its lifetime, including considering the potential effects of climate change.

4.3 This Flood Risk Assessment is undertaken with due consideration of these sustainability aims and has been prepared to inform the proposed scheme.

Project Scope

4.4 In order to achieve the aims outlined above, this Flood Risk Assessment has been undertaken in accordance with current best-practice guidance, including the National Planning Practice Guidance. A scoping study was initially undertaken to identify all potential sources of flooding at the site, which may warrant further consideration. Any potential flooding issues identified in the scoping study have subsequently been considered within this FRA. The scoping study aims to review all available information and provide a qualitative assessment of the flood risk to the site and the impact of the site on flood risk elsewhere. The report has been undertaken with due regard to the EA's National Standing Advice on Development and Flood Risk.

Scoping Study

4.5 All potential sources of flooding must be considered for any proposed development.

- 4.6 Using the EA Flood Zone mapping, topographical survey and Ordnance Survey maps, a summary of the potential sources of flooding and a review of the potential risk posed by each source on the development area of the application site is presented in Table 4.1.

Table 4.1: Potential Risks posed by Flooding Sources

Source	Risk			
	High	Medium	Low	Very low
Fluvial			✓	
Tidal				✓
Surface Water			✓	
Groundwater		✓		
Sewer			✓	
Artificial water bodies			✓	

Flood Risk Mitigation

- 4.7 It is vital that the correct mitigation is put in place to minimise the flood risk to the development. In accordance with the National Planning Policy Framework (NPPF), this includes preventing harm from occurring to the users of the site as well as ensuring the development itself is protected. The below outlines building mitigation measures that are recommended for all sources of flooding.

Fluvial Flood Risk Mitigation

- 4.8 91% of the proposed development is located within Flood Zone 1. The remaining 9% of the site is located within Flood Zone 2 and 3.
- 4.9 Product 4 information has been requested from the Environment Agency; however, the Environment Agency had no modelled information, see Appendix E. As an alternative to Product 4 information, the Flood Map for Planning extents have been plotted against the topographical survey, see Appendix F. Using the 0.1% AEP flood extent, an assessment of the proposed 1% AEPCC flood level was made for the site. Flooding for the 0.1% AEP would likely reach levels of up to 88.0m AOD on site and as such, it is estimated that the flood level for the 1% AEPCC will reach up to 88.0m AOD.
- 4.10 It is recommended that no development should occur within Flood Zone 2 and 3. In accordance with the NPPF and Leicestershire County Council, finished floor levels for the development should be set to a minimum of 88.30m AOD (300mm above the 1% AEPCC event) with flood resilience measures set 300mm above the finished floor levels, i.e., 88.60m AOD.

Flood Resilience and Resistance

- 4.11 In order to ensure the development proposals are in accordance with the NPPF and Leicestershire County Council, flood resilience techniques are recommended to prevent water ingress into the building. Flood resilience measures will be provided as additional mitigation in the event of a flood defence breach or rapid inundation scenario, this will include measures for a water inclusion strategy or water entry strategy as required.
- 4.12 Flood resilience works are measures to make the fabric and services of the building more robust and easier to clean, dry out, and reinstate and enable the building to be reoccupied quickly in the event of floodwater entering the building. Options include: -
- Property level protection including passive flood defences such as flood doors.
 - Raising equipment in the building and any stored goods or equipment 300mm above finished floor levels, i.e. 88.60m AOD.
 - Raising gas and electric intakes and piping/cabling, and electric sockets and cabling, above the likely level of any flood.
 - Installing backflow valves on sanitary drains to prevent sewage from surging up through W. C's, sinks, baths and showers in the event of a flood.
 - Using flood-resilient materials such as concrete and cement-based materials
- 4.13 Further guidance on flood resilient techniques can be found in Improving the Flood Performance of New Buildings (Ref. 20).

Flood Warnings and Evacuation Plan

- 4.14 The area in the north of the site adjacent to the drainage channel sites within the River Anker and River Sence Flood Alert Area. It is recommended that properties within that section sign up for flood alerts with the Environment Agency. This can be done online at Sign up for flood warnings - GOV.UK (www.gov.uk) or through the Flood Line telephone service on 0345 988 1188. Flood alerts are issued when flooding is possible and the action should be prepared for.
- 4.15 For all fluvial events, access and egress is available via Barton Lane, if approaching from the south.

Surface Water Flood Risk Mitigation

- 4.16 The Environment Agency Flood Risk from Surface Water Map indicates that the site is generally at very low risk of surface water flooding. There is an area at low to high flood risk towards the northern boundary of the site due to the unnamed drain flowing into the River Sence. Flooding on site would reach depths of up to 900mm with a velocity of up to 1m/s. The maximum hazard rating is 'danger to some'.
- 4.17 It is recommended that the proposed development is located out of areas at high risk of surface water flooding. Post-development the site levels should be re-profiled to remove any surface water ponding caused by localised low points. Given the above, surface water is likely to be collected by the proposed site-wide drainage infrastructure and conveyed to the proposed discharge point on-site at a QBAR greenfield rate. Therefore, the risk of flooding will be managed at the development and the remaining risk will be very low.

Access and Egress from the site

- 4.18 Safe access and egress should also be considered when appraising the residual risk posed by all sources of flooding. The proposed development will have one access road in and out of the site, which is unaffected by fluvial or surface water flooding. However, Barton Lane is affected by surface water flooding from the 0.1%, 1% and 3.3%AEP flood events.
- 4.19 Detailed surface water modelling information was downloaded from the DEFRA Risk of Flooding from Surface Water Data services.
- 4.20 During the 3.3%AEP event, Barton Lane would only be affected to the north of the development, with depths of up to 1.2m deep and a velocity of 1m/s. The maximum hazard rating is 'danger for most', due to the deep fast flowing water. Access to the site from the south would be viable during the 3.3%AEP event. For the 1%AEP and 0.1%AEP the maximum hazard rating to the north of Barton Road is 'danger for most', so would be inaccessible during flood events.
- 4.21 During the 1%AEP event detailed modelling shows there is a very low risk of flooding to Barton Lane. Surface water flooding along Barton Lane reaches depths of up to 0.30m, with a velocity of up to 0.25m/s to the south of the site. The maximum hazard rating is 'very low'. Access to the site from the south would be viable during the 1%AEP storm event.
- 4.22 During the 0.1%AEP event detailed modelling shows there is a low risk of surface water flooding within Barton Lane, with depths of up to 0.60m deep and a velocity of up to 0.5m/s. The maximum hazard rating is 'danger for some'.
- 4.23 It is recommended that access and egress is taken from the south during flood events, as the hazard rating is lower. According to the R&D Outputs: Flood Risk to People Phase 2 (March 2006) report by the Environment Agency and HR Wallingford, emergency vehicles can travel in flood waters up to 1m deep, and fire engines remain controllable in depths of 0.5m. Therefore, in an emergency, the local emergency services would be able to reach the proposed development, from the south of the development. Land to the north may become impassible during high surface water flooding events.

Flood Risk Mitigation for all other sources of flooding

- 4.24 Ashby de la Zouch Canal is located 205m southeast of the site. Canals do not generally pose a direct flood risk as they are a regulated waterbody, which usually plays a pivotal role in reducing flood risk. However, there is a residual risk from lower probability events such as overtopping or embankment failure.
- 4.25 There is a medium risk of groundwater flooding within the development site. Groundwater monitoring should be undertaken prior to development and if groundwater is discovered, attenuation features should be lined to prevent groundwater seepage. Suspended ground floor slabs may be required to create a void beneath the floor, which will flood before the water rises to enter the proposed dwellings.

Vulnerability Classification of Proposed Development

- 4.26 The National Planning Practice Guidance: Flood Zone and Flood Risk Tables provide information on the vulnerability classification of various developments. The proposed residential development end use of this site falls in the “more vulnerable” classification. A comparison of the ‘more vulnerable’ use with the development proposals within Flood Zone 1 shows the development proposals are acceptable, subject to an exception test, as shown in Table 4.2.

Table 4.2: Flood risk vulnerability and flood zone ‘compatibility’ from Flood Risk and Coastal Change - Planning Practice Guidance

Flood Risk Vulnerability classification		Essential Infrastructure	Water compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone	Zone 1 (<0.1%)	✓	✓	✓	✓	✓
	Zone 2 (0.1% < p <1%)	✓	✓	Exception Test Required	✓	✓
	Zone 3a (1% < p <5%)	Exception Test required	✓	x	Exception Test Required	✓
	Zone 3b ‘Functional Floodplain’ p > 5%)	Exception Test Required	✓	x	x	x

Sequential Test

- 4.27 According to National Planning Practice Guidance: Flood Zone and Flood Risk, the Sequential Test gives preference for locating new development in low-risk areas from all sources of flooding, However, if there is no allocated land within low-risk areas that meets the policy aims of the published Local Authority Local Plan or Local Development Framework then other sites in higher flood risk categories can be considered for that development.
- 4.28 Although a small section of the development is located within Flood Zones 2 and 3 and at low to high risk of surface water flooding, the majority of the site sits within Flood Zone 1, with a low surface water flood risk. There is a potential medium groundwater susceptibility due to the proximity to the River Sence, but further testing is required and the mitigation measures set out in sections 4.7 to 4.25 ensure the sequential test can be considered passed on a technical level with all development contained to the area at the lowest risk.

Exception Test

- 4.29 The proposed development is in accordance with the NPPF and therefore, the exception test is not required.

5.0 CONCLUSION AND SUMMARY

5.1 Mewies Engineering Consultants Ltd (M-EC) has been commissioned by Naylors Estate Agents to undertake a Flood Risk Assessment for a proposed residential development at Barton Lane, Congerstone. This assessment has been undertaken to ascertain the constraints of the development to the site and to assess the impact of the design, concerning flood risk.

- 91% of the site is located within Flood Zone 2 with the remaining 9% in Flood Zones 2 and 3.
- The majority of the site is at very low risk from surface water flooding. There is an area at low to high risk towards the northern boundary of the site, due to the unnamed drain flowing into the River Sence.
- The site is at risk of flooding from the Ashby Canal. Canals do not generally pose a direct flood risk as they are a regulated waterbody, which usually plays a pivotal role in reducing flood risk. However, there is a residual risk from lower probability events such as overtopping or embankment failure.
- The site is at medium risk of groundwater flooding due to its location to the River Sence.
- The risk of flooding from all other sources is low.
- Product 4 information has been requested from the Environment Agency however, no modelled information has been provided. As an alternative, the Flood Map for Planning Extents has been plotted against the topographical survey.
- Using the 0.1% AEP flood extent, an assessment of the proposed 1% AEPCC flood level was made for the site. Flooding for the 0.1% AEP would likely reach levels of up to 88.0m on site and as such, it is estimated that the flood level for the 1% AEPCC will reach up to 88.0m.
- Finished floor levels should be set to 88.30m AOD with resilience measures set 300mm above the finished floor level at 88.60m AOD. It is recommended that no development should occur within Flood Zone 2 and 3.
- It is recommended that the proposed development is located out of areas at high risk of surface water flooding.
- Post-development the site levels should be re-profiled to remove any surface water ponding caused by localised low points. Surface water is likely to be collected by the proposed site-wide drainage infrastructure and conveyed to the proposed discharge point on-site at a QBAR greenfield rate. Therefore, the risk of flooding will be managed at the development and the remaining risk will be very low.
- Groundwater monitoring should be undertaken prior to development and if groundwater is discovered, attenuation features should be lined to prevent groundwater seepage. Suspended ground floor slabs may be required to create a void beneath the floor, which will flood before the water rises to enter the proposed dwellings.
- Safe access and egress are viable along Barton Lane, from the south. The north will remain inaccessible during all surface water storm events.
- The sequential test is passed on a technical basis and therefore, the exception test is not required.

5.2 With the above measures in place, the development of the site will not create any flood risk issues for the wider area.



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Consultants

APPENDICES



APPENDIX A

M-EC
The Old Chapel
Station Road
Hugglescote
Leicestershire
LE67 2GB



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SITE LOCATION PLAN

Project: Barton Lane, Congerstone

File Ref: 28212

O.S. Grid Ref: E:437018, N:305645

Postcode: CV13 6NB





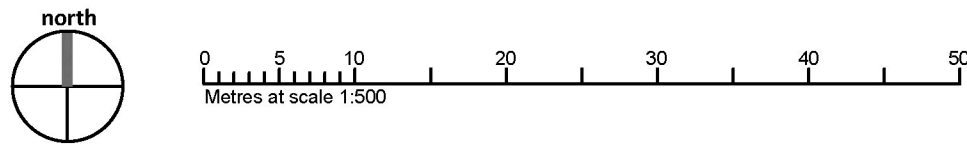
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APPENDICES



APPENDIX B





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APPENDICES



APPENDIX C

Policies and References

National Planning Policy Framework

The National Planning Policy Framework (Ref. 4) sets out the Government's objectives for the planning system and how there should be a 'Presumption in Favour of Sustainable Development and the planning system should facilitate and promote sustainable patterns of development, avoiding flood risk and accommodating the impacts of climate change.

The document seeks to ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk. Reference should also be made to the Planning Practice Guidance (Ref. 17) which provides additional guidance on flood risk.

For the purposes of applying the National Planning Policy Framework, areas at risk from all sources of flooding are included. For fluvial (river) and sea flooding, this is principally land within Flood Zones 2 and 3. It can also include an area within Flood Zone 1 in which the Environment Agency has notified the local planning authority of having critical drainage problems.

Key elements from the document include

"Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk..."

"Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding."

"When determining any planning applications, local planning authorities should ensure flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific risk assessment. Development should only be allowed in areas at risk of flooding where in light of this assessment (and the sequential and exception tests) it can be demonstrated that:

- a) Within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;*
- b) The development is appropriately flood resistant and resilient*
- c) It incorporates sustainable drainage systems unless there is clear evidence that this would be inappropriate;*
- d) Any residual risk can be safely managed; and*
- e) Safe access and escape plan routes are included where appropriate, as part of an agreed emergency plan."*

Flood and Water Management Act 2010

The Flood and Water Management Act 2010 (Ref. 19) gained Royal Assent on the 8th April 2010. The Flood and Water Management Act is the government's newest legislation to help improve flood risk management and ensure the security of water supplies in England and Wales. The Act updates legislation to ensure better protection from flooding, manage water more sustainably, improve public services and secure water resources during periods of drought. The Flood and Water Management Act helps to reduce flood risk by:

- Clarifying who is responsible for managing all sources of flood risk.
- Encourage more sustainable forms of drainage in new developments.
- Makes it easier to resolve misconnections to sewers.

The Flood and Water Management Act imparts significant new roles and responsibilities on local authorities. County or unitary authorities are now classed as lead local flood authorities (LLFAs) who have responsibilities for managing local flood risk. The responsibilities of a LLFA include:

- Prepare and maintain a strategy for local flood risk management in their areas, coordinating views and activity with other local bodies and communities through public consultation and scrutiny, and delivery planning.
- Maintain a register of assets – these are physical features that have a significant effect on flooding in their area.
- Investigate significant local flooding incidents and publish the results of such investigations.
- Issue consents for altering, removing or replacing certain structures or features on ordinary watercourses.
- Play a lead role in emergency planning and recovery after a flood event.

Planning Practice Guidance on Flood Risk & Coastal Change – March 2014, updated August 2021

The Government's new planning policy on sustainable drainage systems came into effect on 6 April 2015. It expects local planning policies and decisions on planning applications relating to major development (those of 10 dwellings or more; or equivalent non-residential or mixed development) to ensure that sustainable drainage systems for the management of run-off are put in place unless demonstrated to be inappropriate. Lead Local Flood Authorities (LLFAs) have also been made statutory consultees and new non-statutory guidance has been published under the changes.

The changes follow a joint Defra/DCLG consultation on delivering SuDS published in September 2014 in which the Government dropped all the key provisions of Schedule 3 of the Flood & Water Management Act 2010 and SuDS Approval Bodies (SABs) in favour of passing the oversight of SuDS from county councils (who are also LLFAs) to local planning authorities. According to the new planning policy, local planning authorities are expected, when considering planning applications:

- To consult the relevant lead local flood authority on the management of surface water,
- To satisfy themselves that the proposed minimum standards of operation are appropriate, and
- To ensure through the use of planning conditions or planning obligations that there are clear arrangements in place for ongoing maintenance over the lifetime of the development.

The policy also states that the sustainable drainage system should be designed to ensure that the maintenance and operation requirements are economically proportionate.

Sustainable Drainage Systems - Non-statutory technical standards for sustainable drainage systems – 2015

The non-statutory technical standards for the design, maintenance and operation of sustainable drainage systems to drain surface water have been published by Defra. The standards apply to systems that drain surface water from housing, non-residential or mixed use developments for the lifetime of the developments. The non-statutory technical standards are to be used in conjunction with the National Planning Policy Framework, and Planning Practice Guidance on Flood Risk & Coastal Change.

The following documents have been referred to in this report:

- 1 The Building Regulations 2015, Approved Document H.
- 2 Design and Construction Guidance for foul and surface water sewers offered for adoption under the Code for adoption agreements for water and sewerage companies operating wholly or mainly in England ("the Code") - October 2019, updated June 2022.
- 3 Planning Practice Guidance – November 2016, updated August 2022.
- 4 National Planning Policy Framework - March 2012, updated July 2021
- 5 Civil Engineering Specification for the Water Industry, 7th Edition.
- 6 Flood Risk and Coastal Change Guidance – March 2014, updated August 2022.
- 7 Environment Agency Flood Risk Standing Advice.
- 8 Environment Agency 'Flood Risk Assessments – Climate Change Allowances' - February 2016., updated May 2022.
- 9 The SuDS Manual – CIRIA C753.
- 10 Interim Code of Practice for Sustainable Drainage Systems – National SuDS Working Group, July 2004.
- 11 Cranfield University Soilscales Map - <http://www.landis.org.uk/soilscales/>.
- 12 British Geological Survey – Geology of Britain viewer, <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>.
- 13 FEH WebService – Centre for Ecology and Hydrology, <https://fehweb.ceh.ac.uk/GB/map>.
- 14 Design and analysis of urban storm drainage. The Wallingford Procedure Vol.1.
- 15 Institute of Hydrology Report No. 124 – Flood Estimation for small catchments.
- 16 Sustainable Drainage Systems – Non-statutory technical standards for sustainable drainage systems – March 2015.
- 17 Water Industry Act 1991.
- 18 Flood and Water Management Act 2010.



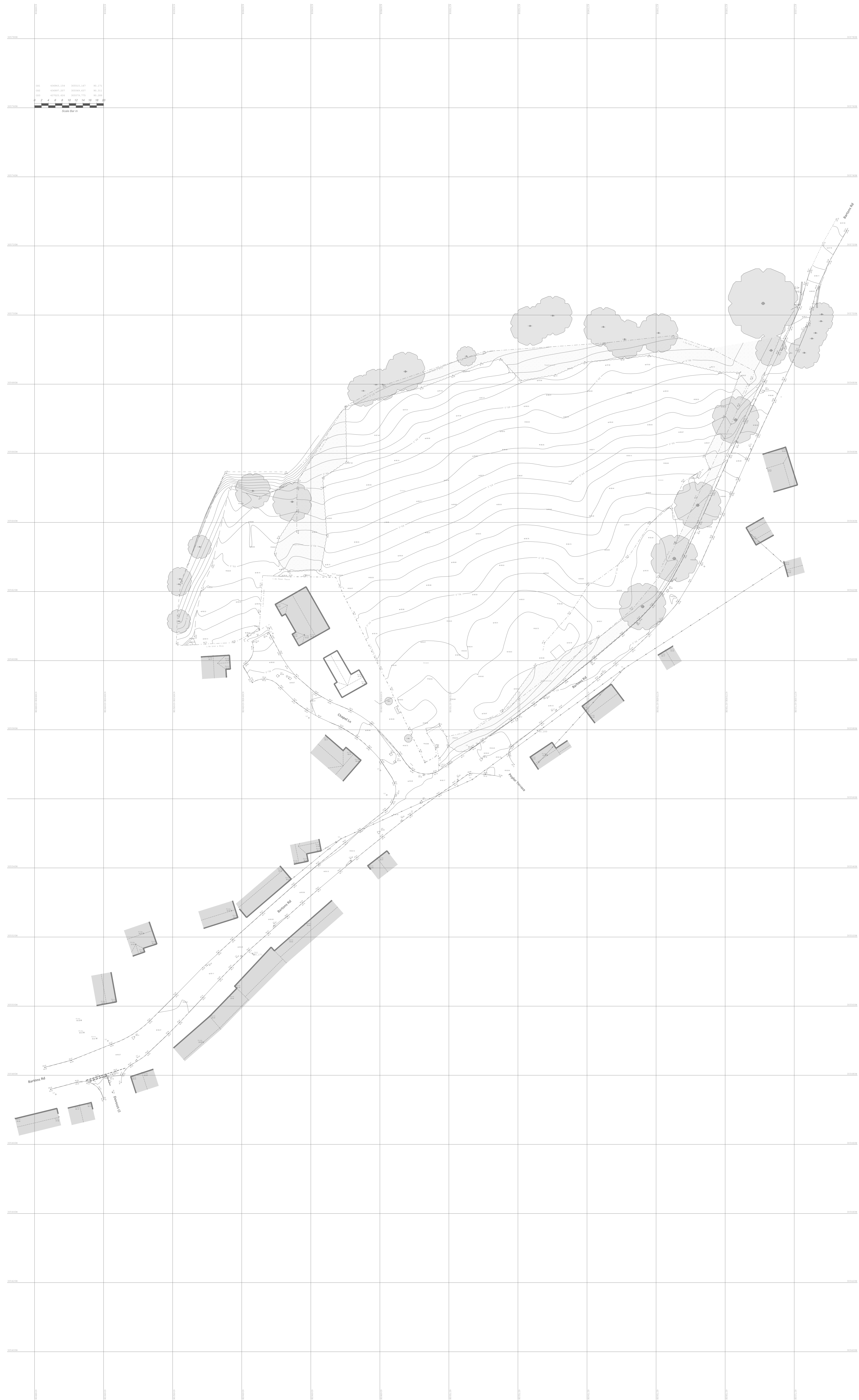
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APPENDICES



APPENDIX D





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APPENDICES



APPENDIX E

Product 4 (Detailed Flood Risk Data) for Barton Lane, Congerstone

Reference number: 319593

Date of issue: 15/08/2023

We are unable to provide you with a full product 4 response because:

- There is no detailed modelled information available for this site because there is no modelling for this area.
- And we do not have any records of flooding in this area.

Flood Map for Planning (Rivers and Sea)

The Flood Map for planning (Rivers and Sea) indicates the area at risk of flooding, **assuming no flood defences exist**, for a flood event with a 0.5% chance of occurring in any year for flooding from the sea, or a 1% chance of occurring for fluvial (river) flooding (flood zone 3). It also shows the extent of the Extreme Flood Outlines (Flood zone 2) which represents the extent of a flood event with a 0.1% chance of occurring in any year, or the highest recorded historic extent if greater. The flood zones refer to the land at risk of flooding and **does not** refer to individual properties. It is possible for properties to be built at a level above the floodplain but still fall within the risk area.

The Flood Map only indicates the extent and likelihood of flooding from rivers or the sea. It should also be remembered that flooding may occur from other sources such as surface water sewers, road drainage, etc. This map can be accessed via our website: <https://flood-map-for-planning.service.gov.uk/>

With regards to the history of flooding I can advise that we do not have any records of flooding in this area. It is possible that other flooding may have occurred that we do not have records for, and other organisations, such as the Lead Local Flood Authority or Internal Drainage Boards (where relevant), may have records.

This information is provided subject to the [Open Government Licence](#), which you should read for details of permitted use.

Risk of Surface Water Flooding Map

Managing the risk of flooding from surface water is the responsibility of Lead Local Flood Authorities. The 'risk of flooding from surface water' map has been produced by the Environment Agency on behalf of government, using information and input from Lead Local Flood Authorities.

You may wish to contact your Local Authority who may be able to provide information on surface water.

It is not possible to say for certain what the flood risk is but we use the best information available to provide an indication so that people can make informed choices about living with or managing the risks. The information we supply does not provide an indicator of flood risk at an individual site level. Further information can be found on the Environment Agency's website, <https://flood-warning-information.service.gov.uk/long-term-flood-risk>



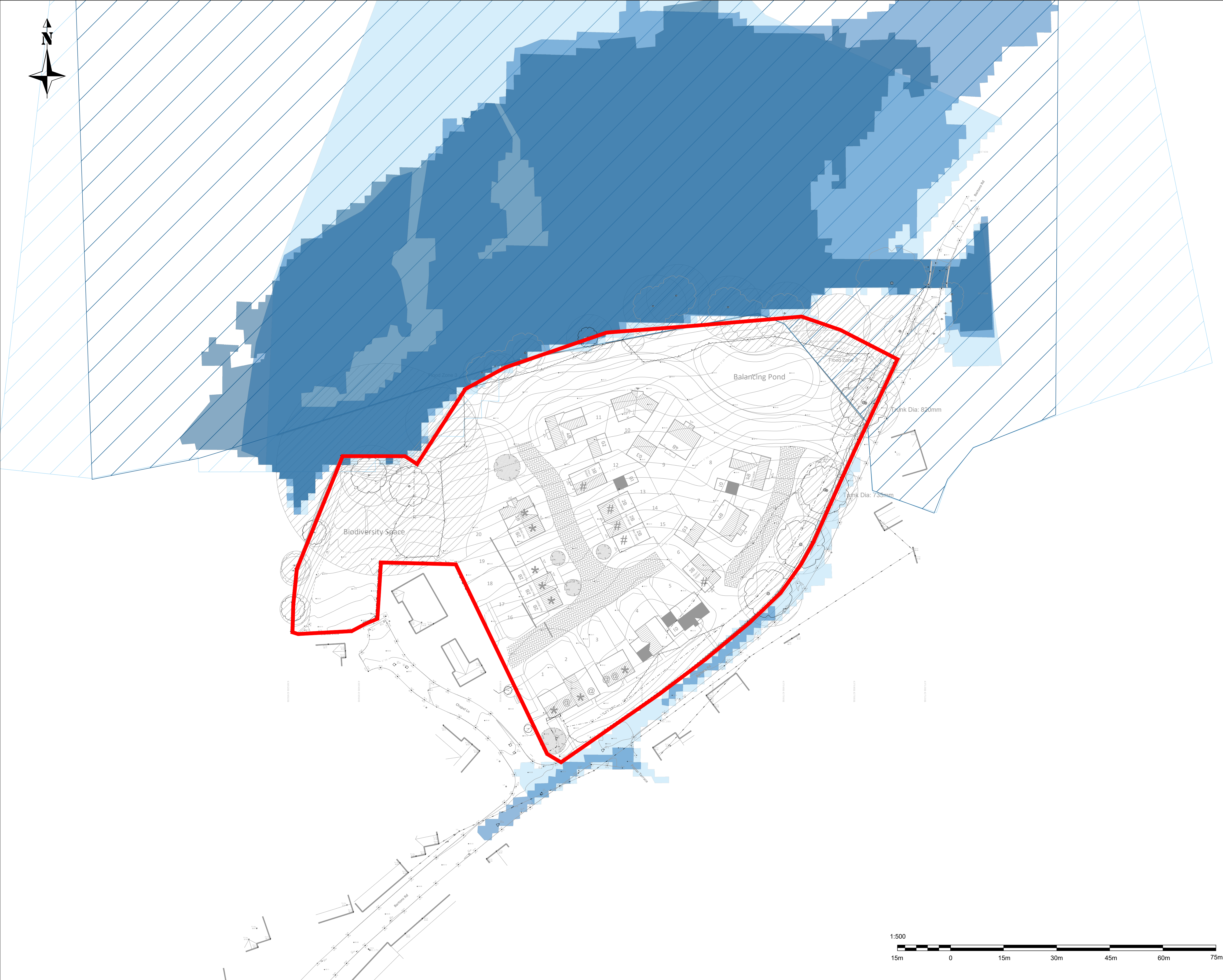
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APPENDICES



APPENDIX F



- NOTES:
1. DO NOT SCALE THIS DRAWING.
 2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEERS, ARCHITECTS AND SPECIALIST DESIGN DRAWINGS AND DETAILS.
 3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE. ALL LEVELS ARE IN METRES UNLESS NOTED OTHERWISE.
 4. THIS DRAWING IS FOR STRATEGY PURPOSES ONLY AND IS NOT TO BE USED FOR CONSTRUCTION PURPOSES.

KEY

	FLOOD ZONE 2 EXTENT = 88.0m AOD
	FLOOD ZONE 3 EXTENT = 88.0m AOD
	3.3% SURFACE WATER FLOOD RISK EXTENT
	1% SURFACE WATER FLOOD RISK EXTENT
	0.1% SURFACE WATER FLOOD RISK EXTENT
	SITE BOUNDARY

REV:	FIRST ISSUE	ZJ	RC	TR	24.08.23
	AMENDMENTS:	DRN:	CHK:	APP:	DATE:
PROJECT: BARTON LANE, CONGERSTONE					
DRAWING TITLE: FLOOD RISK EXTENTS					
CLIENT: C & N STAMPER					
DRAWING NUMBER: 28212_01_230_01					
REVISION: -	SHEET SIZE: A1		SCALE: 1:500		
STATUS: FOR INFORMATION / APPROVAL					
 Consulting Development Engineers			Telephone: 01530 284 753 Email: group@m-ec.co.uk Website: www.m-ec.co.uk ORDNANCE SURVEY © CROWN COPYRIGHT 2015. ALL RIGHTS RESERVED. LICENCE NUMBER 100055865.		

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STRUCTURES



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Development Technical
Consultants

The Old Chapel
Station Road, Hugglescote
Leicestershire LE67 2GB
T: 01530 264753
E: group@m-ec.co.uk
www.m-ec.co.uk