

Technical note for development at Sterry's Lane, Gorsley, Linton, HR9 7AH

Contract Ref: K1006

John Kendrick Ltd



part of



hydro-int.com



Contents

Quality assurance record	.4
Contributors for Hydro-Logic Services:	.4
Document Status and Revision History:	.4
Limitation of liability and use	.4
Executive summary	.5
1. INTRODUCTION	.6
1.1 Purpose of this technical note	.6
1.2 Sources of Information and Consultation	.6
1.3 Policy Context	.6
1.4 Structure of this technical note	.6
2. SPATIAL PLANNING CONSIDERATION	7
2.1 Location and Background	.7
2.2 Topography	. 8
2.3 Flood Zone	.9
2.4 NPPF Vulnerability and Nominal Level Climate Change Allowances	11
2.5 Climate change allowances for peak river flow	11
3. FLOOD HAZARD FOR EXISTING SITE	12
3.1 Source of Flood Risk	12
3.2 Existing Surface Water Drainage Arrangements	16
4. ASSESSMENT OF FLOOD RISK FOR PROPOSED DEVELOPMENT	17
4.1 Development Proposal	17
4.2 Is our agricultural building considered at flood risk	17
4.3 Access and egress	18
5. CONCLUSION	20
6. REFERENCES	21
Appendix A: Rights of Access for the bridleway to the north	22

Figure 1: Site Location (Source: Bing Map)	7
Figure 2: Aerial View of the Site (Source: Google Maps)	8
Figure 3: LiDAR of the Site and Surroundings (Source: EA LiDAR of 1m)	9
Figure 4: Flood Zones (Source: EA Flood Map for Planning)	10
Figure 5: Fluvial Flood Extent (Source: EA Flood Warning Information Service)	10
Figure 6: 1% flood level (Flood Zone 3) and LiDAR map with contours	12
Figure 7: Surface Flood Extent (Source: Flood Warning Information Service)	13
Figure 8: 1% AEP Surface Water Depth (Source: EA Open Dataset)	14
Figure 9: 0.1% AEP Surface Water Depth (Source: EA Open Dataset)	14
Figure 10: Extent of Flooding from Reservoirs (Source: EA Flood Warning Information Service)	15
Figure 11: Ell Brook (Source: EA LiDAR of 1m)	16
Figure 12: Proposed Site (Source: Client)	17
Figure 13: 1% flood level (Flood Zone 3) and LiDAR map with contours	18
Figure 14: Route for access and egress (Source: Client)	19

Table 1: Location of the Development Site	7
	·····



Table 2: Nominal Level Climate Change Allowances	11
Table 3: Flood Risk Vulnerability Classification (Source: NPPF Technical Guide)	11
Table 4: Sources of Flood Risks	12



Quality assurance record

Contributors for Hydro-Logic Services:

Name	Role
Alan Corner	Project Director
Charles Townsend	Project Manager – Principal Flood Risk Consultant

Document Status and Revision History:

Version	Date	Author	Reviewer	Authoriser	Status / Comment
1	24/08/2020	C Townsend	C Townsend	A Corner	Final

Limitation of liability and use

The work described in this technical note was undertaken for the party or parties stated; for the purpose or purposes stated; to the time and budget constraints stated. No liability is accepted for use by other parties or for other purposes, or unreasonably beyond the terms and parameters of its commission and its delivery to normal professional standards.



Executive summary

This technical note documents work undertaken by Hydro-Logic Services for John Kendrick Ltd in support of the proposed development at Sterry's Lane, Gorsley, Linton, HR9 7AH. The development involves conversion of an agricultural building to a single dwelling house. This is required within the scope of the planning application (application code is 212175) as the Decision Notice dated on 27 May 2021 stated:

"The identified access road to the barn and curtilage passes through areas identified within Flood Zones 2 and 3 and in the absence of a Flood Risk Assessment covering this aspect of the proposal, the local planning authority is unable to confirm that a safe means of access is available. The proposal is therefore contrary to criteria Q.2(d) of Class Q, Part 3 of the Town and Country (General Permitted Development Order) (England) 2015 (as amended) and as such prior approval would have been refused."

The objectives of this work include:

- Obtain EA Product 4 and assess fluvial flood risk;
- Assess routes for access and egress;
- Assess other sources of flooding.

The key outcomes of the work so far are answering the questions:

- Is our agricultural building considered resilient in flood risk?
- Is there an adequate route for access and egress?

The work delivered the following outputs:

• This technical note explaining our findings.



1. INTRODUCTION

1.1 Purpose of this technical note

Hydro-Logic Services (International) Ltd. (HLS) has been appointed by John Kendrick Ltd for a technical note in support of the proposed development at Sterry's Lane, Gorsley, Linton, HR9 7AH. The development involves conversion of an agricultural building to a single dwelling house. This is required within the scope of the planning application (application code is 212175) as the Decision Notice dated on 27 May 2021 stated:

"The identified access road to the barn and curtilage passes through areas identified within Flood Zones 2 and 3 and in the absence of a Flood Risk Assessment covering this aspect of the proposal, the local planning authority is unable to confirm that a safe means of access is available. The proposal is therefore contrary to criteria Q.2(d) of Class Q, Part 3 of the Town and Country (General Permitted Development Order) (England) 2015 (as amended) and as such prior approval would have been refused."

The technical note is based on the available flood risk information for the site detailed in Section 1.2 and prepared in accordance with the planning policy requirements set out in Section 1.3. The scope of the technical note is consistent with the 'Site Specific Flood Risk Assessment Checklist' from the National Planning Policy Framework (NPPF) and accompanying Planning Practice Guidance (PPG):

https://www.gov.uk/guidance/flood-risk-and-coastal-change#Site-Specific-Flood-Risk-Assessmentchecklist-section

1.2 Sources of Information and Consultation

This technical note has been informed by:

- Existing Site Plan drawings and respective topographic plan delivered by John Kendrick Ltd;
- EA Product 4 data;
- The EA online flood maps;
- https://flood-map-for-planning.service.gov.uk/;
- https://flood-warning-information.service.gov.uk/long-term-flood-risk/.

1.3 Policy Context

This technical note has been prepared in accordance with the relevant national, regional, and local planning policy and statutory guidance as follows:

- National policy contained within the National Planning Policy Framework (NPPF) dated June 2021, issued by Communities and Local Government with reference to Section 14 'Meeting the challenge of climate change, flooding and coastal change';
- The NPPF Planning Practice Guidance (PPG) released in March 2014 ('Flood Risk and Coastal Change' section) and updated in February 2016 to incorporate the EA 'Flood Risk Assessments: Climate Change Allowances' guidance; and,

1.4 Structure of this technical note

The technical note has been prepared based on the following structure:

- Section 2 refers to spatial planning considerations by reference to the proposed land use, flood zoning and NPPF vulnerability;
- Section 3 presents the assessment of existing flood risk at the site;
- Section 4 presents the assessed routes for access and egress for the proposed development;
- Section 5 provides a summary of the assessments.



2. SPATIAL PLANNING CONSIDERATION

2.1 Location and Background

The location of the proposed development site is shown in Figure 1 and Figure 2, with location details found in Table 1. The site is located on Sterry's Lane, Gorsley, Linton, HR9 7AH (Grid Ref: 368123 225625).

The development involves conversion of an agricultural building to a single dwelling house. The development site is approximately 3.77ha. Nevertheless, the specific development will not occupy more than 0.05ha (area of intervention).

The site is being intersected by Ell brook (Figure 1).

Table 1: Location of the Development Site

Reference	Value		
OS X (Eastings)	368123		
OS Y (Northings)	225625		
Nearest Post Code	HR9 7AH		
Lat (WGS84)	N51:55:40 (51.92779349496414)		
Long (WGS84)	W2:27:49 (-2.463637413261507)		
Nat. Grid	SO681256 / SO6812325625		

Grid reference details taken from the site <u>https://www.streetmap.co.uk/</u>



Figure 1: Site Location (Source: Bing Map)





Figure 2: Aerial View of the Site (Source: Google Maps)

2.2 Topography

The existing ground elevations on site is shown in the contour map (Figure 3) using as a source the 1m resolution EA LiDAR data. They indicate that the site is uneven with high ground surrounding it and low located to the centre of the site. Ground levels vary between 56.0mAOD and 67.2mAOD.





Figure 3: LiDAR of the Site and Surroundings (Source: EA LiDAR of 1m)

2.3 Flood Zone

EA's Flood Maps for planning (Figure 4) shows that the agricultural building lies in Flood Zone 1 while part of the site lies in Flood Zone 3 with an Annual Exceedance Probability (AEP) of flooding greater than 1 in 100. EA's Extent of River and the Sea maps from online Flood Warning Information Service (Figure 5) suggests that our agricultural building lies in the no risk zone while part of the site lies in the medium risk (i.e. between a 1 in 100 and 1 in 1,000 (between 0.1% and 1%)).





Figure 4: Flood Zones (Source: EA Flood Map for Planning)



EA's Product 4 data was acquired for the site but there was no detailed modelled information available for this site. According to EA data there are no records of flooding on the site.



According to EA guidance- **'Flood Risk and Coastal Change: Climate Change allowances for planning** (SHWG area) March 2016 (Sept 2020 update)' the 'higher central' 'climate change allowance' (in our case 35%) should be used for the development. According to Table 2 of the guidance a nominal height of 300mm should be used.

Watercourse	20% - 25%	35% - 40%	70%
Upper Severn			
River Wye	600mm	850mm	1500mm
River Teme			
River Avon	400mm	600mm	1000mm
Lower Severn	400mm	600mm	1000mm
Tributaries and 'ordinary	110.000000		VALUE AND V
watercourses'	200mm	300mm	500mm

Table 2: Nominal Level Climate Change Allowances

The 1% level (Flood Zone 3) will be calculated from the EA's flood maps for planning, compared to the ground levels and then 300mm will be added to the flood level. Our building will lie above the 1 in 100-year event plus climate change to ensure that it is at minimal risk of flooding.

2.4 NPPF Vulnerability and Nominal Level Climate Change Allowances

The development will be classed as 'More Vulnerable' under the NPPF vulnerability classification (Table 3).

More vulnerable (MV)
Hospitals, residential institutions such as residential care homes, children's homes, social services homes, prisons, and hostels
Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.
Non-residential uses for health services, nurseries and educational establishments.
Landfill and sites used for waste management facilities for hazardous waste ⁶ .
Sites used for holiday or short let caravans and camping, subject to a specific warning and evacuation plan. ⁷

2.5 Climate change allowances for peak river flow

The Environment Agency recommends through its official guidance ('Flood Risk and Coastal Change: Climate Change allowances for planning (SHWG area) March 2016 (Sept 2020 update)') that:

• For highly vulnerable or **more vulnerable** development e.g. housing, the FRA should use the 'higher central' climate change allowance (35%).



3. FLOOD HAZARD FOR EXISTING SITE

3.1 Source of Flood Risk

Flood sources and their possibilities at the site is listed in Figure 4: Flood Zones (Source: EA Flood Map for Planning) and further described below.

Table	4:	Sources	of	Flood	Risks
-------	----	---------	----	-------	-------

Key sources of flooding	Possibility at Site		
Fluvial (Rivers)	Medium to Very Low risk (confirmed by EA flood risk maps)		
	Figure 4 and Figure 5		
Tidal	N/A		
Groundwater	Considered to be Very Low (Source Client)		
Sewers	Considered to be Very Low (Source Client)		
Surface water	Mostly Very Low risk (agricultural building to be converted) with parts of the site at Low to High risk Figure 7		
Reservoirs / canals and other artificial sources	Considered to be very low (confirmed by EA flood risk maps Figure 10		
Infrastructure failure	N/A		

3.1.1 Flood Risk from River

As explained in Section 2.3, the majority of the site is at low risk of flooding with parts around the river at medium risk of flooding. HLSI produce a contour map of the flood zone compared to LiDAR. When the boundary of the Flood Zone 3 was compared to the LiDAR data, the level was 57.55 mAOD(Figure 13). With the inclusion of climate change at 35% (a nominal height of 300mm was used), the 1 in 100-year event plus climate change level is **57.85mAOD**.



Figure 6: 1% flood level (Flood Zone 3) and LiDAR map with contours



3.1.2 Surface Water

The EA surface flood extents (Figure 7) and flood depths (Figure 8 and Figure 9) have been obtained from the Flood Warning Information Service website and EA open dataset. Most of the development site is in the low risk zone (i.e. less than 0.1% AEP), including the area around the agricultural building. A small part of the site is at low risk ($0.1\% \sim 1\%$ AEP) with flood depths of below 0.3m for the majority and a small area below 0.9m for the 0.1% AEP and depths below 300mm for 1% (Figure 7 and Figure 8). Therefore, surface flooding risk for the agricultural building itself is very low, but near and in the watercourse is medium to high risk.



Figure 7: Surface Flood Extent (Source: Flood Warning Information Service)





Figure 8: 1% AEP Surface Water Depth (Source: EA Open Dataset)





3.1.3 Flood Risk from Reservoir /Canals / Other Artificial Sources

The EA Extent of Flooding from Reservoirs map (Figure 10), based only on large reservoirs (over 25,000 m³ of water), shows that the site is outside of potential risk of flooding in the event of a breach from reservoirs. Therefore, flooding from reservoir is considered to be extremely unlikely and the risk of flooding to the site considered to be low.

There is no flood risk from canals or other artificial sources excluding reservoirs as there are none.



3.1.5 Flood Risk from Groundwater

According to the client there are no known incidents of groundwater flooding on the site. It is therefore considered the risk of groundwater is low.

3.1.4 Flood Risk from Sewers

According to the client, there are no known incidents of sewer flooding in the vicinity of the site. The proposed development has no public sewers in the area, so the risk of sewer flooding is low.

3.1.5 Flood Risk from Infrastructure failure

There is no infrastructure in the vicinty of the site and so it is considered the risk of flooding from infrastructure is low.



3.2 Existing Surface Water Drainage Arrangements

Existing surface runoff flows down the hill towards Ell Brook. Please see Figure 11which indicates the flow routes from the site. Red is high ground and blue is low ground (Figure 11).



Figure 11: Ell Brook (Source: EA LiDAR of 1m)



4. ASSESSMENT OF FLOOD RISK FOR PROPOSED DEVELOPMENT

4.1 Development Proposal

The development involves conversion of an agricultural building to a single dwelling house.



Figure 12: Proposed Site (Source: Client)

4.2 Is the agricultural building considered at flood risk

As said in section 3.1.1 the 1 in 100-year event plus climate change is 57.85mAOD.

The ground level of the agricultural building is 58.50mAOD.

Therefore, the proposed dwelling is approximately 0.95m above the 1% AEP plus climate change and therefore at low risk of flooding, Figure 13.





Figure 13: 1% flood level (Flood Zone 3) and LiDAR map with contours

4.3 Access and egress

The normal access route will flood in up to and including a 1 in 100-year event plus climate change. However, there is an access road to the north of the development, which can be used for emergency access and egress. According to the land registry office the property has the benefit of a right of way on this access road:

"for all **ordinary and proper purposes** and at all times over that portion of the roadway adjoining The Lodge belonging to Linton Hall and being part of the lane numbered 522 on the plan attached to the Conveyance" (Land Registry; Source: Client). Appendix A

Therefore, this access road can be used for a dry safe access and egress away from the flooding

This access road, as can be seen on Figure 14, goes in the opposite direction of the river therefore away from the flooding and can provide safe access and egress.





Figure 14: Route for access and egress (Source: Client)

It has been confirmed by the client that if required works will be undertaken to ensure this access road is suitable for vehicular access and egress.



5. CONCLUSION

Hydro-Logic Services (International) Ltd. (HLS) has been appointed by John Kendrick Ltd for a technical note in support of the proposed development at Sterry's Lane, Gorsley, Linton, HR9 7AH.

The proposed development is at low risk of flooding from all sources with the exception of fluvial flooding. The main access road is at risk of flooding. The proposed dwelling is not at risk of flooding

There is safe access and egress to the north of the site to access road to the north.

The proposed dwelling has access rights to the private road.



6. **REFERENCES**

Author	Date	Title/Description
	2015	The CLIDS Menual CIDIA Depart 0752
CIRIA	2015	The SUDS Manual – CIRIA Report C753
Cranfield University	2020	Soilscapes Mapping
	2012	Technical Guidance to the National Planning Policy
DOEG		Framework.
Environment Agency	2020	Floodline flood warning web service
Environment Agency	2020	EA standing advice for small extensions
Standard advice		EA Standing advice for small extensions
Ministry of Housing,		
Communities and Local	2021	National Planning Policy Framework
Government.		



Appendix A: Rights of Access for the bridleway to the north





his official copy is incomplete without the preceding notes page.





Offices at

Clevedon

Exeter

Malvern

Reading

Sheffield

Stirling

Warrington

Registered office

Hydro-Logic Services (International) Ltd Shearwater House, Clevedon Hall Estate, Victoria Road, Clevedon, BS21 7RD

Registered in England 03036787