WtFR Ltd

Flood Risk Assessment

Trojanwood Ltd, Bourne Road, Pode Hole,
Spalding, PE11 3LW

10 September 2026

WtFR Ltd

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Issue sheet

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1 Introduction

National planning policy and local planning policy require a Flood Risk Assessment (FRA) to support development planning applications, to demonstrate how risks from all sources of flooding to the site and elsewhere will be managed.

This report details the FRA in respect of development proposals at Trojanwood Ltd, Bourne Road, Pode Hole, Spalding, PE11 3LW. The proposal comprises the installation of a new biomass boiler.

Data has been analysed from several sources to inform this assessment, including: the Environment Agency, British Geological Survey, Ordnance Survey, available online flood mapping and relevant strategic documents prepared by Lincolnshire County Council in its role as Local Planning Authority and Lead Local Flood Authority.

2 Policy Requirements

2.1 National Planning Policy

Paragraph 181 of the NPPF states "When determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk assessment[63]. Development should only be allowed in areas at risk of flooding where, in the light of this assessment (the sequential and exception tests, as applicable) 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 routes are included where appropriate, as part of an agreed emergency plan".

Footnote 63 states "A site-specific flood risk assessment should be provided for all development in Flood Zones 2 and 3. In Flood Zone 1, an assessment should accompany all proposals involving: sites of 1 hectare or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use".

Furthermore paragraph 30 of the Planning Practice Guide on Flood Risk and Climate Change states "A site-specific flood risk assessment is carried out by (or on behalf of) a developer to assess the flood risk to and from a development site. Where necessary, the assessment should accompany a planning application submitted to the local planning authority. The assessment should demonstrate to the decision-maker how flood risk will be managed now

and over the development's lifetime, taking climate change into account, and with regard to the vulnerability of its users.

The objectives of a site-specific flood risk assessment are to establish:

- whether a proposed development is likely to be affected by current or future flooding from any source;
- whether it will increase flood risk elsewhere;
- whether the measures proposed to deal with these effects and risks are appropriate;
- evidence for the local planning authority to apply (necessary) the Sequential Test, and;
- whether the development will be safe and pass the Exception Test, if applicable".

Continuing paragraph 31 of the Planning Practice Guidance quotes "The information provided in the flood risk assessment should be credible and fit for purpose. Site-specific flood risk assessments should always be proportionate to the degree of flood risk and make optimum use of information already available, including information in a Strategic Flood Risk Assessment for the area, and the interactive flood risk maps available on the Environment Agency's web site.

A flood risk assessment should also be appropriate to the scale, nature and location of the development. For example, where the development is an extension to an existing house (for which planning permission is required) which would not significantly increase the number of people present in an area at risk of flooding, the local planning authority would generally need a less detailed assessment to be able to reach an informed decision on the planning application. For a new development comprising a greater number of houses in a similar location, or one where the flood risk is greater, the local planning authority would need a more detailed assessment".

2.2 Local Planning Policy

Local authorities consider flood risk through relevant environmental, drainage and climate change policies which enforce the requirements of the NPPF. Relevant local policy and guidance for this site is provided by East Riding of Yorkshire, which is both the Local Planning Authority and Lead Local Flood Authority for the application site.

i) Strategic Flood Risk Assessment

ii) Local Flood Risk Management Strategy

The Strategic Flood Risk Assessment (SFRA) and the Local Flood Risk Management Strategy (LFRMS) are key sources of flood risk specific information for the area. The SFRA provides a more detailed review of flood risks and recommendations for ensuring developments can be constructed and operated safely in accordance with the NPPF.

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2.3 Flood Risk Zones, Vulnerability and Classification

These Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defences. They are shown on the Environment Agency's Flood Map for Planning available on the Environment Agency's web site, as indicated in the table below.

Table 1 - Flood Zones

Flood Zone	Definition
Zone 1 *Low Probability*	Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)
Zone 2 *Medium Probability*	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or Land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a *High Probability*	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)
Zone 3b *The Functional Floodplain*	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

Table 2 - Flood Risk Vulnerability Classification

Essential Infrastructure
• Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk. • Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood. • Wind turbines.
Highly Vulnerable
• Police and ambulance stations; fire stations and command centres; telecommunications installations required to be operational during flooding. • Emergency dispersal points. • Basement dwellings. • Caravans, mobile homes and park homes intended for permanent residential use. • Installations requiring hazardous substances consent (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as 'Essential Infrastructure').
More Vulnerable
• 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.

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• Non–residential uses for health services, nurseries and educational establishments. • Landfill* and sites used for waste management facilities for hazardous waste. • Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.
Less Vulnerable
• Police, ambulance and fire stations which are not required to be operational during flooding. • Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'More Vulnerable' class; and assembly and leisure. • Land and buildings used for agriculture and forestry. • Waste treatment (except landfill* and hazardous waste facilities). • Minerals working and processing (except for sand and gravel working). • Water treatment works which do not need to remain operational during times of flood. • Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place.
Water Compatible Development
• Flood control infrastructure. • Water transmission infrastructure and pumping stations. • Sewage transmission infrastructure and pumping stations. • Sand and gravel working. • Docks, marinas and wharves. • Navigation facilities. • Ministry of Defence installations. • Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location. • Water-based recreation (excluding sleeping accommodation). • Lifeguard and coastguard stations. • Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms. • Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.

* Landfill as defined in Schedule 10 to the Environmental Permitting (England and Wales) Regulations 2010.

Table 3 - Flood risk vulnerability and flood zone 'compatibility'

Flood Zones	Flood Risk Vulnerability Classification				
	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a†	Exception Test required†	✗	Exception Test required	✓	✓
Zone 3b*	Exception Test required*	✗	✗	✗	✓*

Key:

✓ Development is appropriate

✗ Development should not be permitted.

Notes to *Table 3*:

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- This table does not show the application of the Sequential Test which should be applied first to guide development to Flood Zone 1, then Zone 2, and then Zone 3; nor does it reflect the need to avoid flood risk from sources other than rivers and the sea;
- The Sequential and Exception Tests do not need to be applied to minor developments and changes of use, except for a change of use to a caravan, camping or chalet site, or to a mobile home or park home site;
- Some developments may contain different elements of vulnerability, and the highest vulnerability category should be used, unless the development is considered in its component parts.

† In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.

* In Flood Zone 3b (functional floodplain) essential infrastructure that has to be there and has passed the Exception Test, and water-compatible uses, should be designed and constructed to:

- remain operational and safe for users in times of flood;
- result in no net loss of floodplain storage;
- not impede water flows and not increase flood risk elsewhere.

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3 Summary of Site Characteristics and Development Proposals

The proposals are for a new biomass boiler and auto feed attachment at Trojanwood Ltd, Bourne Road, Pode Hole, Spalding, PE11 3LW.

The site is an existing developed commercial/agricultural site, occupying approximately 900m^2 in total. The impermeable area of the site is approximately 900m^2.

Figure 1 provides the location details and *Figure 2* shows an aerial photograph of the development site.



Location Plan
1:1250

Block Plan
1:500

Figure 1 - Detailed location plan of the development site, highlighted.

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Figure 2 - Aerial view of the development site.

Agricultural developments are generally classified as Less Vulnerable development within Table 2 - Flood Risk Vulnerability Classification of the Planning Practice Guidance. The proposal is for a biomass boiler which is required to service the existing buildings and use of the development land. The proposals do not increase the vulnerability of the development.

Figures 3 and 4 shows the development proposals.

Compared to the existing arrangement, there will be no change in roof area, building footprint or external impermeable area. The biomass boiler will be positioned over existing hardstanding. The proposal therefore has no material effect on runoff generation, floodplain storage or surface water flow routing.

The proposed development is minor and proportionate to the existing use.

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Figure 3 – Location of proposed development

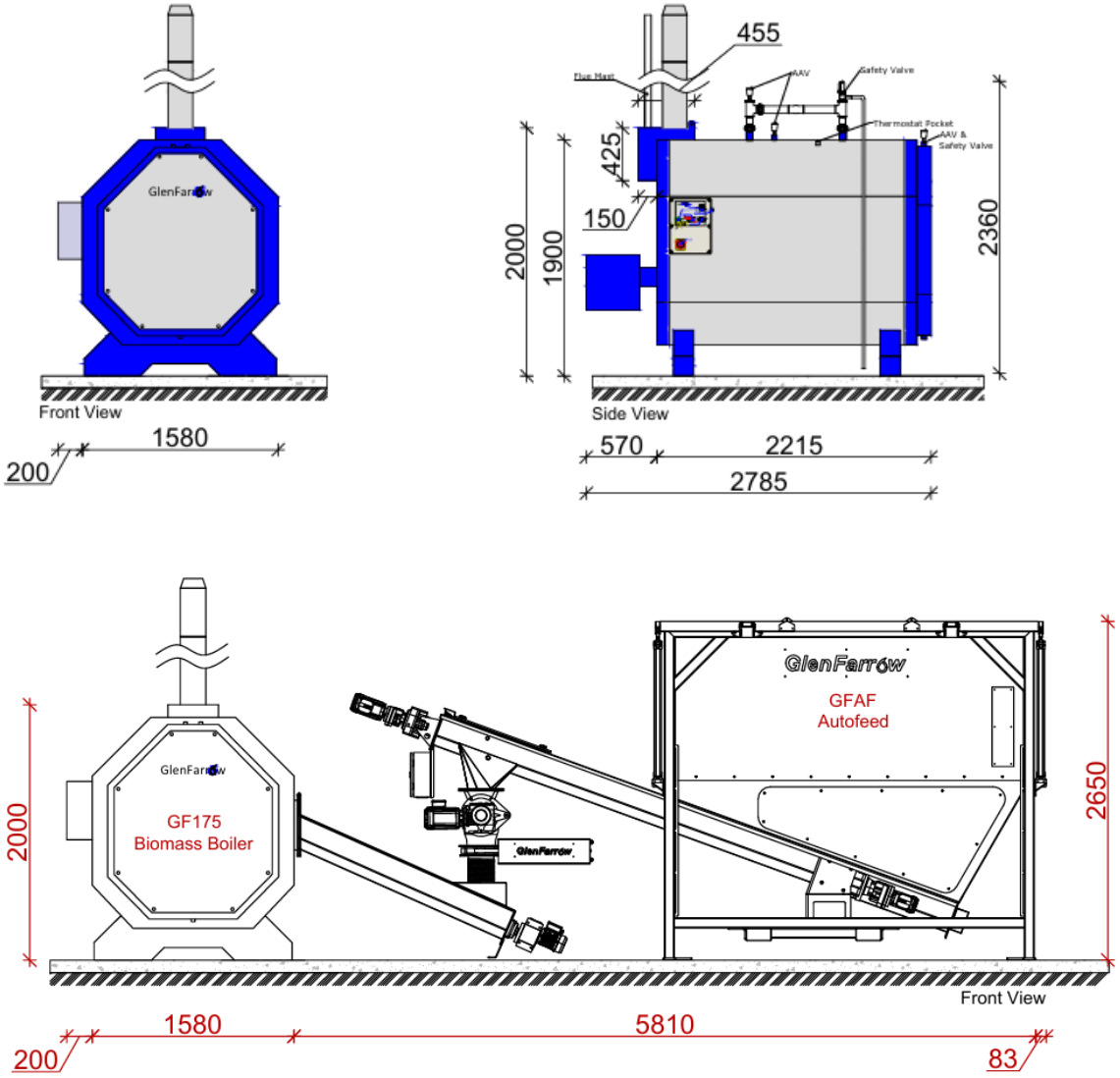


Figure 4 – Proposed views

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4 Sources of flooding

4.1 Fluvial/Tidal

The Environment Agency's Flood Map for Planning (Rivers and Sea) identifies fluvial and tidal flood zones and provides an indication of whether these zones are protected due to the presence of flood defences. The development site lies within Flood Zone 3, having a more than 1 in 100/200 annual probability of river or sea flooding.

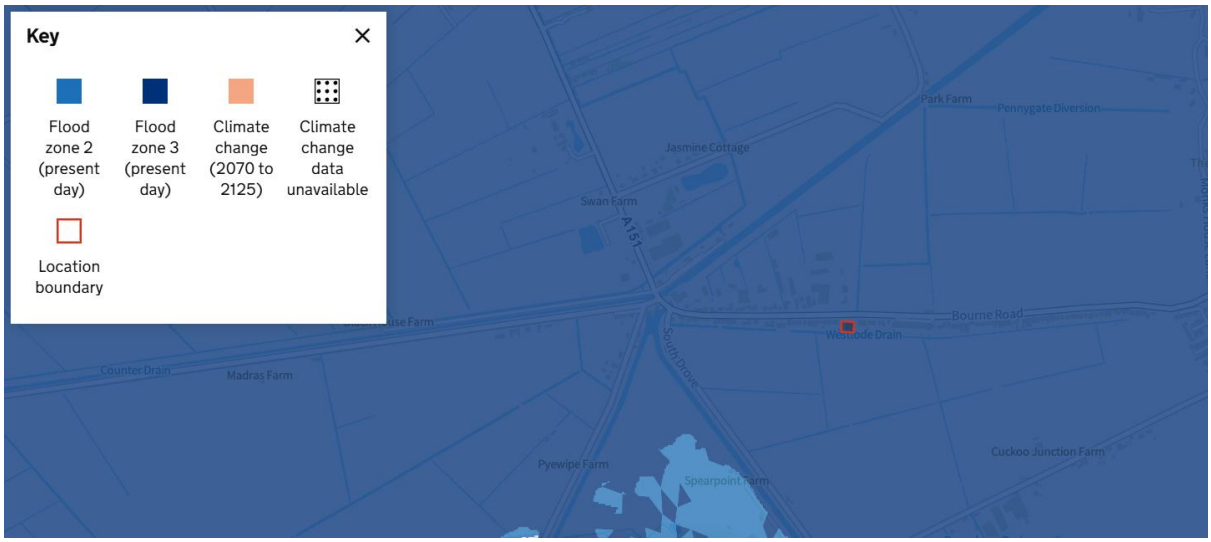


Figure 3 - Flood Map for Planning (Rivers and Sea) plus climate change scenario

Further information from the Environment Agency has modelled flood levels. The development is situated between two nodes – GLEN12214 and Welland15724. Subsequently, the highest of the two nodes has been used. This calculates the 1 in 100 year plus climate change level is 5.09mAOD.

There is an ordinary watercourse to the south and east of the development.

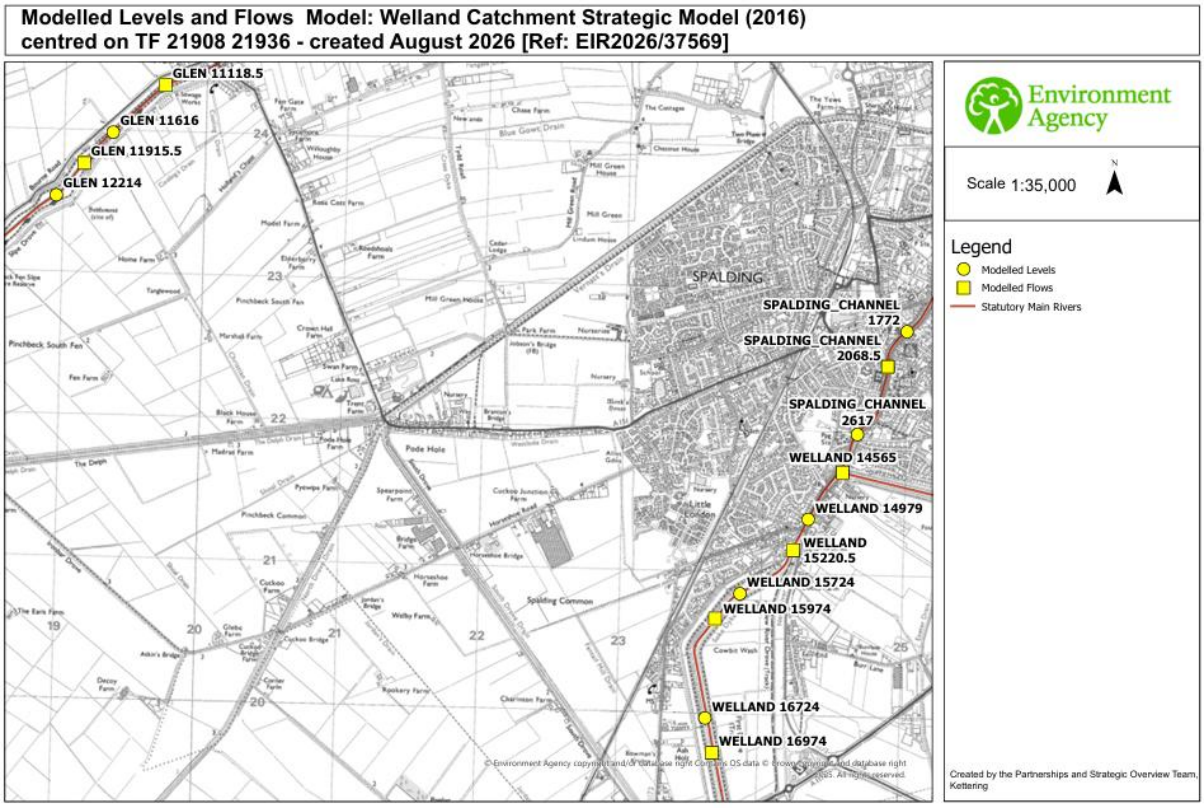


Figure 5 – Node locations

Node Label	Easting	Northing	Annual Exceedance Probability - Maximum Water Levels (mODN)											
			50% (1 in 2)	20% (1 in 5)	10% (1 in 10)	5% (1 in 20)	3.33% (1in 30)	2% (1 in 50)	1.33% (1 in 75)	1% (1 in 100)	0.5% (1 in 200)	0.1% (1 in 1000)	1% (1 in 100) inc 20% Climate Change	0.1% (1 in 1000) inc 20% Climate Change
GLEN 11616	519345	323981	4.17	4.35	4.44	4.54	4.57	4.61	4.64	4.67	4.81	5.18	5.07	5.45
GLEN 12214	518954	323531	4.19	4.37	4.45	4.55	4.58	4.63	4.66	4.69	4.83	5.20	5.09	5.48
SPALDING_CHANNEL 1772	524991	322719	3.69	3.98	4.17	4.44	4.49	4.51	4.51	4.51	4.53	4.55	4.67	4.67
SPALDING_CHANNEL 2617	524658	321986	3.68	3.96	4.17	4.42	4.48	4.49	4.50	4.50	4.52	4.54	4.67	4.67
WELLAND 14979	524326	321381	3.68	3.96	4.16	4.42	4.47	4.48	4.49	4.49	4.51	4.53	4.67	4.67
WELLAND 15724	523856	320846	3.69	3.97	4.18	4.43	4.49	4.51	4.52	4.52	4.53	4.54	4.66	4.66
WELLAND 16724	523630	319964	3.70	3.99	4.19	4.44	4.51	4.53	4.53	4.54	4.54	4.55	4.66	4.66

Figure 6 – Fluvial Flood levels (mAOD)

Node Label	Easting	Northing	Annual Exceedance Probability - Maximum Flows (m³/s)											
			50% (1 in 2)	20% (1 in 5)	10% (1 in 10)	5% (1 in 20)	3.33% (1in 30)	2% (1 in 50)	1.33% (1 in 75)	1% (1 in 100)	0.5% (1 in 200)	0.1% (1 in 1000)	1% (1 in 100) inc 20% Climate Change	0.1% (1 in 1000) inc 20% Climate Change
GLEN 11118.5	519708	324321	24.57	28.29	29.89	31.97	32.53	33.30	33.96	34.42	38.15	48.16	41.68	56.79
GLEN 11915.5	519145	323760	24.33	28.10	29.70	31.76	32.31	33.06	33.70	34.26	38.19	48.21	41.68	56.76
SPALDING_CHANNEL 2068.5	524861	322469	3.93	5.64	6.49	7.42	7.70	7.22	7.75	8.23	8.30	7.75	10.68	10.13
WELLAND 14565	524561	321717	63.80	79.29	90.28	103.47	108.03	112.00	113.21	114.55	114.14	113.78	113.81	113.64
WELLAND 15220.5	524226	321161	61.82	77.48	88.54	101.91	106.83	111.89	113.08	114.43	114.22	113.66	113.70	113.64
WELLAND 15974	523684	320667	60.79	76.55	87.52	100.95	106.27	111.83	113.03	114.37	114.38	113.65	113.76	113.63
WELLAND 16974	523686	319721	59.28	75.10	85.95	99.45	106.32	111.74	112.95	114.31	114.87	113.65	113.94	113.62

Figure 7 - Fluvial Flood Flows

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4.2 Surface Water

The Environment Agency's surface water flood mapping identifies pluvial flood risk. Present day mapping indicates that the chance of surface water flooding at this location could be greater than 0.1% in any year, equivalent to the 1 in 1000 annual probability event. The site is not shown to be affected in the 1 in 30 year or 1 in 100 year present-day events.

No defined overland flow route is identified across the site.



Figure 5- Flood Map for Surface Water, with Climate Change with area of proposals highlighted

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4.3 Reservoir

Reservoir flooding is a residual risk associated with the unlikely failure of a reservoir embankment or structure. Available reservoir flood risk information indicates that reservoir flooding at the site is possible when there is also flooding from rivers.



Figure 6 – Flood risk from reservoirs

Reservoir flooding is extremely unlikely to happen. There has been no loss of life in the UK from reservoir flooding since 1925. All large reservoirs must be inspected and supervised by reservoir panel engineers. As the enforcement authority for the Reservoirs Act 1975 in England, the Environment Agency ensures that reservoirs are inspected regularly, and essential safety work is carried out.

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4.4 Groundwater

The Environment Agency's Groundwater Vulnerability Map indicates that the development site is situated over a high groundwater vulnerability area, as shown in Figure 7. Further analysis shows that the development site is situated over a Groundwater Source Protection Zone (Zone III) as shown in Figure 8.

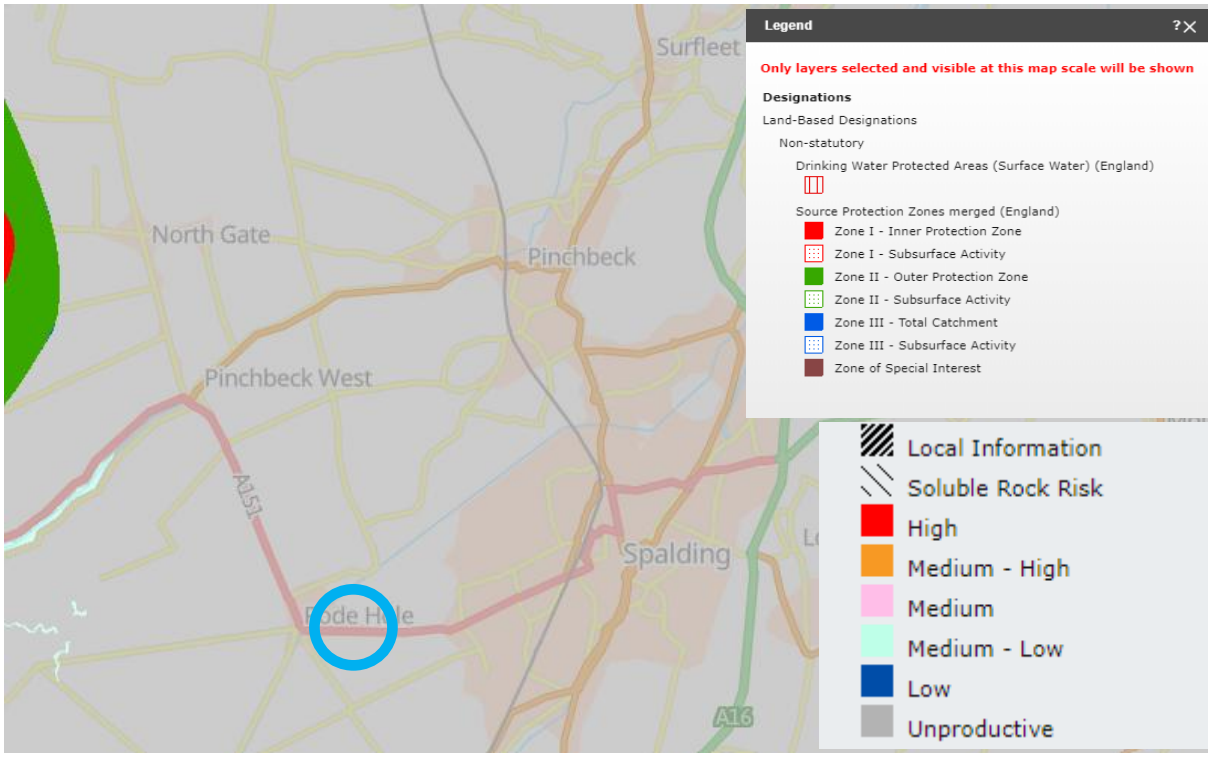


Figure 7 – Groundwater vulnerability map, site highlighted.

Due to the minimal groundworks the impact on groundwater is considered to be negligible.

4.5 Flood history

A review of available flood information provided for this assessment has not identified a recorded history of flooding at the site. No site-specific evidence has been provided of flooding nearby, sewer surcharge, culvert flooding, ditch flooding, reservoir flooding or ordinary watercourse flooding affecting the property.

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4.6 Flood displacement

The proposed works are inside fluvial/tidal extents of flooding. However, due to the nature, location, and scale of the development, the proposals will not obstruct an overland flow route and will not displace mapped floodwater from any source. As such no flood compensatory storage is required.

5 Surface Water Drainage

The proposed biomass boiler will be constructed over existing hardstanding, therefore any rainfall runoff from this feature shall discharge in the same way and location pre-development. The boiler should not be located over any existing drainage feature such as a gully.

6 Use of SuDS

The NPPF, Planning Practice Guide and the Ministerial Statement promote the use of SuDS as a priority to aid the disposal of surface water from new developments.

Due to the nature and constrained nature of the development, there are little opportunities to provide conventional SuDS features such as attenuation basins and swales. However, if any opportunities for water re-use in the form of water butts are possible, these should be explored.

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7 Management of flood risk

7.1 Critical / design flood

The analysis of flood risk from fluvial and tidal sources shows that the site is within Flood Zone 3, having a greater than 1 in 100/200 year annual probability of river or sea flooding. Climate change mapping indicates no change in flood extent affecting the site.

Flood information from the Environment Agency shows the 1 in 100 year plus climate change level is 5.09mAOD.

There is an ordinary watercourse to the south and east of the development. The location of the biomass boiler and autofeed will not be located within 5m of these features.

A review of strategic flood risk documents and available flood records has not identified a recorded history of flooding at the site.

Surface water flood risk information indicates that site is at very low risk.

Whilst the proposed works are inside fluvial/tidal extents of flooding. However, due to the nature, location, and scale of the development, the proposals will not obstruct an overland flow route and will not displace mapped floodwater from any source. As such no flood compensatory storage is required.

The biomass boiler could be installed on a raised platform to minimise any damage in the event of flooding.

A flood plan should also be set up and incorporated into the development. On receipt of a flood warning, temporary measures should be set up i.e. sandbags (or similar) around the boiler and auto feed to limit and prevent the ingress of flood water; as well as other measures.

The development will not detrimentally affect overland flood flows.

7.2 Surface water runoff

The proposed biomass boiler will be constructed over existing hardstanding, therefore any rainfall runoff from this feature shall discharge in the same way and location pre-development. The boiler should not be located over any existing drainage feature such as a gully.

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7.3 Flood Plan

With the development being in flood zone 3, it is prudent for the development to have a flood plan, details are below:

Recommended Flood Plan:

Before a flood

- Register for the Environment Agency's Flood Warning Service.
- Ensure you have adequate flood insurance. The Government backed Flood-Re scheme now makes insurance more accessible for flood risk properties;
- Register for the flood warning service, if available, and note the type available and its lead in times;
- Prepare and keep a list of all your contacts to hand or save them on your mobile phone/tablet;
- Think about what items you can move now and what you would want to move to safety during a flood such as pets, cars, furniture and electrical equipment;
- Know how to turn off gas, electricity and water supplies;
- Prepare a flood kit of essential items and store in an easily remembered / accessible location. It can include copies of important documents, a torch, a battery-powered or wind-up radio, blankets and warm clothing, waterproofs, rubber gloves and a first aid kit including all essential medication.

After a flood

- If you have flooded, contact your insurance company as soon as possible;
- Take photographs and videos of your damaged property as a record for your insurance company;
- Contact your local authority for information on grants and charities that may be available to help you;
- Flood water can contain sewage, chemicals and animal waste. Always wear waterproof outwear, including gloves, wellington boots and a face mask;
- Have your electrics, central heating and water checked by qualified engineers before switching them back on.

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8 Conclusions

The proposed installation of a biomass boiler and auto feed at Trojanwood Ltd, Bourne Road, Pode Hole, Spalding, PE11 3LW is located within Flood Zone 3, and having a greater than 1 in 100/200 year annual probability of river or sea flooding. Climate change mapping indicates no change in flood extent affecting the site.

Agricultural developments are generally classified as Less Vulnerable development within Table 2 - Flood Risk Vulnerability Classification of the Planning Practice Guidance. The proposal is for a biomass boiler which is required to service the existing buildings and use of the development land. The proposals do not increase the vulnerability of the development.

There is an ordinary watercourse to the south and east of the development. The location of the biomass boiler and autofeed will not be located within 5m of these features.

A review of strategic flood risk documents and available flood records has not identified a recorded history of flooding at the site.

Surface water flood risk information indicates that site is at very low risk.

The site is at risk of reservoir flooding.

Whilst the proposed works are inside fluvial/tidal extents of flooding. However, due to the nature, location, and scale of the development, the proposals will not obstruct an overland flow route and will not displace mapped floodwater from any source. As such no flood compensatory storage is required.

The biomass boiler could be installed on a raised platform to minimise any damage in the event of flooding.

A flood plan should also be set up and incorporated into the development. On receipt of a flood warning, temporary measures should be set up i.e. sandbags (or similar) around the boiler to limit and prevent the ingress of flood water; as well as other measures.

The development will not detrimentally affect overland flood flows.

The proposed biomass boiler will be constructed over existing hardstanding, therefore any rainfall runoff from this feature shall discharge in the same way and location pre-development. The boiler should not be located over any existing drainage feature such as a gully.