RABBIT INGS COUNTRY PARK VISITOR CENTRE

LUNDHILL LANE, ROYSTON, BARNSLEY

FLOOD RISK ASSESSMENT & DRAINAGE STRATEGY

BARNSLEY MBC

JANUARY 2026

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APPENDICIES

RABBIT INGS COUNTRY PARK VISITOR CENTRE

FLOOD RISK ASSESSMENT

Shaun Tonge Engineering Limited (STE) has been appointed to carry out an assessment of the site, implement appropriate consultations and prepare a Flood Risk Assessment Report, in accordance with NPPF.

This report is based on the interpretation and assessment of data provided by third parties. Whilst every effort has been taken to ensure this information is accurate and up-to-date, STE cannot guarantee the accuracy of third-party data and the findings of this report may change if the data is amended or updated after the date of consultation.

THE SITE:

The site consists of a visitor centre and associated car parking which is part of a country park.

The development area is approximately 0.37 hectares and is bounded by Lund Hill Lane to the west, with open land to the north, south and east.

A location plan is presented in Appendix A

The site is currently used as a visitor centre and car park with gentle falls generally from north to south.

A topographical survey is presented in Appendix B.

PROPOSED DEVELOPMENT:

Planning permission is sought to demolish the existing visitor centre and replace it with a new building and associated infrastructure. The proposed layout is presented in Appendix C.

FLOOD ZONE LOCATION:

The Environment Agency flood map shows the site lies within flood zone 1. The site is therefore “low probability” where the annual risk of fluvial flooding is less than 0.1%. There are small open ditches within the vicinity of the site. The majority of these are lower than the site so the associated risk is very low. The ditch directly to the north of the car park is a potential risk but an enquiry to Barnsley lead local flood authority (LLFA) has confirmed the ditch is to protect the car park from overland flows. The LLFA also confirmed the only historic flooding within the immediate area occurred to the sports pitches to the south.

EXISTING DRAINAGE

There are foul and surface water drainage systems on the site, although it is not clear where these ultimately outfall (please refer to the topographical survey within Appendix B). Further investigation is recommended to confirm the outfalls.

There is a small ditch approx. 5m north of the car park. Barnsley MBC LLFA have confirmed this is to protect the car park from overland flows with no known flooding issues.

ENVIRONMENT AGENCY CONSULTATION

The Environment Agency Flood Map, which shows areas of land that could flood from rivers or the sea and are shaded blue are presented in Appendix D. These areas do not take into account defences as water can overtop or can fail in extreme conditions.

The EA flood zone classifications are defined as:-

Flood Zone 1 - 'Low Probability' is assessed as having a less than 1 in 1,000 annual probability of river or sea flooding in any year (less than 0.1%).

Flood Zone 2 - 'Medium Probability' is assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding in any year (1% - 0.1%) and between a 1 in 200 and 1 in 1,000 annual probability of flooding from the sea (0.5% - 0.1%).

Flood Zone 3 - 'High Probability' is assessed as having a 1 in 100 or greater annual probability of river flooding in any year (greater than 1%) and a 1 in 200 chance or greater annual probability of flooding from the sea (less than 0.5%).

The EA flood map for planning shows that the site is located within Flood Zone 1 and the site, therefore, has a low risk of fluvial flooding.

The flood map for surface water, which shows areas where surface water only would be expected to flow or pond in England & Wales, is also presented in Appendix D.

All land in England and Wales will be within 'one' of a possible 'four' categories. The four categories shown on the map are:-

High - This area has a chance of flooding greater than 1 in 30 in any given year (annual probability of flooding 3.3%).

Medium - This area has a chance of flooding between 1 in 100 (1%) and 1 in 30 (3.3%) in any given year.

Low - This area has a chance of flooding between 1 in 1000 (0.1%) and 1 in 100 (1%) in any given year.

Very low - This area has a chance of flooding of less than 1 in 1000 (0.1%) in any given year.

The proposed development is shown to be within a very low risk area for surface water flooding with no flood routes from third party land affecting the site.

WATER AUTHORITY CONSULTATION

No formal consultation has been requested from Yorkshire Water (YW), who are the Water Authority for this area. There are no public sewers within the vicinity of the site.

A copy of the public sewer record is presented in Appendix E for reference purposes.

As of October 2011 and the private to public sewer transfer, there are many uncharted Yorkshire Water assets currently not shown on their records.

FLOOD RISK FROM DIFFERENT SOURCES

The risk of flooding to the site from all current and future potential sources of flooding has been assessed as follows:-

Flooding from Rivers (Fluvial) There are no rivers recorded within the vicinity of the site that would pose a risk of flooding to the site. This is evident from the Environment Agency Flood Maps.

Flooding from Local Watercourses (Fluvial) - Unnamed watercourses are located approximately 5m in a northerly direction. However, with no flooding having ever been experienced, flooding from these sources is considered to be low risk.

Flooding from the Sea (Tidal/Coastal) - The site is not located near enough to the sea to cause a problem of flooding from this source.

Flooding from Land (Surface Water) - The Environment Agency surface water flood map shows the site to have a very low risk of surface water flooding, with no flood routes affecting the proposed development.

Flooding from Groundwater - The Phase 2 geotechnical report by Arc Environmental confirms the underlying strata to be mudstone with coal bands. Groundwater flooding tends to occur when the underlying strata is permeable rock and therefore the risk from this source is low. No basements are proposed to the visitor centre and therefore flooding of the building from ground water is considered to be very low risk.

Flooding from Sewers – There are no public sewers within the vicinity of the site and therefore flooding from this source is considered to be low risk.

Flooding from Reservoirs, Canals or Artificial Sources - The Environment Agency produce maps which show the expected inundation area should a reservoir fail and release its capacity. It should be noted, however, that reservoir flooding is extremely unlikely to happen. The proposed development site is shown to be outside of the maximum extent of reservoir flooding.

There are no canals or other artificial sources within the vicinity of the proposed development site that would pose a risk of flooding on site, therefore, the risk from this source is deemed to be negligible.

CLIMATE CHANGE

The NPPF and PPG has indicated that the Global sea levels will continue to rise, depending on greenhouse gas emissions, and the sensitivity of the climate system. This will increase the rainfall intensity across the country.

United Kingdom climate change guidance was revised in February 2016 for peak river flows and peak rainfall intensities. With regards to peak river flows, a regionalised approach has now been adopted to climate change impacts based upon the river basin district of the proposed development site, the flood risk vulnerability of the proposed development and the present-day Flood Zone classification.

The proposed development site is situated within the Don and Rother catchment. The catchment area based on an “upper end” climate change scenario, could see peak river flows increase by 60% by 2080. As the site is situated entirely within Flood Zone 1, an increase of 60% in river flows is deemed unlikely to affect the proposed development site.

FLOOD MITIGATION

As the site falls within Flood Zone 1, flood mitigation measures are only required in the event of a catastrophic storm or blockage of the proposed drainage system. The following precautionary flood mitigation measures are, therefore, recommended:-

The finished flood level to the new building should be raised above external levels by a minimum of 150mm, wherever possible.

The new building should be designed without a basements and ground floors should comprise of a solid concrete slab or beam and block with screed construction.

Incoming electricity supplies should be raised above ground floor level and ground floor electric sockets shall be served by loops from above.

In the unlikely event of flooding of the site, it will be necessary to ensure there is a route for floodwater through the site without causing flooding of buildings.

EMERGENCY EGRESS DURING TIMES OF FLOOD

It is a requirement under the PPG that occupants should be able to egress any building during times of flood, without being trapped by flood conditions. As the site falls within Flood Zone 1, no special mitigation measures are required for emergency egress during times of flood.

EXISTING AND PROPOSED DRAINAGE

Existing Drainage

There are no known public sewers, culverts or watercourses crossing the site. There is currently foul and surface water drainage within the site associated with the current building and car park. The outfalls to the foul and surface water systems are currently unknown. It is recommended further investigations are carried out to confirm the outfalls.

Sustainable Drainage

In order to comply with the requirements of NPPF, it will be necessary to consider aspects of Sustainable drainage techniques for the new development. The Phase 2 geotechnical report by Arc Environmental confirms the underlying strata to be mudstone with coal bands. Mudstone has poor infiltration charecteristics and therefore infiltration methods of surface water drainage will not be a viable option.

Proposed Surface Water Drainage

The impermeable area of the visitor centre and car park will be unchanged. The outfalls from the existing site should be investigated further to confirm their type and location.

The proposed drainage design should mimic the existing system as closely as possible to maintain the “status quo”.

Proposed Foul Drainage

Foul domestic waste should discharge to a septic tank or package treatment plant depending on the confirmed outfall type.

A septic tank should discharge to a drainage field.

A package treatment plant should discharge to a drainage field or suitable watercourse.

Any necessary consents should be put in place before the facility is operational.

Future maintenance

The drainage system will be maintained by Barnsley MBC. (As it is currently)

The proposed drainage strategy plan is presented in Appendix F.

CONCLUSION

The site falls within Flood Zone 1. However, in order to accommodate the possibilities of flood from a catastrophic storm or blockage of the proposed drainage system, the following precautionary flood mitigation measures are recommended:-

The finished flood level of the proposed building should be raised above external levels by a minimum of 150mm, wherever possible. The new building should be designed without any basements and ground floors shall comprise solid concrete slabs or beam and block with screed construction.

Incoming electricity supplies should be raised above ground floor level and ground floor electric sockets shall be served by loops from upper level.

In the unlikely event of flooding of the site, it will be necessary to ensure there is a route for floodwater through the site without causing flooding of buildings.

The proposed surface water drainage system should be designed to keep the “status quo” as closely as possible. i.e. Keep the discharge points and contributing areas as close to the current system as possible.

Foul water should discharge to a septic tank or package treatment plant depending on the confirmed outfall type.

No special mitigation measures are required for emergency egress during times of flood.

Subject to compliance with the above, the proposed development can satisfy the requirements of the National Planning Policy Framework and the Planning Practice Guidance in relation to flood risk.