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DRAINAGE STATEMENT HORKSTOW ROAD, BARTON UPON HUMBER

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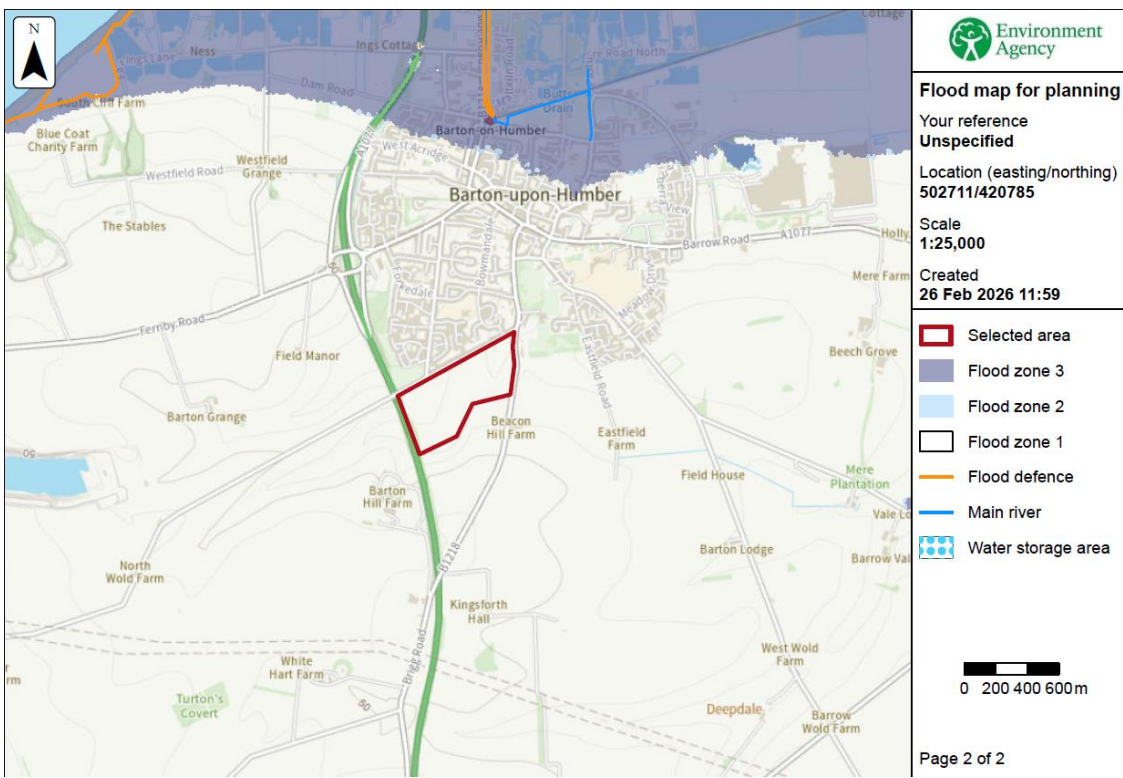
Drainage Statement to support the planning application for the development - Horkstow Road, Barton upon Humber.

Proposed Development and Existing Site Details

The site is located on Horkstow Road, Barton upon Humber which itself is situated about 2km south of the Humber Bridge. It is positioned south of Barton upon Humber.

Flood Risk Assessment

The site is located within Flood Zone 1 and is not considered to be at risk from fluvial, surface water, tidal, reservoir or groundwater flooding. As such, the overall flood risk to the proposed development is considered to be low.



Previous Pond sizing

Previous basin sizing completed by Wardell Armstrong was done to a runoff rate of 17.4 l/s (2.24l/s/Ha acquired through HR Wallingford Greenfield runoff calculator) and an estimated impermeable area of 7.65Ha. Based on 2.24l/s/Ha, the basins were sized as

Catchment 1 = 2551 metres cubed of storage

Catchment 2 = 1947 metres cubed of storage

Catchment 3 = 1853 metres cubed of storage

Adept Revised Pond sizing

The revised pond sizing completed by Adept shows an increase in pond volume needed to suffice the proposed impermeable areas.

A detailed impermeable area plan was used to derive the required pond storage volume to achieve sufficient attenuation. 10% urban creep was applied and a summer and winter runoff coefficient of 0.75 and 0.84 was applied respectively. The same discharge rate in the Wardell Armstrong technical note (2.24l/s/Ha) was applied to the revised pond sizes and a simulation of a 1 in 100-year storm with 40% climate change provided the required storage capacities below:

Catchment 1: 2350 metres cubed of storage

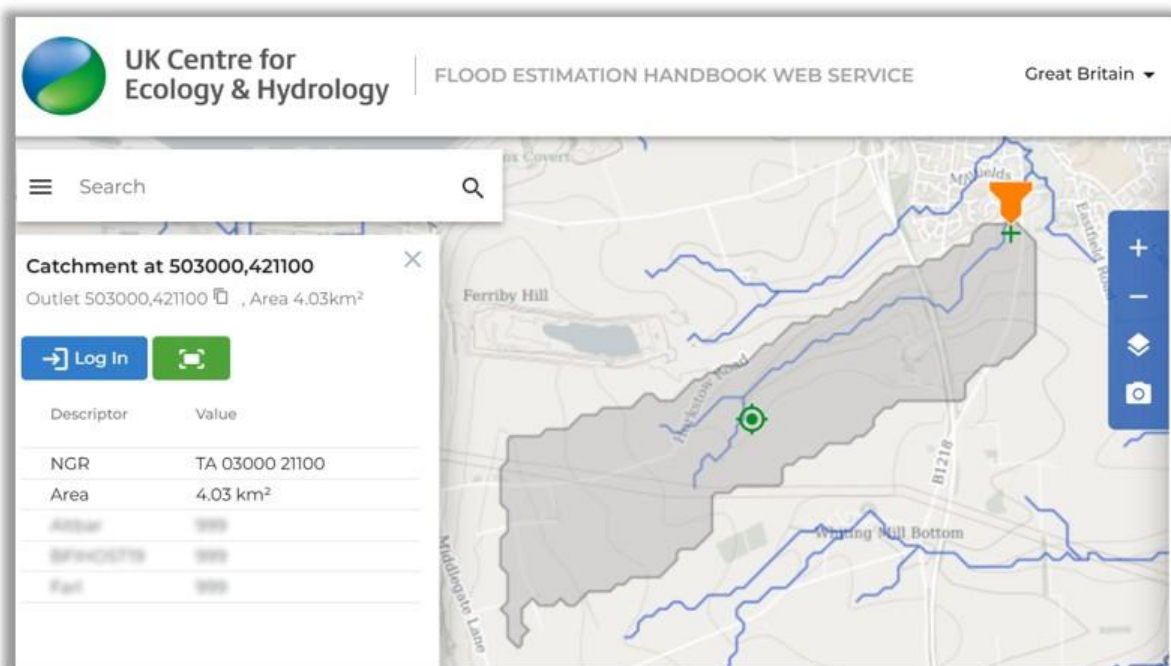
Catchment 2: 2710 metres cubed of storage

Catchment 3: 2320 metres cubed of storage

The revised catchment 1 storage volume has decreased due to a catchment area change where the area of catchment 2 has increased and catchment 1 has decreased. This has been done due to a levels difference along the border between the two catchments.

To facilitate the spatial requirements of the ponds, each pond depth was increased to 1.5 metres of storage compared to the previous 0.7 metres. Permanent water has also increased from 0.3 metres to 0.5 metres and all three ponds maintain 0.3m of freeboard.

Existing watercourse



The Flood Estimation Handbook data shown above portrays an existing watercourse running through the proposed development. This captures 400 hectares which could generate a significant flow. Restricting this flow could prove to be detrimental to the proposed development. For example, a runoff rate of 1.4l/s/Ha would accumulate to 560l/s flowing through the existing watercourse. The flow in the watercourse could be considerable unpractical to hold back. The proposed attenuation of all three proposed catchments may provide an improvement by slightly reducing the area currently discharging to the watercourse.

Conclusion

1. Existing Site and flood risk

The existing site is located within flood zone 1. Therefore, the site is not susceptible or at risk of flooding.

2. Revised Tank sizing

The revised tank sizing completed by Adept shows an increase in volume compared to what was originally proposed by Wardell Armstrong. Over all three catchments an extra 1029 metres cubed of storage volume is required to attenuate the catchments with typical parameters such urban creep. The discharge rate between the two engineering drawings has remained the same as it was derived from HR Wallingford. The large increase in volume needed has resulted in the ponds becoming deeper to satisfy the spatial requirements in the architect's layout.