

Proposed Residential Development at Land off Barkby Road, Queniborough, Leicestershire

Written on behalf of David Wilson Homes - East Midlands

Proof of Evidence

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Charnwood Borough Council Reference: P/20/2380/2

The Planning Inspectorate Reference: APP/X2410/W/23/3316574

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1.0 Relevant Qualifications

I am Richard Holden and I have been employed as a Civil Engineer by Residential and Commercial Engineering Ltd (RACE) since January 2017 and I currently hold the post of Director of Engineering.

My qualifications and professional memberships are summarised as follows:

- B.Eng(Hons) Degree in Civil Engineering
- Fellow of the Institute of Highway Engineers
- Member of the Chartered Institution of Highways and Transportation (MCIHT)
- Incorporated Member of the Association for Project Safety.

I have worked as a Civil Engineer since I graduated from University of Birmingham in June 1991, working as both a consultant and as a direct member of staff for numerous developers over the course of my 32-year career. This work is directly in connection with residential and commercial developments, providing planning advice with regards to engineering, highways, drainage, and flood risk.

Through our work advising on the Barkby Road development proposal, I am familiar with local flooding/drainage conditions on/ near the site and their relevance to this appeal.

2.0 Documentation

Residential and Commercial Engineering Ltd (RACE) were commissioned to undertake a Flood Risk Assessment (FRA) and accompanying Drainage Strategy to support a proposed outline planning application for the construction of residential dwellings on a greenfield site, off Barkby Road, Queniborough. RACE was originally instructed in November 2017, and have subsequently been involved in the updating of the FRA, the accompanying Drainage Strategy in February 2018. We have also been involved in the ongoing consultations and discussions during the planning approval process in relation to the Drainage Strategy.

The 2 documents produced by RACE and submitted in support of the planning application which is now under appeal are: -

- RACE/DWH/BRQ/FRA 1 Rev A - Flood Risk Assessment
- RACE/DWH/BRQ_ENG_002 Rev # - Drainage Strategy Plan

The planning application was refused by Planning Committee on 9 December 2022. There were no Drainage or Flooding cited as part of the reasons for refusal.

I have reviewed the planning documentation listed above, which was submitted with the outline planning application and stand by the findings of the FRA and the Drainage Strategy.

Our evidence, based on the documents produced, will address the reasons why I consider that the proposed development suitably considers the existing flood issues relating to the site and provides a suitable Drainage Strategy that not only takes these considerations into account, but also protects against any potential impact of the development on future flooding/drainage.

We will also address any concerns highlighted within the third-party representations regarding current and potential future flooding.

3.0 Flood Risk

The FRA produced in November 2017 and subsequently updated in February 2018 has identified that the entire site is located within Flood Zone 1, meaning it falls into a low-risk area for flooding (i.e. 0.1% risk of flooding or less than 1 in 1000yrs). This was based on Environment Agency (EA) mapping. While preparing this Proof of Evidence current EA and LCC mapping has been reviewed and, even though several years has elapsed since the FRA was produced, the mapping shows that site is still located within Flood Zone 1.

The FRA details that although there is a small amount surface water flooding running along the southern boundary of the proposed site there are no identified sources of flooding that affect the site.

When reviewing the FRA as part of the planning submission neither the Local Lead Flood Authority (LLFA) nor the Environment Agency (EA) refuted the findings within the FRA regarding flood risk.

4.0 Drainage Strategy – Existing Site Flows

Although the FRA was updated in 2018 it does still follow the principles set out In Charnwood Borough Council's Design Supplementary Planning (January 2020) and Policy CS16. These principles are that the design approach should mimic the existing greenfield run-off from the site, thus minimising the impact of the new development on the existing surroundings. The assessment of existing site flows has been undertaken for both the FRA and Drainage Strategy does take this approach into account.

The existing greenfield flows were calculated using the recognised methodology of IH124 "Flood estimation for small attachments". Using ICP SUDS software by Micro-Drainage (a derivative of IH 124) it was calculated that the equivalent greenfield run-off (Qbar) at the site location. This was based on a development area of **3.82 Ha** (equivalent to 60% of Total Site Area plus a 10% allowance for Urban Creep) and gave an existing run-off rate of **16.80 l/s** (see FRA section 5a).

It should be noted for larger storm events of 30 and 100 years, the equivalent greenfield run-off rate increases to **32.9 l/s** and **43.1 l/s**, respectively.

4.1 Drainage Strategy – Outfall Location

For surface water discharge from new developments, the selection of a suitable outfall must follow a nationally recognised hierarchy as follows: -

- Into the Ground (Infiltration)
- To surface water body (i.e. watercourse)
- To a surface water sewer, highway drain, or another suitable drainage system.

Although an intrusive ground investigation has not been undertaken, based on the ground conditions identified from the British Geological Survey records for the site, the FRA concluded that draining the site into the ground, via infiltration, is not viable due to the cohesive nature of the soils within the site.

The FRA also was able to rule that it was not viable to connect to the nearest watercourse (located east of the site crossing through an existing residential estate) due to the topography meaning that a gravity solution is not practical, and the outfall would need to cross through numerous third-party land ownerships which are not in the control of the developer. It also concluded that the use of any land drainage ditches in the vicinity of the site were not viable as indications were that they are not continuous and thus not able to convey flows away from the site.

The original FRA identified a potential outfall into a public sewer, based on Severn Trent Water [STW] records which is located within the carriageway just outside the north-west corner of the site (MH9201). Subsequent correspondence with STW, following receipt of a Developer Enquiry Response dated 23 February 2018 and an updated one dated 29 April 2021 concluded that a connection into this manhole would be acceptable (see STW Email dated 9 June 2021).

The updated FRA, Drainage Strategy, and correspondence with STW were submitted to the LLFA and EA as part of the planning submission with both parties providing approval to these proposals, as set out the LLFA consultation response dated 14 June 2021 and the emails from EA (dated 26/02/2021 & 10/03/2023). These approvals are also reciprocated in Planning Officer's Report dated 22 January 2021 (see section Flood Risk and Drainage).

4.2 Drainage Strategy - Proposed Site Flows

In accordance with planning policy the Drainage Strategy for the site is to mimic the greenfield run-off from the site to pre-development levels, and attenuating flows from the development to this rate for all storms event up to and including 1 in 100year (+40% allowance for climate change). In addition, the FRA identifies that consideration should be made for an allowance for Urban Creep to allow for future minor increases in impermeable area (due to the addition of conservatories, extensions etc.). Based on the proposed development density this was set at 10%, which is the maximum allowance. This approach is outlined in section 5c of the FRA.

As the proposed outfall is a **150mm** public surface water sewer, it was considered within the FRA that mimicking the existing greenfield flows of **16.80 l/s** may cause capacity issues within the public sewers system downstream of the outfall point. It was therefore proposed to further restrict flows from the development to just **5.0 l/s**. This proposal formed the basis for all subsequent discussions with STW and the LLFA, both of whom accepted this discharge rate, with STW confirming that their own internal modelling of the existing downstream system with this discharge rate added at the outfall point did not result in the need for any capacity improvements to be made to the existing sewer system. It should also be noted that the next manhole downstream of the proposed outfall, the sewer increases in size to a **425mm** diameter.

It should be noted that the above approach provides significant betterment against the existing greenfield run-off from the site. The proposed development will discharge at **5.0 l/s** for all storm events up to and include 100year (+40%). If the site remained undeveloped it is calculated that the site would discharge at **32.9 l/s** for a 30-year event, and **43.1 l/s** for a 100-year event, and by extrapolation **60.3 l/s** for a 100year (+40%). The table below shows the improvement that the post-development surface water discharge will provide:

Storm Event	Existing run-off rate (l/s)	Proposed discharge rate (l/s)	Percentage Betterment
Qbar	16.8	5.0	70 %
30year	32.9	5.0	85 %
100year	43.1	5.0	88 %
100year + 40%	60.3	5.0	92 %

For storm events greater than a 1 in 30-year the above table clearly shows that the discharge from the site post-development will be controlled to a rate that would give over an 85% betterment on current run-off from the site, and even provides a 70% betterment than existing greenfield flows for Qbar. This fundamentally proves that the development will provide benefit in controlling flooding in the vicinity of the site.

By controlling the discharge from the site to existing run-off rate (or lower in this case), it is necessary to provide storage on-site to 'hold' the additional run-off volume within the site. The required volume has been calculated within the FRA (see Section 5d) and the proposed open detention pond indicated on the Drainage Strategy Plan (ENG_002 Rev #) provides this volume. This calculated volume also accounts for potential additional impermeable areas set aside for potential future extensions/conservatories, drive widening et cetera (by increasing the impermeable area by 10% in accordance with the planning guidance requirements of providing an allowance for Urban Creep – see section 5c of the FRA).

The calculation of the proposed discharge rate for the site, along with the proposed attenuation were presented to, and approved in principle, by the LLFA), the EA and Severn Trent Water (STW) [see consultee response from LLFA (dated 14/06/2021); the EA (dated 26/02/2021 & 10/03/2023) and email from STW (dated 09/06/21)].

4.3 Drainage Strategy – SUDS Techniques

The adopted Design Supplementary Planning Document (dated January 2020) identifies any new development must consider Sustainable Drainage Systems within the design (see section 3.130). Based on the SUDS Manual (CIRIA C753) a minimum of 2 treatments should be incorporated into the design.

The FRA clearly identifies the use of 2 SUDS features to provide the following benefits: -

- Reduce the cause and impact of flooding.
- Remove pollutants from run-off.
- Utilise water management with green spaces to provide amenity, recreation, and wildlife.

The FRA also identifies that the attenuation pond will provide the suitable level of treatment from the site.

These principles have been submitted and accepted by the LLFA and Planning Authority as complying with the requirements under CS16 and the Design Supplementary Planning Document.

4.4 Drainage Strategy – Foul Flows

Following consultation with STW (see STW Email dated 9 June 2021) it has been identified that a gravity connection into the public foul sewer located within Beechwood Avenue at MH9301 would be an acceptable outfall location for the foul discharge from the site. STW have identified that the foul discharge from the site would be between **2.1 l/s & 2.8 l/s** (see STW Email dated 9 June 2021), therefore they have confirmed that there is sufficient capacity and a connection into this public sewer is acceptable without the need for any capacity improvements.

The principles and connection location have been accepted by the LLFA, STW and the Planning Authority.

5.0 Third Party Representations to Appeal

It is acknowledged that there have been several third-party representations made with regards to this appeal; however, it is noted that only one makes a passing reference to flooding.

There is a misconception that new development means more hard impermeable areas, thus more run-off and as a result a higher risk of flooding. In fact, by following current national and local statutory guidelines, the introduction of a new development can actually reduce run-off and therefore reduce the risk of flooding in the vicinity of the development. The table in paragraph 4.2 actual shows that post-development the flows from the site will provide between a 70% and 92% betterment on the existing run-off from the greenfield all storm events. This will reduce the run-off from the field associated with the development, thus diverting the contributing overland flows into the land drainage systems which were identified as localised surface water flooding.

It is also noted that there were a substantial number of third-party representations made during the original planning consultation period, and that any objections on drainage/flooding grounds which may have been raised within these responses were not highlighted or reflected within the Planning Officer's Report dated 22 January 2021.

Based on the above it is considered that neither flooding nor drainage are a key issue within this appeal and that the FRA and Drainage Strategy, along with the consultations with STW and the LLFA address any concerns in sufficient detail such that they are acceptable to all parties.