



BDD Bigdale Drive, Kikrby

COMMENTARY ON CONDITION 13- TECHNICAL NOTE

21.05.2025

AJP Ref: 223-080

PREPARED BY John Marshall



Commentary on Condition 13 - Technical Note

Prepared for Tyson

Bigdale Drive, Kirkby - Tyson

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Bigdale Drive, Kirkby

Commentary on Condition 13 - Technical Note



1.0 Introduction

This document has been written in support of the application to discharge of Condition 13 of the Planning Approval for the development of Bigdale Drive, Kirkby - Planning

REF: DC/087141, and the subsequent response from the LLFA REF 22//00703/COND 1

The wording of the response from the LLFA is as below:

1. Discharge to Main River Without Justification

The current strategy proposes discharging surface water from the development into a culverted main river. However, no justification has been provided for ruling out infiltration-based SuDS, despite the site's demonstrated capacity for infiltration. Without a valid and evidenced justification, the proposed discharge to a culverted main river is not acceptable.

2. Discharge Rate and Greenfield Runoff Standards

If infiltration is proven to be unfeasible and discharge to a main river is permitted, the maximum allowable discharge rate should ideally be limited to the QBAR greenfield runoff rate. The submitted strategy proposes a discharge rate of 5 l/s, which is not acceptable. On brownfield sites, where QBAR is not achievable, a minimum 50% reduction from the existing maximum discharge rate must be applied. This reduction should be calculated based on the maximum flow rate at the existing outlet pipe before surcharging occurs. Additionally, if discharge to the main river remains part of the final strategy, an Environmental Permit must be obtained from the Environment Agency.

3. Use of Existing Pipework

The submitted drawings do not clearly indicate whether any existing surface water pipes or the current outlet are to be reused in the proposed drainage system. If existing infrastructure is to be utilised, a CCTV survey must be conducted to confirm that the pipework is in acceptable operational condition.

4. Lack of Design Criteria for Pipe Network

No information has been provided regarding the hydraulic design criteria for the on-site drainage network (e.g., whether it is designed for a 1 in 30-year or 1 in 100-year storm event). This information is necessary to assess system performance.

5. Absence of Exceedance Flow Information

The submission does not include any details on exceedance events or the associated overland flow routes and depths. This information is critical for understanding site flood risk during extreme storm conditions.

6. Missing Management and Maintenance Plan

A Management and Maintenance Plan has not been provided. The plan must include a schedule of routine maintenance, as well as clearly defined responsibilities and procedures for undertaking remedial and emergency repair works, including identification of the responsible party or organisation.

7. Requirement for Summary Drainage Report

A summary drainage report addressing all of the above points will be required as part of the revised submission.

To support discharge of Condition 13, AJP have provide the below response and reference to additional information, sufficient to discharge the Condition.

2.0 AJP COMMENT

2.1 Drainage Hierarchy

The Building Regulations - Approved Document H (2015) details a hierarchy of potential methods for disposing of surface water as shown below in order of preference:

- ◆ Discharge via infiltration
- ◆ Discharge to watercourse
- ◆ Discharge to sewer

Considering the hierarchy above, the surface water network for the existing site should infiltrate where possible. While there are infiltration tests carried out by Sub Surface that initially demonstrate infiltration capacity. AJP consider them insufficient evidence of infiltration for the site on the basis of BRE 365. This is due to the extrapolation of data carried out for the calculation of the infiltration rate, as per the below table.

Trial Pit	Test Number	25% Effective Depth	Max Observed Depth	Extrapolated Data utilised
1	1	0.82m	0.83	NO
1	n/a	n/a	n/a	n/a
1	n/a	n/a	n/a	n/a
2	1	1.18m	0.84	YES
2	2	1.18m	0.64	YES
2	3	1.18m	0.54	YES
2	4	1.18m	1.00	YES

Trial Pit one did not have the necessary three tests carried out and all four tests in Trial pit two rely on extrapolated data to achieve the 75% effective depth. AJP take the view on this basis, that this information cannot be relied upon for evidence of infiltration.

This is further reinforced by the evidence provided by the GRM Gas Addendum Letter (REF P10680/GAL.1) which had 5 wells installed for Gas and Groundwater monitoring, across a 6 month monitoring period, groundwater was encounter across all wells, with depths varying at each visit. The worst occurrences of groundwater for all wells ranged from 0.6m to 1.1m below ground level; suggesting the seasonable variation likely caused by perched water slowly dissipating. With a groundwater level of 1.1m established, it is not appropriate to establish any infiltration structures within the site, both documents are included in Appendix A. As we cannot achieve the necessary 1m of separation between groundwater and infiltration structure required by the CIRIA SuDS manual and good practice. Therefore infiltration to ground has been dismissed as a viable point of discharge for the development.

As the possibility of infiltration has been ruled out by the site investigation, the intent for the development would be to discharge to a watercourse. As indicated in C-1000, the

nearest watercourse is the 1350mm diameter Culvert on the North side of Brook Hey Drive. As the identified point of discharge it shall be necessary to construct a new point of connection, following agreement with the Environment Agency.

2.2 Surface Water discharge

In line with common practice, it is proposed the surface water discharge from the proposed development should mimic that from the existing site.

As the existing site is greenfield, due to the demolition of the previous active drainage elements, Knowsley Council will require the proposed surface water runoff rates to be restricted to match the existing greenfield run off rates. This is also in accordance with the requirements of the EA, where any discharge to a Watercourse shall be limited to the Greenfield Qbar rate of discharge.

Therefore, an assessment of the existing surface water run-off from the greenfield site has been completed using the ICP SuDS method within Micro Drainage. For the existing 0.196ha site, the existing greenfield run-off rates were calculated, including the large urban element. The greenfield runoff assessment is attached in Appendix B and the results are summarized within the table below.

Rainfall Return Period (years)	Existing Brownfield Runoff Rate (L/s)
Qbar (2 Year)	0.90
30 year	1.40
100 year	1.50

As the Qbar calculated comes in at 0.90L/s, it is proposed that a run off rate of 5.0L/s will be acceptable. The 5.0 L/s discharge restriction is generally accepted as the minimum discharge rate to avoid the need for very small orifices, which due to their minimal size are prone to blockage. The 5.0 L/s discharge rate is in compliance with the Environment Agency document; 'Rainfall runoff management for developers,' Report SC030219.

This is further supported by United Utilities, as the guidance notes within the United Utilities Section 104 adoption agreement states that for any flow control device, "The minimum acceptable orifice size is 100mm." and to achieve this minimum orifice diameter a maximum discharge rate of 5.0 L/s is required.

Therefore, using the total post development impermeable area of 0.149ha at the restricted discharge rate of 5.0 L/s, for the 1 in 100 year + 45% return period design storm, a storage volume of 57.0m³ is required. The attenuation storage assessment is attached in Appendix B.

The surface water drainage calculations have also been included within Appendix C and as can be seen the proposed surface water drainage and attenuation storage prevent any flooding for all rainfall events up to and including the 1 in 100 year + 45% climate change event and also meet the required 5.0 L/s discharge restriction

The design criteria for these hydraulic calculations, are as per below:

The existing drainage on site shall not be re-utilised for the proposed development, unless the final point of connection can be proven as connecting into the existing culvert.

M5-60: 19.50

Ratio R: 0.384

Cv: 0.84 Winter / 0.75 Summer

Climate Change : 45%

2.3 Flood Risk

While the development has been adequately designed to accommodate all surface water run off for all storms up to and including the 1 in 100 year storm event, with an allowance for climate change; an Flood Exceedance plan has been provided in Appendix D. This plan shall demonstrate that the proposed building and its surrounding properties are not at risk in the event of a blockage In the proposed drainage system.

2.4 Maintenance and Operation

A summary of the maintenance requirements and responsible parties can be found in document : BDD-AJP-ZZ-XX-RP-C-1000.

3.0 Conclusion

On the basis of the commentary in section 2.0, the appendix information and the supplementary documents identified in this report, it is considered that sufficient information is provided to discharge Condition 13, of the Planning Decision relating to the development at Bigdale Drive.

Appendix A - Evidence of Groundwater Levels

Appendix B - Existing Greenfield and Proposed S.W Calculations

Appendix C - Outline Drainage Layout

Appendix D - Flood Route Exceedance Plan