

Lawrence Owen
96 Starkey Street,
Heywood,
OL10 4JL

19th May 2025

LKC Reference: FRA251053 – Rutland Street Heywood

RE: LAND TO THE WEST OF RUTLAND STREET RUTLAND STREET, HEYWOOD – FLOOD RISK ASSESSMENT ADDENDUM

1. Introduction

LK Consult Ltd (LKC) has previously prepared a Flood Risk Assessment and Drainage Strategy (FRA&DS) (report ref. FRA241073-COM-R1, dated October 2024) to support the outline planning application for the erection of three townhouses and one bungalow at land to the west of Rutland Street and south of Starkey Street, Heywood, OL10 4JJ (Rochdale Borough Council planning reference 24/01076/OUT).

Following submission of the planning application, Rochdale Borough Council (RBC) in its role as Lead Local Flood Authority (LLFA) has provided comments (included as Appendix A) in relation to flood risk and drainage which are summarised below:

1. The outline FRA&DS should be updated to incorporate an outline proposed drainage layout;
2. Further assessment of infiltration potential is required;
3. Hydraulic design should provide for a 45% climate change allowance;
4. Applicant to complete a SuDS Proforma for the proposed scheme; and
5. The above points should be addressed as part of any subsequent application and the plot/buildings layout etc should not be considered fixed until a drainage layout has been accepted.

This FRA Addendum has been prepared to address the comments raised by the LLFA with additional technical information and clarity provided herein. A site visit was undertaken by LKC representatives on 14th April 2025 to inform the preparation of this report. A summary of the site visit is included as Figure 1.

2. The Site

The site is located west of Rutland Street and south of Starkey Street at National Grid Reference 385858E, 411032N and is approximately 883m² in size. The site currently predominantly comprises rough grassland with a hardstanding area along the northern boundary and two domestic garages on the eastern boundary.

Ground levels within the site range between approximately 109 – 110 metres Above Ordnance Datum (m AOD). There is a 3-5m fall in ground levels beyond the western and southern boundaries characterised by steeply banked slopes.

3. Surface Water Discharge Location

The original FRA included a review of British Geological Survey (BGS) online mapping which indicates that the site is underlain by superficial glaciofluvial deposits described as comprising sand and gravel

which are further underlain by bedrock deposits from the Pennine Lower Coal Measures Formation described as comprising mudstone, siltstone and sandstone. In addition, a review of BGS boreholes and the findings of nearby site investigations encountered interbedded cohesive and granular material within borehole records with cohesive material proven in boreholes to depths of >5.45m bgl (i.e. no granular material encountered).

Based on the above, the FRA considered the use of infiltration methods for the disposal of surface water runoff may not be feasible. Moreover, the FRA identified the use of infiltration may result in the destabilisation of boundary slopes to the west and south of the site and lead to the break-out of water at the base of or on the face of the slope.

As part of the site walkover on 14th April 2025, hand pits were excavated to determine the underlying ground conditions. The hand pits confirmed the presence of generally clayey or silty clay strata beneath the site. On occasion, the material was slightly sandy and / or slightly gravelly. The locations of hand dug excavations are shown on Figure 1 and a summary of the arisings is provided in Table 3-1 below.

Location	Depth (m bgl)	Strata
HP1	GL to 0.25	Brown / dark brown slightly sandy, slightly gravelly clayey TOPSOIL. Gravel of brick, pot and coal fragments.
	0.25 - 0.75	Brown soft to form, becoming stiff, slightly gravelly CLAY. Gravel is of sandstone and coal fragments
HP2	GL to 0.3	Brown / dark brown slightly sandy, slightly gravelly clayey TOPSOIL. Gravel of brick and coal fragments.
	0.3 - 0.7	Light brown slightly gravelly, slightly silty CLAY. Gravel of sandstone and coal fragments
HP3	GL - 0.4	Brown / light brown slightly sandy, slightly gravelly, soft silty, clayey TOPSOIL.
	0.4 - 1.3	Light brown sandy clayey SILT.

Table 3-1: Summary of hand pitting exercise

In addition, observations of the overall site setting were made during the walkover. It was noted that the southern boundary of the site to the neighbouring commercial units included a significant drop off supported by a concrete retaining wall estimated to be 3-5m and which was significantly higher than an adjacent Transit pick-up truck (see Figure 1). In addition, the slope adjacent to the western boundary was observed to be approximately 2-3m in height. Based on these physical constraints, along with the ground conditions encountered during hand pitting, it is considered that infiltration is not a suitable means to dispose of surface water runoff from the site. The site being elevated above the adjacent ground alone is considered sufficient reason for not utilising infiltration as point discharge into the ground could result in groundwater emergence and/or failure of the slope to the west.

In lieu of the use of infiltration, the previous FRA identified that the culverted section of Millers Brook, located approximately 15m west of the site, is considered the most feasible option for the disposal of surface water runoff. A review of UU sewer plans and changes to the site layout would allow for the opportunity to connect to the culverted within land owned by the Applicant. The culverted watercourse at this location may be deep therefore consideration of the construction of the connection will be required at the detailed design stage and is subject to agreement with United Utilities. Alternatively, a connection through the adjacent open space could be explored; however, it is

anticipated that this would not be required. The route and depth of the UU culvert beneath the site will need to be confirmed by an appropriate survey.

4. Surface Water Drainage Strategy

The original FRA&DS proposed to restrict surface water runoff generated by the proposed development to a rate of 2.5l/s which represents a 50% betterment over typical United Utilities requirements to restrict runoff to 5l/s and which represents betterment over the existing QBAR brownfield discharge rate (calculated as 3.3l/s within the original FRA). Moreover, it is proposed to restrict surface water runoff to 2.5l/s during all events up to and including the 1 in 100 year plus climate change event thereby providing betterment during the greater return period events.

In order to achieve this restriction, surface water attenuation will be required. An initial Quick Storage Estimate has been undertaken using Causeway Flow modelling software to determine the attenuation that is likely to be required to achieve the proposed discharge rate. The Quick Storage Estimate indicates that between 22 – 33m³ of attenuation will be required for the 1 in 100 year plus 45% climate change event based on the proposed impermeable area of 534m².

It is proposed to provide surface water attenuation with an attenuation basin located to the rear of the proposed dwellings. The attenuation basin will measure a total surface area of 65.8m² with a depth of 1.3m (including 0.3m freeboard) with banks at a gradient of 1 in 3 and will provide 23.6m³ of attenuation. The basin will comprise a grassed depression in the landscape that will occasionally fill with water at times of heavy rainfall but will otherwise remain dry. The provision of an attenuation basin will provide treatment and amenity benefits in addition to the storage of surface water runoff. The location of the proposed attenuation basin, indicated on the Outline Drainage Strategy included as Figure 2, will be confirmed at the detailed design stage taking into account the fixed site layout. Causeway Flow calculations for the proposed attenuation pond are included as Appendix B. In addition, the North West SuDS Proforma has been completed to summarise the proposed drainage strategy and is included as Appendix C. The SuDS proforma should be read in conjunction with this FRA Addendum.

Further consideration of maintenance of the proposed attenuation basin will be required at the detailed design stage to ensure this remains operational over the lifetime of the proposed development.

Surface water runoff stored within the attenuation basin will discharge to the culverted watercourse at a rate of 2.5l/s via a Hydrobrake or similar flow control device subject to agreement with UU. A connection to the culverted watercourse will be provided through land within the Applicant's ownership. The location and levels of the culverted watercourse should be confirmed via an appropriate survey at the detailed design stage.

In addition to the above, at source SuDS features such as permeable paving could be provided at the detailed design stage based on a fixed site layout. The use of permeable paving may provide additional attenuation volume that would contribute towards a potential reduction in the size of the proposed attenuation basin as well as providing additional treatment benefits.

5. Conclusion

A summary of the information contained within this FRA Addendum is provided in Table 5-1 below.

LLFA Summary Comment	LKC Response
The outline FRA&DS should be updated to incorporate an outline proposed drainage layout.	This FRA addendum presents an outline surface water drainage strategy which aims to demonstrate that a suitable surface water drainage strategy can be achieved. The drainage strategy proposes to restrict surface water runoff to a rate of 2.5l/s during all events up to and including the 1 in 100 year plus climate change. Attenuation will be provided in the form of an attenuation basin with runoff discharging to the culverted watercourse via a connection through land within the Applicant's ownership.
Further assessment of infiltration potential is required.	Hand pitting has been undertaken on site which encountered the presence of generally clayey or silty clay strata beneath the site with occasional slightly sandy and /or slightly gravelly material. The presence of cohesive material is likely to preclude the use of infiltration for the disposal of surface water runoff. The site being elevated above the adjacent ground alone is considered sufficient reason for not utilising infiltration as point discharge into the ground could result in groundwater emergence and/or failure of the slope to the west.
Hydraulic design should provide for a 45% climate change allowance.	Surface water runoff will be restricted to 2.5l/s during all events up to and including the 1 in 100 year plus 45% climate change event with. The proposed attenuation basin has been sized to accommodate the full balance of storage required for the 1 in 100 year plus 45% climate change event.
Applicant to complete a SuDS Proforma for the proposed scheme.	Completed SuDS Proforma is included as Appendix C.

Table 5-1: FRA addendum summary

Based on the information presented within this FRA Addendum, it is considered that the comments raised by the LLFA have been suitably addressed such that the FRA&DS can be approved subject to a suitably worded planning condition.

We trust that we have satisfactorily addressed your requirements, however, please do not hesitate to contact us should you require anything further.

Yours sincerely,

Matthew Bell

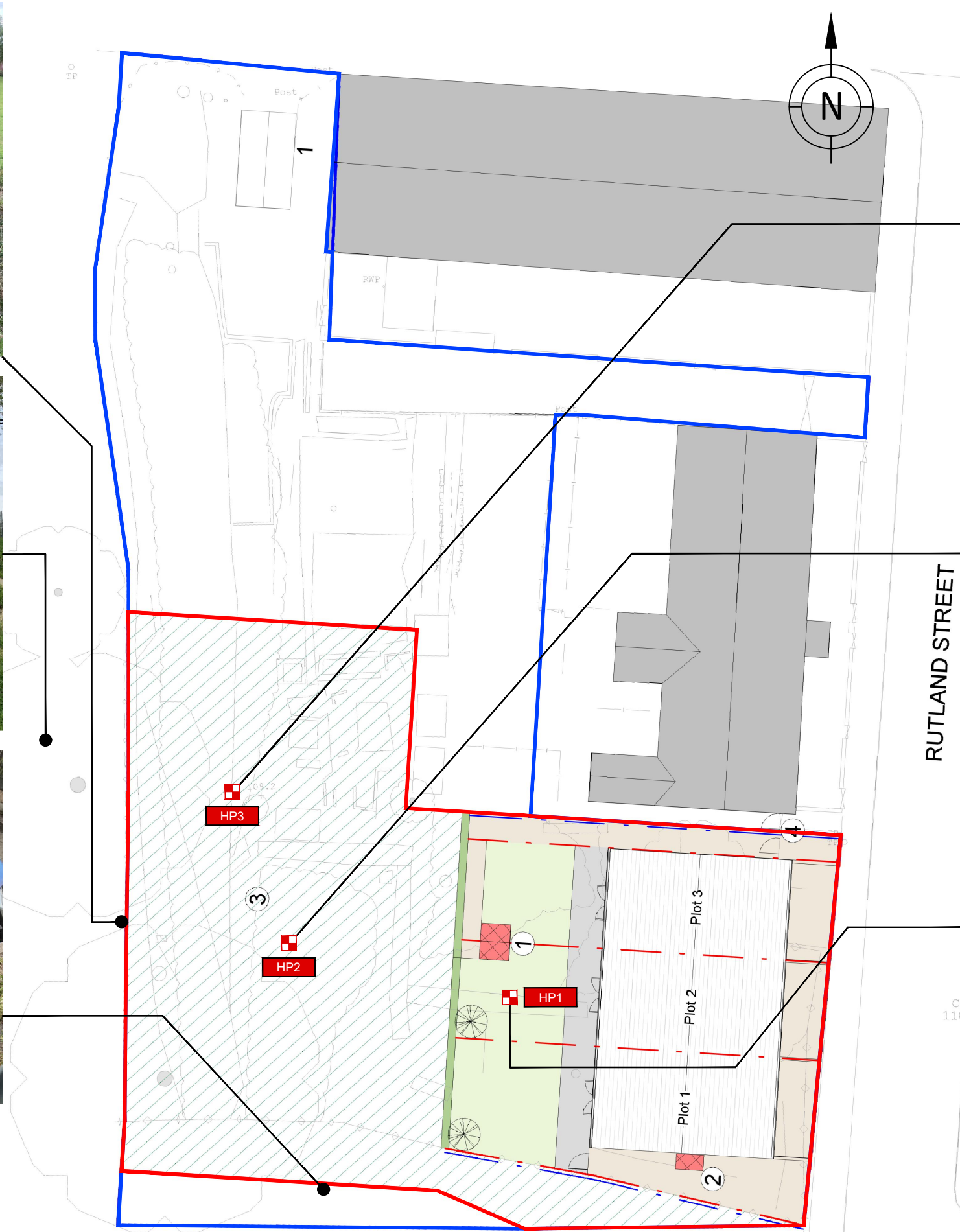
Associate Director – Flood Risk and Drainage

ENCLOSED:

Terms and Conditions

Figures

Figure 1 – Site Walkover Observations & Hand Pitting Locations



KEY

- Site Boundary
- Ownership Boundary
- Hand Dug Trial Pit (HP)

Key to Photographs:

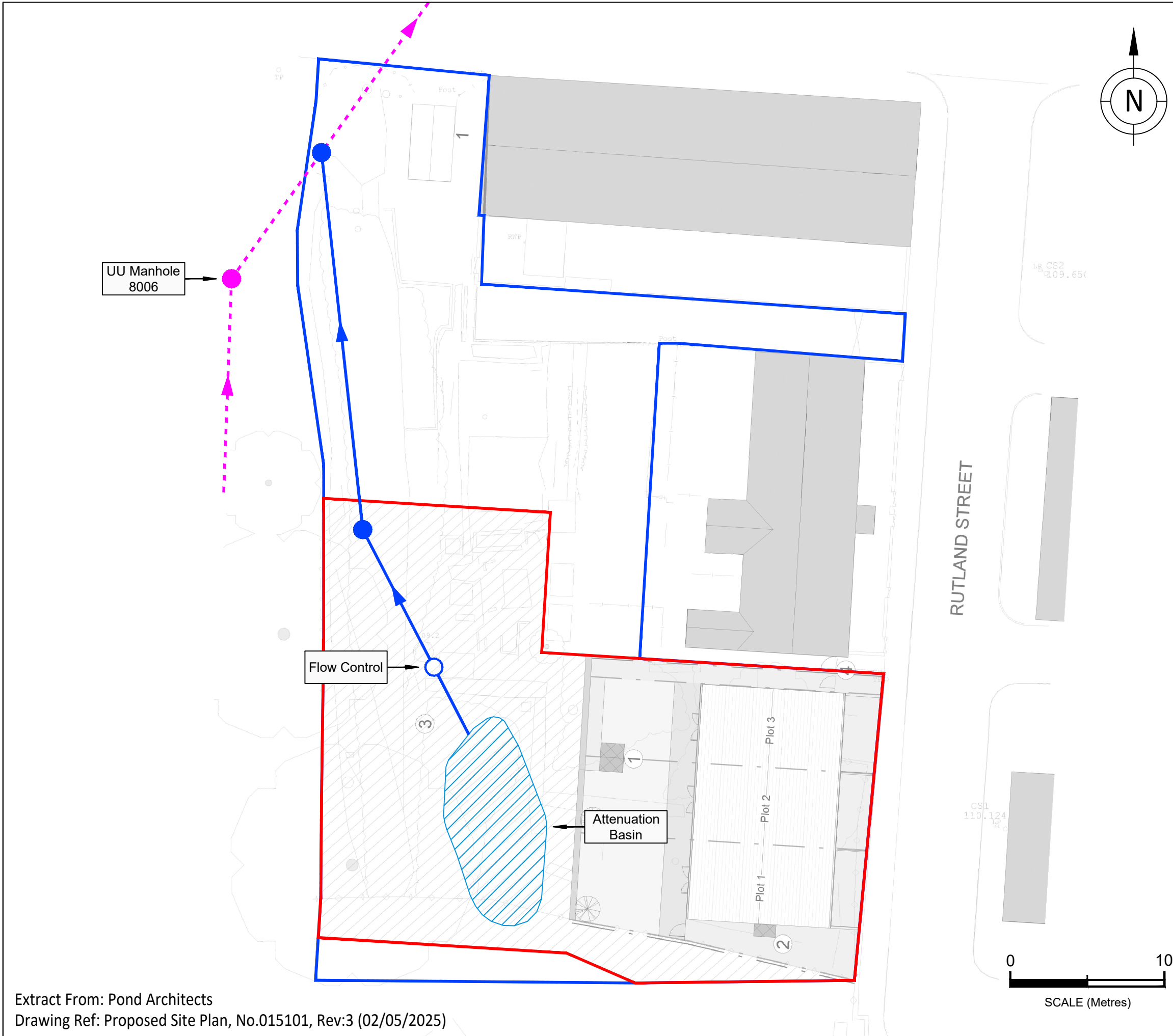
- A: Hand dug pit A.
- B: Hand dug pit B.
- C: Hand dug pit C.
- D: Retaining wall located at southern end of the site.
- E: Slope located at the western end of the site.
- F: Slope located at the western end of the site.

Do not scale from this drawing and work from marked dimensions only. All dimensions and features should be confirmed on site by the Contractor. Where this drawing includes information provided to LK Consult Ltd by others, LK Consult Ltd gives no warranty, representation or assurance as to the accuracy of such information. Subject to detailed design.



Client:		Lawrence Owen	
Site:		Rutland Street	
Title:		Hand Pit Locations & Site Observations	
Job No.:	FRA251053	Scale (See Scale Bar):	1:250 @ A3
Drawn By:	AC	Checked By:	MB
		Drawn:	May 2025
		Figure:	1
		Revision:	

Figure 2 – Outline Surface Water Drainage Strategy



KEY

- Site Boundary
- Ownership Boundary
- Inspection Chamber
- Flow Control
- Surface Water Pipe
- Attenuation Basin
(Surface area = 65.8m², depth = 1.3m (including 0.3m of freeboard) providing 23.6m² of attenuation.)
- Culverted Watercourse (UU)

NOTES:

1. This drawing represents an Outline Surface Water Drainage Strategy only. Detailed surface water drainage design will be required at the detailed design stage.
2. Surface water runoff generated by the proposed development will be restricted to a rate of 2.5l/s.
3. Storage to be provided within an attenuation basin for all events up to and including the 1 in 100 year plus 45% climate change event. Attenuation basin to measure a total surface area of 65.8m² with a depth of 1.3m (including 0.3m freeboard). Location of attenuation basin to be confirmed at the detailed design stage based on the fixed site layout. The attenuation basin will be lined to prevent the infiltration of water into the ground.
4. Surface water runoff to discharge to culverted Millers Brook with a connection to be provided within land owned by the Applicant. Connection to culverted watercourse subject to agreement with UU. Survey to confirm the location and levels of the culverted watercourse will be required at the detailed design stage.

Do not scale from this drawing and work from marked dimensions only. All dimensions and features should be confirmed on site by the Contractor. Where this drawing includes information provided to LK Consult Ltd by others, LK Consult Ltd gives no warranty, representation or assurance as to the accuracy of such information. Subject to detailed design.



LK CONSULT

Client: Lawrence Owen			
Site: Rutland Street			
Title: Outline Drainage Strategy			
Job No.: FRA251053	Scale (See Scale Bar): 1:250 @ A3	Figure: 2	Revision:
Drawn By: AC	Checked By: DP	May 2025	

Appendices

Appendix A – LLFA Consultation



Highways and Engineering Service – Economy and Environment

DRAINAGE CONSULTATION ON APPLICATION – 24/01076/OUT - LAND TO THE WEST OF RUTLAND STREET AND SOUTH OF STARKEY STREET, HEYWOOD OL10 4JJ

LLFA Consultation Response on behalf of Head of Highways and Engineering

Date of Response: 20th February 2025

LOCATION & PROPOSED DEVELOPMENT

Land To The West Of Rutland Street And South Of Starkey Street, Heywood OL10 4JJ

Outline application (including details of access, layout, scale and appearance) for the erection of 3no. two storey townhouses and 1no bungalow

DOCUMENTS REVIEWED

- Flood Risk Assessment & Sustainable Drainage Strategy Rev R1, October 2024 (FRA&DS)
- Location Plan, drawing no. 015 L01
- Existing and Proposed Site Plans, drawing no. 015 101

DRAINAGE & FLOOD OFFICER COMMENTS

1. The FRA&DS does not show a proposed drainage layout for the development. The applicant has stated the site is located within a Critical Drainage Area. The applicant should upload a drainage layout drawing indicating the existing and proposed drainage regimes.
2. The drainage proposal discusses a connection to a culverted watercourse (Miller Brook) for surface water discharge. The report suggests this would require crossing 3rd party land. However, the location plan indicates the site ownership boundary to the approx culvert route.
3. Infiltration-based SuDS have been discounted based on British Geological Survey (BGS) mapping which identifies glaciofluvial deposits (sand and gravel). Additionally, 2No local borehole logs (for Heywood East Sewer) have been reviewed.
4. However, the BH logs indicate water at significant depths and a one suggests a reasonable degree of granular material. Therefore, the conclusions that infiltration is not feasible is not supported and should be investigated further with site-based data.
5. The FRA&DS has not adequately assessed green surface-based SuDS source control components. Most have been summarily discounted based on spatial constraints. However, it is considered that raingardens, tree-pits etc could be incorporated. No drainage layout has been submitted, and the report should be updated to incorporate a layout which considers all SuDS / drainage aspects.
6. The applicant's drainage design is based on a 1-in-100-year storm event with a 40% allowance for climate change. However, the site is located within the 'Irwell Management' Catchment and classified as 'Highly Vulnerable' as it is a residential development, a 45% climate change should be used in the hydraulic calculations.

7. Any subsequent application should be supported with a completed SuDS Proforma (North-west).

DRAINAGE & FLOOD OFFICER SUMMARY:

- I. The outline FRA&DS should be updated to incorporate an outline proposed drainage layout.
- II. Further assessment of infiltration potential is required.
- III. Hydraulic design should provide for a 45% climate change allowance.
- IV. Applicant to complete a SuDS Proforma for the proposed scheme.
- V. The above points should be addressed as part of any subsequent application and the plot / buildings layout etc should not be considered fixed until a drainage layout has been accepted.

Consultation by Keith Mealey

Drainage & Flooding Officer

 **Mob 0787 2500 722** / Office 01706 924657

 keith.mealey@rochdale.gov.uk

Appendix B – Causeway Flow Drainage Calculations

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	1	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	Cover Level (m)	Easting (m)	Northing (m)	Depth (m)
Attenuation Pond	0.053	100.000	4.694	70.351	1.300

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	1.000	Drain Down Time (mins)	1440	Check Discharge Volume	x
Winter CV	1.000	Additional Storage (m³/ha)	0.0		

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
100	45	0	0

Node Attenuation Pond Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	98.700	Product Number	CTL-SHE-0075-2500-1000-2500
Design Depth (m)	1.000	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.5	Min Node Diameter (mm)	1200

Node Attenuation Pond Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	98.700
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	86

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	3.1	3.1	1.000	44.1	46.7	1.300	65.8	69.8

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	Attenuation Pond	60	99.694	0.994	21.4	23.3506	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
60 minute winter	Attenuation Pond	Hydro-Brake®	2.5	31.4

Appendix C – North West SuDS Proforma

NORTH WEST SuDS PRO-FORMA

This pro-forma is a requirement for any planning application for major development.

It supports applicants in summarising and confirming how surface water from a development will be managed sustainably under current and future conditions.

Your sustainable drainage system should be designed in accordance with [CIRIA The SuDS Manual C753](#) and any necessary adoption standards.

HOW TO COMPLETE

Blue Box	Instruction/ Question
Orange Box	Evidence Required
White Box	To be completed by Developer / Consultant

1. Complete ALL white boxes
2. Submit this pro-forma to the Local Planning Authority, along with:
 - Sustainable Drainage Strategy
 - Site Specific Flood Risk Assessment (if required)
 - Minimum supporting evidence, as indicated in orange boxes of this pro-forma.

GUIDANCE TO SUPPORT YOU

The pro-forma should be completed in conjunction with ‘Completing your SuDS Pro Forma Guide.’

The pro-forma can be completed using freely available tools such as [Tools for Sustainable Drainage Systems](#) or appropriate industry standard surface water management design software.

SECTION 1. APPLICATION & DEVELOPMENT DETAILS

Planning Application Reference <i>(if available)</i>	24/01076/OUT	
State type of planning application <i>i.e. Pre-application, Outline, Full, Hybrid, Reserved Matters*</i> <i>*Information only required if drainage is to be considered as part of reserved matters application</i>	Outline	
Developer(s) Name:	Mr Lawrence Owen	
Consultant(s) Name:	The LK Group	
Development Address <i>(including postcode)</i>	Land to the west of Rutland Street and South of Starkey Street, Heywood, OL10 4JJ	
Development Grid Reference <i>(Eastings/Northings)</i>	385858E, 411032N	
Total Development Site Area (Ha)	0.0883	
Drained Area (Ha)* of Development	0.0534	
Please indicate the flood zone that your development is in. Tick all that apply. <i>Based on the Environment Agency Flood Map for Planning and the relevant Local Authority Strategic Flood Risk Assessment (to identify Flood Zones 3a/3b).</i>	Flood Zone 1	
What is the surface water risk of the site? Tick all that apply. <i>Based on the Environment Agency Surface Water Flood Map.</i>	Low	
Have you submitted a Site Specific Flood Risk Assessment (FRA)? <i>See separate guidance notes for clarification on when a FRA is required</i>	Yes	
Have you submitted a Sustainable Drainage Strategy?	Yes	
Does your drainage proposal provide multi-functional benefits via SuDS?	Yes	
Expected Lifetime of Development <i>(years)</i> <i>Refer to Planning Practice Guidance "Flood Risk and Coastal Change" Paragraph 026</i>	minimum 100 years	
Development Type:	State Proposed Number of Units	
Greenfield Site Site is wholly undeveloped, and a new drainage system will be installed		
Previously Developed/ Brownfield Site - Site is already developed, and the <u>entirety</u> of the existing surface water drainage system will be used to serve the new development (evidence must be provided to prove existing surface water drainage system is reusable); OR - Where records of the previously developed system are not available so that the hydraulic characteristics of the system cannot be determined or where the drainage system is not in reasonable working order i.e. broken, blocked or no longer operational for other reasons, then one of the approaches outlined in Section 24.5 of The SuDS Manual (C753) should be adopted.	X	three residential dwellings
Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 1.		

SECTION 2: IMPERMEABLE AREA AND EXISTING DRAINAGE

	Existing (E)	Proposed (P)	Change (P – E)
State Impermeable Area (Ha)	0.0243	0.0534	0.0291
Evidence Required: Plans showing development layout of site with existing and proposed impermeable areas.			

Are there existing sewers, watercourses, water bodies, highway drains, soakaways or filter drains on the site?	Yes
Evidence Required: Plan(s) showing existing layout to include all: - Watercourses, open and culverted - Water bodies – ponds, swales etc. - Sewers, including manholes - Highway drains, include manholes, gullies etc. - Infiltration features - soakaways, filter drains etc.	Location of existing culverted watercourse shown on outline drainage strategy and based on UU public sewer records

Drainage Design <u>Outline planning applications</u> should be able to demonstrate that a suitable drainage system is achievable. <u>All other type of planning application</u> should provide full details or reference to previous planning application where drainage details have been submitted or approved.	
Select which design approach you are taking to manage water quantity (refer to Section 3.3 SuDS Manual) Approach 1 – Volume control / Long Term Storage (Technical Standards S2/3, S4/5) - The attenuated runoff volume for the 1 in 100 year 6 hour event (plus climate change allowance) is limited to the greenfield runoff volume for the 1 in 100 year 6 hour event, with any additional runoff volume utilising long term storage and either infiltrated or released at 2 l/s/ha - The discharge rate for the critical duration 1 in 1 year event is restricted to the 1 in 1 year greenfield runoff rate - The discharge rate for the critical duration 1 in 100 year event (plus climate change allowance) is restricted to the 1 in 100 year greenfield runoff rate Approach 2 – Qbar (Technical Standards S6) - Justification has been provided that the provision of volume control/long term storage is not appropriate and an attenuation only approach is proposed. All events up to the critical duration 1 in 100 year event (plus climate change allowance) are limited to Qbar (1 in 2 year greenfield rate) or 2 l/s/ha, whichever is greater.	X
Evidence Required: Plans showing: - Existing flow routes and flood risks - Modified flow routes - Contributing and impermeable areas - Current (if any) and proposed 'source control' and 'management train' locations of sustainable drainage components (C753 Chapter 7) - Details of drainage ownership - Details of exceedance routes (Technical Standards S9) - Topographic survey - Locations and number of existing and proposed discharge points <i>Note consideration should be given to manage surface water from both impermeable and permeable surfaces (including gardens and verges) likely to enter the drainage system.</i>	

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 2.	
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SECTION 3: PEAK RUNOFF RATES – TECHNICAL STANDARDS S2, S3 AND S6
(UNLESS S1 APPLIES)

Rainfall Event	Existing Rate (l/s)	Greenfield Rate (l/s)	Proposed Rate (l/s) <i>Previously developed sites - In line with S3 should be equivalent to Greenfield runoff rates – discuss with LLFA if this is not achievable pre-application</i>
Qbar <i>(Approach 2)</i>	3.3l/s		2.5l/s
1 in 1 Year Event <i>(Approach 1)</i>			
1 in 30 Year Event			
1 in 100 Year Event* <i>(Approach 1)</i>			
* Total discharge at the 1 in 100 year rate should be restricted to the greenfield runoff volume for the 1 in 100 Year 6 hour event with additional volumes (long-term storage volume) released at a rate no greater than 2 l/s/ha where infiltration is not possible. The climate change allowance should only be applied to the proposed rate and not the existing or greenfield rate.			
Evidence Required: Methodology used to calculate peak runoff rate clearly stated and justified. Impermeable areas plan, supported by topographical survey confirming positive drainage. Hydraulic calculations and details of software used.			X X

State the hydraulic method used in your calculations <i>(Refer to Table 24.1 of The SuDS Manual)</i>	IH124
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Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 3.	FRA&DS (FRA241073-COM-R1, dated October 2024) FRA Addendum (FRA25103-Rutland Street, Heywood-FRA Addendum-R0, dated May 2025)
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SECTION 4: DISCHARGE VOLUME – TECHNICAL STANDARDS S4, S5 AND S6 (UNLESS S1 APPLIES)

Rainfall Event	Existing Volume (m ³)	Greenfield Volume (m ³)	Proposed Volume (m ³)
1 in 100 Year 6 Hour Event <i>(Approach 1)</i>			
Does the below statement apply to your development proposal? Long term storage is not achievable on this site and, in accordance with S6 of the Non Statutory Technical Standards for SuDS, the surface water discharge rates for events up to and including the 1 in 100 year critical event are limited to Qbar (Approach 2)			Yes ☐ No ☐
Evidence Required: Approach to managing the quantity of surface water leaving the site clearly stated and justified Methodology used to calculate discharge volume clearly stated and justified. Hydraulic calculations and details of software used.			☐ ☐ ☐

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 4.	
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SECTION 5: STORAGE – TECHNICAL STANDARDS S7 AND S8

State climate change allowance used (%)	45%
State housing density (houses per ha)	
State urban creep allowance used (%)	
Evidence Required: State / used in appropriate industry standard surface water management design software.	

State storage volume required (m³) (excluding non-void spaces) <i>Must include an allowance for climate change and urban creep</i>	23.6
Have you incorporated interception into your design? <i>(Refer to Chapter 24 of The SuDS Manual C753)</i> <i>Where possible, infiltration or other techniques are to be used to try and achieve zero discharge to receiving waters for rainfall depths up to 5mm.</i>	No
Evidence Required: Drainage plans showing location of attenuation and all flow control devices and supporting calculations.	X

Summarise how storage will be provided for 1 in 30 year event on site. <i>Storage must be designed to ensure that at no flooding occurs onsite in a 1 in 30 year event except in designed areas and no flooding occurs offsite in a 1 in 100 year (plus climate change allowance) event.</i>	storage to be provided within the proposed attenuation basin which has been sized to cater for the storage required during all events up to and including the 1 in 100 year plus 45% cc event.
Summarise how storage will be provided for 1 in 100 year (plus climate change) event on site. <i>Where storage above the 1 in 30 year rainfall event is provided in designated areas designed to accommodate excess surface water volumes, plans showing storage locations and surface water depths and supported by calculations used in appropriate industry standard surface water management design software. It is important to run a range of duration events to ensure the worst case condition is found for each drainage element on the site</i>	Storage to be provided within proposed attenuation basin
Evidence Required: Plans showing size and location of storage and supporting calculations. Where there is controlled flooding, extents and depths must be indicated.	X

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 5.	FRA Addendum (FRA25103-Rutland Street, Heywood-FRA Addendum-R0, dated May 2025)
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SECTION 6: WATER QUALITY PROTECTION

Contaminated surface water run-off can have negative impacts on the quality of receiving water bodies. The potential level of contamination will influence final the design of an appropriate treatment train as part of your sustainable drainage system.

Is the proposal site known to be or potentially contaminated?	No
If the site is contaminated, it should be demonstrated that the sustainable drainage system will not increase the risk of pollution to controlled waters through the mobilisation of contaminants and/or creation of new pollution pathways.	

Confirm the Pollution Hazard Level of the proposed development - Tick ALL that apply		
Refer to Pollution Hazard Indices for different Land Use Classifications in Table 26.2 of The SuDS Manual C753 for further guidance.		
Pollution Hazard Level Tick ALL that apply	Surface water run-off from the proposed development will drain from:	
VERY LOW	☒	Residential roofs
LOW	☐	- Other roofs (typically commercial/industrial roofs) - Individual property driveways, residential car parks, low traffic roads (e.g. cul de sacs, home-zones and general access roads) - Non-residential car parking with infrequent change (e.g. schools, offices) i.e. < 300 traffic movements/day
MEDIUM	☐	- Commercial yard and delivery areas - Non-residential car parking with frequent change (e.g. hospitals, retail) - All roads except low traffic roads and trunk roads/motorways¹
HIGH	☐	- Sites with heavy pollution (e.g. haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites) - Sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured - Industrial sites - Trunk roads and motorways¹

If the development's Pollution Hazard Level is 'Very Low' or 'Low', has the sustainable drainage design been risk assessed and appropriate mitigation measures included?	Yes
If the proposed development has a very low or low polluting potential, you should design your sustainable drainage system to include an appropriate treatment train in accordance with The SuDS Manual (C753).	

If the development's Pollution Hazard Level is 'Medium' or 'High', is the application supported by a detailed water quality risk assessment?	
- If the proposed development has a high polluting potential, a detailed risk assessment <i>will</i> be required to identify an appropriate SuDS treatment train and ensure compliance with Paragraph 170 of the National Planning Policy Framework. - If the proposed development has a medium polluting potential, a detailed risk assessment <i>may</i> be required depending on the nature, scale and location of the development.	

Has pre-application advice on water quality been obtained from the Environment Agency?	No
If YES, provide details:	

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 6.	
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¹ Motorways and trunk roads should follow the guidance and risk assessment process set out in Highways Agency (2009).

SECTION 7: DETAILS OF YOUR SUSTAINABLE DRAINAGE SYSTEM

a) Function of your Sustainable Drainage System

Do your proposals store rainwater for later use (as a resource)?	No
Evidence Required: Please provide a brief sentence in the adjacent white box to describe how this function has been achieved.	
Do your proposals promote source control to manage rainfall close to where it falls? (e.g. promoting natural losses through soakage, infiltration and evapotranspiration)	No
Evidence Required: Please provide a brief sentence in the adjacent white box to describe how this function has been achieved.	
Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 7a.	

b) Hierarchy of Drainage Options – Planning Practice Guidance

The proposed method of discharge are set out within order of priority. Generally, the aim should be to discharge surface run off as high up the following hierarchy of drainage options as reasonably practicable.

Proposed method of surface water discharge			Is this proposed?	
Hierarchy Level 1: Into the ground (via infiltration)			No ☐	
If YES - Evidence Required			If NO – Evidence Required Tick ALL that apply	
☐	A. Completed Infiltration Checklist from The SuDS Manual (C753) Appendix B <i>An editable version of this form is available on SusDrain website.</i>	X	A. Site investigation to demonstrate that the ground is not free draining. Test results to be provided in accordance with: - The methodology within BRE 365 (2016), OR - Falling head permeability tests BS EN ISO 22282-2: 2012	
☐	B. British Geological Survey (BGS) Infiltration SuDS Map	☐	B. NOTE: where an applicant is unable to access a site to undertake testing, e.g. where unable to access a site for an outline application, they can submit a SuDS GeoReport or similar.	
☐	C. Infiltration testing to BRE 365 (2016) or falling head permeability tests to BS EN ISO 2228-2: 2012 (optional for outline)	☐	C. Evidence to confirm that infiltration to ground would result in a risk of deterioration to ground water quality.	
☐	‘Plan B’ sustainable drainage plan and statement of approach with an alternative discharge method, in case infiltration proposals are proven not feasible upon further site specific ground investigation e.g. to consider seasonal variations to groundwater.	☐	D. Geotechnical advice from a competent person* which determines that infiltration of water to ground would pose an unacceptable risk of geohazards to the site and/or local area. <i>*Note: Competent person may include a Chartered Engineer, Chartered Geologists, Registered Ground Engineering Professionals (RoGEP).</i>	

Proposed method of surface water discharge		Is this proposed?	
Hierarchy Level 2: To a surface water body (<i>select type</i>) NOTE: Consent from LLFA or Permit from Environment Agency may be required – refer to guidance		No	
		☐ Main river ☐ Ordinary watercourse	☐ Canal ☐ Other water body
If YES - Evidence Required		If NO – Evidence Required Tick <u>ALL</u> that apply	
☐	Surface water body / watercourse survey and report	☒ ☒	Plan showing nearby watercourses and waterbodies AND Statement providing justification in your Sustainable Drainage Strategy Note: Where third party land is cited as a barrier, you should provide visibility of discussions held to date with the riparian landowner of the waterbody.

Proposed method of surface water discharge		Is this proposed?	
Hierarchy Level 3: To a surface water sewer or highway drain (<i>select type</i>)		Yes	
		Surface water sewer	
If YES - Evidence Required		If NO – Evidence Required Tick <u>ALL</u> that apply	
☐	Written correspondence from Water and Sewerage Company/ Highway Authority regarding proposed connection.	☐ ☐	Plan showing nearby sewers and highway drains AND Statement providing justification in your Sustainable Drainage Strategy

Proposed method of surface water discharge		Is this proposed?	
Hierarchy Level 4: To combined sewer		No	
If YES - Evidence Required		If NO – Evidence Required	
☐	Written correspondence from Water and Sewerage Company	N/A	

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 7b.	
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c) Proposed SuDS Component Types

	Tick ALL that apply				
Within property boundary	☐ Rainwater harvesting	☐ Green/ blue roofs	☐ Pervious pavements [Type: A ☐ B ☐ C ☐	☐ Soakaway	☐ Bio retention systems

	Tick ALL that apply				
Within development site boundary (not property)	☐ Infiltration system [Type: ☐ Surface level ☐ Below ground]		☐ Filter strips	☐ Filter drains	☐ Swales
	☐ Bio retention system	☒ Detention basins	☐ Ponds and wetlands	☐ Attenuation tanks/ Oversized pipes	☐ Other (state below)
	If 'Other' please state:				

Off site (not within the boundary of the proposed development)	Please state:
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I confirm that the above selected components have been designed in accordance with The SuDS Manual (C753).	I confirm x
I confirm that the management of flows resulting from rainfall in excess of a 1 in 100 year plus climate change rainfall event, and their exceedance route(s), has been fully considered in order to minimise the risks to people, property (new and existing) and infrastructure.	I confirm x

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 7c.	
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The applicant is responsible to ensure that ALL components selected in Section 7 can be maintained for the design life of the development. This information is required so the Local Planning Authority can ensure the maintenance and management of the sustainable drainage system. The Local Planning Authority will discuss how this will be secured (e.g. via planning condition or planning obligation).

	Information Provided?
Management Plan	No
Evidence Required: Plan/ drawing provided to show the position of the different SuDS components with: • Key included to identify any of the adopting bodies that you will be offering your sustainable drainage components for adoption (<i>relates to maintenance and management arrangements below</i>). • Plan/ drawing to identify any areas where certain activities are prohibited, detailing reasons why.	☐
Action plan for accidental pollutant spillages.	☐

	Information Provided?
Maintenance Schedule	No
Evidence Required: A copy of the maintenance schedule including: Proactive and preventative maintenance Detailing regular, occasional and remedial maintenance activities including recommendations for inspection and monitoring. This should include recommended frequencies, advice on plant/ machinery required and an explanation of the objectives for the maintenance proposed and potential implications of not meeting them. Reactive and corrective maintenance (e.g. product repair and replacement). Including advice on excavations, or similar works, in locations that could affect the SuDS components/ adjacent structures.	☐

		Information Provided?
Maintenance and Management Arrangements		No
Evidence Required: Evidence of formal agreement with the party responsible for undertaking maintenance. Please select any of the adopting bodies that you will be offering your sustainable drainage components for adoption. Tick all that apply. ☐ Water and Sewerage Company <i>Section 104 agreement (Water Industry Act 1991)</i> ☐ Highway Authority <i>Section 278/38 agreement (Highways Act 1980)</i> ☐ Local Authority Public Open Space <i>[Refer to Local Authority Policy]</i> Please select the arrangement(s) for all non-adopted sustainable drainage components. Tick all that apply. ☐ Management Company ☐ Property Owner <i>(for SuDS components within property boundary only)</i> ☐ Other (please state)		☐

Please list any relevant document and or drawing numbers (including revision reference) to support your answers to Section 8.	
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DECLARATION AND SUBMISSION

This pro-forma has been completed using evidence from information which has been submitted with the planning application.

The information submitted in the Sustainable Drainage Strategy and site-specific Flood Risk Assessment (FRA), where submitted, is proportionate to the site conditions, flood risks and magnitude of development and I agree that this information can be used as evidence to this sustainable drainage approach.

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		Telephone Number(s)	
Signed off by	Matthew Bell	Accreditation(s) and/or Qualification(s) of Signatory	BSc (Hons), MCIWEM
Date (dd/mm/yyyy)	16/05/2025	Company	LK Group

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