Critical Assessment: The Cumulative Flood Risk of North Petherton Development on the Somerset Levels

Executive Summary

The Core Issue: Unacceptable Cumulative Flood Risk

This report finds that the aggregate flood risk from **1,330 new residential units** in North Petherton has been fundamentally underestimated. The proposals, including sites at Park Lane, Gateway, Stafflands Farm, Daws Lane, and West of Shovel Lane, are being assessed in isolation, ignoring their collective impact on the **vulnerable Somerset Levels** catchment, which is already severely constrained, as evidenced by the 2014 flood events.

Contents

1. Introduction: The Critical Failure to Address Cumulative Flood Risk

This report highlights a **critical and unacceptable failure** to fully address the **cumulative flood risk** posed by the current portfolio of major housing applications in **North Petherton**.

The proposed developments—totalling **1,330 new dwellings**—are being assessed in isolation, overlooking the aggregate hydraulic burden placed on the already marginal drainage capacity of the receiving environment. This approach contravenes national and local planning policy aimed at protecting vulnerable communities.

Development Scale and Geographic Context

The collective impact from the following key applications, currently in various planning stages, demands an immediate, unified reassessment:

Application Reference	Site Name	Proposed Dwellings	Notes
37/25/00044	Park Lane	64	*(New figure as of August 25)*
37/22/00125	Vistry Gateway	150	
37/25/00055	Gateway	15	
37/25/00042	Gateway	346	
37/25/00023	Stafflands Farm	190	
37/25/00018	Daws Lane	175	
37/25/00088	Dancing Hill	140	
Proposal	West of Shovel Lane	250	Up to 250 dwellings
SUB-TOTAL		**1,330**	

2. Exacerbated Flood Risk to Moorland and the Somerset Levels

The proposed development of 1,330 new homes in North Petherton, which sits close to the catchment area of the Somerset Levels and Moors, presents an undeniable increase in flood risk to communities downstream, particularly Moorland.

The Mechanism of Increased Risk

- **Increased Impermeable Surfaces:** New development, by its nature, replaces porous land (fields, open ground) with impermeable surfaces (roofs, roads, driveways). This dramatically **accelerates and increases surface water runoff volume**.
- **Catchment Impact:** North Petherton is situated on the edge of the catchment area that drains into the low-lying **Somerset Levels**, including the Parrett and Tone River systems. A sudden increase in surface water runoff from this scale of development may place an immediate and additional hydraulic burden on the main rivers and, crucially, the surrounding moors used as designated flood storage areas (e.g., Northmoor, Saltmoor, Currymoor, Fordgate).
- **Direct Impact on Moorland:** Communities like Moorland, which are geographically low-lying and historically prone to inundation, function as a spillover point when the river systems are at capacity. The **cumulative effect of 1,330 new homes** discharging surface water, even at 'greenfield' runoff rates (the ideal scenario, which is often not met in practice), may incrementally increase the frequency, duration, and depth of flooding in these already vulnerable areas. The tragic experiences of 2014, where Moorland was severely impacted, underscore the catastrophic consequences of exceeding the system's storage and conveyance capacity.

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3. Inadequate Pumping and Drainage Capacity

The current capacity for managing water on the Somerset Levels, particularly the system of pumping stations and drainage networks, is **not sufficient** to manage the existing flood risk, let alone the added pressure from significant new development.

- **Existing Capacity Limitations:** The pumping system is designed to manage water within the context of the historical environment. However, the 2014 floods and subsequent near-miss events have repeatedly demonstrated that the rivers (e.g., River Tone, River Parrett) can reach levels where **pumping stations cannot operate effectively** because the receiving watercourse is already too high, a concept known as being "tide-locked" or "river-locked."
- **Reliance on Temporary Measures:** Although investments have been made since 2014, reports often highlight the need to deploy **temporary mobile pumps** and take pre-emptive action when intense rainfall is forecast. This indicates that the permanent, built-in capacity is already marginal. Adding the runoff from 1,330 homes may reduce the operational window for existing pumps and accelerate the trigger points for deploying temporary measures, increasing the long-term operational cost and risk.
- **Climate Change and Future Storm Events:** The current capacity is insufficient when factoring in the increased frequency and intensity of rainfall events predicted under climate change allowances (which mandate a 20-40% increase in design rainfall depths). The development proposals fail to provide a robust demonstration that the capacity exists to manage the worst-case, climate-adjusted scenario without detriment to downstream residents.

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4. The Flawed Reliance on Attenuation and SuDS

The primary mitigation strategy for new developments, as often promoted under the **National Planning Policy Framework (NPPF)**, involves the use of **attenuation ponds/tanks and Sustainable Drainage Systems (SuDS)** to manage surface water runoff. However, for a flood-sensitive location like North Petherton and the Somerset Levels, this approach carries significant inherent risks and potential for failure, leading to a repeat of the 2014 situation.

Mitigation Strategy	Risk of Failure & Consequence
Attenuation Ponds/Tanks	These features temporarily *store* water before slow release. In a prolonged rainfall event, such as in 2014, these structures may **fill up and lose all capacity** before the storm event is over, resulting in uncontrolled discharge and compounding the flood peak. Their effectiveness is critically dependent on the downstream drainage network having sufficient capacity to accept the attenuated flow, which, as established, is already questionable.
Sustainable Drainage Systems (SuDS)	While designed to mimic natural processes (infiltration, slow conveyance), a review of SuDS in Somerset found that many schemes favour **underground storage/pipe-to-pond solutions** over truly multi-functional source control features (e.g., rain gardens, permeable paving). Furthermore, poor construction site management and lack of ongoing maintenance can lead to **blockages and system failure** at a critical time, rendering them ineffective.
Groundwater Interaction	The Somerset Levels have a naturally high-water table. Attenuation features, if not correctly lined or managed, risk being filled with rising **groundwater**, which significantly **reduces their capacity to store surface runoff** from rainfall, increasing the flood risk to the development itself and the wider area.

Conclusion: The design and maintenance limitations of these mitigation measures mean they offer **false security**. Relying on them for 1,330 homes introduces an unacceptable systemic risk that, in an extreme event, may inevitably contribute to widespread flooding across the Levels, directly impacting Moorland.

5. Reduced Waterway Maintenance and Legislative Failures

Compounding the capacity and development issues is the observable trend of **reduced maintenance work** on the network of rivers, rhynes, and drainage ditches in the area, a vital component of the Somerset Levels flood defence strategy.

- **Dredging and Desilting:** The effectiveness of the river system to convey water rapidly is dependent on continuous maintenance, notably **dredging and desilting**. A lack of consistent, timely maintenance leads to reduced channel capacity, causing water to overtop banks sooner and flow onto the floodplains (moors) unnecessarily or prematurely.
- **Rhyne and Ditch Clearance:** The smaller drainage networks (rhynes and ditches), managed by Internal Drainage Boards (IDBs), are critical for local water management. If maintenance is neglected, these waterways become choked with vegetation and silt, impeding the flow of water *off* the moors and into the main rivers, thereby **prolonging the duration of flooding** in communities like Moorland.
- **Sedgemoor and NPPF Policy Conflict:** While **Sedgemoor's planning policy** (and the overarching **NPPF**) requires developers to manage flood risk and promote SuDS, the sheer volume of development, coupled with the systemic underinvestment in core downstream infrastructure (pumping and channel maintenance), creates an untenable conflict. Under the August 2026 NPPF, the **Sequential and Exception Tests** remain relevant where applicable, while **Policy F7** directly requires development not to increase flood risk elsewhere. The **cumulative downstream impact** on highly vulnerable receptors like the Somerset Levels should therefore be robustly addressed.

The current trajectory of high-volume development without a demonstrably robust, fully funded, and future-proofed flood defence and maintenance strategy may inevitably place an overwhelming and unacceptable burden on the residents of Moorland and the wider Somerset Levels. **Planning permission for these 1,330 dwellings may need to be reconsidered until an independently verified, holistic, and capacity-enhancing solution for the entire catchment is delivered.**

The core arguments in the report are strongly supported by key policies in the **National Planning Policy Framework (NPPF)** and the **Sedgemoor Local Plan 2011-2032**, particularly Policy D1 on flood risk and surface water management, in relation to the Sequential Test, cumulative risk, and the long-term operation and maintenance of Sustainable Drainage Systems (SuDS).

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6. NPPF Policy Weight: A National Imperative

The **NPPF** provides the overarching national policy framework for flood-risk decision-making, including the requirement that development should be safe for its lifetime and should not increase flood risk elsewhere.

NPPF Policy F5 (and F6 where relevant): Sequential and Exception Tests

- **Policy Link: Policy F5** sets the Sequential Test, steering development to areas with the lowest flood risk from any source. **Policy F6** sets the Exception Test where required in Flood Zones 2, 3a and 3b.
- **Report Weight:** The proposed 1,330 homes may need to satisfy **Policy F5** where the Sequential Test applies; F5 also specifies circumstances where the test is not required. The report's downstream concerns remain directly relevant to **Policy F7**, which requires development not to increase flood risk elsewhere, and to the wider assessment of cumulative risk.

NPPF Policy F7: Ensuring Development is Safe from Flooding

- **Policy Link:** Policy F7 requires development not to present flood risk to occupiers, users or visitors and *not to increase flood risk elsewhere*. Where a location is known to be at risk now or in the future, F7 sets specific safeguards.
- **Report Weight:** This directly engages the report's central concern: whether **cumulative runoff from 1,330 homes could increase flood risk** to vulnerable downstream communities such as Moorland and the Levels. Policy F7 makes the *no increase elsewhere* requirement an explicit decision-making test.

NPPF Policy F8 (and PPG): Sustainable Drainage Systems and Maintenance

- **Policy Link:** NPPF **Policy F8** requires SuDS where development could affect drainage, to control flow rates and reduce runoff volumes. **F8(2)(b)** requires maintenance arrangements for acceptable operation over the development's anticipated lifetime. **Planning Practice Guidance (Flood Risk and Coastal Change)** clarifies that the **Sequential Test must not rely on mitigation measures requiring ongoing active maintenance** to make a site safe; such measures may be considered at later stages but cannot be used to justify site selection.
- **Report Weight:** The report's concerns about long-term SuDS performance (including silting, blockage and poor maintenance) gain weight from F8(2)(b), which requires maintenance arrangements to ensure acceptable operation for the anticipated lifetime of the development—a key vulnerability highlighted by the 2014 floods and regional waterway conditions.

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7. Sedgemoor Local Plan: Specific Local Protection

The Sedgemoor Local Plan reinforces national policy with a clear local framework for flood risk and surface-water management, directly relevant to North Petherton as a **Tier 1 rural settlement** within the former Sedgemoor area.

Sedgemoor Local Plan Policy D1: Flood Risk and Surface Water Management

- **Policy Link:** Policy D1 requires site-specific Flood Risk Assessments to demonstrate that development will be safe over its lifetime and **not increase flood risk elsewhere**. It also requires regard to relevant sources of flooding identified through the Strategic Flood Risk Assessment and more recent mapping from the Environment Agency and other flood-risk management bodies.
- **Report Weight:** Policy D1 directly supports the report's cumulative-risk concern because it requires the wider-area implications of surface-water drainage to be considered and seeks an overall reduction in flood risk, with betterment particularly sought where known flooding issues exist. The report's concern about potential increased risk to Moorland therefore directly engages Policy D1.

Sedgemoor Local Plan Policy D1: Surface Water Drainage and Sustainable Drainage Systems (SuDS)

- **Policy Link:** Policy D1 states that proposals should seek to reduce flood risk overall through green infrastructure and SuDS; betterment is sought particularly where there are known flooding issues. Where development increases the rate of surface-water drainage, the implications for the wider area should be considered. SuDS are expected for all major developments, and proposals must include clear arrangements for ongoing operation and maintenance. Supporting paragraph 7.10 states that development should be run-off neutral as a minimum wherever possible.
- **Report Weight:** The report's concern is therefore not whether SuDS are required, but whether the cumulative development can demonstrably satisfy Policy D1's wider-area, no-increase-elsewhere and maintenance requirements in a constrained receiving system. Achieving controlled or nominally greenfield/run-off-neutral discharge at individual sites does not, by itself, resolve the report's cumulative downstream-capacity concern.

Summary of Policy Application

The report's claims are therefore a direct test of compliance with national and local policy:

- **Cumulative Risk:** The 1,330 dwellings engage **NPPF Policy F7** and **Sedgemoor Local Plan Policy D1** because both require development not to increase flood risk elsewhere, including at Moorland.
- **Pumping Capacity:** Limited pump capacity is material to the **NPPF F7 / SLP D1** safe-lifetime and no-increase-elsewhere tests.
- **SuDS Reliability:** SuDS maintenance or groundwater-interaction risks engage **NPPF Policy F8** and **Sedgemoor Local Plan Policy D1**, which require runoff control and ongoing operation and maintenance.

Appendixes - Next page

Appendix X

Estimated Runoff from Individual Applications (Piece-meal) & References for Assumption Calculations

Purpose and scope (short):
The table below gives order-of-magnitude estimates of additional runoff generated by each planning application considered in this report. The estimates are **scenario-based** (not site-specific hydraulic model outputs) and intended for comparative and cumulative accounting only.

Assumptions (conservative/default):

1. Assumed impermeable area per dwelling = **200 m^2** (roofs + hardstanding/drive).
2. Runoff coefficient (impermeable surfaces) = **C = 0.90**.
3. Annual rainfall = **800 mm = 0.8 m** (typical Somerset order).
4. Design storm intensity for peak runoff calculation = **i = 30 mm/hr** (example extreme short-duration intensity).
5. Peak runoff estimated using the Rational method:

Q=C×i (mm/hr)1000×A (m2)3600(m3 ⍰/s)Q = C \times \frac{i~(\text{mm/hr})}{1000} \times \frac{A~(\text{m}^2)}{3600} \quad\text{(m}^3\!/s)Q=C×1000i (mm/hr)×3600A (m2)(m3/s)

then convert to litres per second (l/s) by multiplying m^3/s × 1,000.

How to use: replace any of the assumptions above (A per dwelling, C, annual rainfall, i) to re-compute scenario figures.

Calculations (step-by-step) and results

Notes on the arithmetic convention used: every multiplication and division below is shown step-by-step (digit by digit) to avoid arithmetic mistakes.

Common intermediate arithmetic

- Assumed impermeable area per dwelling = 200 m^2.
- To compute *total impermeable area* for a site: Total area (m^2) = Dwellings × 200.
- To compute *annual runoff volume* (m^3/year): Annual vol = Total area × Annual rain (m) × C.

- To compute *peak Q (m³/s)* for the design storm: Q(m³/s) = C × (i/1000) × Total area / 3600. Convert to l/s by Q(l/s) = Q(m³/s) × 1000.

Site-by-site worked calculations

1. **37/25/00044 — Park Lane — 64 dwellings**

- Total impermeable area: 64 × 200 = 12,800 m².
- Annual runoff (m³/yr):
    - 12,800 × 0.8 = 10,240 (this is area × annual rain)
    - 10,240 × 0.9 = 9,216 m³/yr (apply C).
- Peak runoff (design storm 30 mm/hr):
    - i/1000 = 30 / 1000 = 0.03 m/hr
    - Area × 0.03 = 12,800 × 0.03 = 384 m³/hr
    - 384 / 3600 = 0.1066666667 m³/s
    - 0.1066666667 × 0.9 = 0.096 m³/s (apply C)
    - 0.096 m³/s × 1000 = **96 l/s**

2. **37/25/00055 — Gateway — 15 dwellings**

- Total impermeable area: 15 × 200 = 3,000 m².
- Annual runoff:
    - 3,000 × 0.8 = 2,400
    - 2,400 × 0.9 = 2,160 m³/yr.
- Peak runoff:
    - 3,000 × 0.03 = 90 m³/hr
    - 90 / 3600 = 0.025 m³/s
    - 0.025 × 0.9 = 0.0225 m³/s
    - 0.0225 × 1000 = **22.5 l/s**

3. **37/25/00042 — Gateway — 346 dwellings**

- Total impermeable area: 346 × 200 = 69,200 m².
- Annual runoff:

    - 69,200 × 0.8 = 55,360
    - 55,360 × 0.9 = 49,824 m^3/yr.
- Peak runoff:
    - 69,200 × 0.03 = 2,076 m^3/hr
    - 2,076 / 3600 = 0.5766666667 m^3/s
    - 0.5766666667 × 0.9 = 0.519 m^3/s

      0.519 × 1000 = **519 l/s**

4. 37/22/00126 — Vistry Gateway — 150 dwellings

- Total impermeable area: 150 × 200 = 30,000 m^2.
- Annual runoff:
    - 30,000 × 0.8 = 24,000
    - 24,000 × 0.9 = 21,600 m^3/yr.
- Peak runoff:
    - 30,000 × 0.03 = 900 m^3/hr
    - 900 / 3600 = 0.25 m^3/s
    - 0.25 × 0.9 = 0.225 m^3/s
    - 0.225 × 1000 = **225 l/s**

5. **37/25/00023 — Stafflands Farm — 190 dwellings**

- Total impermeable area: 190 × 200 = 38,000 m^2.
- Annual runoff:
    - 38,000 × 0.8 = 33,600
    - 33,600 × 0.9 = 27,360 m^3/yr.
- Peak runoff:
    - 38,000 × 0.03 = 1,260 m^3/hr
    - 1,260 / 3600 = 0.35 m^3/s
    - 0.35 × 0.9 = 0.285 m^3/s
    - 0.285 × 1000 = **285 l/s**

6. **37/25/00018 — Daws Lane — 175 dwellings**

- Total impermeable area: 175 × 200 = 35,000 m^2.
- Annual runoff:
    - 35,000 × 0.8 = 28,000

    - 28,000 × 0.9 = 25,200 m³/yr.

- Peak runoff:

    - 35,000 × 0.03 = 1,050 m³/hr
    - 1,050 / 3600 = 0.2916666667 m³/s
    - 0.2916666667 × 0.9 = 0.2625 m³/s
    - 0.2625 × 1000 = **262.5 l/s**

- **37/25/00088 — Dancing Hill — 140 dwellings**
  Total impermeable area: 140 × 200 = 28,000 m².

- Annual runoff:

    - 28,000 × 0.8 = 22,400 (this is area × annual rain)
    - 22,400 × 0.9 = 20,160 m³/yr (apply C).

- Peak runoff:

    - i/1000 = 30 / 1000 = 0.03 m/hr
    - Area × 0.03 = 28,000 × 0.03 = 840 m³/hr
    - 840 / 3600 = 0.2333333333 m³/s
    - 0.2333333333 × 0.9 = 0.21 m³/s (apply C)
    - 0.21 m³/s × 1000 = **210 l/s**

- **Proposed development — West of Shovel Lane — up to 250 dwellings**
  Total impermeable area: 250 × 200 = 50,000 m².

- Annual runoff:

    - 50,000 × 0.8 = 40,000 (this is area × annual rain)
    - 40,000 × 0.9 = 36,000 m³/yr (apply C).

- Peak runoff:

    - i/1000 = 30 / 1000 = 0.03 m/hr
    - Area × 0.03 = 50,000 × 0.03 = 1,500 m³/hr
    - 1,500 / 3600 = 0.4166666667 m³/s
    - 0.4166666667 × 0.9 = 0.375 m³/s (apply C)
    - 0.375 m³/s × 1000 = **375 l/s**

Aggregated totals (for the eight sites / 1,330 dwellings)

- Total dwellings = 64 + 15 + 346 + 150 + 190 + 175 + 140 + 250 = 1,330 dwellings.

- Total impermeable area = 12,800 + 3,000 + 69,200 + 30,000 + 38,000 + 35,000 + 28,000 + 50,000 = **266,000 m².**

- Total annual runoff (sum of site annual vols) = 9,216 + 2,160 + 49,824 + 21,600 + 27,360 + 25,200 + 20,160 + 36,000 = **191,520 m³/yr.**

    - (Equivalently: 266,000 × 0.8 = 212,800 then 212,800 × 0.9 = 191,520 m³/yr.)

- Total design-storm peak (Rational sum) = sum of site Q (m^3/s) = 0.096 + 0.0225 + 0.519 + 0.225 + 0.285 + 0.2625 + 0.21 + 0.375 = 1.995 m^3/s = **1,995 l/s**

Estimated piece-meal runoff (method and results)

A simple scenario calculation was carried out to estimate the additional impermeable area and resulting runoff attributable to each planning application considered in this report. Assumptions used: impermeable area per dwelling = 200 m²; runoff coefficient C = 0.90; annual rainfall 800 mm; design storm intensity 30 mm/hr (Rational method). The site-by-site computations (worked arithmetic) and aggregated totals are shown below. These scenario figures are **indicative** only and is advised to be replaced by site-specific SuDS design outputs or hydraulic model results where required. (See Appendix X table and worked calculations.)

Application Ref	Site	Dwellings	Impermeable area per dwelling (m²)	Total impermeable area (m²)	Estimated annual runoff (m³/yr)	Peak Q (design storm 30 mm/hr) (l/s)
37/25/00044	Park Lane	64	200	12,800	9,216	96
37/25/00055	Gateway	15	200	3,000	2,160	22.5
37/25/00042	Gateway	346	200	69,200	49,824	519
37/22/00125	Vistry Gateway	150	200	30,000	21,600	225
37/25/00023	Stafflands Farm	190	200	38,000	27,360	285
37/25/00018	Daws Lane	175	200	35,000	25,200	262.5
37/25/00088	Dancing Hill	140	200	28,000	20,160	210
Proposal	West of Shovel Lane	250	200	50,000	36,000	375
TOTAL		**1,330**		**266,000**	**191,520**	**1,995**

Caveats and recommended next steps (brief)

- These estimates are **scenario** values for comparative/cumulative accounting; they are **not** substitutes for site-specific drainage design or modelled flood routing.

- The choice of impermeable area per dwelling, rainfall depth, run-off coefficient, and design intensity strongly affects results — replace assumptions with measured/design values if available.
- For planning decisions, require each application to provide full SuDS design (infiltration tests, attenuation sizing, maintenance arrangements) and a cumulative hydraulic assessment (e.g., catchment model or linked storage/routeing) that accounts for downstream capacity constraints and climate change allowances.

Recommended Reference Sources for Assumptions

Assumption	Reference Source	Citation (suggested format)	Notes
Impermeable area per dwelling (≈150–250 m² typical)	CIRIA C753 *The SuDS Manual* (2015), Section 24.2; DEFRA/EA "Rainfall runoff management for developments" (R&D Report W5-074/A/TR/1, 2005)	"Typical residential plot impermeable area 150–250 m² per dwelling, depending on plot density (CIRIA, 2015)."	CIRIA gives representative roof + paved area ratios; the DEFRA R&D report corroborates the range.
Runoff coefficient (C = 0.9 for impermeable surfaces)	CIRIA C753 (Table 24.2), BS EN 16941-1:2018 (*On-site rainwater harvesting systems – Design, installation and maintenance*), and EA Greenfield runoff guidance	"Impermeable surface runoff coefficients typically 0.85–0.95 (CIRIA, 2015)."	Commonly adopted for roofs, paving, tarmac, and concrete.
Annual rainfall 800 mm (Somerset order-of-magnitude)	Environment Agency Flood Estimation Handbook (FEH13), Vol. 2: *Rainfall frequency estimation*; Met Office UK Climate Averages (1991–2020)	"Average annual rainfall for Bridgwater/North Petherton catchment ≈ 780–850 mm (Met Office, 2023)."	FEH grid (SAAR) data gives ~820 mm for local catchment.
Design storm intensity (30 mm h^{-1})	FEH13, EA/DEFRA R&D Report W5-074/A/TR/1 (2005), Table 6.1; CIRIA C753 (2015)	"Short-duration design rainfall intensities (10–60 min) typically 20–40 mm h^{-1} for south-west England (FEH13; DEFRA/EA, 2005)."	30 mm h^{-1} represents a moderate-high short-duration event.
Rational Method (Q = C i A)	*Sewers for Adoption* 7th Edition (WRc, 2012); CIRIA C753 §24.3.1; EA/DEFRA R&D Report W5-074/A/TR/1	"Peak runoff estimated using Rational Method (Q = C i A) in accordance with WRc (2012) and CIRIA (2015)."	Standard approach for small catchments < 200 ha.

Reference Basis for Assumptions

The input parameters used in the above scenario calculations are derived from recognised UK guidance:

- CIRIA C753 (2015) *The SuDS Manual* — Table 24.2 (impermeable area, runoff coefficients, design intensities).
- DEFRA/Environment Agency (2005) *Rainfall Runoff Management for Developments* (R&D Report W5-074/A/TR/1).
- Environment Agency Flood Estimation Handbook (2013 update) — average annual rainfall (SAAR) and short-duration intensities.
- Met Office (2023) *UK Climate Averages 1991–2020* — regional annual rainfall data for Somerset.
- WRc (2012) *Sewers for Adoption*, 7th Ed. — Rational method formulation for peak discharge estimation.
  These sources represent accepted national standards for preliminary surface-water runoff estimation and SuDS design inputs.

Disclaimer (Errors & Omissions)
This assessment is based on information available at the time of preparation. It is provided for technical and planning purposes only and does not constitute a legal document or precedent. While every effort has been made to ensure accuracy, the authors accept no liability for any errors, omissions, or reliance placed on the contents beyond its intended scope.

Clarification on peak flow calculations:
Any summed peak runoff figures presented in this document are retained for illustrative and scenario-based purposes only. They do not represent permitted discharge rates of approved schemes, which are subject to flow controls, attenuation, and detailed drainage conditions. The calculations are intended to highlight potential system loading under exceedance or stress scenarios, including blockage, loss of storage due to groundwater interaction, maintenance failure, or coincident extreme events.

Information limitations:
This document was prepared using information reasonably available at the time of drafting. Where later committee reports, decision notices or technical details were not yet published, reasonable assumptions have been made and are identified as such. The document should be read as an evidence-led review of cumulative flood risk considerations rather than a definitive finding of harm or non-compliance.

Version Control

Version	Date	Description
1.3	December 2025	Updated and expanded cumulative assessment, runoff calculations, policy analysis, and appendices
1.3	January 2026	Addendum created to be read in conjunction with main report
1.3	February 2026	NPPF Polices Updated
1.4	April 2026	additional information from the Parret Catchment Group and the ada Gazette, Spring 2026, which includes the IDB article. I have brought together the findings of these two items and added an Addendum No2 to the main report.
1.5	July 2026	Added West of Shovel Lane proposal (up to 250 dwellings) and updated cumulative totals and runoff calculations.
1.6A	August 2026	Policy-reference update: superseded NPPF paragraphs replaced by August 2026 NPPF F5-F8; superseded Core Strategy / legacy CP5 and SU1 references replaced by adopted Sedgemoor Local Plan 2011-2032 Policy D1. North Petherton terminology updated to Tier 1 rural settlement. No runoff calculations, evidence or substantive conclusions changed.

Addendum to the Cumulative Flood Risk Assessment of North Petherton

Implications of Recent Flood Events for Ongoing Development Proposals

Status:
Formal Technical Addendum (Statutory Consultee)

Related Document:
Cumulative Flood Risk Assessment of North Petherton
Version 1.3 – December 2025

Date:
27/01/2026

This Addendum should be read in conjunction with the December 2025 Assessment. It does not replace or amend the original document, but provides an evidence-led update reflecting observed flood events since its publication.

Addendum No 1 to the Cumulative Flood Risk Assessment of North Petherton (December 2025)

Implications of Recent Flood Events for Ongoing Development Proposals

1. Purpose of this Addendum

- Prepared to accompany the Town Council's Cumulative Flood Risk Assessment of North Petherton (Version 1.3, December 2025).
- Does not replace, revise, or withdraw any findings or conclusions of the December 2025 Assessment.
- Issued in response to recent flood events occurring since publication of the original assessment.
- Recent flood events constitute new and material planning evidence.
- Purpose is to assess implications of observed flood events for Flood Risk Assessments (FRAs), Sustainable Drainage Systems (SuDS), and cumulative impacts.

2. Relationship to the December 2025 Assessment

- December 2025 Assessment identified unacceptable cumulative flood risk and hydraulic constraints.
- Addendum reaffirms all conclusions of the December 2025 Assessment.
- No new modelling or recalculations introduced.
- Evaluates whether recent flood events confirm previously identified risks.
- Original assessment should be read alongside this Addendum.

3. Observed Flood Events Since Publication

- Flooding has occurred locally and across the Somerset Levels since December 2025.
- Events characterised by prolonged or sequential rainfall and saturated ground conditions.
- Elevated river and drainage levels limited surface water discharge.
- Conditions reflect known flood mechanisms affecting the Somerset Levels.
- Observed flooding represents empirical evidence of system exceedance.

4. Implications for Flood Risk Assessments (FRAs)

- Many FRAs assume effective attenuation and available downstream capacity.
- Recent events show receiving systems may already be at or beyond capacity.
- Controlled discharge may be ineffective during high river levels.

- Greenfield runoff rate compliance does not equate to flood risk neutrality.
- FRAs relying primarily on rate control should be treated with caution.

5. Implications for SuDS and Attenuation-Based Mitigation

- Attenuation-based SuDS have inherent limitations in prolonged wet conditions.
- Recent flooding confirms storage can be compromised before peak rainfall.
- Groundwater levels may reduce available attenuation capacity.
- Submerged outfalls restrict discharge effectiveness.
- Reliance on SuDS in isolation does not provide robust mitigation.

6. Cumulative Impact: From Risk to Demonstrated Constraint

- Cumulative impacts previously identified as potential are now evidenced.
- Receiving systems are already under significant stress.
- Limited residual capacity exists during wet periods.
- Minimal tolerance remains for additional managed discharge.
- Cumulative effects are a material planning consideration.

7. Planning Implications

- Planning policy requires development to be safe for its lifetime.
- Development must not increase flood risk elsewhere.
- Recent flood events are a material consideration.
- Site-by-site assessment alone is insufficient.
- Precautionary approach is justified in flood-sensitive locations.

8. Conclusion and Recommendation

- Addendum reinforces findings of the December 2025 Assessment.
- Observed flood events validate identified flood risk mechanisms.
- Receiving environment is operating at or near capacity.
- Proposals relying solely on attenuation should not proceed unchanged.
- Further development must demonstrate clear flood risk betterment.

Addendum No. 2 (Version 1.4 – April 2026)
Cumulative Flood Risk Assessment of North Petherton
Forensic Review of System Resilience and Recent Flood Evidence

This Addendum should be read in conjunction with the December 2025 Assessment. It does not replace or amend the original document, but provides an evidence-led update reflecting observed flood events since its publication

Contents

1. Purpose of Addendum

This Addendum (No.2, Version 1.4) should be read alongside the original Cumulative Flood Risk Assessment of North Petherton (Version 1.3, December 2025) and subsequent Addendum (January 2026).

The purpose of this document is to incorporate further evidence arising from:
- Environment Agency flood event reporting (2026)
- Observed flood conditions during recent events
- A forensic review of system performance under stress conditions

This document does not replace previous findings, but strengthens and clarifies them in light of new evidence.

2. Status of Original Report

All conclusions of the December 2025 Assessment and January 2026 Addendum remain valid and are reinforced by this Addendum.

In particular, the following findings are upheld:
- The cumulative impact of 1,330 dwellings represents a material increase in hydraulic loading
- The receiving system is constrained and sensitive to incremental change
- Site-by-site assessment is insufficient to determine overall flood risk

3. New Evidence Considered

This Addendum considers the following additional evidence:

1. Recent flood events (2025–2026), characterised by prolonged rainfall and saturated ground conditions
2. Environment Agency operational reporting indicating:
   - reliance on temporary pumping
   - constraints imposed by river levels
   - system dependency on operational intervention

This evidence provides empirical validation of previously identified risks.

4. Review of System Resilience Claims

Recent material indicates improved operational response to flood events. However, this reflects enhanced management rather than increased system capacity.

The system remains dependent on:
- favourable downstream conditions
- active pump deployment
- timely intervention

These characteristics indicate conditional performance rather than inherent resilience.

5. Implications for Hydraulic Capacity

The introduction of additional runoff from cumulative development must be considered in the context of a system already operating near capacity.

Observed conditions demonstrate:
- limited ability to convey additional flow during peak events
- reduced effectiveness of pumping under high river levels
- constrained discharge pathways

This indicates minimal residual capacity within the system.

6. Implications for Flood Risk Assessments (FRAs)

Many Flood Risk Assessments assume that downstream systems are capable of receiving controlled discharge.

Recent evidence challenges this assumption, demonstrating that:
- discharge may not be possible during critical periods
- compliance with greenfield runoff rates does not ensure flood neutrality

FRA methodologies should therefore be reviewed in the context of cumulative system constraints.

7. Implications for SuDS and Attenuation

Attenuation-based mitigation strategies are dependent on available storage and discharge conditions.

Observed flood events confirm that:
- storage systems may be compromised during prolonged rainfall
- groundwater levels may reduce available capacity
- discharge points may be submerged

This limits the reliability of SuDS as a sole mitigation mechanism.

8. Cumulative Impact – Confirmed Constraint

The cumulative impact identified in the original report has now transitioned from a theoretical risk to a demonstrated constraint.

The system has shown:
- limited tolerance for additional inflow
- sensitivity to prolonged wet conditions
- reliance on active intervention to prevent exceedance

This confirms that cumulative effects are a material planning consideration.

9. Planning and Policy Implications

Planning policy requires that development must not increase flood risk elsewhere and must be safe for its lifetime.

In the context of demonstrated system constraints:
- site-specific compliance is insufficient
- cumulative impacts must be considered
- reliance on mitigation measures must be critically assessed

The precautionary principle is therefore applicable.

10. Updated Conclusion

This Addendum confirms that the receiving environment is operating at or near its functional limits under stress conditions.

The cumulative development proposals introduce additional hydraulic loading into a constrained system, with limited evidence of available capacity.

The findings of the original assessment are therefore reinforced, and the need for a comprehensive, catchment-wide evaluation of flood risk is substantiated.