Flood Risk, Hydrology & Nutrient Neutrality

Legal Policy & Framework

The National Planning Policy Framework (December 2024) requires local plans to avoid inappropriate development in areas at risk of flooding and to direct growth to the safest locations. Paragraphs 159 to 169 set out the tests for sequential exception assessments. Development should only proceed where it can be proven safe for its lifetime without increasing flood risk elsewhere. Paragraph 183 requires planning authorities to protect sites with statutory ecological designations and prevent any adverse effect on their integrity.

The Flood & Water Management Act 2010 designates Lead Local Flood Authorities (LLFAs) with statutory duties to manage local flood risk from surface water, groundwater, and ordinary watercourses. This included assessing cumulative impacts of major developments on downstream catchments and approving sustainable drainage designs.

Under the Environmental Permitting Regulations 2016, discharge of surface water or treated effluent to controlled waters requires an Environment Agency Permit. Any proposal within the River Mease catchment must demonstrate that discharges will not increase nutrient or sediment loading to the designated site.

The Conservation of Habitats and Species Regulations 2017 require that any plan or project likely to have a significant effect on a Special Area of Conservation (SAC) undergoes a Habitats Regulations Assessment. The competent authority may only approve the project if there is a certainty, beyond reasonable scientific doubt, that it will not adversely affect site integrity. This applies directly to the River Mease SAC and its associated SSSI.

The Environment Act 2021 introduces a statutory requirement for at least ten percent biodiversity net gain and sets binding water quality improvement targets. These obligations place additional land and cost pressures on large allocations within sensitive catchments such as the Mease.

Locally, the Hinckley & Bosworth Local Plan seeks to promote climate resilience, protect green infrastructure, and secure sustainable drainage as integral parts of all major development. The Leicestershire Local Transport Plan 4 (LTP4) also embeds water environment and flood resilience objectives across infrastructure delivery. Any allocation inconsistent with these principles conflicts with adopted policies and statutory duties.

Under the regulations any development that increases nutrient or sediment load within the River Mease catchment would fail the legal tests of Habitat Regulations and NPPF. Assertions that such a scheme could "improve " the Mease have no statutory scientific basis.

Catchment Context & Environmental Designations

The proposed Norton Heath allocation covers approximately 700 hectares of active farmland within the River Mease hydrological catchment. Surface water from the site drains north via Twycross Brook and River Sence to the River Mease, a designated Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI). These tributaries form part of the Mease's functional network and carry nutrient and sediment loads from all upstream sources into its main channel.

The River Mease holds international protection under the Habitats Directive for its populations of spined loach (Cobitis taenia) and bullhead (Cottus gobio) and for its Annex I river habitat. Natural England's condition assessment lists the site as "Unfavourable – Declining". Excessive phosphorus, fine sediment, and organic pollution have already breached the conservation objectives. The River Mease Nutrient Management Plan confirms the catchment is at or beyond its assimilative capacity. The current legal position is on of *no deterioration:* no new development may lawfully increase the nutrient load entering the SAC.

The land within the allocation is a mixture of, grazed pasture and mixed farmland managed under Countryside Stewardship and the Sustainable Farming Incentive (SFI). These farms have invested in buffer strips, riparian fencing, nutrient management, and reduced fertiliser inputs to protect the Mease and its tributaries. Adjacent arable holdings operate under SFI principles, maintaining soil cover, grass margins and winter stubble to slow run off. Together, these measures provide infiltration, nutrient buffering, and habitat continuity across the sub catchment.

Replacing this network of low intensity, actively managed farmland with 10,000 dwellings, roads and drainage infrastructure would reverse years of environmental stewardship. Hardstanding and foul drainage remove infiltration capacity, accelerate surface run off, and increase both flow and nutrient loading. These effects cannot be neutralised or reversed through engineered systems.

Claims that development could "make the Mease better" are false. The SAC's decline is a product of cumulative load within a fixed ecological limit, not an absence of mitigation effort upstream. The existing land use already contributes to the catchment protection; conversion to an urban settlement would cause measurable harm that no mitigation package can lawfully or practically offset.

Flood Zones and On site Risk

Environment agency mapping confirms that the Norton Heath allocation contains extensive land within Flood Zones 2 and 3 along the Twycross Brook, the River Sence, and their connected tributaries. These corridors form an active flood plane and provide essential water storage during peak rainfall events. The central and northern parts of the allocation, including land south of Norton Juxta Twycross, lie within these high risk zones.

LiDar topography shows the site falling from south east to north west towards the Twycross Brook and the River Sence, which both discharge into the River Mease SAC. The lowest areas adjacent to these channels already experience seasonal flooding and prolonged soil saturation. This landscape currently functions as a natural sponge, holding and filtering water before it reaches the Mease.

Much of this land is managed under the countryside Stewardship Scheme and Sustainable Farming Incentive (SFI) schemes, which maintain grassland cover, buffer strips and controlled grazing. These measures slow run off and limit sediment transfer. Replacing this system with roads, housing plots and engineered drainage would remove infiltration capacity and disrupt exceedance routes.

To deliver "safe" development, large scale re-profiling, bunding, and flood storage would be required. Such works would displace floodwater, increase velocity, and heighten downstream flood peaks, contrary to NPPF Sections 159 and 167 which prohibit development that increases flood risk elsewhere. The assertion that engineered drainage could "make the Mease better" ignores the ecological and hydrological function already provided by existing farmland.

The sites current form provides flood storage and filtration that no SuDS network can reproduce. Building within Flood Zones 2 and 3 would erase these natural defences and breach both the sequential and exception tests under national policy.

Developers may suggest that they would "avoid" construction within the mapped flood plain and instead convert those areas into wetlands or "habitat enhancement zones". In practice, this would not reduce flood risk or improve the Mease. The existing land already acts as a natural sponge, absorbing and slowly releasing rainfall through its grassland soils and root structures. Engineered wetlands replace infiltration with permanent open water. They reduce soil storage, increase evaporation losses, and push flood peaks downstream.

True wetland restoration requires stable catchment hydrology and low nutrient inflow. Creating artificial ponds within a new urban drainage system does the opposite, it concentrates polluted run off and displaces floodwater from where it naturally settles. These features serve engineering compliance, not ecological recovery.

Converting functional farmland floodplain into constructed wetlands would therefore increase local flood frequency and worsen nutrient transfer into the Mease. It is not environmental betterment; it is a loss of an already working natural system.

Surface Water & Run off Impacts

A settlement of between 6,000 and 10,000 dwellings would introduce over 400 hectares of impermeable surface across, roofs, roads and pavements. This removes the natural infiltration capacity that currently absorbs rainfall and filters surface water through grassland and topsoil. Under current farm management, rainwater percolates into the ground, recharging aquifers and feeding the Twycross Brook system at a slow, controlled rate. Urbanisation replaces this with rapid, channelled discharge.

Modelling from comparable developments shows surface run off volumes increasing by two to three fold once open ground is sealed. Flow peaks rise sharply, and the lag time between rainfall and downstream flooding shortens. The result is higher flood levels along the Twycross Brook, the River Sence, and ultimately the River Mease.

The Environment Agency's climate change allowances require an uplift of 20-40 percent in design rainfall for the 1 in 100 year storm event, and up to 70 percent for extreme scenarios approaching a 1 in 1,000 year. When applied to this allocation, even enhanced SuDS would not prevent exceedance flooding. Attenuation basins would fill faster and fill more often, particularly when catchments are already saturated.

Urban run off also carries fine sediment, hydrocarbons, tyre residue and domestic pollutants. These wash directly into the tributaries feeding into the Mease SAC. Increased flow rates mobilise existing sediment and erode channel banks, releasing trapped phosphorus. The cumulative effect is higher nutrient loading at every storm event.

Developers may claim that on site SuDS, green roofs, or "wetland features" would offset this. In reality, these engineered systems only delay discharge; they do not remove nutrients or restore infiltration. Once capacity is reached, water is released in a concentrated pulse, worsening downstream peaks. The existing farmland, managed under SFI & Countryside Stewardship, already performs this function far more effectively through natural soil structure and vegetative cover.

Replacing permeable farmland with urban drainage would therefore accelerate run off, increase flood risk, and intensify nutrient pollution. No mitigation strategy proposed to date demonstrates that these impacts could be neutralised, let alone deliver any improvement to the River Mease SAC.

Nutrient Neutrality Requirement

The entire 700 hectare Norton Heath allocation lies within the River Mease SAC catchment. The SAC is in “Unfavourable – Declining” condition due to the excess phosphorus and fine sediment. Under the Conservation of Habitats and Species Regulations 2017, any development within the catchment mist prove “no adverse effect on site integrity.”

Independent analysis using Natural England’s River Mease Nutrient Neutrality Calculator (v3.01.6) shows the proposed 10,000 home settlement would add 2,435 kg total phosphorus (TP) per year at full build out, with a cumulative excess of +41,601 kg TP over a 40 year delivery period. This load originates primarily from foul drainage, with waste water contributing roughly 1,893 kg TP/year, accounting for 80% of the total. Land use change from farmland to urban surface adds a further 136 kg TP/year, even assuming the developers unverified claim of 50% “parkland”.

On-site Sustainable Drainage Systems (SuDS) could offset only 10-19 percent of the phosphorus increase, equivalent to 250-465kg TP/year, leaving approximately 2,700kg TP/year requiring offsite mitigation in a catchment with no remaining capacity. The River Mease Partnership has confirmed the DCS1 and DCS2 mitigation schemes are fully allocated. No additional trading capacity exists.

Developers may attempt to claim that “parkland”, “wetlands” or “enhanced green infrastructure” would improve water quality. But the Independent Nutrient Audit demonstrates this is not possible. True phosphorus reduction requires large scale land conversion to permanent wetland or woodland, at costs of £20,000-£35,000 per dwelling, producing a total mitigation liability of £200-£350 million. No such land, funding or delivery mechanism exists.

The remaining 81-90 percent phosphorus would discharge untreated into the headwaters of the Mease, undermining restoration projects already funded by Natural England and the Environment Agency. This directly contravenes the “no deterioration” requirement under the Water Framework Directive and the Habitats Regulations test of Integrity.

The existing farmland already functions as active mitigation. Under Countryside Stewardship and SFI, participating farms maintain buffer strips, riparian fencing, and low input practices that absorb nutrients before they enter the Twycross Brook and Sence system. Replacing this with foul sewers, SuDS tanks, and impermeable surfaces would eliminate this protective function.

In this context, claims that the development could “make the Mease better” are demonstrably false. The proposal introduces 40 tonnes of phosphorus onto the rivers headwaters and destroys the very land that currently filters and protects it. There is no lawful route to nutrient neutrality, no spare credit capacity, and no feasible offsite mitigation.

The allocation therefore fails the Habitats Regulations, NPPF S183, and Environment Act water quality objectives. It cannot be made compliant within the plan period and must be removed from the draft Local Plan on environmental grounds.

Flood Defence & Drainage Infrastructure

A settlement of this scale would requite a complete artificial drainage network. To meet minimum standards the developer would need to deliver:

- A full SuDS management train incorporating permeable paving, swales, attenuation basins, and constructed wetlands.
- Exceedance routing to intercept overland flow from higher ground and channel it safely through the site.
- Flood storage and discharge controls to restrict outflow into the Twycross Brook and River Sence system.

These measures demand significant land take. Based on standard design ratios, SuDS and flood attenuation infrastructure would occupy 15- 20% od the total allocation, or roughly 100-140 hectares. Additional buffers for watercourses, biodiversity net gain, and maintenance access increase this to over 150 hectares. This reduces the developable yield and pushes densities beyond reasonable limits.

The location of the A444 and its existing drainage system introduces further complexity. Any SuDS discharge must align with the A444's highway drainage and Environment Agency outfall controls. This creates dependencies outside the developers control. The A444 already suffers surface water flooding during high rainfall, so additional inflows would require costly off site upgrades. Without those, exceedance water would back up into residential areas, breaching NPPF S167's requirement for safe development for the lifetime of the scheme.

Even if attenuation basins and wetlands succeeded in holding back some surface water on site, hydraulic pressure would still be transmitted downstream. The Twycross Brook and River Sence already carry flows from several high risk catchments before joining the River Mease. By adding a new urban drainage system, the proposal would increase both base flow and storm volume entering these channels. This pushes flood pressure into Flood Zones 2 and 3 further downstream, transferring rather than reducing risk. Such displacement is contrary to NPPF S159 and the Flood and Water Management Act 2010 which require developers to avoid causing flooding elsewhere.

Constructed wetlands or balancing ponds, often presented as multifunctional "amenity" features, do not offset these risks. They remove the soil's natural infiltration function, increase open water surface area, and require constant desilting and vegetation management. Maintenance costs are high and continuous, typically £5,000 - £10,000 per hectare per year over the lifetime of the scheme.

Long term adoption presents further uncertainty. Severn Trent Water is unlikely to adopt extensive open SuDS systems within the Mease catchment due to pollution liability. Management would fall to private maintenance companies funded by estate service charges. Experience across similar sites shows high default rates, poor maintenance, and long term failure of attenuation systems once management companies dissolve.

In practical terms, the required flood defences and drainage infrastructure would:

- Reduce developable land area by atleast 150 hectares.
- Depend on third party highway and outfall upgrades not secured or funded.
- Introduce long term maintenance costs and liabilities for residents.
- Replace functioning farmland drainage with engineered systems that cannot replicate infiltration or nutrient buffering.
- Increase flood pressure in downstream zones along the Twycross Brook, River Sence and Mease.

These dependencies, costs, and liabilities make the site undeliverable within the plan period. The claim that such infrastructure could “make the Mease better” is unsound. It would instead substitute a natural hydrological system with a fragile, high cost engineered one that increases long term flood & pollution risk.

Cost, Viability & Deliverability

Delivering the drainage, nutrient, and flood infrastructure requires to make the Norton Heath allocation policy compliant would impose costs far beyond any realistic developable margin.

The estimated nutrient neutrality liability alone sits between £200 million and £350 million, based on the current £20,000- £35,000 per dwelling range used by Natural England and the River Mease Partnership. This excludes land purchase, construction or maintenance of any offset sites. No market for phosphorus credits exists within the Mease catchment, and both DCS1 and DCS2 schemes are fully allocated.

Flood and drainage infrastructure adds a further £80 -£120 million, including:

- Extensive SuDS and attenuation systems across 150 ha of land.
- A444 drainage upgrades and highway outfall works.
- Long term operation, desilting & vegetation management.
- Replacement or reinforcements of culverts and outfalls into the Twycross Brook & River Sence.

Biodiversity Net Gain (BNG) requirements under the Environment Act 2021 remove an additional 10 percent per hectare, and carry compliance costs estimated at £20,000-£30,000 per hectare. Combined, these obligations cut net yield and destroy financial viability.

No secured funding or partnership scheme exists to share these costs. The Local Plan evidence base contains no viability testing for a scheme of this scale within a protected SAC catchment. Without guaranteed mitigation land, nutrient credits, or infrastructure funding, the project fails the NPPF tests of deliverability and soundness.

Developers may attempt to rescope the scheme to phase the costs over 40 years, but this does not remove the up front requirement for nutrient neutrality and flood safety before the first dwelling is occupied. The capital outlay required to achieve compliance would exceed the lands residual value, rendering the entire allocation financially unviable.

In effect:

- Nutrient neutrality mitigation alone exceeds any realistic profit margin.
- Flood and drainage works are unfunded and dependent on third party infrastructure.
- Biodiversity and stewardship land losses reduce yield below viable thresholds.
- The Local Plan provides no mechanism or evidence to secure or deliver these works.

The allocation is therefore not viable, not fundable, and not deliverable within the plan period. It fails the NPPF tests of being positively prepared, justified, effective and consistent with national policy, and should be removed at regulation 19.

Policy Compliance & Soundness

NPPF Paragraph 35 sets the four tests of soundness. Plans must be:

- Positively prepared
- Justified
- Effective
- Consistent with national policy

On flooding, hydrology and nutrient neutrality, this allocation fails all four.

Positively Prepared

The NPPF expects plans to meet needs in a way that respects environmental limits. Here, the evidence shows:

- The River Mease SAC is already in “Unfavourable – Declining” condition.
- The Norton Heath site adds over 2,400kg in total phosphorus per year and 41,000+ kg over 40 years, with no route to neutrality.
- Flood risk rises on site and in downstream Flood Zones 2 and 3.

A plan that knowingly worsens a failing SAC and increases downstream flood risk is not positively prepared.

Justified

A justified plan uses appropriate strategy, based on proportionate evidence, when reasonable alternatives exist. NPPF paragraphs 182-183 require great weight for designated landscapes and set strict tests major development where harm arises.

Here:

- The strategy places a 10,000 home town at the Mease headwaters, in direct conflict with Natural England's own nutrient management guidance.
- The brownfield register is out of date and reasonable alternative sites have not been fully explored or updated.
- HBBC relies on developer supplied reports and not produced independent hydrology or nutrient evidence to justify this choice.

This is not a justified strategy.

Effective

Effective plans are deliverable over the plan period based on effective joint working. NPPF requires that key infrastructure and mitigation are "strategic, costed and deliverable."

For Norton Heath:

- DCS1 and DCS2 nutrient schemes are fully allocated. No spare credits exist in the Mease catchment.
- Nutrient neutrality needs £200-£350 million of off site land use change, with no land, funding, or delivery body in place.
- Flood and drainage works depend on unfunded upgrades to the A444 and downstream watercourses, outside the promoters control.

Mitigation is neither secured nor practically deliverable. The allocation is therefore ineffective.

Consistent with national policy.

NPPF natural environment policies require protection and enhancement of designated sites and avoidance of pollution.

The Habitats Regulations demand no adverse effect on SAC integrity. The Environment Act introduces legally binding water quality and biodiversity targets.

This allocation:

- Increases phosphorus loading into a failing SAC with no neutralisation route.
- Replaces SFI and stewardship farmland that currently supports Mease recovery with impermeable urban drainage.
- Increases flood pressure along the Twycross Brook, River Sence and Mease, at odds with national adaptaion and flood risk guidance.

That conflicts with NPPF paragraphs on flood risk, pollution and designated sites, and with the Habitats Regulations legal test.

On flooding hydrology & nutrient neutrality alone LPR231 is not positively prepared, not justified, not effective, and not consistent with national policy. It is unsound and should be removed from the Local Plan at Regulation 19.

Proposed Mitigations & Their Limitations

Developers are expected to promote a range of technical and land based measures to argue that the Norton Heath allocation can achieve nutrient neutrality and flood resilience. These follow a familiar pattern seen on other sensitive catchments and rely on optimistic or non compliant modelling. None remove the underlying problem: the River Mease SAC has zero spare capacity. Any additional load breaches the Habitats test of integrity.

Claimed Mitigations & Their Technical Limitations

Proposed Measure	**What they will claim**	**What they will enter in the Natural England calculator**	**Why it fails**
Water efficient fittings (low flush toilets, taps, appliances)	Reduces wastewater volume per person	Lower daily water use (90L instead of 110L)	At best cuts phosphorus by 5–7 %. Already assumed in baseline housing. Negligible effect on diffuse pollution
Private or modular wastewater treatment works	On site plant discharging at 0.5mg/L TP	Replace STW discharge value with 0.5mg/L	Needs EA permit, operator, energy and sludge removal. Declines within 3–5 years. EA rarely permits new discharges in SAC headwaters.
Constructed wetlands or reedbeds	“Natural Polishing” removes 70%P	Apply 50-70% removal factor to wastewater portion	Field data show 10–20 % average removal. Requires

			> 100 ha, £50–100 k/ha build cost, plus annual maintenance. Raises flood risk.
Urban greenspace/ parkland filtration	Half the site will be green and absorb nutrients	Code 300-350 ha as semi natural greenspace	Only ~160 ha realistic greenspace remains. Compacted soils export more P within years. Disallowed as mitigation by NE TIN200.
Rainwater harvesting/ grey water reuse	Less wastewater produced	Lower per capita discharge	Cuts load < 5 %. High failure rates. Maintenance heavy and unreliable.
SuDS basins, ponds and swales	Capture and treat surface run off	Apply “best practice” offset	CIRIA data show 10–19 % P removal. Stores, not removes, pollutants. Spills release concentrated pulses.
Off site land use change (nutrient offsetting)	Convert farmland elsewhere to wetland or grassland	Add “mitigation land” with negative P export	DCS1 / DCS2 credit banks full. Needs 2,000 + ha and £200–350 m. No land, covenant, or funding exists.
Future Severn Trent upgrades	Later AMP9 works will lower P at STWs	Substitute effluent concentration of 1 mg/L	Not funded or approved. Reliance on hypothetical upgrades invalid under HRA.
Behavioural or education schemes	Residents will cut waste or fertiliser use.	None (narrative only)	No quantifiable nutrient value. Ignored in formal HRA.

Calculator Manipulation Tactics & Why They Are Misleading

Manipulation Tactic	**What they will change in the calculator**	**Why it is misleading or non- compliant**

Reduced occupancy	Lower household size 2.4 → 2.1	Artificially lowers wastewater load. Occupancy must reflect census or HEDNA data. Breaches NE guidance.
Lower water consumption	Reduce daily use 110–125 → 90 L/person	Assumes universal adoption of high-spec fittings and perfect behaviour. Unrealistic and effect < 7 %.
Enhanced phosphorus removal	Reduce daily use 110–125 → 90 L/person	No approved plant. Creates fictional capacity. Requires new EA permit and funding that do not exist.
Re-labelling land as greenspace/wetland	Code large tracts as low-export "semi-natural"	Misrepresents urban parkland as countryside. Compaction and dog waste increase P export. Disallowed under NE TIN200.
Inflated SuDS efficiency	Enter 50–70 % P-removal factor	Contradicts CIRIA C753 data (10–19 %). Gives false neutrality.
Excluding construction phase	Omit excavation/topsoil loss	Removes major short-term nutrient source. NE requires inclusion.
Ignoring long-term degradation	Assume constant system performance	SuDS clog and fail within 3–5 years. Ignores decay and breaches precautionary principle.
Assuming future Severn Trent upgrades	Substitute improved effluent (1 mg/L)	Not funded or scheduled in AMP8. Reliance on speculation fails deliverability test.
Combining unverified offsets	Add unapproved farmland conversions	DCS1 / DCS2 full. Unregistered offsets lack legal or monitoring framework. Misuse of calculator.

Why None of It Works

- All measures depend on third party approvals, land or funding beyond the developer's control.

- Combined capital and maintenance costs exceed £300 million, erasing scheme viability.
- None achieve the legal threshold of *no adverse effect on site integrity*.
- Many options increase flooding and all remove farmland that currently filters nutrients.
- Manipulating calculator inputs breaches the precautionary principle that governs all Habitats Regulations Assessments.

Summary

The mitigation options proposed for Norton Heath are neither credible or lawful. They rely on model manipulation, hypothetical upgraded, and the rebranding of existing farmland functions as "environmental enhancement". Every measure falls short of the statutory requirement for nutrient neutrality and flood safety.

The River Mease SAC already exceeds its ecological limits. Any additional phosphorus or hydrological loading, no matter how engineered on paper, constitutes deterioration. The claim that this development could "make the Mease better" is scientifically false, legally indefensible, and renders the allocation unsound.

Conclusion

The Norton Heath allocation fails every relevant legal, environmental, and policy test. It sits within the headwaters of the River Mease Special Area of Conservation and Site of Special Scientific Interest—one of England's most protected and environmentally constrained catchments. The Mease is already in "Unfavourable – Declining" condition, with no residual nutrient capacity.

The proposed development would add more than 2,400 kilograms of phosphorus each year and over 41,000 kilograms cumulatively over the plan period. This scale of increase cannot be mitigated through on-site systems, green infrastructure, or SuDS. Both River Mease Partnership mitigation schemes (DCS1 and DCS2) are fully allocated, and no additional credit market or funding mechanism exists.

All suggested mitigation measures are either technically ineffective, financially unviable, or legally prohibited. Constructed wetlands, SuDS, and "parkland" features displace the farmland systems that currently absorb and filter rainfall. Engineered drainage and wetland systems cannot replicate the infiltration, nutrient buffering, or ecological balance delivered by the existing Countryside Stewardship and SFI management.

The scheme conflicts with the Habitats Regulations, the Environment Act 2021, and NPPF Sections 159-169 and 183. It also breaches the tests of soundness set out in NPPF S35:

- It is not positively prepared, as it worsens a failing SAC.
- It is not justified, relying on speculative and misleading evidence.
- It is not effective, as mitigation and infrastructure are unfunded and undeliverable.
- It is not consistent with national policy, which requires protection and restoration of designated sites and avoidance of pollution.

The allocation would increase flood and nutrient pressures, remove functioning farmland, and obstruct restoration of the River Mease. There is no lawful or deliverable route to compliance.

Conclusion

LPR231 – Norton Heath must be removed from the draft Local Plan at Regulation 19. It is unsound, undeliverable, and incompatible with national environmental policy and statutory obligations.

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Appendices

Appendix A – Legal and Policy Framework Extracts

A1. National Planning Policy Framework (NPPF, December 2024)

Paragraphs 159–169 require planning authorities to avoid inappropriate development in areas at risk of flooding and to apply the sequential test to steer development to the lowest-risk locations. Where development in flood risk areas is unavoidable, it must be demonstrated to be safe for its lifetime without increasing risk elsewhere. Paragraph 167 confirms that flood risk should not be increased on- or off-site, and that natural floodplain storage should be retained wherever possible.

Paragraph 183 requires that planning decisions protect sites designated under the Habitats Regulations and ensure that developments do not have an adverse effect on the integrity of such sites. It specifically prohibits granting permission where uncertainty remains about potential harm to a protected habitat.

Paragraph 188 requires planning policies to contribute to the improvement of the natural environment by preventing new or existing development from contributing to, being put at unacceptable risk from, or being adversely affected by pollution.

A2. Conservation of Habitats and Species Regulations 2017

Regulation 63 requires a *Habitats Regulations Assessment (HRA)* where a plan or project may have a likely significant effect on a European site. The competent authority must ascertain, beyond reasonable scientific doubt, that the plan will not adversely affect the integrity of the site before it can be approved.

Regulation 64 allows a project that fails this test to proceed only where there are *imperative reasons of overriding public interest* and where there are no alternative solutions—neither of which applies to speculative housing allocations. In all cases, full compensatory measures must be secured before approval.

A3. Environment Act 2021

The Act sets legally binding long-term environmental targets, including those for water quality and biodiversity. It introduces a mandatory minimum 10 percent Biodiversity Net Gain (BNG) requirement for most major developments and a duty to enhance and protect the natural environment.

Section 7 places a statutory duty on public authorities to consider environmental improvement plans and water quality targets when exercising planning functions. Section 18 requires the Secretary of State to report on progress toward those targets, ensuring local decisions do not undermine national objectives.

A4. Flood and Water Management Act 2010

The Act designates Lead Local Flood Authorities (LLFAs) with responsibility for managing local sources of flooding—surface water, groundwater, and ordinary watercourses. Schedule 3 establishes national standards for sustainable drainage systems (SuDS) and requires developers to obtain LLFA approval for major drainage proposals.

Section 9(1) obliges LLFAs to investigate flood events and Section 13 promotes cooperation between local planning authorities, the Environment Agency, and water companies. Any allocation that increases downstream risk conflicts with these statutory duties.

A5. Leicestershire Local Transport Plan 4 (LTP4)

LTP4 integrates flood resilience into transport planning. It commits to protecting existing infrastructure, reducing the carbon impact of new developments, and preventing new growth from increasing flood risk to strategic routes such as the A444 corridor. The Norton Heath allocation conflicts with these objectives by adding surface water discharge and traffic loading to an already flood-sensitive transport corridor.

A6. Department for Transport – Transport Decarbonisation Plan (2021)

The plan sets out the need for all new development to align with a low-carbon, climate-resilient transport network. It requires infrastructure decisions to factor in flood resilience, sustainable drainage, and avoidance of road-led growth that increases emissions or flood exposure.

The Norton Heath proposal, dependent on major highway expansion through the River Mease catchment, conflicts with these principles and fails to meet the plan's direction of sustainable, resilient infrastructure investment.

Appendix B – Supporting Evidence and Calculations

B1. Independent Nutrient Neutrality Assessment (Lee, 2025)

An assessment prepared by a community hydrologist (Lee, 2025) used Natural England's *River Mease SAC Nutrient Neutrality Calculator v3.01.6* to quantify the phosphorus load from the proposed Norton Heath allocation.

Key findings:

- Net additional phosphorus load: **+2,435 kg TP/year** at full build-out (10,000 dwellings).
- Cumulative phosphorus excess: **+41,601 kg TP** over 40 years.
- Wastewater contribution: **≈1,893 kg TP/year (80% of total)**.
- Land-use change (arable to urban): **+136 kg TP/year**.
- On-site SuDS offset: **10–19% of load (250–465 kg TP/year)**.
- Off-site mitigation required: **≈2,700 kg TP/year**, with no capacity available in DCS1 or DCS2.

The assessment concludes that nutrient neutrality cannot be achieved and that the proposal would irreversibly damage the River Mease SAC from the headwaters downwards.

B2. Natural England River Mease Nutrient Management Plan (TIN200, June 2024)

Natural England identifies the River Mease as "Unfavourable – Declining" due to excess phosphorus and sediment. The plan confirms:

- No residual assimilative capacity exists in the catchment.
- "Any additional nutrient input upstream will make its way downstream and add to current exceedance."
- All new development must demonstrate *no deterioration* in phosphorus load.
- Development requiring off-site mitigation must secure credits before permission is granted.

These criteria make new settlement-scale growth incompatible with the conservation objectives for the Mease SAC.

B3. River Mease Partnership Statements (2024)

The River Mease Partnership's published developer contribution reports confirm:

- DCS1 and DCS2 nutrient mitigation schemes are fully allocated.
- No further credits or capacity exist within the Partnership.

• Any new mitigation would require **creation of a DCS3**, which has not been designed, funded, or consulted on.

HBBC and the developer therefore have no lawful mechanism to offset nutrient impact.

B4. CIRIA C753 – SuDS Performance Data

Empirical evidence from *The SuDS Manual* (CIRIA, 2024) shows:

• Mean phosphorus removal efficiency for vegetated SuDS features ranges **10–19 percent**.

• Long-term removal efficiency declines with sediment build-up and cold-weather stagnation.

• Effective nutrient removal requires ongoing desilting, vegetation cutting, and sediment disposal, creating perpetual costs and pollution risks.

This data confirms that SuDS can delay discharge but cannot achieve nutrient neutrality.

B5. Environment Agency (EA) Permitting Guidance and Correspondence

EA correspondence for the Mease catchment (2024) confirms:

• No new discharge permits will be issued that increase phosphorus entering the SAC or its tributaries.

• Private package treatment works are not acceptable due to compliance and monitoring concerns.

• New discharges would contravene the *Environmental Permitting (England and Wales) Regulations 2016* and the *Water Environment (Water Framework Directive) Regulations 2017*.

B6. Phosphorus Load Summary Table

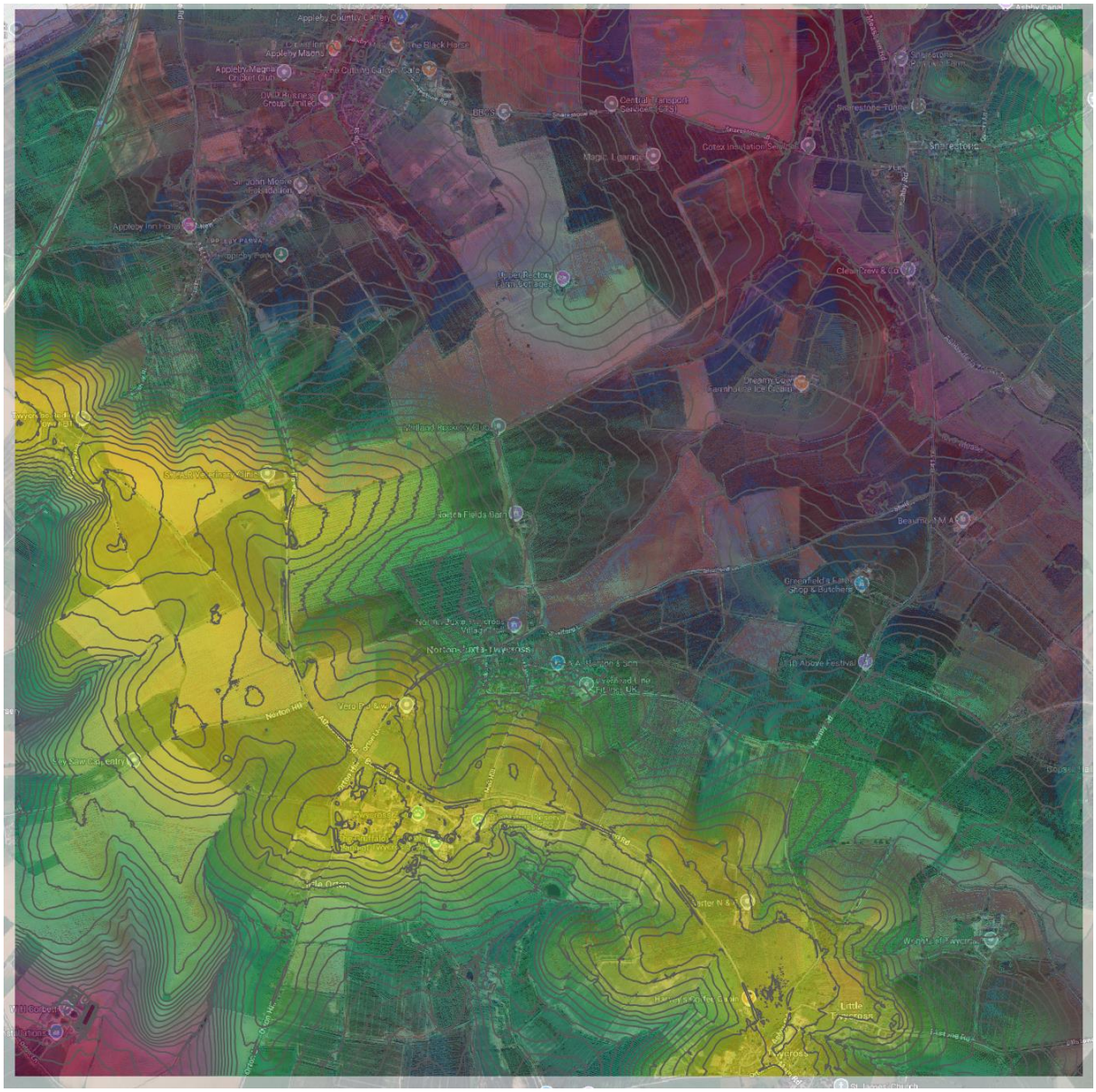
Component	Description	Estimated TP Load (kg/year)	Notes
Baseline farmland	Existing arable (650 ha) + dairy (50 ha)	**≈371**	Current land management under SFI and Countryside Stewardship supports infiltration and low runoff.
Proposed development	10,000 dwellings + infrastructure	**≈2,400**	Includes foul discharge and surface runoff.

Component	Description	Estimated TP Load (kg/year)	Notes
Net increase		**≈+2,029**	+20% precautionary buffer applied → **2,435 kg TP/year**.
On-site SuDS removal	Swales, ponds, wetlands	**250–465**	10–19% removal efficiency.
Off-site mitigation required		**≈2,700**	No credits or scheme available.
40-year cumulative load		**≈41,600**	Equivalent to 112 years of current baseline runoff.

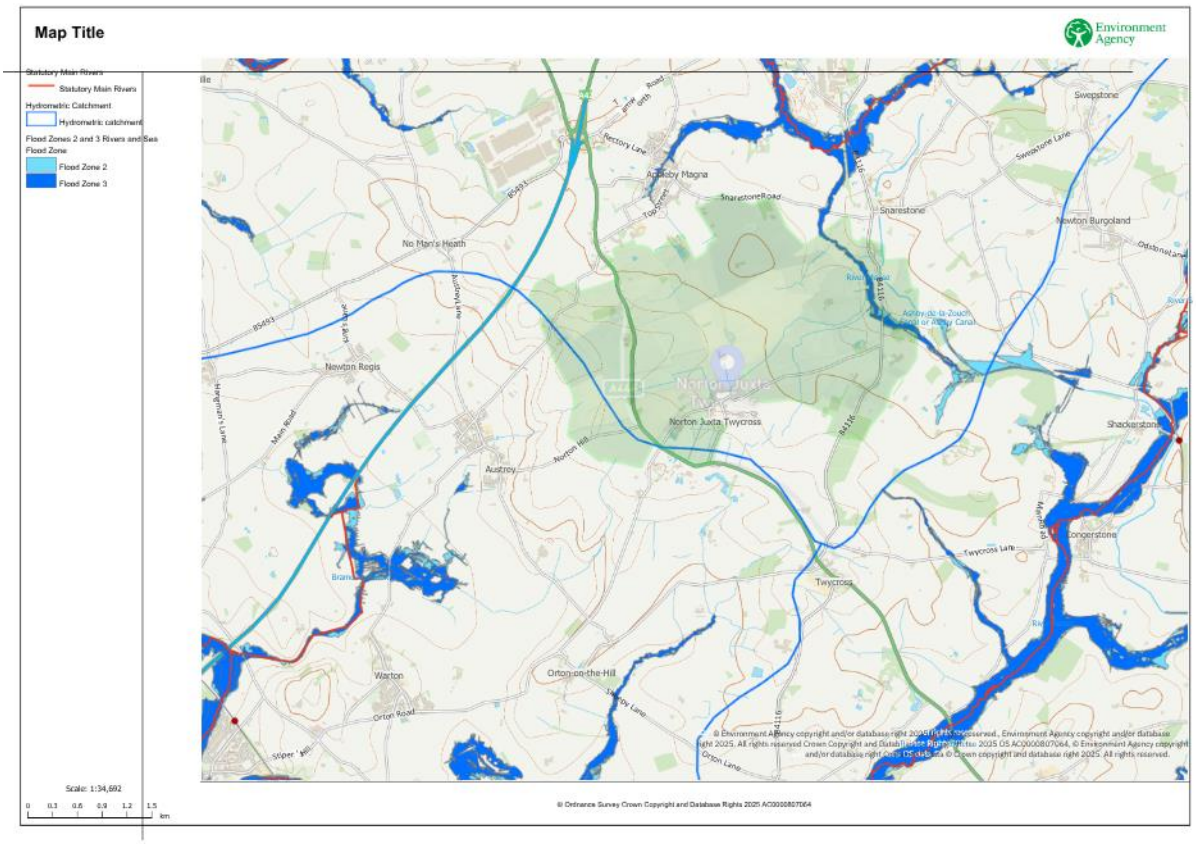
(Source: Lee, 2025; Natural England Calculator v3.01.6)

Appendix C – Hydrology and Catchment Evidence


Netherseal
Oakthorpe
A444
A42
M42
B5493
Trajectory of surface run off into the Mease
Snarestone
Swepstone
Newton Burgoland
No Man's Heath
Newton Regis
M42
Austrey
M42
Burton Rd
Twycross



. LiDAR-derived aspect map showing dominant slope orientation between 280° and 320°, confirming the Norton Heath site drains north-west toward the Twycross Brook and River Sence, which flow into the River Mease SAC. This demonstrates full hydrological connectivity between the allocation and the protected catchment.



Environment Agency Surface Water Flood Risk mapping (RoFSW) overlay illustrating local overland flow routes and ponding within the Norton Heath allocation. Flow paths align with the Twycross Brook and River Sence valleys, reinforcing evidence of north-west drainage into the River Mease SAC

Appendix D – Flood and Drainage Infrastructure Analysis
D1. SuDS management train and attenuation layout

For a 700 ha settlement the drainage strategy will need a full SuDS management train, from plot to outfall, in order to meet current LLFA and EA expectations. The sequence is:

- Roof and driveway drainage to permeable paving and rain gardens at plot level.
- Local swales and filter strips along residential streets, employment plots and school sites.
- Neighbourhood detention basins and dry ponds sized for 1 in 100 year plus climate change storms.
- Strategic attenuation ponds and constructed wetlands at the lowest points before discharge to the Twycross Brook and River Sence.

• Flow control structures limiting discharge to greenfield runoff rates or lower.
• Exceedance flow routes along streets and open space directing residual surface water towards designed storage rather than dwellings.

Strategic elements sit within the floodplain and along the north west boundary where the land falls towards the Mease system. Any failure or blockage in upstream components pushes water through these low points and into Flood Zones 2 and 3.

D2. Indicative land-take for storage and buffers

Based on standard design ratios for major greenfield schemes, the required land-take is as follows. Figures are indicative but conservative.

Function and feature

- Local plot SuDS (permeable driveways, rain gardens)
- Street swales, filter strips and small basins
- Strategic attenuation basins and wetlands
- Watercourse buffers, riparian habitat and access strips
- Biodiversity net gain habitat linked to SuDS
- Total strategic SuDS, flood and habitat land

Approximate land requirement

- 20 - 30 ha
- 25 - 35 ha
- 60 - 70 ha
- 20 - 25 ha
- 10 - 15 ha
- 135 - 175 ha

This takes at least 150 ha out of productive use, in addition to normal open space, schools, roads and employment land. Net developable land for housing drops sharply, driving densities above realistic levels for a rural location and undermining viability.

D3. Comparative costs for SuDS and flood defence works

Order of magnitude costs for the strategic elements are:

• Earthworks, lining and structures for attenuation basins and wetlands - £45 million to £60 million.
• Swales, filter drains and street level SuDS features - £10 million to £15 million.

• Culvert upgrades, headwalls and outfall controls into the Twycross Brook and River Sence - £10 million to £15 million.
• A444 and local highway drainage upgrades, including additional carrier pipes and outfalls - £15 million to £20 million.
• Design, environmental assessment, supervision and risk allowances - £5 million to £10 million.

Total indicative capital expenditure for flood and drainage infrastructure sits in the range £85 million to £120 million, before nutrient mitigation or long term operation costs. None of this funding is identified in the Local Plan evidence base or any capital programme.

D4. Drainage interaction with the A444 corridor

The AECOM HBBC Strategic Transport Assessment Phase 2 shows that the A444 carries the majority of vehicular movements from the proposed settlement and already suffers congestion and incident related delay. Surface water flooding already affects parts of the corridor during heavy rainfall.

Any SuDS strategy for Norton Heath must therefore:

• Avoid increasing peak discharge to highway culverts that already approach or exceed design capacity.
• Accommodate runoff from widened carriageways, junctions and new roundabouts.
• Integrate with Highways Authority standards for gully spacing, carrier drains and pond freeboard.

This multiplies dependencies and cost. Without committed funding from National Highways or the County Council, and without early design of off-site drainage upgrades, the SuDS strategy remains theoretical and fails the deliverability test for Regulation 19.

D5. Maintenance, adoption and long term risk

Experience from large UK SuDS estates shows persistent problems with adoption and maintenance:

• Water companies resist adoption of open SuDS features in sensitive catchments because they carry pollution and safety risk.
• LLFAs expect developer funded management for life, which shifts responsibility to private management companies.
• Service charges for residents often rise steeply once initial agreements expire. Non payment leads to under maintenance and system failure.
• Desilting of ponds and wetlands every 5 to 10 years requires specialist plant, waste handling and disposal to licensed facilities, pushing lifetime costs far beyond initial estimates.

For a network of 100 ha or more of SuDS features, typical whole life maintenance costs sit in the region of £5,000 to £10,000 per hectare per year. Over a 60 year design life this yields an additional liability of £30 million to £60 million in present day terms, falling on residents or on the public sector if management companies fail.

These unresolved adoption and funding issues sit alongside the technical evidence in the main report:

• Land-take for storage and buffers removes at least 150 ha from development.
• Capital costs for SuDS and flood defence works reach £85 million to £120 million with no identified funding route.
• Long term maintenance liabilities reach tens of millions and rely on fragile management arrangements.

Taken together, the flood and drainage infrastructure package required for Norton Heath is neither fundable nor secure. It does not deliver a robust or resilient replacement for the existing farmland drainage system, and it does not meet the NPPF requirement for safe development for its full lifetime without increasing flood risk elsewhere.

Appendix E – Viability and Deliverability Evidence
E1. Summary of Cumulative Cost Exposure

Cost Category	Key Components	Indicative Range
Nutrient Mitigation	• Off-site land-use change, wetland or woodland creation in the Mease catchment • Benchmarks £20 000 – £35 000 per dwelling • 10 000 dwellings = £200 m – £350 m	**£200 m – £350 m**
Flood & Drainage Works	• Strategic SuDS network (~150 ha) • A444 and watercourse upgrades • Design and permit costs included	**£80 m – £120 m**
Biodiversity Net Gain (BNG)	• 10 % net gain on 700 ha greenfield site • Habitat creation and long-term management • £20 000 – £30 000 per ha	**£20 m – £30 m**

Total indicative environmental and flood cost exposure: £300 m – £500 m before any housing is built.

E2. HBBC Local Plan Viability Study

Review of the published viability work shows:
• Strategic sites tested without full Mease nutrient neutrality requirements.
• No line item for purchase or covenant of mitigation land holdings.
• No allowance for DCS1 / DCS2 exhaustion or the need for a new DCS3.
• Flood and SuDS costs treated as standard greenfield drainage rather than a SAC headwater constraint.

The evidence therefore underestimates abnormal costs and overstates deliverability.

E3. Management Company Maintenance Failures on UK SuDS Estates

Experience from large schemes shows persistent issues:
• Service charges rise once developer control ends, causing non-payment and under-maintenance.
• Ponds and wetlands silt up, outfalls block and freeboard reduces.
• Local authorities step in without dedicated budgets.
• In several cases the EA or LLFA has funded remedial works at public expense.

For a 100 ha + SuDS network at Norton Heath, whole-life maintenance costs ≈ £30 m – £60 m over 60 years. No secured funding exists for this liability.

E4. Residual Land Value and Negative Viability

A scheme is viable only if residual land value remains positive after all abnormal costs, infrastructure and profit.

• Environmental / flood costs alone: £300 m – £500 m.
• Standard infrastructure (schools, roads, utilities etc.) adds further tens of millions.
• Land value uplift for a high-risk Mease headwater site is minimal.

Even on optimistic sales values, the residual land value turns negative once full obligations are included. The scheme would require major public subsidy or relaxation of environmental standards — both contrary to national policy and the Environment Act.

E5. Implications for Deliverability

Given:
• Key cost items omitted from HBBC viability testing.
• Large unfunded off-site mitigation and infrastructure requirements.

• Dependence on private management companies with poor performance records.
• Negative residual land value when realistic costs are applied.

The Norton Heath allocation is **not viable and not deliverable** within the plan period. Claims of deliverability ignore the true environmental and flood obligations that apply within the River Mease catchment.

Appendix F – Policy and Soundness Review

F1. NPPF Soundness Tests

Under paragraph 35 of the *National Planning Policy Framework (Dec 2024)*, a Local Plan must be:

1. **Positively prepared** – meeting needs within environmental limits.
2. **Justified** – based on proportionate, reasonable evidence.
3. **Effective** – deliverable within the plan period and underpinned by joint working.
4. **Consistent with national policy** – enabling sustainable development in line with the NPPF.

F2. Assessment Against Each Test

NPPF Test	Requirement	Norton Heath Position	Outcome
Positively Prepared	Must plan for growth within environmental limits	The site lies entirely within the River Mease SAC catchment, already in "Unfavourable – Declining" condition. The development adds >2,400 kg phosphorus per year and worsens flood risk.	**Fails**
Justified	Must rely on proportionate, evidence-based strategy	No independent hydrological or nutrient analysis supports the allocation. Developer data is used without verification. Reasonable brownfield and lower-impact alternatives were not assessed.	**Fails**
Effective	Must be deliverable and supported by infrastructure funding	Nutrient mitigation (£200–£350 m), SuDS/flood works (£80–£120 m), and BNG (£20–£30 m) are unfunded. DCS1/DCS2 exhausted; no DCS3.	**Fails**

NPPF Test	Requirement	Norton Heath Position	Outcome
		Dependent on unapproved Severn Trent upgrades.	
Consistent with National Policy	Must comply with NPPF §§159–169 (flood) and §183 (habitats)	The allocation increases flood and nutrient load, contrary to NPPF, the Habitats Regulations, and the Environment Act 2021.	**Fails**

F3. Habitats Regulations and Environment Act Duties

• The proposal cannot pass the Habitats Regulations test of "no adverse effect on site integrity."
• No lawful mitigation or nutrient credit capacity exists within the Mease catchment.
• The Environment Act 2021 imposes statutory water-quality and biodiversity targets that the scheme would breach.
• Any approval would risk infraction of the *Water Environment (Water Framework Directive) Regulations 2017*.

The allocation therefore conflicts with UK environmental law and binding statutory duties.

F4. Conflict with National and Local Transport Policy

Policy Framework	Key Objective	Conflict Identified
Transport Decarbonisation Plan (DfT, 2021)	Avoid road-led growth that increases flood exposure or emissions	Settlement depends on A444 corridor expansion through floodplain; adds congestion and surface run-off.
Leicestershire LTP4 (2016–2036)	Protect existing infrastructure, integrate flood resilience	Site adds surface-water inflow to already flood-prone transport corridors; no funded resilience works.
Environment Act 2021	Integrate climate adaptation into all local decisions	Development undermines statutory resilience and adaptation goals.

F5. Key Policy Conflicts Summary

Policy / Regulation	Requirement	Effect of Allocation
NPPF §§159–169	Avoid development in flood risk areas	Development lies in Flood Zones 2–3 and displaces storage.
NPPF §183	Protect designated habitats	SAC deterioration through nutrient loading.
Habitats Regulations 2017	No adverse effect on integrity	Unable to demonstrate neutrality or compensation.
Environment Act 2021	Achieve water-quality improvement targets	Adds >40 tonnes P over plan period; direct contravention.
Flood and Water Management Act 2010	Prevent increased off-site flood risk	Pushes flow to downstream zones 2–3.
LTP4 & DfT Decarbonisation Plan	Strengthen resilience and reduce flood exposure	Requires major unfunded road drainage and embankment works.

F6. Overall Soundness and Policy Position

The Norton Heath allocation conflicts with every relevant policy framework:
- It worsens a failing SAC and floodplain system.
- It depends on mitigation, infrastructure, and funding that do not exist.
- It contravenes the Habitats Regulations, Environment Act, and NPPF.
- It increases road-based emissions and flood risk contrary to the Transport Decarbonisation Plan and LTP4.

Result:
The allocation is not positively prepared, not justified, not effective, and not consistent with national policy. It is therefore unsound and undeliverable under Regulation 19 and should be removed from the draft Local Plan.

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