

via e-mail

Mark Brands

Planning Section

North Norfolk District Council

Holt Road

Cromer

Norfolk

NR27 9EN

NCC contact number: 0344 800 8020

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Your Ref: PF/24/2483

Date: 28 May 2025

NCC Member: Cllr Edward Maxfield

My Ref:

Tel No.:

Email:

FW2025_0351

0344 800 8020

llfa@norfolk.gov.uk

Case Officers: Rosie Chubbock, Flood Risk Officer

Reviewed by: Dean Shelton, Senior Flood Risk Officer

Dear Mr Brands,

Town and Country Planning (Development Management Procedure) (England) Order 2015

Construction of 37 dwellings; full planning permission for 36 dwellings (including 13 affordable homes) together with car parking, garages, vehicular access, cycle / footway accesses, highway works, public open space, landscaping, drainage and associated infrastructure; and outline planning permission for 1 self-build dwelling (all matters reserved) at Land Off Cromer Road Mundesley Norfolk.

Thank you for your consultation on the above site, received from the Local Planning Authority (LPA) on 13 May 2025.

It is the LLFA's understanding that the applicant has submitted the following document/supporting information to you, the LPA, for consideration to account for flood risk and surface water drainage aspects of this application:

- Flood Risk Assessment & Drainage Strategy Statement | Cromer Road, Mundesley | Barter Hill Partnership | Ref: 9943 | Rev: V.02 | Dated: 21 November 2024
- Site Investigation Report | Cromer Road, Mundesley | Harrison Geotechnical Engineering | Ref: GN24501_SI | Rev: N/A | Dated: September 2021

The County Council, as Lead Local Flood Authority (LLFA) and in its role as statutory consultee to the planning application process, have reviewed the application as submitted and **object** to this planning application in the absence of an acceptable Drainage Strategy relating to:

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- Insufficient information provided to demonstrate compliance with relevant nation and/or local policy, frameworks, guidance (including best practice) and/or non-statutory technical standards.
- Submission of a Surface Water Drainage Strategy that lacks the detail expected by the LLFA at a full planning application stage.

Reason

To prevent flooding in accordance with National Planning Policy Framework paragraph 181, 182 and 187 by ensuring the satisfactory management of local flood risk, surface water flow paths, storage and disposal of surface water from the site in a range of rainfall events and ensuring the SuDS proposed operates as designed for the lifetime of the development.

The LLFA will consider reviewing this objection if the following issues are adequately addressed:

- Detailed discussion into how/where surface water collection and reuse can (or cannot) be included in the drainage design is provided.
- Detailed discussion/evidence into the suitability of the proposed open SuDS features with regard to the gradient of the site.
- The applicant reviews the Amenity and Biodiversity pillars of SuDS and provides evidence and explanation as to how both have been fully achieved in this drainage strategy through the use of multifunctional, surface level green SuDS.
- The drainage calculations are updated and resubmitted to include all 37 dwellings, roads and driveways, and 100% of the surface area of all open SuDS features.
- Suitable calculations and discussion are provided to evidence that all storage features with half drain times exceeding 24 hours have enough spare capacity following a peak storm for the relevant subsequent AEP event.
- An exceedance route plan is provided alongside detailed discussion into where surface water would flow during an exceedance event.
- Evidence of groundwater monitoring at the location of the infiltration basin, ideally including at least one seasonally high groundwater level event, is submitted.
- Pervious uplift is scoped into the site design and updated calculations to reflect this are submitted if required.
- Appropriate finished Floor Levels (FFLs) for all dwellings are included on the Drainage Strategy drawing.
- Additional mitigation measures are scoped and discussed to confirm the flood risk to existing properties downhill of the site is not increased.
- The party responsible for the maintenance and management of the swale and infiltration basin is confirmed.

Further detailed comments can be found in the attached Annex.

Additional Considerations for the LPA

- The Risk of Flooding from Surface Water (RoFSW) maps displayed in Section 4 have been updated since the Flood Risk Assessment and Drainage Strategy were written. As the update has not resulted in significant changes to the flood risk for the site, the LLFA have no objection to the submission of outdated maps but would recommend the maps are replaced with the latest versions.
- Due to the close proximity of the site to the cliff line, the use of infiltration and its potential impact on ground stability should be considered and accounted for. While this falls outside of the LLFA's remit, we strongly recommend the LPA confirm this has been fully scoped into the applicant's drainage strategy.
- The scheme proposes individual soakaways and permeable paving driveways for some plots where maintenance and management of the features will be the responsibility of the future occupants of the dwelling(s). You should satisfy yourself that the occupant's responsibilities for both individual and shared drainage features are covered in sufficient detail in the deeds to the dwelling(s), so that management and maintenance of these features will be ensured.
- The applicant has stated some components of the SuDS drainage system might be adopted by Anglian Water. You should satisfy yourself that the applicant has engaged with the relevant adopting authority regarding the adoption under a Section 104 agreement.

Further guidance on the information required by the LLFA from applicants can be found at <https://www.norfolk.gov.uk/rubbish-recycling-and-planning/flood-and-water-management/information-for-developers>.

If you, the Local Planning Authority review and wish to determine this application against our advice you should notify us, the Lead Local Flood Authority, by email at llfa@norfolk.gov.uk so that appropriate conditions can be placed on the development. Alternatively, if further information is submitted, we request we are reconsulted and we will aim to provide bespoke comments within 21 days of the formal consultation date.

Yours sincerely,

Rosie Chubbock
Flood Risk Officer

On behalf of Norfolk County Council as Lead Local Flood Authority

Disclaimer

We have relied on the accuracy and completeness of the information supplied to us in providing the above advice and can take no responsibility for incorrect data or interpretation, or omissions, in such information. If we have not referred to a particular issue in our response, it should not be assumed that there is no impact associated with that issue.

Annex: Norfolk County Council LLFA Additional Information to LPA



LPA Application Ref: PF/24/2483	LPA: North Norfolk District Council
LLFA Ref: FW2025_0351	Applicant name: Denbury Homes Ltd
Site name/Description: Construction of 37 dwellings; full planning permission for 36 dwellings (including 13 affordable homes) together with car parking, garages, vehicular access, cycle / footway accesses, highway works, public open space, landscaping, drainage and associated infrastructure; and outline planning permission for 1 self-build dwelling (all matters reserved) at Land Off Cromer Road Mundesley Norfolk	Greenfield or Brownfield Development: Greenfield
Planning Stage: Full	Summary of Surface Water Drainage Proposed: The surface water drainage strategy proposes that all surface water from impermeable areas will discharge via shallow infiltration into the ground through the use of soakaways, permeable paving, a swale and an infiltration basin.

Local Flood Risk Assessment and Site Summary: Summary of both local and strategic flood risk sources, on and within the vicinity of the site, with additional site specific informatives. Data sources available on request.

- **Surface water** – There are some areas of very minimal localised surface water flooding (ponding) identified within the site red line boundary, as shown in the Environment Agency's (EA) Risk of [Flooding from Surface Water \(RoFSW\) maps](#). The LLFA consider that the 0.1% annual probability flood map can provide an indication of the 1.0% annual probability flood including an allowance for climate change.
- **Critical Drainage Catchments (CDC)** - The application site does not fall within a CDC as defined by the District Council and the LLFA.
- **Ordinary Watercourses** – According to LLFA datasets, there are no watercourses known to exist within or on the boundary of the site.
- **Groundwater** – The submitted ground investigation report includes 6 boreholes which encountered no water down to a maximum depth of 4.45mbgl (DCS01-DCS06). The ground investigation was carried out in August 2021 and only includes results for the higher half of the site.
There are no publicly accessible BGS borehole record within close proximity to the site. BGS mapping shows that the bedrock geology of the site is entirely Crag Group – Sand and Gravel. The site is entirely overlain by superficial deposits of Briton's Lane sand and Gravel Member - Sand and Gravel.

- **Source Protection Zones** – The application site itself does not fall within a Source Protection Zone (SPZ) for groundwater or surface water, however the boundary of an SPZ3 is present approximately 30m south of the site boundary.
- **Sewers and Sewer Flooding** – The LLFA are aware of a foul sewer within or on the boundary of the site. This would need to be confirmed by Anglian Water. The LLFA are not aware of any records of sewer flooding within 0.5km of the site; however, this would need to be confirmed with Anglian Water.
- **Artificial Waterbodies** – The site is not identified as being at risk of flooding from reservoirs on the EA Flood Risk from Reservoirs mapping ([Technical map - Check your long term flood risk - GOV.UK](#)). The site is not in proximity to any canal or other artificial waterbody.
- **Historical Flooding** – The LLFA are not aware of any known incident of internal flooding within 0.5km of the site. Flood investigation reports can be found on our website at <https://www.norfolk.gov.uk/rubbish-recycling-and-planning/flood-and-water-management/flood-investigations>. It should be noted that our records only cover the period of 2011 to the present day.

Assessment: Summary of assessment of local flood risk and submitted drainage proposals

The Flood Risk Assessment and Drainage Strategy (Flood Risk Assessment & Drainage Strategy Statement | Cromer Road, Mundesley | Barter Hill Partnership | Ref: 9943 | Rev: V.02 | Dated: 21 November 2024) and supporting information (Site Investigation Report | Cromer Road, Mundesley | Harrison Geotechnical Engineering | Ref: GN24501_SI | Rev: N/A | Dated: September 2021) submitted with the planning application has been assessed against the National Planning Policy Framework (NPPF), Planning Practice Guidance, the SuDS Non-Statutory Technical Standards (NSTS) (March 2015) and the policies of the adopted Norfolk Local Flood Risk Management Strategy as follows:

Assessment of Site and Local Flood Risk Issues

- Discussed in Section 4 of the submitted Drainage Strategy Report.
- Please see the general flood risk assessment in the previous section of this annex.
- The LLFA note that the Surface Water Flooding maps displayed in Section 4 have been updated since this report was written. Please note the relevant informative in this letter.
- While Section 4 could benefit from further detail, the LLFA are satisfied that a sufficient assessment of site flood risk has been provided.

Sequential Test/Sequential Approach

- The sequential test has been discussed in Section 3 of the submitted report.
- The LLFA note the site is in an area at low risk from all sources of flooding and has been allocated within the upcoming North Norfolk Local Plan.

- It is ultimately the decision of the LPA as to whether a sequential test/approach is required for the development.

Supporting Detailed Flood Modelling

- Detailed fluvial and/or surface water runoff modelling has not been submitted as part of the FRA or Drainage Strategy Report.
- Based on the flood risk in this area, considering the drainage proposals for the development and there being no apparent risk of increasing flood risk from surface water downstream or upstream through the design intentions, detailed modelling of this scale does not appear necessary for the current application.
- If future design alterations were to alter this, then a re-assessment and submission of further information may be required.

Drainage Hierarchy and Viability

- The discharge location hierarchy has been addressed in Section 5 of the submitted report. The applicant is proposing to discharge all surface water runoff from the site into the ground via shallow infiltration.
- The LLFA are satisfied that the provided infiltration testing confirms that infiltration is a viable form of surface water discharge for the site.
- Surface water collection and reuse has not been discussed within the report. In line with the Water Design and Construction Guidance, surface water runoff collected for use should be deemed top of the hierarchy and included as a complimentary system to the wider drainage strategy in all greenfield developments. The LLFA recommend that consideration into how water runoff collection for reuse could be further integrated into this drainage strategy is provided (e.g., through the inclusion of non-potable water reuse, raingardens/rainwater planters, water butts etc.).
The LLFA recommend that further information is requested.

SuDS Component Elements and Four Pillars of SuDS

- The LLFA cannot confirm if the quantity pillar of SuDS has been achieved until updated drainage calculations have been submitted; please refer to the 'Drainage Design Calculations/Modelling' section of this report for further information.
The LLFA recommend that further information is requested.
- While the LLFA welcome the open SuDS features utilised onsite, further discussion/evidence is required to confirm that these components are suitable on a site with such a significant gradient, and that their functionality will not be compromised/reduced.
The LLFA recommend that further information is requested.
- With the current proposed drainage strategy, the LLFA are satisfied that the quality pillar has been achieved; please refer to the 'Water Quality' section of this report for further information.
- The applicant has provided no evidence/discussion into how the proposal satisfies the amenity and biodiversity pillars of SuDS. To satisfy these pillars, the drainage system itself should be benefitting/enhancing the biodiversity and amenity onsite (e.g., through the use of multi-functional surface level green SuDS features such as: green roof, rainwater

planters/raingardens, bioretention areas, planted swales, tree pits etc.).

The LLFA recommend that further information is requested.

Drainage Design Calculations/Modelling

- From the submitted calculations, it appears that only the main 'primary' network has been modelled, and that multiple dwellings, driveways and a section of road have not been included in the modelling at all. At full planning stage, the LLFA expect the entire proposal to be modelled in detail.

The LLFA recommend that further information is requested.

- While the LLFA note the applicant has included 75% of the open SuDS features surface area as impermeable, it is expected that 100% of the surface area of all open SuDS features should be included in the total contributing area as these features will receive direct rainfall. The LLFA query if this is a misinterpretation of the NCC Guidance and recommend the applicant reviews Section 6.7.

The LLFA recommend that further information is requested.

- The LLFA note Soakaway B has a half drain time of over 24 hours at 1618 minutes. In line with LLFA guidance, where the expected half drain time of 24 hours is slightly exceeded, the applicant needs to provide evidence that there is enough capacity for a subsequent 10 year AEP event (plus climate change) following the peak storm for features with a half drain time between 24-48 hours.

The LLFA recommend that further information is requested.

- There appears to be a discrepancy between the half drain time for the infiltration basin shown on the Drainage Strategy drawing (1015 minutes) and in the modelling calculations (2907 minutes). Assuming the time of 2907 minutes in the calculations is correct, this takes the half drain time over 48 hours. For half drain times above 48 hours, evidence that there is enough capacity for a subsequent 30 year AEP event (plus climate change) following the peak storm should be provided.

The LLFA recommend that further information is requested.

- The LLFA cannot confirm if the drainage design calculations submitted are sufficient until the above changes have been implemented.

Drainage Strategy Drawings

- A drawing displaying the main proposed drainage strategy titled Drainage Strategy (Barter Hill Partnership Ltd | Drawing No.: 9943-BHP-XX-XX-DR-C-0102 | Rev: P01 | Dated: 21 November 2024) and contributing areas drawing titled Impermeable Area Plan (Barter Hill Partnership Ltd | Drawing No.: 9943-BHP-XX-XX-DR-C-3011 | Rev: P01 | Dated: 21 November 2024) have been provided.
- The LLFA recommend the addition of an exceedance route plan for the entire site and construction detail drawings, particularly for open SuDS features to demonstrate that suitable gradients have been established.

The LLFA recommend that further information is requested.

Drainage Components - Protection from All Sources of Flooding

- The LLFA note the site is within close proximity to the cliff line. The use of infiltration for surface water disposal may therefore pose a risk to the site with regard to ground stability

etc. This risk should be quantified and accounted for to ensure the functionality of the drainage system is not negatively impacted. While this falls outside of the LLFA's remit, we recommend the LPA confirm this has been fully scoped into the applicant's drainage strategy. Please note the relevant informative in this letter.

- Where infiltration is proposed, the LLFA expect results of site specific groundwater monitoring to be provided, ideally over a 12 month period but covering at least one seasonally high groundwater level event (most likely between January and March) to evidence a suitable unsaturated zone of at least 1.2m between the base of infiltrating features and the seasonally high groundwater level.

While the LLFA acknowledge that the submitted Site Investigation report includes records of 6 boreholes (DCS01-DCS06), the LLFA does not feel these are sufficient to evidence the above. This is due to the combination of the ground investigation being carried out in August when groundwater levels are highly unlikely to be at their highest, and that all boreholes' locations are confined to the northern half of the site which is at a higher elevation. Due to the significant slope present onsite, and the fact that the infiltration is situated in the lowest corner of the site at the south, this is where the LLFA would expect borehole monitoring to establish the seasonally high groundwater level to be undertaken.

The LLFA recommend that further information is requested.

Greenfield Runoff Rates (Pre- and Post-development)

- Greenfield runoff rates have been discussed in Section 6 of the FRA and Drainage Strategy Statement.
- While it is appreciated that infiltration methods are planned for this development, meaning there will be no surface water runoff leaving the site up to and including the 1.0% (plus climate change) AEP event, the LLFA still welcome submission of the pre-development greenfield runoff rates calculated correctly with appropriate inputs to evidence that the SuDS Non-Statutory Standards have been met.

Urban Creep & Pervious Uplift

- The LLFA welcome that a 10% allowance for urban creep has been added to all dwelling roof areas, as evidenced on the Impermeable Area Plan drawing.
- To the best of the LLFA's knowledge, it does not appear that a pervious uplift has been applied to this site. Further guidance on this can be found in Section 6.7 of the Norfolk LLFA's Guidance Document.

The LLFA recommend that further information is requested.

Water Quality

- Water quality has been addressed in Section 6 of the submitted report.
- The LLFA are satisfied that the current proposed water quality treatment for all areas is adequate and will satisfy the Simple Index Approach (SIA).

General Mitigation and Freeboard Allowances

- Finished Floor Levels (FFLs) have not been provided.
The LLFA expect as standard that all buildings should have a 150mm freeboard above surrounding ground levels, with all external ground levels sloping away from any building,

especially entrances, to avoid ponding of water against or within a structure. The LLFA also expect a 300mm freeboard between the FFL and the flood/water level from all sources (including within the proposed drainage system) in all events up to and including the 1.0% (plus climate change) AEP event.

The LLFA cannot confirm if sufficient freeboard have been afforded until updated drainage calculations/modelling has been submitted and the FFLs have been provided for all 37 dwellings.

The LLFA recommend that further information is requested.

- The LLFA note that there are dwellings directly south of the site. Given that the gradient continues to slope downhill beyond the infiltration basin, the LLFA expect the applicant to scope if/what additional mitigation measure may be required to ensure the risk of flooding downhill from the site is not increased, e.g. with the addition of a bund/emergency spillway etc.

The LLFA recommend that further information is requested.

Exceedance Routes (Flood event greater than 1.0% AEP +CC event)

- Exceedance route have not been discussed within the submitted report or included on any drawings. Detailed consideration and explanation regarding where surface water will flow in an exceedance event is required and is particularly important for this proposal where there is a significant change in topography across the site. This should include consideration of the depth/velocity of flood water to quantify any potential risks to people and property in the event of exceedance of the drainage system.

The LLFA recommend that further information is requested.

Maintenance and Management

- The Maintenance and Management of the site has been discussed in Section 7 of the submitted report.
- The applicant states the responsibility for managing and maintaining components of the drainage system will be as follows:
 - Permeable paved drives and soakaways will be maintained by the associated property owner(s). Please note the relevant informatives in this letter.
 - The swale and infiltration basin "*could be adopted by Anglian Water or otherwise a private management company*". At full planning stage, the applicant should be able to confirm who will be responsible for the management and maintenance of every drainage component.

The LLFA recommend that further information is requested.

- While the LLFA believe the maintenance and management plan would benefit from further detail, we are largely satisfied that the current maintenance tasks, schedules and timeframes for all SuDS features are sufficient.

SuDS Standards: Summary of alignment to relevant Non-Statutory Technical Standards for Sustainable Drainage systems

S2 (Greenfield) – The applicant is currently proposing to discharge all surface water from the site into the ground via infiltration. There will be no increase in the quantity of surface water runoff from the site.

S4 (Greenfield) – The applicant is currently proposing to discharge all surface water from the site into the ground via infiltration. There will be no increase in the quantity of surface water runoff from the site.

S7 – The LLFA cannot confirm if this standard has been met until updated drainage calculations for the 3.3% (plus climate change) AEP event have been submitted. **The LLFA recommend that further information is requested.**

S8 – The LLFA cannot confirm if this standard has been met until updated drainage calculations for the 1.0% (plus climate change) AEP event have been submitted. **The LLFA recommend that further information is requested.**

S9 – The applicant has not identified exceedance routes for flows in excess of a 1.0% AEP (plus climate change allowance) event. **The LLFA recommend that further information is requested.**