The Droves Solar Farm

Technical Information Note – Groundwater Elevation Methodology

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1 Modelling Report

Introduction

1.1.1 This technical note has been prepared at the request of the Environment Agency (EA) to summarise a review of groundwater model data from the North East Anglia Chalk (NEAC) Model, provided by the EA on 6 May 2026, and to identify any implications for the hydrogeological model and conclusions presented in **ES Chapter 12: Water Resources [APP/6.2.1]** and **ES Appendix 12.2 Flood Risk Assessment [APP/6.4.2]**.

ES 2025 data

1.1.2 Measured groundwater elevations within the North West Norfolk Management Catchment were plotted in ArcGIS Pro using data from 18 monitoring stations collecting sub-daily records to capture short-term fluctuations. A conservative approach was taken by selecting maximum recorded groundwater elevations for each location.

1.1.3 A Triangulated Irregular Network (TIN) was developed to interpolate groundwater elevations across the study area. This created a 3D groundwater surface relative to LiDAR-derived ground levels.

1.1.4 The interpolated dataset shows:

- Maximum groundwater elevation of 42.76 m Above Ordnance Datum (AOD), decreasing toward the north of the CSA (33.97 m AOD)
- Predominantly deep groundwater conditions, with most of the CSA exceeding 30 m depth to groundwater; and
- Localised shallow groundwater areas, including:
  - Northeastern boundary with potential to emerge at 5.5 m.

1.1.5 In the Southwestern area (~14 m depth, associated with Work Nos. 1, 6, and 7), validation against nine borehole records within 3 km confirmed:

- Borehole groundwater levels do not exceed the interpolated surface; and
- The triangulated surface represents a conservative upper bound.

1.1.6 The triangulated groundwater elevation shows the potential for interaction of groundwater with foundation extents of Work Nos. 2 – 4.

1.1.7 Limitations of the triangulation method include:

- Limited data density affecting resolution; and

- Assumption of linear groundwater gradients, which may not reflect subsurface complexity.

EA suggestion and data acquisition

1.1.8 Following identification of the NEAC model in the EA's Relevant Representation **[AS-062]** (see EA04), the Applicant requested groundwater model outputs and attended a meeting with the EA on 23 April 2026.

1.1.9 Upon receipt of model outputs, the wet scenario (March 2001) was reviewed and compared against the triangulated baseline groundwater interpolation which informed the assessment of groundwater, ahead of Issue Specific Hearing 1 (ISH1) (which took place on 7 May 2026). Prior to the implemented changes to the triangulated method, the groundwater elevation was more conservative than the NEAC model outputs, as reported by the Applicant at ISH1.

Changes to triangulated method

1.1.10 In response to the EA's recommendation within their Relevant Representation **[AS-062]** (EA18), the triangulated dataset was updated at Deadline 2 to include the maximum groundwater elevation from Brink Hill monitoring station.

1.1.11 This inclusion resulted in no change to interpolated groundwater levels, confirming robustness of the existing baseline.

1.1.12 River controls were also incorporated into the triangulated groundwater method, as boundary conditions to better represent groundwater–surface water interaction, particularly in areas influenced by the River Nar. Introduction of river controls reduced the maximal groundwater elevation from those used in **ES Chapter 12: Water Resources [APP/6.2.1]**.

1.1.13 The interpolated dataset shows:

- Maximum groundwater elevation of 50.8 m AOD, decreasing toward the River Nar (approximately 23.1 m AOD)
- Predominantly deep groundwater conditions, with most of the CSA exceeding 30 m depth to groundwater; and
- Localised shallow groundwater areas, including:
  - Northeastern boundary (approximately 0.68 m depth); and
  - Southwestern area (approximately 8.5 m depth, associated with Work Nos. 1, 6, and 7).

1.1.14 In the Southwestern area (~14 m depth, associated with Work Nos. 1, 6, and 7), validation against the same nine borehole records within 3 km confirmed:

- Borehole groundwater levels do not exceed the interpolated surface; and
- The triangulated surface represents a conservative upper bound.

1.1.15 The revised triangulated groundwater elevation shows there is no potential interaction with foundation extents of Work Nos. 2 – 4. The NEAC model similarly indicates:

- A local northward groundwater gradient toward the River Nar valley; and
- An overall westward flow direction toward the Marham public water supply abstraction

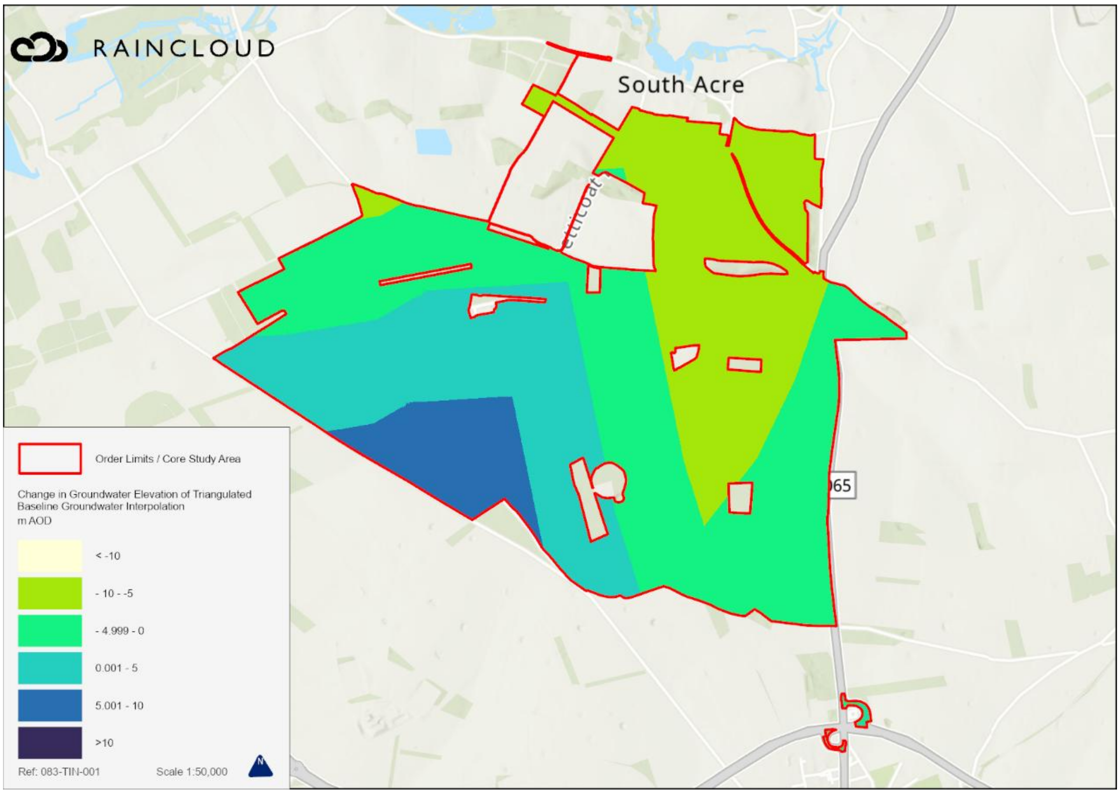
1.1.16 This consistency supports the validity of river-controlled groundwater behaviour in both approaches.

1.1.17 Prior to the addition of river controls, the groundwater elevation derived from the triangulated method was more conservative than the wet day scenario from the NEAC model, as stated by the Applicant during ISH1.

1.1.18 The addition of control points has reduced the maximal groundwater elevation derived from triangulation and now the wet day scenario from the NEAC model is marginally more conservative, and has therefore been adopted as the dataset to assess the Scheme against the updated **ES Chapter 12: Water Resources [APP/6.2.1]**, which has been submitted at Deadline 2.

1.1.19 The difference in the groundwater elevations as a result of the introduction of control points is shown in Plate 1.

Plate 1: Difference in the groundwater elevations – triangulation method



1.1.20 The overall conclusions of **ES Chapter 12: Water Resources [APP/6.2.1]** remain valid due to the strong correlation between triangulated groundwater levels and NEAC model outputs and limited and localised potential for groundwater interaction with infrastructure. Furthermore, the triangulated dataset provides a suitable validation dataset for NEAC outputs and support the existing hydrogeological conceptual model.

Groundwater Monitoring

1.1.21 Additional monitoring infrastructure will be installed post-consent and site-specific groundwater level data will be collected to refine the existing hydrogeological conceptual model. Monitoring will be undertaken over an appropriate duration to capture seasonal variation. Monitoring of groundwater pre-construction is secured within the **outline Construction Environmental Management Plan [APP/7.6.2]**.

1.1.22 Monitoring results will be used to verify the assumptions adopted within **ES Chapter 12: Water Resources [APP/6.2.1]**. Should groundwater levels be shallower than groundwater assumptions, appropriate design mitigation measures will be developed and implemented, secured within **Design Principles, Parameters and Commitments [APP/5.8.2]**.

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