Cut and Fill Design Philosophy and Methodology Report – Bryn Lane, Wrexham

Hybrid Planning Permission: P/2023/0280
Site: Land Off Bryn Lane, Wrexham Industrial Estate, Wrexham, LL13 9UT
Dated: 19/06/2025

1. Introduction

This report, produced for FI Real Estate Management, outlines the design philosophy and methodology applied to the cut and fill regrade strategy for the proposed development at Land Off Bryn Lane, Wrexham Industrial Estate and aims to discharge condition 45 of Hybrid Planning Permission (P/2023/0280). It should be read in conjunction with the following drawings:

- C020 - Kingmoor - EGLP01 - Existing Ground Levels Plan Rev -
- C020 - Kingmoor - PRLP01 - Proposed Regrade Levels Plan Rev –
- C020 - Kingmoor - RCFP01 - Regrade CutFill Plan Rev A
- C020 - Kingmoor - SRS01 - Site Regrade Sections Rev -.pdf

2. Design Philosophy

The primary philosophy behind the earthworks design is to sustainably regrade the site by making best use of site-won materials, reducing dependency on imported fill or export of excess material. The scheme involves redistributing material from higher areas of the site to lower-lying zones, creating a development platform suitable for construction of the proposed scheme mitigating any large level steps where excessive batters or retaining walls would be required.

The earthworks design prioritises:

- Material Balance Management: Using on-site cut material to fill lower areas as much as practical.
- Future Flexibility: Leaving site levels generally lower than final proposed levels, resulting in a controlled net shortfall of material. This allows future arisings generated from ongoing construction works (such as foundation, service trench, and road construction excavations) to be incorporated into the site fill progressively.
- Minimisation of Environmental Impact: Limiting the need for off-site material movement reduces haulage, traffic, and associated emissions.
- Compliance with Environmental Constraints: Preserving and protecting environmentally sensitive areas, existing retained trees and vegetation, and habitats as outlined in the submitted planning documents.

3. Methodology

The cut and fill design has been developed through a digital design process using specialist earthworks modelling software. The methodology involved the following key stages:

- Data Collection and Existing Model Development: A detailed topographical survey by Survey & Engineering Projects from March 2022, titled ‘S23280-T’ was undertaken to capture existing site levels and features. This data formed the basis of the initial ground model. This information is shown on drawing ‘C020 - Kingmoor - EGLP01 - Existing Ground Levels Plan Rev -’.
- Proposed Ground Model Creation: Using specialist software, an optimised ground model was created, taking into account the design requirements for the proposed development, including building plots, access roads, drainage infrastructure, and service corridors. Levels were designed to suit development needs while maximising the use of site-won materials. This proposed contour lines are shown on drawing ‘C020 - Kingmoor - PRLP01 - Proposed Regrade Levels Plan Rev -’.
- Cut and Fill Analysis: A comparative analysis was carried out between the existing and proposed ground models to calculate the cut and fill volumes. The software enabled accurate quantification of material movement, identifying banded areas of surplus and deficit – this is shown on drawing ‘C020 - Kingmoor - RCFP01 - Regrade Cut/Fill Plan Rev A’.
- Net Balance Strategy: The earthworks strategy was finalised to leave a planned net shortfall of material, to be progressively made-up during construction activities through civil arisings. This approach reduces stockpiling requirements and minimises disposal costs. The profile sections shown on ‘C020 - Kingmoor - SRS01 - Site Regrade Sections Rev -’ correlate with the section lines shown on the plans.
- Environmental Considerations: The cut and fill design respects all relevant environmental, arboricultural, and ecological constraints agreed and submitted for approval within the approved planning documentation. Protective buffer zones have been maintained around sensitive areas, and groundworks sequencing will be undertaken to limit disturbance. All works will comply with best practice site management and pollution prevention guidelines.

4. Conclusion

The regrade design for the development at Bryn Lane has been carefully engineered to provide a practical, sustainable, and environmentally responsible earthworks solution. By utilising site-won material wherever possible and planning for controlled future fill from civil arisings, the design achieves material efficiency and cost-effectiveness while supporting the requirements of the Hybrid Planning Application P/2023/0280. The methodology ensures that the site’s environmental, ecological, and arboricultural considerations remain protected throughout the earthworks and subsequent development phases.