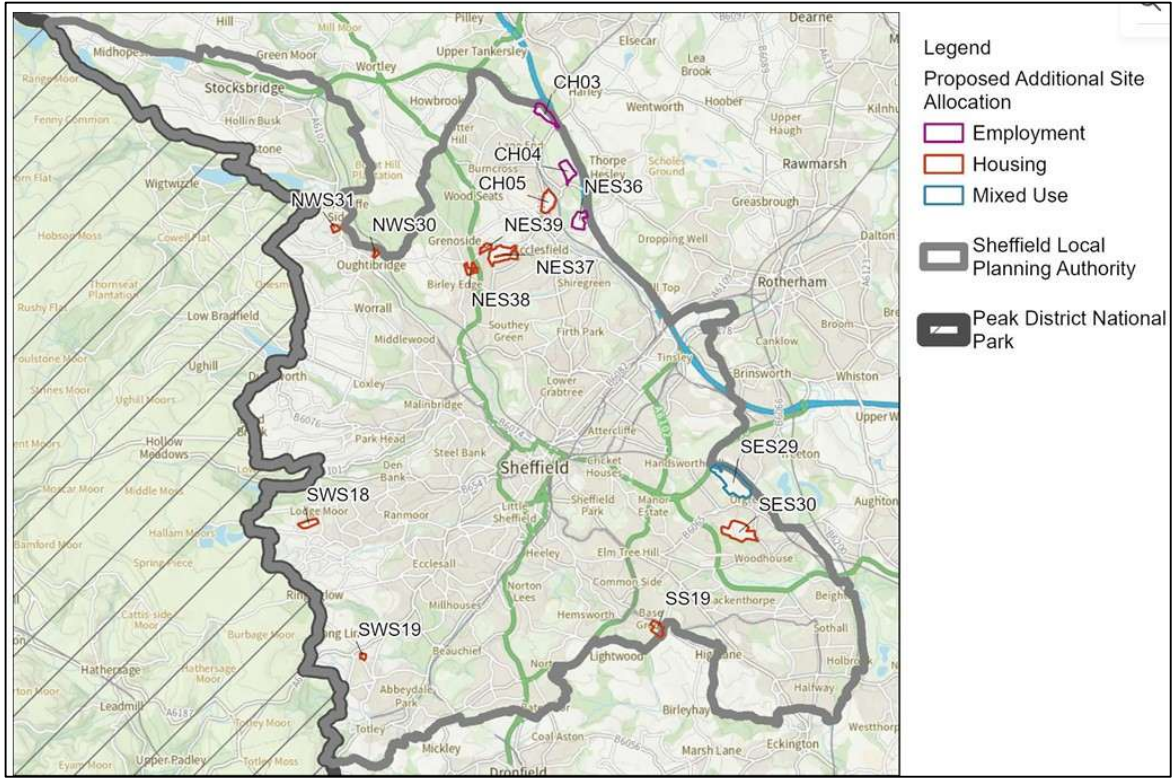


“The Sheffield Plan”

Assessment of Cumulative Impact of Sites CH03, CH04, CH05, NES36, NES37, NES38 & NES39 on Ecclesfield, Chapeltown and Grenoside



Map of Sites – SCC

April 2026

1 TERMS OF REFERENCE

Aprica Ltd has been commissioned by a local interest group to comment on the highway implications for several proposed 'Sheffield Plan' Greenbelt development sites in and around Ecclesfield, Chapeltown and Grenoside. The sites in question are CH03, CH04, CH05, NES36, NES37, NES38 and NES39, shown on the above map.

The purpose of this summary report is to assess the overall, cumulative, impact of the current proposals for the sites. It is intended that this report be considered by the interest group with a view to submitting a formal response to Sheffield City Council ('SCC'). The report is based on local knowledge, prevailing highway conditions and available documents, illustrative drawings etc. The assessment should be read in conjunction with the individual Transport Statements prepared for each site.

Ian Taylor (I.Eng MICE) has produced this report. Ian is an Incorporated Engineer and a Member of the Institution of Civil Engineers, with thirty-five years' experience of public and private sector highway infrastructure disciplines including transportation planning, RoSPA accredited accident investigation & prevention, traffic management, road safety audits, traffic regulations, and highway design & construction. Ian has led on numerous major highway projects for Local Authorities and has presented at Planning Committees, Council meetings, public meetings and drop-in events, and at Public Inquiry.

2 INTRODUCTION

The scope of this report is to consider the cumulative impact of the proposed 'Main Modifications' for the Sheffield Plan, specifically addressing the dense cluster of residential, general employment, and large-scale logistics allocations proposed across the S35 corridor. The sites concerned comprise CH03, CH04, CH05, NES36, NES37, NES38 and NES39. These sites have been assessed individually and Transport Statements prepared for each. The Assessments can be read in conjunction.

This report is separated into the following parts:

- 1 Terms of Reference
- 2 Introduction and Executive Summary
- 3 Cumulative Impact
- 4 Hotspot Analysis
- 5 Flawed Baseline Data and Sustainability Failures
- 6 Mitigation
- 7 Recommendations

EXECUTIVE SUMMARY

The individual Transport Statements for these sites, collectively, highlight a local highway network that is not just 'busy' but operating at structural breaking point. Whilst individual site promoters might claim their specific allocations only add marginal, manageable traffic, the cumulative reality is an increased state of permanent network stress where the system has lost all residual resilience.

The simultaneous introduction of hundreds of residential commuter vehicles (from sites like NES37, NES38, and CH05) alongside the continuous, 24/7 influx of Heavy Goods Vehicles and commercial vans generated by the 16-hectare logistics hub at NES36, creates an unmitigable conflict. The North Sheffield corridors are fundamentally incapable of absorbing these competing traffic demands without triggering total system failure. Any minor incident, such as a vehicular collision, motorway obstruction, or the daily 'school run', will inevitably cascade into area-wide gridlock.

Based on the cumulative evidence, the current approach to the Sheffield Plan in this area is fundamentally unsound. Before any further consideration of these sites takes place, a whole-area micro-simulation model should be commissioned to account for rat running, lifelike driver behaviour and the traffic generation and movement across all the sites. Sites that offer the highest safety risk or zero sustainable travel potential should be considered for removal from the plan. Any development that does progress should be under Grampian-style conditions whereby no works can take place until major strategic junction improvements, such as at the M1 Junction 35, the A61 and the major hot spots on the local network are fully delivered.

3 CUMULATIVE IMPACT

The following matrix demonstrates how the seven sites interact to create local and strategic network (SRN) failure points:

| Hotspot Location | Contributing Sites | Nature of Cumulative Impact | Severity Rating |
|---|-------------------------|--|-----------------|
| M1 Junction 35 Gateway | CH03, CH04, CH05, NES36 | SRN Failure: Commuter vehicles and 24/7 heavy logistics (HGV/LGV) queuing onto the M1 mainline; strategic instability. | CRITICAL |
| Chapelton Centre & Warren Lane | CH03, NES36 | Commercial Rat-Running: M1 J35A routing restrictions force westbound industrial traffic through the residential core, clashing with CH03 commuter flow. | CRITICAL |
| The Ecclesfield "Cross" | NES37, CH05, NES39 | Village Paralysis: Combined school run and commuter traffic critically exceed historic junction capacities. | SEVERE |
| Local Lanes (Yew/Wheel/Jumble) | NES36, NES37, NES39 | Safety Erosion: Major residential and industrial rat-running on semi-rural lanes; severe vehicle/pedestrian conflict. | HIGH |
| Skew Hill / A61 Corridor | NES38, CH05 | Corridor Saturation: Total loss of resilience; knock-on of minor isolated delays leading to area-wide gridlock. | HIGH |

4 HOTSPOT ANALYSIS

Strategic Road Network (SRN) Failure: M1 Junction 35

The interface between the local network and the M1 is the most critical failure point identified in this assessment.

- **The 'Blocking Back' Risk:** Sites CH03, CH04, and NES36 are located within immediate proximity to the M1. The unprecedented volume of heavy logistics traffic from NES36 will saturate the A629 Cowley Hill/Cowley Way junctions, causing queues to physically extend back onto the M1 slip roads.
- **National Policy Conflict:** National Highways (NH) policy forbids development that causes queuing on the motorway mainline due to the severe risk of high-speed rear-end collisions.
- **HGV/Residential Deadlock:** The continuous 24/7 freight movements from the logistics allocations will compete for the exact same limited road space as the 600+ residential car trips generated by NES37 and CH05, creating a strategic deadlock at the primary gateway to Chapelton and Ecclesfield.
- **The M1 J35A Layout and the Chapelton Rat Run:** A critical failure in the Council's strategic modelling is the assumption that the SRN will seamlessly absorb the industrial traffic generated by sites like NES36. This ignores a fundamental geographic reality, that M1 Junction 35A is a restricted junction offering no northbound entry or southbound exit. Consequently, the motorway cannot function as a local bypass for traffic travelling between

the M1 J35 corridor and the A616/Thorncliffe industrial areas. Commercial routing algorithms and natural commuter behaviour will default to the path of least resistance. Instead of undertaking a massive motorway detour, industrial traffic will be structurally forced directly through the residential centre of Chapeltown via Cowley Lane and Lound Side, overwhelmingly burdening the already failing Warren Lane/Thorncliffe Road junction alongside commuter traffic from CH03.

- **The Village Core - The Ecclesfield Cross (A6135/B6087):** The village core serves as a physical funnel for traffic from CH05, NES37, and NES39.
- **The School-Run Multiplier:** Site NES37 includes a new secondary school and SEND provision. This creates a 'peak within a peak', where local residential roads reach 100% capacity exactly when pedestrian activity—specifically vulnerable children—is at its highest.
- **Lack of Physical Width:** The historic nature of the Ecclesfield Cross means there is no residual highway land available to widen junctions or introduce sustainable travel infrastructure. The impact is therefore unmitigable through traditional engineering.
- **Deterioration of Amenity: Traffic Speeds and Residential Rat-Running** As primary arteries (A61 and A629) reach total saturation, driver behaviour will violently shift towards residential relief routes.
- **Inappropriate Use of Rural Lanes:** Warren Lane (CH03) and Yew Lane (NES37/39) are narrow residential roads with topographical constraints. Similarly, the potential utilisation of Jumble Lane or Loicher Lane for NES36 access or routing poses a severe threat. These semi-rural lanes possess narrow carriageways, blind bends, and a complete absence of footways. Forcing 24/7 industrial freight traffic or displaced residential commuters onto these lanes creates an unacceptable collision risk for local residents and vulnerable road users.

5 FLAWED BASELINE DATA & SUSTAINABILITY FAILURES

The Transport Assessments (TAs) justifying these allocations rely on standard TRICS (Trip Rate Information Computer System) database averages. When assessing cumulative impact, this methodology is critically flawed. For commercial sites like NES36, the reliance on traditional 'B8 storage' data completely fails to capture the hyper-intensive reality of a modern logistics hub. It grossly underestimates "last-mile" LGV (van) movements and masks the massive, simultaneous spikes caused by 24/7 shift changeovers violently clashing with the traditional commuter peaks generated by the residential allocations.

The Sheffield Plan mandates sustainable travel, yet the cumulative reality of these sites guarantees absolute car dependency.

The primary public transport link for the NES36/Cowley corridor is the M35 bus, an hourly service with no late-evening or Sunday provision. It is fundamentally incompatible with the 24/7 operational demands of the logistics allocation.

Sites like NES38, NES39, and the Cowley Hill access points feature steep gradients and hostile freight environments that effectively make 'Active Travel' impossible for the average commuter, guaranteeing private car reliance across the entire S35 portfolio.

The M1 Junction 35 corridor is a documented air quality hotspot (2025 Air Quality ASR). The simultaneous development of a major logistics hub alongside the wider S35 housing allocations will introduce thousands of new, daily combustion-engine movements. This cumulative increase in

emissions directly threatens the "Very High" ecological integrity of adjacent Ancient Woodlands (e.g., Smithy Wood and Hesley Wood) through chronic nitrogen deposition, representing a failure to balance economic development with statutory environmental protections.

6 MITIGATION

The campaign group and other residents maintain that the impacts of these seven sites cannot be mitigated. It is a view supported by the evidence given in this assessment and the associated individual Transport Statements. There are many physical and policy barriers. The primary reasons for concern are:

- **Zero Residual Capacity:** In planning law, if a road is already at 100% capacity, even a small increase is considered 'severe' because it triggers total system failure.
- **Topographical Mythology:** Sites like NES36, NES38 and NES39 feature steep gradients that effectively make 'Active Travel' (walking, wheeling and cycling) impossible for the average resident. Consequently, nearly 100% of new residents will be using private cars, further overloading the identified hotspots.
- **The Safety Red Line:** With the high numbers of recorded injury collisions in the area, any cumulative increase in traffic volume poses an increased threat to public safety.

7 RECOMMENDATIONS

Based on the cumulative evidence, the current approach to the Sheffield Plan in the Ecclesfield, Chapeltown, and Grenoside area is unsound. The following actions are urgently recommended:

- **Mandatory Micro-Simulation:** Isolated, generic junction modelling must be discarded. The Council must commission a comprehensive, whole-area micro-simulation model (e.g., VISSIM) that simultaneously assesses the 'busy day' (85th percentile) impact of all seven sites, explicitly accounting for the J35A routing restrictions, logistics shift-change spikes, and lifelike rat-running behaviour.
- **Immediate Review and Removal of Allocations:** Sites that offer the highest safety risks, generate unmitigable industrial traffic, or possess zero realistic sustainable travel potential (specifically naming NES36, CH03, and NES39) must be removed from The Sheffield Plan to prevent severe residual network failure.
- **Infrastructure-Led Delivery (Grampian Conditions):** If any of these allocations are progressed, strict Grampian-style conditions must be legally applied across the S35 corridor, whereby no development can commence until major strategic junction improvements and physical measures preventing commercial rat-running through local lanes are fully funded, delivered, and operational.