TRANSPORT & TRAFFIC STATEMENT

PROPOSED ERECTION OF 11 INDUSTRIAL UNITS AND 4 OFFICE UNITS

STEPHENSON AVENUE, PINCHBECK, SPALDING, LINCOLNSHIRE PE11 3SW

Produced December 2025 for Tawny Homes Limited

1.0 INTRODUCTION

1.1 Purpose and Scope

This Transport Assessment has been prepared to accompany a full planning application for the proposed erection of 11 industrial units and 4 office units on land at Stephenson Avenue, Pinchbeck, Spalding, Lincolnshire PE11 3SW. The assessment evaluates the transport implications of the proposed development and demonstrates that the site can accommodate the anticipated traffic generation without adverse impact on the local highway network.

1.2 Assessment Methodology

This assessment has been undertaken in accordance with:

- National Planning Policy Framework (NPPF) guidance on transport matters
- Department for Transport guidance on Transport Assessments
- Lincolnshire County Council highway standards and requirements
- Local planning authority transport policies
- Analysis of comparable developments within the PE11 3SW postcode area

1.3 Development Proposal Summary

The proposed development comprises:

- **11 Light Industrial Units** suitable for manufacturing, storage, distribution and light industrial uses
- **4 Office Units** providing modern business accommodation
- 45 marked standard parking spaces of standard dimensions (2.4m x 4.8m); plus 2 disabled parking spaces (4.8m x 6m) and a further 4-8 bicycle parking spaces
- Internal circulation and servicing arrangements
- Direct vehicular access via the established Stephenson Avenue industrial estate

2.0 SITE LOCATION AND CONTEXT

2.1 Site Description

The application site is strategically located within the established Stephenson Avenue industrial estate in Pinchbeck, adjacent to Spalding. The site benefits from excellent connectivity to the strategic road network and forms an integral part of the wider South Holland employment area.

2.2 Strategic Transport Context

2.2.1 Primary Route Access:

- Direct connection to A16 trunk road via established industrial estate roads
- Excellent connectivity to A17 and wider regional transport network
- Strategic location serving South Holland's key employment corridor
- Established freight and logistics hub with proven transport infrastructure

2.2.2 Local Highway Network:

- Stephenson Avenue: Purpose-built industrial estate road with appropriate design standards
- Wide carriageway suitable for industrial traffic movements
- Comprehensive visibility splays ensuring safe vehicular movements

- Proven capacity for existing industrial estate traffic demands

2.2.3 Existing Transport Infrastructure

The site benefits from mature transport infrastructure including:

- **Carriageway Design:** Wide carriageway constructed to industrial estate standards
- **Visibility Standards:** Excellent visibility splays in both directions from site access
- **Junction Design:** Appropriate geometry for industrial traffic movements
- **Traffic Management:** Established traffic flow patterns serving existing industrial uses

3.0 PLANNING PRECEDENT ANALYSIS

3.1 Comparative Development Assessment

A comprehensive review of planning applications within the PE11 3SW postcode area submitted to South Holland District Council suggests many approvals for industrial developments with significantly higher transport impact potential than the current proposal.

3.2 Heavy Goods Vehicle Precedent

3.2.1 Existing Approved Developments

Multiple planning permissions granted within the immediate area include provisions for:

- **Frequent HGV Movements:** Regular articulated lorry access and egress
- **24-Hour Operations:** Round-the-clock industrial activities generating continuous traffic
- **Distribution Centers:** Large-scale logistics operations with intensive vehicle movements
- **Manufacturing Facilities:** Industrial processes requiring regular heavy vehicle servicing

3.2.2 Traffic Generation Comparison:

The approved developments demonstrate that the local highway network has been assessed and confirmed as suitable for:

- Continuous heavy goods vehicle movements
- Peak hour industrial traffic generation
- Overnight and weekend commercial vehicle operations
- Large articulated vehicle maneuvering and parking

In comparison, no such regular use of HGVs or other similar vehicles are proposed to form as part of the use of this development; focusing predominantly on carts and LGVs to access this site on a reduced frequency in comparison to neighbouring developments.

3.3 Infrastructure Capacity Validation

The approval of existing applications demonstrates and illustrates:

- **Highway Capacity:** Local road network designed and proven suitable for intensive industrial use
- **Junction Performance:** Existing access arrangements accommodate heavy commercial traffic
- **Safety Standards:** Visibility and geometric design meet requirements for industrial estate traffic
- **Network Resilience:** Infrastructure capacity exceeds current proposal requirements

4.0 PROPOSED DEVELOPMENT TRAFFIC CHARACTERISTICS

4.1 Traffic Generation Profile

The proposed light industrial and office development will generate significantly lower traffic impact compared to existing neighbouring approved heavier industrial uses:

- **Primary Access:** Private cars and light commercial vehicles (vans)
- **Commercial Vehicles:** Occasional light goods vehicles and small delivery trucks
- **Heavy Vehicles:** Minimal requirement for large goods vehicle access – predominantly for periodic deliveries also
- **Frequency:** Standard business hours operation largely expected; therefore reducing off-peak traffic impact

4.2 Daily Traffic Generation (Estimated)

- **Car Movements:** Approximately 60 daily vehicle movements as a maximum
- **Light Commercial:** Approxaimtely 20 van movements per day
- **Service Vehicles:** Minimal heavy goods vehicle requirements
- **Peak Hour:** Concentrated during standard business hours (08:00-18:00)

4.3 Traffic Distribution

Primary Route Usage would be expected to be:

- **A16 Access:** Majority of traffic via established industrial estate connections
- **Local Routes:** Minimal use of secondary roads
- **Peak Spreading:** Natural distribution across business hours
- **Directional Split:** Balanced movements reflecting mixed employment uses

5.0 SITE ACCESS AND LAYOUT

5.1 Vehicular Access Strategy

5.1.1 Primary Access Point:

- **Location:** Direct connection to Stephenson Avenue
- **Design Standard:** Utilizes existing industrial estate infrastructure
- **Visibility:** Excellent sight lines exceeding minimum requirements
- **Capacity:** Proven adequate for anticipated traffic volumes

5.2 Internal Site Layout

5.2.1 Circulation Design:

- **Internal Roads:** Adequate width for two-way traffic flow
- **Turning Areas:** Appropriate provision for light commercial vehicles
- **Service Access:** Direct access to all units for deliveries and servicing
- **Emergency Access:** Full compliance with emergency vehicle requirements

5.3 Parking Provision

5.3.1 Car Parking

- **Total Provision:** 45 marked parking spaces
- **Space Dimensions:** 2.4m wide x 4.8m long (standard specification)
- **Distribution:** Convenient access to all units
- **Disabled Provision:** Appropriate number of accessible parking spaces

5.3.2 Service Parking

- **Loading Areas:** Dedicated open spaces amongst parking areas for delivery and servicing activities
- **Van Parking:** Enveloped provision for light commercial vehicles
- **Visitor Parking:** Adequate provision for business visitors and clients

5.4 On-Site Parking Sufficiency

5.4.1 Traffic Flow Management

Comprehensive on-site parking provision ensures:

- **No On-Street Parking:** Sufficient parking provisions to eliminate requirements for roadside parking demand
- **Traffic Flow Maintenance:** Preservation of carriageway capacity for through traffic
- **Industrial Estate Function:** Support for continued efficient operation of wider estate
- **Network Capacity:** Retention of highway capacity for existing and future industrial uses

6.0 HIGHWAY IMPACT ASSESSMENT

6.1 Network Capacity Analysis

6.1.1 Existing Infrastructure Performance:

- **Current Usage:** Highway network operating within design capacity
- **Peak Hour Performance:** No observed congestion or capacity constraints
- **Safety Record:** No identified accident clusters or safety concerns
- **Design Standards:** Infrastructure appropriate for current and proposed uses

6.2 Incremental Traffic Impact (Additional Traffic Assessment)

The proposed development's traffic generation represents:

- **Minimal Increase:** Negligible additional traffic compared to approved developments
- **Appropriate Vehicle Types:** Lighter vehicles than existing approved industrial uses
- **Peak Hour Distribution:** Natural spreading across business hours
- **Network Integration:** Seamless integration with established traffic patterns

6.3 Junction Analysis

- **Existing Capacity:** Adequate capacity demonstrated through current operations
- **Geometric Design:** Appropriate for proposed traffic mix
- **Visibility Standards:** Excellent sight lines in all directions
- **Safety Performance:** No identified safety concerns or improvement requirements

6.4 Cumulative Impact Assessment

6.4.1 Combined Development Effects

When considered alongside existing approved developments:

- **Network Capacity:** Ample remaining capacity for proposed development
- **Infrastructure Resilience:** Proven ability to accommodate industrial traffic
- **Safety Standards:** Maintained high safety performance
- **Operational Efficiency:** No degradation of network performance anticipated

7.0 SUSTAINABLE TRANSPORT PROVISION

7.1 Public Transport Accessibility

Bus Service Provision:

- **Route Proximity:** Reasonable walking distance to existing bus routes
- **Service Frequency:** Regular services connecting to Spalding town centre
- **Employment Accessibility:** Good public transport links for employees
- **Integration:** Effective connection with wider public transport network

Bus Services enable connection to train services in Spalding town centre also.

7.2 Pedestrian and Cycle Infrastructure

- **Pedestrian Routes:** Safe pedestrian access from parking areas to units
- **Cycle Provision:** Appropriate cycle parking and storage facilities
- **Integration:** Connection with existing pedestrian/cycle network
- **Safety Measures:** Adequate lighting and visibility for pedestrian safety

7.3 Travel Plan Framework & Sustainable Transport Promotion

- **Employee Information:** Travel information provision for occupiers
- **Alternative Modes:** Promotion of car sharing and public transport use
- **Cycle Facilities:** Secure cycle storage and changing facilities
- **Monitoring:** Framework for travel pattern monitoring and review

8.0 ENVIRONMENTAL CONSIDERATIONS

8.1 Air Quality Impact & Emissions Assessment

- **Vehicle Types:** Predominantly light vehicles with lower emissions
- **Traffic Volume:** Minimal increase compared to approved heavy industrial uses
- **Local Impact:** Negligible additional air quality impact
- **Mitigation:** Electric vehicle charging provision to support low-emission transport

8.2 Traffic Noise Impact & Assessment

- **Vehicle Characteristics:** Light commercial vehicles generate minimal noise
- **Operating Hours:** Standard business hours reducing evening/night impacts
- **Comparison:** Significantly lower noise impact than approved HGV operations
- **Mitigation:** Site layout design minimizes noise transmission

8.3 Highway Safety

- **Traffic Mix:** Safer vehicle types than existing approved industrial uses
- **Volume Impact:** Minimal increase in total traffic movements
- **Infrastructure Standards:** Existing safety standards maintained

- **Accident Risk:** No increased accident risk anticipated

9.0 POLICY COMPLIANCE

9.1 NPPF & National Policy Alignment

The development and associated access proposals align and complies with the current and most recent NPPF guidance

- **Sustainable Development:** Appropriate location minimizing transport need
- **Economic Growth:** Support for employment development with good transport links
- **Transport Choice:** Provision for multiple transport modes
- **Safety Standards:** Maintained high highway safety standards

This is further supported by additional policies detailed within he most current local plan also:

- **Employment Policy:** Strong support for industrial development in appropriate locations
- **Transport Policy:** Compliance with sustainable transport objectives
- **Design Standards:** Appropriate design meeting local highway requirements
- **Infrastructure Capacity:** Effective use of existing transport infrastructure

CONCLUDING REMARKS

This Transport Assessment demonstrates that the proposed development of 11 industrial units and 4 office units at Stephenson Avenue will generate minimal additional transport impact compared to existing approved industrial uses within the PE11 3SW area.

Key Findings:

- **Precedent Analysis:** Existing approved developments establish clear precedent for significantly higher traffic impact
- **Infrastructure Capacity:** Local highway network proven suitable for intensive industrial use
- **Traffic Generation:** Proposed development generates substantially lower traffic than approved HGV-intensive uses
- **Safety Standards:** Excellent visibility and geometric design ensure continued safety performance

The Highway Network Assessment indicates an over-specified capacity and adequacy for the existing infrastructure to support the access and traffic requirements of this development, including:

- **Capacity Sufficiency:** Ample remaining network capacity for proposed development
- **Design Standards:** Infrastructure exceeds requirements for proposed traffic mix
- **Access Quality:** Excellent site access with superior visibility standards
- **Integration:** Seamless integration with established industrial estate operations

Additionally, the proposed integrated parking provisions and planned capacity for parking on-site is designed to minimise impacts to the wider industrial area traffic movements.

- **Parking Adequacy:** 44 marked spaces eliminate any on-street parking demand
- **Traffic Flow:** Comprehensive on-site circulation maintains highway capacity

- **Service Access:** Appropriate provision for all servicing and delivery requirements
- **Network Protection:** Complete elimination of highway parking impacts

Therefore, this transport impact assessment indicates that the proposed development is entirely appropriate from a transport perspective and will generate negligible additional impact on the local highway network.
The development benefits from:

- **Strong Precedent:** Established approval of higher-impact developments in immediate area
- **Infrastructure Adequacy:** Proven highway capacity and design standards
- **Appropriate Scale:** Traffic generation well within network capacity
- **Comprehensive Provision:** Complete on-site parking and circulation arrangements
- **Safety Standards:** Maintained excellent visibility and access standards

The development merits planning consent from a transport perspective as a low-impact industrial scheme that makes efficient use of existing transport infrastructure while supporting local economic development objectives.

Further information is contained within the following appendices:

APPENDICES

- **Appendix A:** Parking Layout and Specifications
- **Appendix B:** Traffic Generation Calculations

Access Plans are included as a separate document within these submissions.

APPENDIX A:

PARKING AREA SPECIFICATIONS, CONSTRUCTION METHODOLOGIES, TESTING & COMPLIANCE PARTICULARS

GENERAL REQUIREMENTS	**Scope of Works** This specification covers the design, materials, and construction requirements for all parking areas associated with the proposed industrial and office development, including: • Standard car parking spaces • Disabled parking spaces • Visitor parking areas • Service and delivery areas • Access roads and circulation routes • Associated drainage and line marking **Standards and Compliance** All parking areas shall be constructed in accordance with: • British Standards BS 7533 (Pavements constructed with clay or concrete block pavers) • British Standards BS 594 (Hot Rolled Asphalt for Roads and Other Paved Areas) • Highways England Manual of Contract Documents for Highway Works • Lincolnshire County Council Highway Design Guide • Building Regulations Approved Document M (Access to and Use of Buildings) • Disability Discrimination Act requirements
PARKING SPACE DIMENSIONS AND LAYOUT	**Standard Parking Spaces** • Length: 4.8 meters • Width: 2.4 meters • Total Area per Space: 11.52 square meters • Rectangular configuration with clearly defined boundaries • 90-degree parking arrangement to maximize space efficiency • Minimum 6.0 meter circulation aisle width between opposing parking bays • Corner radii of minimum 1.0 meter where applicable **Disabled Parking Spaces** • Length: 6 meters • Width: 3.6 meters (including 1.2m access zone) • Provision: Minimum 6% of total parking provision (2 spaces minimum) • Located closest to main building entrances • Maximum 50 meters from accessible building entrance • Connected to accessible pedestrian routes • Level gradients not exceeding 1:20 (5%) **Visitor Parking Areas** • Minimum 10% of total parking allocation • Clearly designated and signed • Convenient access to office units
SURFACING SPECIFICATION	**Permeable Tarmac/Asphalt System** Surface Course: • Material: Permeable Hot Rolled Asphalt (HRA) or Porous Asphalt • Thickness: 40mm minimum • Aggregate: 10mm nominal maximum size, angular crushed stone • Binder: Modified bitumen suitable for permeable applications

	• Air Voids: 18-25% for optimal permeability Binder Course: • Material: Dense Bitumen Macadam (DBM) or equivalent • Thickness: 60mm minimum • Aggregate: 20mm nominal maximum size • Binder: 40/60 pen grade bitumen or approved equivalent **Foundation Layers** Road Base: • Material: DTp Type 1 granular material to BS EN 13285 • Thickness: 150mm minimum (200mm for heavy duty areas) • Compaction: 95% maximum dry density to BS 1377 • CBR Value: Minimum 30% at 95% maximum dry density Sub-Base: • Material: DTp Type 2 granular material or approved recycled aggregate • Thickness: 150mm minimum • Compaction: 95% maximum dry density to BS 1377 • Geotextile Separator: Where specified by ground conditions **Permeable Properties** Permeability Requirements: • Surface Infiltration Rate: Minimum 270mm/hour (ASTM C1701 test method) • Structural Infiltration: Designed to accommodate 1:100 year storm event • Void Ratio: Maintained throughout construction and operational life • Testing: Pre-construction testing of materials and post-construction performance verification
CONSTRUCTION METHODOLOGY	**Site Preparation** Excavation: • Excavate to formation level as shown on drawings • Remove all unsuitable material including topsoil, organic matter, and soft spots • Proof roll formation with loaded truck to identify weak areas • Treat any identified weak areas with additional granular material or geotextile Formation Treatment: • Compact formation to 95% maximum dry density • Apply geotextile separator fabric where ground conditions require • Install edge restraints prior to laying granular materials • Ensure adequate falls for drainage (minimum 1:40, typically 1:20) **Layer Installation** Sub-Base Installation: • Place DTp Type 2 material in maximum 150mm compacted lifts • Compact each lift using appropriate vibratory roller • Achieve uniform compaction across full width • Test compaction using nuclear density gauge or equivalent Road Base Installation: • Place DTp Type 1 material in maximum 150mm compacted lifts • Use appropriate compaction equipment to achieve specified density • Maintain correct profile and levels throughout • Protect completed road base from contamination

	Asphalt Installation: • Apply tack coat to road base at rate of 0.25-0.35 l/m^2 • Lay binder course to specified thickness and profile • Compact using appropriate rolling pattern • Apply further tack coat before surface course • Lay permeable surface course to specified thickness • Compact lightly to maintain void structure **Quality Control** Material Testing: • All materials to be tested and certified compliant with specifications • Aggregate grading, binder content, and void content testing • Compaction testing at regular intervals • Permeability testing of completed surface Construction Monitoring: • Continuous supervision during critical operations • Temperature monitoring during asphalt laying • Weather condition monitoring and restrictions • Photographic record of construction stages
DRAINAGE INTEGRATION	Surface Water Management Permeable System Integration: • Surface water to infiltrate through permeable surface • Sub-base to act as temporary storage reservoir • Connection to existing surface water drainage system where required • Provision for emergency overflow during extreme events Collection System: • Linear drainage at low points where required • Connection to existing site drainage infrastructure, predominantly soakaways • Appropriate outfall arrangements to prevent flooding • Maintenance access to all drainage components Sustainable Drainage Features Infiltration Areas: • Enhanced infiltration zones adjacent to parking areas • Native planting to improve water quality and amenity • Integrated landscape design supporting drainage function • Long-term maintenance accessibility
LINE MARKING AND SIGNAGE	**Parking Bay Marking** Standard Spaces: • Line Width: 75mm white thermoplastic • Line Type: Continuous perimeter marking • Numbering: Sequential numbering system using 150mm high digits • Material: Hot applied thermoplastic to BS EN 1871 Disabled Spaces: • Marking: Blue hatched infill with wheelchair symbol • Signage: Vertical sign post with appropriate disability symbol • Access Zones: Clearly marked transfer areas • Enforcement: "Disabled Badge Holders Only" text

	Traffic Management Marking Circulation Routes: • Centerlines: Where appropriate for wide circulation areas • Directional Arrows: At key decision points • Stop Lines: At junction points with main circulation routes • Speed Control: "SLOW" markings in appropriate locations Pedestrian Areas: • Crossings: Marked pedestrian crossing points • Walkways: Defined pedestrian routes where shared with vehicles • Safety Zones: Highlighted pedestrian priority areas
ACCESSIBILITY COMPLIANCE	**Disabled Access Requirements** Gradient Standards: • Maximum Gradient: 1:20 (5%) for accessible routes • Cross Falls: Maximum 1:40 (2.5%) across accessible parking areas • Level Landings: Provided at regular intervals on sloped routes Surface Standards: • Slip Resistance: Minimum SRV 55 when wet • Surface Regularity: Maximum 3mm variation under 2m straight edge • Joint Treatment: Flush joints with no upstands or lips **Pedestrian Safety** Visibility: • Clear Sight Lines: Maintained between parking areas and pedestrian routes • Lighting: Adequate illumination levels for evening/night use • Hazard Elimination: No protruding objects or trip hazards • Emergency Access: Clear routes for emergency vehicles
MAINTENANCE REQUIREMENTS	**Immediate Post-Construction** Initial Maintenance Period: • Defects Liability: 12-month period for all construction defects • Surface Protection: Restrictions on heavy vehicle loading initially • Drainage Testing: Verification of permeability performance • Line Marking Touch-up: Address any installation defects **Long-Term Maintenance** Routine Maintenance: • Surface Cleaning: Regular mechanical sweeping to maintain permeability • Vacuum Cleaning: Annual specialist cleaning of permeable surfaces • Line Marking Renewal: 3-5 year cycle depending on wear • Drainage Maintenance: Regular inspection and cleaning of drainage systems Preventive Maintenance: • Surface Sealing: Periodic surface treatment to maintain integrity • Crack Sealing: Prompt repair of any surface cracking • Edge Maintenance: Regular inspection and repair of edge restraints • Sign Replacement: Replacement of damaged or faded signage
ENVIRONMENTAL CONSIDERATIONS	**Sustainable Materials** Recycled Content: • Aggregate: Minimum 25% recycled aggregate where appropriate

	• Asphalt: Incorporation of reclaimed asphalt planings where suitable • Waste Minimization: Efficient material usage and waste reduction • Local Sourcing: Priority for locally sourced materials to reduce transport **Environmental Protection** Construction Phase: • Dust Control: Measures to minimize dust generation during construction • Noise Control: Appropriate working hours and equipment selection • Pollution Prevention: Measures to prevent spillage and contamination • Wildlife Protection: Consideration of local wildlife during construction Operational Phase: • Water Quality: Permeable surface to improve runoff quality • Heat Island Effect: Light-colored surfaces to reduce heat absorption • Air Quality: Reduced surface water runoff reducing downstream pollution • Biodiversity: Integration with landscape planting schemes
TESTING AND COMMISSIONING	**Performance Testing** Permeability Testing: • Initial Testing: Post-construction infiltration rate testing • Methodology: ASTM C1701 or equivalent approved method • Acceptance Criteria: Minimum 270mm/hour infiltration rate • Documentation: Full test certificates and performance records Structural Testing: • Compaction Testing: All foundation layers to achieve specified density • Core Testing: Asphalt layer thickness and density verification • Load Testing: Proof loading if specified by structural engineer Surface Regularity: Profile measurement to ensure compliance with tolerances

APPENDIX B:
TRAFFIC GENERATION CALCULATIONS

DEVELOPMENT PARAMETERS	**Site Infrastructure** Parking Provision: • **Total Marked Spaces:** 44 spaces for cars and vans • **Space Allocation:** Mixed provision serving industrial and office units • **Vehicle Types:** Predominantly private cars with light commercial vans • **Utilization Rate:** Estimated 85-90% peak occupancy Internal Access: • **Central Access Road:** 6 meters width • **Design Standard:** Two-way traffic flow with adequate maneuvering space • **Capacity:** Suitable for simultaneous entry/exit movements • **Service Access:** Accommodation of light goods vehicles and delivery vans **Development Composition** Industrial Units: 11 units • **Primary Use:** Light industrial, manufacturing, storage and distribution • **Employment Density:** 3-4 employees per unit (average) • **Vehicle Generation:** Primarily staff vehicles plus occasional service vehicles Office Units: 4 units • **Primary Use:** Business and administrative offices • **Employment Density:** 4-6 employees per unit (average) • **Vehicle Generation:** Predominantly staff vehicles with visitor traffic
TRAFFIC GENERATION METHODOLOGY	**Calculation Approach** Traffic generation calculations have been based on: • **TRICS Database:** Industry-standard traffic generation rates • **Local Comparable Developments:** Similar industrial estate developments • **Parking Space Analysis:** Relationship between parking provision and trip generation • **Employment Density Assessment:** Staff numbers and associated vehicle movements **Peak Hour Identification** Morning Peak Period: 07:30 - 09:00 hours • **Duration:** 1.5 hours • **Characteristics:** Staff arrival pattern • **Peak Hour:** 08:00 - 09:00 hours (maximum arrivals) Evening Peak Period: 16:00 - 17:30 hours • **Duration:** 1.5 hours • **Characteristics:** Staff departure pattern • **Peak Hour:** 16:30 - 17:30 hours (maximum departures) **Vehicle Classification** Private Cars: 75% of total movements • **Occupancy:** Single occupancy (staff commuting) • **Trip Purpose:** Work-related travel • **Frequency:** Regular daily pattern Light Commercial Vehicles (Vans): 20% of total movements • **Purpose:** Service, delivery, and business-related trips • **Pattern:** Throughout working day with morning concentration

	• **Size Classification:** Up to 3.5 tonnes GVW Goods Vehicles: 5% of total movements • **Purpose:** Occasional deliveries and collections • **Timing:** Generally outside peak hours • **Impact:** Minimal due to low frequency
EMPLOYMENT-BASED CALCULATIONS	**Estimated Employment** Industrial Units (11 units): • **Average Employment:** 3.5 employees per unit • **Total Industrial Employment:** 42 employees • **Vehicle Ownership:** 90% car ownership rate • **Generated Vehicles:** 38 daily car movements Office Units (4 units): • **Average Employment:** 5 employees per unit • **Total Office Employment:** 20 employees • **Vehicle Ownership:** 95% car ownership rate • **Generated Vehicles:** 19 daily car movements **Total Employment:** 62 employees **Total Staff Vehicles:** 57 daily car movements **Trip Generation Rates** Per Employee Trip Generation: • **Daily Trips:** 1.8 trips per employee (arrival + departure + occasional mid-day) • **Peak Hour Factor:** 0.85 (85% of daily movements in peak hours) • **Directional Split:** 90% single direction during peak periods Visitor and Service Trips: • **Daily Visitor Rate:** 0.3 trips per employee • **Service Vehicle Rate:** 0.2 trips per employee per day • **Delivery Frequency:** 2-3 deliveries per unit per week
PARKING-BASED VERIFICATION	**Parking Space Analysis** **Available Parking:** 44 marked spaces **Peak Occupancy Rate:** 85% (38 occupied spaces during peak periods) **Vehicle Turnover:** 1.2 (accounting for visitor parking and mid-day movements) Parking-Based Trip Calculation: • **Peak Occupied Spaces:** 38 vehicles • **Daily Turnover Factor:** 1.2 • **Generated Daily Trips:** 38 × 1.2 × 2 = 91 daily movements **Parking Adequacy Assessment** Supply vs Demand Analysis: • **Total Demand:** 57 staff vehicles + 8 visitor/service vehicles = 65 vehicles • **Peak Simultaneous Demand:** 38 vehicles (60% of total demand) • **Available Supply:** 45 spaces • **Surplus Capacity:** 7 spaces (18% spare capacity)

	Conclusion: Adequate parking provision with comfortable spare capacity for peak periods and visitor accommodation.
DETAILED TRAFFIC GENERATION CALCULATIONS	**Daily Traffic Generation** Staff-Related Movements: • **Total Employees:** 62 • **Vehicle Movements per Employee:** 1.8 trips/day • **Staff Vehicle Movements:** 62 × 1.8 = 112 movements/day Visitor Movements: • **Visitor Rate:** 0.3 trips per employee per day • **Total Visitor Movements:** 62 × 0.3 = 19 movements/day Service Vehicle Movements: • **Service Rate:** 0.2 trips per employee per day • **Total Service Movements:** 62 × 0.2 = 12 movements/day **Total Daily Movements:** 112 + 19 + 12 = **143 two-way movements per day** **Peak Hour Traffic Generation** Morning Peak Hour (08:00-09:00): *Staff Arrivals:* • **Peak Factor:** 0.7 (70% of staff arrive during peak hour) • **Staff Arrival Movements:** 62 × 0.7 = 43 arrivals • **Directional Split:** 90% inbound, 10% outbound • **Inbound:** 39 movements • **Outbound:** 4 movements *Service/Visitor Movements:* • **Morning Service Activity:** 20% of daily service movements • **Service Movements:** 12 × 0.2 = 2 movements (1 in, 1 out) • **Visitor Movements:** Minimal during morning peak **Morning Peak Hour Total:** 42 movements (40 in, 2 out) Evening Peak Hour (16:30-17:30): *Staff Departures:* • **Peak Factor:** 0.6 (60% of staff depart during peak hour) • **Staff Departure Movements:** 62 × 0.6 = 37 departures • **Directional Split:** 10% inbound, 90% outbound • **Inbound:** 4 movements • **Outbound:** 33 movements *Service/Visitor Movements:* • **Evening Service Activity:** 15% of daily service movements • **Service Movements:** 12 × 0.15 = 2 movements (1 in, 1 out) • **Visitor Departures:** 3 movements (outbound)

	Evening Peak Hour Total: 40 movements (5 in, 35 out) **Off-Peak Traffic Distribution** Inter-Peak Period (09:00-16:00): • **Remaining Daily Movements:** 143 - 82 (peak hours) = 61 movements • **Distribution Period:** 7 hours • **Average Hourly Rate:** 61 ÷ 7 = 9 movements per hour • **Characteristics:** Sporadic service deliveries, visitor traffic, occasional staff movements Evening Period (17:30-19:00): • **Late Departures:** Occasional staff working extended hours • **Service Activity:** Minimal commercial vehicle activity • **Average Hourly Rate:** 2-3 movements per hour
VEHICLE MIX ANALYSIS	**Peak Hour Vehicle Composition** Morning Peak Hour (08:00-09:00): • **Private Cars:** 35 movements (83%) • **Light Commercial Vans:** 6 movements (14%) • **Small Goods Vehicles:** 1 movement (3%) • **Total:** 42 movements Evening Peak Hour (16:30-17:30): • **Private Cars:** 32 movements (80%) • **Light Commercial Vans:** 6 movements (15%) • **Small Goods Vehicles:** 2 movements (5%) • **Total:** 40 movements
SITE ACCESS CAPACITY ANALYSIS	**Internal Access Road Assessment** Road Specification: • **Width:** 10.3 meters • **Configuration:** Two-way traffic flow • **Design Standard:** Industrial estate standard Capacity Analysis: • **Theoretical Capacity:** 1,200 vehicles per hour (two-way) • **Peak Hour Demand:** 42 movements (morning peak) • **Capacity Utilization:** 3.5% of theoretical capacity • **Level of Service:** Excellent (minimal congestion risk) **Site Access Junction Performance** Junction Capacity: • **Approach:** Simple priority junction with Stephenson Avenue • **Visibility:** Excellent sight lines in both directions • **Peak Hour Performance:** No queuing or delay anticipated • **Reserve Capacity:** Substantial spare capacity for future growth
SENSITIVITY ANALYSIS	**High-Growth Scenario** Assumptions:

	• **Employment Growth:** 25% increase in employment density • **Trip Generation:** Proportional increase in vehicle movements Revised Traffic Generation: • **Daily Movements:** 143 × 1.25 = 179 movements per day • **Morning Peak:** 42 × 1.25 = 53 movements • **Evening Peak:** 40 × 1.25 = 50 movements Impact Assessment: • **Parking Demand:** 47 vehicles (exceeds 45 space provision by 2 spaces) • **Access Road Capacity:** Still minimal utilization (4.4% of capacity) • **Network Impact:** Remains negligible **Low-Growth Scenario** Assumptions: • **Employment Density:** 15% below estimated levels • **Economic Downturn:** Reduced business activity Revised Traffic Generation: • **Daily Movements:** 143 × 0.85 = 122 movements per day • **Morning Peak:** 42 × 0.85 = 36 movements • **Evening Peak:** 40 × 0.85 = 34 movements Impact Assessment: • **Parking Utilization:** Reduced to 70% peak occupancy • **Network Impact:** Further reduced minimal impact
COMPARISON WITH EXISTING DEVELOPMENTS	**Local Comparator Analysis** Similar Developments in PE11 3SW Area: • **Average Daily Generation:** 15-25 movements per 1,000m² industrial space • **Peak Hour Rates:** 12-18% of daily movements in peak hour • **Vehicle Mix:** 70-80% cars, 20-30% commercial vehicles Proposed Development Comparison: • **Generation Rate:** Within established range for light industrial • **Peak Hour Distribution:** Consistent with local patterns • **Vehicle Mix:** Appropriate for mixed industrial/office use **Regional Industrial Estate Standards** East Midlands Industrial Estates: • **Typical Generation:** 5-8 movements per employee per day • **Proposed Development:** 2.3 movements per employee per day • **Assessment:** Significantly lower than regional average
CALCULATION SUMMARY TABLES	**Daily Traffic Generation Summary** **Component** / **Movements** / **Percentage** Staff Vehicles / 112 / 78% Visitor Vehicles / 19 / 13% Service Vehicles / 12 / 9% **Total Daily** / **143** / **100%**

Peak Hour Traffic Generation

Period	Inbound	Outbound	Total
Morning Peak (08:00-09:00)	40	2	42
Evening Peak (16:30-17:30)	5	35	40
Off-Peak Average	4.5	4.5	9

Vehicle Mix Analysis

Vehicle Type	Daily Movements	Percentage
Private Cars	108	75%
Light Commercial Vans	28	20%
Goods Vehicles	7	5%
Total	**143**	**100%**

Parking Demand Analysis

Parameter	Peak Demand	Available Supply	Spare Capacity
Parking Spaces	38	45	7 (18%)