

ROOT BRIDGE & ACCESS ROAD

PLANNING SUPPORT STATEMENT

Structural Capacity, Tree Protection & SuDS Compliance

Document Reference: LR.R.BRIDGE.DOC.01

Site: Land Adjacent to Lyne House, Links Road, Worthing, BN14 9QY

Drawing Reference: LR.R.BRIDGE.01

Structural Reference: LR.STK.R.BRIDGE.01 – QED Structures (Ref: 25-084, Rev BR1)

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DOCUMENT REFERENCES (TO BE READ IN CONJUNCTION WITH THIS REPORT)

Ref B – Construction Drawing LR.R.BRIDGE.01

Ref C – Structural Calculations – QED Structures (Ref: 25-084, Rev BR1)

Ref D – Arboricultural Impact Assessment & Method Statement – James Bell (Arbortrack Systems Ltd)

1. INTRODUCTION

This statement has been prepared in support of a planning application to demonstrate:

- The structural suitability of the proposed access route to accommodate a fire appliance
- The protection of adjacent trees, including Leylandii (G12), within Root Protection Areas (RPA)
- That the access route has been designed as a fully permeable SuDS-compliant system

This document should be read in conjunction with References B–D listed above.

2. ARBORICULTURAL CONTEXT

The arboricultural report prepared by James Bell confirms:

- The site contains trees protected under Tree Preservation Order No. 23 of 1990
- Root Protection Areas (RPAs) defined in accordance with BS5837:2012
- The access route encroaches into RPAs of off-site trees including Leylandii group G12, requiring mitigation

The report requires a no-dig construction methodology to:

- Prevent soil compaction
- Avoid excavation within RPAs
- Maintain root health and function

The proposed Root Bridge and crossover solution directly respond to these requirements.

3. PROPOSED ROOT PROTECTION STRATEGY

3.1 Root Bridge Construction Approach

The access road within the RPA is formed using a Root Bridge system, as detailed on drawing LR.R.BRIDGE.01 and assessed by QED Structures.

This system:

- Is a no-dig solution
- Is supported on screw piles, SHS steel beams, and a concrete ring beam
- Maintains a minimum 25mm air gap above existing ground and tree roots
- Avoids compaction and disturbance of the root zone

The QED design confirms the system is intended to accommodate a fire appliance without loading the underlying ground or retaining structures.

3.2 Protection of Leylandii Trees (G12)

The Leylandii group (G12) is identified within the arboricultural report as requiring protection due to proximity to the access route.

The proposed system ensures:

- No excavation within the RPA
- No direct load transfer to the root zone
- Structural loads transferred to deeper strata via piles and pads
- Existing soil profile and aeration maintained

This approach accords with best practice for tree protection and long-term retention.

3.3 Compliance with BS5837:2012

The design complies with the principles of BS5837:2012, including:

- Retention of existing soil structure
 - Avoidance of compaction
 - Use of no-dig construction
 - Implementation of protective measures during construction
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4. STRUCTURAL DESIGN FOR FIRE APPLIANCE ACCESS

4.1 Design Vehicle

The structure has been assessed for:

- 18 tonne fire appliance
 - Design wheel load = 45 kN per wheel
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4.2 Load Distribution Strategy

The surface build-up comprises:

- EcoGrid E40 (stone filled)
- Resin-bound permeable surface
- Aluminium equalisation plate at wheel zones

This system distributes wheel loads to an approximate footprint of:

- 550mm × 550mm at grating level

This ensures loads are applied as distributed pressure rather than concentrated point loads.

4.3 Structural Deck

The distributed load is supported by:

- Staco SP 50-3 welded steel grating
- Supported on 80×80×4mm SHS beams
- Connected to a concrete-encased UB 152×89×16 ring beam

Structural calculations confirm the system operates within design capacity.

4.4 Foundations and Substructure

Loads are transferred via:

- Concrete ring beam
- Concrete pad foundations
- Radix ground screws
- Bearing into firm chalk

The system distributes loads across multiple supports and transfers them safely into competent ground.

4.5 Structural System Behaviour

The structural system:

- Distributes loads across the full support frame
 - Provides stability through combined action of beams, ring beam and foundations
 - Avoids loading the existing ground within the RPA
 - Ensures long-term structural performance
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5. DRIVE CROSSOVER (NON-BRIDGE SECTION)

The access route prior to the bridge is constructed using:

- CORE root protection system
- EcoGrid load distribution layer above

The system is suitable for:

- 18–30 tonne vehicle loads (manufacturer guidance)

This exceeds the fire appliance design requirement and provides additional load distribution and root protection.

5A. SUSTAINABLE DRAINAGE (SuDS) COMPLIANCE

All elements of the access route have been designed to be fully permeable and compliant with Sustainable Drainage System (SuDS) principles.

The surface build-up comprises:

- Resin-bound porous surface
- EcoGrid cellular system (stone filled)
- Free-draining aggregate layers
- Geotextile and geogrid separation layers

This ensures:

- Direct infiltration of surface water
- No increase in runoff
- No requirement for conventional drainage
- Maintenance of natural ground conditions

The no-dig construction ensures soil permeability is preserved and root environments remain aerated.

6. CONCLUSION

Based on the supporting documents listed and the design approach adopted, it is concluded that:

Tree Protection

- Root Protection Areas are preserved
- No excavation or compaction occurs within RPAs
- Soil structure and root health are maintained
- Appropriate mitigation is provided for Leylandii group G12

Structural Performance

- The structure supports 45 kN wheel loads
- The access route accommodates a standard 18 tonne fire appliance
- A continuous and robust load path is provided

Drainage

- The system is fully permeable
 - The design is SuDS compliant
 - Natural drainage conditions are maintained
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FINAL STATEMENT

The proposed access arrangement, including the Root Bridge and crossover construction, provides a structurally robust, fully permeable SuDS-compliant, and arboriculturally compliant solution. The design enables emergency fire appliance access while ensuring the protection and long-term retention of adjacent trees.