Geosynthetics

QUEENSBRIDGE FARM

Updated Access Surface & Root Protection Strategy

Combined Site-Specific Design, Arboricultural Method Statement and Entrance Surface Statement

Planning Ref: P/2025/0854

Queensbridge Farm Glamping Development, Wrexham

September 2026

UPDATED COORDINATED STRATEGY

Prepared to consolidate the revised access, no-dig root-protection construction, drainage/culvert principle and site-specific deliverability evidence.

Purpose and status

This document consolidates and updates the previous Cellweb® access-road method statement and entrance surface/root-protection statement to reflect the revised access layout. It is intended to demonstrate, at planning stage, that the revised access can be constructed using a coordinated permeable cellular-confinement solution while protecting retained trees, accommodating the existing roadside drainage feature and maintaining the highway access geometry. The established construction approach, terminology and principal methodology from the previous strategy are retained, with additional site-specific coordination added only where required by the revised entrance position.

It should be read alongside the latest site layout, Stantec visibility-splay/long-section drawing, the topographical survey (The Survey House Ltd drawing 25017-25-01), the project arboricultural information and the Geosynthetics preliminary cross-section TR-5298 V2.

Important design-stage distinction: this strategy demonstrates the construction principle and its site-specific compatibility. Final structural sizing, pipe invert/cover, CBR verification and any localised arboricultural working method are to be confirmed before construction. Those detailed-design checks are not intended to alter the agreed highway alignment, finished access profile or no-dig principle within the retained oak RPA.

Executive technical position

- The first 10 m from the highway boundary is proposed as TTE™ block infill over a Cellweb® TRP cellular-confinement structure, providing a stable, permeable highway-interface surface.
- Beyond the first 10 m, the access continues using TTE™ gravel infill / Cellweb® TRP before transitioning into StrataWeb within the car-park area.
- Within the Root Protection Area of the retained oak adjacent to the revised entrance, the construction principle is no-dig: existing ground is retained and required levels are achieved by building upwards, subject only to any expressly identified localised works approved by the project arboriculturist.
- A 600 mm diameter culvert is proposed through the existing roadside drainage depression. Geosynthetics drawing TR-5298 V2 shows the pipe within an indicative overall local section depth H = 0.96 m.
- Stantec's revised highway cross-section identifies a proposed access level of 71.337 m at the driver reference position 2.4 m back from the road edge. Stantec has confirmed that this level incorporates the proposed 5% access gradient. The same highway design assesses the required 600 mm vertical visibility envelope, and the final pavement build-up must remain coordinated with that cross-section.
- At a 5% rising gradient, the access gains 50 mm in level for every metre travelled back from the road edge. Over the 2.4 m distance to the driver reference position the total rise is therefore 0.120 m. Accordingly, a proposed access level of 71.337 m at 2.4 m back implies an indicative design/tie-in level of approximately 71.217 m at the road edge. This is a geometric design relationship and should not be described as the independently surveyed carriageway level. Exact culvert invert and structural cover remain matters for final setting-out.
- The topographical survey is GPS-fixed to OSGB 1936 and uses 0.2 m contours. It confirms a materially variable roadside/verge profile in the access corridor, consistent with the V-shaped drainage depression shown in the Geosynthetics section. Exact local levels are to be checked on site before construction.

1. Revised construction strategy

Area	Proposed system	Purpose / principle
First 10 m of site access, from highway boundary across full access width	TTE™ (Total Traffic Exopave™) block infill over Cellweb® TRP; cellular layers configured to bridge/build up the existing V-ditch profile and accommodate the culvert detail.	Stable, heavy-duty, high-shear and permeable highway interface. No-dig construction within the retained oak RPA; load distribution, soil/root protection and retention of natural hydrology.
Remaining access route after first 10 m	TTE™ gravel infill over Cellweb® TRP, transitioning into StrataWeb 3D Cellular Confinement System.	Permeable load-distributing construction through sensitive ground, protecting soil structure and roots while retaining a rural appearance.
Car park	TTE™ gravel infill over StrataWeb 3D Cellular Confinement System.	Permeable, low-disturbance pavement structure supporting SuDS performance and retention of existing soil function.

2. Revised site plan

The plan below is retained from the latest strategy. The green route identifies the access corridor to which the root-protection construction applies; the car park is separately treated using StrataWeb/TTE. The first 10 m at the highway interface uses block-infill TTE to prevent migration of loose gravel onto the highway.



Figure 1 - Revised access / car-park treatment plan.

3. Design objectives

- Provide a robust access capable of accommodating construction, service and operational traffic.
- Minimise excavation and soil compaction in areas influenced by existing tree roots.
- Retain permeability and natural water/air movement through the construction build-up.
- Use a high-shear, heavy-duty permeable surface at the highway interface.
- Use purpose-designed cellular confinement through the sensitive access corridor.
- Retain the mature oak adjacent to the revised access and make the construction methodology expressly responsive to its RPA.
- Accommodate the existing roadside drainage depression/ditch and culvert without undermining the no-dig root-protection principle.
- Maintain the finished highway access levels and geometry used by Stantec for the visibility assessment.
- Maintain a visually sympathetic rural character and support SuDS/soil-function objectives.

4. First 10 m - TTE™ and Cellweb® TRP

The first 10 metres of the access from the highway boundary, across the full width of the entrance, will comprise TTE™ block infill paving over a Cellweb® TRP cellular-confinement sub-base. The block-infill surface is intended to provide a consolidated entrance capable of resisting acceleration, braking and turning forces while retaining permeability.

Cellweb® TRP is used as the structural no-dig root-protection solution. Within the identified RPA, the system is to be installed from existing ground level upwards, distributing loads laterally and reducing the need for excavation, subsoil compaction and root severance while maintaining water and gaseous exchange.

The revised entrance crosses an existing roadside drainage depression. A 600 mm diameter culvert is proposed through this feature. The culvert is therefore not treated as an isolated deep trench through otherwise flat ground; it is integrated into the existing depression and the access is then built up around and above it using the cellular-confinement structure, subject to final pipe invert, bedding and cover design.

5. Site-specific level and culvert deliverability

This section is included to demonstrate why the proposed 600 mm culvert and cellular-confinement build-up are physically credible at the revised access position, while distinguishing planning-stage evidence from final construction setting-out.

The Survey House topographical survey (drawing 25017-25-01, survey date 08/01/2025) is a 1:500 GPS-fixed survey using 0.2 m contours. The surveyed frontage shows a variable verge/ditch profile rather than a level platform. This is consistent with the V-shaped drainage feature represented in the Geosynthetics cross-section. The survey notes also require all dimensions/levels to be checked on site before design and construction; accordingly, the exact ditch invert at the final access centreline should be set out and verified before works.

Stantec drawing 332613092/100/005 P03 shows LVL 71.337 m at the driver reference position used for the visibility assessment, located 2.4 m back from the road edge. Stantec has confirmed that the proposed access profile to this point is formed at a 5% gradient. The same drawing assesses the 600 mm object-height visibility envelope. The access construction must therefore be coordinated to reproduce this finished geometry.

At the confirmed 5% rising gradient, the finished access gains 0.05 m of level for each metre travelled back from the road edge. The driver reference position is 2.4 m back and is shown at 71.337 m. The total rise over 2.4 m at 5% is 0.120 m; deducting that rise gives an indicative design/tie-in level of approximately 71.217 m at the road edge. The table below expresses this relationship from the road edge towards the 2.4 m driver reference point. The 71.217 m figure is derived from the confirmed profile geometry and is not presented as a separate surveyed carriageway spot level.

Distance back from road edge	Rise at 5%	Indicative proposed access level
0.0 m	0.000 m	71.217 m
1.0 m	0.050 m	71.267 m
2.0 m	0.100 m	71.317 m
2.4 m (driver reference)	0.120 m	71.337 m

Geosynthetics drawing TR-5298 V2 shows an indicative local section depth H = 0.96 m at the culvert crossing and a 600 mm diameter pipe. The overall illustrated depth is therefore 0.36 m greater than the pipe diameter. This close numerical relationship is encouraging because it demonstrates that the manufacturer has developed the cross-section around a local depression of broadly the same order as the pipe plus structural build-up, rather than assuming a shallow flat verge.

However, the 0.36 m difference must not be treated as confirmed pipe cover: bedding, pipe wall/crown level, Cellweb layers, overfill and surfacing all consume part of the available depth. Final deliverability should therefore be confirmed by a levelled cross-section stating the existing ditch invert, pipe invert, pipe crown, finished access level and structural cover at the exact crossing.

Taken together, the surveyed variable ditch profile, Stantec's confirmed 71.337 m proposed access level at the 2.4 m driver reference position, the 5% access gradient and Geosynthetics' H = 0.96 m section provide a coherent planning-stage explanation of how the access can be formed predominantly by building up from the existing depression. On the stated 5% geometry, the implied design/tie-in level at the road edge is approximately 71.217 m, with the access then rising by 0.120 m over 2.4 m to reach 71.337 m. These figures support deliverability in principle, but the final pipe invert, structural cover and pavement levels remain subject to site verification and detailed design.

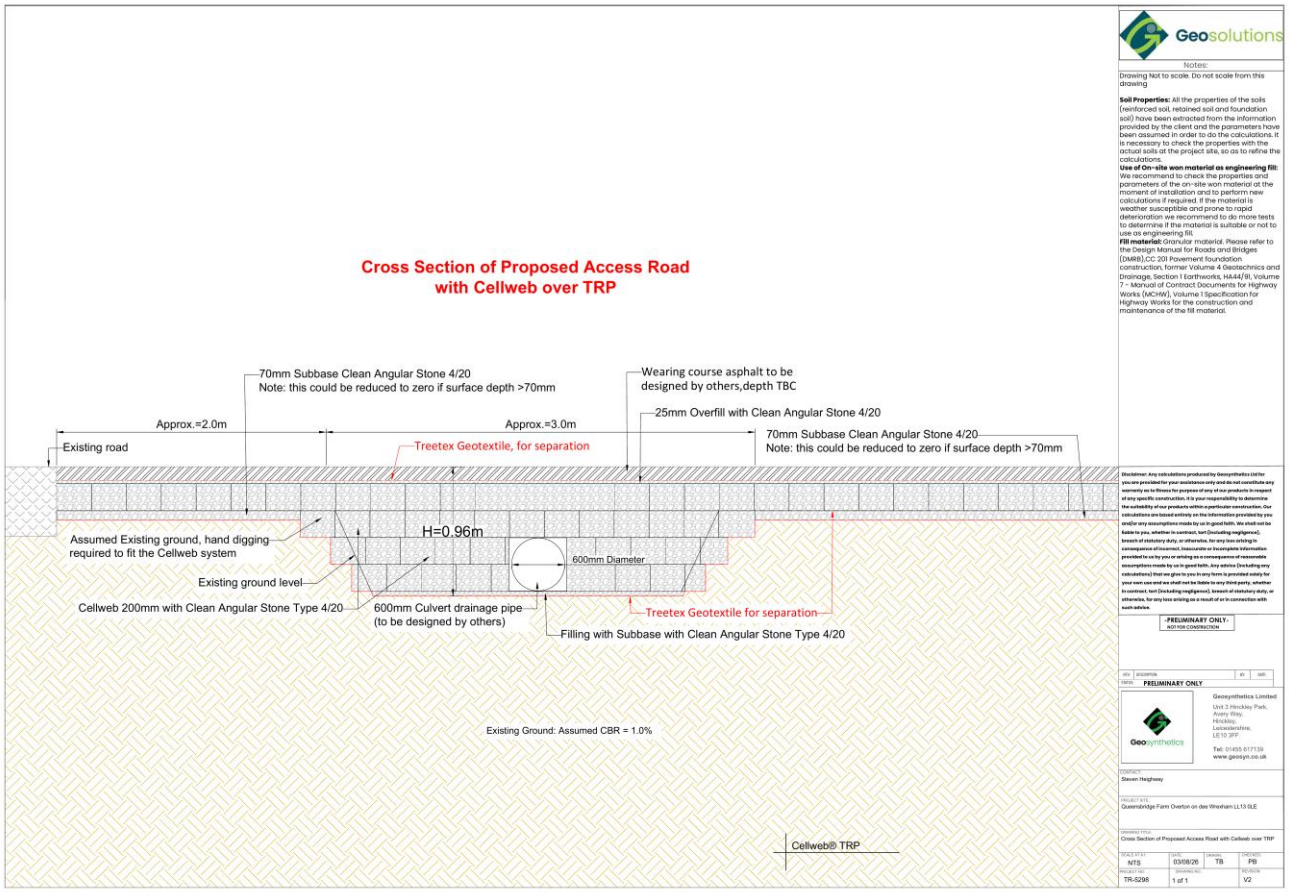


Figure 2 - Geosynthetics TR-5298 V2 preliminary cross-section: 600 mm culvert, Cellweb build-up and indicative H = 0.96 m. Retained as supplied; not for construction.

6. Retained oak adjacent to revised access

The revised access passes within or immediately adjacent to the Root Protection Area of the retained mature oak beside the entrance. The construction in this location is therefore specifically based on a no-dig cellular-confinement solution.

- Existing ground within the identified oak RPA is to be retained.
- No routine topsoil stripping, reduction of levels or root severance is to take place within the RPA.
- Required pavement levels are to be achieved by adding clean material above existing ground and using Cellweb® TRP to distribute loading.
- Any exceptional localised excavation, including works associated with the culvert if it intersects the RPA, must be expressly approved and supervised by the project arboricultural consultant.
- Conventional excavated kerb foundations or drainage trenches are not to be introduced within the RPA unless specifically detailed and arboriculturally approved.
- The final arboricultural documents should plot the oak RPA against the revised access and cross-reference this construction strategy.

This wording intentionally distinguishes the no-dig RPA construction from any localised works outside the RPA. If the culvert or any part of its installation lies within the RPA, the final Arboricultural Method Statement must define the permitted method before construction.

7. Remaining access and car park

Following the first 10 m, the remainder of the green-highlighted access route is proposed as Cellweb® TRP with a permeable TTE™ gravel-infill surface, transitioning into the StrataWeb no-dig / low-disturbance pavement structure within the car park.

The indicative Cellweb® TRP build-up comprises existing ground retained in situ, Treetex™ separation geotextile, cellular confinement panels sized to project loading, clean open-graded 4/20 mm angular stone infill and a permeable upper surface. Local level adjustment is to be achieved by adding suitable clean material above existing ground rather than cutting into the rooting environment, unless specifically approved by the arboricultural consultant.

8. Arboricultural method and construction sequence

1. Set out the final highway access alignment, first 10 m treatment, Cellweb route, culvert crossing, RPA boundary and car-park treatment before works commence.
2. Install tree-protection fencing and any temporary ground protection required by the approved arboricultural documents before construction traffic enters sensitive areas.
3. Verify the existing ditch invert and proposed culvert position/levels at the exact access centreline. Confirm whether any culvert working area intersects the oak RPA.
4. Within the oak RPA, undertake only light surface preparation. Do not strip topsoil, reduce levels or excavate unless expressly approved by the project arboriculturist.
5. Lay Treetex™ separation geotextile directly over the prepared existing ground in accordance with the manufacturer's requirements.
6. Install the culvert using the approved detailed drainage/arboricultural method. Where works are outside the RPA, normal engineered installation may be used; where any work falls within the RPA, the arboriculturist-approved method governs.
7. Expand, secure and fill Cellweb® TRP panels with specified clean angular stone. Do not compact the underlying soil.
8. Install TTE™ block infill to the first 10 m and the approved permeable finish beyond, maintaining the designed access profile.
9. Transition to the StrataWeb/TTE car-park construction in accordance with the detailed pavement design.
10. Record the completed works and obtain arboricultural sign-off at the stages identified in the final AMS.

9. Drainage and permeability

TTE™, Cellweb® TRP and StrataWeb are proposed as permeable systems intended to retain infiltration and natural water/air movement through the soil profile. The 600 mm culvert provides a defined route through the existing drainage depression beneath the access, while the permeable pavement structure reduces the tendency for surface runoff.

The culvert should be described as part of the existing ditch-crossing arrangement, not simply as 'additional drainage capacity'. Its final hydraulic specification, inlet/outlet treatment, invert levels and structural cover should be coordinated with the wider drainage and highway design. Surface water must not be allowed to discharge uncontrolled onto the A528.

No drainage trenching is to occur within the retained oak RPA unless it forms part of an expressly approved arboricultural working method.

10. Coordination with highway design

The root-protection and drainage design must not inadvertently alter the finished levels relied upon by Stantec. The final detailed pavement build-up should therefore be checked against Stantec drawing 332613092/100/005 P03 (or its superseding final revision).

- Final access alignment to match the Stantec/Matt coordinated layout.
- Finished levels to remain consistent with the Stantec long section and 600 mm vertical visibility assessment.

- The first 10 m TTE treatment to be confirmed by the highway consultant as satisfying the required stable/bound entrance treatment.
- Drainage/culvert works to avoid uncontrolled runoff to the highway.
- Any manufacturer-driven change in Cellweb depth is to be absorbed within the build-up without changing the agreed highway geometry unless rechecked by Stantec.

11. Loading and site-specific verification

The earlier design assumptions included construction traffic up to approximately 30 tonnes, with maximum axle and wheel loads of 100 kN per axle and 50 kN per wheel. These assumptions should be confirmed against the final construction traffic requirements.

Geosynthetics drawing TR-5298 V2 uses an assumed existing-ground CBR of 1.0% and expressly states that actual soil properties should be checked. For planning purposes this is an indicative/conservative design assumption used to demonstrate the construction principle. Prior to commencement, site-specific CBR testing should be undertaken to finalise cellular depth, aggregate grading, geotextile requirements and structural build-up.

The pre-construction CBR and engineering verification should be framed as detailed design rather than as a prerequisite to establishing the planning principle. The final detailed design must retain the no-dig requirement within the oak RPA and the finished access levels used for the highway visibility assessment.

12. Conclusion

The revised access and parking strategy provides a coherent planning-stage solution combining a stable permeable highway interface, no-dig root protection, cellular load distribution, retention of the mature oak and accommodation of the existing roadside drainage depression.

The site-specific evidence now aligns in a useful way. Stantec shows a proposed access level of 71.337 m at the driver reference position 2.4 m back from the road edge and Stantec has confirmed a 5% access gradient to that point. That geometry equates to a 0.120 m rise over 2.4 m and therefore an indicative design/tie-in level of approximately 71.217 m at the road edge. The topographical survey confirms a variable roadside/ditch profile, while Geosynthetics' preliminary cross-section independently illustrates a 600 mm culvert within an indicative 0.96 m local section. Those elements are mutually consistent with a construction approach based primarily on filling/building upwards rather than cutting down through the rooting environment.

The evidence does not remove the need for final setting-out, pipe-cover design, CBR verification or arboricultural approval of any localised works. Instead, it demonstrates that there is a credible and coordinated route to detailed design without changing the principle of the revised access.

Subject to those final professional checks, the proposed methodology is considered capable of delivering the revised access at the agreed highway alignment and levels while protecting retained trees, preserving permeability and maintaining the environmental function of the site.

13. Technical references

- Geosynthetics Ltd - TTE™ (Total Traffic Exopave™).
- Geosynthetics Ltd - Cellweb® Tree Root Protection.
- Geosynthetics Ltd - Cross Section of Proposed Access Road with Cellweb over TRP, drawing TR-5298 V2, preliminary.
- The Survey House Ltd - Topographic Site Survey, drawing 25017-25-01, survey date 08/01/2025, scale 1:500.
- Stantec - Queensbridge Farm, Overton, Site Access Visibility Splay, drawing 332613092/100/005 P03, dated 01/09/2026.
- BS 5837:2012 - Trees in relation to design, demolition and construction.