

JBA Project Code	2026s0324
Contract	Steyne Gardens, Worthing (Arboriculture) 2026
Client	Hemiko – Daniel Reynolds
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Subject	Assessment of HDD Installation in Relation to BS5837:2012 Trees in Relation to Design, Demolition and Construction

1 Purpose of Note

This technical note provides an arboricultural review of the proposed Horizontal Directional Drill (HDD) alignments for the next phase of works in Steyne Gardens, Worthing. The assessment evaluates the HDD proposals with specific reference to BS5837:2012 – Trees in relation to Design, Demolition and Construction, with the aim of safeguarding the long-term retention of trees on the site.

The drilling contractor has prepared detailed pit-to-pit profiles indicating drill depths, entry/exit pit locations, and bore curvature. This note sets out the arboricultural parameters used to evaluate those profiles, identifies areas of potential concern, and provides clear criteria for approving or adjusting the HDD methodology from a tree-protection standpoint.



Figure 1 Illustration of route from Heat Exchange to pit location in park.

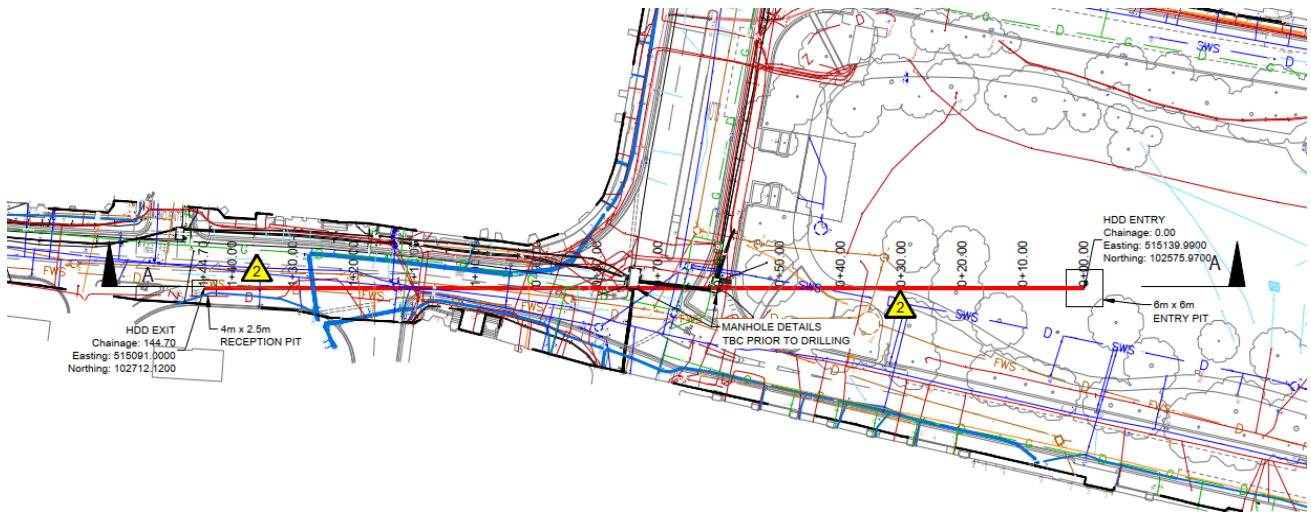


Figure 2 Screenshot taken of Plan Section (Drawing Ref: C384-JGL-HDD-XX-DR-C-001001)

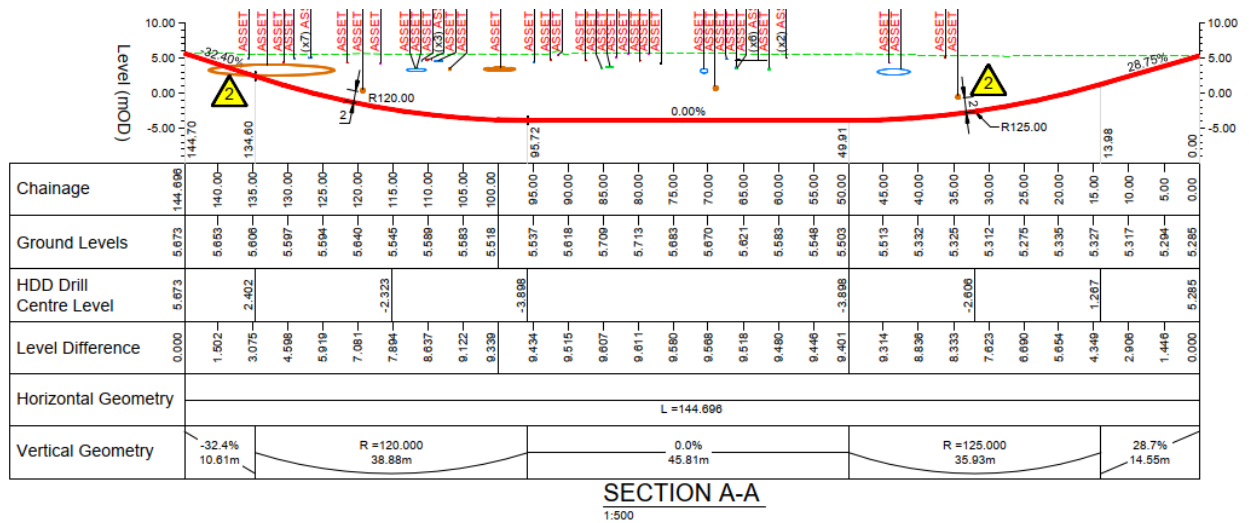


Figure 3 Screenshot of Vertical Section (Drawing Ref: C384-JGL-HDD-XX-DR-C-001001)

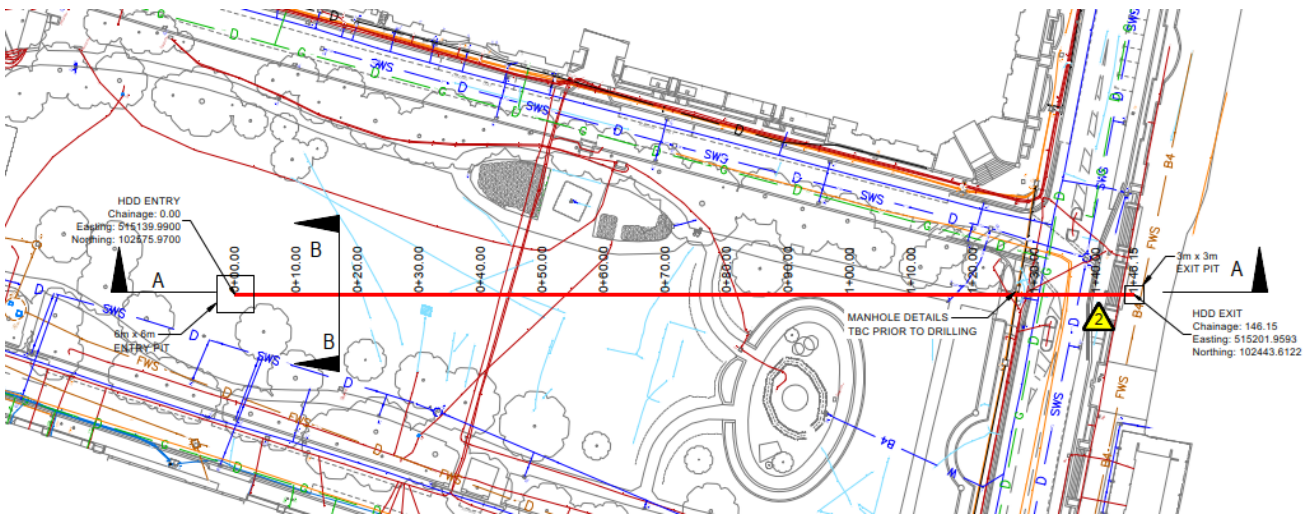


Figure 4 Screenshot taken of Plan Section (Drawing Ref: C384-JGL-HDD-XX-DR-C-002001)

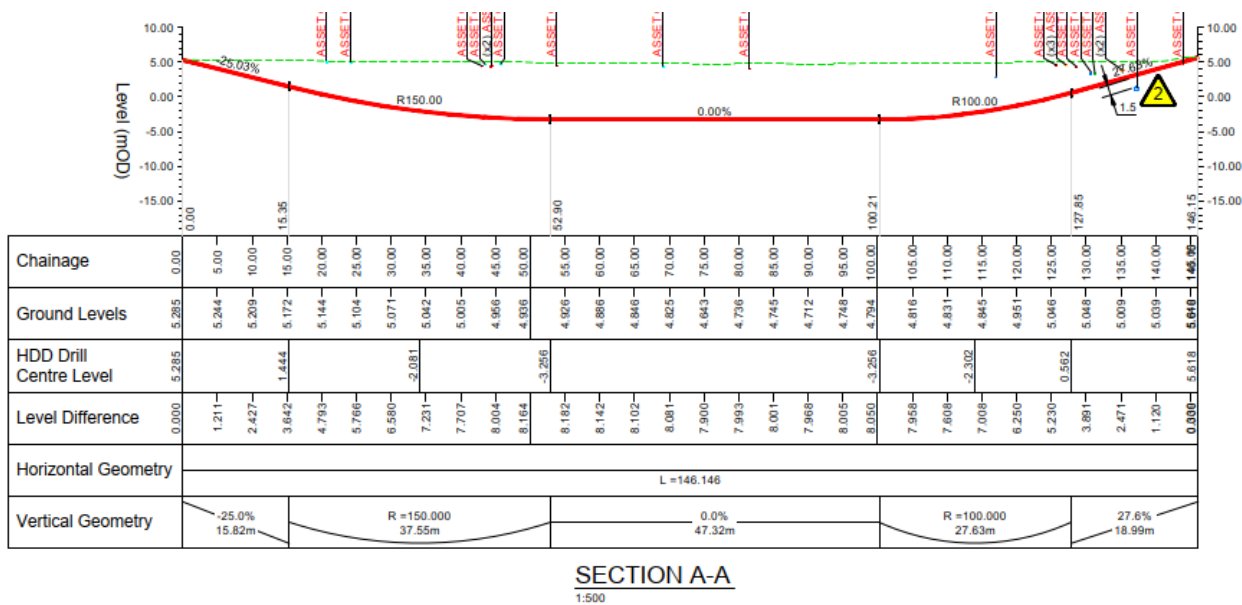


Figure 5 Screenshot of Vertical Section (Drawing Ref: C384-JGL-HDD-XX-DR-C-002001)

2 Summary of HDD Method in Relation to Trees

HDD is generally considered a low-impact installation technique for installing underground services within treed environments. Unlike open-cut trenching, HDD allows the route to pass beneath Root Protection Areas (RPAs) without excavation, significantly reducing the likelihood of severing structural and functional roots. On this basis its use is supported where avoiding the intrusion into the theoretical RPA is not practical.

When designed appropriately, HDD typically poses minimal risk because:

- The drill depth places the bore well below the rooting horizon, avoiding direct mechanical root damage. The steerable drill head can also be controlled to maintain a safe depth beneath sensitive rooting zones.
- Surface disturbance is confined to discrete pits, rather than long, linear open trenches which often requires root severance or exposure resulting in desiccation.

However, the method is not risk/ impact free to tree stock and due consideration must be given to:

- Entry/exit pits where works occur within or adjacent to RPAs.
- Drill path geometry where the bore rises or falls beneath rooting zones.
- Logistical requirements, including plant operation, working space and storage of arisings, which may encroach on RPAs.
- Potential for indirect impacts such as ground heave, settlement, or drilling fluid escape (frac-out).

3 Depth Parameters and Rooting Considerations

Based on the current design intent:

- The Drill depth at lowest point: approx. 8–10 m below ground level (bgl).
- Exit depth into pit: approx. 1.2m bgl.

In arboricultural terms:

- BS5837 and modern arboricultural knowledge recognises that most tree roots occur within the top 600 mm, down a typical depth of 900mm, with occasional structural roots extending to 1–1.5 m depending on soil conditions.
- Even on free- draining soils, roots are seldom found below 2m bgl.
- At the typical 8–10 m depth, the drill path is well beyond the functional rooting zone of any tree species likely to be present on site.
- The only arboriculturally sensitive zone is therefore the transition zone where the drill path rises into or out of pits located within or adjacent to RPAs.

Implications:

- Direct root damage is not anticipated from HDD at the deeper sections of the bore.
- The potential for harm exists only at the shallowest sections of each alignment near the pits, where the drill path horizon may intersect the uppermost rooting areas.

4 Assessment Requirements for Pit Locations

To account for the potential for harm at the shallowest sections of each alignment near the pits, the following checks must be applied:

- Pit footprint vs. RPA: Confirm whether any pit encroaches into the calculated RPA of retained trees.
- Depth of cover over drill head: Ensure the drill head remains below the anticipated rooting depth until clear of the RPA.
- Angle of ascent/descent: Steeper angles can bring the drill path closer to the rooting zone; a minimum cover of >1.0 m beneath RPAs is typically acceptable where ground conditions allow.
- Working room: Confirm that plant access, spoil storage, and welfare do not require encroachment into RPAs without appropriate mitigation.
- Tree category: Higher scrutiny will be applied to Category A and B trees; limited encroachment may be deemed tolerable for Category C trees.

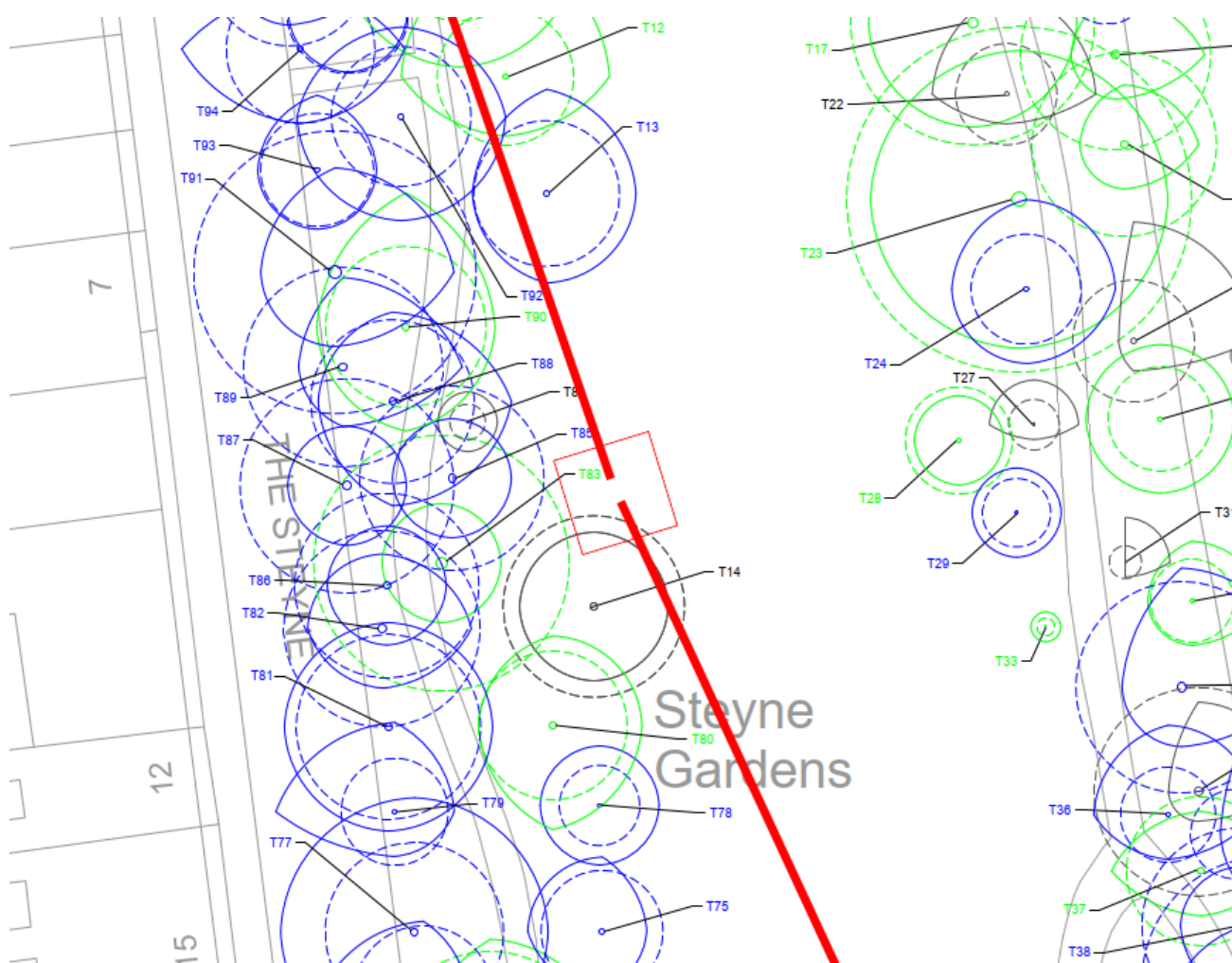


Figure 6 Tree Protection Plan with HDD route annotated

5 Risk Assessment of Potential Impacts

Based on the information provided to date, the risk of significant root damage is considered low, subject to confirmation of the following prior to commencement of works on site:

- No open excavation within RPAs unless previously agreed and supervised.
- Drill path remains below 1.0–1.2 m until fully outside RPAs.
- No inadvertent surface disturbance from drilling operations (e.g., frac-outs, settlement).
- Pits in the Gardens to be reviewed in detail due to proximity to mature trees and the rising drill angle.

6 Recommended Controls and Mitigation

Before Works

- Arboricultural review of final HDD profiles prior to works commencing.
- Protective barriers installed in accordance with BS5837 Figure 2.

During Works

- Arboricultural supervision for any excavation within RPAs.
- Use no-dig ground protection for machinery where proximity to RPAs is unavoidable.
- No storing spoil or materials within RPAs
- A pre-agreed response for Emergency procedure for drilling fluid escape (frac-out) within sensitive areas (to be agreed with HDD contractors).

7 Conclusion

Based on the current design intent, the HDD methodology is compatible with the retention of trees on site and aligns with the principles of BS5837:2012. The planned drill depth (8–10 m) is significantly deeper than any realistic rooting depth, providing a substantial and robust buffer against direct mechanical root damage.

The only arboriculturally sensitive components are the pit locations and the pit interfaces and drill ascent/descent angles require detailed arboricultural scrutiny where the bore rises toward the surface. With appropriate design confirmation and standard BS5837 controls in place, the risk to retained trees is considered low, and the HDD technique is acceptable from an arboricultural perspective.