4 Vinci Ringway Capital Scheme Proposals

4.1 Duver Road, St Helens

Current Defects

4.1.1 Sub-standard bridge deck and edge restraint with some loss of ground by washout, which is exposing the pile support.

Proposed Solution

4.1.2 Figure 4.1 illustrates Vinci Ringway's proposed solution, an A3 version of which can be found in Appendix V. The solution can be summarised as follows:

- Complete structural replacement with new piles supporting a new slab;
- Improved edge capacity, edge restraint;
- Cosmetic facing to the remaining void beneath the deck; and
- Short section of sheet piling to low embankment to the west.

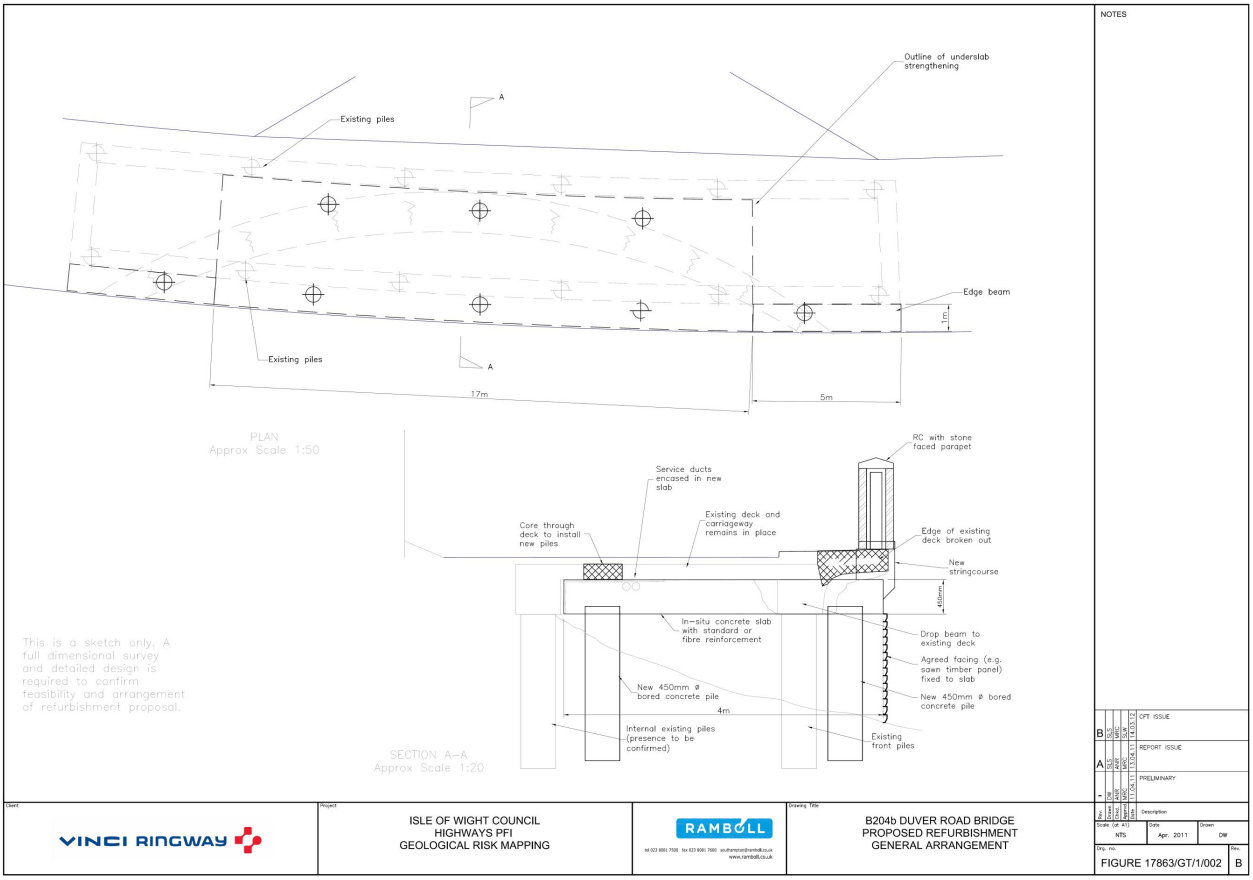

Figure 4.1: Proposed engineering solution at Duver road

4.2 Undercliff Drive Area B, Ventnor

Current Defects

4.2.1 Tension cracking and differential settlement of the road surface caused by creep movement of the existing landslide complex. Rotational slip failures occurring on the road surface instigated by rainfall events. Multiple surface repairs are evident and repaired slip movements have led to unsafe steep changes in gradient over short lengths.

Proposed Solution

- Ground anchors at scarp edge;
- Soil nails with flexible facing system on lower south scarp slope; and
- Adjust road vertical alignment with no net increase in load.

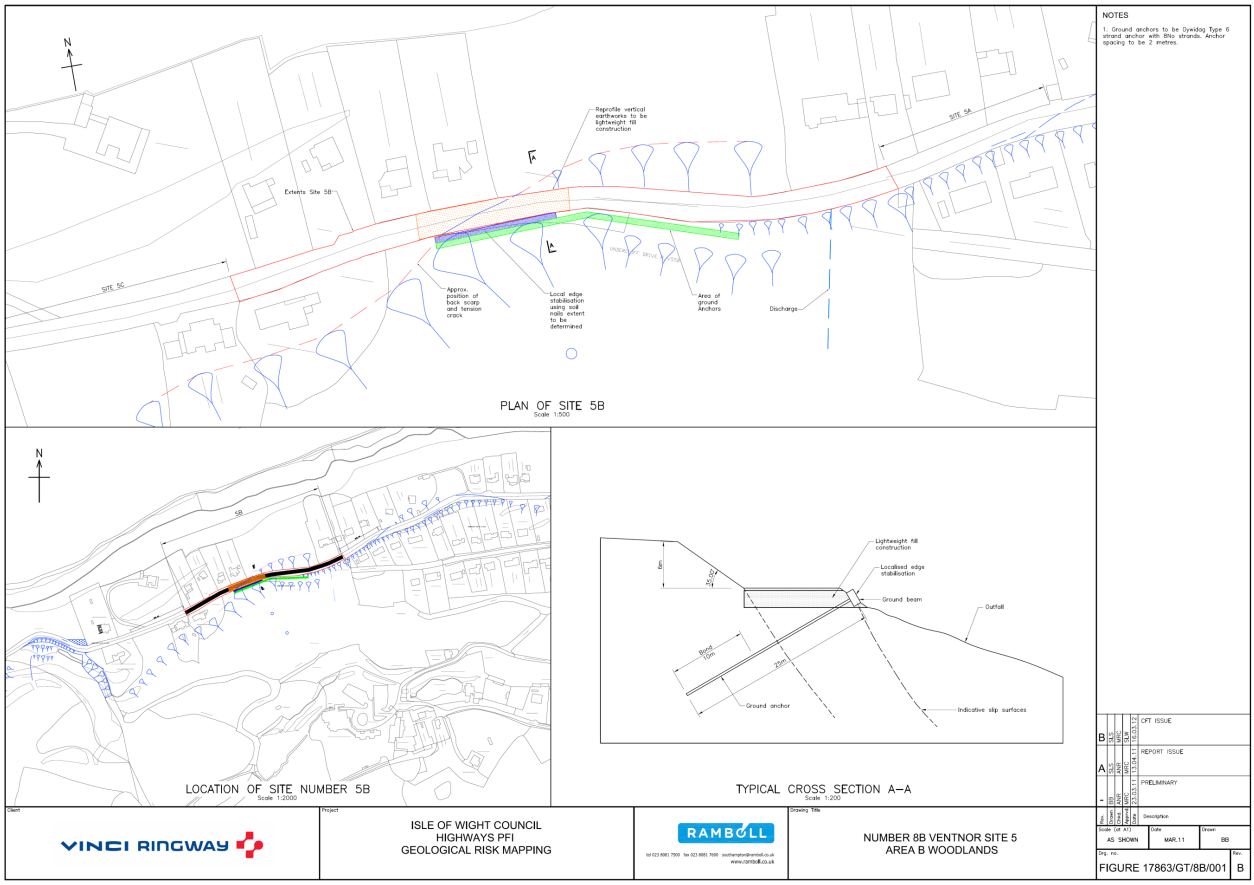

Figure 4.2: Proposed engineering solution at Undercliff Drive Area B

4.3 Undercliff Drive Area C, Ventnor

Current Defects

4.3.1 Tension crack along length of westbound carriageway caused by creep movement of the existing landslide complex. The tension crack is adjacent to a scarp slope on the seaward/downslope side of the road. Adjacent land also shows signs of localised depression and differential movement.

Proposed Solution

- Ground anchors on seaward scarp slope in front of westbound carriageway tension crack;
- Soil nails with flexible facing system on local scarp slope in association with ground anchors; and
- New pavement in area damaged by cracking.

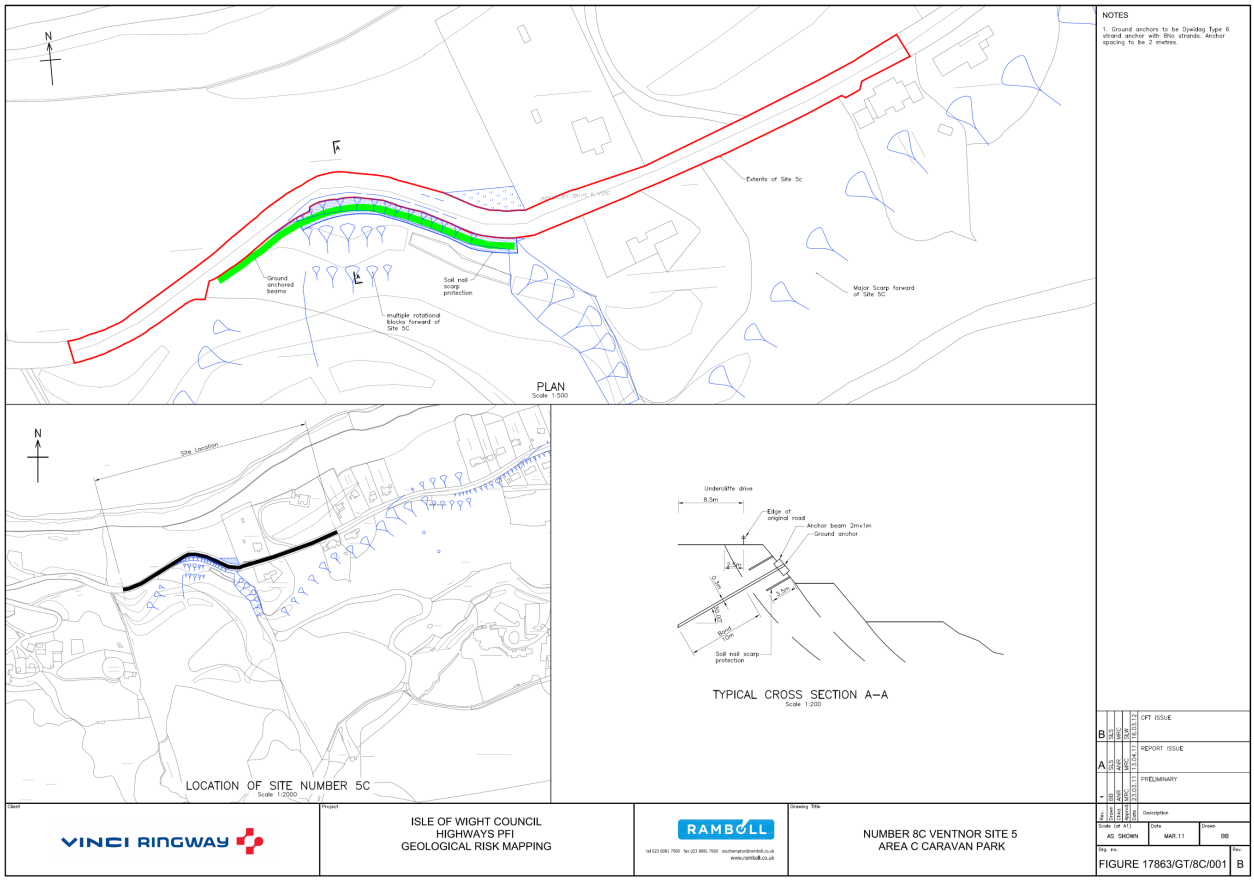

Figure 4.3: Proposed engineering solution at Undercliff Drive Area C

4.4 Undercliff Drive Area D, Ventnor

Current Defects

4.4.1 Multiple cracks in the road and a differential "bump". The southern side of the road is supported by a dry stone wall and there are localised bulges in the dry stone wall associated with cracks in the road. Repeated resurfacing works to repair cracks in the road are evident.

Proposed Solution

- Reprofiling for 50 metres across the differential bump involving excavation and reconstruction of pavement foundation with a geogrid reinforced compliant road foundation;
- Future resurfacing interventions to repair small scale crack damage; and
- Assess dry-stone wall and make good as appropriate maintaining current form and appearance.

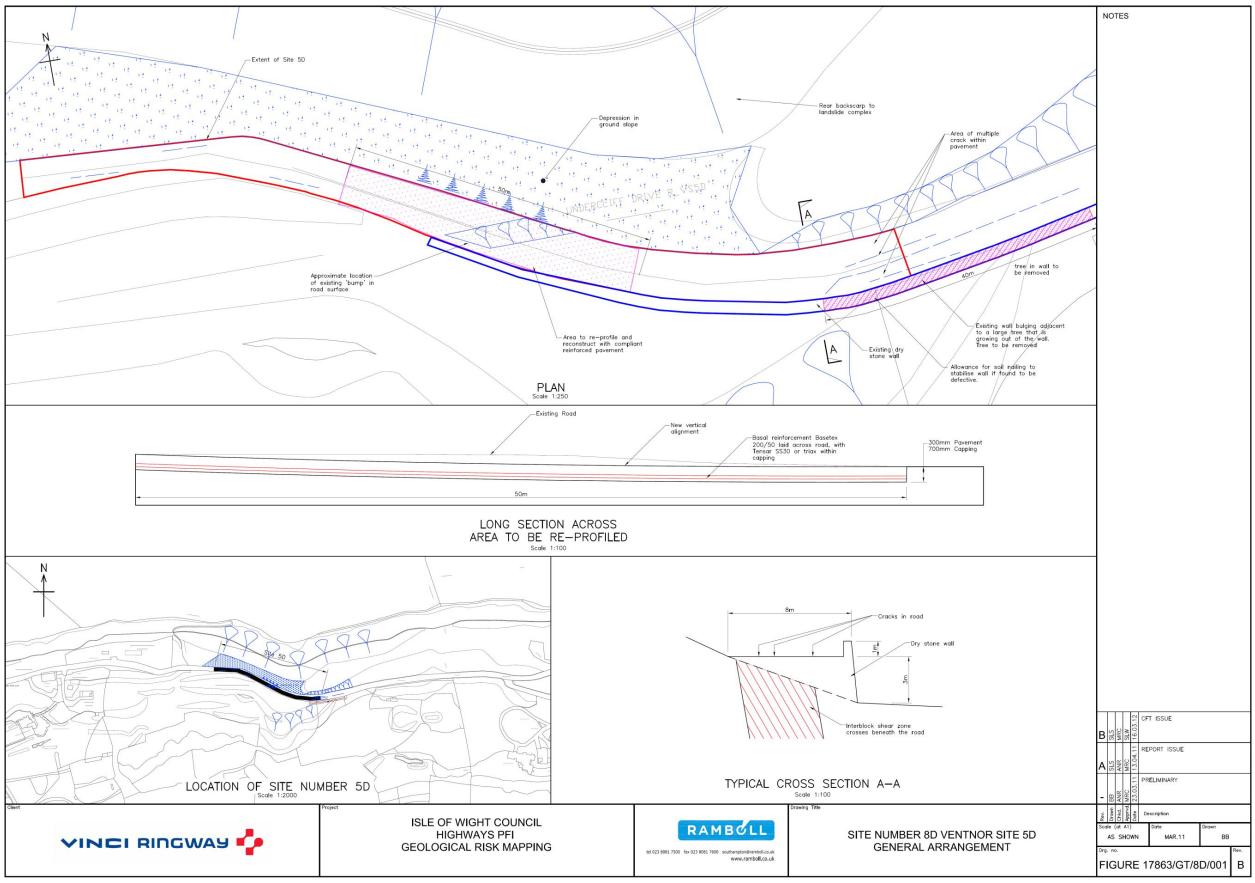

Figure 4.4: Proposed engineering solution at Undercliff Drive Area D

4.5 Military Road, Brook Chine

Current Defects

4.5.1 Coastal landslip has regressed back close to the road leading to lane closure.

Proposed Solution

- 16 metre span pile-supported temporary steel bridge deck, pre-installed in path of regressing landslide; and
- Incorporation of effect of drainage recently installed by Isle of Wight.

Scope of Work

4.5.2 Construction of a 16 metre clear span bridge deck carried on eight 750mm diameter piles. The construction will be a temporary modular steel bridge superstructure comprising multiple side-by-side units, consisting of rolled steel universal beam section longitudinal girders with rolled steel transverse beams and stringer beams. Construction depth will be approximately 850mm. The superstructure will be founded on simple beam abutments, carried on piles. The superstructure will be designed to be removable, and the sub-structure will be removed once exposed by coastal regression or development of the incised gulley feature (chine) in this area.

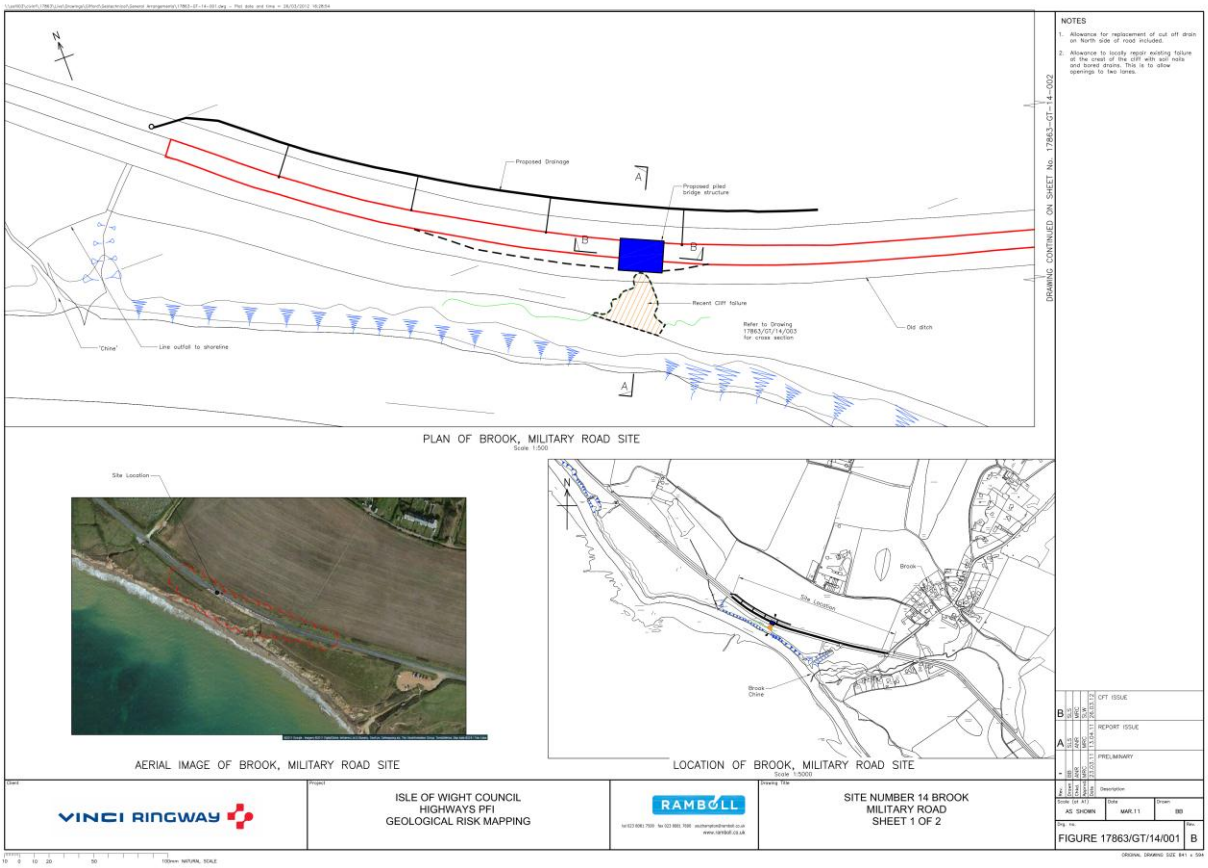

Figure 4.5: Site map of proposed engineering solution at Brook Chine, Military Road

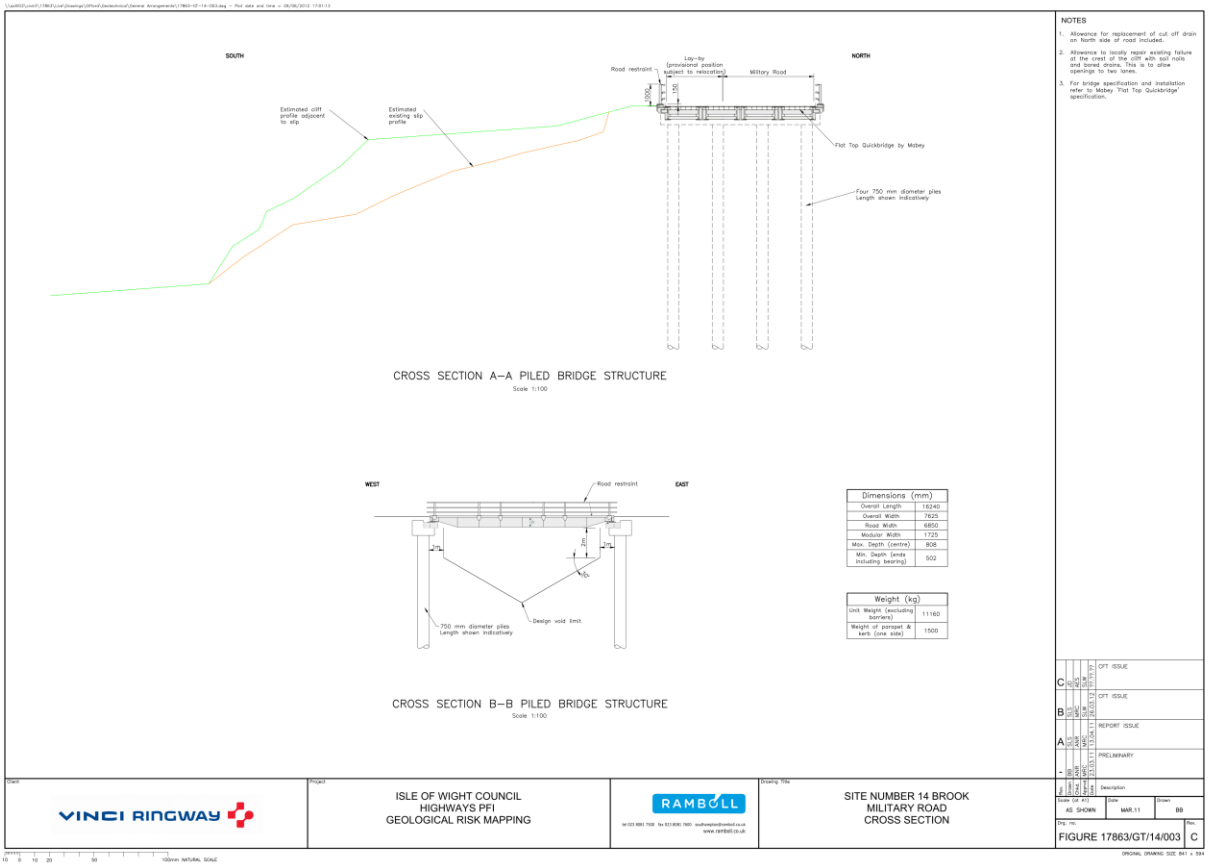

Figure 4.6: Proposed engineering solution at Brook Chine, Military Road

4.6 Military Road, Shippards Chine

Current Defects

4.6.1 None to road but threatened by rate of retreat.

Proposed Solution

- A 16 metre span, pile-supported bridge deck pre-installed in path of regressing landslide. Bridge and piles to be removable.

Scope of Work

4.6.2 The initial approach will be to monitor and maintain this stretch of the highway. Once coastal regression develops sufficiently to require an engineering intervention then, as with Brook Chine, it will comprise construction of a 16 metre clear span bridge deck carried on eight 750mm diameter piles. The construction will be a temporary modular steel bridge superstructure comprising multiple side-by-side units, consisting of rolled steel universal beam section longitudinal girders with rolled steel transverse beams and stringer beams. Construction depth will be approximately 850mm. The superstructure will be founded on simple beam abutments, carried on piles. The superstructure will be designed to be removable, and the sub-structure will be removed once exposed by coastal regression or development of the incised gulley feature (chine) in this area.

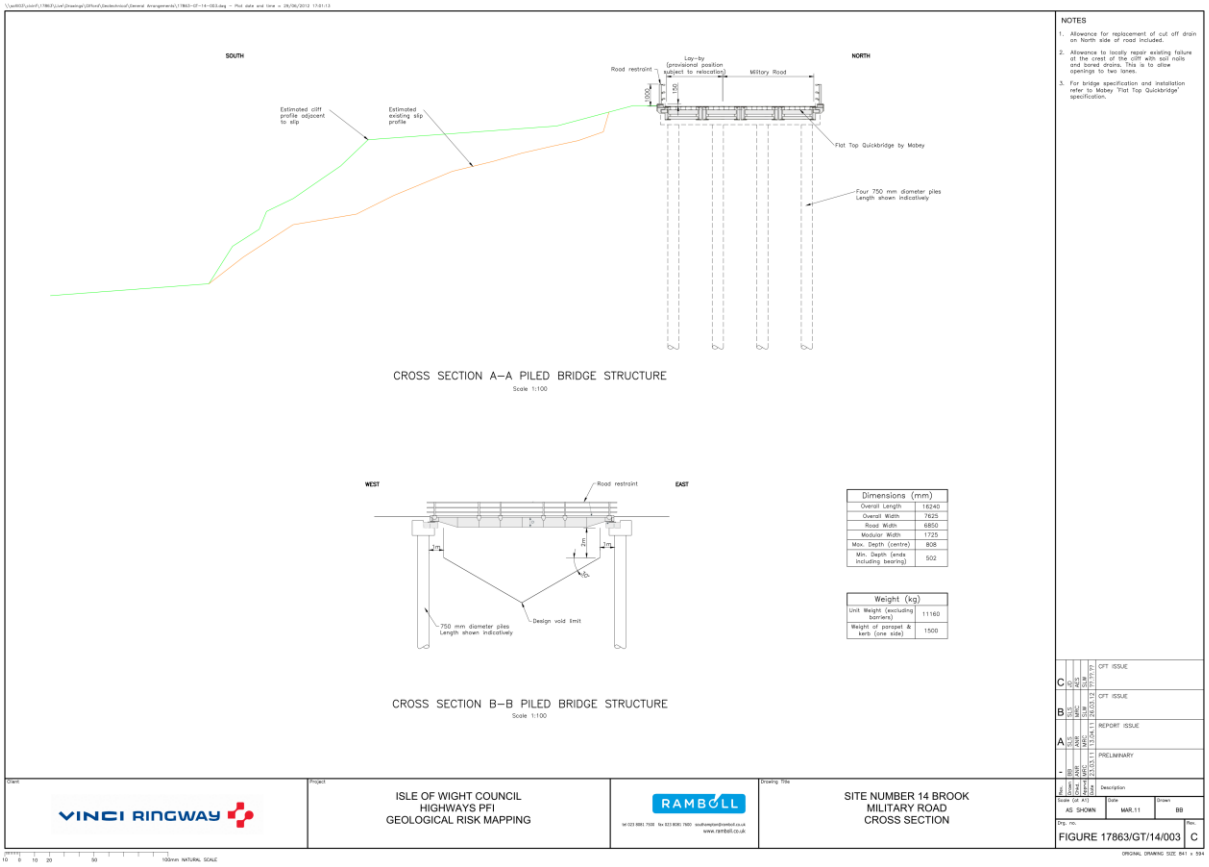

Figure 4.7: Proposed engineering solution at Shippards Chine, Military Road

4.7 Bouldnor Road, Yarmouth

Current Defects

4.7.1 Cracking and undulation of carriageway due to general down slope creep on coastal slope, with local larger instability events, and possible deficient road foundation/construction.

Proposed Solution

- Heavy sheet pile wall (Arcelor AZ37-700 currently proposed) over majority; and
- Soil nails to embankment west of wooded area.

Scope of Work

4.7.2 As stated by Vinci Ringway:

"The work has been divided into two phases to avoid disruption during the summer season and the December to July bird wintering and nesting seasons. However, this leaves an effective maximum working period of two months per annum. Clearly with these constraints it will be difficult to comply with the completion milestone requirement for the project."

4.7.3 It is important to note that the time constraints identified in Chapter 3 in relation to the SPA/Ramsar bird assemblage indicates that restrictions on the working method for the scheme

should be imposed at times of year when bird populations of the SPA are most likely to be adversely affected (i.e. between July and March). Other nesting birds not protected by the SPA/Ramsar may also be affected if works are carried out during spring and early summer (April to June); these will need to be assessed separately.

4.7.4 The construction periods listed below are taken directly from Vinci Ringway's proposal, however, Vinci Ringway acknowledges that they do not comply with the time constraints described above, but instead have been based on achieving the specified completion milestone. Vinci Ringway proposes to enter into to negotiation with all stakeholders to formulate a strategy to construct the works in the least disruptive way.

Phase 1

4.7.5 Install sheet pile along crest of slope to stabilise carriageway. Install soil nails at western end of slope to stabilise slope and carriageway. Proposed construction period: October 2013 – March 2014 (28 weeks).

Phase 2

4.7.6 Footway widening, carriageway strengthening / reconstruction and new drainage. Proposed construction period: October 2014 – December 2014 (12 weeks).

Sheet Piling

4.7.7 The sheet piles will be installed using silent piling techniques – also known as the "press-in" method, and initial discussions with specialist installers have confirmed the viability of this method. The piling rig uses the previously installed piles as the reaction stand to install the next piles. Once mobilised and started this will continue until all piles are installed. Piles will be driven to 15m depth. Every eighth sheet pile will not be driven to full depth in order that the ground water flow regime is not seriously impeded.

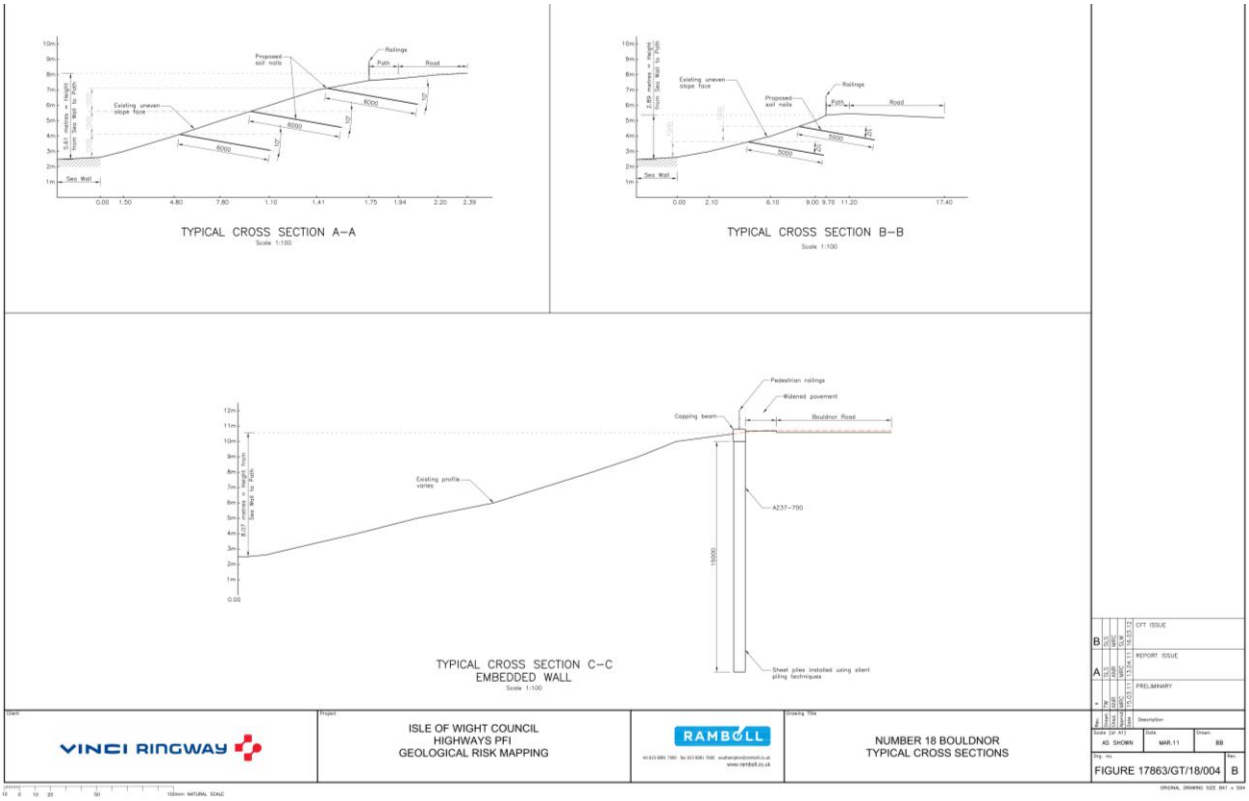

Figure 4.8: Proposed engineering solution at Bouldnor Road, Yarmouth