East Cape Consulting Limited

111 Avenue Road East

Hastings 4122

Memorandum

7 October 2025

To: Daniel Thorne daniel@townplanning.co.nz

4663 STATE HIGHWAY 6, PUNAKAIKI DEVELOPMENT

ACCESS OPTIONS DESIGN STATEMENT

1. Scope

East Cape Consulting (ECC) has been engaged to provide access design advice for an accommodation development proposed at 4663 State Highway 6 (SH6), Punakaiki.

The site location is identified by the orange roof shown by Figure 1 below.

Figure 1 – Proposed Development Location

Initial traffic engineering advice suggested that a Diagram D layout, as described by Appendix 5B – Accessway standards and guidelines[1], provides an appropriate access solution taking into account the expected traffic volumes.

[1] Transit Planning Policy Manual version 1 Effective from 1 August 2007

Subsequent consultation with the New Zealand Transport Agency (NZTA) determined that this option is soon to be discontinued (although no timeframe has been provided). Accordingly, NZTA requested a Diagram E layout.

Upon further analysis the project team agreed to investigate two options; the Diagram E layout and a rural right turn bay layout[2]. The three treatments are presented below as Figure 2 for ease of reference.

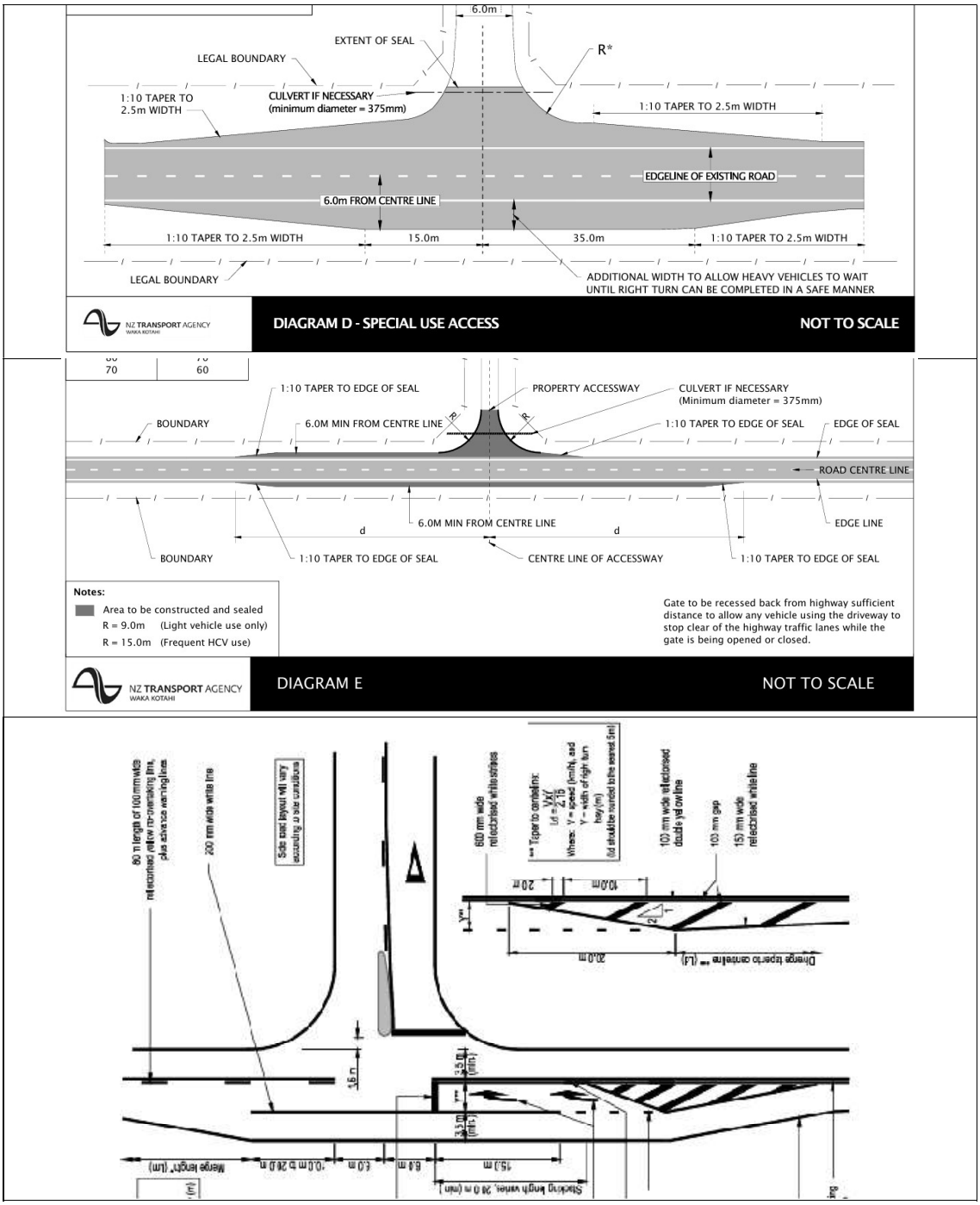

Figure 2 – Access Options Overview (Top to Bottom: Diagram D, Diagram E and Rural Right Turn Bay)

[2] Defined by MOTSAM (Manual Of Traffic Signs And Markings). Diagram extracted from MOTSAM Figure 3.25.

To aid in the preparation of both design options, Tom Tom speed data was acquired. This shows an 85th percentile speed along this part of SH6 to be 75 km/h. An 80km/h design speed was therefore adopted for both design options.

Due to a steep hill opposite the site access, it was agreed that widening should occur on the site side of SH6. The existing shoulder is relatively narrow and any widening on the site side of SH6 will require a retaining wall. This approach is likely to involve a larger retaining wall but avoids embankment trimming required if widening is undertaken on the opposite side to the site.

2. Diagram E Layout

A Diagram E layout involves widening of the road around the access to 6m on each side (12m total sealed width) to provide shoulders that allow informal passing.

Achieving a Diagram E layout at this location requires significant road geometry modification, including reprofiling and superelevation adjustments on three separate curves. This would necessitate a full-width reconstruction over a greater length than indicated by the nominal 140 m treatment footprint.

Due to the existing road geometry, the only way to provide the required widening is to modify the geometry of the corners to the immediate north and south along with the curve where the access is located.

To the south the existing radius can be extended further north (i.e. most of the curve remains unchanged). To the north, the existing curve is too close and needs to be shifted further north. By these methods a new (higher radius) curve can fit in between to keep all widening on the west side of SH6.

Extending the southern curve requires full width road reprofiling, which is likely to extend beyond the extent of centreline remarking, to ensure the superelevation remains consistent.

Moving the northern curve further north requires full width road reprofiling, which will extend north along the straight to develop the superelevation in advance of the curve. This ensures an appropriate road geometry.

In the middle, the curve at the existing access needs a higher radius to achieve the required alignment. This means the existing superelevation is likely to be too high to provide a consistent speed environment. Therefore, this curve will require full width road reprofiling to apply a new superelevation design.

Overall, the Diagram E layout is likely to require a full width road reconstruction that extends further north and south than the 240m (approximately) shown by Figure 3 below (larger scale drawing attached).

Figure 3 – Proposed Diagram E Layout

3. Right Turn Bay Option

Due to the extensive road reprofiling that is likely to be required to achieve a Diagram E layout a conceptual right turn bay was also designed.

Because the existing curves can be retained and only minor superelevation adjustments are likely to be required, the right-turn bay can be implemented with significantly less disruption to the existing road corridor. The resulting treatment is safer for all road users by removing turning vehicles from the through lane, thereby reducing speed differentials and rear-end crash potential.

With a right turn bay the southbound lane remains unchanged and the widened area provides the bay and northbound lane. Therefore, the southbound lane is likely to remain unchanged, with no reprofiling required. Figure 4 shows the right turn bay layout (larger scale drawing attached).

Figure 4 – Proposed Right Turn Bay Layout

The extent of road marking is about 280m however, this is likely to also be the full extent of work as existing curve radii (to the south, to the north, and at the site access) can all be retained. The superelevation for each curve can likely be extended on the existing grade, which dramatically reduces the extent of work (even though the right turn bay extends further north and south than the Diagram E widening will).

For these reasons, a right turn bay is recommended. This is considered a higher-order access treatment than a Diagram E widening because it provides a dedicated deceleration and storage lane for right-turning vehicles, full physical separation between through and turning traffic, and clearer lane guidance for opposing movements.

This reduces the risk of rear-end and head-on crashes and improves network efficiency at higher operating speeds. Diagram E only provides widened shoulders to facilitate informal passing, whereas the right-turn bay meets the full treatment hierarchy for rural accesses.

For these reasons, the rural right turn bay is recommended as the preferred access treatment. It provides a safer, higher-order solution that reduces crash risk, improves traffic flow, and can be delivered with significantly less road reconstruction and construction disruption than a Diagram E widening.

Attachments:
Drawing number 24-0162-04A-SHT1 (MOTSAM RURAL RIGHT TURN BAY)
Drawing number 24-0162-05A-SHT1 (DIAGRAM E WIDENING FOR 80KM/H)

End