

Appendix C

Construction Area

Requirements

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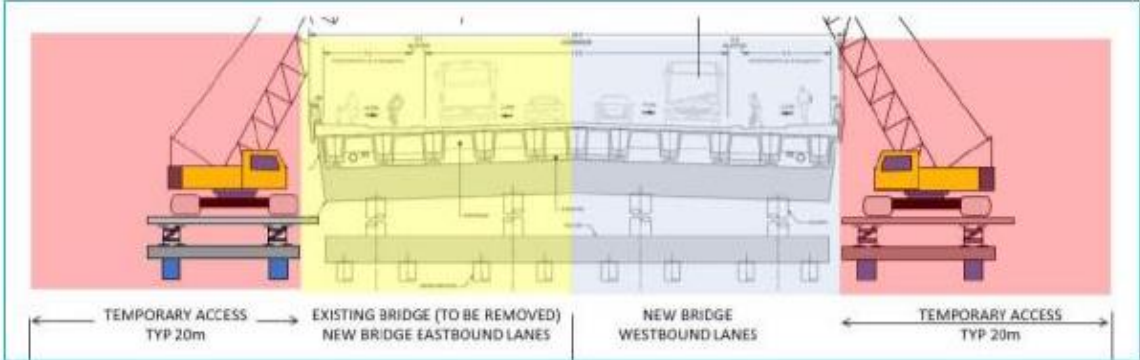
Appendix C – Construction Area Requirements

Typical areas required for construction have been identified and applied to inform the proposed designation boundaries of the North Projects NoRs. These offsets and typical construction areas have been based on transport infrastructure projects which are similar in size and nature. The table below sets out the main elements and the corresponding general parameters used to initially define work areas, and subsequent designation boundaries.

However, site specific constraints and the rationalisation of impacts on properties mean the designation boundary does not exactly follow the guidance parameters in all instances. In these instances, the standard design parameters are altered in order to best address constraints, whilst at the same time seeking to still align with general parameters as closely as possible. This approach is called 'constraints-led design'.

Table 0-1: Guidance on Typical Construction Areas

Construction Element	Typical Area for Construction
Construction of batter slopes:	<ul style="list-style-type: none"> • Rural: 6m from earthworks batter slopes (moderate earthworks batters). • Urban: 2m from earthworks batter slopes (minimal earthworks batters). <p>For larger earthworks projects, the construction areas will differ significantly to account for the larger plant and equipment likely to be used, construction methodology and temporary works such as haul roads and sediment retention ponds. Typically, 20m from the earthworks batter slopes.</p>
Bridge construction:	<ul style="list-style-type: none"> • Abutments: 20m either side of bridge, 40m (minimum) behind each abutment ends. • Piers: 20m either side of bridge, 10m longitudinally next to the piers. • Deck: 20m x 45m for crane pad and access for bridge beams. <p>Generally, the design has enabled either a bridge or culvert, with the form to be identified at regional consent stage, unless identified in the AEE as necessary to address effects on the environment.</p> <p>The bridge construction method shall typically follow conventional bottom-up bridge construction techniques. Once the bridge structure is complete, the temporary staging and access ways can be removed. See Figure 0-1 below for typical bridge construction area.</p>

Construction Element	Typical Area for Construction
<p>Figure 0-1: Typical new bridge construction area</p>  <p>The diagram illustrates a bridge construction site. It shows a central section where the existing bridge is being removed and new bridge lanes are being constructed. The new bridge lanes are divided into 'NEW BRIDGE EASTBOUND LANES' and 'NEW BRIDGE WESTBOUND LANES'. On either side of the central construction area, there are 'TEMPORARY ACCESS' zones, each labeled 'TYP 20m'. Two yellow cranes are positioned on the temporary access areas, one on each side, facing the central construction zone. The existing bridge structure is shown in a light blue color, while the new bridge lanes are shown in a light yellow color.</p>	
<p>Retaining Wall construction:</p>	<ul style="list-style-type: none"> Retaining walls up to 5m high (e.g. timber or blockworks): Depending on the retained height, typically retained height plus 1m clearance area outside of wall (away from centreline) for smaller walls up to 5m in height. Large retaining walls (e.g. secant pile or sheet pile): Typically, 15m outside wall (away from centreline) depending on type of wall, retained height and topography for larger walls higher than 5m. <p>Retaining structures are generally located near the project boundary to overcome overspill of earthworks batters or at the bridge abutments. Typically, retaining walls are constructed of Mechanically Stabilised Earth walls to contain fill embankments and piled retaining walls and soil nails to retain cut batters.</p> <p>The working area required to construct the retaining walls will largely depend on the design and size of the wall.</p> <p>The specific design will be defined in the future detailed design stage.</p>
<p>Stormwater treatment construction.</p>	<ul style="list-style-type: none"> Ponds: 6m around for access and environmental controls. Diversion drains / Overland Flow Path (OLFP): 6m from the diversion drains / OLFP. Culvert headwalls and scour protection: 6m across and 10m longitudinally around the culvert headwalls. <p>New stormwater drains will likely be required on both sides of the proposed corridors. These will connect to the new stormwater wetlands. Additionally, new discharge lines are required from</p>

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	<p>the proposed stormwater wetlands to a suitable discharge point.</p> <p>The size of the working area will vary depending on the size of culvert being installed, the topography of the area, and volume of water being diverted. Works on the new culvert construction may require flow diversion or over pumping. Further investigations will be required to confirm the flow volumes and ecological requirements for the diversions.</p> <p>Access track will also be required for delivery of plant and materials. This requirement may change depending on the final design and scope of works, terrain and topography of the respective culvert location.</p> <p>Regional consents (including for earthworks and stream works) will be sought in the future before construction commences.</p>
Temporary works:	<ul style="list-style-type: none"> • Sediment retention ponds: 3% of earthworks catchment area up to 1,500m² for catchment area of 5ha. Typically, 20m x 60m with 6m around for bunds and maintenance for a 4ha catchment. • Haul roads and construction access roads: Typically, 6m wide, two-way for smaller vehicles such as cars and utes (no heavy vehicle access): • Typically, 20m for large earthworks sites (two-way for large trucks). <p>Surface water running through the earthwork sites will need to be treated prior to discharge. The typical method for doing this is to contain the water from the earthworks areas and channel it into temporary sediment retention ponds. Locating the ponds at the low point of the zones and outside of the permanent works area is ideal so it can be operational and maintained throughout the construction works. Where possible temporary and permanent ponds have been co-located, so that at the end of construction the pond can be reinstated as a permanent device.</p> <p>Haul roads are typically required for large earthworks projects for the movement of people, plant and materials along the proposed alignment. These haul roads provide access and connectivity</p>

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	to critical work sites such as the culverts, bridge sites, and main cut and fill sites. These are best constructed outside the earthwork's extent to avoid clashes with the permanent works.
<p>Site facilities:</p> <ul style="list-style-type: none"> • Main site compound (project office) • Additional / satellite site compound • Construction yards for laydown / stockpile • Construction yards for intersection works 	<ul style="list-style-type: none"> • Typically, 2,000 to 3,000m² (for small to moderate size projects, 20 to 50 staff). • Up to 10,000m² for larger scale projects. • Typically, 1,000 to 2,000m² (spread out along the site, approximately every 1km in a brownfield site and between 2km and 3km in a greenfield site). • Typically, 500 to 1,000m². (spread out along the site, approximately at 500m and 1km spacing). • Approximately 3,000m² (for rural intersections). • Approximately 1,000m² (for urban intersections). <p>Site compounds and laydown areas are required to support construction along the proposed corridor alignments. The proposed compound site locations identified for each NOR enable easy access to key construction zones and arterial routes. Examples of facilities include:</p> <ul style="list-style-type: none"> • Site offices including lunchrooms and ablution facilities • Services connection (power, water and communications) • Car parking, waste management and re-fuelling facilities • Laydown areas and lockable storage containers • Workshop space and plant/equipment storage areas and maintenance facilities • Wheel washing and cleaning facilities • Facilities for pre-casting products. <p>The use of these compounds will only be required during the construction period and will be reinstated upon completion of the works.</p>
<p>Reconnecting property access:</p> <ul style="list-style-type: none"> • Service lanes • Access roads / driveways 	<p>Legal vehicle access will be maintained to all private properties during construction and including reinstatement after works. However, there may be temporary disruptions to access. Where this is</p>

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	<p>proposed, it will be discussed in advance with the affected user/owner.</p> <p>An access way assessment has been carried out on all legal accesses. As required, accesses are designated to enable reintegration to the permanent corridor. Where it has been determined that legal safe access cannot be reinstated after construction (e.g., due to gradient, angle, proximity), the property in its entirety is included in the proposed designation.</p>