Caversham Valley Safety Improvements
Urban Design, Landscape & Visual Assessment

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1 The Project

1.1 Brief

This document has been prepared to support the Alteration to the Designation, for the safety improvements to the section of Caversham Valley Road between Barnes Drive and Lookout Point. The purpose of the report is to identify what effects the proposed development will have on the existing environment, with particular reference to urban design qualities, landscape character and visual change.

It also seeks to identify what mitigation can be carried out within the highway corridor to minimise any adverse effects, and to optimise any potential benefits for the area.

1.2 Background

A Landscape and Urban Design Strategy was developed in 2009 for the full extent of the four laning project. This identified the urban design and landscape issues and proposed a concept to mitigate the effects, while maintaining the character of the area, providing improved accessibility for both traffic and pedestrians.

This was based on identification of land use, landscape features, open space, connections, pedestrian/cycle routes, and local character. It outlined mitigation concepts which would assist in retaining local character and promote quality of road corridor as an integral part of the locality.

The eastern section from Barnes Drive toward the City is currently under construction, in line with the mitigation concept proposed. Provision has been made for improved cycle and walkway provision, footbridge access across the highway, some noise attenuation for adjacent housing and new landscape planting. (Appendix A, Plan 1 - Site Location.)

The second stage of the project, the Safety Improvements from Barnes Drive to Lookout Point, is where the effect of the works is greater, as additional land has to be taken to accommodate the change. Some houses are also removed, which results in some additional noise to remaining housing, and there is some dislocation of existing routes, to enable the safer road crossing at the top of the hill. The road widening will also affect pedestrian movement across the cross highway. Mitigation concepts for the second stage build on the principles of the 2009 Strategy, which remain valid.

1.3 Existing Environment

The section of highway is located to the south of the city. It sweeps up the steep hillside slopes from the Mosgiel in the south, crosses the volcanic rim of the Dunedin volcanic field at Lookout Point, and runs down the northern slopes toward the harbour. The ridge forms a natural break between the rural and more developed urban areas. Both sides of the ridge are however well vegetated, the southern approach primarily a pastoral landscape, while the north comprises a significant swathe of woodland vegetation, the Caversham Valley Northern slopes, zoned an Urban Landscape Conservation Area on the shady side of the hill, with and a mix of small scale settlement

on the sunnier facing slopes on the opposite side of the highway. (Appendix A, Plan 2 – Context.) Views from this high point and the housing stepping down the slopes are extensive, toward the old settlement area of Caversham, the current industrial development area on the low land, and to the harbour beyond.

The history of the area can be traced in the settlement pattern, the built forms, particularly related to Caversham village, the heritage buildings and historic uses, not least the railway. This route out of the valley carried the early rail line, cut into the valley floor, with the tunnel portal beneath the hillside still evident near Aberfeldy Street. The more recent rail line lies to the south of the current highway. The old traditional highway of South Road winding up the hillside has been replaced by the Caversham Valley Road, and the combination of rail and road, particularly as the road has grown over time, truncating the old street pattern and separates the two hillside communities.

The communities appear to be oriented away from the highway, though jointly using it as a corridor into and out of the city. As the highway has developed and become more heavily used, this division has been reinforced. Visually, settlement on the two sides still have a connection, facing each other across the highway.

1.4 Alternative Options

The project provides for the four laning of the highway, with associated cycleway/walkways, and junction modifications connecting to the local streets. While the approach to the widening of the main highway is consistent, three alternatives were investigated to improve the safety and traffic capacity particularly at the top of the hill. The difference between the Base Option and Alternative 1 relate to the travel patterns which are provided. Both provide a bridge connection between Mornington Road and Riselaw Road. The Base Option provides access into and out of town, in both directions, albeit in a circuitous fashion. However Alternative 1 facilitates assess out of town (to/from the south) only and has no provision for connection to Caversham Valley Highway into town. The Base Option is the preferred option and is considered in more detail is this report, as it provides greatest overall benefit. (Details of traffic layout and movements are provided in the Traffic Report.)

Alternative 2 differs, in that a pedestrian/cycle connection only is proposed across the highway, separated from road traffic. Whether this is an over bridge or underpass has yet to be determined. Provision of such a crossing has benefits to non vehicular users, and while separation from traffic provides additional safety from vehicles, there may be disincentives to its use. Neither option is at grade, and required pedestrians to expend more effort. An underpass is inherently less safe for users, as overview of the route is restricted. An overpass provides an exposed route, which may deter use in winter, and provides no alternative “escape “ routes for users. However, no benefits in terms of safer vehicle travel is achieved by this Alternative. It does cause less disturbance to current traffic movement patterns and to the landscape; it would take land for provision of access ramps, but otherwise creates less visual change in the neighbourhood, as the roading pattern remains consistent.

The structure would have some effect on views from neighbouring houses, but to a lesser extent that a road bridge, being a lighter structure. The footbridge construction, unless of significant design excellence, is unlikely to create a point of difference on the approach to Dunedin City

Of the two alternatives, effects of Alternative 1 are similar to that of the Base Option. The form and land take are generally similar, so the change to the landscape and the visual effects are similar. Mitigation potential is also comparable to that of the Base Option. Alternative 2 has less effect, but less benefit, and a more substantial road bridge structure would contribute more to the urban form.

1.5 Description of the Base Option

In summary, the proposal widens the highway to provide two lands in each direction, a service lane to provide access to housing on the southern side of the road, and a bridge at the top of the hill over the highway connecting Riselaw and Mornington Roads.

Access to the highway at South Road and Short Street for vehicles is closed, though pedestrian access remains. Functional access for the Lookout Point Fire Station is provided.

Footpaths are provided on both sides of the highway, parallel to the road, with that on the north side is capable of serving as a combined cycleway.

A central median is provided, as is a median between the service lane and the main southbound carriageway.

A 1.8m acoustic barrier is being investigated, located on the service lane median, to provide benefit for the housing. A 1.8m boundary fence to the rear of properties in South Road (from no 472 to Burnett Street), now exposed due to removal of houses, may also be installed. On the north side, a fence to 5 Aberfeldy Street and abutting properties is being proposed.

The project removes housing between Burnett Street and 109 Caversham Valley Road. The residual use of this land is likely to be amenity planting, linked to Burnett Street. The widened road then swings away from the housing to the north to avoid remaining housing and to provide a service lane which maintains access to those houses.

As a result, removal of vegetation and extension of the road formation is required on the north side of the highway. (The current footpath is approximately on the line of the new central median.) Access to retained properties on the north side will be provided along this edge. There will be land take and vegetation removal from three reserves which abut the route, but foot access will remain through the reserves to the combined footpath/cycleway.

2 Issues Identified

This assessment has been based on previous work, including the preparation of the Urban Design Strategy 2009, review of specialist reports for this stage of the project, feedback from public consultation and review of engineering plans and preliminary models. Several site visits to the project site and surroundings. Visual effects are based on those experienced from public viewpoints or estimated to be those from private property.

The widening of the road has various effects on the area, although the land use and activity in the corridor remains similar. Issues identified can be generally grouped into:

- those which affect connectivity in the area;
- those which affect local character of this urban landscape; and
- the visual effects, how these changes are seen by the local community.

2.1 Connectivity

The intersection and over bridge at the top of the hill will alter movement patterns for the community. The current proposal seeks to optimise this but there are inevitably compromises. Some existing connections and safety will be improved, others are restricted. The more connections and alternative routes which are accessible, the greater the level of choice and connectivity for the community. There appears to be potential to provide left in and out access at Burnett Street, and possibly to maintain a connection from South Road to Riselaw Road, raised by the community during consultation, and which would provide more local connectivity.

While the highway works are designed to optimise traffic movements and user safety, the distances pedestrian will need to travel may increase, as may the number of times roads need to be crossed, particularly in the area of the bridge. Cross highway movement is limited to the bridge at the top of the hill and at Barnes Drive.

The scheme improves the movement along the Riselaw/Mornington Road, of particular benefit for local schools. The service lane allows bus access to the Caversham Valley Road houses, travelling uphill, though travel into town is affected and becomes longer via Riselaw Road. However, the bus service on South Road is redirected to achieve this, removing the current public transport service from South Road. It is understood that linkage of the service lane and South Road may be possible, which would assist in maintaining more flexibility of bus routes. (Appendix A, Plan 3 – Connectivity,)

The key to maximising the level of amenity provided is to ensure that there is a network of routes and crossing points which are as direct as possible, easily traversable, safe and attractive to use. Pedestrians require direct routes with a level of amenity to encourage use, located to avoid the need for barriers and railings.

In this regard, improvement can be made in the Lookout Point intersection by including:

- Footpaths on both sides of the Mornington/Riselaw Road bridge;
- 'Shortcuts' via steps at changes in level to link paths;
- Safe traffic/median islands with wide kerb cuts, located on desire lines, avoiding extra metres to walk;
- Good visibility at these points.

And throughout the rest of the highway:

- Attractive alleyways between properties, linking South Road and Caversham Valley Road, with clear entry points, where these exist;
- Resting points on routes;
- Well located bus stops with shelters;
- Good intervisibility between highway and pathways;
- Mid route crossing points of the highway.

The second north/south crossing point on this project is at Barnes Drive, where traffic lights provide a crossing on the east side of the intersection. There is however an intersection at the end of South Road, with Cole Street and then Barnes Drive, which involves complex crossings for pedestrians. This has traffic conflicts at peak times, with some risk for users, particularly elderly and children. This is outside the project area but is of significance in terms of urban design effects.

There are other existing north/south linkages, which are separated by the current highway. These include alleyways from South Road, as well as the housing on Caversham Valley Road, and from Burnett Street, to Aberfeldy and Balance Streets on the north side. Increased road width and traffic volume and speed will compromise such habitual routes. The two proposed formal crossing points, at Riselaw/Mornington Road and at Barnes Drive will require considerable additional distance and effort to cross the highway, and may discourage users, who are more likely to chance crossing the road. It could be safer to provide crossing/rest point on the median in one defined place than having random shortcutting across the highway, and the potential for an intervening crossing such as this should be considered, due to the significant pedestrian distance between Barnes Drive and Lookout Point.

Pedestrian and cycle routes east/west are well provided and north/south accessways link to these ways. On the north side, the proposed cycle/walkway is parallel to the highway and potential to vary this route is limited by the extent of the batter slopes. However this provision safeguards potential linkage with the bush reserves, and a buffer edge can be created between the highway and cycle/walkway to increase its amenity. It is preferable to keep this route with oversight from the highway, unless a broad recreation reserve swathe is developed along this north side.

On the south side, there is potential to develop the route from Burnett Street to Caversham Place, to encourage use of Barnes Drive intersection, which could also be extended through the residual amenity area west of Burnett Street, where housing is removed. The service lane can provide some protected cycle access travelling west, preferably linking to Riselaw Road via the south batter slope, to avoid the on/off junction at the bridge.

2.2 Landscape and Urban Character

Loss of housing on the lower slopes of the hill and their replacement with an amenity space does not alter the general pattern of stand-alone houses in gardens on these slopes. The retention of the houses higher up the hill retains the appearance of the walls and elevated houses seen when travelling south. (Sketches of how the area could look are shown in Appendix A, Plan 5)

There is potential to provide new local amenity space, at a similar scale and composition to the surrounding gardens, here and at the junction with Burnett Street, integrated with the new footpath alignment, and linked to alleyways leading to South Road, improving the fine grain of the area.

There will be change for houses in the vicinity of the over bridge, which will relate primarily to change in the outlook from these. Those at the head of South Road may feel impacted by the taller batter/abutment slopes in close proximity. There is some potential to screen/green the structure and integrate it into the landform.

The scattering of housing on the opposite (north) side of the road typifies the Caversham Valley slopes, where significant tree growth and reserve areas provide a well vegetated green appearance of the valley. There will be vegetation loss for the construction of the road, along the edge of the existing highway. This affects access and the margins of the three reserves abutting the highway. Much of the vegetation in the area is a mix of exotic and weedy species and new batter slopes can be replanted with local species to recreate a greened effect long term.

Of the three reserve areas, there is a critical area of fauna habitat which has been assessed by an Ecologist. Opportunity can be taken as part of these works to improve the physical quality of the local reserve planting and habitats, for both local flora and fauna, transitioning them to local native species rather than exotic trees. These measures will, over time, remedy the impacts caused by the construction. This matter is dealt with in detail in the Ecological Assessment.

New cycleway/walkways will, if well designed, link reserves, encourage use and add to the local amenity of the area, and engender a sense of local community ownership of the area. The proposal also has avoided impacting on the old railway tunnel portal and cutting, an element in the history of the area and City, safeguarding the potential for any future recreational use.

One factor which will both improve the amenity, for some residents, but may impact on the character of the locality for others, is the introduction of noise attenuation fences, in the service lane median and on some property boundaries. This matter has been addressed in detail in the Noise Assessment Report, which will define the optimum location for fences to mitigate noise effects. Current fencing is varied in type and height, and set amongst garden vegetation, and

quite open and informal in appearance. Noise fencing is likely to be of a consistent type and height and, at 1.8m comparable with typical boundary fencing. Carefully designed and located, these could avoid the appearance of an adjunct to the highway, and retain the residential character of the area. One way of reducing a "barrier" effect would be to tailor fencing to each house, and provide planting which would integrate the structures into the residential setting. This is relevant to the back boundaries of those houses in South Road which will be exposed to road noise, and similarly to the section of fencing under consideration to parts of Aberfeldy Street (#5 and adjacent) housing.

Provision of a 1.8m noise barrier is proposed on the service lane median, with sufficient width in the median to include planting. While the fence will cause shading of the service lane in winter, its location away from the footpath, and the typical residential scale, and with planting on both sides, will be in keeping with the residential character of the area. (See Appendix A, Plan 6 - Mitigation.)

2.3 Visual Effects

Change in character of the area caused by the works is limited, due to the existing highway use and the extension of the same use, to match areas north and south. However, issues which do arise and where visual change will be experienced and noticeable include:

- The bridge structure – visible from the highway and adjacent properties;
- The raised road approaches to the bridge, particularly Riselaw Road;
- Noise wall and service lane construction;
- The houses on South Road, where houses lower down the slope to the highway have been removed.

The main viewing audience affected are, in the first instance, those using the highway: large numbers of travellers who will experience the effect personally for a short time span. It is likely that the majority of these will be regular users. A component of tourists/visitors to the area will experience the highway changes, as this is on the main airport and southern highway route. Their first view of Dunedin City will be from the crest of the hill, as they pass under the bridge structure.

The new bridge provides not only safe connection across the highway but also provides a new point for extensive views over the city and harbour to the north for those crossing east/west along the city rim. It is also the focus of views to the town and harbour when arriving from the south. The current scheme does not propose to make a feature of the structure, but to absorb it into the landscape, but there is no doubt that it will bring a new element to the urban landscape.

The second effect is a long term one, for surrounding dwellings and gardens, with the changes being a permanent element in their view, and seen over long periods. The visual effects of the changes will be greatest for those few closest to the new bridge and associated retaining walls, where these are a larger component of the view, due to proximity, and where the orientation of main windows is toward the structures. (Appendix A, Plan 4 – Visual Effects.) These effects can be ameliorated by good bridge design and well located planting.

The approach to the bridge required the road to be raised above the current level, with Riselaw Road and Mornington Road locally raised to slope up to the crossing point, and to accommodate the intersection ramps beneath. Physically access is retained to the adjacent housing, but there is change to the surroundings and to views from the houses.

Houses on the upper side of Riselaw Road are sufficiently elevated at present to look over the traffic on this road, particularly taking into account the screening effect of planting in the sloping front gardens. The proposal will raise the road level to be closer to the floor level of the houses, but will remain below and at the same distance from them. This will result in traffic movement and street furniture being more apparent as the foreground to residents' views, causing some loss of amenity. On the downhill side of the approach road, for a few houses at the top of South Road, the elevated road will create a steep bank to the south of the houses. Access is retained and views are mainly to the open areas to the north, but there is some loss of openness due to the raised approach. The batter also affect the first houses on the downhill side of Riselaw Road , but to a lesser extent as the road returns to its current level near this point. Houses to the west of the bridge are also elevated, which will lessen the effect of the raised slopes and structure of the bridge, which is also to the side of their view. Removal of foreground vegetation may introduce traffic into the foreground view but there is potential to replant within the area of the off ramp.

There are few dwellings in the proximity of the intersection and bridge on Mornington Road. Main visual change will be caused by the removal of mature vegetation on the site, but retention of boundary planting on Mornington Road will screen much of the new construction, and additional planting would further minimise any effect.

There is potential for such mitigation through design in the form and materiality of the bridge, retaining wall and abutment structure. his should take account of the masonry vernacular of the city, the location on the old volcanic rim of the city' (as instanced in the Urban Design Strategy 2009). Good design, materiality of retaining walls and planting within the area of the works, can be used to soften structures and blend in with the Caversham Valley slopes.

On the upper section of the highway, where housing is accessed by a new service lane, the placement of noise attenuation structures may also modify views from houses. There is potential to mitigate the effect by careful design of any fencing, to be kept in scale with housing. Provision of a noise barrier between the service land and highway will partly screen vehicles on the road but also cause shade on the service lane.

For houses on South Road, with the removal of the houses fronting the highway, views will open up to the north and east. Effects of any noise walls may restrict views if located close to the dwelling, but has the potential to provide an attractive foreground buffer to the highway in this area. (See sketches of likely effects, in the Appendix A, Plan 5 – Visual Effects: Artists Impressions.)

Construction may reduce the existing vegetation along the old railway cutting which screens the road from parts of Aberfeldy Street housing, but existing vegetation on the north side of the cutting which links to Sidey Park will remain as a buffer.

The visual effects on specific properties will vary, with those in the immediate vicinity of the bridge structure and intersection at Riselaw Road, the most affected. The overall effect of the scheme is, however, likely to be limited. Careful consideration needs to be given to the form and treatment of batter slopes in close proximity to houses, and boundary plantings, and in placement of signage and lighting. There is opportunity on the west side and between Burnett Street and Barnes Drive to add open space and vegetation elements which will add to the amenity of the area and enhance the linkage to Caversham Village.

3 Mitigation

In 2009 a Landscape and Urban Design Strategy was prepared which demonstrated what design outcomes could be put in place within the project area. This aimed to both integrate the highway into the surrounding landscape form and urban character and increase the amenity and connectivity of the area.In addition, it demonstrated the type of solutions which will improved the visual outcomes for residents and provide a coherent road corridor and entry to Dunedin from the south.

The Strategy provided a guide to achieve coherence through both stages of the project. These principles have been reviewed and developed further to demonstrate what mitigation can be achieved on this section of the project. (Shown in Appendix A, Plan 6 - Mitigation)

In ongoing development of the design at the next stage, particular attention should be paid to:

- Reviewing potential for additional local road connection at Burdett Street and South Road/Riselaw Road
- Function, form and materiality of the bridge and retaining wall structures;
- Location of vegetation to highway edges, separating highway from pedestrian ways;
- Replanting of the cleared house sites south of Burnett Street;
- Reviewing treatment of pedestrian access from South Road/Caversham Village along the highway
- Managing vegetation and using native plant species on the north side, adjacent to the existing reserve areas to improve the quality of habitat for both fauna and users;
- Reviewing the potential for intermediate crossing points across the highway, north/south
- Tailoring noise fencing to a positive feature both in terms of noise reduction and visual appearance.

4 Conclusion

The Caversham Valley Safety Improvements Project, from Barnes Drive to Lookout Point, alters the urban fabric of the area by:

- removing housing on Caversham Valley Road,
- affecting vegetation on the margins of the valley slopes, both reserve areas and habitats,
- altering north/south west connections, and pedestrian/public transport movement patterns east/west,
- introducing a new bridge element at the top of the hill, a new view and view point, and
- providing noise fencing to benefit residents, which adds a new element to the urban landscape.

Some changes are beneficial, particularly the improved amenity for Caversham Valley Road and South Road residents provided by noise attenuation, amenity planting and pedestrian/cycle ways along the highway. There is likely to be reduction in the ability to cross the highway, except at either end of the section of works, at Lookout Point and Barnes Drive. Ability to cross the road at the midpoint remains, now by way of the median strip, but may prove less attractive with the other safer options now provided. The location of public transport routes and stops has yet to be resolved.

It is suggested that further improvement can be made to the development by reviewing the intersection of South Road and Caversham Valley Road, and by investigating the potential to provide a safe mid-point crossing across the highway for pedestrians, if demand is established.

Effects on landscape can be mitigated by providing new planting and development of residual areas as amenity spaces, and by habitat development for significant local flora and fauna on the Caversham Valley Slopes margins and reserves. This should be developed in conjunction with the Dunedin City Council and affected owners.

The visual effects of the changes will be greatest for those few closest to the new bridge and associated retaining walls, where these are a larger component of the view, due to proximity, and where the orientation of main windows is toward the structures. These effects can be ameliorated by good bridge design and well located planting.

Effects of noise fencing will be beneficial in terms of an improved noise environment. In general, the visual effect of such fencing for road users will be minor, particularly when integrated with planting on both central and service medians, and boundary fencing. Effects on dwellings will be limited to where fences are in close proximity to properties, such as down alleyways and for those South Road properties close to Burnett Street. Forms of fencing require further investigation at detail design stage in relation to effects on each property.

The principles of the draft urban design and landscape mitigation concept has been presented to the community, (illustrated in Appendix A, Plan 6 - Mitigation), and will require further development as the project progresses to minimise and mitigate any effects caused.

APPENDIX A

PLANS & SKETCHES