5.1 General

Urban design and landscape impacts are considered in terms of:

- land uses;
- amenity;
- safety;
- vegetation;
- public access;
- loss of views; and
- construction impacts.

5.2 Beecroft - Quadruplication of existing line from Epping to Beecroft

Land uses

Cut and cover tunnel and quadruplication are to be located within the existing rail corridor. Most impacts relate to intensification of rail infrastructure within the corridor. The landscape buffers beyond the rail corridor would be affected through vegetation removal, but as there are minimal other recreational or public uses in these areas there would be minimal impact from the proposed works.

Extensive retaining walls are required as part of the proposal. These would ensure that there is no change in land uses beyond the rail corridor.

The Scout Hall at Beecroft on RailCorp land is to be removed. This will result in a loss of community facilities.

Public Access

Figure 5.1 shotcrete walls to be avoided due to poor and uncontrolled finishes.

All existing public access paths are to be retained.

Additional viaduct over Devlins Creek will involve longer pedestrian underpasses.

Commuter car parking would to be reduced at Cheltenham Station. Access roads into and around Cheltenham Station may have increased activity that would affect the quality and character of existing access paths.

Amenity

Proposal will have impact on amenity primarily through loss of vegetation that provides shade, climate amelioration, and visual character.

Most of the shade lost however has little impact on the amenity of the surrounding areas as there are no footpaths or usable park areas in the vicinity of the edge of the rail line.

Safety

The project would involve the introduction of high retaining walls at the edge of the rail corridor. This would not affect passive surveillance of paths and access ways beside the rail corridor, as it would replace existing fences and vegetation on the rail corridor boundary.

Landscape

Vegetation will be removed as part of the proposal on rail reserve corridor edges between Epping and Beecroft. This would include some significant trees which affect the ecological corridors, and the visual character of the place, and some areas of shrubs that afford visual screening.

View interruption

High retaining walls that face into the public domain would affect the views from the streets, parks and from some housing. Pedestrians in Epping and in Cheltenham will have views to natural vegetation and the hinterland interrupted by tall retaining walls which will affect distant views.

Some houses which look across the rail line to distant views of bush would also be affected by the partial interruption of these views.

Construction impacts

If well managed there would be minimal impact on the land uses, public access and issues of amenity during the construction period. If construction plant is required to use local roads or areas beside the rail corridor they are not envisaged to interrupt public access or the minimal uses of the reserves beside the rail corridor. Around Cheltenham Station there may be temporary diversions necessary for pedestrians while work on the station proceeds.

5.3 Franklin Road – future station precinct

Land uses

The surface interface will substantially alter the land uses of the precinct.

The proposed transit centre area would replace the large-lot residential nature of the area. It would become an urban setting with a civic design that will mix transport modes with retail, commercial and, possibly, medium density residential uses.

From an environmental view of the urban design, these uses are appropriate given the sparseness of other centres in the locality, and so there is probably minimal impact.

Public Access

Current proposals detail some clear access paths and pedestrian thoroughfares in the station precinct. There would be few impacts providing that the paths are sufficiently flexible to enable good design to occur at future stages of the development.

The plans however do not indicate the extent of new access ways or an understanding of how these might be extended into the existing street network of Cherrybrook and West Pennant Hills, and how they link with existing schools on Franklin Road. Unless these are clarified in a master plan, there is potential for poor connectivity from the station to its surrounding suburbs.

Amenity

The proposal will have an impact on visual amenity. To be addressed as noted below.

The proposal will have an impact on amenity of roadside footpaths through loss of shade trees.

The proposal will also have an adverse impact on the amenity of the adjoining residential areas, some of which have been recently constructed. The impact arises from the loss of shade trees and climate amelioration, the increased density, bulk and scale of built form in the precinct, the increased traffic and parking and the adverse effect on quiet suburban life.

The proposal has the potential to improve amenity for nearby schools by providing easy public transport access which will reduce the impact of vehicles in the area.

Safety

The underground station minimises fenced-off underused areas which may become sites for anti-social behaviour.

The proposed transit centre conceptual layout includes broad streets on a simple legible grid pattern, which will easily lend itself to a design that addresses safety of the transit centre users. The potential for residential users and school students to link up to the centre needs to be established in a detailed master plan, to ensure safety is achieved in the detailed design.

The potential for residential uses as part of a mix of uses would further enhance the potential for passive surveillance, and minimise the opportunities for anti-social behaviour.

Landscape

There is considerable impact through loss of significant Blue Gums in this location. These trees have an important function in climate amelioration, ecological corridors, shade and visual character.

View interruption

Views to tall vegetation in this area will potentially be lost to motorists on Castle Hill Road and residents in Cherrybrook and West Pennant Hills.

Loss of tall trees will make views to high voltage power lines more apparent. This is an adverse impact.

Construction impacts

If well managed there would be minimal impact on adjoining land uses, public access and issues of amenity (with the exception of noise) during the construction period. If construction plant is required to use local roads or areas above the rail station it is envisaged that this will occur on property that would be acquired by RailCorp prior to commencement.

5.4 Castle Hill town centre – future station precinct

Land uses

The station development is proposed at existing town centre.

The existing town centre is subject to planned redevelopment and town centre improvements. There is potential for the proposed rail station to be integrated with the proposed redevelopment.

The proposed civic design that is embodied in the Mainstreet Master Plan is to achieve a high level of urban design that is modern, efficient, safe for users, has amenity, universal accessibility, employs sustainable building methods and materials, and is landscaped to represent its place. It should have legibility and a clear expression of the civic character of the public areas. The proposed underground rail station.

The Main Street master plan proposes Arthur Whitling Park will be developed as a civic square, as a town focus for Castle Hill Town Centre. This is complementary to the proposed station which would need to cater for a large number of pedestrian movements and a variety of transport mode interchange.

Public access

The proposed rail station would have a large impact on pedestrian numbers in the Park at the station entries. The proposed design addresses this issue but needs to be tested with crowd modelling.

Pedestrian access would be generally improved by the proposed Main Street improvements. This would include provision of a large multi-functional pedestrian area in the Arthur Whitling Park and safe access to transport interchange.

Amenity

The proposed rail station would justify environmental improvements to the amenity of Castle Hill town centre. There are few adverse impacts, but numerous positive impacts by integration of rail station with the town centre. This would include provision of community meeting places, provision of open air activity areas, retention of existing vegetation, and rerouting of traffic on Old Northern Road.

The underground station also offers the potential for underground links to shopping centre which would offer more options for pedestrians and thereby enhance amenity.

Safety

The underground station, with a potential to be closed for access out of hours, eliminates problems with loss of permeability of the town centre.

The added activity associated with the rail station would enhance the safety and viability of the proposed town square at Arthur Whitling Park. The proposed conceptual layout includes broad pedestrian spaces streets, which would lend itself to a design that addresses safety of the town centre users.

Landscape

The construction technique for the rail station would allow most vegetation to be retained and tree planting to be augmented over the proposed rail station.

View interruption

The rail station would not impact on any significant views. It is likely that the redevelopment will open up views from the ridgetop to the surrounding suburbs, enhancing the sense of character in the town centre.

Construction impacts

The construction technique would minimise construction impacts on the surface especially if the works are done in conjunction with the town centre improvements.

5.5 Hills Centre – future station precinct

Land uses

The surface interface will substantially alter the precinct, changing the light industrial uses into a neighbourhood centre and focus for the residential and employment community.

The proposed station will stimulate activity in the precinct. There would be change in uses that focus on the transport interchange and the retail / commercial activity that accompanies such a use.

There is potential to integrate the areas of hard stand with the character of the area.

Showground buildings and facilities should be protected and maintained.

Public access

Pedestrian access to the site has potential to be vastly improved. It is currently obscure and illegible. There is limited access across Cattai Creek, across Showground Road and into and around the Showground, except by private motor vehicles.

The proposed station precinct has the potential to be integrated with access and movements to the industrial area, to the civic areas of the Council chambers and administration, to the Hills Centre, and to the Showground.

Pedestrian connectivity through Showground from Carrington Road and from industrial area would be enhanced, creating more amenity, safety and well-used precinct that is not as dependent on private car usage.

Crossing points on Showground Road would be improved.

Impacts are thus potentially minimal. There is presented an opportunity to enhance the urban design of the area by introducing the station and its proposed infrastructure of accessways.

Amenity

The proposed rail station would justify environmental improvements to the amenity of the Hills Station precinct and its relationship with the showground, the Fred Caterson Reserve and the adjoining light industrial area. The positive impacts would include provision of community meeting places, provision of safe access routes through the district, retention of existing vegetation, new planting for shade and reduced local through traffic.

The underground station also offers the potential for underground links to shopping centre which would offer more options for pedestrians and thereby enhance amenity.

Safety

The surface level activity associated with the rail station would offer increased surveillance to the precinct.

The proposed retail / commercial activities would provide passive surveillance on pedestrian uses. The proposed conceptual layout includes broad pedestrian spaces streets, which would lend itself to a design that addresses safety of the precinct users.

Landscape

There would be little loss of significant vegetation. It is likely that the increased works in the precinct would introduce and reinvigorate the urban tree planting and provide a catalyst for weed management for Cattai Creek.

View interruption

There would be no view loss as a result of the proposal.

Construction impacts

The construction technique would minimise construction impacts on the surface especially if the works are done in conjunction with other precinct improvements.

There would be an impact on activities in the showground in terms of access, noise and amenity, which would need to be managed as part of the construction process, but as this does not affect residents or daily users of the site, this impact is not seen to be significant.

Construction activities have the potential to impact on Cattai Creek, through sedimentation and associated nutrient influx and weed infestation.

If construction plant is required to use areas above the rail station it is envisaged that this will occur on property distant from residential areas.

5.6 Norwest Business Park – future station precinct

Land uses

The station development is proposed at existing town centre.

There would be minimal impact on the existing town centre, as the station is entirely underground. There is potential for the proposed rail station to be integrated with the existing development.

The existing civic design that is embodied in the town centre achieves a mix of uses with a high level of urban design that is modern, efficient, safe for users, has amenity, universal accessibility, and a range of built form and landscape materials. The proposed underground rail station will add surface access elements that complement these uses.

Public Access

There will be a large impact on pedestrian numbers at the station entries. The proposed design addresses this issue by providing broad pavement areas with a flexibility to cater for crowds.

Pedestrian connectivity along Brookhollow Drive allows for links to shopping and community facilities.

Amenity

There is already considerable amenity in the external areas at Norwest. There is flexibility in these spaces for enhancement of this amenity to cater for pedestrian numbers.

The station's development would provide positive impacts which would include provision of community meeting places, provision of safe access routes through the town centre, retention of existing vegetation, new planting for shade.

Safety

Because the station is underground there are few problems with loss of permeability of the town centre.

The added activity associated with the rail station would enhance the safety and viability of the existing town centre. The proposed conceptual layout includes broad pedestrian spaces, which would lend itself to a design that addresses safety of the town centre users.

Crossing points on the main roads would be improved.

There is negligible adverse impacts with respect to safety, providing good safety by design procedures are to be followed.

Landscape

The proposed construction technique will allow most vegetation to be retained. It is likely that the works which would include landscaping would supplement tree planting and vegetation in the town centre.

View interruption

There would be no impact on any significant views.

Construction impacts

The construction technique would minimise construction impacts on the surface.

There would be an impact on town centre activities in terms of access, noise and amenity, which would need to be managed as part of the construction process, but as this does not affect residents, and as there is ample space for construction activities to occur it is unlikely that any construction activity would be detrimental to the urban fabric.

5.7 Norwest to Burns Road – future cut and cover section

Land uses

There is no impact on land uses or built form in cut and cover alignment, assuming that the existing ground will be reinstated. The major land use impact will arise from the Balmoral Road Release Area which is the subject of another application.

Public access

The existing road is to reconstructed in situ so there would be no long term impacts on existing access. The DCP for the Balmoral Road Release Area includes typical street edge and footpath treatments which would be incorporated in the redevelopment of the area and would cater for future pedestrian and cyclist needs in the area.

Amenity

The proposal will have minimal impact on amenity as all surface elements will be reinstated. Amenity of existing trees is required for private properties only.

There will be minor effects on the amenity of the residential properties created by temporary loss of vegetation.

Safety

Because the rail line would be covered, there are no safety issues for the general public.

Landscape

There is considerable impact to existing vegetation, particularly through loss of native species. This vegetation provides important character, climate amelioration and shade to existing residents and has the potential to do provide this amenity to future residents. There will be an impact because of loss of these trees.

View interruption

Existing long views will be removed by loss of vegetation and would be replaced by views of suburban development.

Construction impacts

There would be impacts in time period that it would take to allow vegetation to be re-established.

5.8 Burns Road - future station precinct

Land uses

The station will be partly open to the surface and, with adjoining town development will substantially alter the land uses of the precinct.

The proposed transit centre area will replace the large-lot residential nature of the area. It would become an urban setting with a civic design that will mix transport modes with retail, commercial and, possibly, medium density residential uses.

From an environmental view of the urban design, these uses are appropriate given the sprawl of suburban development both now and into the future, and so there is probably minimal adverse impact.

Public Access

Current proposals detail some clearly accessible streets and pedestrian thoroughfares in the station precinct. There would be few impacts as the paths are sufficiently flexible to enable good design to occur at future stages of the development and will enable cross-connectivity of future proposed adjacent residential areas and proposed Transitway.

The plans however do not indicate the extent of new access ways or an understanding of how these might be extended into the future street network of the Balmoral Road Release Area. While there is some provision for this in the DCP it needs to be clarified in a master plan to ensure that impacts are negligible.

Amenity

The Proposal will have an impact on visual amenity due to loss of trees.

The proposal will also have an impact on the amenity of the future residential areas. The impact would be mitigated by the introduction of street trees that provide shade and climate amelioration, and by controlling built form density, bulk and scale and by managing increased traffic and parking. The proposal has the potential to improve amenity for future residents by providing easy public transport access which will reduce the impact of vehicles in the area.

Safety

The underground station, avoids surface rail lines that typically create marginalised and underused spaces with potential for anti-social behaviour. The proposal thus minimises this possible impact.

The proposed station and its surrounding development includes broad streets on a simple legible grid pattern, which will easily lend itself to a design that addresses safety of the rail centre users. The potential for residential users to link up to the centre needs to be established in a detailed master plan, to ensure safety by design is achieved.

The potential for residential uses as part of a mix of uses would further enhance the potential for passive surveillance, and minimise the opportunities for anti-social behaviour.

Landscape

There is some impact through loss of trees in this location. These trees have an important function in climate amelioration, ecological corridors, shade and visual character.

View interruption

Views to existing vegetation in this area will be lost to motorists on Windsor Road and both existing and future residents.

Loss of tall trees will make views to suburban sprawl more apparent. This is an adverse impact.

Construction impacts

If well managed there would be minimal impact on the existing adjoining land uses, public access and issues of amenity (with the exception of noise) during the construction period. If construction occurs after residential development of the Balmoral Road Release Area occurs, then there will be greater impact on the amenity of residents that would need to be managed, but would ultimately benefit these residents by the provision of public transport and mixed use facilities.

5.9 Burns Road to Rouse Hill – future surface rail line

Land use

There would be no impact on existing built form.

New built form would include the viaduct structure adjacent and parallel to Old Windsor Road. It would only affect the existing wetland and recreation areas, which are typically of low active use.

Public Access

The transport corridor offers the opportunity to expand on the accessibility of the area by provision of pedestrian path within the floodplain with connections to local residential streets and parks. There would be adequate clearance beneath viaduct structure to accommodate pedestrian activity and access.

Ancillary to the proposed development and the Transitway development there would be improved connectivity across Windsor Road, Samantha Riley Drive and Merriville Road and connections from the proposed Transitway across the NWRL to residential / local centres / recreational reserves.

Amenity

The major impact will be on visual amenity.

There would be minor impact by loss of trees but as there is not continuous cover of trees in this part of the project, the impact is not considered to be significant.

Safety

The future railway viaduct, noise walls and embankments will impact on potential surveillance and safety of pedestrians. Mitigation measures are needed to ensure this would not be adverse.

All earthworks will impact on visual amenity. Cuttings would have minimal vegetation or screening to permit long distance views, thus minimising impact on visual amenity. Fill embankments would be planted in a manner that is consistent with the character of vegetation in the area and would thus have impact mitigated.

Landscape

There will be some vegetation lost as a result of the proposal. This would be replaced. Hence impact is not considered to be significant.

View corridors

Views have the potential to be marred by fill embankments and the viaduct.

Landscaping may mitigate this impact but would not remove it.

If designed appropriately, screening of the viaduct is not necessary, but providing a veil of trees on either side would provide a good visual amenity and scale both for passengers and residents.

Construction impacts

There are minimal impacts on residents as site is isolated from other parts of the community network of public spaces.

The site would lose its character in the short term due to construction activities, but this would affect primarily road users of Windsor road, who would not be highly sensitive.

5.10 Rouse Hill – future station precinct

Land uses

Built form around the station is the subject of town centre DA. The town centre is rapidly changing its land uses. The station design would be a positive and potentially iconic element in the town centre.

The proposed civic design associated with the town centre would achieve a high level of urban design that is modern, efficient, safe for users, has amenity, universal accessibility, employs sustainable building methods and materials, and is landscaped to represent its place. The station would be integrated into this design.

Public Access

There will be a large impact on pedestrian numbers at the station entries. The proposed town centre design addresses this issue by providing broad pavement areas with a flexibility to cater for crowds and varying types of transport interchange modes.

Pedestrian connectivity along main streets allows for flexible links to shopping and community facilities.

Amenity

Once the town centre is constructed there would be considerable amenity in the external areas. There is flexibility in these spaces for enhancement of this amenity to cater for pedestrian numbers.

The station's development would provide positive impacts which would include further activation of the town centre and provision of community meeting places and new planting for shade.

Safety

Because the station is underground there are few problems with loss of permeability of the town centre.

The added activity associated with the rail station would enhance the safety and viability of the existing town centre. The proposed conceptual layout includes broad pedestrian spaces, which would lend itself to a design that addresses safety of the town centre users.

There is negligible adverse impacts with respect to safety, providing good safety by design procedures are to be followed.

Landscape

The proposed construction technique will allow tree planting to be dominant in the town centre rail station precinct. It is likely that the works which would include landscaping would supplement tree planting and vegetation in the town centre.

View interruption

There would be no impact on any significant views, given that the town centre will be developed in the near future.

Construction impacts

The construction technique would minimise construction impacts on the surface.

Assuming it is built first, there would be an impact on town centre activities in terms of access, noise and amenity, which would need to be managed as part of the construction process.

5.11 Rouse Hill stabling yards

Land uses

Land uses in the area will change due to the future Area 20 Urban Release. The stabling Yards will have minimal impact as the stabling yards are located near Windsor Road.

Public access

The existing road that is affected by the proposal is to reconstructed in situ so there would be no long term impacts on existing access. The Area 20 Release Area will include typical street edge and footpath treatments which would be incorporated in the redevelopment of the area and would cater for future pedestrian and cyclist needs in the area.

Amenity

The proposal will have minimal impact on amenity as all surface elements will be reinstated. Amenity of existing trees is required for private properties only. as the proposal is near Windsor road the impact of the whole transport corridor affects the amenity.

There will be minor effects on the amenity of the residential properties created by temporary loss of vegetation.

Safety

Because the rail yards would be fenced, there are no safety issues for the general public.

Landscape

There is some impact to existing vegetation, particularly through loss of native species. This vegetation provides important character, climate amelioration and shade to existing residents and has the potential to do provide this amenity to future residents.

Visual Context

Due to vegetation at Second Ponds Creek, only glimpses of the proposed stabling yards will be visible. As the stabling yards will be seen in the context of an expanded Old Windsor road and the new urban release areas of Rouse Hill and Kellyville Ridge, the impact on the viewshed from this heritage site is considered to be minimal.

The rail corridor should be maximised to incorporate landscape and visual screening rather than noise walls which are urban and out of character.

Construction impacts

Construction works will need to be managed to minimise adverse visual impacts and access issues.

6.1 General

Each precinct is considered in terms of:

- visual effect – the change in intrinsic character;
- visual significance - the number and type of onlookers who would be affected by the proposal; and
- the visual impact which is a product of the above two.

6.2 Beecroft - Quadruplication of existing line from Epping to Beecroft

Visual Effect

The proposed dive structure at Beecroft and quadruplication would be formed within the existing rail line corridor cutting into bedrock as the rail gradient increases and the alignment veers to the northwest. The existing rail lines are unaffected by the proposal, with additional tracks and electrification masts incorporated to the north and south. The proposal is consistent with the current landuse and form.

The proposed bridges and viaducts, if constructed as described in Section 5 would have minimal visual effect.

However the clearance of vegetated verge areas, construction of cut batters / embankments and earth reinforced retaining structures along the alignment would result in intrinsic change to the character of the area and form a high visual effect to the area.

The highest likely visual effect is in areas where there is fill retaining walls. These would occur on the Epping side of the line and on the eastern side near Cheltenham Station. Impact upon the area would be significant, although revegetation would in due course would help to mitigate the loss of tree lined rail corridor. Overall the visual effect of the retaining walls in the locality would be high.

Figure 6.1 Views along perpendicular avenues to rail corridor will be affected by loss of vegetation at termination of avenue.

Visual Significance

The surrounding residential landscape in Cheltenham affords permanent filtered views to the existing rail line. The proposal would not dramatically alter the existing rail grade. Residents who have downward viewing angles (on the west side of Cheltenham) would not be significantly affected, though there will be some loss of vegetation in their view composition. Residents who have upward viewing angles in Epping and on the east side of Cheltenham to the fill walls would be most affected.

Passing motorists on the busy Beecroft Road may experience only transient views of retaining walls at Epping. There is little change in visual context. Road users on local roads on Sutherland Street would be affected by a more urbane setting in an otherwise natural landscape with varying topography.

The visual sensitivity of the section would be high due to the significant number of local residents, local road users, motorists, who are likely to be visually sensitive to the proposal.

Visual Impact - HIGH

A high number of user groups would be affected by the proposal and the potential change in the character of the area would be significant. The visual impact of the Epping to Beecroft works would therefore be high.

Landscape screening and careful design of the retaining walls is imperative to ensure these impacts are mitigated.

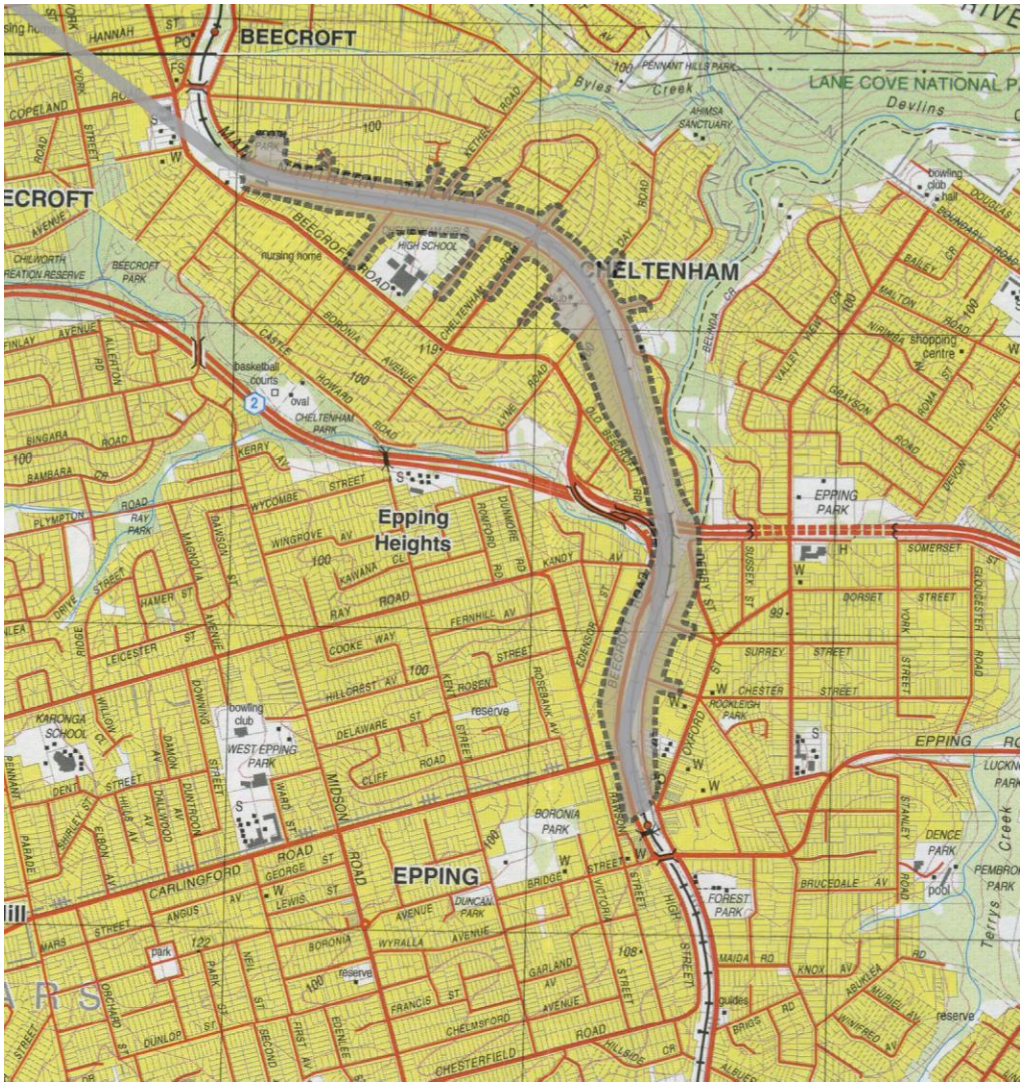

Figure 6.2 Visual catchment for Epping Beecroft area

6.3 Franklin Road – future station precinct

Visual Effect

There is minimal visual effect of the station as most of it will be constructed below ground level.

Potential development around the station would change considerably due to the quality of the existing landscape with its tall trees and grasslands on this prominent ridgeline. The new landscape will be predominantly smaller trees with a dense urban setting. The construction methodology would also impact upon the existing vegetation cover. The overall visual effect is considered to be high.

Visual Significance

The main visual impacts in the locality are on adjacent residents, the Inala and Tangara Schools to the northeast and motorists on Castle Hill Road.

While there are very few local residents, the visual catchment of this area is broad because of its significance at the ridge line. The removal of trees will affect the natural ridgeline when viewed from a distance.

School users are generally set back from the proposal on Franklin Street and are not considered to be highly significant.

Passing motorists would experience transient views of the new transit centre , although the speed of motorists would reduce the sensitivity to these users.

The visual sensitivity of the proposed Franklin station site, due to the ridgeline position and the loss of significant screen vegetation is high.

Visual Impact - HIGH

The high level of visual effect associated with the introduction of a new urban centre and built development combines with a high level of visual sensitivity for neighbours and schools, resulting in a high overall visual impact level.

A desired balance between sensitive design of the station structures and retention of trees should mitigate and reduce the visual impact.

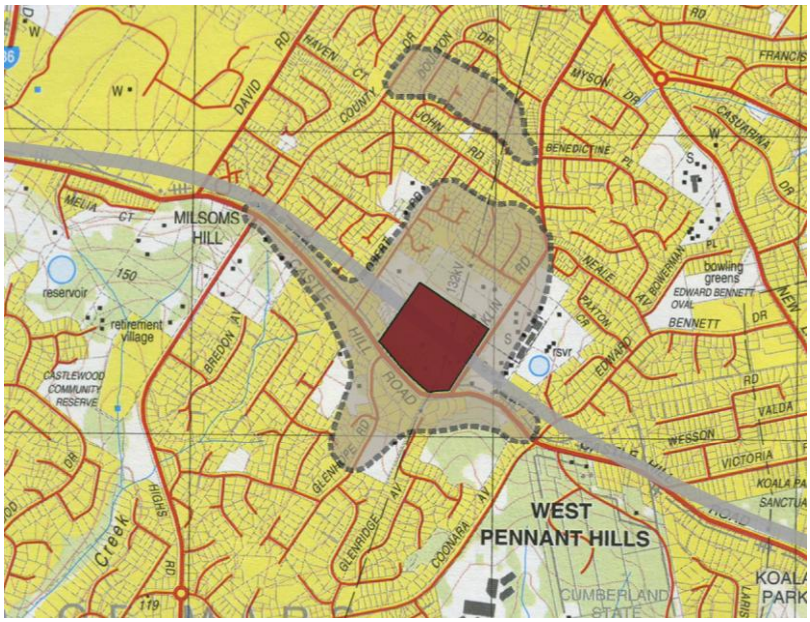

Figure 6.3 Visual catchment for Franklin Street station

6.4 Castle Hill town centre – future station precinct

Visual Effect

The proposed sub-surface station with access structures at-grade would quite likely provide a low level of visual disturbance within the locality. Reorganisation of the park would further enhance the visual character of the area as the civic heart of Castle Hill. The station structures should be consistent with the urban character of the retail and commercial precinct, and of limited contrast with the surrounds.

There is thus a low level of visual effect, provided disturbance to the existing established trees within Arthur Whitling Park is minimised. The mined cavern construction method would be most appropriate within the confines of the Castle Hill Town Centre and reduce the levels of visual effect in the area.

Visual Significance

The main users groups of the surrounding spaces are pedestrians, shoppers, motorists and occupants of retail and commercial buildings. User groups have a high level of sensitivity because of their high numbers and the significance attached to this site. However the visual catchment is very small given the impact of the predominantly underground proposal. Hence the visual significance is considered to be medium.

Visual Impact - LOW

The visual impact of the Castle Hill Station on its surrounds is low. The civic design of the station surrounds will improve the area and the adjacent commercial zones and proposed bus interchange is compatible. Treatment to the Castle Hill Park should maintain the significant treed avenue and aesthetic qualities of the park.

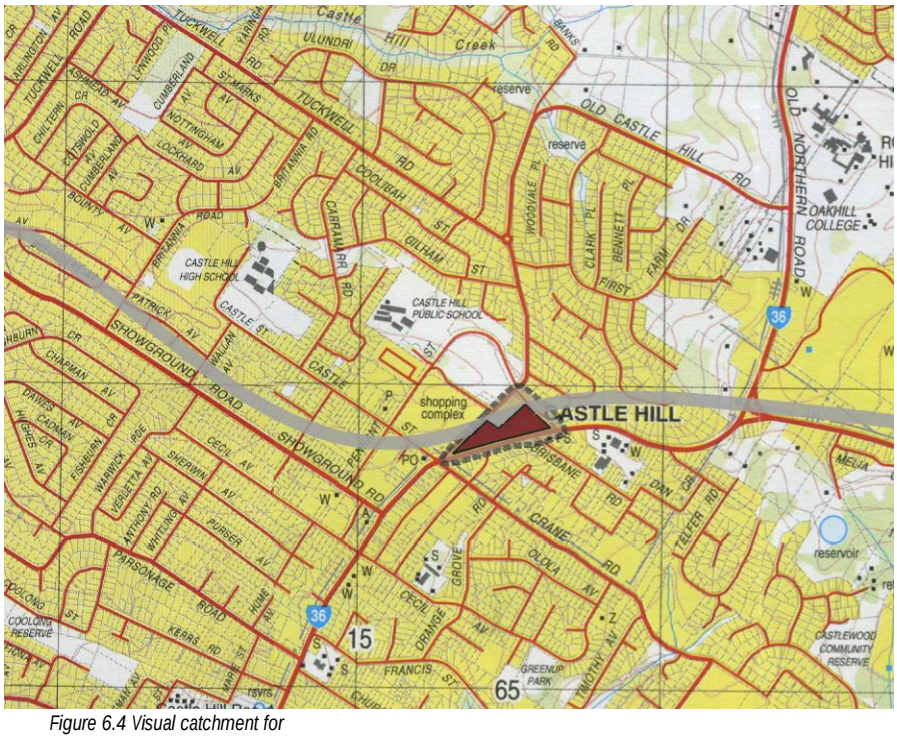

Figure 6.4 Visual catchment for Castle Hill station

6.5 Hills Centre – future station precinct

Visual Effect

The existing built form and road network is spread out. The sub-surface station reduces any adverse visual effect within the landscape setting, with only the station entrances emerging above ground level. The proposed station would offer the opportunity to tie in the uses and forms in the precinct to create a central civic space for Baulkham Hills, which would be offset by the open space character of the Showground and Fred Caterson reserve. Short term construction processes, likely to be cut and fill techniques would impact significantly on the locality but the ultimate station structure have minimum visual effect on the character of this area. Hence the visual effect of the proposed station in this vicinity would be low.

Visual Significance

There are a high number of different user groups within the area, including users of the Hills Centre, workers in the Council depot and offices, visitors to the Showground and neighbouring residents. All are likely to be subject to views of the station development. Users of the Showground facilities and residents on Carrington Road would experience a high degree of sensitivity with prominent views at higher elevations and filtered views through existing vegetation at lower elevations.

As this is not a prominent area in the locality most of the users groups experience a medium visual significance of this view.

Visual Impact - LOW

The proposed Hills Centre Station experiences a low level of visual effect within the existing landscape, and a medium level of visual significance. The Hills Centre Station would therefore be subject to a low level of visual impact.

It has the potential to be developed as an important element in the visual unification of the area.

Figure 6.5 Visual catchment for Hills station

HASSELL

6.6 Norwest Business Park – future station precinct

Visual Effect

The proposed sub-surface station with access structures at-grade would likely provide a low level of visual disturbance within the locality. Reorganisation of the street footpaths would further enhance the visual character of the area as the civic heart of Norwest Business Park.

Locally, the station abuts the Ice Skating Rink, Norwest Marketown and the Hills Christian Life Centre, all of which are of considerable proportion and affirm a strong built form to the commercial area.

The station structures would be consistent with the urban character of the retail and commercial precinct, and of limited contrast with the surrounds.

There is thus a low level of visual effect, provided disturbance to the existing established trees within Norwest Boulevard is minimised. The mined cavern construction method would be most appropriate within the confines of the area and reduce the levels of visual effect in the area during construction.

Visual Significance

The local user groups include a large number of occupants and users of the retail complex, attendees of the Hills Christian Life Centre, local rural and future proposed subdivision residents of the Kellyville / Rouse Hill Release Area to the north. The visual catchment is small. While the users may be high in number and reasonably sensitive to changes, the small catchment means that the significance is low to medium.

Visual Impact - LOW

The visual impact of the Norwest Station on its surrounds is low. The civic design of the station surrounds will improve the area and the adjacent commercial zones and proposed bus interchange is compatible. Treatment to the town centre should maintain the significant treed avenue and aesthetic qualities of the park.

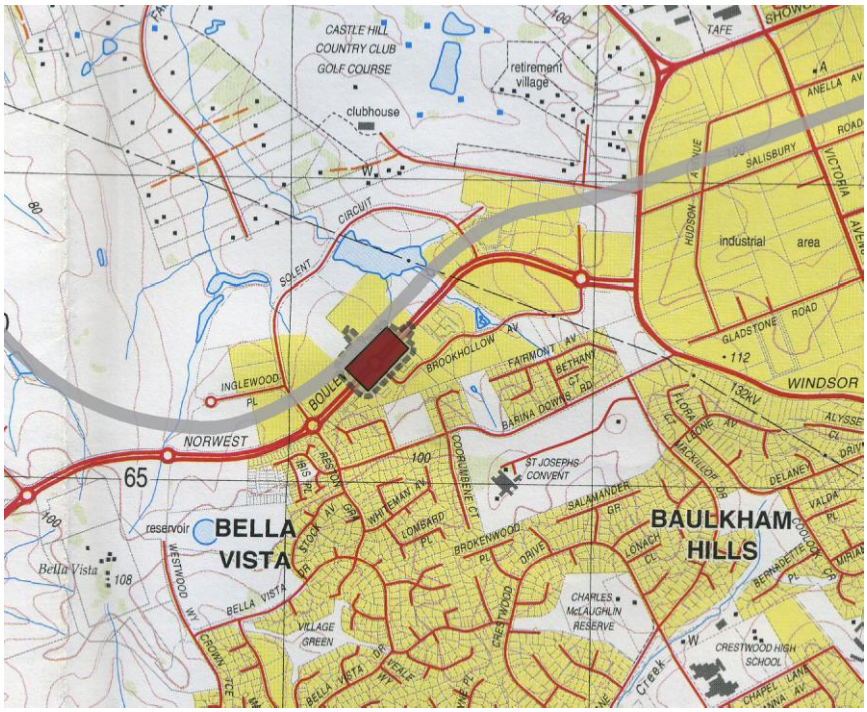

Figure 6.6 Visual catchment for Norwest station

6.7 Norwest to Burns Road – future cut and cover section

Visual effect

The visual effect of the cut and cover is ultimately limited as the proposal will entail reinstatement of the existing landscape. The visual effect is thus considered to be low, providing that existing landscape is reinstated.

Visual Significance

The main user groups within the precinct include neighbouring residents, whose proximity to the rail range from as close as 100m to approximately 250m to either side of the rail line. Some residential houses on Balmoral Road would incur temporary loss of views of trees direct and / or filtered views to the rail line / revegetation areas.

The visual sensitivity of the area is low due to the scattered nature of existing residences, however further subdivision planning proposals in the vicinity would increase the number of impacted residences, thus increasing the visual sensitivity of the area.

Visual Impact - LOW

The combination of a low visual effect on the landscape, due to a inclusion of a temporary treatment, and a low visual sensitivity, for reasons of scattered residential proximity and visual catchment, results in a low visual impact on the precinct.

Figure 6.7 Vegetation in Burns Road / Balmoral road precinct that will be lost due to cut and cover, or cut embankments

6.8 Burns Road - future station precinct

Visual Effect

The proposed station includes commuter carpark facilities and a town centre, linked with the facilities provided at the proposed Western Sydney Transitway interchange. The rail line would be recessed, ensuring that the industrial aspects of the rail line do not affect the area.

Notwithstanding the alterations to the landscape by the introduction of the transit centre, the scale of new built form and roads will be integrated with the scale of the Old Windsor Road and the expansion of the Transitway.

A permanent new station facility would contrast with the existing landscape character but would be in keeping with the expanse of transport infrastructure already adjacent to this site. The visual effect of the proposal in the locality is low to medium.

Visual Significance

The proposed station site and its associated development impacts upon a few local existing and future residents, motorists on Burns Road and Old Windsor Road, and future Bus Transitway users. Most residents do not face the proposed development site, even though the visual catchment would extend to residents beyond Burns Road and future subdivision areas. In the short term there would be a medium level of visual sensitivity, as some residences are affected by vegetation loss. Long term significance would likely be low as vegetation in the town centre matures and the station defines the character of the transport infrastructure of Old Windsor Road.

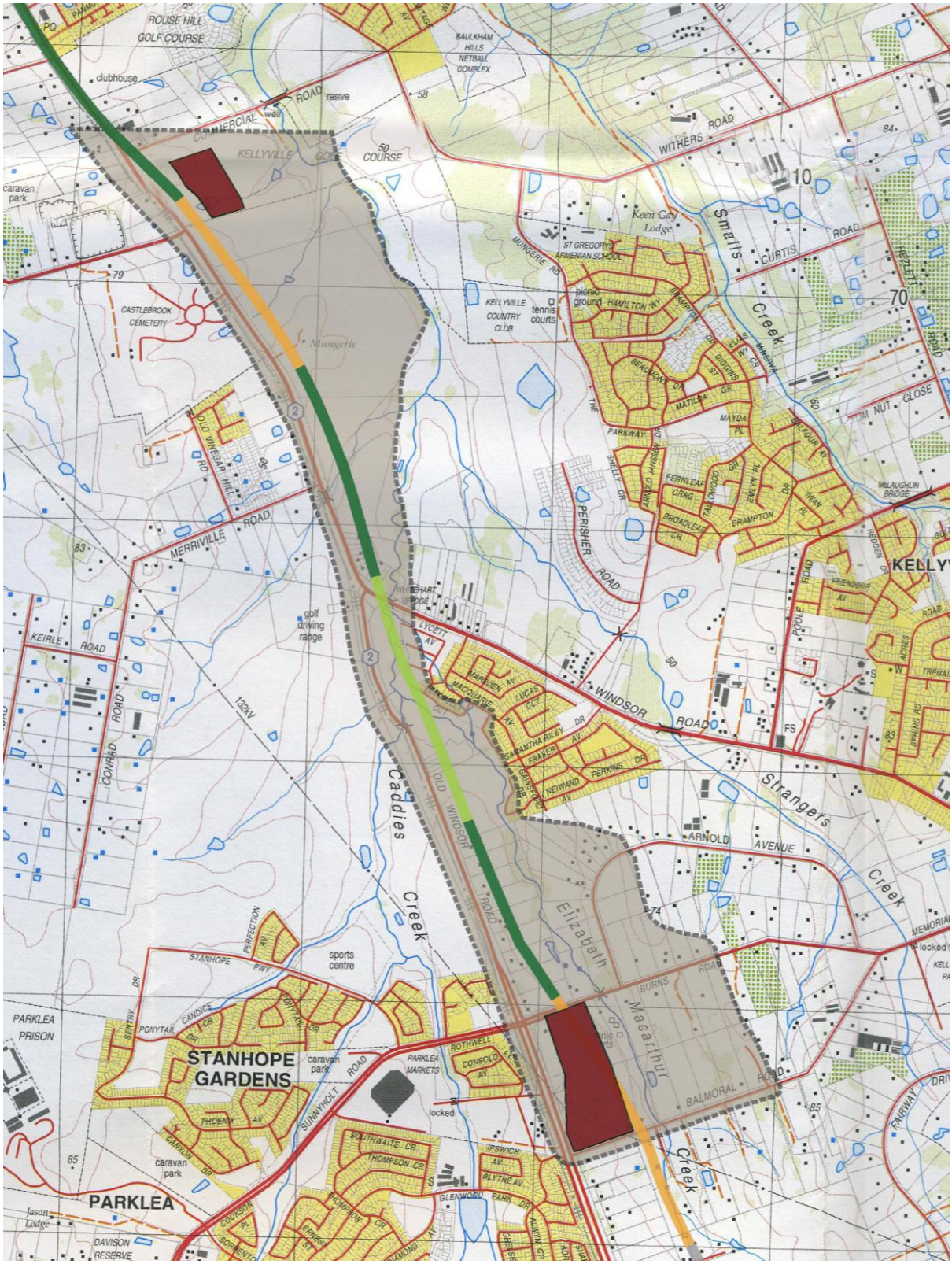

Figure 6.8 Visual catchment for Balmoral road to Rouse Hill

Visual Impact - LOW

With medium-low levels of visual effect associated with a new and permanent feature in the transport oriented landscape combined with a low level of significance for residential and motorist user groups, the resulting effect is a low level of visual impact.

6.9 Burns Road to Rouse Hill – future surface rail line

Visual Effect

The proposed rail line runs parallel to Old Windsor Road / Windsor Road and remains consistent with the strong arterial transport character of the area. Loss of remnant woodland vegetation and the elevated sections of the route would increase the visual effect of the proposal in this precinct. Potential impacts upon the wetland / riparian communities along Caddies Creek and the construction process increase the visual effect of the proposal.

The viaduct has the potential to be a simple and elegant feature in a chaotic landscape of roads and bridges and residential housing.

The embankments in the landscape deter from these qualities and magnify the change in character from a rural residential flood plain to a more complex heavily engineered transport corridor.

Overall there is a moderate level of visual effect.

Visual Significance

The main user groups in the area include existing and future residents, and passing motorists. The visual catchment zone extends to a large number of existing residents located in close proximity to the route and a number that are located approximately 300m from the proposed rail line. Residents would quite likely experience filtered views of the rail line, which may be mitigated by the retention of existing vegetation reinforced with newly proposed planting. Motorists would incur transient views of the rail line. The visual sensitivity of the proposal is deemed to be moderate.

Visual Impact - MEDIUM

The visual impact of the proposed rail route within the Windsor Road transport corridor is medium. While the viaduct and fill embankments would be distinctive elements, this is mitigated by the compatibility of the existing landscape character of the area and the proposed reinforcement of the landscape through extensive planting.

Figure 6.9 Future views across Caddies Creek floodplain will include raised viaduct to height of trees in background. Additional foreground planting and careful viaduct design is essential to mitigate this potential impact

6.10 Rouse Hill – future station precinct

Visual Effect

The proposed station would be a partially underground facility, with entrance forecourts at surface level. The station would form part of the proposed transport terminus at the Rouse Hill Regional Centre servicing the Bus Transitway and local bus networks.

The visual effect of the station is low in the context of the Rouse Hill Regional Centre scheme. The structure would not contrast with the transport character of Windsor Road and little vegetation is lost. The visual effect would be further reduced as the Rouse Hill Regional Centre is developed, the station becoming part of the proposed transport interchange complex.

Visual Significance

There are currently very few user groups in the immediate area. The open grass plain in which the proposed station is sited provides a considerable distance between the station and the closest residence, negating the issue of permanent views by occupants, however some residents south of Rouse Hill Town Centre avenue may experience partial filtered views.

Future residents and users of Rouse Hill town centre are unlikely to be affected by the proposed station as it would fit seamlessly into the town centre landscape and would not be an item of sensitivity. Overall the visual sensitivity is low.

Visual Impact - LOW

The overall visual impact of the Rouse Hill Station site is low. A low / moderate visual effect on the site due to the subsurface nature of the station and the future development plans for the area, combined with a low significance, due to few user groups within the direct vicinity, results in a low visual impact.

6.11 Stabling Yard Facility

Visual Effect

The rail approach to the stabling yard would be via a deep cutting of up to 10m beneath Windsor Road, that extends to Second Ponds Creek floodplain area. The surface area covered by the rail stabling yard remains narrow and it is in cutting with potential for screening it will not be prominent, nor will it disturb distant views.

Figure 6.10 Views from Rouse Hill Regional Park. Screening of trees on Second Ponds Creek will minimise impact from Park users.

The rail cutting carves through the flat floodplain landscape that is already impacted upon by the Old Windsor Road widening. The stabling yard covers a broad area in a deep cutting, creating a discrete element in the landscape that is mostly disguised from the existing semi-rural character and in keeping with the adjoining road corridor. The overall visual effect of the stabling yard would be low.

Visual Significance

The main user groups in this area are rural residents, in scattered plots. Some present and future local residents would experience direct views, with neighbouring residents on higher elevations experiencing permanent filtered views of the site. The Area 20 urban release residents will have minimal impact caused by the stabling yards.

Few motorists in the nearby Old Windsor Road would notice the yards in the screened cutting.

Users of the Rouse Hill Regional Park would be impacted upon with loss of some screening vegetation and glimpses of the Stabling Yard facility. The visual significance is moderate due to the low visual catchment .

Visual Impact - LOW

A combination of the adjacency of Old Windsor Road and low levels of significance leads to an overall low visual impact rating.

6.12 Visual Assessment Impacts Summary

The proposed rail line traverses a number of different landscapes. There a number of viewpoints from which the proposal will be seen. For the most part the impacts are acceptable, but there are clearly specific components that need to be mitigated.

- Between Epping and Beecroft the extent of retaining walls associated with the quadruplication has the potential to be a significant impact to local residents who are below the rail line.
- Only the above ground section of the proposed station at Franklin Road is of concern, and only because it is a highly prominent site with some very distinctive trees. The underground stations are of low visual impact with stations located within a landscape conducive to the proposed station infrastructure. Sensitive urban and landscape design in this location should reduce the overall impact and improve visual interaction while enhancing use.
- The surface route beside the arterial route of Old Windsor Road / Windsor Road and the Parramatta to Rouse Hill Transitway forms integrated transport infrastructure to the north western suburbs and provides a distinctive statement of character. While the rail line fits within the existing transport corridor of Windsor road, visual impacts are significant only where the rail route is elevated on embankments with extensive noise walls. The only significant surface structure is the viaduct. Design guidelines should mitigate the visual clutter that this element may present and offer a way in which the proposed development may proceed with limited impact.

  The changing land use and character of the landscape through which the rail line travels would modify the overall visual impact. Increased residential land use development within the urban release areas adjacent to the route would likely decrease the visual effect while increasing sensitivity to the above ground components of the proposal. However the visual effect of the rail line would not be as prominent as existing and proposed adjacent roads, which dominate the landscape. Vehicle movements are a strong detractor, while train movements are less frequent and therefore less intrusive in the visual envelop. The rail line ultimately benefits from visual interaction in the landscape.

7.1 Introduction

This section describes the proposed mitigation in the landscape of the proposed rail line. A series of guidelines form part of the Strategy Plan, which indicate the intent of the mitigation measures. It is intended that these guidelines should assist in the development of a detailed landscape plan that coordinates all the station layouts, noise walls and other issues raised in this assessment.

7.2 Purpose of mitigation measures

Landscape / urban design Integration

The purpose of landscape / urban design integration is to:

- minimise adverse impacts on access, amenity of the area surrounding the rail line;
- retain and enhance significant existing vegetation;
- conserve and enhance creeklines and riverine habitats;
- re-establish endemic woodlands in appropriate locations;
- ensure safe operational rail use;
- reduce potential soil erosion through environmentally friendly erosion control measures;
- create appropriate habitats within the rail corridor;
- increase bio-diversity by planting indigenous vegetation of providence;
- use ecological sustainable design principles in design and during construction; and
- establish an effective Management Plan of landscape.

Visual Mitigation

The purpose of visual mitigation is to:

- ensure the route and stations integrate into the existing landscape characters and types;
- minimise adverse impacts on the views of local residents and landowners; and
- maximise the potential for views and experience of the landscape from the rail corridor.

7.3 Guidelines

The following guidelines have been adapted from Context (2002). They are relevant in nforming the overall intent and means of achieving a proposed landscape concept.

- ensure that the visual impacts of the rail line on adjacent sensitive land uses, such as residential and recreational areas, are mitigated with appropriate screening i.e. mounding / woodland vegetation;
- Tconsideration should be given to retention of views of the surrounding landscapes for the rail user in order to provide interest and a series of visual locational cues for the journey;
- protect existing vegetation to ensure screening ;
- enhance existing remnant indigenous vegetation communities with plantings of appropriate endemic species;

— consider the location and form of stormwater controls in relation to landscape treatments to achieve the integration of these elements i.e. wetlands;

— highlight creek crossings with appropriate riparian plantings;

— ensure noise walls integrate with mounding and vegetation, and reflect the landscape character of the locality;

— Limit exposed 'shotcrete' surface treatments to internal tunnel surfaces;

— ensure there is a continuity and language of materials that are consistent within precincts, or within the whole rail corridor; and

— ensure the viaduct structure does not impact upon the natural flows and ecosystems of creeklines and riparian zones.

7.4 Landscape Treatment

The following detailed landscape prescribes a broad scale approach formulated to define the landscape composition, which would be subject to further detailed landscape planning and design. Treatments would generally be restricted to the rail corridor including the cut batters, fill embankments and station surrounds. The basic landscape treatments of specific zones include:

— Stations;

— Tunnel Portals;

— Woodland / Forest;

— Fill Embankments / Cut Batters;

— Rural Residential Screening / Noise Mitigation;

— Creeks and Riparian Forest;

— Detention Basins; and

— Landscape Establishment.

All landscape treatments should be in accordance with current rail design / management policy (i.e. *Structure Gauge 1994 – Ref C 2104*) and, in particular, should not interfere with rail infrastructure, sight lines or the safe operational use of the rail line.

7.4.1 Stations

The station precincts represent the most significant features and require a complex arrangement of elements and programme of activities for the proposed rail line. The landscape treatment of station precincts would differ according to the specific station locality and proposed structure.

The treatment of all station areas would be dependent upon the chosen construction methodology and extent of subsidiary station development, including car parking, commercial and residential development. The station locations should all maintain an established landscape character, which should be retained and enhanced where practicable. Existing mature vegetation should be retained to provide a mature canopy layer to the station forecourts and development zones. A distinct urban form and detailing would augment station and route identity, establishing a sense of place in the local community and enhancing patronage.

A master plan needs to be developed for each of the stations to integrate these issues and features. The master plan should include a public domain plan with tree planting strategies, pavement strategies, shade and seating strategies, and character statements. Landscape design and selection of species should reflect the local environs and endeavour to mitigate adverse visual intrusion with appropriate screening of structures and / or carparking areas.

On Old Windsor Road tree and shrub plantings at stations should integrate with the existing structure planting of the Norwest Business Park, the proposed Transitway Interchange at Burns Road and the proposed Rouse Hill Regional Centre respectively.

Landscape proposals at all stations should create a balance between maintaining high visibility to assist patronage and the effective 'fit' of the station into the landscape.

7.4.2 Tunnel Portals

The rail tunnel portals at Beecroft and Norwest are discrete elements in the landscape. The Beecroft portal would lie within the rail reserve, while the Norwest portal would be located at the northern edge of the Business Park. The portals should provide a sense of identity and visual landmark that rail passengers can use as a reference point.

The portal structure should exhibit a simple form, in scale with the elements in the surrounding area. The portal entry surround should integrate with associated retaining structures, which should provide a high level of detailed design in response to the residential and commercial urban forms in the adjoining areas. Facades such as decorative concrete panels, textured concrete, exposed rock face, gabions etc. could be used on external faces. Exposed 'shotcrete' treatments should be restricted to internal tunnel areas only.

7.4.3 Woodland / Forest

Woodland / forest landscape treatment aims to extend and restore the indigenous woodland / forest community where it occurs within or adjacent to the surface components of the rail corridor along the Old Windsor Road. Use of indigenous woodland / forest species would assist in strengthening remnant stands of vegetation, providing improved local screening and a sense of the surrounding landscape to rail users.

All existing vegetation to be retained should be fenced and protected prior to commencement of construction and throughout the duration of the works. Particular care should ensure existing vegetation is not affected by altered drainage regimes and / or earth compaction.

Indigenous trees, shrubs and groundcovers should be planted in natural associations appropriate to the community woodland / forest type. The identified vegetation communities in the proximity include; Shale Plains Woodlands (Grey Box-Ironbark Woodland) and Alluvial Woodlands (River Flat Forest). Species from these communities should be used in those areas of the corridor where they naturally occur, either in woodland tree and shrub plantings or as scattered pockets of woodland trees in native grasses.

7.4.4 Old Windsor Road

The Rail line forms a transport link to the expanding north western suburbs. Between Norwest Business Park and Rouse Hill town Centre the route runs parallel and adjacent to the Old Windsor Road and the proposed Parramatta to Rouse Hill Transitway and its associated cycleway / pedestrian way. The close proximity of the three transport corridors serving cars, bus, cycle, pedestrian and rail users creates a unique opportunity for an integrated transportation and landscape character to this route.

The landscape structure along the corridor should unify the separate transport proposals to provide a cohesive corridor. The following principles establish the vision:

- retain existing remnant vegetation where possible and incorporate into urban design plan;
- create a strong landscape definition to the heritage route by planting clusters of trees representative of a rural tree lined route;
- minimise shrub planting. Use mostly trees and grasses;
- establish plantings of indigenous vegetation, which complement the existing remnant communities beyond the route corridor;
- where practicable retain open views for rail users.

The above principles endeavour to provide a landscape structure to the transport corridor while improving screening, enhancing regional vistas and mitigating the severance of the landscape.

7.4.5 Fill Embankments / Cut Batters

Grading and earthworks can be visually intrusive and cause major erosion problems in the absence of appropriate mitigation measures. Graded slopes should be 1:3 or less, where corridor widths permit, to allow for tree planting with native grasses and some shrub planting. Rounded profiles should be used to soften and integrate earthworks into the surrounding landform.

If required, terracing should be applied as irregular benching with vegetation to stabilise exposed fill and cut batters, prevent erosion and reduce runoff. Retaining structures should provide visual interest to rail viewers, with a textured decorative finish or gabion surface. Exposed untreated 'shotcrete' surface treatment is not recommended.

Planting to earthworks should complement the vegetation characteristics and woodland communities of the adjoining areas.

7.4.6 Residential Screening / Noise Mitigation

Screening treatments would be applied to sections of the rail corridor adjoining sensitive areas, such as residential suburbs. Reduction of visual impact levels to adjoining properties can be achieved with dense mass plantings of indigenous woodland species, preferably in combination earth mounding or, if required, noise attenuation walls.

Consideration should be made of the proposed future subdivision of rural lands adjacent to the corridor (Balmoral Road Release Area / Old Windsor Road Release Area / Rouse Hill Release Area). It is anticipated that the rail corridor would require dense screen plantings to selective locations along the route where future residential subdivisions are in close proximity to the corridor or where the route is raised on fill embankments. Exact locations of screening treatments and noise attenuation walls should be identified

during detail design development.

The at surface section of the route from Burns Road to Rouse Hill provides flexibility to attain sufficient landtake to incorporate screen mounding and vegetation, for adjacent existing and proposed residential developments. Noise mitigation and visual enhancement should be combined where possible i.e. mounding and vegetated screening, to restrict the inclusion of wall structures in the landscape. Key areas where mounding would be preferential to noise walls include the cut and fill embankments.and the rail line.

Where there is insufficient room for mounding noise the use of noise barriers to batter crests and / or bridge structures would be acceptable.

Planting treatments can be used to soften the visual effects of noise attenuation walls, from both the rail corridor and adjoining properties. Should mitigation not be possible within the rail corridor, vegetation screening should be implemented on the adjoining property. This process would be undertaken in coordination with landholders and utilise planting guidelines to ensure vegetation choice is appropriate.

Noise attenuation measures should be sensitive to the environment in which they are situated and of appropriate materials i.e. purpose designed barriers to reflect a local character. Materials should be consistent.

7.4.7 Creeks and Riparian Forest

This treatment occurs where creeks cross the rail alignment or are in close proximity to it. The treatment aims to enhance, and where necessary, reinstate riparian vegetation within the rail corridor to ensure the retention of visual and ecological benefits. This would serve to improve the habitat value of the creek and form visual variation for the rail user.

All existing indigenous riparian species along creeks and gullies should be protected prior to and throughout construction works. Impacts on existing flora and fauna, bank structures, water levels and water quality should be avoided where practicable. A process of weed eradication should be undertaken by qualified personal prior to planting operations. Indigenous trees, shrubs, groundcovers and aquatics should be planted in natural associations, utilising species of local provenance procured from seed collection prior to any vegetation removal.

7.4.8 Detention Basins

Detention basins form a key role in the regulation of runoff and the maintenance of water quality within the proposal, to ensure minimal impacts upon the existing water catchments. Detention systems in the rail corridor would form either a temporary or permanent water body in a constructed dam.

The design of detention basins should include variable slope grading profiles, naturalistic shapes and wetland planting to pond edges. The basins should provide wildlife habitat value, integrate with the surrounding landform and vegetation and be located away from the rail route to reduce potential impacts on wildlife.

Vegetative treatments to detention basins increase the effective removal of pollutants from runoff and provide aesthetic benefits to the rail environment. A buffer planting of tree and shrub species to basin margins would also soften views and stabilise embankments in periodic storm events. Aquatic plant selection should represent locally occurring species.

7.4.9 Landscape Establishment

The successful establishment of landscape areas within the rail corridor is dependent upon a combination of management measures implemented throughout the project and at all stages of construction. The key management procedures that should be adhere to include:

Seed Collection - Seed collection should occur in the rail corridor prior to vegetation clearing and at sites adjacent to the corridor during construction, with the necessary approvals from Local Councils and DEC. Seeds collected are to be used in the revegetation works, including direct seeding operations, propagation and growing-on for use as tubestock etc. Local seed collectors and nurseries with appropriate skills and training should undertake collection, storage and propagation. If required additional seeds can be sourced from reputable, approved seed and plant suppliers.

Vegetation Clearing - The extent of vegetation to be cleared should be minimised to the extent of earthworks. Existing vegetation to be retained should be identified and protected with suitable, approved tree protection fencing throughout the duration of the works.

Weed Control - All weed control operations should be detailed in a Weed Management Strategy. Areas assessed as weed infested shall be identified and managed so as to reduce the potential infestation of other areas. Throughout the duration of the works, all areas should be kept free of weed invasion using approved methods of eradication appropriate to the location. Prior to revegetation, weed growth shall be eradicated using environmentally acceptable means and general weed control maintenance should be increased during the plant establishment phase.

Site Soil Management - Soil stripped from the works easement should be screened, sorted and stockpiled on site. Soil stockpiles are to be protected by erosion control treatments, temporary mulching, nursery crop seeding and weed eradication. The stockpiles should not exceed 2.5m in height to maintain living organisms within the seed bank and should be differentiated on the basis of extraction location. Uncontaminated site soil should be replaced in the original zone from which it was extracted to ensure appropriate seed regeneration from the soil seed bank. Prior to spreading, the topsoil shall be tested by an approved independent testing laboratory to ensure the topsoil is capable of sustaining plant growth. If recommended, the inclusion of soil additives shall be cultivated into the soil.

Planting Operations – Installation and establishment of plant stock should follow standard horticultural practices. All disturbed areas are to be hydro-seeded as soon as earthworks are completed to reduce potential weed invasion and improve soil surface stabilisation. Planting works should be undertaken when all construction works have been completed and no further disturbance to landscape areas is likely. Works may progress in a staged manner within a controlled works programme. A selection of planting techniques should be used appropriate to the scale and location of landscaped areas.

Mulch - Mulch should be derived from trees and shrubs obtained during the clearing and grubbing operations on site. The mulch should be stored in a suitable weed free location, free from pests and diseases, in stockpiles that do not exceed 2m high. Should the quality of the mulch produced from cleared material be insufficient, the shortfall can be made up by approved woodchip.

Construction and Plant Establishment Period - Plant establishment and landscape maintenance works should commence progressively during the construction period. Establishment maintenance would be undertaken for a specified period, normally 12 months, following completion of the landscape works. Maintenance works would generally include: watering, weed and litter removal, grass cutting, control of disease and insect infestation, plant care, replacement of failed, damaged or stolen plants, and maintenance of existing vegetated areas.

7.6 Landscape design

Landscape design should be prepared in accordance with the objectives and Landscape Strategy guidelines detailed in Section 7.5 of this report. Full concept design can only progress when sufficient detailed design information is available i.e. final route and levels, access road location, maintenance exit/entry locations, rail structures (gantries etc.) and batter slope treatments i.e gradient / retaining wall structures. The Landscape design should be prepared in conjunction with the detailed rail line design to ensure impacts are mitigated.

Following the visual and landscape assessment the identified areas of high impact are as follows:

- Epping to Beecroft retaining walls;
- Franklin Road station; and
- Caddies Creek Viaduct.

Landscape treatment to these locations should be identified to mitigate the proposal both visually and in landscape terms.

Landscape treatments should also be prepared to all other sites on the rail line.

7.7 Recommendations

The following table identifies the principle visual and urban design recommendations for the whole of the proposal. Recommendations have been identified by precinct, running from Epping to the Stabling facility at Rouse Hill. The design of the overall project should adhere to the Design Objectives, Guidelines and Recommendations to promote high quality landscape and urban design and minimise the impacts of the proposal.

Element	Visual mitigation principles	Urban design mitigation recommendations
Epping to Beecroft	Maintain the local street quality with retention of verge tree plantings and dense screen vegetation to rail batters. Incorporate noise attenuation devices of appropriate scale / type for the residential surrounds to visually sensitive sections viewed from adjacent undulating local roads / residences. Where practicable retain vegetation within the rail corridor. Replace and enhance impacted screen vegetation on adjacent roads (Sutherland Road / The Crescent)	Internally exposed surfaces of retaining walls should provide a high level of detailed design with decorative concrete panels, textured concrete, exposed rock face, gabions etc. Externally exposed walls should be recessed or terraced to maximise the potential for planting to be used to reduce scale and bulk. Large areas of retaining walls should be fragmented to reduce their appearance of bulk. Additional bridges over M2 and viaduct over Devlins Creek are to match existing rail bridge in vertical and horizontal alignment. Columns, deck thickness, parapets and abutments are to match existing. Additional bus underbridge at Epping is to be well lit and to match existing finishes and forms. Electrification masts should be designed with a high level of robustness and simplicity. Shotcrete treatments should be restricted to internal dive structures only and used in a decorative manner. Exposed portal should be provided with a high level of detailed design. Materials should be consistent throughout this section of the works. Planted embankments are preferable to noise walls as they are more in keeping with the landscape of the suburban environment. If noise walls are required they should be designed from a consistent palette so they allow passengers and residents to appreciate high quality finish and should be sited to minimise loss of view. Ensure noise wall materials are honest to the structure and are fragmented if of large scale.
Beecroft Village Green	Maintain the Village Green ambience and character. Minimise the loss of mature significant vegetation.	Maintain pedestrian / cycle connections through the Village Green to / from the Community Centre / Tennis Club.
Franklin Station	Retain existing vegetation on Castle Hill Road to reduce visual impact on local residents etc. Reduce loss of vegetation across the site to maintain screening of long distant vistas to ridgeline.	Integrate associated station facilities within existing trees. Provide safe pedestrian / cycle links / crossings over Castle Hill Road and to / from adjacent Schools.

Element	Visual mitigation principles	Urban design mitigation recommendations
Castle Hill Station	Retain and protect the Castle Hill Park character and structure. Ensure station elements reflect the existing urban design scale and form.	Avoid impacts on the existing park structure and significant tree avenue along Castle Hill Park boundary. Coordinate surface station design with the Castle Hill Town Centre Master plan, existing improvement works and the proposed bus stops. Form a cohesive circulation network (linking the Castle Hill Towers Shopping Centre, Castle Hill Park and NWRL station) with a safe pedestrian route across Old Northern Road. Recommend cavern construction techniques to preserve significant landscape features of Town Centre.
Hills Centre Station	Enhance existing boundary / creek vegetation to maintain a visual screen to station structures / car parking for local residents. Ensure localised views from Castle Hill Showground are mitigated, with screen plantings.	Protect and enhance existing fauna and flora of Cattai Creek. Extend landscape treatments and weed management programmes beyond the immediate NWRL corridor. Provide a defined network of pedestrian / cycle paths that link to the Showground / Hills Centre circulation system.
Norwest Business Park Station	Retain and protect the Norwest character and structure. Ensure station elements reflect the existing urban design scale and form.	Integrate the Station urban design treatment with the town centre. Coordinate feature tree and shrub plantings with the existing infrastructure and species palette established within Norwest Business Park.
Cut and cover north of Bella Vista	Replace cover with vegetation	
Burns Road Station	Incorporate landscape character that is consistent with Old Windsor Road landscape	Incorporate pedestrian / cycle links between Transitway, shared path routes and the Parklea Markets to the West.
Old Windsor Road Transport Corridor	Keep noise attenuation wall provision to a minimum, with preference for architectural treatment to individual residences. Or land take and mounding.	Adhere to the landscape design principles.Incorporate tree and shrub screen planting between transit way and rail line.Ensure flood prone areas are not impacted upon by rail line.

Element	Visual mitigation principles	Urban design mitigation recommendations
Caddies Creek Viaduct (ch 41630 to ch 42290)	Incorporate scattered pockets of riparian tree and shrub planting to provide partial filtering of the viaduct structure.	Viaduct to be an elegant utilitarian structure in the landscape, rather than a heavy piece of industrial engineering. The viaduct needs to be designed so that it is simple with horizontal decking. The parapet needs to be designed so that it is simple plane angled upward to catch light. Girders should be designed so that they are in shade. Headstocks as currently designed should be avoided. They affect the simplicity of the bridge when seen from afar, as they will be. Elliptical piers would be more elegant than the proposed circular ones. The proportion between the span and the depth of the superstructure (excluding noise walls) needs to be maximised. Noise walls need to be clearly articulated and where possible be transparent to minimise the apparent bulk of the viaduct. Superstructure elements such as masts need to be in rhythm with the substructure support. Ensure noise mitigation proposals adjacent to established residential neighbourhoods on Windsor Road are of appropriate scale and structure. Planted embankments are preferable to noise walls as they are more in keeping with the landscape of the rural and suburban environment. If noise walls are required they should be designed from a consistent palette so they allow passengers and residents to appreciate high quality finish and should be sited to minimise loss of view. Ensure noise wall materials are honest and are fragmented if of large scale. Enhance wetland feature - increased area coverage and fauna / flora diversity.Provide a landscape 'buffer' zone incorporating wetland areas to allow riparian plantings and integration of the route into the landscape.Future potential to provide a creek reserve walk adjacent to residential areas.
Rouse Hill Regional Centre Station		Landscape treatments to coordinate with future proposed Rouse Hill Regional Centre master plan / principles.
Stabling Yard	Where practicable incorporate mounding and vegetated noise attenuation in favour of wall structures.	Avoid disturbance of Second Ponds Creek - locate away from creekline and associated vegetation stands. Incorporate significant areas of revegetation to mitigate land take and maintain view character from Rouse Hill Regional Park.

The visual impacts and urban design of the NWRL needs to be considered within the context of its importance as a major public transport link fitting within existing and future urban development.

The proposal provides the opportunity to avoid future expansions in road development, avoiding the amenity impacts that arise from road widening works.

Most of the areas associated with the surface impacts occur to the north west of Norwest Business Park which is currently changing with new housing development. In many cases the impacts can be acceptably mitigated by landscape treatments and by ensuring pedestrian connectivity both to and across the stations is achieved.

Impacts associated with new stations and quadruplication occur in established urban areas where urban design can be integrated with existing and visual impacts can be mitigated by appropriate landscape and urban design treatments.

It is essential that detailed master plans are prepared for each of the sites affected by the proposal to ensure that the mitigation measures proposed are fully realised and coordinated with proposed works. In most cases the mitigation of impacts is subject to such detailed design being carried on throughout the life of this project in accordance with the broad principles and recommendations explained in this report.

Appendix A
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