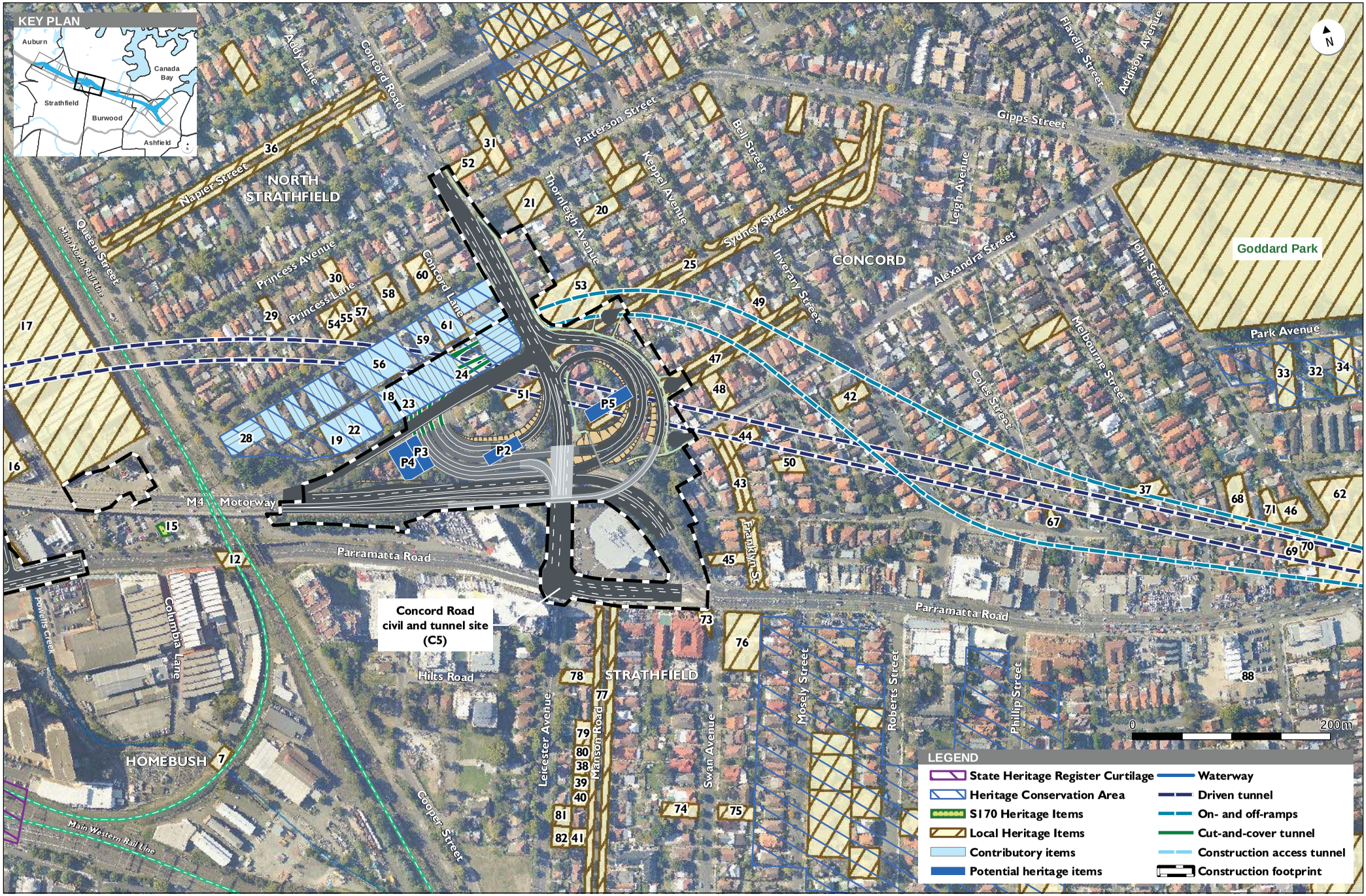

Figure 6.3 Non-Aboriginal heritage items and heritage conservation areas - Concord

Figure 6.4 Non-Aboriginal heritage items and heritage conservation areas - Cintra Park

Figure 6.5 Non-Aboriginal heritage items and heritage conservation areas - Five Dock and Croydon

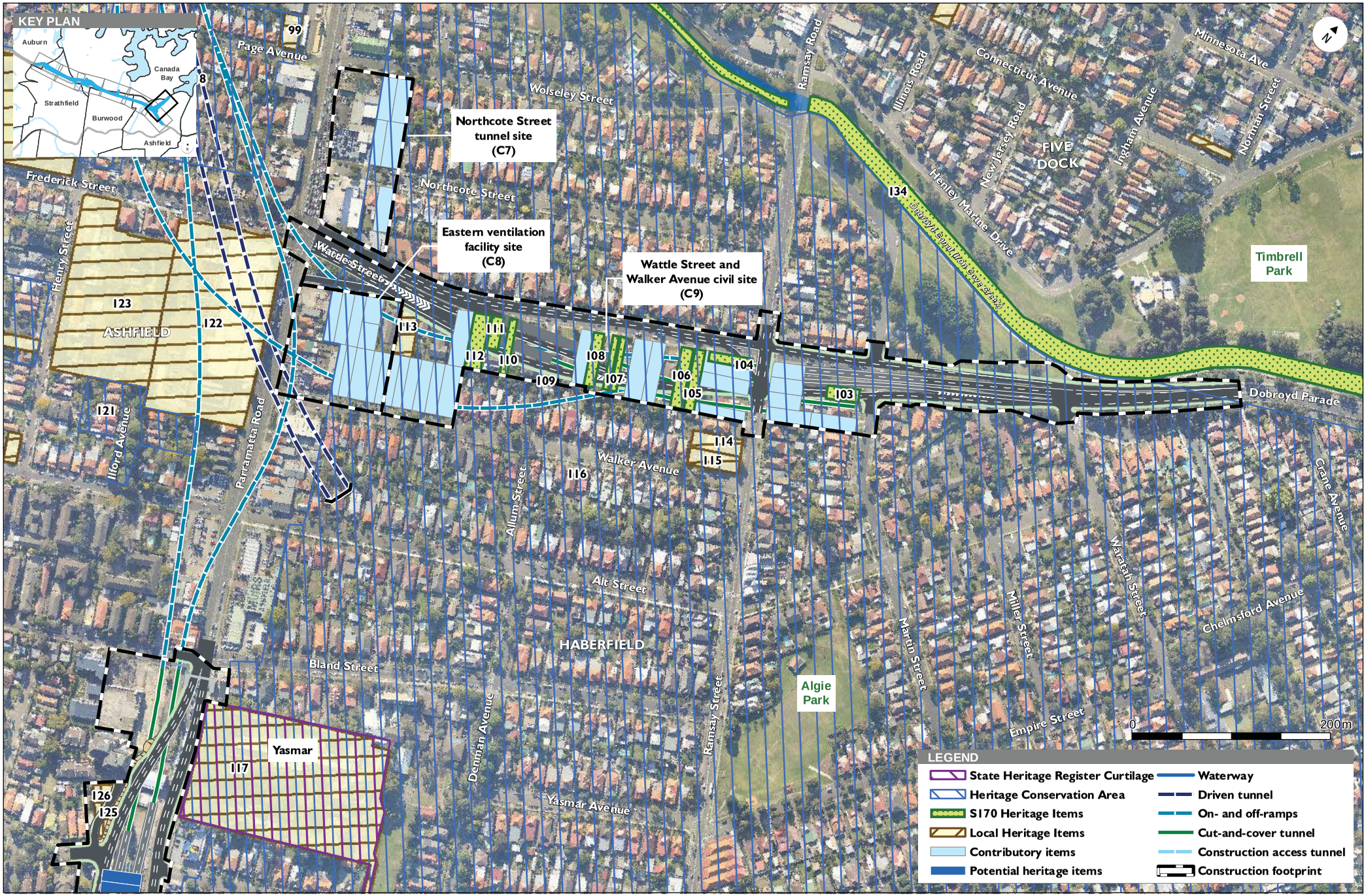

Figure 6.6 Non-Aboriginal heritage items and heritage conservation areas - Haberfield and Ashfield

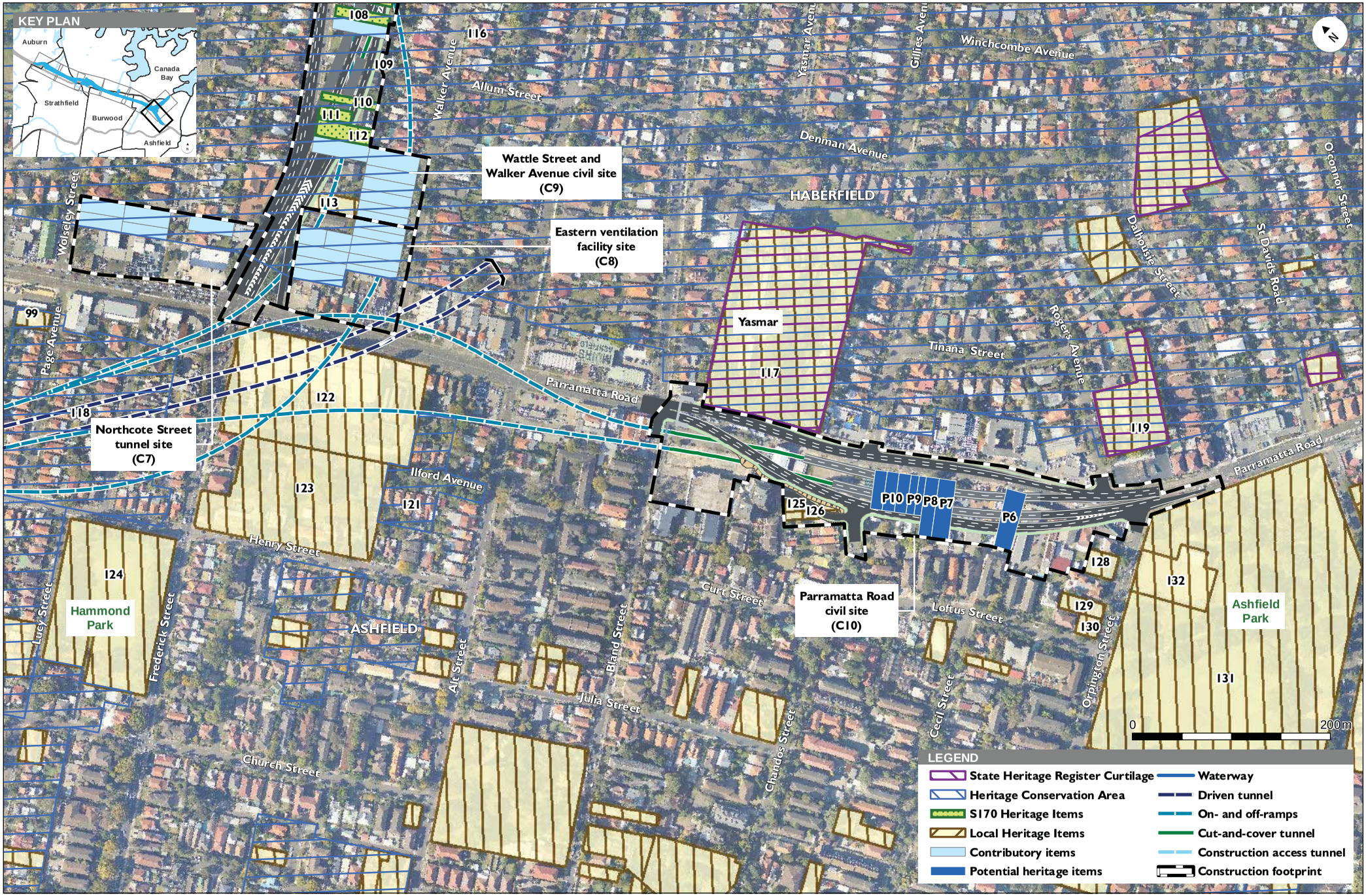

Figure 6.7 Non-Aboriginal heritage items and heritage conservation areas - Haberfield and Ashfield

Appendix C WUDF assessment

The tables below provide a legible comparison of the urban design objectives and principles of both the proposal and the WUDF.

Table B.1 Framework Objective 1 assessment table

Framework Objective 1: Leading edge environmental responsiveness		Preferred design urban design objective	Assessment
Planning, design, construction and long-term management shall be based upon a natural systems approach which is responsive to the environment and promotes the highest levels of sustainability.		The preferred design has prioritised minimising land acquisitions and optimising land use to reconnect communities and maximise opportunities for urban revitalisation along the alignment.	This preferred design objective is consistent with the WUDF. The proposal has improved on the geometry of the reference design to reduce the project footprint. In the next design phase further spatial efficiencies will be explored. A 'natural systems' approach will be an ongoing feature of the design as it evolves.
1.1	Consider the concept of 'green infrastructure' and its possible application to the project.	Protect and retain as much existing vegetation as possible to minimise the footprint, maximise vegetated screening and reduce community concerns over loss of green space and green links.	The preferred design seeks to maximise opportunities for vegetated screening as part of its approach to 'green infrastructure'. As the project evolves further aspects of a 'natural systems' approach will be explored.
1.2	Where possible, restore or re-establish fragmented vegetation and ecologically endangered plant communities. Where possible create additional public open space and enhance existing open space in and around the motorway corridor communities (ie Cumberland Plain Woodland).	Using only containerised planting stock to facilitate rapid establishment of new landscape installations. Feature plant species that reinforce local Cumberland Plain indigenous plant communities.	The use of Cumberland Plain Woodland species is an appropriate response to re-establish fragmented and endangered eco-systems. Notwithstanding the benefit of re-establishing endemic species, where appropriate, the use of domestic and cultural landscape species will also be developed in the next phase of design.
1.3	Protect and enhance waterways, re-establishing green corridors along existing creek lines where possible.	Use appropriate vegetation treatments appropriate to reinforce key landscape patterns.	This preferred design principle is supportive of the WUDF.
		Key elements such as retaining walls and noise walls would have a textured surface with an anti-graffiti paint to discourage vandalism.	This preferred design principle relates to WUDF Objective 1 'Leading edge environmental responsiveness'.

Framework Objective 1: Leading edge environmental responsiveness		Preferred design urban design objective	Assessment
1.4	Balance the composition of built form and landscape to maximize planting opportunities by ensuring appropriate slope gradients (1V:3H maximum) that allow successful plant establishment and ability to access and maintain long term.	Balance the composition of built form and landscape by maximising planting opportunities that visually compete with the scale of the proposed infrastructure elements.	This preferred design principle is consistent with the WUDF. The proposal seeks to adopt slopes in a range from 4H:1V to 2H:1V. Maximum grades of 3H:1V are preferred for plant establishment. Where these grades cannot be achieved because of spatial constraints a combination of retaining walls and 3H:1V grades will be considered.
1.5	Maximise opportunities for carbon sequestration, through planting trees on residual lands non critical to motorway operations.		Initiatives for carbon sequestration will be considered as the detailed design evolves.
1.6	Integrate (embed) sustainability principles and technologies into design thinking, detailing and delivery to help offset environmental footprint of the motorway. Explore the potential to incorporate the latest advances in material sciences, solar energy and water sensitive urban design initiatives (WSUD).		Opportunities for sustainable design and WSUD will be further explored in the detailed design stage of the proposal.
1.7	Ensure a robust, durable, long life, low cost, minimal maintenance outcome that deters vandalism.		The preferred design demonstrates the application of this principle, which will be carried through into the detailed design phase.
1.8	Where possible, preserve wide margins and space along the road corridor to safely create an ‘urban forest’ along the motorway. This will improve the environmental performance and physical aesthetic of the motorway by controlling the micro-climate, creating habitat and biodiversity, allowing for water infiltration to recharge aquifers and reducing the heat island affect.	Where possible, preserve wide margins and space along the road corridor to safely create an ‘urban forest’ along Parramatta Road.	This design principle is aligned with the WUDF. In the next design phase further opportunities for structure planting along the road corridor will be explored.

Table B.2 Framework Objective 2 assessment table

Framework Objective 2: Connectivity and legibility		Preferred design urban design objective	Assessment
Build connectivity across the city, beyond the boundaries of the motorway corridor and promote increased legibility of places, buildings, streets and landmarks.		The project will create a simple, legible and inviting design solution that will build connectivity across the city, within and beyond the boundaries of the motorway, enhancing journeys for motorists, pedestrian and cyclists alike.	The preferred design provides opportunities to enhance connectivity for all users, including cycle and pedestrian connections. In the next stage the design will be developed to include further details, including connections with bus stops.
2.1	Provide visual stimuli within the road corridor appropriate to the posted speed that creates a progressive sequence of visual events, within and without the corridor, and an enhanced view of the road.	Reinforce the legibility of landmarks such as Sydney Olympic Park, Concord Road interchange and the Parramatta Road interchange.	This design principle is consistent with the WUDF. The proposed intersections will be highly legible due to the scale and sequence of the interventions. The detailed design approach is simple and appropriate to that scale. Details of motorway navigation will be further refined in the next stage of design.
2.2	Provide architectural articulation to the horizontal and vertical surfaces, materials and the lighting of motorway tunnels to visually and psychologically break up the extent of tunnel lengths.	Provide visual stimuli within the tunnel that creates a progressive sequence of visual events for the motorist.	This preferred design principle is consistent with the WUDF. The detailed design approach is simple and appropriate to the scale and speed of movement through the tunnels.
		Provide architectural articulation to horizontal and vertical surfaces, materials and the lighting of tunnels to visually and psychologically break up the extent of tunnel lengths.	This preferred design principle is consistent with the WUDF. Further design details, such as 'location identifiers' and tunnel lighting, will be confirmed and refined in the next stage of design.
2.3	Provide visual cues for drivers to understanding their vertical and horizontal location in relation to the urban setting through the form, materials, finishes, lighting of the motorway.		This WUDF design principle is also covered in 2.2 above, and subject to further design development in the next stage of design.

Framework Objective 2: Connectivity and legibility		Preferred design urban design objective	Assessment
2.4	Clearly articulate motorway transition zones (eg above/below ground, on/off ramps, intersections) and the early warning of decision making points.		The preferred design adopts a road geometry that is self-explanatory and navigation intuitive. Areas of sensitivity such as tunnel portals (the transition from full sunlight to dark tunnel with no light transition) and wayfinding in complex zones such the M4 (approaches to viaducts and portals), will be further refined in the next stage of design.
2.5	Where possible, promote opportunities to `read the landscape' by providing visual access to/over water bodies and broader views.		The preferred design proposes the use of transparent noise walls where appropriate.
2.6	Reinforce road user safety by designing for movement within the corridor through landscape and built form to promote appropriate driver behaviour (ie to travel at appropriate speeds, slow down or merge).	Enhance shared paths to provide safe and seamless journeys for pedestrians and cyclists around tunnel entry and exit points.	This preferred design principle is consistent with the WUDF. Details of cycle and pedestrian connectivity with existing networks beyond the project boundary will be confirmed in the next stage of design.
2.7	Provide a simple and effective wayfinding and signage strategy that is appropriately located and designed in unison with all regulatory and operational signage requirements.	Provide self-explanatory roads and ease of wayfinding through simple and refined treatments of tunnel entry and exits, tunnel portals and facilities to make an enjoyable and legible journey for motorists.	Road systems within the preferred design are as simple and as 'self-explanatory' as possible. Motorway wayfinding in complex zones such the M4 and Concord Rd interchange will adopt an efficient and well-considered signage strategy.

Table B.3 Framework Objective 3 assessment table

Framework Objective 3: Place making		Preferred design urban design objective	Assessment
Create beautiful places, streets, structures and landscapes that draw their form, character and materiality from local context, the intrinsic natural and cultural qualities of each locale.		The project will add to local places, streets, structures and landscape and minimise impacts on the local community through the below design treatments:	This preferred design principle is consistent with the WUDF.
3.1	Ensure public places are beautiful, high quality, engaging and functional.	Using high quality and functional materials.	The preferred design applies this principle to all urban design elements.
		Activating the edges of public spaces through the design and by considering pedestrians and cyclists and adjacent land uses. Visually recede existing retained and new elements through using mid to dark tones whenever appropriate to minimise visual impacts.	The preferred design has considered adjacent land uses. Opportunities for pedestrian activation will be further explored in alignment with future residual land development.
3.2	Respond to the intrinsic natural and cultural qualities of each locale through form, colour, character and materiality.		The preferred design adopts a respectful architectural language, using materials of high quality, for the major urban design features such as vent stacks and tunnel portals.
3.3	Retain and protect valuable natural and cultural features.		The preferred design is respectful of natural and cultural features.
3.4	Optimise access to sunlight, daylight, breezes and views.		The preferred design is sensitive to issues of microclimate and adopts optimum solar access wherever possible.
3.5	Activate the edges of public places with complimentary activities and land uses.		There are no details provided as to how this principle is to be applied.
3.6	Integrate the interfaces (eg levels, utilities, servicing, entry and access points) with adjacent urban renewal opportunities to benefit the community.		Urban renewal opportunities are provided for in the preferred design by identifying residual land for that purpose. Opportunities for pedestrian activation will be further explored in alignment with future residual land development. The programing of public realm components will be further explored in the next phase of design.
3.7	Engage with communities, artists and local precinct groups in the design of the motorway, its places and precincts.		Opportunities to engage with communities, artists and local precinct groups will be considered in the next phase of design.

Framework Objective 3: Place making		Preferred design urban design objective	Assessment
3.8	Investigate opportunities for the redevelopment and renewal of surplus land holdings along the corridor.	Offering opportunities for the redevelopment and renewal of surplus land holdings along the corridor	Urban renewal opportunities are provided for in the preferred design by identifying residual land for that purpose. Details of future development, land uses, heights densities etc will be explored in the next stage of design.

Table B.4 Framework Objective 4 assessment table

Framework Objective 4: Urban renewal and liveability		Preferred design urban design objective	Assessment
Enable opportunities for urban renewal and provide high levels of urban amenity and liveability.		The preferred design has considered and integrated design with the local movement networks, places and land uses to enable opportunities for urban renewal and to create a more attractive place to live, work and socialise.	Urban renewal opportunities are provided for in the preferred design by identifying residual land for that purpose. Areas of proposed public realm have also been identified, for example at the Concord Road portal. Further details of land use and activation will be provided in the next stage of design.
		The design has prioritised minimising land acquisitions and optimising land use – to reconnect communities and maximise opportunities for urban revitalisation along the alignment.	The design intent is to minimise land acquisition. The next stage of design will demonstrate how communities will be reconnected and/or urban revitalisation maximised.
4.1	Examine strategies to achieve long-term reduction of local traffic volume, congestion, pollution, vibration and noise.	The preferred design aims to avoid ‘isolated land’ and remove through traffic by removing surface traffic which will achieve long term improvement in air quality and noise on surface roads and streets which support pedestrian activity.	This preferred design principle is aligned with the WUDF objectives.
4.2	Develop strategies to eliminate visual clutter and encourage the removal of extraneous and unnecessary signage and advertising from local buildings, streets and places.	Consolidating and simplifying structures and alignments to enhance surrounding areas.	This preferred design principle is aligned with the WUDF objectives. The minimalist architectural expression of major urban design elements further reinforces these design principles.

Framework Objective 4: Urban renewal and liveability		Preferred design urban design objective	Assessment
		Improving access to public and active transport. Restoring local street, pedestrian and bus connectivity (a regular street edge).	The next stage of design will demonstrate how pedestrian and bus connectivity can be improved by the project.
4.3	Wherever possible undertake footpath widening and the installation of a high quality suite of urban elements (eg street furniture, lighting, signage and pavements).	Widening footpaths to improve amenity for pedestrians and cyclists	This preferred design principle is aligned with the WUDF objectives. The full extent of footpath widening will be confirmed in the next stage of design.
		Featuring coloured built elements to add interest and identity.	This preferred design principle is aligned with the WUDF objectives and expressed in the architectural language of the project.
4.4	Encourage the development of active land uses (commercial, community, retail and recreational) at ground level and the passive surveillance of public spaces.	Considering the future land use of existing commercial areas that could potentially be rejuvenated – to be developed during detailed design.	Urban renewal opportunities are provided in the preferred design by identifying residual land for that purpose. Further details of land use and activation will be provided in the next stage of design.
4.5	Provide extensive tree planting of endemic species to achieve continuous tree canopy cover for shade, shelter and habitat creation.	Providing extensive tree planting of endemic species to achieve tree canopy cover for shade, shelter and habitat. Maintaining vegetated screening by reducing existing vegetation loss and enhancing existing vegetation screening by utilising similar plant species where possible.	The preferred design principle of providing endemic tree species is appropriate to those areas of the project adjacent to sensitive ecological zones. In areas that interface with the cultural plantings of existing residential zones it is appropriate to enhance that existing planting with like species. The next stage of design development will provide further detail of the range of appropriate plant species to be provided.
4.6	Provide sufficient space at intersections (on- and off-ramps) and overpasses to promote connectivity between modes and to improve the amenity and liveability of adjacent communities.		The preferred design provides sufficient space to achieve this principle. Further details will be developed in the next design stage.
4.7	Consider the needs of aging populations, young families and the physically impaired to ensure equitable access and easy movement for all.		The preferred design addresses the requirements and appropriate design standards for universal access.

Framework Objective 4: Urban renewal and liveability		Preferred design urban design objective	Assessment
4.8	Where possible create additional public open space and enhance existing open space in and around the motorway corridor.	Creating additional public open space and enhances existing open space in and around the project corridor, especially at Concord Road interchange.	Areas of proposed public realm have been proposed in the preferred design, for example at the Concord Road portal. Further details of activation and programing, including the enhancement of existing adjoining open spaces, will be provided in the next stage of design.
4.9	Consider the impact of the motorway on urban renewal opportunities by ensuring no dead zones are created or the sterilisation of development opportunities.		The preferred design identifies redevelopment opportunities as residual lands. No sterile or dead zones are created that may compromise these opportunities.
4.10	Investigate urban renewal on surplus lands and the selective initiation of land development on identified catalyst sites.		Urban renewal opportunities are provided for in the preferred design by identifying residual land for that purpose. The next stage of design will identify future land uses and opportunities for development activation.

Table B.5 Framework Objective 5 assessment table

Framework Objective 5: Memorable identity and a safe, pleasant experience		Preferred design urban design objective	Assessment
Provide a memorable project identity and experiences for road users and adjacent stakeholders which are safe, convenient and enjoyable.		The preferred design will provide a memorable identity and provide a high quality user experience for road users and adjacent stakeholders through.	This preferred design objective is aligned with the WUDF.
5.1	Develop a whole of project design philosophy and response that will deliver a consistent product using a unified approach to the form, detailing, fabrication and construction of all motorway and urban design elements but which also affords opportunities for local modulation to reflect the particular character of each locale.	Keeping a simple and consistent language of built elements and components to minimise visual clutter.	This design principle is consistent with the WUDF and has been demonstrated in the preferred design of all urban design elements.
5.2	Ensure that all design solutions safeguard the safety and convenience of the road users and adjacent stakeholders.		A safety in design and CPTED review of the preferred design will included in the next stage of design.

Framework Objective 5: Memorable identity and a safe, pleasant experience		Preferred design urban design objective	Assessment
5.3	Amplify design at key locations such as portals, junctions, bridges and river crossings.		The preferred design of key locations will be further developed in subsequent design stages. In particular, the application of integrated street improvements at the interface with existing neighbourhoods will be carefully considered.
5.4	Create distinctive portal access points that reinforce the character of the local area.	Creating distinctive portal access points that reinforce the character of the local area, but also being respectful to each individual setting.	This preferred design proposed for tunnel portals is simple, elegant and appropriate to the various settings.
5.5	Explore the differentiation of character zones within the tunnel zone between portals to vary driver experience and heighten awareness.	Differentiating character zones and breaking up tunnel lengths to vary the driver experience and heighten awareness of geographical location through lighting, signage and art.	This preferred design principle is consistent with the WUDF and is well demonstrated in the tunnel design.
5.6	Use landscape to define different character zones from broad landscape regeneration through to impact landscape design (ie airport and Sydney Olympic Park).		Detailed planting palettes, including non-endemic species, that respond to existing landscape character will be further developed in the next design stage.
5.7	Maximise opportunities to provide a well vegetated 'green' corridor by providing substantial accessible space, protecting existing vegetation and avoiding small unmaintainable spaces.	Maximising opportunities to provide a well vegetated 'green' corridor by providing substantial accessible space at Concord Road, protecting existing vegetation and avoiding small unmaintainable spaces.	This preferred design principle is consistent with the WUDF. The next stage of design will further consider issues of accessibility and activation within the proposed areas of public realm and explore opportunities for additional road corridor screen planting.

Table B.6 Framework Objective 6 assessment table

Framework Objective 6: A new quality benchmark		Preferred design urban design objective	Assessment
Provide design and construction quality of world class standard. The project shall establish a new benchmark for integrated sustainability, engineering, art, architecture and urban design.		The preferred design will deliver a world-class solution for the project that sets a new benchmark in the travel experience. The design will establish an identity for the existing M4 and future stages.	By adopting a consistent, high quality, design approach to tunnel portals and other urban design elements the preferred design achieves an urban design identity for the motorway that could also be adopted by future stages.
6.1	The project shall establish a new benchmark in urban transport and renewal in Australia and embrace world's best engineering, architecture and urban design practice.		The preferred design provides for building architecture, portal elements, tunnel linings, noise walls and retaining walls of high quality, and as such makes a positive contribution to the quality benchmark for the whole project.
6.2	Provide a simple and elegant design beautifully integrating with built and landscape elements which clearly express materials, refined simplicity of form and function.	Integrating the various existing and proposed new built form elements such as the dive structures, portals, noise walls and retaining walls to reinforce an integrated design solution that enhances visual unity and clarity.	This design principle has been demonstrated in the preferred design proposal for building architecture, portal elements, tunnel linings, noise walls and retaining walls. Similar quality benchmarks for remaining elements such as the motorway bridges and viaducts will be explored in the next stage of design.
6.3	Use robust, high quality and durable materials appropriate to the urban setting and avoid opportunities for vandalism.	Utilising durable and high quality materials to ensure the motorway maintains its identity for years to come.	This design principle has been demonstrated in the preferred design for portal elements, tunnel linings, transparent noise walls and retaining walls. In the next detailed design stage the principle will be applied to the design of bridges, viaducts, concrete noise wall panels and the materiality of components in general.
6.4	All visible motorway operation fittings, fixtures and equipment shall be considered as a complete set of integrated urban design elements.		The preferred design has set the framework to enable the application of this principle in the detailed design stage.

Framework Objective 6: A new quality benchmark		Preferred design urban design objective	Assessment
6.5	Define and implement an urban art strategy for the entire project, providing a clear vision and set of controls for an integrated artist response that is contextually relevant, resists an ad-hoc, fussy, plastering approach and ensures road safety.		An urban art strategy has not yet been included in the preferred design.
6.6	Adopt a design verification procedure using an eminent design and sustainability review panel to ensure design quality throughout each stage of works, from briefing to handover.		A design verification procedure will be included in all future stages of design.
6.7	Validate design and documentation using full-scale prototypes.		A design and documentation validation procedure will be included in all future stages of design.