

Figure 33 – Key site views and vistas in approved (left and proposed (right) master plans
Source: CHROFI

6.4.1 Local Views

Figures 34 to 37 below provide a comparative analysis between the visual scale of building envelopes under the approved and amended master plans.

Of greatest note in these comparisons is the significant improvement in the visual impact in the Edward Street view at **Figure 34**, where the realignment of the main public open space results in the street terminating with a district view rather than a long, bulky building. Whilst the taller elements of the proposed envelopes protrude slightly above the existing tree canopies to the sides of the main view axis, these protrusions are minor and are more than offset by the visual benefits of the newly created view corridor.

Figures 35 and 36 illustrate the closer streetscape views along Artarmon Road and Richmond Avenue. These views indicate that there will be no significant change in the overall massing of buildings to these interfaces, with the additional articulation proposed along the Richmond Avenue providing for a reduced visual impact along the length of this street. On Artarmon Road, the creation of the new 'Village Square' will break up the massing of the buildings along this street, and as noted in **Section 6.3.1** the sensitive approach to building massing on Artarmon Road will provide a low scale edge that is visually appropriate at the interface to lower-density residential areas.

On Walter Street, the angled view indicates that part of the taller proposed building will be visible from public street views toward the Site. As noted in **Section 6.2.2**, however, the properties along the northern edge of Walter Street have been recently rezoned for medium density residential development, including residential flat buildings. As a result, it is likely that the scale and nature of development on these properties will change substantially over the medium term, either blocking views to development within the Site or substantially altering the context in which this proposed building is perceived. In terms of private views taken from the rear of properties in Walter Street, the amended Concept Plan will offer a net improvement in comparison to the approved Concept Plan by:

- Substantially reducing the footprint of built form in the vicinity of the south-eastern corner of the site and providing a stepped down built form to the southern edge of Building J;
- Preserving much of the southern edge of the Site for publicly accessible open space;
- Narrowing of proposed envelopes for taller building envelopes, and increasing their setback from the southern boundary to reduce visual impact and widen the visible spacing between buildings; and
- Contributing toward the regeneration of the Walter Street Reserve, which is currently weed-infested and unsightly.

In light of the above, it is considered that the amended CHROFI master plan represents a significant improvement to the visual impact of the building envelopes on local views in comparison to the approved Concept Plan.



Figure 34 – View 04 – Edward Street looking south with approved envelopes (left) and proposed envelopes (right)



Figure 35 – View 05 – Artarmon Road looking west with approved envelopes (left) and proposed envelopes (right)



Figure 36 – View 02 – Richmond Avenue looking north-east with approved envelopes (left) and proposed envelopes (right)



Figure 37 – View 06 – Walter Street looking north-west with approved envelopes (left) and proposed envelopes (right)

Source: CHROFI

6.4.2 District and Regional Views

District views to the subject site are currently dominated by the TXA transmission tower which, at 233 metres in height, is one of the tallest structures in Sydney. The Castle Vale development is also prominent within local district views to the north, east and south. Within the broader visual catchment of the Site, district and regional views are positioned in a context of a number of visually prominent developments and centres such as Chatswood (Figure 38), Royal North Shore Hospital, St Leonards, North Sydney and the Sydney CBD.

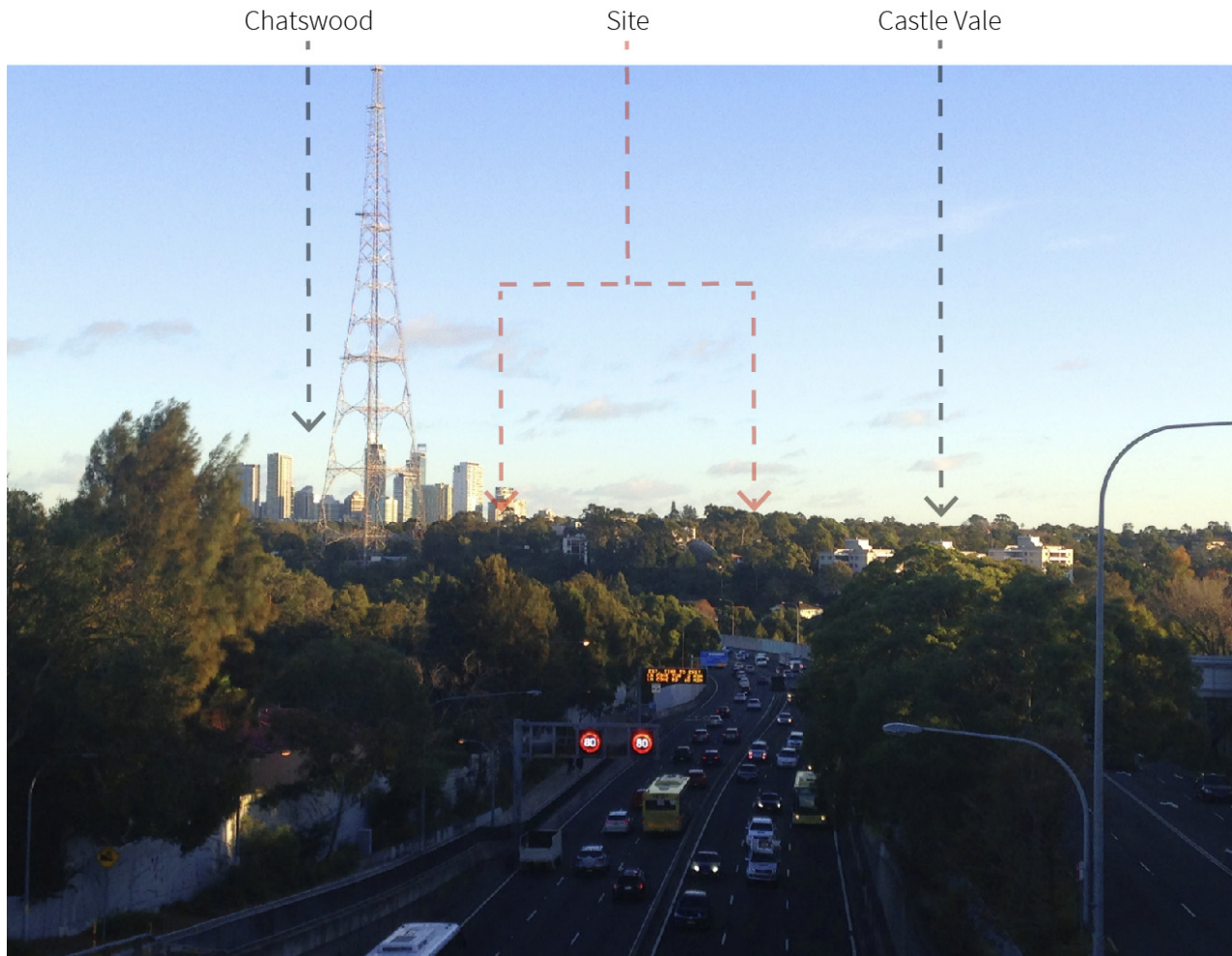


Figure 38 – View toward Site from Naremburn pedestrian overpass



Figure 39 – View 01 – Grandview St, Naremburn (near Olympia Ave) looking north-east with approved envelopes (left) and proposed envelopes (right)



Figure 40 – View 09 – Willoughby Incinerator (Small Street) looking west with approved envelopes (left) and proposed envelopes (right)

Figure 39 represents the key view from Naremburn that was assessed during the original Concept Plan application (refer to Appendix 1 of Master Plan Report for detailed views). As can be seen in this figure, the realignment of the main public open space and the increase in the setback of taller buildings from the southern boundary results in a building form that appears substantially less bulky and visually intrusive than the approved Concept Plan. Whilst it is apparent that there are some slightly taller building elements proposed in the amended master plan, there is also a substantial increase in the amount of visible skyline within the site and between buildings, providing a more articulated profile that allows for views past the proposed buildings. The visual impact of the amended scheme is considered to be superior to the approved scheme.

Figure 40 is taken from Small Street to the east of the site near the Willoughby Incinerator, and is a good representation of views to the Site from further to the east in Northbridge. As can be seen in this figure there is a slight increase in the apparent height of the building envelopes, however, once again there is substantially greater articulation of this massing across the horizon and the increased height is across only a very small area. The visual impact of the amended scheme is considered to be equal to or less than that of the approved scheme.

The proposed building envelopes under the amended scheme are not visible from View 09 taken within Artarmon Reserve.

In light of the above, and the detailed comparison of additional district views contained in the CHROFI Master Plan Report, it is clear that the proposed amendments will result in an improvement to the visual impacts of the residential redevelopment of the Site in comparison to the approved Concept Plan.

6.4.3 Conclusion – Visual Impacts

Perceived visual impacts of the Concept Plan were one of the major points of contention during the assessment of the original development proposal considered by the PAC, and were one of the key reasons given by the PAC in its determination to reduce the maximum height of building envelopes to eight storeys. Overall height is only one component of a visual impact assessment, which must also take into account the separation, setbacks, articulation, visibility of building envelopes and actual visual appearance within a skyline. As demonstrated in the preceding sections and the further analysis contained within the CHROFI Master Plan Report, the proposed amendments to the master plan would result in a significant improvement to the visual impacts of the approved Concept Plan, notwithstanding the increase in proposed building heights. In light of this, it is considered that the proposed modifications should be supported on the basis that they represent an improvement of visual impacts when compared to the current Concept Plan Approval.

6.5 Public Open Space and Landscaping

6.5.1 Public Open Space

Under the proposed modification, public open space on the Site would increase by 28%, resulting in an additional 1,539m² of publicly accessible open space. This increase represents a significant public benefit associated with the modification, which is achieved by providing narrower building envelopes and a rationalised internal road layout.

The approved park on Artarmon Road had a depth from the street of only 25 metres, providing a narrow space that would be more suited to passive recreation and heavily affected by the interface to the road (in terms of safety and

noise). The remaining two spaces are isolated and located deeper within the Site located on largely inaccessible internal roadways and footpaths that provide little incentive or legibility for the public to enter the site and utilise these spaces.

Importantly, the modification not only increases the quantum of public open space, but also increases community access to this space. The CHROFI master plan provides for a legible and well-connected public open space network that draws on the key visual axes toward the site along Edward Street and connects through to the underutilised Walter Street Reserve. The public nature of the space will be clearly evident to people travelling along Artarmon Road, and the simplified loop road with on-street visitor parking will provide a simple means of access. The placement of public attractors such as cafes and kiosks at key locations near the entrances and centre of the main public open space will provide an incentive for the public to engage with the open space, as will the new children's playground at the southern edge of the Site.

The new escarpment park at the south of the Site has the potential to be a significant asset for the entire community, with a large expanse of lawn showcasing district and regional views toward St Leonards and the Sydney CBD. The children's playground will provide an engaging and interesting attractor for families within the broader community, whilst the direct public connection from Artarmon Road and Richmond Avenue to the Walter Street Reserve (see **Section 6.5.2**) will connect the area into the valuable east-west open space corridor that touches the southern edge of the Site.

The Landscape Master Plan prepared by McGregor Coxall (refer to Section 3 of the Master Plan Report) in conjunction with CHROFI provides a more defined and descriptive concept for the future embellishment and purpose of each of the public open spaces within the amended master plan. The landscape master plan, which will be subject to further detailed design in consultation with Council and the community prior to the submission of detailed Development Applications for the public domain, describes a series of spaces that will serve the active and passive recreational needs of both the existing and the future communities.

With the increase in the proposed area of the landscaped open space, and the provision of higher quality embellishments than previously approved, the additional dwellings proposed under this amendment will be critical in ensuring the initial feasibility and ongoing viability of maintaining this public space to a high standard. Council took a strong stance against public ownership of the publicly accessible areas of the Site during the assessment of the previous Concept Plan, meaning that the ongoing cost of maintaining this additional space will fall onto the owners of new dwellings under a Community Title arrangement. Simply increasing the open space to be maintained without a commensurate increase in dwellings would be financially unsustainable and would impact on housing affordability and the long-term quality of these spaces.

On the whole, it is evident that the open space benefits of the amended master plan represent a significant benefit to the whole community in both quantitative and qualitative terms.

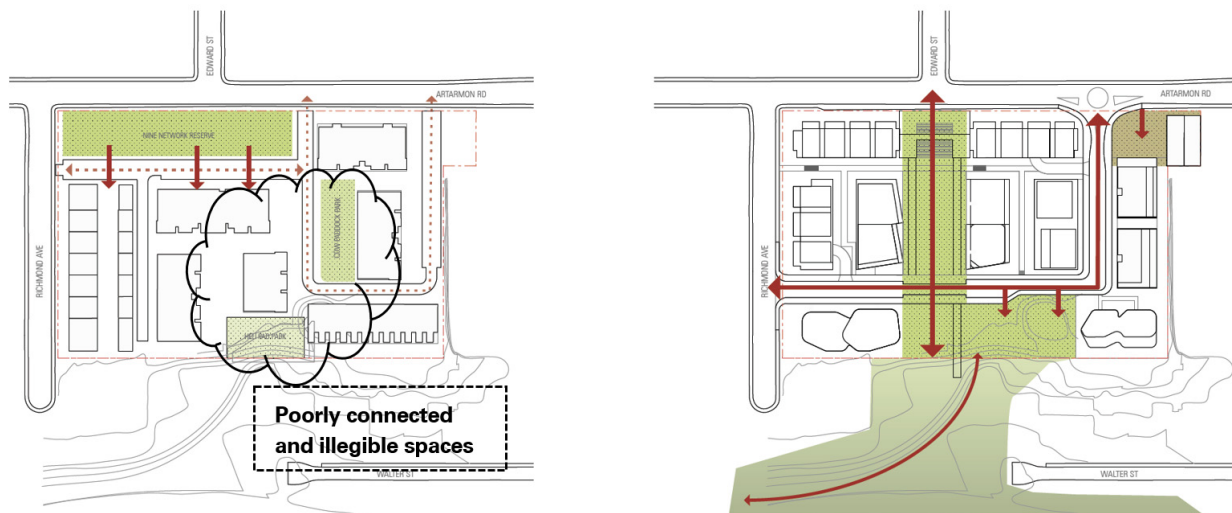


Figure 41 – Comparison of approved (left) and amended (right) open space strategy and connectivity
Source: CHROFI

6.5.2 Walter Street Reserve

Condition 18 of Schedule 3 of the current Concept Plan Approval requires the proponent to provide “an accessible bush track to council requirements through Walter Street Reserve connecting the through-site link with Walter Street”. These works are to be delivered by the developer of the site, either through works-in-kind or a financial contribution to Council to undertake the works. Beyond the construction of this track, there is no requirement for any further upgrades to this public reserve.

Council’s ‘Plan of Management – Naremburn Ward Parks’ (1999) identifies the opportunity to construct pedestrian links through the Walter Street Reserve between Chelmsford Avenue, Richmond Avenue and Walter Street. Weed infestation problems were identified in this plan and continue to be an issue more than 15 years later, preventing the regeneration of this patch of bushland. As illustrated in **Figure 42** below, the Walter Street Reserve is currently in very poor condition and fails to deliver on Council’s objectives for both bushland regeneration and access.

The new public benefit offer described in **Section 5.4** of this report proposes a new \$1 million contribution toward Council to undertake the construction of new access tracks and bushland regeneration works. The proposed contribution is well in excess of the value of the works required under Condition 18 of the existing Concept Plan Approval, and would allow for Council’s planned vision for this Reserve to be fulfilled, resulting in substantial community benefits. In addition, works would be undertaken by the proponent on the southern parcel of land within the Concept Plan Approval site (Lot 12 DP 1162507) to better facilitate the Richmond Avenue access and support the bushland regeneration.

The final program of works will be required to be determined in consultation with Council, adjoining land owners and the local community, ensuring that the community benefit is maximised and integrated with Council’s other planned open space and bushland regeneration works.

Providing new access connections through the Site would complete a missing link in a strong east-west corridor of public open space and bushland between Artarmon and Middle Harbour as illustrated in **Figure 43**. Furthermore, the reorientation of the public open space within the site to the proposed north-south axis would allow for this network to be more readily accessed by the existing

Willoughby community to the north. Bushland regeneration within the Reserve will have benefits to the broader local environment by reducing the transfer of weeds into local waterways. As such, the additional public benefit delivered by this Modification Application to the Walter Street Reserve is considered to be of significant community and environmental merit and should be supported.



Figure 42 – Images of Walter Street Reserve
Source: CHROFI

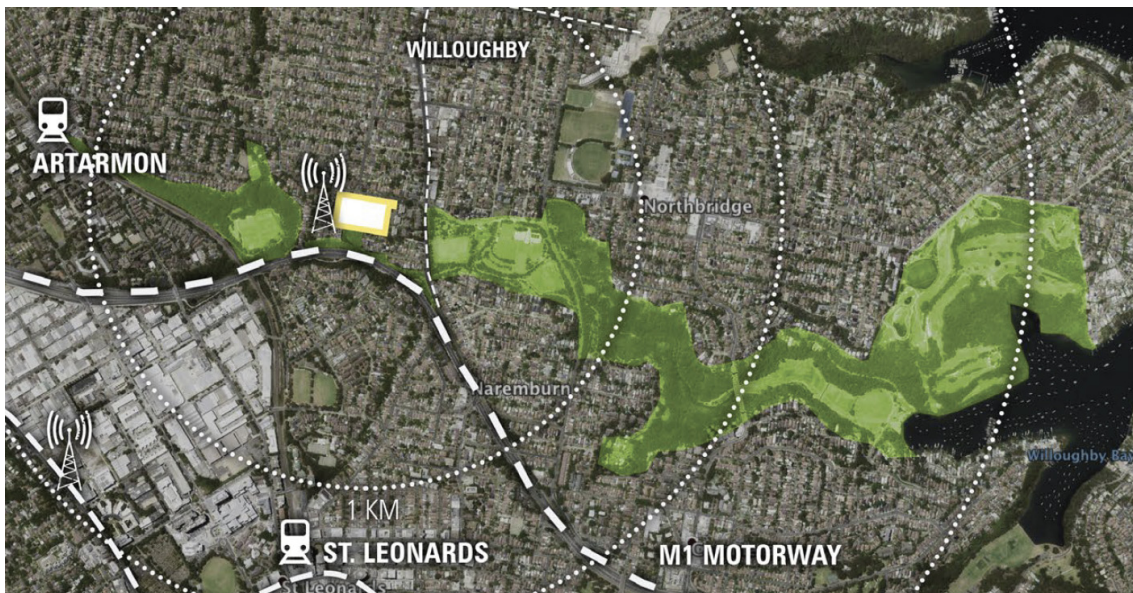


Figure 43 – Existing east-west corridor of public open space between Artarmon and Middle Harbour
Source: CHROFI

6.5.3 Tree Removal and Replacement

The amended master plan would result in an additional (net) 14 existing trees being removed within the Site in comparison to the approved master plan. Of these, three were identified as being of high value for retention and are discussed further below.

Trees 18 and 19, two Red Bloodwood trees approximately 18 metres in height and located at the Artarmon Road frontage of the Site near Scott Street (existing), were designated as being of high retention value during the original planning assessment and were required to be retained under the Concept Plan Approval. Under the amended scheme, these trees are proposed to be removed to allow for the consolidated vehicular access point and roundabout to Artarmon Road. The consolidated vehicular access provides for significant improvements to access and traffic conditions within the immediate locality for the benefit of both the existing and future community. The re-aligned Scott Street will be planted with a boulevard of native trees that are integrated with the overall landscape master plan and suitable for their location. As such, the removal of these two trees is

considered to be mitigated by the broader amenity and landscaping benefits of the amended master plan.

Tree 32, a Sydney Blue Gum in the centre of the Site approximately 20 metres in height, was designated as being of high retention value during the original planning assessment and was required to be retained under the Concept Plan Approval. Under the amended scheme, this tree is proposed to be removed to allow for new building footprint in this location. This amendment is considered to have significant urban design and visual impact benefits by allowing for building envelopes to be concentrated within the centre of the Site, rather than along the southern boundary as in the approved scheme. This in turn allows for new significant tree plantings and additional tree retention along the southern site boundary, providing additional visual screening of new buildings and connection with existing bushland within the Walter Street Reserve. In addition, it is noted that the central north-south public open space will be planted with a boulevard of larger native tree species that will make a significant contribution to the landscaped character of this space. As such, the impact of the removal of this tree is considered to be acceptable and mitigated by the benefits of the broader landscape and urban design benefits of the amended master plan.

The Landscape Concept Plan prepared by McGregor Coxall outlines an indicative landscaping scheme that involves the planting of more than 100 new native trees within the Site. In addition, the final landscaping scheme would also include a range of shrubs and groundcover planting, and all new landscape plantings within the Site would be native plant species selected from Willoughby Council's list of recommended species. This landscaping scheme would be integrated with the urban design outcome for the Site, and provide significant visual and environmental benefits to the community over the medium and long term.

Further to the above, it is noted that the amended master plan incorporates a proposal to contribute \$1 million to Willoughby City Council for the upgrade of the Walter Street Reserve, which is likely to include the rehabilitation and replanting of native vegetation in addition to that provided within the Site. The Proponent would work with Council and the community to develop a comprehensive works and management plan to improve the ecological values and public utility of this underutilised public reserve.

In light of the above, it is evident that the amended master plan will provide for a significant increase in native trees and vegetation within the Site that will provide a positive landscaped outcome. There will be a significant increase in the number of native trees located within the Site, providing a range of benefits to the existing and local community. The amended master plan provides for an integrated urban design and landscaped outcome that substantially increases the opportunity for publicly accessible landscaped spaces on the Site, with a significant increase in native trees that will more than mitigate the impact of the removal of existing trees on the Site.

6.6 Traffic, Access and Transport

A Transport Impact Assessment has been prepared by GTA Consultants for the proposed modification (**Appendix H**) which is discussed in the following sections.

6.6.1 Traffic Generation and Network Impacts

Traffic Generation

The proposed modification would result in an increase from 400 to 510 dwellings on the Site, with a proportionate increase in the number of associated vehicular movements throughout the day. The following provides an overview of the proposed modification's implications for traffic generation on the Site:

- Weekday peak traffic generation from the Site would increase by 36 movements from 128 (approved) to 164 vehicles per hour. The existing traffic generation by Nine is 198 vehicles per hour in the AM peak and 176 vehicles per hour in the PM peak⁶.
- Weekday total traffic generation from the Site would increase by 167 movements from 609 (approved) to 776 vehicles per day.
- Weekend hourly traffic generation from the Site would increase by 28 movements from 100 (approved) to 128 vehicles per hour. The existing traffic generation by Nine is 24 vehicles per hour on weekends⁷.

These increases are minor in the context of the existing traffic counts within the local road network, and as outlined below would have negligible impacts on local intersection performance.

Willoughby Road/ Artarmon Road/ Small Street Intersection

During the assessment of the original Concept Plan Application, and in the preliminary consultation for this modification, the performance of the intersection of Willoughby Road, Artarmon Road and Small Street (the Willoughby Rd intersection) was a matter of significant community concern. Based on updated 2016 modelling by GTA, this intersection currently performs at a Level of Service (LoS) B during weekday peak periods, which is defined as 'Good with acceptable delays and spare capacity' under the applicable RMS guidelines (refer **Table 8**). On Saturdays, the intersection currently performs at LoS C, which is defined as 'Satisfactory'. The lower performance level on Saturdays is primarily due to the additional traffic utilising this intersection from Small Street as a result of the operation of the Willoughby Leisure Centre and netball courts. Despite the intersection operating at an acceptable level of service based on RMS guidelines, the performance of this intersection was not considered to be satisfactory to the existing local community during the assessment of the original Concept Plan assessment phase.

Table 8 – SIDRA Intersection Level of Service (LoS) Criteria

Level of Service	Average delay per vehicle (seconds)	Description
A	Less than 14	Good operation
B	15 to 28	Good with acceptable delays and spare capacity
C	29 to 42	Satisfactory
D	43 to 56	Near capacity
E	57 to 70	At capacity, at signals incident will cause excessive delays
F	Greater than 70	Extra capacity required

The addition of the 400 approved dwellings on the Site in accordance with the current Concept Plan Approval would not alter the LoS for this intersection, with only small increases to average delays.

GTA's modelling indicates that, absent of any upgrades, the proposed master plan with 510 dwellings would result in the following changes to the future performance of the Willoughby Rd intersection:

- Average delays in the Weekday AM Peak would increase from 28 seconds to 30 seconds, which is categorised as a LoS C;
- Average delays in the Weekday PM peak would increase from 28 seconds to 29 seconds, which is categorised as a LoS C; and

⁶ GTA Consultants, Appendix H

⁷ GTA Consultants, Appendix H

- Average delays on Saturdays would increase from 34 seconds to 35 seconds, which is categorised as a LoS C.

LoS C is objectively defined as 'Satisfactory' performance for a signalised intersection under the RMS guidelines for intersection assessment. The next level down, LoS D, is defined as 'Near Capacity', which as suggested by the name means that there is still capacity and an upgrade to the intersection is not required. It is only at LoS E 'At Capacity, Incident at Signals Will Cause Excessive Delays' and LoS F 'Extra Capacity Required' that there is a certain need to provide upgrades to the intersection. As such, it is evident that the proposed modifications would not trigger a need for an upgrade to the intersection in their own right.

The Willoughby Rd intersection currently accommodates between 3,300 and 3,500 vehicles per hour during the weekday peaks and on weekends. The redevelopment of the Site for residential purposes (as amended) would result in only a 0.5% increase in existing traffic volumes at the intersection during the AM Peak and a 2.0% increase in existing traffic volumes at the PM Peak and on weekends. This increase is considered to be very minor, and as detailed above the intersection will continue to operate with satisfactory performance notwithstanding the proposed amendments to the Concept Plan. In light of this, it is evident that the proposed modifications to the Concept Plan do not give rise to a need to upgrade the Willoughby Rd intersection.

Notwithstanding the above, there are a number of additional future influences on the performance of this intersection, including the cumulative impacts of future residential development along Willoughby Road and Penshurst Street to the north of the Site and Council's planned upgrade of the Willoughby Leisure Centre on Small Street to the east. It is apparent from consultation undertaken during the original Concept Plan assessment and during the preparation of this modification application that there is a broad community desire for this intersection to be upgraded.

Council identified the performance of the Willoughby Rd intersection as being a key constraint on its planned upgrades to the Willoughby Leisure Centre during the preparation of the Draft Willoughby Leisure Centre Master Plan (2012). In this master plan, Council prepared a concept design for the upgrade of the intersection (**Figure 44**) involving:

- Providing a new separated right-turn lane for traffic turning from Willoughby Road into Small Street, allowing unimpeded west-bound and north-bound vehicle movements;
- Providing a new left-turn lane for traffic exiting Small Street onto Willoughby Road, reducing conflicts with east-bound traffic turning onto Willoughby Road from Artarmon Road; and
- Re-phasing of the traffic signals to provide quicker and more efficient flow of traffic from Artarmon Road and Small Street onto Willoughby Road.

Recognising the broader community desire and benefit in upgrading the Willoughby Road intersection, the Proponent is seeking to make a new voluntary contribution of \$3 million to Council for these works to be undertaken. Utilising the funding provided by the Proponent, Council would be responsible for refining the concept intersection design, acquiring any land required, liaising with the NSW Roads and Maritime Services and physically undertaking the upgrade works. The timing of payment and works would be agreed between the Proponent and Willoughby City Council as part of the negotiation of the proposed VPA but generally consistent with the timeframe for development.

The proposed upgrades to the Willoughby Road intersection, supported by the amendments to the Concept Plan, would result in improvements to traffic conditions at this intersection. **Table 9** below summarises the average delays (in seconds) at the Willoughby Road intersection under existing conditions, with the approved Concept Plan and with the proposed amendments to the master plan (including intersection upgrade). This table summarises both the overall average delay at the intersection, as well as breaking down the average delays for vehicles approaching from Artarmon Road and Small Street. This table demonstrates that the amended scheme would result in improvements to the performance of the Willoughby Rd intersection at all times for traffic exiting Artarmon Road and Small Street in comparison to the approved scheme. Whilst there would be a slight (0.5 seconds) increase in average delays overall on Saturdays, there would be a reduction in delays for traffic entering from Artarmon Road and Small Street.

GTA's modelling also indicates that there would be a reduction in *existing* average delays at the intersection during both the AM peak (2% improvement) and PM peak (8% improvement). Average delays for traffic exiting Artarmon Road onto Willoughby Road during the weekday AM peak would be reduced by 9% from existing levels. The LoS on Saturdays would remain at LoS C with a minor increase in average delays, however, there would be a 5% reduction in delays from existing conditions for traffic exiting Artarmon Road and a 38% reduction in average delays for traffic exiting Small Street. Importantly, the upgrade would provide additional capacity for the intersection to accommodate future traffic increases from the planned expansion of the Willoughby Leisure Centre by Council.

On the basis of the above, it is clear that the Willoughby Rd intersection could operate at a satisfactory LoS without upgrades should the proposed modification be approved. There is, however, a significant broader community interest and benefit in undertaking these intersection upgrade works, and the proposed modification has the ability and intention to facilitate these improvements.

Table 9 – Summary of changes to average delays at intersection of Willoughby Road, Artarmon Road and Small Street

Peak	Existing Delay	Approved Delay	Proposed Delay	Change from Approved	
	seconds			seconds	%
Overall Intersection Performance					
Weekday AM	26.8	28	26.3	-1.7	-6.1%
Weekday PM	27.5	27.7	25.3	-2.4	-8.7%
Saturday	33	34.3	34.8	0.5	1.5%
Artarmon Road Approach					
Weekday AM	56	52.5	51	-1.5	-2.9%
Weekday PM	59.7	60.5	58.8	-1.7	-2.8%
Saturday	60.4	62.5	57.4	-5.1	-8.2%
Small Street Approach					
Weekday AM	64.2	68.1	44.1	-24	-35.2%
Weekday PM	62.3	63.5	44.8	-18.7	-29.4%
Saturday	64.7	65.9	40	-25.9	-39.3%

Source: GTA Consultants

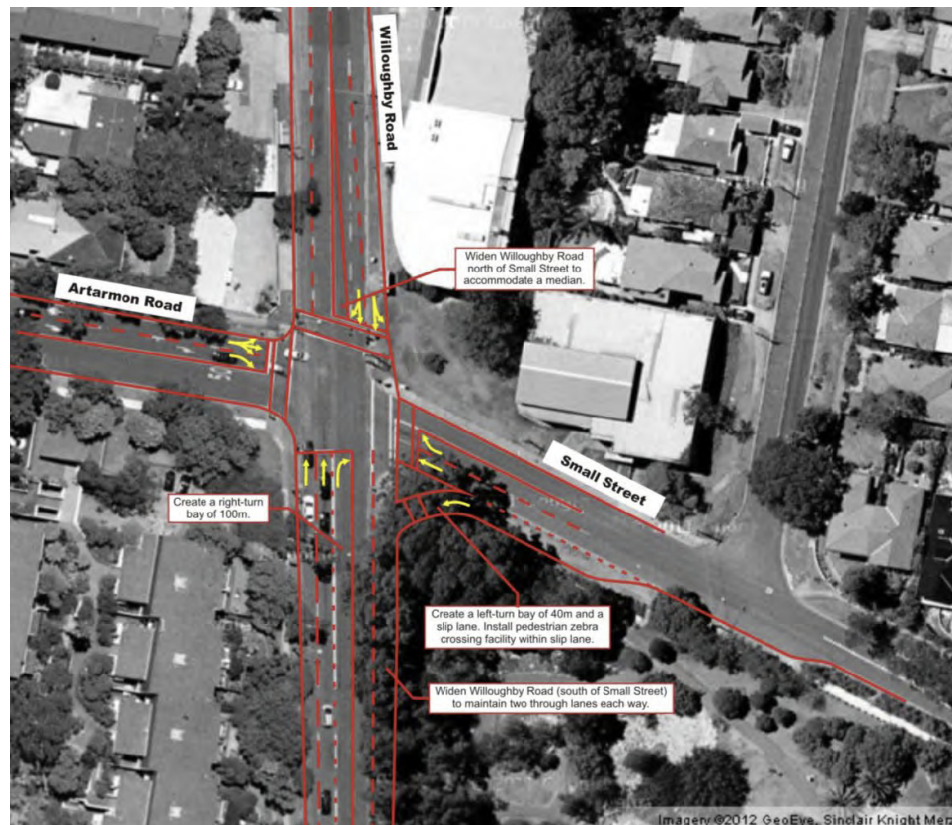


Figure 44 – Council’s concept design for the upgrade of the Willoughby Rd intersection
 Source: GTA Consultants for Willoughby City Council (2012)

Site Access Points

Under the current Concept Plan Approval, Condition 10 of Schedule 3 limits the two approved vehicular access points to Artarmon Road (Scott Street and new driveway) to left-in, left-out vehicular movements only. In addition, Condition 11 requires the upgrade of the Richmond Avenue intersection to be upgraded to a roundabout. These conditions are shown in **Figure 45**. The effect of this approval would be to force all traffic exiting the Site toward Willoughby Road to either:

- Leave via the Richmond Avenue exit, substantially increasing traffic levels on this road; or
- Exit left via the Artarmon Road access points, drive up to Edward Street or the new Richmond Avenue roundabout, perform a U-turn and then drive back towards the Willoughby Rd intersection.

Neither of these outcomes is considered to be optimal from a local traffic perspective. In particular, it would result in all new east-bound traffic exiting the Site during the AM weekday peak travelling through the Edward Street/Artarmon Road intersection, reducing opportunities for traffic from Edward Street to safely enter the flow of traffic along Artarmon Road.

The amended master plan seeks to establish a far more rational traffic arrangement, with a simple loop road and only one access point to each of Artarmon Road and Richmond Avenue (**Figure 46**). A new roundabout located on Artarmon Road would allow for the majority of traffic to and from the Site to be directed to Willoughby Road with minimal impact on the established residential areas surrounding the Site. The need for a roundabout at Richmond Avenue (as per the current approval) is removed due to the ability for traffic to exit the Site in an east-bound direction from the new Artarmon Road roundabout.

Modelling by GTA indicates that the proposed roundabout would perform at LoS A (Good Service) at all peak weekday and weekend periods, and would not be adversely impacted by queuing on the Artarmon Road approach to the Willoughby Rd intersection. Traffic flows from the Site into the roundabout during peak periods would not significantly impact upon or delay the movement of existing traffic along Artarmon Road heading east toward Willoughby Road.

GTA have confirmed that the proposed roundabout location is suitable from a traffic safety perspective, subject to detailed design, and achieves the required sight lines and visibility. All land required for the construction of the roundabout would be within the existing road reserve or the Site.

As noted in **Section 5.5** of this report, the option of limiting the Richmond Avenue entrance to an ingress-only design has been contemplated in the development of the amended master plan. This is not currently documented in this application, due to the limited extent of feedback received on this option. The modification would re-direct traffic leaving the Site in a westerly direction to exit via Artarmon Road rather than Richmond Avenue, reducing overall traffic movements on Richmond Avenue. GTA have confirmed that this arrangement, if pursued, would not give rise to any additional local traffic impacts.

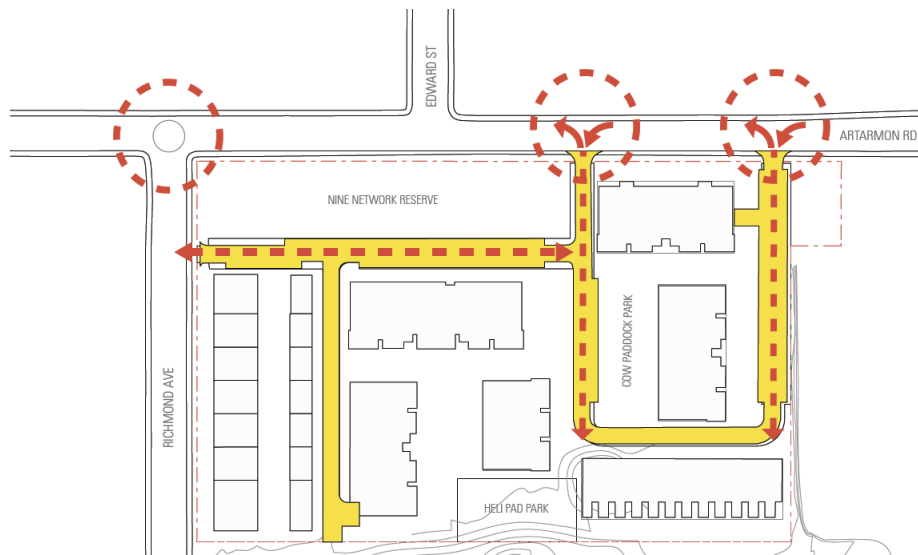


Figure 45 – Currently approved site access arrangements
Source: CHROFI

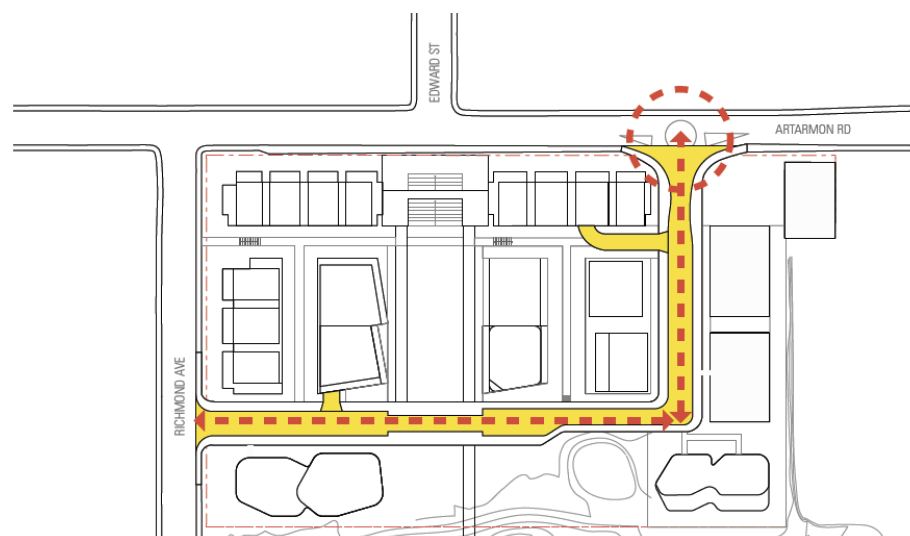


Figure 46 – Proposed site access arrangements
Source: CHROFI

Other Local Intersections

In addition to those key intersections discussed above, GTA also studied and modelled the impact of the proposed modifications to the Concept Plan on the intersections of Artarmon Road with Scott Street, Edward Street, Richmond Avenue and Wyalong Street as detailed in **Table 10**. All of these intersections will continue to operate at LoS A (Good Operation) with the amended proposal not resulting in any significant impacts on traffic conditions at these locations.

Table 10 – Summary of performance of local intersections under existing, approved and proposed development scenarios

Intersection	Peak	Current level of service ³	Approved 400 dwellings				510 Dwellings without intersection upgrade			
			Degree of saturation (v/c)	Average delay (sec)	95th percentile queue (m)	Forecast level of service	Degree of saturation (v/c)	Average delay (sec)	95th percentile queue (m)	Forecast level of service
Artarmon Road/ Scott Street	Thursday AM	Not calculated	0.37	5	18	A	0.38	5	19	A
	Thursday PM	Not calculated	0.31	4	14	A	0.33	4	15	A
	Saturday	Not calculated	0.27	4	12	A	0.28	4	12	A
Artarmon Road/ Edward Street	Thursday AM	A	0.23	6	4	A	0.23	6	4	A
	Thursday PM	A	0.23	6	2	A	0.23	8	2	A
	Saturday	A	0.22	6	2	A	0.22	6	2	A
Artarmon Road/ Richmond Avenue	Thursday AM	A	0.24	6	1	A	0.24	6	1	A
	Thursday PM	A	0.22	7	2	A	0.22	7	2	A
	Saturday	A	0.21	6	1	A	0.21	6	1	A
Artarmon Road/ Wyalong Street	Thursday AM	A	0.32	6	14	A	0.32	6	14	A
	Thursday PM	A	0.30	5	14	A	0.31	5	15	A
	Saturday	A	0.28	5	13	A	0.29	5	13	A

Source: GTA Consultants

Conclusions

The proposed amendments to the existing Concept Plan Approval will result in:

- Improvements to existing conditions at the intersection of Willoughby Road, Artarmon Road and Small Street during weekday peaks and on weekends for traffic travelling along Artarmon Road;
- Additional capacity being provided at the Willoughby Rd intersection to support Council's planned expansion of the Willoughby Leisure Centre, providing a broader public benefit by resolving an existing local traffic issue;
- A more rational and efficient internal road layout and site access arrangements, reducing potential impacts on existing local traffic conditions and increasing the site area that is able to be dedicated toward publicly accessible open space.

Notwithstanding the increase in traffic generation from the Site, the refined traffic arrangements and proposed contribution to the Willoughby Rd intersection will result in a net improvement to traffic conditions within the locality, benefiting both the existing and future local communities. Importantly, these outcomes are directly supported by the proposed amendments to the site master plan, including the additional dwellings that allow for these additional works to be viably undertaken.

6.6.2 Parking

This Modification Application does not seek to change the approved parking rates specified in Condition 29 of Schedule 3 of the existing Concept Plan Approval. Whilst there will be an increase in the total number of resident and visitor parking spaces provided within the Site as a result of the increase in total dwellings, the rates per apartment type were determined to be appropriate during the original assessment phase due to the Site's location and transportation context. The approved rates are consistent with Council's Development Control Plan.

All car parking will be located within building basements that are typically confined to the footprint of the building above. This will allow for deep soil landscaping within the Site to be maximised. All basement entrances will be via the internal loop road, with no additional driveways to Artarmon Road or Richmond Avenue beyond the two proposed site access points.

As required by the existing Condition 30 of the Concept Plan approval, the internal loop road has been designed to accommodate on-street parking on both sides wherever possible. It is expected that the additional parking provided on this new street will offset any reduction in parking on Artarmon Road and Richmond Avenue associated with the construction of new site access points. This parking will be for general visitor parking for persons utilising the public open space, commercial tenancies or visiting residents of the new residential community. The appropriateness of imposing time-limits for visitor parking on this new street will be discussed with Council as part of the future Development Application(s) for the roadway. This would be to ensure that on-street parking is available for visitor use and is not used for car storage or park-and-ride associated with the Willoughby Road bus services.

The additional dwellings will also contribute to improved viability of car sharing on the Site, which will be incorporated within the development, and could potentially support an increased number of car-share vehicles being provided.

6.6.3 Public Transport

During the original Concept Plan assessment, and during preliminary consultation for the amended master plan, the impact of the redevelopment of the Site on city-bound bus services along Willoughby Road was raised as an area of community concern.

The Site is located between 150 and 350 metres walking distance from bus stops on Willoughby Road located immediately to the north of the Artarmon Road intersection. Four existing public bus routes service these stops, connecting the Site to Neutral Bay, Chatswood, North Sydney and the Sydney CBD. Of particular note are the M40 and 272 services. On these services, there is only one further stop (Willoughby Rd near Garland Rd) to the south of the Site before these buses enter the Sydney CBD. 32 city-bound services operate on these routes departing the closest bus stop to the Site between 7am and 9am on a regular weekday, equating to 16 services per hour. Depending on traffic, the travel time between the nearest bus stop and Wynyard Station is between 10 and 20 minutes. On average, these bus services are faster than existing train services between Chatswood and Wynyard and just as frequent. On this basis, the Site is considered to be extremely well-served by public transport.

The NSW Government is currently constructing two major transport infrastructure projects that will reduce bus congestion on the Gore Hill Freeway and increase capacity for buses from the Lower North Shore to enter the Sydney CBD. The Metro Northwest (and Metro Sydney) will substantially reduce the number of city-bound bus services entering the CBD from The Hills and broader north west area, whilst the CBD and South East Light Rail will reduce the number of buses entering the CBD from Sydney's south-eastern suburbs. Both of these improvements are scheduled for completion before any dwellings are likely to be completed on the Site, and will allow additional bus capacity to be provided on Willoughby Road as required by future passenger demand.

Further to the above, the increase in passenger demand arising from the additional 110 dwellings proposed for the Site under the amended master plan would be minimal in the context of existing passenger loadings, and are not expected to result in any significant impacts on overall utilised bus capacity.

6.6.4 Pedestrian and Cyclists

The CHROFI master plan provides for a significantly more permeable and walkable development outcome for the Site that would encourage members of the public and future residents to walk and cycle through the Site.

As discussed in **Section 6.5** the amended master plan provides a significant new public open space with pedestrian pathways that connects a substantial existing residential population to the north (Willoughby) directly to an underutilised public reserve immediately to the south (Walter Street Reserve). As outlined in **Section 5.2.3** of this report, the Proponent is seeking to make a voluntary financial contribution or undertake works-in-kind to the value of \$1 million within the Walter Street Reserve to improve accessibility and ecological values. When these two considerations are combined with the existing east-west cyclist and pedestrian path along the Gore Hill Freeway, the proposed modifications represent a significant potential improvement to local and regional connectivity.

Cycle parking would be provided within the publicly accessible open space for use by the general public, and within individual buildings for residents and visitors in accordance with Council's requirements as determined at the Development Application stage.

Condition 17 of Schedule 3 of the Concept Plan Approval requires that a raised pedestrian crossing be provided on Artarmon Road to the west of Edward Street where projected demand meets the standard thresholds to warrant this type of crossing. If the applicable criteria are not met, the condition requires that a speed hump be provided. Initial analysis by GTA indicates that it is unlikely that the threshold for a raised pedestrian crossing would be met, and as such it is proposed to provide a pedestrian refuge only. This modification application does not seek to amend Condition 17, however, and if the thresholds are met then the Proponent would certainly provide a raised pedestrian crossing.

6.7 Heritage

A Supplementary Heritage Impact Statement has been prepared by Godden Mackay Logan (GML) and included at **Appendix J**. This supplementary statement addresses the potential heritage impact of the amended master plan.

An assessment of the heritage significance of the subject Site and its archaeological potential was undertaken as part of the Concept Plan application. This prior assessment confirmed that the existing buildings on Site had limited historic value, with the extent of this value originating from the visual context of the Site and the prominence of the TXA transmission tower. The Concept Plan was also confirmed to have no likely impact on archaeological artefacts, which does not need to be reassessed as a result of the proposed modifications.

Within the locality of the Site there are a number of commercial and residential buildings identified as being local heritage items under Schedule 5 of the WLEP or State heritage items under the State Heritage Register. The impacts of the modified proposal on the heritage significance of these structures is determined to be negligible. The rearrangement of building envelopes, and the proposed increase in building heights in the centre of the Site, means that the majority of the proposal retains the bulk and scale as the approved scheme and provides an appropriate transition in height to the surrounding area.

Accordingly, whilst the buildings will continue to be visible in the setting of a number of these heritage items, the visual impact of the modified scheme is not substantially different from the approved concept and from a locality contextual perspective is actually improved as outlined in detail at Section 6.4. This will

therefore not adversely impact on the heritage significance or the appreciation of the setting of these items and has been assessed as “negligible” by GML

In addition to this, GML Heritage have undertaken an assessment of the modified Concept Plan in relation to the Artarmon Heritage Conservation Area located to the north west of the Site. This conservation area does not directly adjoin the Site and as such will not be physically impacted by development resulting from the modified Concept Plan. Furthermore, in view of the topography of the area, the proposed development will not be visible from most areas of the public domain within the centre, northern, or western parts of the conservation area. The impact on the southern and eastern portions of the conservation area will remain consistent with the approved concept plan.

The revised heights of the buildings on Site and the rearrangement of open space means the future building envelopes will be partially visible from the conservation area, consistent with the approved scheme. The modified Concept Plan adopts a graduated height transition, allowing for the edge of the buildings along Richmond Avenue and Artarmon Road to screen some of the lower building mass of the tower buildings behind and reduce the perceived scale of these buildings. Accordingly, it is confirmed by GML that the proposed modifications *“would have negligible additional impacts on the streetscape value of the majority of the Artarmon Conservation Area”*.

Accordingly, GML conclude that *“the heritage impacts of the proposed S75 modification are substantially the same as those assessed in the 2012 HIS”*.

6.8 Other Matters

6.8.1 Ecologically Sustainable Development

The CHROFI Master Plan Report includes a statement identifying the guiding ESD principles for the master plan which will guide detailed building and site infrastructure design. The approved Concept Plan established principles for ESD performance for the site. These principles continue to be reflected in the amended CHROFI master plan and are intended to ensure that future development achieves a high level of environmental performance which adopts a more holistic approach to sustainability than traditional approaches to water and energy efficiency. ESD principles for the amended Concept Plan are:

- **Energy** – The amended master plan incorporates passive design principles to allow the apartments to exceed minimum BASIX energy efficiency requirements. Specific apartment and common area energy efficiency and metering will be addressed in detailed design at the Development Application stage.
- **Indoor Environment Quality** – The amended master is designed to meet the objectives of indoor environmental quality provisions for residential amenity under the Apartment Design Guide, specifically daylight, thermal comfort, private external space and natural ventilation.
- **Transport** – the site is well served by public transport which will minimise vehicular movements during peak periods. The amended master plan adopts on-site parking rates in accordance with the existing Concept Plan approval and Council’s specified rates, which is expected to discourage on-street parking. Provision for incorporation of a car-sharing scheme within the Site will be made in the detailed design of on-street parking within the internal loop road. Bike storage facilities will be provided in order to promote non-car travel modes to improve health and reduce congestion and pollution.

- **Water** – the amended master plan will allow for stormwater reuse for irrigation and water efficient fixtures and fittings, with a Stormwater Concept Plan required to be submitted to Council prior to the first Development Application under the conditions of the existing approval. No water based cooling systems would be included in future development.
- **Materials** – Material selection is subject to detailed design, however, materials will be carefully selected to ensure a high standard of environmental performance and safety and will be detailed at the Development Application stage.
- **Land Use and Ecology** – The redevelopment of the Site will achieve reuse of existing urban land, reclaiming some contaminated land, an improvement in the ecological value and the potential inclusion of communal garden facilities in the public open space. Furthermore the proponent is proposing to contribute \$1 million toward the upgrade of the Walter Street Reserve, including for bushland regeneration, which will improve the ecological values of this public reserve and reduce the existing impacts of weed transfer from this reserve into local waterways.
- **Emissions** – Site stormwater management plan is to ensure that post development flows from site are not greater than current flows.

Environmental performance of individual buildings will be assessed in detail as part of future Development Applications, and the amended master plan continues to ensure that above-BASIX performance can be achieved in accordance with the requirements of the existing Concept Plan approval.

6.8.2 Community and Social Infrastructure

The Environmental Assessment Report for the original Concept Plan application included a detailed assessment of the impact of the residential redevelopment of the Site on local community and social infrastructure. The amendments to the Concept Plan do not give rise to any substantive change to this assessment, which was for 600 dwellings and found the impacts to be acceptable.

During the assessment of the original Concept Plan application, and in preliminary consultation during the preparation of the amended CHROFI master plan, the potential impact of the residential redevelopment of the Site on local public school capacity was raised as a significant issue of community interest being raised in over half of public submissions.

Based on a demographic analysis of apartment occupancy within the Willoughby LGA (**Appendix K**), the revised projections for school-aged children residing on the Site under the amended CHROFI master plan of 510 dwellings are as follows:

- 61 students attending local public primary schools, and 29 students attending local independent primary schools
- 36 students attending local public secondary schools, and 54 students attending local independent secondary schools.

The additional 110 dwellings proposed under the amended master plan would only result in an additional 13 public primary school students and 8 public secondary school students above the demand already projected from the approved dwellings. This is a minor increase, particularly given the substantial additional investment in education capacity that is underway and/or planned for the Willoughby area and the long lead-in time before the redevelopment of the Site actually occurs due to Channel 9's ongoing occupation of the Site.

Further, the NSW State Budget 2013/14 included substantial new funding to increase the capacity of public schools within Northern Sydney. The Budget provided \$70 million of new funding from general revenue for the following works:

- Northern Sydney Primary Schools Upgrade Stage 1 to be completed in 2014, including:
 - 12 new classrooms at Chatswood Public School.
 - 4 new classrooms at Artarmon Public School.
 - 4 new classrooms at Lane Cove West Public School.
- New Anzac Public School at Cammeray.
- Mowbray Public School Upgrade.

Furthermore, the recently released 2016/17 State Budget provides further additional funding for the commencement of works on:

- New Lindfield Learning Village (K-12)
- Cammeraygal High School, Crows Nest (new senior campus).
- Willoughby Public School Upgrade.
- Willoughby Girls High School Upgrade.

It is noted that it is not the policy of the NSW Government to levy private developers for the cost of education infrastructure within established urban areas⁸. The Department of Education is aware of the current approval for the redevelopment of the Site, and will have sufficient time to plan for the projected minor increase in student enrolments arising from new dwellings on the Site.

Nine has the ability to remain on the site under its sale and lease-back agreement with LEPC9 until 2020. As such, it is not expected that the first stage of dwellings on the site would be occupied until 2022/23 at the earliest. There are some 6-7 years, therefore, until there would be any additional demand for local schools as a result of the redevelopment of the Site. This is in a time where new school infrastructure and funding will be coming to fruition.

In light of the above, it is considered that the increase in school demand from the additional proposed dwellings is minor, particularly in light of substantial additional infrastructure funding by the NSW Government, and can be appropriately accommodated by the Department of Education prior to the occupation of any dwellings on the Site.

6.8.3 Electromagnetic Radiation

An Electromagnetic Analysis of the subject Site has been prepared by Kordia Solutions and included at **Appendix L**. This analysis addresses the potential impacts of radiofrequency fields propagating from the TXA lattice tower located immediately adjacent to the Site.

The electric fields have been assessed against the Australian Radiation Protection and Nuclear Safety Agency's (ARPANSA) *Radiation Protection Standard – Maximum Exposure Levels to Radiofrequency Fields – 3kHz to 300 GHz*. Under the ARPANSA standard, the General Public Reference Level (GPRL) is considered the maximum level of exposure for residential and office uses.

⁸ *Planning System Circular PS 07-018 Development Contributions (6/11/2007) states that “the costs of the construction and operation of social infrastructure facilities such as schools and TAFEs, hospitals and emergency services will be borne by the State Government.”*

Previous measurements conducted as part of the original Concept Plan application confirmed that the electric field readings were well within the GPRL, with the mean of the 31 readings being 0.3% of the GPRL and the highest reading being only 28% of the GPRL. This maximum reading was taken approximately 10m from the base of the mobile phone base station antenna mounted on an adjacent TV studio building roof, which is to be removed with the studio building as part of the redevelopment of the subject Site.

Accordingly, the revised readings undertaken as part of this application have confirmed that there is no substantial increase in the maximum RF field level, which is anticipated to be approximately 5% of the general public reference level at the roof level of the proposed development Site. This remains well within the GPRL, re-confirming that the proposal for residential accommodation, small scale commercial uses and a child care centre can be suitably accommodated on the Site.

6.8.4 Wind Impacts

A Pedestrian Wind Environment statement has been prepared for the amended master plan by Windtech (**Appendix M**). Taking into account the local climatic wind conditions and the proposed building envelopes, the report makes a number of recommendations for the future detailed design of buildings and landscaped open space to ensure that all outdoor trafficable areas within and around the development will be suitable for their intended purposes. Overall, and subject to future detailed design, the assessment concludes that the master plan is capable of ensuring appropriate pedestrian wind environments are achieved throughout the Site.

Future Development Applications for the public open space, internal pedestrian areas and taller building elements (Buildings D, E and F) will be required to demonstrate that appropriate wind mitigation measures are incorporated as required, and that the final design will ensure that appropriate pedestrian wind environments are achieved. An additional provision has been included in the Statement of Commitments at **Appendix E** to ensure that this requirement forms part of the future planning assessment and approvals framework for the Site.

6.8.5 Crime Prevention Through Environmental Design

The amended CHROFI master plan incorporates consideration of safety and security within the master plan, and has adopted design principles to minimise the incidence of crime by addressing the principles outlined in the Department of Planning's guidelines titled *'Crime prevention and the assessment of development applications'* (2001), being surveillance, access control, territorial reinforcement and space management.

The amended master plan makes the following positive contribution in terms of safety and security, in accordance with the recommended design principles of CPTED and SEPP 65, by:

- Providing for strong passive and active surveillance of all publicly accessible and communal open spaces within the site through the orientation and positioning of apartment buildings;
- Provides for clear delineation between publicly accessible areas and private or communal areas;
- Includes clear methods of public access and an internal loop road that is clearly accessible and navigable for visitors to the site;

- Clear sightlines between spaces including public and private interfaces are established through the master plan and will be further detailed in building design and landscape treatments;
- The re-orientation of the main public open space to the axis of Edward Street provides for a natural connection that is clearly accessible to the public and which encourages public interaction with the site throughout the day; and
- Optimise visibility, functionality and safety of buildings by orientating entrances towards the internal roads and providing clear lines of sight between entrances, foyers and the street.

6.8.6 Stormwater Management

An Integrated Water Management Plan was prepared by Cardno to support the original Concept Plan application. This plan identified that there are opportunities to:

- Capture rainwater from non-trafficable building rooftops for the irrigation of publicly accessible and communal landscaping, as well as for other communal non-potable water uses;
- Employ best-practice water sensitive urban design techniques within the landscaping of communal and publicly accessible open spaces within the Site;
- Ensure that there is a neutral or beneficial outcome in terms of the quality and velocity of stormwater discharge from the Site;
- Provide on-site stormwater detention within the future development of the Site in accordance with Willoughby City Council's development and engineering standards; and
- Minimise water consumption on common property and within future dwellings in order to reduce pressures on water supply infrastructure through employment of water-savings measures.

These opportunities continue to be relevant to the amended CHROFI master plan, which reduces the area of roadway and building coverage on the site and increases the proportion of soft landscaping to improve stormwater management outcomes. Future detailed design in accordance with the amended master plan (subject to approval), will involve further consideration of the stormwater infrastructure, water storage and reuse mechanisms, site discharge points and potable water consumption efficiency measures as part of detailed Development Applications for infrastructure, landscaping and buildings.

Condition A7 of Schedule 2 of the Concept Plan Approval requires that, prior to the submission of the first Development Application or issue of a subdivision certificate, a Stormwater Concept Plan be submitted to and approved by Council. The stormwater concept plan shall incorporate measures to harvest stormwater and reuse for irrigation of landscape gardens and open space. Condition 22 requires that all final landscape plans are to incorporate best practice water sensitive urban design measures. As such, it is considered that the existing conditions and future planning framework are appropriate and do not require further amendment or augmentation as part of this modification application.

6.8.7 Geotechnical and Structural

Pells Sullivan Meynink (PSM) undertook a desktop assessment of the geotechnical aspects of the originally exhibited Concept Plan. PSM found that the site is underlain by Hawkesbury Sandstone, which is the rock unit that underlies much of the Sydney Region. The geotechnical characteristics of Hawkesbury Sandstone are well understood and many significant excavations and tunnels have been constructed within this formation.

PSM identified the key risks associated with the development of the Site will be the basement excavations that may involve excessive movement of the overburden or rock face into the excavation.

PSM advise that the identified risks can be managed through the following measures:

- Development of excavation shoring (retaining walls) design and associated construction sequence;
- Where rock faces are left unsupported, use of localised support through rock bolts, installed in areas identified by a geotechnical engineer;
- Implementation of an appropriate geotechnical monitoring and inspection programme; and
- Dilapidation surveys of adjacent land and structures prior to excavation

These recommendations continue to be relevant for the amended CHROFI master plan. A new Statement of Commitment is proposed to be inserted in Schedule 4 of the approval in order to require that further geotechnical investigations are undertaken to inform specific excavation and structural plans for future development, particularly in relation to the detailed design and construction of Buildings G and J.

7.0 Conclusion

The proposed modification to the Concept Plan Approval offers a number of significant benefits to the existing and future Willoughby community, including:

- Significant improvements to the urban design framework for the Site resulting in a reduction in the environmental impacts, such as overshadowing and visual impact, the delivery of a better transitional scale to the surrounding areas and a higher quality master plan design outcome.
- 28% increase in public open space within the Site and improvements to the accessibility, quality and connectivity of this space to better meet the needs of the community and integrate with Council's established open space network.
- \$3 million financial contribution toward the upgrade of the intersection of Willoughby Road, Artarmon Road and Small Street, which has already been conceptually planned by Council to support the upgrade of the Willoughby Leisure Centre. The existing and future performance of this intersection was the source of significant community concern during the original assessment phase, and the upgrade will see future performance that is better than current conditions during all weekday peak periods and better than the approved weekend conditions.
- \$1 million financial contribution for bushland regeneration and access improvements of the Walter Street Reserve, which have been identified in Council's Plan of Management since 1999 but have not been able to be fulfilled. These upgrades will significantly improve community access to and between existing open space areas, as well as having a number of local environmental benefits.
- Additional affordable housing provision in accordance with Council's requirements in proportion to the increase in total dwellings, and overall housing to support Willoughby's future projected population growth.

These benefits are additional to the existing Concept Plan approval and are directly supported by an increase in the number of dwellings proposed on the site to a total of 510 apartments. Importantly, whilst both the number of dwellings and maximum building heights are proposed to be increased, the actual environmental and social impacts of the amended CHROFI master plan are no greater and in many instances better than the currently approved master plan. In particular:

- Net improvement to overshadowing impacts on dwelling houses in Walter St.
- Net improvement to the overshadowing impacts on existing apartment buildings in the adjoining Castle Vale development.
- Appropriate transitions in the scale of building forms, particularly at sensitive low-density residential interfaces such as Walter St and Artarmon Rd.
- Reduction in the visual impact of the redevelopment of the Site through the sensitive placement of taller building elements, intelligent spacing of buildings and a narrowing of proposed building envelopes.
- Safer site access to Artarmon Road and Richmond Avenue through a refined traffic and access strategy.
- Minimal increases in demand for social infrastructure such as local public schools, with new demand from the Site not arising until at least 2023.

In light of the above, we consider the proposed modifications to represent a substantial improvement to the current Concept Plan and have no hesitation in recommending that this Section 75W Modification Application be approved.