Arboricultural Report

In Relation to

Lincoln Road Corridor Improvements

for

Auckland Transport

ATC AMENITY TREE CONSULTANTS LTD

May 2016

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1. Introduction

1.1. Amenity Tree Consultants Ltd (ATC) was commissioned by Auckland Transport (AT) to provide an arboricultural report to accompany a Notice of Requirement (NOR) for the Lincoln Road Corridor Improvements (LCRI) project and to assess the potential environmental effects of the vegetation alteration to be undertaken as part of the LCRI project.

2. Report Author

2.1. This report has been written by Stephen Bishop. I am the Director of ATC and hold the following relevant qualification: Higher National Diploma in Arboriculture. I have been a qualified and practicing arborist in local government (United Kingdom and New Zealand) and private consultancy for 17-years. Furthermore, I am a fellow of the UK Arboricultural Association a member of the New Zealand Arboricultural Association.

3. Scope and Purpose of the Report

3.1. ATC has been engaged to provide a report that addresses and identifies the following:

- An assessment of effects of the LRCI project on all trees along and in the vicinity of the proposed works as per the Operative District Plan and the PAUP.
- Recommended measures to avoid or mitigate the effects on affected trees including protection measures

4. Report Details and Limitations

4.1. Unless otherwise stated:

- All vegetation has been inspected from ground level only.
- All vegetation measurements (heights, stem, girths, and canopy spreads) are approximate.
- No samples of vegetation or soil have been taken for analysis.
- Amended or supplementary plans are not to scale.
- The professional opinion expressed on the health status or structural integrity of trees or other vegetation is valid at the time of inspection and cannot be guaranteed beyond the date of the report, given the variability of natural organisms and the influences of climatic events. It is always advisable to reassess vegetation in high risk areas following storm events.

- This report has been prepared for the particular project described to ATC Ltd. No responsibility is accepted by ATC or its director for the accuracy of any information provided by third parties and the use of this report or any part of it for any purposes beyond the agreed scope.

4.2. The site assessments were carried out on 18th August and 17th September 2015. During the site visits, trees were identified and mapped using aerial photographs and maps showing the designation footprint. The approximate location of each tree was marked on the designation footprint plans. Where the trees were located very close to the designation line, it was difficult to determine on the ground whether the trees were inside or outside the line in some instances. Accordingly, a very conservative approach has been adopted and some trees which appear to be outside the designation have been identified for "possible removal" and treated as needing to be removed for the purpose of this report. An accurate tree location survey will be undertaken when the designation footprint is physically marked on the ground prior to the commencement of construction. The tree assessment in this report represents a "worst case scenario" in terms of the trees needing to be removed.

5. Proposed works

5.1. The LRCI project applies to a 1.3 km length of Lincoln Road, between its intersection with Te Pai Place / Pomaria Road to the south and the State Highway 16 (SH 16) on-ramp to the north. The project will upgrade Lincoln Road to maintain two lanes for general traffic in each direction, while also providing for a transit lane, dedicated cycle lane and footpath in each direction. Additional and/or longer turning lanes will be constructed at controlled intersections. A raised median will be installed in the centre of the road, and U-turns will be enabled at controlled intersections. The improvements will be integrated with the New Zealand Transport Agency's upgrades of SH 16 at the Lincoln Road interchange.

5.2. The LRCI project also involves the collection and treatment of stormwater generated from the road at 312 Lincoln Road. There will be a new public road formed to the rear of 300-312 Lincoln Road, which will provide access to Daytona Reserve and existing properties that will be unable to be accessed directly from Lincoln Road. In order to construct the improvements, the existing road reserve will be widened by varying amounts on each side (generally around 2-3 m, up to approximately 8 m) as a greater area of land is required in the vicinity of intersections.

5.3. Approximately 88 properties will be directly affected by the road widening, i.e land will be required from the properties.

5.4. A fuller description of the project is provided in the Assessment of Environmental Effects which supports the NOR.

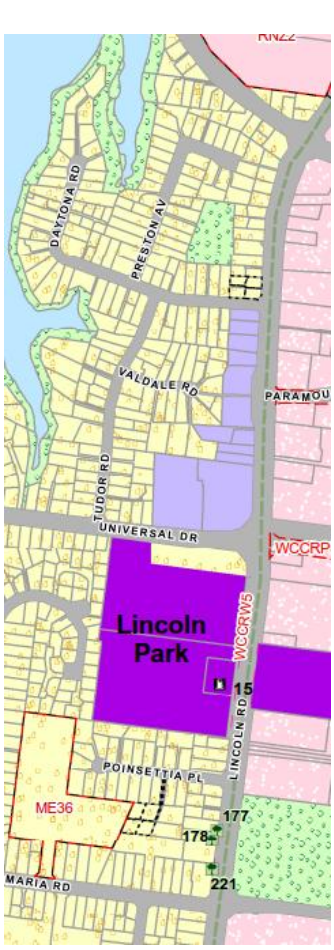
5.5. The project affects 154 trees with 142 requiring removal and 12 with works within the dripline. The location of all trees, affected by the proposed works, is shown in the tree reference plans attached as Appendix 1 of this report.

6. Site Details and District Plan Zoning

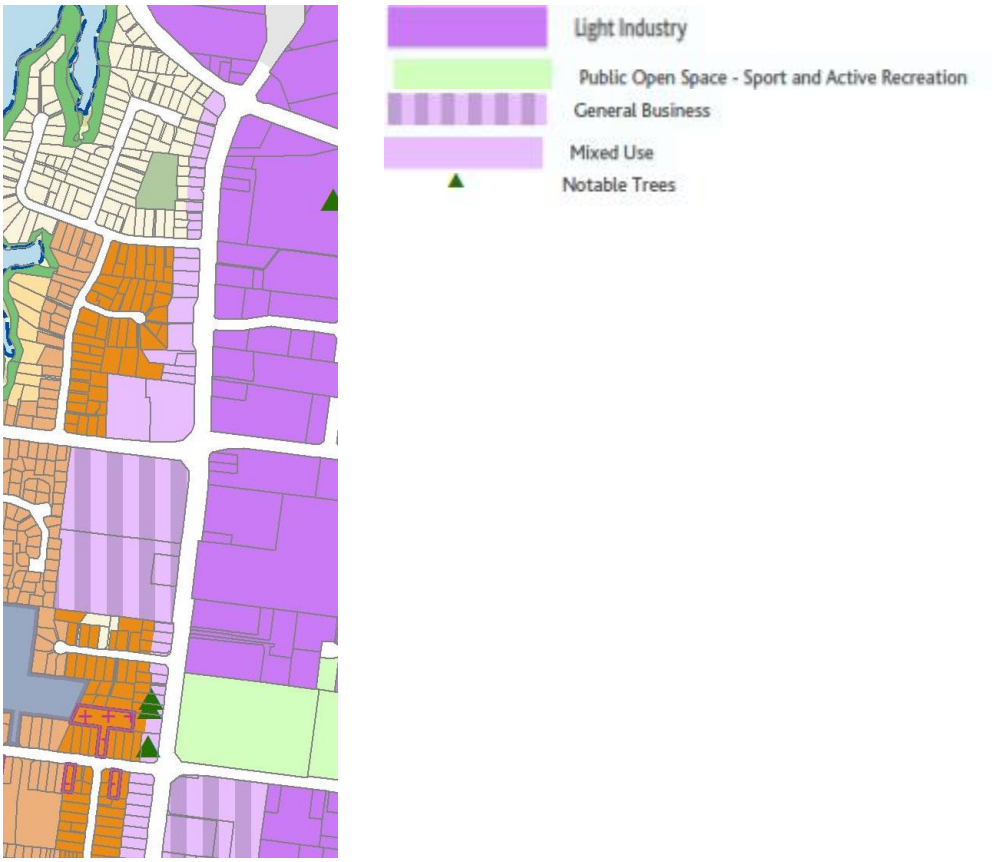
6.1. Table 1 – Relevant District Plan and PAUP Zoning

Waitakere Section District Plan	General Natural Area Transport Environment Historic/Scheduled tree No 177,178 and 221 Living Environment Community Environment College Special Area Working Environment Open Space
Proposed Auckland Unitary Plan	Residential Sports and Active Recreation Mixed use Public Open Space General Business Light Industry Lincoln Precincts Notable Trees

6.2. Figure 1 – Operative Plan – Human Environment (Top) and Natural Environment (Bottom)



6.3. Figure 2 – District Plan zoning (PAUP)



7. Relevant Tree Protection Rules

7.1. As a designation is being sought for this project, the tree rules in the Operative Plan do not apply. However, an analysis of the tree rules is included below to provide an indication of what tree removal is permitted by the Operative Plan, and where consent is required, what type of consent would be required if the rules were to be applied.

7.2. Table 2 – Relevant Tree Protection Rules

Operative District Plan	General Natural Area (i) 2.0 General The following rules shall apply only to those activities involving vegetation alteration (pruning, clearance and any work within the dripline of vegetation). on a site that is not an urban environment allotment. 2.1 Permitted Activities Activities meeting the following Performance standards are Permitted Activities: (a) any vegetation alteration of: (i) native vegetation and exotic vegetation which is less than 6.0metres in height and less than 600mm in girth (as measured 1.4metres above the ground), and (ii) vegetation listed in the Removable Vegetation Appendix and the Environmentally Damaging Plants Appendix provided that any clearance does not exceed a total cleared area of 500m2 2.2 Controlled Activities Activities, other than those permitted under Rule 2.1 (a), meeting the following Performance Standards are a Controlled Activity: (a) any vegetation alteration of: (i) native vegetation and exotic vegetation which is less than 6m in height and less than 600mm in girth (measured at 1.4m above the ground) (ii) vegetation listed in the Removable Vegetation Appendix and the Environmentally Damaging Plants Appendix, to a total cleared area greater than 500m2. (b) any work within the dripline of native vegetation which is more than 6m in height or more than 600mm in girth (measure at 1.4m above the ground) 2.3 Limited Discretionary Activities Activities, other than those permitted under Rule 2.1 (a), meeting the following Performance Standards are Limited Discretionary Activities: • the clearance of native vegetation and exotic vegetation which is more than 6.0m in height or more than 600mm in girth (measured at 1.4m above the ground). Heritage 3.3 Non Complying Activity Removal of vegetation appearing in the Heritage appendix.
Proposed Auckland Unitary Plan	Part 3 Overlay Rules J6.4 Notable Trees Tree alteration or tree removal of a notable tree Discretionary Activity

7.3. Under the Operative Plan, it is a site's natural area zoning that dictates the applicable tree/vegetation rules. In this instance all the proposed works are within a General Natural Area zone.

7.4. As set out in Rule 2 above, the tree protection rules only apply to those sites that *are not* an 'Urban Environment Allotment'. The term 'Urban Allotment Environment' is defined as follows:

means an allotment no greater than 4000m^2; and
(a) that is connected to a reticulated water supply system and a reticulated sewerage system; and
(b) on which there is a building used for industrial or commercial purposes, or as a dwelling house; and
(c) that is not reserve (within the meaning of section 2(1) of the Reserves Act 1977) or subject to a conservation management plan or conservation management strategy prepared in accordance with the Conservation Act 1987 or the Reserves Act 1977.

7.5. Therefore, while most of the sites within the project area fall within the definition of Urban Environment Allotment (and are therefore not covered by Rule 2), some sites are not, including those that are public reserves, and those that are over 4,000m² in size. The Council has also determined that the Rule 2 applies to trees in the road reserve.

7.6. Within Urban Environment Allotments within the General Natural area it would be a permitted activity to carry out any vegetation alteration or removal, which would apply to the majority of the trees adjacent to the transport corridor located in private property.

7.7. Within Urban Environment Allotments (including the road reserve), the following consent status would apply:

- work within the dripline of trees which are more than 6m in height to more than 600mm in girth (measured 1.4m above the ground) – a resource consent for a controlled activity would be required.

- clearance of trees which are more than 6m in height or more than 600mm in girth (measured at 1.4m above the ground) – a resource consent for a limited discretionary activity would be required.

7.8. Removal of trees that are listed within the Heritage Appendix of the Operative Plan require a resource consent for a non-complying activity. Details of trees within the project area that are listed in the Heritage Appendix are set out in Table 4 below. A resource consent for a Limited Discretionary Activity would be required to carry out work within the trees dripline.

7.9. Although the PAUP is not yet operative, it is noted that the Notable Tree overlay in the PAUP has immediate legal effect. The three trees listed in the Heritage Appendix are also found in the Notable Tree Overlay of the PAUP.

7.10. Under the PAUP it is a Discretionary Activity to remove or carry out any alteration to a Notable Tree. It is a permitted activity to carry out pruning to a Notable Tree provided:-

- The maximum branch diameter must not exceed 50mm
- No more than 10 per cent of live growth of the tree is removed in any one calendar year
- Must meet accepted modern arboricultural practice
- The trimming must retains the natural shape, form and branch habit of the tree.

7.11. Table 3 – Details of Heritage Vegetation

Tree Species	Location	Council Heritage Reference Number	ATC reference Number
Cedar	1 Pomaria Road	221	T87
Rimu	170 Lincoln Road	178	T151
Rimu	172 Lincoln Road	177	T79

8. General Assessment of Trees Affected by the Project

8.1. This section provides a general overview of the observations from the tree survey and assessment. Table 4 below details the numbers of trees that will require removal/alteration for the proposed works. The table has been taken from the result of the tree survey work which is attached to this report as Appendix 2. Appendix 2 to this report lists all the trees assessed and the rules that would apply under the Operative Plan.

Table 4 – Proposed tree removal/alteration

Summary Table	TOTAL	Road Reserve	Private Property	Open Space
Trees subject to Rule 2 requiring removal	51	29	15	7
Tres subject to Rule 2 requiring work within the dripline	8	3	2	3
Trees not subject to Rule 2 requiring removal	91	54	37	-
Trees not subject to Rule 2 requiring works within dripline	1	-	1	-
Heritage trees requiring removal	0	-	-	-
Heritage tree requiring Work within dripline	3	2	1	-
TOTAL	154	88	56	10

8.2. Trees within the Road Reserve

8.3. There are approximately 88 trees in the Lincoln Road transport corridor (within road reserve), the predominant species being Tulip tree (*Liriodendron tulipifera)* which has been planted along both sides of Lincoln Road. The variance in age and size of the trees observed indicate a long term planting strategy undertaken by Council with plantings undertaken over many years. Some of the Tulip trees are maturing specimens, others are still quite young with considerable future growth potential, generally they have all established well and considered to be a successful species choice for the environment in which they have been planted. A small percentage has struggled to grow or show signs of stress, but this is a small number and considered normal and acceptable level for any planting scheme. Many of the Tulip trees are under 6m high and 0.6m girth and would therefore not be covered by Rule 2 in the Operative Plan.

8.4. Other visually prominent species found within the road reserve include a Cedar (T75) outside No 174 Lincoln Road, a Pohutukawa tree (T17) outside of No 312 Lincoln Road, and Norfolk Island Pine (T42) outside No 286 Lincoln Road, and a Gum tree (T97) adjacent to Te Pai Place. These trees are in good condition with no signs of significant defect or disease. The Cedar, Norfolk Island Pine and Gum tree all have heights of greater than 12m and a girth of greater than 0.6m. The Pohutukawa has a height of 4m and contains multiple stems. In

total there are 29 trees (within the road reserve) that need to be removed, and are subject to Rule 2.

8.5. There are also 54 smaller trees requiring removal, not subject to Rule 2, within the road reserve including Phoenix Palm, Wattle and Acmena that are considered a weed species. These trees are under 6m in height and 600mm in girth so it would be a permitted activity under the Operative Plan to remove these trees.

8.6. Urban street trees help reduce stormwater runoff significantly by catching and holding water on their foliage and releasing this gradually following heavy rain/storm event. This is dependent on species and time of year. Urban trees can also provide valuable habitats for birds and other animals.

8.7. The trees along the Lincoln Road Corridor help soften the harsh and highly modified urban environment. The Tulip trees are a consistent theme; the more mature and larger Tulip trees are fine specimens that have considerable growing potential. Best practice would see a proposal that included significant new street tree planting to replace/mitigate the loss of trees required for the LCRI project.

8.8. It is proposed that a median strip will run down the centre of Lincoln Road. It has been suggested that this strip could be utilised for replacement planting. Investigations have determined that soil depths of 1.3m can be obtained within the median strip. The width of the median strip may vary but will be a minimum of 1.2m. Although space is limited within the median strip, it will be possible to plant and establish new trees in this area. Any such trees planted within the median strip would have to be hardy and tolerant of the conditions. Crucially the planting beds/pits would have to be designed to provide free drainage and watering systems for the first few years of the trees' life to provide optimum chance of successful establishment. Suitable species may include Tulip Tree or London Plane tree, and both of these species are good street trees. Planting in the median strip could provide partial mitigation for the removal of street trees required by the LCRI project.

An additional replanting area has been identified at 308 and 310 Lincoln Road. These properties will be retained by Auckland Transport following completion of the project. A small pocket park could be created in this area which could include large specimen trees to give some instant impact.

8.9. Trees within Open Space (Te Pai Park)

8.10. The Oak trees (T148, T149, T150, 153) in Te Pai Park are significant healthy specimens that are also visually very prominent. These trees are easily seen by the users of Lincoln Road, pedestrians and park users. These trees will require works within their dripline.

8.11. The small (6 metres in height) Kahikatea tree T147 which is to be removed is a good healthy specimen that could possibly be relocated elsewhere within Te Pai Park . The remaining mature and significant trees within Te Pai Place will remain unaltered by the proposal.

8.12. Trees within Daytona Reserve

8.13. Several trees in Daytona Reserve were found to be potentially directly or indirectly affected by the proposal, including a group of mature Acmena trees, a small Alder tree and a large mature Sweet Gum (liquidambar styraciflua). The Alder, Acmena and Sweetgum trees will be removed.

8.14. The exotic Acmena trees are likely to be part of an old hedge, which has not been maintained resulting in these large trees. Acmena trees are considered to be a weed species under the Operative District Plan.

8.15. The Sweet gum tree is a large mature exotic specimen that is prominent within the park and easily viewed from surrounding properties. It measures approximately 10m height and has a crown spread of 7m. The tree has co-dominant stems with an included bark union near its base. This is considered to be a significant structural defect and typical of this species in New Zealand.

8.16. A meeting with Council and subsequent correspondence established an agreement in regard to the removal of the trees discussed above and mitigation planting. The mitigation planting consists of 3 Totara trees with a minimum height of 3m to be planted along the same alignment as the existing Totara adjacent to the new road layout as per planting specifications supplied by Council. A copy of this memo and email correspondence is attached as appendix 5.

8.17. Trees within Private Property

8.18. 56 trees on private property will be affected (removal/alteration) with 50 requiring removal, of which 13 are subject to Rule 2 and contribute to the overall greening of the city.

8.19. The remaining 37 are not subject to Rule 2 and the majority are not considered to be prominent or significant specimens. However, there are a few exceptions, including Gum tree (T83) at 158 Lincoln Road, Sweetgum (T27) at 300 Lincoln Road, and Norfolk Island Pine (T28) at 298 Lincoln Road, all of which due to their size and location are visually prominent. Given that these trees are not covered by Rule 2 in the Operative District Plan they could be removed as a permitted activity. As such I do not consider that any mitigation is required for their loss. However, individual land owners may wish to have mitigation planting on their properties. This will be discussed and agreed by separate land owner agreements with Auckland Transport.

8.20. Urban trees help reduce stormwater runoff significantly by catching and holding water on their foliage and releasing this gradually following heavy rain/storm event. This is dependent on species and time of year. Urban trees can also provide valuable habitats for birds and other animals and can provide significant visual amenity as well as valuable shade in the summer months.

The removal of protected trees from within private property will result in a net loss of the factors above. Best practice would see a proposal that includes new planting to mitigate the loss of trees, required for this upgrade.

8.21. There are a few sites that are private property that fall outside the definition of Urban Environment Allotment and so the tree rules would apply. These include Laidlaw college complex and the Pak'n'Save/Mitre 10 sites.

8.22. Trees (Tree No T118, T119, T120, T123, T124 and T125), located in the Laidlaw college complex at No 211, 213 -221 Lincoln Road, which may also require removal and works within driplines. At this stage the exact location of the proposed layout is not known. Rule 2 would apply to these trees as they are located on a site of over 4,000m² and are over 6m in height or 600mm in girth.

8.23. The Pak'n'Save/Mitre 10 sites at 186-198 and 202-204 Lincoln Road are also over 4000m^2. There are three trees on this site (T59, T60, T65 and T161) which are over 6m in height or 600mm in girth. It is considered that these are easily replaced on a like for like basis elsewhere within the car park

8.24. Heritage/Notable Trees

8.25. As stated above, there are three Heritage/Notable trees T87 (a Cedar), and T79 and T151 (Rimu trees) that are potentially affected by the LCRI project. Currently there is no information regarding the history of these trees and why they were singled out for heritage status, especially when there are others of similar size and prominence along Lincoln Road. Often it seems that some trees were added to the Heritage Appendix of the Operative Plan when it was felt they were under threat from removal or damage and where it was felt they could not be adequately protected by existing rules. This could explain the seemingly ad hoc approach where some prominent trees are scheduled and others are not.

8.26. All three Heritage/Notable trees are in a reasonable health with no obvious disease or significant defects that would warrant removal outside of this proposal. The trees are also prominent specimens within the landscape.

8.27. The Heritage/Notable trees were originally shown in earlier concept plans to be removed by the LCRI project. However, given the difficulties associated with either relocating the trees or mitigating their loss with replacement planting, a multi-criteria analysis for retaining the trees was undertaken. The decision was made to alter the LCRI project preliminary design so that these trees could be retained.

8.28. Consideration has been given for the possibility of relocating the Heritage trees. Large tree relocation is carried out with regularity in North America, but it is not something that has been practiced in New Zealand. Indeed there are no known examples of successfully moving trees of this species or size.

8.29. When assessing the possibility of transplanting/relocating mature trees several factors have to be considered to determine if it is viable, these include :-

- the existing health and structure of the tree
- time of year transplanting proposed
- soil type and profile and the ability to obtain a viable root ball
- access to the tree
- being able to transport the tree to the final planting site
- location of underground services
- planting trees in new location, aftercare and maintenance
- cost implications

In this instance, given the size of the heritage trees, any transplanting would require the use of heavy machinery including large cranes. A viable

root ball would need to be excavated to a depth of at least 1m and supporting steel framework constructed to support the root ball. Because the trees are growing in a highly modified urban environment, this operation in itself becomes very difficult due to the restricted work area, minimal growing environment for the trees and the underground services that will undoubtedly be found in the immediate area. Obtaining a viable root ball is likely to be very difficult.

8.30. At this stage, there is simply not enough information on the location of underground services to determine if a viable root ball could be obtained. Further investigations would have to be carried out to establish this, but it is theoretically possible to achieve a sufficient viable root ball.

8.31. Complete removal of the Heritage/Notable trees and carrying out replacement planting has also been considered as an option. Given the status of the Heritage/Notable trees, their current form, health and prominence, it is considered that removal would cause an adverse effect. Replacement planting could help mitigate this effect. Any replacements would have to be the same species of the trees being removed, and planted as close to the trees being removed as practically possible, to enable a continuance of the values associated with the trees. Replacement trees could either be very large specimen trees e.g in excess of 4000lt[1] , or smaller PB95. Both options have merits and disadvantages, large trees provide instant visual impact, but are more problematic to achieve successful long term establishment. Smaller trees are easier to establish and manage and more of them could be planted. Replacement planting would require careful planning and preparation as per Councils specification. Several factors will need consideration including location, soil medium, drainage, watering, protective fencing, general maintenance until established; these could all be addressed in a management plan.

8.32. In this instance it is considered that the removal of trees could not be readily mitigated by replacement planting due to several factors including:-

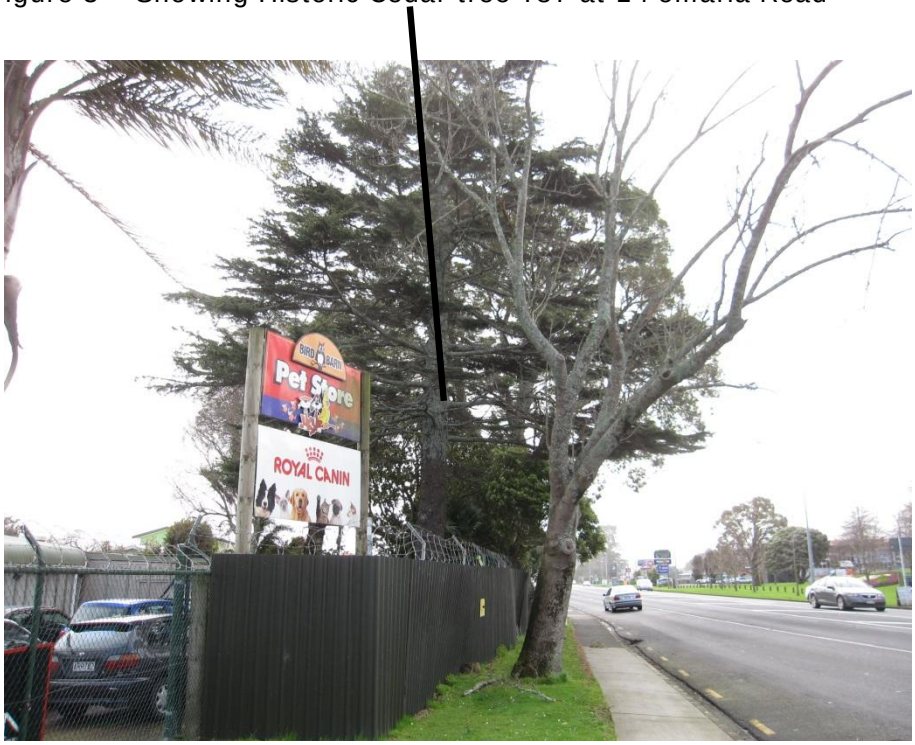
- Site constraints – the highly modified urban environment adjacent to the existing trees means that suitable locations/positions do not exist that would allow the trees to grow unrestricted. The nearest available area identified that could accommodate such planting is within Te Pai Reserve. This would mean that the current values associated with the existing trees would be permanently altered.

[1] Large specimen container grown trees are referred to by the size of the root ball, or bag they are grown in, in this instance 4000 ltr and not the height of the tree.

- Replacement trees will take several decades to reach the same size as the Heritage/notable trees – even with large specimen trees, although this effect would reduce over time.

8.33. Given the above, the original proposed layout has been altered to retain the Heritage/Notable trees. Work will be required within their dripline and there are obvious risks associated with that including severance or damage to the trees root systems. But with careful design and construction methods these risks can be reduced and managed to ensure the trees remain for the future.

8.34. Figure 3 – Showing Historic Cedar tree T87 at 1 Pomaria Road



8.35. Figure 4 – Showing Historic Rimu tree in 172 Lincoln Road T79

8.36. Figure 5 – Showing Historic Rimu tree located in 170 Lincoln Road T151

8.37. Overall Summary of Effects

8.38. The importance of the Heritage/notable trees has been recognised – it is preferable to avoid removal, and the design does this. Construction effects can be managed through appropriate work and protection methodologies.

8.39. Regarding the loss of trees within the Road Corridor, best practice would see a large proportion of these trees replaced as mitigation. It is proposed to carry out replanting within the median strip at 308, 310 Lincoln Road and 322-324 Lincoln Road. However, there is likely to be some residual adverse effect as it is unlikely that all trees lost can be replaced.

8.40. Regarding the trees in the open space, it is considered that the effects can be fully mitigated through appropriate design, work and protection methodologies.

8.41. All remaining vegetation will need to be protected through appropriate conditions and construction techniques.

9. Recommended Conditions

9.1. The removal of any vegetation shall be undertaken by suitably trained and experienced individuals and in a manner which avoids any unnecessary damage or disturbance to any retained vegetation and their root zones (for example sectional felling in conjunction with modern rigging techniques where required).

9.2. To ensure the retained vegetation is not damaged during construction the following tree protection methodology shall be adhered to at all times when conducting any works around retained vegetation which the landowner wants to retain and AT agrees are able to be retained.

9.3. A protective fence of robust construction shall be erected around all vegetated areas of the site where works are not required to take place. The location of the fence shall be confirmed with council's EMO(Environmental Monitoring Officer) at the pre-start meeting

9.4. No tools, vehicles or machinery are to be allowed to enter the area enclosed by the protected fence. Nothing is to be stored, emptied or disposed of in the area enclosed by the protective fence unless otherwise authorised to do so by Council's environmental monitoring officer.

9.5. If at any time it becomes necessary to move the protective fence, then the area previously enclosed by the protective fence shall be regarded in the same manner as if the protective fence were still in place.

9.6. If for any reason it becomes necessary to store, manoeuvre or temporarily place any vehicle, equipment or machinery within the permeable area of the

root zone of protected vegetation, then those vehicles, machinery or pieces of equipment shall be supported on a temporary load bearing hard surface such as “Trak Mats”, ply wood or similar.

9.7. If machinery/vehicles are to be operated or stored within the root zone area on an existing or temporary load bearing surface, then the machinery/vehicle shall not cause any detrimental effect to the tree(s) through compaction, physical damage, spillage of lubricants and fuels or discharge of waste emissions.

9.8. All excavations which are to take place in or around the root zone of any of the trees shall be done so in conjunction with the works arborist. The first 600mm of the excavation shall be dug by hand and at the discretion of the works arborist, may proceed with light machinery.

9.9. Any roots which are encountered during any part of the process are to be retained where possible. Every effort shall be made to retain all roots 35mm in diameter or greater. The severance of any root less than 35mm shall be done so at the discretion of the works arborist. Where roots are to be severed, they shall be cut cleanly by the works arborist with a sharp hand saw or loppers, and the area around the root shall be backfilled with the original material.

9.10. Where roots to be retained are encountered and there is need for these roots to remain exposed in order that works are not impeded, then those roots shall be covered with a suitable protective material (such as moist Hessian, or a wool mulch) in order to protect them from desiccation and/or mechanical damage, until such a time as the area around the root can be back filled with the original material. The wrapping or covering of any roots shall be undertaken by the works arborist.

9.11. Where concrete is to be poured into excavations containing exposed roots, then all exposed roots shall first be covered in a layer of geotextile fabric to prevent the concrete from contacting the exposed root.

9.12. If during the works, it becomes necessary to pour concrete and/or lay asphalt directly over exposed roots (for example during reinstatement, or footpath construction), then all exposed roots shall first be covered with a layer of fine sand not less than 75mm thick and a layer geotextile fabric shall placed over the roots prior to pouring the concrete/asphalt.

9.13. Heritage/Notable Trees

9.14. Prior to any work occurring to or within the proximity of the heritage/notable trees, detailed design of the proposed works will be submitted to council for approval. The design shall avoid/minimise root loss by using non dig construction options, and damage to the tree. The design should allow for permeable surfaces beneath the dripline where possible.

9.15. Specimen Tree Planting

9.16. All planting within the road corridor shall be undertaken as per Auckland Transport Code of Practice chapter 14 (Draft).

9.17. Specimen tree planting within Daytona reserve will be as per Council planting specification and will consist of 3 Totara trees of PB 95 size, planting along the same alignment as the existing trees.

9.18. Specimen tree planting in Te Pai Place will be as per Council specification – a management plant will be provided for all plantings.

10. Conclusion

11.1 The assessment carried out in this report, in particular within Section 8, has identified the actual and potential environmental effects of the proposed works and has concluded that there will likely be an overall adverse effect in regard to removal of street trees. This report recommends potential measures which will assist in mitigating some of these adverse effects, including replacement planting within the median strip along Lincoln Road at 308, 310,322 and 324 Lincoln Road, specimen tree planting within Daytona Reserve and Te Pai Reserve.

11.2 Given that the Heritage/Notable trees are being retained, the effects of the proposal at this stage are considered to be no more than minor provided appropriate engineering design, construction and work methods are adopted to minimise disturbance/potential damage to the trees.

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Appendix 1

Tree Reference Plans

DO NOT SCALE - IF IN DOUBT, ASK

ORIGINAL SIZE A1

CENTRAL PARK DRIVE

LINCOLN ROAD

TRIANGLE ROAD

T1 T2 T3 T4 T5 T6 T7 T8 T9 T10 T11 T12 T13 T14 T15 T16 T17 T18 T19 T20 T21 T22 T23 T24 T25 T26 T27 T28 T29 T30 T31 T37 T39 T41 T128 T130 T131 T132 T133 T134 T135 T136 T137 T138 T139 T140 T141 T142 T143 T144 S1 S2 S3 G1 G2 REF1 REF2 REF3

AREA FOR PLANTING: CONTINUE NZTA SCHEME FOR NATIVE UNDERSTOREY PLANTING AND INCLUDE STREET TREES TO REPLACE THOSE REMOVED.

TREE AND UNDERSTOREY SHRUB PLANTING TO ROAD EDGE.

POSSIBLE STORMWATER TREATMENT / MANAGEMENT DEVICE AREA OF PLANTING.

LEGEND

- DESIGNATION BOUNDARY
- NEW ROAD CORRIDOR
- EXISTING TREES (SIZE VARIES)
- EXISTING HERITAGE TREE (SIZE VARIES)

10 0 10 20m

SCALE 1:500

NOT FOR CONSTRUCTION

REV	REVISIONS	DRN	CHK	APP	DATE
C	FOR CONSULTATION	GS	AGS	AGS	2016-05-31
B	FOR CONSULTATION	GS	AGS	AGS	2016-05-16
A	PRELIMINARY	PJC	AGS	AGS	2016-05-12

SURVEYED	By Others (As Built)	
DESIGNED	Michael Yale	16/06/15
DRAWN	Phillip Cook	03/16
CAD REVIEW	Gavin Smit	04.05.16
DESIGN CHECK	Graeme Stanton	13.05.16
DESIGN REVIEW	Graeme Stanton	13.05.16
APPROVED	Graeme Stanton	31.05.16
PROF REGISTRATION:		

MWH

Client:

LINCOLN ROAD CORRIDOR UPGRADE

ARBORIST TREE LOCATION LAYOUT
SHEET 1 OF 3

Status Stamp: FOR CONSULTATION

Date Stamp: 2016-05-31

Scales: 1 : 500 Datum: Mt.Eden2000

Drawing No.: 80507651-0301-C551 Rev.: C

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DO NOT SCALE - IF IN DOUBT, ASK

ORIGINAL SIZE A1

PARAMOUNT DRIVE

UNIVERSAL DRIVE

LINCOLN ROAD

DA□TONA RD

LAIDLAW BIBLE COLLEGE ENTRANCE

UNDERSTOREY PLANTING TO ROAD EDGE.

LINE C551

LINE BELOW

JOIN REFER

LINE ABOVE

LINE C553

T32 T33 T42 T50 G4 T51 T52 T53 T54 T55 REF 5 T58 T43 T44 T45 T46 T47 T48 T49 T145 T146 T59 T60 T61 T62 T63 T64 T65 T66 T67 T68 T69 T70 T71 T72 T73 T111 T112 T113 T114 T115 T116 T117 T118 T119 T120 T121 T122 T123 T124 T125 T126 T127 T128 T129 G5 T161

LEGEND

- DESIGNATION BOUNDARY
- NEW ROAD CORRIDOR
- EXISTING TREES (SIZE VARIES)
- EXISTING HERITAGE TREE (SIZE VARIES)

5 0 5 10m

SCALE 1:250

NOT FOR CONSTRUCTION

REV	REVISIONS	DRN	CHK	APP	DATE
C	FOR CONSULTATION	GS	AGS	AGS	2016-05-31
B	FOR CONSULTATION	GS	AGS	AGS	2016-05-16
A	PRELIMINARY	PJC	AGS	AGS	2016-05-12

SURVEYED	By Others (As Built)	
DESIGNED	Michael Yale	16/06/15
DRAWN	Phillip Cook	03/16
CAD REVIEW	Gavin Smit	04.05.16
DESIGN CHECK	Graeme Stanton	13.05.16
DESIGN REVIEW	Graeme Stanton	13.05.16
APPROVED	Graeme Stanton	31.05.16
PROF REGISTRATION:		

MWH

Client: AT

LINCOLN ROAD CORRIDOR UPGRADE

ARBORIST TREE LOCATION LAYOUT
SHEET 2 OF 3

Status Stamp: FOR CONSULTATION

Date Stamp: 2016-05-31

Scales: 1 : 500

Datum: Mt.Eden2000

Drawing No.: 80507651-0301-C552

Rev.: C

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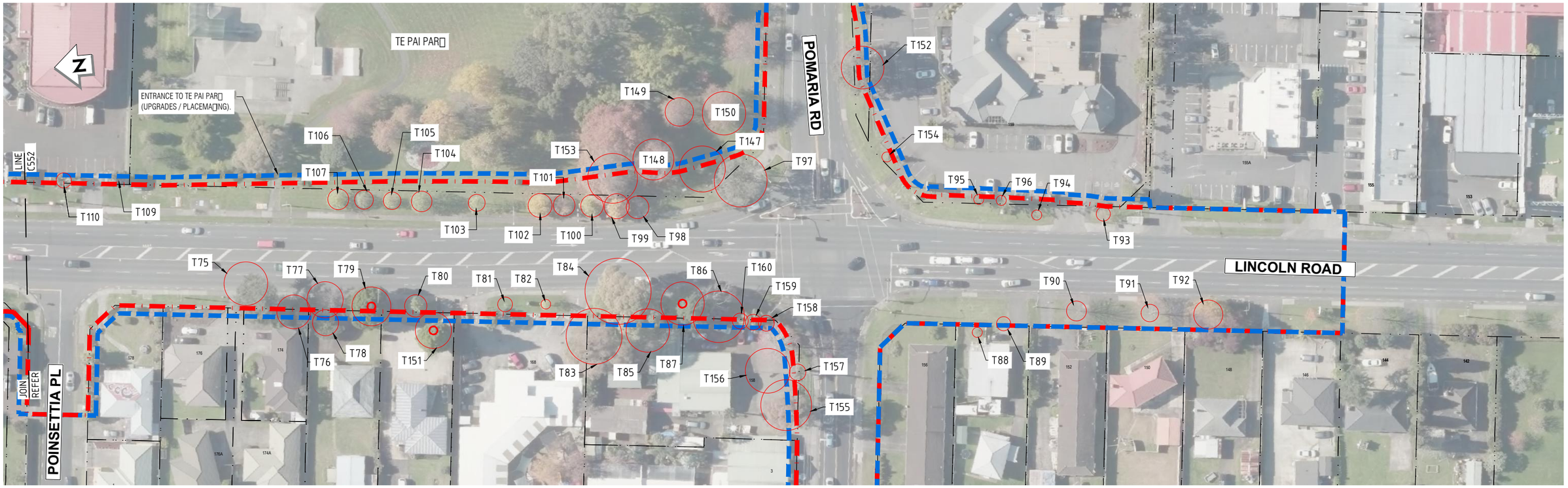
DO NOT SCALE – IF IN DOUBT, ASK

ORIGINAL SIZE A1



LEGEND

- DESIGNATION BOUNDARY
- NEW ROAD CORRIDOR
- EXISTING TREES (SIZE VARIES)
- EXISTING HERITAGE TREE (SIZE VARIES)

5 0 5 10m

SCALE 1:250

NOT FOR CONSTRUCTION

REV	REVISIONS	DRN	CHK	APP	DATE
C	FOR CONSULTATION	GS	AGS	AGS	2016-05-31
B	FOR CONSULTATION	GS	AGS	AGS	2016-05-16
A	PRELIMINARY	PJC	AGS	AGS	2016-05-12

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DESIGNED	Michael Yale	16/06/15
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CAD REVIEW	Gavin Smit	04.05.16
DESIGN CHECK	Graeme Stanton	13.05.16
DESIGN REVIEW	Graeme Stanton	13.05.16
APPROVED	Graeme Stanton	31.05.16
PROF REGISTRATION:		

MWH

Client:

LINCOLN ROAD CORRIDOR UPGRADE

ARBORIST TREE LOCATION LAYOUT
SHEET 3 OF 3

Status Stamp: FOR CONSULTATION
Date Stamp: 2016-05-31
Scales: 1 : 500
Datum: Mt.Eden2000
Drawing No.: 80507651-0301-C553
Rev.: C

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Appendix 2

Tree Assessment Table

Key
Road Reserve Tree – RR
Open Space tree – OS
Private Property – PP

Tree No	Species		Age Class	Height	Girth	Spread	Vigor	Comments	Protected Requiring removal	Unprotected requiring removal	Works in the dripline	Location	Protected
T1	Phoenix palm	*Phoenix canariensis*	Mature	5	>0.6	3	N	removal likely		1		RR	No
T2	Phoenix palm	*Phoenix canariensis*	Mature	7	>0.6	3	N	removal likely		1		RR	No
T3	Puriri	*Vitex lucens*	Maturing	6	>0.6	5	N	Removal	1			RR	Yes
T4	Tulip tree	*Liriodendron tulipifera*	Maturing	7	>0.6	4	L	Thin crown - recent works within dripline - Removal required	1			RR	Yes
T5	Tulip tree	*Liriodendron tulipifera*	Maturing	8	>0.6	5	N	Removal required	1			RR	Yes
T6, T7 and T8	Acmena	*Acmena smithii*	Mature	4	M/S	3	N	removal required		3		RR	No
T9	Loquat	*Eriobotrya japonica*	Mature	3.5	T/S			removal required		1		PP	No
T10	Unknown (exotic)		Young	4	M/S	1	N	Removal required		1		PP	No
T11	Albizia	*Albizia spp*	Maturing	3	>0.6	3	N	Removal required		1		PP	No
T12	Acmena	*Acmena smithii*	Mature	7	M/S	3		removal required		1		PP	No
T13	Coprosma	*Coprosma spp*	Maturing	3	3		N	removal required		1		PP	No

Tree No	Species		Age Class	Height	Girth	Spread	Vigor	Comments	Protected Requiring removal	Unprotected requiring removal	Works in the dripline	Location	Protected
T14	Phoenix palm	*Phoenix canariensis*	Maturing	4	>0.6	2	N	removal required		1		PP	No
T15	Tulip tree	*Liriodendron tulipifera*	Maturing	6	>0.6	3	N	Removal required	1			RR	Yes
T16	Gum	*Eucalyptus spp*	Mature	10	>0.6	4	N	Removal required	1			RR	Yes
T17	Pohutukawa	*Metrosideros excelsus*	Maturing	4	M/S	2	N	removal required	1			RR	Yes
T18	Tulip tree	*Liriodendron tulipifera*	Maturing	7	>0.6	2	N	Removal required	1			RR	Yes
T19	She Oak	*Casuarina cunninghamiana*	Maturing	10	T/S	5	N	Removal required		1		PP	No
T20	Tulip tree	*Liriodendron tulipifera*	maturing	8	>0.6	3	N	Removal required	1			RR	Yes
T21	Tulip tree	*Liriodendron tulipifera*	Young	3	<0.6	2	N	removal required, Top broken out and lost central leader		1		RR	No
T22	Tulip tree	*Liriodendron tulipifera*	Young	2-3	<0.6	1	N	removal required		1		RR	No
T23	Tulip tree	*Liriodendron tulipifera*	Young	2-3	<0.6	1	N	removal required		1		RR	No
T24	Tulip tree	*Liriodendron tulipifera*	Young	2-3	<0.6	1	N	removal required		1		RR	No
T25	Unknown (exotic)				>0.6		N	dead, - removal required		1		PP	No
T26	Italian cypress	*Cupressus spp*	Maturing	12	>0.6	1	N	Removal likely		1		PP	No
T27	Sweetgum	*Liquidambar styraciflua*	Mature	12	>0.6	7	N	Removal likely		1		PP	No
T28	Norfolk Island Pine	*Araucaria heterophylla*	Maturing	12	>0.6	2	L	Discoloured foliage, possible stress indicator - possible be able to retain this tree		1		PP	No

Tree No	Species		Age Class	Height	Girth	Spread	Vigor	Comments	Protected Requiring removal	Unprotected requiring removal	Works in the dripline	Location	Protected
T29	Tulip tree	*Liriodendron tulipifera*	Young	3	<0.6	1.5	N			1		RR	No
T30	Tulip tree	*Liriodendron tulipifera*	Maturing	4	>0.6	2	N	Removal required	1			RR	Yes
T31	Tulip tree	*Liriodendron tulipifera*	Maturing	3	>0.6	2	N	Removal required	1			RR	Yes
T32	Tulip tree	*Liriodendron tulipifera*	Maturing	4	>0.6	3	N	Removal required	1			RR	Yes
T33	Tulip tree	*Liriodendron tulipifera*	Young	2	<0.6	0.5	N	Removal required		1		RR	No
T37	Pohutukawa	*Metrosideros excelsus*	Young	3	M/S	3	N	removal required	1			PP	Yes
T39	Tulip tree	*Liriodendron tulipifera*	Young	2	<0.6	0.5	L	Dead top - removal required		1		RR	No
T41	Tulip tree	*Liriodendron tulipifera*	Maturing	4	>0.6	3	N	Removal required	1			RR	Yes
T42	Norfolk Island Pine	*Araucaria heterophylla*	Maturing	15	>0.6	4	N	Removal required	1			RR	Yes
T43	Tulip tree	*Liriodendron tulipifera*	Young	2.5	<0.6	1	N	removal required		1		RR	No
T44	Tulip tree	*Liriodendron tulipifera*	Young	2.5	<0.6	1	N	removal required		1		RR	No
T45	Tulip tree	*Liriodendron tulipifera*	Young	4.5	<0.6	3	N	removal required		1		RR	No
T46	Lemonwood	*Pittosporum eugeniodes*	Maturing	3.5	>0.6	3	N	Removal required	1			RR	Yes
T47	Brush box	*Lophostemon conferta*	Mature	9	>0.6	3	N	Light pruning probably required <20% - works within dripline			1	RR	Yes

Tree No	Species		Age Class	Height	Girth	Spread	Vigor	Comments	Protected Requiring removal	Unprotected requiring removal	Works in the dripline	Location	Protected
T48	Cedar	*Cedrus spp*	Maturing	9	>0.6	4	N	Light pruning probably required <20% - works within dripline			1	RR	Yes
T49	Gleditsia	*Gleditsia triacanthos*	Maturing	5	M/S	5	N	Light pruning probably required <20% - works within dripline			1	PP	Yes (site > 4,000m2)
T50	Tulip tree	*Liriodendron tulipifera*	Young	2.5	<0.6	1	N	removal required		1		RR	No
T51	Unknown (exotic)		Maturing	4	>0.6	4	N	Removal required	1			RR	Yes
T52	Lemonwood	*Pittosporum eugeniodes*	Young	3	<0.6	1.5	N	removal required		1		RR	No
T53	Pittosporum	*Pittosporum spp*	Maturing	4	M/S	2	N	Removal required	1			RR	Yes
T54	Tulip tree	*Liriodendron tulipifera*	Young	3	<0.6	0.5	L	Dieback - removal required		1		RR	No
T55	Tulip tree	*Liriodendron tulipifera*	Young	3	<0.6	0.5	N	- removal required		1		RR	No
T58	Tulip tree	*Liriodendron tulipifera*	Young	3	<0.6	1	N	removal required		1		RR	No
T59	Pohutukawa	*Metrosideros excelsus*	Maturing	4	>0.6	1.5	N	Removal required protected as if in urban environment site is over 4000m2	1			PP	Yes (site > 4,000m2)

Tree No	Species		Age Class	Height	Girth	Spread	Vigor	Comments	Protected Requiring removal	Unprotected requiring removal	Works in the dripline	Location	Protected
T60	Pohutukawa	*Metrosideros excelsus*	Maturing	4	>0.6	1.5	N	Removal required protected as if in urban environment site is over 4000m2	1			PP	Yes (site > 4,000m2)
T61	Tulip tree	*Liriodendron tulipifera*	Young	3	<0.6	0.5	N	removal required		1		RR	No
T62	Tulip tree	*Liriodendron tulipifera*	Young	4	<0.6	0.5	N	removal required		1		RR	No
T63	Tulip tree	*Liriodendron tulipifera*	Young	5	<0.6	0.5	N	removal required		1		RR	No
T64	Tulip tree	*Liriodendron tulipifera*	Young	6	<0.6	0.5	N	removal required	1			RR	Yes
T65	Pohutukawa	*Metrosideros excelsus*	Maturing	4	>0.6	2	N	Removal required protected as if in urban environment site is over 4000m2	1			PP	Yes (site > 4,000m2)
T66	Tulip tree	*Liriodendron tulipifera*	Maturing	5	>0.6	2	N	Removal required	1			RR	Yes
T67	Tulip tree	*Liriodendron tulipifera*	Mature	11	>0.6	5	N	Removal required	1			RR	Yes
T68	Olive	*Olea europaea*	Maturing	3	>0.6	2	N	Removal required		1		PP	No
T69	Olive	*Olea europaea*	Maturing	3	>0.6	2	N	Removal required		1		PP	No
T70	Olive	*Olea europaea*	Maturing	3	>0.6	2	N	Removal required		1		PP	No
T71	Tulip tree	*Liriodendron tulipifera*	Mature	8	>0.6	4	N	Removal required	1			RR	Yes
T72	Tulip tree	*Liriodendron tulipifera*	Young	3-4	>0.6	2	N	Removal required	1			RR	Yes
T73	Lemonwood	*Pittosporum eugeniodes*	Mature	5	>0.6	3	N	Variegated variety - pruning will be			1	RR	Yes

Tree No	Species		Age Class	Height	Girth	Spread	Vigor	Comments	Protected Requiring removal	Unprotected requiring removal	Works in the dripline	Location	Protected
								required <20% and works within the dripline					
T74	Tree of heaven	*Alianthus altissima*	Mature	10	>0.6	4	N	Possible retain and prune back <20%			1	PP	No
T75	Cedar	*Cedrus spp*	Mature	15	>0.6	5	N	Removal required	1			RR	Yes
T76	Mixed trees and shrubs including Privet, Cherry		Young	4		4	N	removal required		1		PP	No
T77	Tulip tree	*Liriodendron tulipifera*	Maturing	8	>0.6	4	N	Removal required	1			RR	Yes
T78	Cotoneaster	*Cotoneaster spp*	Mature	3		3	N	removal required		1		PP	No
T79	Rimu	*Dacrydium cupressinum*	Maturing	7	>0.6	4	N	HERITAGE TREE – listed as being in 172 Lincoln Road but it is likely to be within the road reserve			1	RR	Yes - scheduled
T80	Tulip tree	*Liriodendron tulipifera*	Young	4	>0.6	2	N	Misshapen and damaged base - removal required	1			RR	Yes
T81	Tulip tree	*Liriodendron tulipifera*	Young	2	<0.6	0.5	N	removal required		1		RR	No
T82	Tulip tree	*Liriodendron tulipifera*	Young	3	<0.6	1	N	removal required		1		RR	No
T83	Gum	*Eucalyptus spp*	Mature	16-18	>0.6	7	N	Removal required		1		PP	No
T84	Magnolia	*Magnolia spp*	Maturing	7	>0.6	4	N	Removal required		1		RR	No
T85	Lemonwood	*Pittosporum eugeniodes*	Maturing	4	>0.6	2	N	Removal required		1		PP	No

Tree No	Species		Age Class	Height	Girth	Spread	Vigor	Comments	Protected Requiring removal	Unprotected requiring removal	Works in the dripline	Location	Protected
T86	Tulip tree	*Liriodendron tulipifera*	Mature	10	>0.6	4	L	Major asymmetry, dieback - removal required	1			RR	Yes
T87	Cedar	*Cedrus spp*	Mature	12	>0.6	5	N	HERITAGE TREE			1	PP	Yes - scheduled
T88	Pine	*Pinus spp*	Mature	15	>0.6	4	N	Retain - works within dripline			1	PP	No
T89	Silver birch	*Betula spp*	Maturing	6	>0.6	4	N	Possibly require removal		1		PP	No
T90	Tulip tree	*Liriodendron tulipifera*	Maturing	6	>0.6	3	N	Removal required	1			RR	Yes
T91	Tulip tree	*Liriodendron tulipifera*	Maturing	7	>0.6	4	N	Removal required	1			RR	Yes
T92	Tulip tree	*Liriodendron tulipifera*	Maturing	7	>0.6	4	N	Removal required	1			RR	Yes
T93	Tulip tree	*Liriodendron tulipifera*	Young	3	<0.6	1	N	removal required		1		RR	No
T94	Tulip tree	*Liriodendron tulipifera*	Young	2	<0.6	1	N	removal required		1		RR	No
T95	Norfolk Island Pine	*Araucaria heterophylla*	Maturing	8-15	>0.6	4	N	Works within dripline - minor pruning to raise crown <20%			1	PP	Yes (site > 4,000m2)
T96	Norfolk Island Pine	*Araucaria heterophylla*	Maturing	8-15	>0.6	4	N	Works within dripline - minor pruning to raise crown <20%			1	PP	Yes (site > 4,000m2)
T97	Gum	*Eucalyptus spp*	Mature	12	>0.6	6	N	removal required	1			RR	Yes
T98	Tulip tree	*Liriodendron tulipifera*	Young	2-4	<0.6		N	removal required		1		RR	No
T99	Tulip tree	*Liriodendron tulipifera*	Young	2-4	<0.6		N	removal required		1		RR	No
T100	Tulip tree	*Liriodendron tulipifera*	Young	2-4	<0.6		N	removal required		1		RR	No

Tree No	Species		Age Class	Height	Girth	Spread	Vigor	Comments	Protected Requiring removal	Unprotected requiring removal	Works in the dripline	Location	Protected
T101	Tulip tree	*Liriodendron tulipifera*	Young	2-4	<0.6		N	removal required		1		RR	No
T102	Tulip tree	*Liriodendron tulipifera*	Young	2-4	<0.6		N	removal required		1		RR	No
T103	Tulip tree	*Liriodendron tulipifera*	Young	2-4	<0.6		N	removal required		1		RR	No
T104	Tulip tree	*Liriodendron tulipifera*	Young	2-4	<0.6		N	removal required		1		RR	No
T105	Tulip tree	*Liriodendron tulipifera*	Young	2-4	<0.6		N	removal required		1		RR	No
T106	Tulip tree	*Liriodendron tulipifera*	Young	2-4	<0.6		N	removal required		1		RR	No
T107	Tulip tree	*Liriodendron tulipifera*	Young	2-4	<0.6		N	removal required		1		RR	No
T109	Tulip tree	*Liriodendron tulipifera*	Young	2-4	<0.6		N	removal required		1		RR	No
T110	Tulip tree	*Liriodendron tulipifera*	Young	2-4	<0.6		N	removal required		1		RR	No
T111	Tulip tree	*Liriodendron tulipifera*	Young	2-4	<0.6		N	removal required		1		RR	No
T112	Tulip tree	*Liriodendron tulipifera*	Young	2-4	<0.6		N	removal required		1		RR	No
T113	Tulip tree	*Liriodendron tulipifera*	Young	2-4	<0.6		N	removal required		1		RR	No
T114	Tulip tree	*Liriodendron tulipifera*	Young	2-4	<0.6		N	removal required		1		RR	No
T115	Tulip tree	*Liriodendron tulipifera*	Young	2-4	<0.6		N	removal required		1		RR	No
T116	Tulip tree	*Liriodendron tulipifera*	Young	2-4	<0.6		N	removal required		1		RR	No

Tree No	Species		Age Class	Height	Girth	Spread	Vigor	Comments	Protected Requiring removal	Unprotected requiring removal	Works in the dripline	Location	Protected
T117	Tulip tree	*Liriodendron tulipifera*	Young	2-4	<0.6		N	removal required		1		RR	No
T118	Pin Oak	*QPPrcus palustris*	Maturing	9	>0.6	4	N	Possible removal required Protected as site over 4000m2	1			PP	Yes (site > 4,000m2)
T119	She Oak	*Casuarina cunninghamiana*	Maturing	10	>0.6	4	N	Possible removal required	1			PP	Yes (site > 4,000m2)
T120	Gum	*Eucalyptus spp*	Mature	18-20	>0.6	8	N	Works within dripline - minor pruning to raise crown <20% Protected as site over 4000m2			1	PP	Yes (site > 4,000m2)
T121	Hedge	*species unknown*	mature	2.5	>0.6	1	N	removal required Protected as site over 4000m2	1			PP	Yes (site > 4,000m2)
T122	Acmena	*Acmena smithii*	Maturing	4		2-3	N	removal required		1		PP	No
T123	Walnut?	*Juglans spp*	mature	15	>0.6	6	N	Possibly require removal Protected as site over 4000m2	1			PP	Yes (site > 4,000m2)
T124	Oak	*QPPrcus spp*	Maturing	9	>0.6	4	N	Possibly require removal Protected as site over 4000m2	1			PP	Yes (site > 4,000m2)
T125	She Oak	*Casuarina cunninghamiana*	Maturing	18	>0.6		N	3x trees - possibly require removal Protected as site over 4000m2	3			PP	Yes (site > 4,000m2)
T126	Tulip tree	*Liriodendron tulipifera*	Young	2	<0.6	0.5	N			1		RR	No
T127	Tulip tree	*Liriodendron tulipifera*	Young	2	<0.6	0.5	N	removal required		1		RR	No

Tree No	Species		Age Class	Height	Girth	Spread	Vigor	Comments	Protected Requiring removal	Unprotected requiring removal	Works in the dripline	Location	Protected
T128	Tulip tree	*Liriodendron tulipifera*	Young	2	<0.6	0.5	N	removal required		1		RR	No
T129	Tulip tree	*Liriodendron tulipifera*	Young	3.5	<0.6	1	N	removal required		1		RR	No
T130	Magnolia	*Magnolia spp*	Young	4	<0.6	2-3	N			1		PP	No
T131	Wattle	*Acacia spp*	Maturing	5	<0.6	4	L			1		RR	No
T132	Phoenix palm	*Phoenix canariensis*	Maturing	3	>0.6	2	N			1		PP	No
T133	Pine	*Pinus spp*	Mature	7	>0.6	4	N			1		RR	No (removable vegetation)
T134	Pohutukawa	*Metrosideros excelsa*	Young	2.5	<0.6	1	N			1		PP	No
T135	Sweet Gum	*Liquidambar styraciflua*	Maturing	9	>0.6	4	N			1		PP	No
T136	Acmena	*Acmena smithii*	Mature	7	>0.6	2-3	N			1		PP	No
T137	Cypress x 2	*Cupressus spp*	Maturing	8	M/S	3	N			1		PP	No
T138	Acmena	*Acmena smithii*	Mature	12	M/S	4	N			1		PP	No
T139	Shrubs	*Various*	Maturing	2	M/S	1	N			1		PP	No
T140	Totara	*Podocarpus totara*	Maturing	4	>0.6	2	N	In park – good specimen	1			OS	Yes
T141	Totara	*Podocarpus totara*	Maturing	4	>0.6	2	N		1			OS	Yes
T142	Alder	*Alnus glutinosa*	Maturing	4	>0.6	2	L	Dead branches	1			OS	Yes
T143	Alder	*Alnus glutinosa*	Maturing	4	>0.6	2	N		1			OS	Yes
T144	Sweet gum	*Liquidambar styraciflua*	Mature	10	>0.6	7	N	Major crown asymmetry, major defect – included union – could not be retained safely next to road	1			OS	Yes
T145	Karo?		Maturing	7	>0.6	3	N			1		PP	No
T146	Brush Wattle	*Callistemon spp*	Mature	7	T/S	4	L	Central leader failed, internal decay, broken hanging branch in crown		1		RR	No (Environmentally damaging plant)

Tree No	Species		Age Class	Height	Girth	Spread	Vigor	Comments	Protected Requiring removal	Unprotected requiring removal	Works in the dripline	Location	Protected
T147	Kahikatea	*Dacrycarpus dacrydiodes*	Young	6	<0.6	1	N	In park	1			OS	Yes
T148	Oak	*Querrcus spp*	Mature	10	>0.6	5	N		1			OS	Yes
T149	Oak	*Querrcus spp*	Mature	10	>0.6	4	N				1	OS	Yes
T150	Oak	*Quercus spp*	Mature	10	>0.6	5	N				1	OS	Yes
T151	Rimu	*Dacrydium cupressinum*	Maturing	7	>0.6	4	N	HERITAGE TREE			1	PP	Yes - scheduled
T152	She Oak	*Casuarina cunninghamiana*	Maturing	7	>0.6	6	N			1		PP	No
T153	Oak	*Quercus spp*	Mature	10	>0.6	5	N	In Park			1	OS	Yes
T154	Kauri	*Agathis australis*	Young	4	<600	1	N			1		PP	
T155	Gum	*Eucalyptus spp*	Mature	13	>600	5	N	Located in Bird Barn		1		PP	No
T156	Sweet Gum	*Liquidambar styraciflua*	Mature	12	>600	6	N	Located in Bird Barn		1		PP	No
T157	Palm	*U/K*	Maturing	5	>600	2	N	Located in Bird Barn		1		PP	No
T158	Palm	*U/K*	Mature	9	>600	2	N	Located in Bird Barn		1		PP	No
T159	Palm	*U/K*	Mature	9	>600	2	N	Located in Bird Barn		1		PP	No
T160	Palm	*U/K*	Mature	9	>600	2	N	Located in Bird Barn		1		PP	No
T161	Pohutukawa	*Metrosideros excelsus*	Maturing	6	>0.6	3	N	Removal required protected as if in urban environment site is over 4000m2	1			PP	Yes (site > 4,000m2)
G1	Mixed Hedge - Acmena, Pittosporum and Hoheria												
G2	Mixed hedge - Pittosporum , Bottlebrush							Possibly able to retain - but consider removal					
G3	Mixed hedge - Pittosporum, Pohutukawa, Bottlebrush							Possibly retain but will require pruning back					

Tree No	Species	Age Class	Height	Girth	Spread	Vigor	Comments	Protected Requiring removal	Unprotected requiring removal	Works in the dripline	Location	Protected
G4	Mixed shrubs and trees - Titoki, Cabbage, Hebe						Removal required					
G5	Acmena, Wattle and Privet			>0.6		N	THIS HAS BEEN REMOVED					
REF 1	Tree Dead and partially Removed											
REF 2	Willow Myrtle - appears to be outside area of work - unprotected tree											
REF 3	Gum tree that is half dead - recommend removal as a clear hazard to users of future cycle path						THIS HAS BEEN REMOVED					
REF 5	Tree Dead and partially Removed											
S1	Shrub beds, Hebe										PP	
S2	Shrub beds, Hebe										PP	
S3	Shrub beds, Hebe										PP	
								49	87	15		

Summary Table	TOTAL	Road Reserve	Private Property	Open Space
Trees subject to Rule 2 requiring removal	51	29	15	7
Tres subject to Rule 2 requiring work within the dripline	8	3	2	3
Trees not subject to Rule 2 requiring removal	91	54	37	-
Trees not subject to Rule 2 requiring works within dripline	1	-	1	-
Heritage trees requiring removal	0	-	-	-
Heritage tree requiring Work within dripline	3	2	1	-
TOTAL	154	88	56	10

Appendix 3
Tree Reference Photographs

T1 Phoenix palm

T2 Phoenix palm

T3 Puriri

T4 Tulip Tree

Ref 1

T5 Tulip Tree

T6, T7 and T8 Acmena

T9 Loquat and T10 Tree of Heaven

T11 Albizia spp

T12 Acmena

T13 and T14 Coprosma and Phoenix palm

G1 Mixed hedge

T15 Tulip tree

T16 Gum and T17 Pohutukawa

T18 Tulip tree and T19 She Oak

T20 Tulip tree

Ref 3 Dead/dying gum and Tulip tree

Ref 2 Willow Myrtle

T22,T23 and T24 Tulip tree

T25 Unknown exotic

G2

T27 Sweetgum

T28 Norfolk Island Pine

T29 Tulip tree

T30 Tulip tree

T31 Tulip tree and G3 mixed hedge

T33 Tulip tree

S1 Shrub bed

S2 Shrub Bed

S3 Shrub bed

T41 Tulip tree

T42 Norfolk Island Pine

T43, T44 and T45 Tulip tree

T46 Lemonwood

T47 Brush box

T48 Cedar and T49 (behind) Gleditsia

T50 Tulip tree

G4 mixed shrubs – Titoki, Cabbage and Hebe

G4

T51 unknown exotic

T52 Lemonwood and T53 Pittosporum

T54 Tulip tree

T55 Tulip tree

Ref 5 trees removed – remaining dead tree

T58 Tulip tree

T59 Pohutukawa

T60 Pohutukawa and T61 Tulip tree

T65 Pohutukawa

T66 Tulip tree

T67 Tulip tree

T68, T69 and T70 Olive tree's

T71 Tulip tree

T72 Tulip tree

T73 Lemonwood

T74 Tree of Heaven

T75 Cedar

T76 Mixed spp

T77 Tulip tree

T78 Cotoneaster

T79 Rimu

T80 Tulip tree

T81 Tulip tree

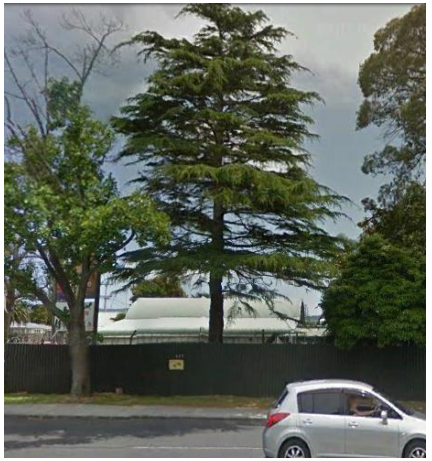
T82 Tulip tree

T83 Gum

T84 Magnolia

T85 Lemonwood

T86 Tulip tree



T87 Cedar

T87 Cedar

T88 Pine T89 Silver birch (behind)

T90 Tulip tree

T91 Tulip tree

T92 Tulip tree

T93 Tulip tree

T94 Tulip tree

T95 and T96 Norfolk Island Pine

T97 Gum

T98 – T107 Tulip trees

T98 – T107 Tulip trees

T121 Hedge

T120 Gum

T126 – T129 Tulip trees

T121 Hedge

T122 Acmena

T125 She oaks

T129 Tulip tree

G5 Acmena, Wattle and Privet

T130 Magnolia

T131 Wattle

T132 P Palm

T133 Pine

T134 Pohutukawa

T135 Sweet gum and T136 Acmena

T137 Cypress trees

T135, T136 and T137

T138 Acmena

T139 Shrubs

T140 Totara

T141 Totara

T142 and T143 Alder

T144 Sweetgum

Structural weakness trunk of T144

T145 Karo?

T146 Brush wattle

T147 Kahikatea

T148 Oak

T150 Oak

T151 Rimu

T152 She Oak

T153 Oak

T154 Kauri

T155, T56, T157

T158, T159, T160

T161 Pohutukawa

Appendix 4

Definitions

Dimensions: All dimensions are estimated unless otherwise indicated. Measurements taken with a tape or clinometer are indicated with a '*'. Less reliable estimated dimensions are indicated with a '?'.

Species: I based the species identification on my visual observations and have placed '?' after the name of a tree where I have some doubt over its identity.

Height: Height is estimated to the nearest meter.

Trunk diameter: Trunk diameter is estimated at 1.4m above ground level and recorded in meters. If appropriate, it has been measured with a diameter tape. Trees that have multiple stems are indicated with 'M/S'.

Maturity: Tree maturity has been assessed as mature (last one third of life expectancy), maturing (one third to two thirds life expectancy) and young (less than one third life expectancy).

Vigour: This is an indication of the health of the tree. Trees have either been assessed as N = normal vigour or L = low vigour.

Comments: This column records any relevant features that may help clarify the retention category allocation.

Appendix 5

Daytona Reserve Memo

Vegetation Assessment Summary
Daytona Reserve

Assessment Details

Dates of visit	18th August 2015	ATC Ref	294
Arborist	Stephen Bishop, Amenity Tree Consultants		
Location	Daytona Reserve		
Project	Lincoln Road Corridor Improvements		

Background/Scope

Amenity Tree Consultants Ltd (ATC) was commissioned by Auckland Transport (AT) to provide an arboricultural report to accompany a Notice of Requirement (NOR) and resource consents for the Lincoln Road Corridor Improvements (LCRI) project. And to assess the potential environmental effects in regard vegetation alteration as per the Operative Auckland Council District Plan Waitakere Section 2003 and the Proposed Auckland Unitary Plan (PAUP) 2013.

During the initial assessment several trees in Daytona Reserve were found to be potential directly or indirectly affected by the proposal, including a group of mature Acmena trees, a small Alder tree and a large mature Sweet Gum (liquidambar styraciflua).

Findings and Discussion

The exotic Acmena trees are likely to be part of an old hedge, which has not been maintained resulting in these large trees. Acmena trees are considered to be a weed species under the operative district plan.

A small alder tree that is less than 4m in height may require removal for the road/pavement – this tree is in a poor condition with several dead/dying branches within its crown.

The Sweet gum tree is a large mature exotic specimen that is prominent within the park and easily viewed from surrounding properties. It measures approximately 10m height and has a crown spread of 7m. The tree has co-dominant stems with an included bark union near its base, this is considered to be a significant structural defect and typical of this species in New Zealand.

A photograph of the tree can be seen in figure 3 and the structural defect is shown in figure 4.

Co dominant stems are inherently weaker as the stem fibres are not anatomically joined; the two stems meet symmetrically and can be separated with ease. Bark inclusions indicate this weakness. The risk of the separate stems falling apart increases as the tree grows. These defects can sometimes be pruned out at an early stage of a trees development, but very difficult or impossible when mature. In this instance removal of one or the other of the stems would leave the tree extremely lop sided and increase the wind load on the remaining stem – actually increasing the risk of stem failure.

The degree of risk any tree presents to people and property depends upon many factors including type and significance of defect, location, species type, site conditions. other defects and obviously potential targets. In this instance the tree has an identified significant defect but the risk it presents to people and property is currently lower because of its location than perhaps if were located next to a footpath or road.

The proposed construction of a new road and pedestrian footpath close to the base of this tree will cause several things to occur.

- The tree will be placed under considerable stress due to the rapid change in its environmental conditions.
- It is also likely that significant root loss or damage would occur – even with good engineer solutions and protection measures employed to minimise the impact.
- The identified hazard (fault) would have a greater chance of occurring due to removal of Acmena hedge and root loss, through increase wind loading and trees response to stress factors.
- The potential target for the tree would increase exponentially – the risk would be unacceptable and the tree would have to be removed as per good arboricultural practice and risk management.

In simple terms it is considered that the tree could not be safely retained during or post construction of the proposed works with such high potential risk factor remaining and that these risk factors cannot be minimised other than by the removal of the entire tree.

Because of the prominence of the tree and it being located in a public reserve, a meeting was arranged between Auckland Transport, Amenity Tree Consultants and Auckland Council Parks Arborist (Mr Chris Loughborough). This meeting was held on site to discuss the tree and potential solutions. Mr Loughborough concurred with the above findings, in that the tree has a significant defect, would be further jeopardised by the works and it could not safely be retained. Given the significant defect Mr Loughborough was satisfied that removal and replacement planting was a better long term solution and would be supported providing mitigation planting was proposed. Mr Loughborough suggested continuing the theme of Totara trees – two of these are already along the alignment of the proposed road and will not be adversely affected by it. Mr Loughborough was also comfortable that one of the small Alder trees being removed.

It is therefore proposed that the Sweet gum, Alder tree and Acmena hedge will be removed as part of the Lincoln Road Corridor Improvements. That mitigation planting will consist of at least 3 totara trees of approximately 3m in height planted as replacement trees in Daytona reserve adjacent to the proposed road as per the specifications Council Parks team dictate.

Figure 1 Excerpt from tree assessment location plans

Table 1 – Excerpt from Tree Assessment Data

Ref No	Species		Age	Height	Spread	Comment
T138	Acmena	*Acmena smithii*	Mature	12	4	
T140	Totara	*Podocarpus totara*	Maturing	4	2	In park – good specimen
T141	Totara	*Podocarpus totara*	Maturing	4	2	
T142	Alder	*Alnus glutinosa*	Maturing	4	2	Dead branches
T143	Alder	*Alnus glutinosa*	Maturing	4	2	
T144	Sweet gum	*Liquidambar styraciflua*	Mature	10	7	Major crown asymmetry, major defect – included union – could not be retained safely next to road

Figure 2 Showing Proposed Road Layout

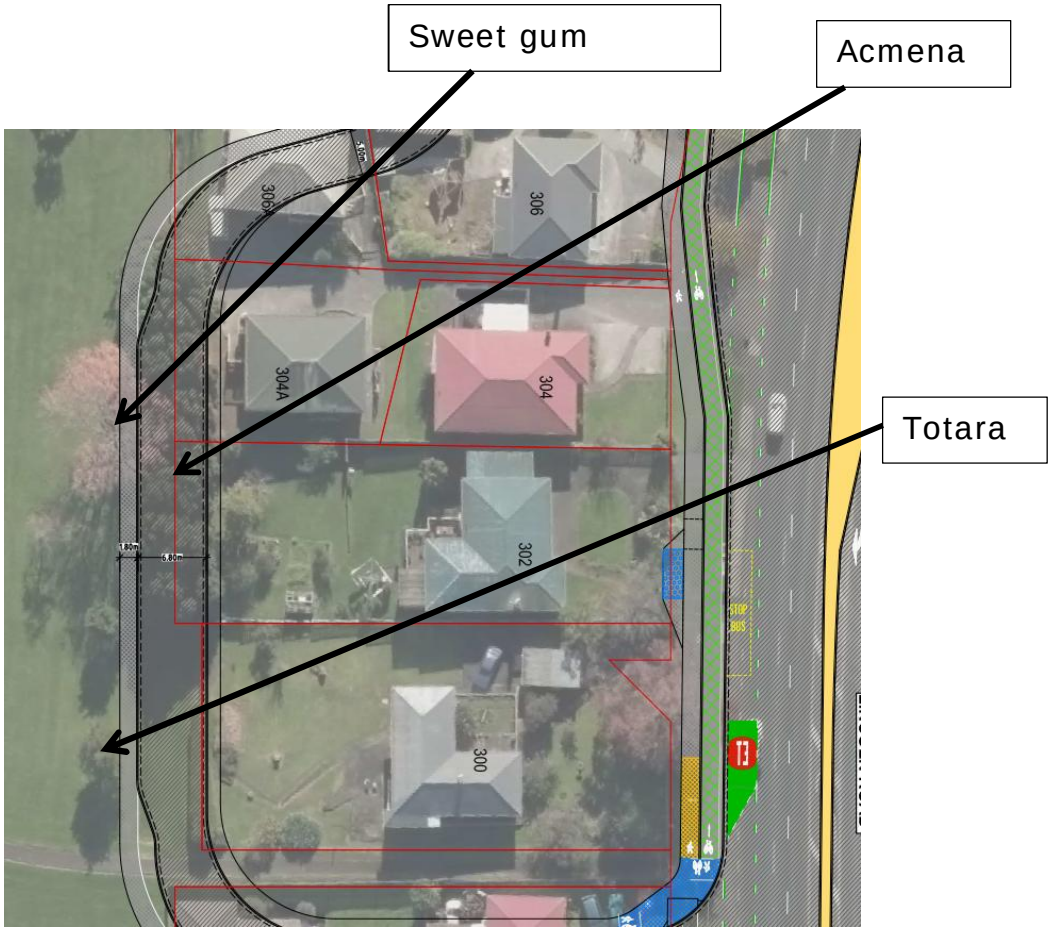


Figure 3 Showing trees in Daytona Reserve

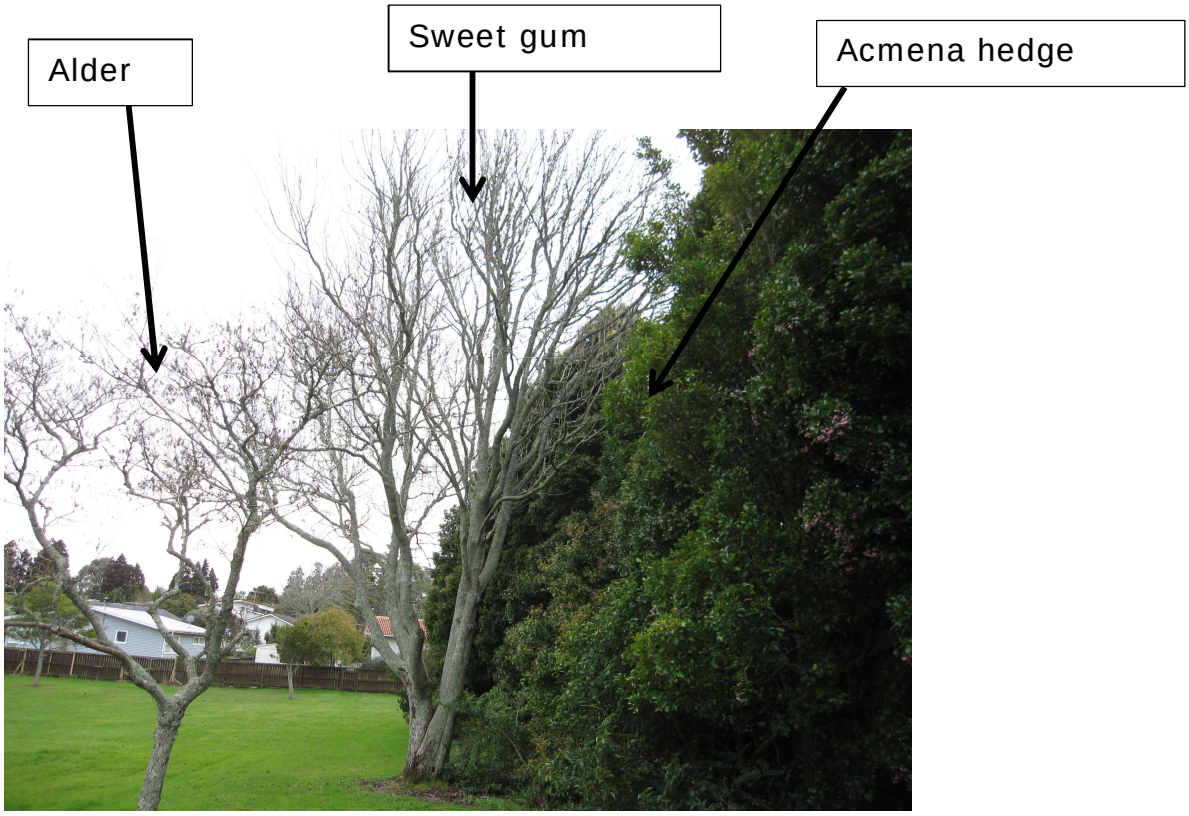


Figure 4 Showing the co dominant stem and included bark union

Figure 4 Showing Totara trees in Daytona Reserve

Yours sincerely,

Stephen Bishop
Arborist
Amenity Tree Consultants Ltd