

TOWN OF COTTESLOE



ATTACHMENTS

**NORTH COTTESLOE PRIMARY SCHOOL TRAFFIC SAFETY COMMITTEE
MEETING – 9 SEPTEMBER 2019**

TABLE OF CONTENTS

ITEM	SUBJECT	PAGE NO
8.1 REPORTS OF OFFICERS		
OFFICER REPORTS		
8.1.1	KISS AND DROP COMMUNITY ENGAGEMENT	
8.1.1(a)	NORTH COTTESLOE PRIMARY SCHOOL COMMUNITY ENGAGEMENT - COUNCILLOR AMENDMENTS AUGUST OCM	3
8.1.1(b)	COMMUNITY ENGAGEMENT PLAN - NORTH COTTESLOE PRIMARY SCHOOL CAR PARK - CR TUCAK AMENDMENTS	8
8.1.1(c)	COMMUNITY ENGAGEMENT PLAN - NORTH COTTESLOE PRIMARY SCHOOL CAR PARK - CR HARKINS AMENDMENTS	22
8.1.1(d)	NORTH COTTESLOE PRIMARY SCHOOL - KISS AND DROP CONSULTATION IMAGERY	37
8.1.1(e)	ARBORLOGIC - DESIGN SPECIFIC TREE ASSESSMENT REPORT.....	40
8.1.1(f)	TRAFFIC ENGINEERING REPORT - NORTH COTTESLOE PRIMARY SCHOOL	83

TOWN OF COTTESLOE



NORTH COTTESLOE PRIMARY SCHOOL TRAFFIC SAFETY COMMITTEE MEETING

ATTACHMENT

**ITEM 8.1.1A:
NORTH COTTESLOE PRIMARY SCHOOL
COMMUNITY ENGAGEMENT - COUNCILLOR
AMENDMENTS AUGUST OCM**

COUNCILLOR AMENDMENTCr Harkins - 10.3.5 - Concept Options and Community Consultation Plan

That Council:

1. Notes that an alternative concept has been developed to mitigate time risk to the project, **by reducing the impact on Western Power and ATCO Gas infrastructure** however it should be acknowledged that the original plan is the **preferred option of these two** as time is subordinate to achieving the most desirable outcome for the community as a whole.
2. Notes the arborist site investigations have been delayed until the detailed design stage and will be undertaken in conjunction with other engineering investigations; and,
3. Approves the North Cottesloe Primary School Kiss and Drop Relocation Project Community Engagement Plan and its implementation, subject to the following changes:
 - a. Holding and information session prior to the survey being released, on the **14th September 2019 with the survey running from the 16th September – 7th October 2019**
 - b. Letterbox drop to be from Napier Street to Parry St., between Stirling Hwy and Railway St.
 - c. In section 2, engagement text to commence with the following:

The Town's strategic community plan contains and adopted strategy to proactively pursue solutions for the improved access to North Cottesloe Primary School, with the view to reducing congestion on Eric Street. The Town's adopted corporate plan outlines actions to achieve this strategy to develop a costed project that relocates the school's parking and drop off point from Eric St to Railway St.

Therefore, the Town seeks your feedback on the proposed Kiss and Drop facility for North Cottesloe primary School, comprising the realignment of Railway Street and construction of a car park and kiss and drop facility, to improve safety for pedestrians cyclists and motorists and alleviate traffic congestion in the current Eric St. drop off/pick-up zone.
 - d. In section 3, incorporate similar text as per point C above in the survey introduction text. Replace the text "including provision sums and 10% contingency, with \$350,000 of the funding being provided by the Town of Cottesloe in the recently adopted 2019/2020 budget and additional funding being sought from the Department of Education and Main Roads Western Australia" with **"the Town has budgeted up to \$350,000 including \$140,000 from the Federal Roads to Recovery program and will lobby the State Government to seek funding for the project"** include "The Town engaged an independent traffic expert to review the concept plan and to suggest alternatives. The expert fully supported and endorsed this plan **as the most effective solution to improve safe access and reduce traffic congestion"** Also include **"The project will commit to protecting the**

- mature trees in the affected area and to increase the tree canopy with additional plating in the area”
- e. In question 7, include the text “additional trees will be planted as part of the project” replace with “A key criteria of the project will be to protect the mature trees and increase the tree canopy by planting additional trees.”
 - f. In question 11, include as an option “reduce congestion on Eric St”
 - g. Remove question 16 in light of point 1 above
 - h. In light of all the items above, make the necessary changes to the Frequently Asked Questions.
 - i. Include a one page executive summary for the Traffic Engineering Report and The Tree Report with the survey (in addition to providing links to the entire reports).
 - j. In question 2 remove the word “Student” from the list of stakeholder groups respondents belong to.
 - k. In section 3 of the engagement plan, just before question 1, remove “do you want unregistered participations to be able to complete the survey” (remove as registration will be an automatic requirement of the survey).
 - l. Change the wording in number 9 of the Frequently asked Questions to: “ the existing Eric Street car park will be utilized for visitors to the school, such as canteen duty, reading duty and meetings”
 - m. Ensure that the concept plan as per the attachment to the 27 August OCM is included with the survey.

COUNCILLOR AMENDMENTCr Tucak - 10.3.5 - Concept Options and Community Consultation Plan

That Council:

1. Notes that an alternative concept has been developed to mitigate time risk to the project, **by reducing the impact on Western Power and ATCO Gas infrastructure**, however it should be acknowledged that the original plan is the **preferred option of the two as time is subordinate to achieving a more complete design**.
2. Notes the arborist site investigations have been delayed until the detailed design stage and will be undertaken in conjunction with other engineering investigations; and,
3. Approves the North Cottesloe Primary School Kiss and Drop Relocation Project Community Engagement Plan **for** implementation, subject to the following changes:
 - a. Holding an information session **at a neutral location** prior to the survey being released, on the 10 August 2019, with the survey running from the 12 August 2019 until the 2 September 2019.
 - b. Letterbox drop to be from Napier Street to Parry St., between Stirling Hwy and Railway St.
 - c. In section 2, engagement text to commence with the following:

The Town's strategic community plan contains and adopted strategy to proactively pursue solutions for the improved access to North Cottesloe Primary School, with the view to reducing congestion on Eric Street. The Town's adopted corporate plan outlines actions to achieve this strategy to develop a costed project that relocates the school's parking and drop off point from Eric St to Railway St.

Therefore, the Town seeks your feedback on the proposed **relocation of the** Kiss and Drop facility for North Cottesloe Primary School, comprising the realignment of Railway Street and construction of a **new** car park and kiss and drop facility, to improve safety for pedestrians, cyclists and motorists and alleviate **some of the** traffic congestion in the current **North Cottesloe Primary School** drop off/pick-up zone.
 - d. In section 3, incorporate similar text as per point c above in the survey introduction text. Replace the text "including provision sums and 10% contingency, with \$350,000 of the funding being provided by the Town of Cottesloe in the recently adopted 2019/2020 budget and additional funding being sought from the Department of Education and Main Roads Western Australia with "The Town will lobby the state government to seek substantial funding of this project **but has already allocated \$350,000 funding from the Town in the 2019/2020 budget (including \$140,000 from Roads to Recovery Funds). The total project cost is estimated at \$550,000 (excluding staff cost) if any state funding is not obtained.**" Also include "The Town engaged an independent traffic expert to review the concept plan and to suggest alternatives. The expert fully supported and endorsed this plan **but did not consider or suggest alternatives other than**

- traffic light timing and reducing of speed limits.” Add “Town of Cottesloe’s” before each “North Cottesloe Primary School Traffic Safety Committee”.
- da In question 3, add an initial question “If you are a Parent, how often do you drop your children at school?”, and include Likert Scale options “Never, Rarely, Occasionally, Frequently, Very Frequently”.
 - e. In question 7, include the text “additional trees will be planted as part of the project” and include after “protects all mature trees” the text “(but removes X other trees)” and add “and any change to it affecting trees needing Council approval” after “street tree policy” replace the final paragraph text “Given the information provided in relation to the natural environment, are you satisfied that this plan will protect existing mature trees?” with “Given the above approach, how important to you is it that this plan, including any changes to it, protect existing mature trees?” and replace the responses with: “Not Important, Slightly Important, Moderately Important, Important, Very Important”.
 - ea In question 9, add the response options: “I support the concept design but would not use the new ‘Kiss and Drop’ if implemented”
 - f. In question 11, include as an option “reduce congestion on Eric St” and an “Other” option.
 - fa In question 13, include “Won’t reduce congestion on Eric Street.” and also an “Other” option.
 - fb In question 15, after “ramping” add “(backing or building up)” and add an option “Keeping the roundabout on Eric St and Railway St clear of traffic”.
 - g. Remove question 16 in light of point 1 above
 - h. In light of all the items above, make the necessary changes to the Frequently Asked Questions.
 - i. In Frequently Asked Questions question 4, replace the words “Alternative plans” with “A previous plan” and replace “Since then, concept plans have been created” with “Since then, the current new concept plan has been created”.
 - j. In section 3 of the engagement plan, just after question 1, add after “do you want your personal details to remain confidential” (with a “Yes or No” option), (as we want as many stakeholders as possible to respond to the survey).

TOWN OF COTTESLOE



NORTH COTTESLOE PRIMARY SCHOOL TRAFFIC SAFETY COMMITTEE MEETING

ATTACHMENT

**ITEM 8.1.1B:
COMMUNITY ENGAGEMENT PLAN - NORTH
COTTESLOE PRIMARY SCHOOL CAR PARK - CR
TUCAK AMENDMENTS**

Community Engagement Plan

Please use this form to provide details of your community engagement project

Project Title	North Cottesloe Primary School Kiss and Drop Facility	
Project Launch Date: 7 th September 2019	Project Close Date: 1 st October 2019	
Name of Project Contact: David Lappan, Denise Tyler-Hare	Email: council@cottesloe.wa.gov.au	
Approximate Project Budget: \$550,000 (including provisional items and contingency).	Potential Funding Sources/Options: Department of Education, Main Roads, Town of Cottesloe	
Project Background Provide a brief summary of the project background	Developed in conjunction with the North Cottesloe Primary School Traffic Safety Committee, the proposal is to provide a safer and more efficient pick up and drop off area for both parents and students, and to reduce traffic congestion around the school during peak periods on Eric St.	
Purpose and objectives for undertaking community engagement	To gather feedback and community support for the proposed concept design to proceed to detailed design.	
Stakeholders List the community and stakeholders you intend to consult with	<ul style="list-style-type: none">) North Cottesloe Primary School parents and students) North Cottesloe Primary School teachers and associated staff) Cancer Wellness Centre staff and visitors) Department of Education) Main Roads Western Australia) Councillors) Cottesloe Residents and Ratepayers) Westree Canopy 	
Resourcing	Agency/Department:	Required for:

External Consultants and Internal staff that need to be involved	1. Town of Cottesloe Engineering Department	Project Management, design approval
	2. Town of Cottesloe Corporate Services	Community engagement, advice and support Administration support
	3. Town of Cottesloe Executive Services	Communications, media
	4. Arbor Logic	Expert arborist input during planning, design and construction phases
	5. Main Roads WA	Road authority for approvals (proximity to Eric St Bridge and signs and lines) and/or funding
	6. Department of Education	Consultation and/or funding

1. Please select the engagement 'Tool' you wish to use in this project Y = Yes, N =No	
Survey	If yes, please provide details below in table 3
) Website	Yes
) Social Media	Yes
) Hardcopy	Available upon request
Formal Submission	Submission Email Address: (If yes please provide the email address) council@cottesloe.wa.gov.au
Media Release/Public Notice	Yes – regularly before and during consultation period. Also have information boards up at each end of the site on Railway St.
Public Meeting – Information Session	Yes - 7th September – At a neutral location , display with opportunities to ask questions.
Letterbox Drop	Yes – see map and letter. Letterbox drop to be from Napier St to Parry St, between Stirling Hwy and Railway St.
Frequently Asked Question document to assist engagement participants?	If yes, please provide details below in table 4
Information Only Flyers/Brochures	Yes
Other – please specify	School – keep signs up, provide take home brochures for kids and email parents.

2. Please provide your “Engagement Introduction” text in the space below.

The Town’s strategic community plan contains an adopted strategy to proactively pursue solutions for improved access to North Cottesloe Primary School, with the view to reducing congestion on Eric Street. The Town’s adopted corporate plan outlines actions to achieve this strategy to develop a costed project that relocates the school’s parking and drop off point from Eric Street to Railway Street.

Therefore, the Town seeks your feedback on the proposed relocation of the Kiss and Drop facility for North Cottesloe Primary School, comprising the realignment of Railway Street and construction of a new car park and kiss and drop facility, to improve safety for pedestrians, cyclists and motorists, and alleviate some of the traffic congestion in the current North Cottesloe Primary School drop off/pick-up zone.

3. Please provide your Survey “Introduction, Questions and Responses” in the spaces below. (M = Mandatory Question O = Optional Question)

<p>Survey introduction text.</p>	<p>The Town’s strategic community plan contains an adopted strategy to proactively pursue solutions for improved access to North Cottesloe Primary School, with the view to reducing congestion on Eric Street. The Town’s adopted corporate plan outlines actions to achieve this strategy to develop a costed project that relocates the school’s parking and drop off point from Eric Street to Railway Street.</p> <p>Therefore, the Town seeks your feedback on the proposed Kiss and Drop facility for North Cottesloe Primary School, comprising the realignment of Railway Street and construction of a car park and kiss and drop facility, to improve safety for pedestrians, cyclists and motorists, and alleviate traffic congestion in the current Eric St drop off/pick-up zone.</p> <p>The estimated cost to deliver this project is \$550,000. The town will lobby the state government to seek substantial funding of this project but has already allocated \$350,000 funding from the Town in the 2019/2020 budget (including \$140,000 from Roads to Recovery Funds). The total project cost is estimated at \$550,000 (excluding staff cost) if any state funding is not obtained.</p> <p>The Town engaged an independent traffic expert to review the concept plan and to suggest alternatives. The expert fully supported and endorsed this plan but did not consider or suggest alternatives other than traffic light timing and reducing of speed limits.</p> <p>To assist with the completion of this survey, it is important that you review the concept plan and ‘Frequently Asked Questions’ document found on our website.</p> <p>This project has been developed in conjunction with the Town of Cottesloe’s North Cottesloe Primary School Traffic Safety Committee.</p>
<p>Do you want unregistered participants to be able to complete the Survey?</p>	<p>No</p>

<i>Question Type</i>	<i>M or O</i>	<i>Add your Survey Questions below.</i>	<i>Add your Response Options below (use a new line or bullet point for each)</i>
Q1.	M	Name, address, postcode, would you like to be kept informed about this project? If so, please provide your email address.	
Q1a	M	Do you want your personal details to remain confidential?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Q2.	M	Which stakeholder group do you belong to?	<input type="checkbox"/> Teacher/School Administration <input type="checkbox"/> Parent <input type="checkbox"/> Student <input type="checkbox"/> Resident near the school (Eric St and Railway St) <input type="checkbox"/> Resident not near the school <input type="checkbox"/> Cancer Wellness Centre – Staff or visitor <input type="checkbox"/> Other (cyclist, commuter etc.)
Q3.	M	What is your current drop off point/parking location?	<input type="checkbox"/> Eric Street <input type="checkbox"/> Railway Street <input type="checkbox"/> Not applicable to me

Q3a	M	If you are a Parent, how often do you drop your children at school?	<input type="checkbox"/> Never <input type="checkbox"/> Rarely <input type="checkbox"/> Occasionally <input type="checkbox"/> Frequently <input type="checkbox"/> Very frequently
Q4.	M	What year range are your children currently attending? (Select all that apply)	<input type="checkbox"/> Prep to Year 2 <input type="checkbox"/> Year 3 – Year 5 <input type="checkbox"/> Year 6/Final Year <input type="checkbox"/> I have no children in attendance at the school but will have in the future <input type="checkbox"/> Not applicable to me
Q5.	M	Have you had an opportunity to view the concept design and read the associated documents	<input type="checkbox"/> Yes <input type="checkbox"/> No
Q6.	M	Thinking about the reason you are usually in the area how important is short term parking to you?	<input type="checkbox"/> Extremely important <input type="checkbox"/> Very important <input type="checkbox"/> Somewhat important <input type="checkbox"/> Not so important <input type="checkbox"/> Not at all important

<p>Q7.</p>	<p>M</p>	<p>Conservation of our existing tree canopy is important to the Town of Cottesloe and its residents. The proposed concept is mindful of this, and protects all mature trees, but removes X other trees, in accordance with arborist investigations and reports. Any future design and construction will be undertaken in accordance with the Town of Cottesloe’s street tree policy, which can be found here, and in accordance with all relevant Australian Standards. Any changes to the concept affecting trees will need Council approval.</p> <p>An arborist will be involved at every stage during the project to ensure that trees are protected throughout the project.</p> <p>Additional trees will be planted as part of the project.</p> <p>Given the above approach, how important to you is that this plan, including any changes to it, protect existing mature trees?</p>	<p> <input type="radio"/> Not important <input type="radio"/> Slightly important <input type="radio"/> Moderately important <input type="radio"/> Important <input type="radio"/> Very important </p> <p>1.</p>
<p>Q8.</p>	<p>O</p>	<p>Thinking about your response to question 7, would you like to provide a comment?</p>	

Q9.	M	Thinking about your current interaction with the area, how supportive are you of the proposed realignment and 'Kiss and Drop' facility?	<input type="checkbox"/> I support the concept design <input type="checkbox"/> I support the concept design and would use the new 'Kiss and Drop' when implemented <input checked="" type="checkbox"/> I support the concept design but would not use the new 'Kiss and Drop' when implemented <input type="checkbox"/> I do not support the concept design
Q10.	O	Can you tell us why?	
Q11.	M	What elements do you like about the plan? Please select all that apply.	<input type="checkbox"/> Realignment of Railway Street <input type="checkbox"/> Footpath <input type="checkbox"/> Crossing locations <input type="checkbox"/> Parking bays <input type="checkbox"/> Kiss and drop location <input checked="" type="checkbox"/> Reduce congestion on Eric Street <input type="checkbox"/> I neither like or dislike the elements <input checked="" type="checkbox"/> Other
Q12.	O	Can you tell us why you like these elements?	
Q13.	M	What elements do you not like about the plan?	2.
Q14.	O	Can you tell us why you don't like these elements?	

Q15.	O	<p>Before locking things down with our design team we would really appreciate your assistance to prioritise some key design considerations.</p> <p>What elements of design do you consider a priority?</p> <p>Please rank in order, those elements which are of importance to you (1 being most important, 8 being the least important)</p>	<ul style="list-style-type: none"> ⌋ Lowering the design speed of Railway Street ⌋ Limiting ramping (backing or building up) of cars on Railway and Eric Streets ⌋ Keeping the roundabout on Eric St and Railway St clear of traffic ⌋ Safe pedestrian crossings on Railway Street such as raised crossings that also slow traffic ⌋ Access to short term parking for commuters, residents, parents and precinct visitors ⌋ Relative locations of parking to classrooms from pre-primary to year 3 ⌋ Minimising tree losses and planning for an overall increase in the tree canopy ⌋ Provision of ACROD parking ⌋ Improving access to paths for pedestrians and bike riders
Q16.	O	Do you have any other comments/ideas/suggestions?	
Q17.	M	Residents and Ratepayers database question	

<p>4. Please provide your FAQ “Questions and Answers” in the spaces below.</p>	
FAQ 1. How many Norfolk Island Pines will be removed as a part of the design?	Zero
FAQ 2. How much will the project cost?	The estimated cost to deliver this project is \$550,000. The town will lobby the state government to seek substantial funding of this project.
FAQ 3. Can juvenile trees be transplanted as part of the design?	Yes, subject to the arborist report.
FAQ 4. What other plans have been considered?	A previous plan was considered in 2016/17, which involved extensive earthworks and vegetation loss, which was unacceptable to the Town. Since then, the current new concept plan has been created in conjunction with arborist input and traffic safety studies, in order to prevent vegetation loss, and improve vehicle and pedestrian safety.
FAQ 5. What happens with existing services?	Existing services will be protected during works, minor adjustments to street lighting and storm water drainage are likely to be required.
FAQ 6. Have the school been engaged/involved in this design?	Yes, through the North Cottesloe Primary School Traffic Safety Committee.
7. How will this be funded?	Council has a budget of \$350,000 set aside for the 2019/2020 financial year. The town will lobby the state government to seek substantial funding of this project.

8. How will the trees be protected?	<p>Below ground root assessments will be developed alongside detailed design to mitigate any root impact during works.</p> <p>Trees will be protected during works with tree root protection zones implemented as recommended by qualified arborist.</p> <p>All works will be undertaken in accordance with the relevant Australian Standards.</p>
9. What happens to the existing Eric St drop off and car park?	<p>Eric Street Car park will be utilized for school staff parking and strategies developed for minimal public use.</p>

5. Please provide the key dates for activities during the project – include advertising dates.	
Date 1.	Consultation to be in September 2019
Date 2.	Detailed design November 2019
Date 3.	Tender and award of construction works February 2020
Date 4.	Construction estimated to be in May 2020

Additional information to be incorporated into the plan

1. Further consultation may be required depending on feedback, but may include targeted consultation for specific groups.

TOWN OF COTTESLOE



NORTH COTTESLOE PRIMARY SCHOOL TRAFFIC SAFETY COMMITTEE MEETING

ATTACHMENT

**ITEM 8.1.1C:
COMMUNITY ENGAGEMENT PLAN - NORTH
COTTESLOE PRIMARY SCHOOL CAR PARK - CR
HARKINS AMENDMENTS**

Community Engagement Plan

Please use this form to provide details of your community engagement project

Project Title	North Cottesloe Primary School Kiss and Drop Facility	
Project Launch Date: 16 th September 2019	Project Close Date: 7 th October 2019	
Name of Project Contact: David Lappan, Denise Tyler-Hare	Email: council@cottesloe.wa.gov.au	
Approximate Project Budget: \$550,000 (including provisional items and contingency).	Potential Funding Sources/Options: Department of Education, Main Roads, Town of Cottesloe	
Project Background Provide a brief summary of the project background	Developed in conjunction with the North Cottesloe Primary School Traffic Safety Committee, the proposal is to provide a safer and more efficient pick up and drop off area for both parents and students, and to reduce traffic congestion around the school during peak periods on Eric St.	
Purpose and objectives for undertaking community engagement	To gather feedback and community support for the proposed concept design to proceed to detailed design.	
Stakeholders List the community and stakeholders you intend to consult with	<ul style="list-style-type: none">) North Cottesloe Primary School parents and students) North Cottesloe Primary School teachers and associated staff) Cancer Wellness Centre staff and visitors) Department of Education) Main Roads Western Australia) Councillors) Cottesloe Residents and Ratepayers) Westree Canopy 	
Resourcing	Agency/Department:	Required for:

External Consultants and Internal staff that need to be involved	1. Town of Cottesloe Engineering Department	Project Management, design approval
	2. Town of Cottesloe Corporate Services	Community engagement, advice and support Administration support
	3. Town of Cottesloe Executive Services	Communications, media
	4. Arbor Logic	Expert arborist input during planning, design and construction phases
	5. Main Roads WA	Road authority for approvals (proximity to Eric St Bridge and signs and lines) and/or funding
	6. Department of Education	Consultation and/or funding

1. Please select the engagement 'Tool' you wish to use in this project Y = Yes, N =No	
Survey	If yes, please provide details below in table 3
) Website	Yes
) Social Media	Yes
) Hardcopy	Available upon request
Formal Submission	Submission Email Address: (If yes please provide the email address) council@cottesloe.wa.gov.au
Media Release/Public Notice	Yes – regularly before and during consultation period. Also have information boards up at each end of the site on Railway St.
Public Meeting – Information Session	Yes - 7th September – At the school, display with opportunities to ask questions, and two site walkthroughs scheduled for the day. Do this at the kick off to the 3 week public consultation period. Peg out the site and tree protection zones for walkthroughs.
Letterbox Drop	Yes – see map and letter. Letterbox drop to be from Napier St to Parry St, between Stirling Hwy and Railway St.
Frequently Asked Question document to assist engagement participants?	If yes, please provide details below in table 4
Information Only Flyers/Brochures	Yes
Other – please specify	School – keep signs up, provide take home brochures for kids and email parents.

2. Please provide your “Engagement Introduction” text in the space below.

The Town’s strategic community plan contains an adopted strategy to proactively pursue solutions for improved access to North Cottesloe Primary School, with the view to reducing congestion on Eric Street. The Town’s adopted corporate plan outlines actions to achieve this strategy to develop a costed project that relocates the school’s parking and drop off point from Eric Street to Railway Street.

Therefore, the Town seeks your feedback on the proposed Kiss and Drop facility for North Cottesloe Primary School, comprising the realignment of Railway Street and construction of a car park and kiss and drop facility, to improve safety for pedestrians, cyclists and motorists, and alleviate traffic congestion in the current Eric St drop off/pick-up zone.

3. Please provide your Survey “Introduction, Questions and Responses” in the spaces below. (M = Mandatory Question O = Optional Question)

<p>Survey introduction text.</p>	<p>The Town’s strategic community plan contains an adopted strategy to proactively pursue solutions for improved access to North Cottesloe Primary School, with the view to reducing congestion on Eric Street. The Town’s adopted corporate plan outlines actions to achieve this strategy to develop a costed project that relocates the school’s parking and drop off point from Eric Street to Railway Street.</p> <p>Therefore, the Town seeks your feedback on the proposed Kiss and Drop facility for North Cottesloe Primary School, comprising the realignment of Railway Street and construction of a car park and kiss and drop facility, to improve safety for pedestrians, cyclists and motorists, and alleviate traffic congestion in the current Eric St drop off/pick-up zone.</p> <p>The estimated cost to deliver this project is \$550,000. The Town has budgeted up to \$350,000 including \$140,000 from the Federal Roads to Recovery program and will lobby the State Government to seek funding for the project.</p> <p>The Town engaged an independent traffic expert to review the concept plan and to suggest alternatives. The expert fully supported and endorsed this plan as the most effective solution to improve safe access and reduce traffic congestion.</p> <p>The project will commit to protecting the mature trees in the affected area and to increase the tree canopy with additional planting in the area.</p> <p>To assist with the completion of this survey, it is important that you review the concept plan and ‘Frequently Asked Questions’ document found on our website.</p> <p>This project has been developed in conjunction with the North Cottesloe Primary School Traffic Safety Committee.</p>
----------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

<i>Question Type</i>	<i>M or O</i>	<i>Add your Survey Questions below.</i>	<i>Add your Response Options below (use a new line or bullet point for each)</i>
Q1.	M	Name, address, postcode, would you like to be kept informed about this project? If so, please provide your email address.	
Q2.	M	Which stakeholder group do you belong to?	<input type="checkbox"/> Teacher/School Administration <input type="checkbox"/> Parent <input type="checkbox"/> Resident near the school (Eric St and Railway St) <input type="checkbox"/> Resident not near the school <input type="checkbox"/> Cancer Wellness Centre – Staff or visitor <input type="checkbox"/> Other (cyclist, commuter etc.)
Q3.	M	What is your current drop off point/parking location?	<input type="checkbox"/> Eric Street <input type="checkbox"/> Railway Street <input type="checkbox"/> Not applicable to me
Q4.	M	What year range are your children currently attending? (Select all that apply)	<input type="checkbox"/> Prep to Year 2 <input type="checkbox"/> Year 3 – Year 5 <input type="checkbox"/> Year 6/Final Year <input type="checkbox"/> I have no children in attendance at the school but will have in the future <input type="checkbox"/> Not applicable to me

Q5.	M	Have you had an opportunity to view the concept design and read the associated documents	<input type="checkbox"/> Yes <input type="checkbox"/> No
Q6.	M	Thinking about the reason you are usually in the area how important is short term parking to you?	<input type="checkbox"/> Extremely important <input type="checkbox"/> Very important <input type="checkbox"/> Somewhat important <input type="checkbox"/> Not so important <input type="checkbox"/> Not at all important

<p>Q7.</p>	<p>M</p>	<p>Conservation of our existing tree canopy is important to the Town of Cottesloe and its residents. The proposed concept is mindful of this, and protects all mature trees, in accordance with arborist investigations and reports. Any future design and construction will be undertaken in accordance with the Town of Cottesloe’s street tree policy, which can be found here, and in accordance with all relevant Australian Standards.</p> <p>An arborist will be involved at every stage during the project to ensure that trees are protected throughout the project.</p> <p>A key criteria of the project will be to protect the mature trees and increase the tree canopy by planting additional trees.</p> <p>Given the information provided in relation to the natural environment, are you satisfied that this plan will protect existing mature trees?</p>	<p> <input type="checkbox"/> Very satisfied <input type="checkbox"/> Satisfied <input type="checkbox"/> Neither satisfied or dissatisfied <input type="checkbox"/> Dissatisfied <input type="checkbox"/> Very dissatisfied </p> <p>1.</p>
<p>Q8.</p>	<p>O</p>	<p>Thinking about your response to question 7, would you like to provide a comment?</p>	

Q9.	M	Thinking about your current interaction with the area, how supportive are you of the proposed realignment and 'Kiss and Drop' facility?	<input type="checkbox"/> I support the concept design <input type="checkbox"/> I support the concept design and would use the new 'Kiss and Drop' when implemented <input type="checkbox"/> I do not support the concept design
Q10.	O	Can you tell us why?	
Q11.	M	What elements do you like about the plan? Please select all that apply.	<input type="checkbox"/> Realignment of Railway Street <input type="checkbox"/> Footpath <input type="checkbox"/> Crossing locations <input type="checkbox"/> Parking bays <input type="checkbox"/> Kiss and drop location <input checked="" type="checkbox"/> Reduce congestion on Eric Street <input type="checkbox"/> I neither like or dislike the elements
Q12.	O	Can you tell us why you like these elements?	
Q13.	M	What elements do you not like about the plan?	2.
Q14.	O	Can you tell us why you don't like these elements?	

<p>Q15.</p>	<p>O</p>	<p>Before locking things down with our design team we would really appreciate your assistance to prioritise some key design considerations.</p> <p>What elements of design do you consider a priority?</p> <p>Please rank in order, those elements which are of importance to you (1 being most important, 8 being the least important)</p>	<ul style="list-style-type: none"> ⌋ Lowering the design speed of Railway Street ⌋ Limiting ramping of cars on Railway and Eric Streets ⌋ Safe pedestrian crossings on Railway Street such as raised crossings that also slow traffic ⌋ Access to short term parking for commuters, residents, parents and precinct visitors ⌋ Relative locations of parking to classrooms from pre-primary to year 3 ⌋ Minimising tree losses and planning for an overall increase in the tree canopy ⌋ Provision of ACROD parking ⌋ Improving access to paths for pedestrians and bike riders
<p>Q16.</p>	<p>O</p>	<p>Do you have any other comments/ideas/suggestions?</p>	
<p>Q17.</p>	<p>M</p>	<p>Residents and Ratepayers database question</p>	

<p>4. Please provide your FAQ “Questions and Answers” in the spaces below.</p>	
FAQ 1. How many Norfolk Island Pines will be removed as a part of the design?	Zero
FAQ 2. How much will the project cost?	The estimated cost to deliver this project is \$550,000. The town will lobby the state government to seek substantial funding of this project.
FAQ 3. Can juvenile trees be transplanted as part of the design?	Yes, subject to the arborist report.
FAQ 4. What other plans have been considered?	Alternative plans were considered in 2016/17, which involved extensive earthworks and vegetation loss, which was unacceptable to the Town. Since then, concept plans have been created in conjunction with arborist input and traffic safety studies, in order to prevent vegetation loss, and improve vehicle and pedestrian safety.
FAQ 5. What happens with existing services?	Existing services will be protected during works, minor adjustments to street lighting and storm water drainage are likely to be required.
FAQ 6. Have the school been engaged/involved in this design?	Yes, through the North Cottesloe Primary School Traffic Safety Committee.
7. How will this be funded?	Council has a budget of \$350,000 set aside for the 2019/2020 financial year. The town will lobby the state government to seek substantial funding of this project.

8. How will the trees be protected?	<p>Below ground root assessments will be developed alongside detailed design to mitigate any root impact during works.</p> <p>Trees will be protected during works with tree root protection zones implemented as recommended by qualified arborist.</p> <p>All works will be undertaken in accordance with the relevant Australian Standards.</p>
9. What happens to the existing Eric St drop off and car park?	<p>The existing Eric Street car park will be utilized for visitors to the school, such as canteen duty, reading duty and meetings.</p>

5. Please provide the key dates for activities during the project – include advertising dates.	
Date 1.	Consultation to be in September 2019
Date 2.	Detailed design November 2019
Date 3.	Tender and award of construction works February 2020
Date 4.	Construction estimated to be in May 2020

Additional information to be incorporated into the plan

1. Further consultation may be required depending on feedback, but may include targeted consultation for specific groups.

TOWN OF COTTESLOE



NORTH COTTESLOE PRIMARY SCHOOL TRAFFIC SAFETY COMMITTEE MEETING

ATTACHMENT

ITEM 8.1.1D:
NORTH COTTESLOE PRIMARY SCHOOL - KISS AND
DROP CONSULTATION IMAGERY



DRAFT



landscape architecture
 urban design
 environmental management



NORTH COTTESLOE PRIMARY SCHOOL CONCEPT

DATE 26.06.2019
 DRAWING NO
 ISSUE A



landscape architecture
urban design
environmental management

NORTH COTTESLOE PRIMARY SCHOOL CONCEPT

DATE	DRAWING NO	ISSUE
26.06.2019		A

TOWN OF COTTESLOE



NORTH COTTESLOE PRIMARY SCHOOL TRAFFIC SAFETY COMMITTEE MEETING

ATTACHMENT

ITEM 8.1.1E: ARBORLOGIC - DESIGN SPECIFIC TREE ASSESSMENT REPORT



March 27, 2019

Town of Cottesloe
PO Box 606
Cottesloe WA 6011

ATTENTION: David Lappan
Cc Shaun Kan

RE: Assessment of Trees; Western verge of Railway Street, opposite North Cottesloe Primary School

Dear David

Further to your request, the following is a brief summary of my assessment of the identified trees in the identified area of the Western verge of Railway Street, opposite North Cottesloe Primary School.

Should you have any queries regarding the findings of this report, or if I can be of any further assistance in the management of the identified trees, please do not hesitate to contact me.

Yours sincerely

A handwritten signature in black ink, appearing to read "J. Royal", written in a cursive style.

JASON ROYAL

Dip. Arboriculture (UK)
Tech. Arbor A

ARBOR logic
A.C.N.: 107 194 061
Ph: (08) 9240 7555

ARBORICULTURAL CONSULTANCY
A.B.N.: 66 566 369 687
email: jason@arborlogic.com.au

*Assessment of Trees; Western verge of Railway Street opposite North
Cottesloe Primary School*

Prepared For

Town of Cottesloe

Prepared By



*Town of Cottesloe: Assessment of Trees:
western verge of Railway Street opposite North Cottesloe Primary School*

March 2019

Contents

1.	Particulars to this Assessment_____	Page	1
2.	Scope of Works_____	Page	2
3.	Assessment Methodology Applied_____	Pages	3 - 4
4.	Summary of the Key Findings of the Assessment_____	Pages	5 - 8
5.	Table of the Findings of the Assessment_____	Pages	9 - 31
6.	Potential Impact from Development and Further Considerations_____	Pages	32 - 33
7.	Attachments to the Report		
	Attachment 1; Tree Location Guide		
	Attachment 2; Location Guide with Retention Value Overlaid		
	Attachment 3; Location Guide (not all Trees) Overlaid onto Copy of the Plan Provided		
	Attachment 4; Company Information & Disclaimer		



*Town of Cottesloe: Assessment of Trees:
western verge of Railway Street opposite North Cottesloe Primary School*

March 2019

1. Particulars to the Assessment

1.1 Terms Used

The following terms have been used in this report:

'Site'	meaning the area of the Western verge along Railway Street opposite North Cottesloe Primary School that was included in the assessment
'Tree'	meaning any tree identified on the Site
'AS 4970'	meaning Australian Standards guideline 4970 (2009); Protection of trees on development sites
'AS 4373'	meaning Australian Standards guideline 4373 (2007); Pruning of amenity trees
'TPZ'	meaning Tree Protection Zone; the area where the majority of the given Tree's root mass is considered likely to be found, and the area that is recommended to be protected during any development or landscape activity
'SRZ'	meaning 'Structural Root Zone'; the where the where the majority of the Tree's larger in-ground supportive root mass is considered likely to be found.
'Initial Inspection'	meaning the initial assessment of the Trees on the Site that was undertaken by Arbor logic in February 2018
'Plan Provided'	meaning the plans of the current proposed design provided; drawing numbers SK300 and SK301

1.2 Limitations and Particulars of this Assessment

The information and opinions provided in this document are based on the findings from the visual observations of the Trees on the Site during the inspections initially undertaken February 26, 2018 and then subsequently undertaken March 26, 2019.

All observations of all of the Trees were undertaken from ground level.

No exploratory excavations were undertaken as part of this particular assessment to verify the actual root spread of any given Tree. As such the allocation of TPZ for each Tree has at this stage been based on AS 4970 guidelines, with some amendments being made for the physical size and canopy dimensions of the Tree, its condition, the known root zone morphology of its given species in the sort of soil profile considered to be typical to this area of Western Australia.

*Town of Cottesloe: Assessment of Trees:
western verge of Railway Street opposite North Cottesloe Primary School*

March 2019

2. Scope of Works

1. Re-inspect of all Trees in the area identified.
2. Provide up-dated information on each Tree where considered necessary in regards to the species of each identified tree, its current physical attributes (height, main stem calliper, canopy width, health condition, and structural condition), recommended zone of protection, and any comments deemed pertinent to the identified tree (i.e. any hazards, defects, issues etc.).
3. Review the Plans Provided and identify any Trees that may be impacted by the proposed works.
4. Provide any broad-brush purposeful and practical considerations and recommendations as part of the development process.

3. Methodology of the Assessment

All of the identified Trees and areas of trees were visually inspected from ground level in accordance with visual tree assessment ("VTA") methods and principles.

The VTA method is based on the sciences of tree biology, physiology, tree structure, and tree bio-mechanics. It is a method widely used by arborists worldwide to identify visible signs on trees that indicate any health or potential structural issues that in turn could increase the risks associated with the given tree.

The overall health of each Tree was adjudged from an inspection of its leaf, overall percentage of leaf mass present in the canopy of the Tree, and the presence (or absence) of any pest or disease factor that could have an effect on the overall health of the Tree.

The structural integrity of each Tree was determined from a visual inspection of its main stem, primary (and secondary) branch unions to determine the presence of any areas considered to be a structural 'defect' or 'imperfection' such as unions with included bark, swelling, or noticeable splitting at them.

Symptoms of decay, growth patterns and defects are identified and assessed as to their potential to cause whole tree, part tree or branch failure, and where considered necessary further investigation by way of the use of sounding techniques was utilised to determine the presence and general extent of any areas of cavity or associated decay within a tree's main stem structure.

The Tree's root plate area was also inspected to identify any visible signs of root plate, movement, cracking or heave from which a determination of the in-ground stability of the Tree can be ascertained.

With regards to any future development the known natural species traits of the given tree and its suitability for use in an urban area and if the identified specimen is of a species that can be subject to the sudden branch failure phenomenon or is known to be potentially problematic in terms of self-sowing (weed) issues, was also considered as part of the assessment process.

The Tree's species and its ability to cope with disturbances to its root zone that typically occur as part of a development process, as well as its ability to cope with the new parameters that are commonly created by an urban development (i.e. decreased soil oxygen due to compaction, increased un-seasonal watering from irrigation, increased pollution, increased radiated heat/light from urban infrastructure (roads, walls, buildings etc.) are all also taken into consideration.

The known root zone morphology of the species was taken into consideration when allocating the recommended TPZ for each of the identified trees. Note: Whilst some reference and acknowledgment is given to the guidelines set down in AS 4970, the TPZ for each Tree has been based on the known typical root zone morphology for specimens of their species, the condition of the given Tree, and the known tolerance to root zone disturbance of the given species.

3. Methodology of the Assessment

The Trees were also assessed using the principles of SULE; "Safe-Useful-Life-Expectancy"¹.

SULE is a system that can be used to provide an indication of the length of time an individual tree can be retained with an acceptable level of risk based on the information available at the time of inspection.

It is a snapshot in time of the potential an individual tree has for survival in the eyes of the assessor based on the tree's current health and structural condition, and the known typical life span of specimens of its given species for the given area/situation.

There are many factors that can affect SULE of a tree such as:

- Obvious past influences.
- Health and vitality and presence of any pest or disease pathogen.
- Estimated age in relation to expected life expectancy for the species.
- Structural defects which may influence the potential life expectancy for the species.
- Remedial work which may be necessary to allow retention in the existing situation.
- 'Rootable' soil volume for the area in which it is situated.
- Environment and climate factors.

As such, at best the SULE for any given tree can only be estimated within a 'range' of years, with the following ranges typically used; Long Term (>40 years), Medium Term (15-40 years), Short Term (5-15 years), and Limited (<5yrs)

¹ SULE: Its use and status into the new millennium; J Barrell; 2001

4. Summary of the Key Findings of the Assessment

4.1 No of Trees Identified

83 Trees were identified in the area inspected. Attachment 1 of this report provides a guide to their location.

4.2 Species Identified

26 different species were identified on the Site across 12 different plant Genera, and 8 plant Family.

The majority of the species identified were noted to be West Australian native species.

All of the species identified on the Site were considered to be very common species for the Perth metropolitan area, and most were considered suitable for their given situation.

Table 1; List of species Identified on Site

Species	No of	Origin	Family
Bald Island Marlock (<i>Eucalyptus conferruminata</i>)	1	WA native	Myrtaceae
Bottlebrush Dawson River Weeper (<i>Callistemon 'Dawson River Weeper'</i>)	6	Aus native	Myrtaceae
Bottlebrush Kings Park Special (<i>Callistemon 'Kings Park Special'</i>)	6	Aus native	Myrtaceae
Bracelet Honey Myrtle (<i>Melaleuca armillaris</i>)	1	Aus native	Myrtaceae
Coojong (<i>Acacia saligna</i>)	6	WA native	Fabaceae
Coral Gum (<i>Eucalyptus torquata</i>)	1	WA native	Myrtaceae
Firewood Banksia (<i>Banksia menziesii</i>)	2	WA native	Proteaceae
Geraldton Wax (<i>Chamaelaucium uncinatum</i>)	1	WA native	Myrtaceae
Grass Tree (<i>Xanthorrhoea preissii</i>)	13	WA native	Xanthorrhoeoideae
Jarrah (<i>Eucalyptus marginata</i>)	2	WA native	Myrtaceae
Limestone Marlock (<i>Eucalyptus decipiens</i>)	1	WA native	Myrtaceae
Norfolk Island Pine (<i>Araucaria heterophylla</i>)	10	Aus native	Araucariaceae
Northern River Red Gum (<i>Eucalyptus camaldulensis 'Obtusa'</i>)	3	Aus native	Myrtaceae
Red Flowering Gum (<i>Corymbia ficifolia</i>)	1	WA native	Myrtaceae
River Red Gum (<i>Eucalyptus camaldulensis 'Camaldulensis'</i>)	1	Aus native	Myrtaceae
River Sheoak (<i>Casuarina cunninghamiana</i>)	1	Aus native	Myrtaceae
River Yate (<i>Eucalyptus macrandra</i>)	3	WA native	Myrtaceae
Rose Gum (<i>Eucalyptus grandis</i>)	1	Aus native	Myrtaceae
Rottneest Island Pine (<i>Callitris preissii</i>)	4	WA native	Cupressaceae
Rottneest Island Tea Tree (<i>Melaleuca lanceolata</i>)	4	WA native	Myrtaceae
Showy Honey Myrtle (<i>Melaleuca nesophila</i>)	1	WA native	Myrtaceae
Spotted Gum (<i>Corymbia maculata</i>)	1	Aus native	Myrtaceae
Swamp Sheoak (<i>Casuarina obesa</i>)	4	WA native	Casuarinaceae
Tamarisk (<i>Tamarix aphylla</i>)	2	Exotic	Tamaricaceae
Tuart (<i>Eucalyptus gomphocephala</i>)	1	WA native	Myrtaceae
West Australian Peppermint (<i>Agonis flexuosa</i>)	6	WA native	Myrtaceae

None of the tree species identified are considered to be (or are known to be classed as) an endangered species, or found on the Environment Protection and Biodiversity Conservation Act 1999.

One of the tree species identified is known to be a declared weed species²: Tamarisk (*Tamarix aphylla*); status s22(2).

² Reference; Declared Plant Species in Western Australia (Department of Agriculture and Food, Western Australia 2008)

*Town of Cottesloe: Assessment of Trees:
western verge of Railway Street opposite North Cottesloe Primary School*

March 2019

4. Summary of the Key Findings of the Assessment

The Northern River Red Gum (*Eucalyptus camaldulensis* 'Obtusa') is generally considered to be a higher risk species in terms of their propensity for branch failure compared to the majority of other species of tree.

4.3 Health Condition

The majority of the Trees looked to be remaining in good health or better at this time and no major change looks to have occurred since the Last Inspection.

One dead tree was noted on the Site and a small number of other Trees show indications of a declining health which looks to be due to their probable age and typical life span of their given species.

I could see no visible evidence of any pest or disease pathogen that could have a major impact to the health of the Trees on this Site at the time of my inspection and any tree health issues looks to be associated with environment factors and/or the age of the given tree and the typical natural life span of their given species expected when found in their given situation.

4.4 Structural Condition

The majority of the Trees continue to show to have (what is considered to be) typical structural forms for specimens of their given species.

Whilst a number of the Trees showed to have what are considered to be 'structural defects' such as bi-furcated unions with signs of swelling and included bark (which are considered to potentially have an increased likelihood for failure than other forms of branch unions) for the most part any structural defect or imperfections were not considered to be of any major concern at this time.

A small number of the Trees were noted to have very low spreading canopy form. Whilst this is not necessarily considered to be of any issue in terms of their structural integrity, this type of canopy form can become a limiting factor to tree retention particularly if canopies need to be raised excessively to provide clearances over road and/or footpaths.

All of the Trees looked to be remaining root stable at the time of inspection.

4.5 SULE

The majority of the Trees were still considered to have either a medium or a long SULE remaining; given the majority are species that are generally considered to be long-lived species when remaining in good health.

Their SULE could however change depending on the extent of changes to their surrounds that occur as a result of development and/or their treatment (protection) during any development works that occur around them.

There are 10 Trees on this Site that look to have limited SULE remaining (<5 years anticipated before they will either be dead or require removal), and a further 9 Trees look to have a Short-Term SULE remaining (between 5 and 15 years anticipated before they will require removal).

4. Summary of the Key Findings of the Assessment

4.6 Suitability for inclusion into an area of development

Retention value of the various tree species and even individual tree specimens will always be open to some personal opinion.

In general trees displaying good health and deemed to have a good aesthetic quality will be generally considered to have a high retention value.

Conversely, dead or declining trees, or tree species known (or considered) to be problematic in terms of having a propensity for branch failures, or ones that could self-seed freely, or one that display low aesthetic traits would typically be considered to have a low retention value.

Whilst all of the Trees on the Site may have high environmental benefits, as part of ascertaining the suitability for inclusion into a development other aspects of each tree must be considered; primarily its structural form and suitability for inclusion into an urbanised area with high volumes of potential targets (such as people, structures etc.), and its potential to cope with changes to its soil and surrounding environment that typically occur as part of a development process.

Based on the findings of the assessment:

- **17 Trees were considered to have a 'High' retention value.** These Trees are considered to be the better quality Trees on this Site and have good aesthetic form and provide good (visual) amenity for the area in which they are situated. Of these Trees:
 - 9 are large mature Norfolk Island Pine that look to provide high aesthetic amenity and a prominent feature for the area where they are situated.
 - 8 are old Grass Tree specimens considered to be well in excess of 100 years old. These Trees would be transplantable if required.
- **28 Trees were considered to have a 'Medium' retention value.** These Trees are generally considered to be reasonably good (i.e. typical) specimens of their given species and would be suitable for retention in the context of what is proposed providing design can accommodate their protection requirements.
- **33 Trees are considered to have a 'Low' retention value** in the context of a development process. Of these Trees
 - 15 of these look to be juvenile trees that would be readily replaceable with limited loss of canopy cover,
 - 5 have structural form that looks likely to cause issues longer term
 - 4 are species that is generally considered to have a very short live span (i.e. <10 years)
 - 3 are trees of a higher risk species for urbanised areas,
 - 4 have canopy form that may limit their potential for retention in the context of what is proposed, and
 - 2 are a declared weed species

*Town of Cottesloe: Assessment of Trees:
western verge of Railway Street opposite North Cottesloe Primary School*

March 2019

4. Summary of the Key Findings of the Assessment

- **Five Trees are considered to have a 'Very Low' retention value** and would be recommended to be removed as part of any development process of the Site. Of these Trees:
 - 1 looks to be mostly dead,
 - 2 look to have limited life span remaining, and
 - 2 look to be regrowth from the stumps of previously removed trees

Attachment 2 of this report provides an overview of the Site with the retention value of each Tree overlaid and colour coded for ease of reference.

4.7 Other Notable Observations about the Site considered pertinent to the Trees

The existing Road looks to be higher than the majority of the area where the Trees are situated by so some level of cut/fill may be possible without impacting the majority of the Trees depending on the final alignment of any new road pavement constructed and any site specific retaining or engineering requirements.

Drainage outlet for the Road was noted between Trees #27 and #28. At this time it is suspected that the installation of the drainage pipes and associated infrastructure may have resulted in some degree of previous root zone disturbance and/or loss of root mass to occur to these Trees.

Based on historical aerial imagery of the Site, the current existing footpath and car park area look to have been constructed after the line of Norfolk Island Pine had been planted and established. At this time it is suspected that the construction of the footpath and/or car park area may have resulted in some degree of previous root zone disturbance and/or loss of root mass to occur to those particular Trees (Trees #1, #7, #23 and #24).

*Town of Cottesloe: Assessment of Trees:
western verge of Railway Street opposite North Cottesloe Primary School*

March 2019

5. Table of the Key Findings of the Assessment

The following pages provide further information on the Trees identified during this assessment.

Explanation of Fields of Information in the Table

Tree ID.	Provides an identification number for the identified Tree corresponding to its tree tag number on Site
Species	Provides the botanical and most commonly used species name of the Tree.
Height	Provides the height of the Tree (in metres) to the nearest metre.
DBH (Trunk Calliper)	Provides the diameter of the Tree's main stem (trunk) in centimetres, and generally measured at 1.4 metres above ground level as per the industry standard. Should lower canopy formation start below 1.4 metres above ground level, the DBH is estimated at the point below the furcation of its main stem. In instances where the tree has multiple main stem structures, the DBH of all has been provided.
Estimated Canopy Spread	Provides an estimated spread of the Tree's canopy; provided in metres diameter. Both north-south and east – west canopy dimensions have been provided.
Health Condition	Provides a view of the Tree's health/vigour condition at the time of inspection based on a number of predetermined criteria.

Health Rating	Explanation
Excellent	Shows to have typical foliage condition and amount of foliage mass for a specimen of the species. May have a minor amount of deadwood, but no signs of any pest or disease factor that may affect its health.
Good	Shows to have typical foliage condition. Canopy foliage may be slightly chlorotic, or it may have a slightly higher percentage of deadwood than usual, or exhibit signs of being affected by environmental conditions. May have a minor pest or disease present that could start to affect its health.
Fair	Shows to have a relatively high percentage of deadwood than considered typical for a specimen of the given species and/or a low volume of live canopy leaf mass for a specimen of the given species. Apical sections of the canopy (may also be) dead. Signs of a pest or disease factor evident.
Poor	Canopy mass and foliage condition shows to be in a poor state for a specimen of the species. Has a high percentage of deadwood material in its canopy and a low volume of live canopy mass (typically <20%).
Dead	Shows to have either no live tissue within its structure, or at best has <5% live foliage mass remaining in its canopy.

Town of Cottesloe: Assessment of Trees:
western verge of Railway Street opposite North Cottesloe Primary School

March 2019

5. Table of Information on the individual Trees identified during the Assessment

Structural Form Provides a view of the Tree's structural form at the time of inspection based on a number of predetermined criteria.

Structure Rating	Explanation
Good	Shows typical structural form for a specimen of the species. Branch unions show typical form at the point of attachment. May have a small number of minor structural defects; but are within the scope of tree surgery management to rectify. Shows to be root-stable.
Acceptable	Shows an acceptable form, but may have a number of structural defects present i.e. bi-furcation (but with no major swelling or movement), or areas of stem cavities, but structure remains within the scope of management at this stage; albeit with a higher risk/management requirement. Can include previously lopped trees that are known to have good points of attachment of any regrowth that occurs.
Questionable /Undesirable	Shows an undesirable structure for a specimen of the species. Structural condition likely to cause future issues in regards to the potential for branch or even complete tree failure to occur. Generally includes previously lopped trees, trees with large areas of cavity and/or associated decay that may be starting to affect its structural integrity, trees with bi-furcated unions with notable included bark and swelling that are considered to have an increased potential to fail.
Poor	Major structural defects evident. May have very large stem cavities, extensive termite damage, or noticeable movement in main stem, branch unions or root plate area.

Age Class Provides the age class of the given Tree.

SULE Provides an opinion of the 'safe-useful-life-expectancy' of the given Tree (range in years)

Image Provides an image of the Tree

Comments Provides any additional information (seen as relevant in the context of this report) to the Tree. Comments are (generally) self-explanatory.

An explanation of arboricultural terms has been provided as an attachment to this document.

TPZ Meaning the Tree's protection zone; the area where the majority of the given Tree's root mass is considered likely to be found.

Any works required in this zone are considered likely to have some potential to impact the Tree.

Retention Value Provides an overall 'opinion' on the quality of the Tree and its suitability for retention as part of the development.





This opinion rating has been colour-coded for ease of reference.

High
Medium
Low
Very Low



Town of Cotuit, Assessment of Trees
western verge of Railway Street opposite North Cotuit Primary School

March 26, 2019

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
1	Norfolk Island Pine (<i>Argusonia heterophylla</i>)	25	53	4-5	4-5	Excellent	Good	Early-mature	Long term (>40 yrs)		Reasonably good specimen. No issues or major concerns visible at this time.	6.4	Highly prominent aesthetic	Approx. 3m from existing footpath (proposed kerblines) Lower than footpath level. Impact to root zone needs to be verified by way of exploratory excavations
2	Rottnest Island Pine (<i>Callitris preissii</i>)	2	10	1-2	1-2	Excellent	Good	Semi-mature	Long term (>40 yrs)		Reasonably good specimen. No issues or major concerns visible at this time. Readily replaceable if required.	1.5	Lowly replaceable at this size/age	Approx. 1m from existing footpath. Lower than footpath level. May not necessarily be impacted by the works
3	Rottnest Island Pine (<i>Callitris preissii</i>)	2	10	1-2	1-2	Excellent	Good	Semi-mature	Long term (>40 yrs)		Reasonably good specimen. Readily replaceable if required.	1.5	Lowly replaceable at this size/age	Approx. 1m from existing footpath. Lower than footpath level. May not necessarily be impacted by the works
4	Rottnest Island Pine (<i>Callitris preissii</i>)	2	10	1-2	1-2	Fair	Good	Semi-mature	Short-term (5-15 yrs)		Canopy condition suggests possibly limited life remaining. Readily replaceable if required.	1.5	Lowly replaceable at this size/age	Approx. 1m from existing footpath. Lower than footpath level. May not necessarily be impacted by the works



Town of Cottesloe, Assessment of Trees
western verge of Railway Street opposite North Cottesloe Primary School





March 26, 2019

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
5	Bottlebrush Dawson River Weeper (Coffaraea Dawson River Weeper)	1	5	0.5-1	0.5-1	Excellent	Good	Juvenile	Long term (>40 yrs)		Reasonably good specimen. No issues or major concerns visible at this time. Readily replaceable if required.	1.5	Low, replaceable at this size/age	Approx. 1m from existing footpath. Lower than footpath level. May not necessarily be impacted by the works but may well get damaged during construction anyway due to its small size.
6	Bottlebrush Dawson River Weeper (Coffaraea Dawson River Weeper)	1	5	0.5-1	0.5-1	Excellent	Good	Juvenile	Long term (>40 yrs)		Reasonably good specimen. Readily replaceable if required.	1.5	Low, replaceable at this size/age	Approx. 1m from existing footpath. Lower than footpath level. May not necessarily be impacted by the works but may well get damaged during construction anyway due to its small size.
7	Norfolk Island Pine (Araucaria heterophylla)	19	39	4-5	4-5	Good	Good	Early/mature	Long term (>40 yrs)		Reasonably good specimen. Canopy slightly sparse. Remaining leaf still good condition.	4.7	High, prominent aesthetics	Approx. 1.5m from existing footpath (proposed kerbline). Lower than footpath level. Impact to root zone needs to be verified by way of exploratory excavations.
8	Red Flowering Gum (Corymbia ficifolia)	2	5	0.5-1	1-2	Excellent	Good	Juvenile	Medium term (15-40 yrs)		Reasonably good specimen. No issues or major concerns visible at this time. Looks to be a hybrid variety.	1.5	Low, replaceable at this size/age	May be in the way of the footpath.



Town of Coatesville, Assessment of Trees
western verge of Railway Street opposite North Coatesville Primary School





March 26, 2019

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
9	Bottlebrush Kings Park Special (ColErdman 'Kings Park Special')	3.5	10	3-2	1-2	Excellent	Good	Juvenile	Long term (>40 yrs)		Reasonably good specimen. No issues or major concerns visible at this time.	1.5	Low; replaceable at this size/age	May be in the way of the footpath
20	Coopong (Annona saligna)	3.5	12	2-3	3-4	Excellent	Good	Semi-mature	Limited (<5 yrs)		Reasonably good specimen. No issues or major concerns visible at this time. Looks to be self-sown. Typically very short lived species.	1.5	Low; typically short lived species	Looks unlikely to be impacted based on the Plan Provided.
11	Northern River Red Gum (Eucalyptus camaldulensis 'Obtuse')	10	61	9-10	9-10	Excellent	Undesirable	Mature	Short-term (5-15 yrs)		Ok specimen. Evidence of numerous previous branch failures. Species tend to have higher propensity for branch failures than most others.	7.3	Low; generally considered to be a higher risk species	Looks unlikely to be impacted based on the Plan Provided.
12	River Sheoak (Casuarina cunninghamiana)	7	24	6-7	6-7	Excellent	Good	Juvenile	Long term (>40 yrs)		Reasonably good specimen. No issues or major concerns visible at this time. Possibly self-sown.	2.8	Medium; ok tree - no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided.



Town of Coatesville, Assessment of Trees
western verge of Railway Street opposite North Coatesville Primary School





March 26, 2019

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
13	Rothwest Island Tea Tree (<i>Melaleuca lanceolata</i>)	3.5	20	8-9	7-8	Excellent	Good	Semi-mature	Long term (>40 yrs)		Reasonably good specimen. Multi-stemmed from ground level possibly more than one tree. Looks to be a number of trees planted in close proximity that effectively form the one canopy. Sections of its canopy may be able to be removed but suggest treat as one for purposes of protection	canopy spread	Low: ok tree but form may be limiting factor to its retention	Looks to be in the way of the footpath alignment
14	Swamp Sheoak (<i>Gasuarina obesa</i>)	2.5	34*	6-7	6-7	Excellent	Acceptable	Semi-mature	Long term (>40 yrs)		Ok specimen. Multi-stemmed from ground level possibly more than one tree. Included bark between stems. Ok at this time but likely to cause issues longer term	-4.1	Medium: ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided
15	Northern River Red Gum (<i>Eucalyptus camaldulensis</i> 'Obtusa')	17	77	16-18	18-20	Excellent	Questionable	Mature	Short-term (5-15 yrs)		Large mature specimen. Evidence of numerous previous branch failures. Broken branch lodged in the canopy (medium diameter-10-20cm). Possibly cross with Flooded Gum. Species tend to have comparatively high probability for failures than most others. May query retention if Targets are introduced into its Fall Zone	9.2	Low: generally considered to be a higher risk species	Looks unlikely to be impacted based on the Plan Provided
16	Bottlebrush Dawson River Weeper (Goldman Dawson River Weeper)	1	2	0.5-1	0.5-1	Excellent	Good	Juvenile	Long term (>40 yrs)		Reasonably good specimen. No issues or major concerns visible at this time. Readily replaceable at this size	1.5	Low: replaceable at this size/age	May not necessarily be impacted by the works but may well get damaged during construction anyway due to its small size



Town of Coxsdale, Assessment of Trees
western verge of Railway Street opposite North Coxsdale Primary School





March 26, 2019

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
17	Bottlebrush Dawson River Weeper (Coffaroa Dawson River Weeper)	1	2	0.5-1	0.5-1	Excellent	Good	Juvenile	Long term (>40 yrs)		Reasonably good specimen. Readily replaceable at this size.	1.5	Low; replaceable at this size/age	May not necessarily be impacted by the works but may well get damaged during construction anyway due to its small size.
18	Bottlebrush Dawson River Weeper (Coffaroa Dawson River Weeper)	1	2	0.5-1	0.5-1	Excellent	Good	Juvenile	Long term (>40 yrs)		Reasonably good specimen. Readily replaceable at this size.	1.5	Low; replaceable at this size/age	May not necessarily be impacted by the works but may well get damaged during construction anyway due to its small size.
19	Swamp Sheak (Casuarina obesa)	7.5	32*	5-6	6-7	Excellent	Acceptable	Semi-mature	Medium term (15-40 yrs)		Reasonably good specimen. Multi-stemmed from near ground level. Included bark between stems. Ok at this time but may cause issues longer term.	3.8	Medium; ok tree - no issues or concerns at this time.	Looks unlikely to be impacted based on the Plan Provided.
20	Swamp Sheak (Casuarina obesa)	7	32*	5-6	4-5	Excellent	Acceptable	Semi-mature	Medium term (15-40 yrs)		Reasonably good specimen. Bark wound noted on main stem. Co-dominant leader from near ground level. I included bark between stems. Ok at this time but may cause issues longer term.	3.8	Medium; ok tree - no issues or concerns at this time.	Looks unlikely to be impacted based on the Plan Provided.



Town of Colchester, Assessment of Trees
western verge of Railway Street opposite North Coltsloe Primary School





March 26, 2019

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
21	Tamarik (Tamarix aphylla)	13	88	10-11	10-11	Excellent	Good	Mature	Medium term (15-40 yrs)		Reasonably good specimen. No issues or major concerns visible at this time. Low canopy western side	8.2	Low: declined weed species	Looks unlikely to be impacted based on the Plan Provided
22	Rotmest Island Tree (Melaleuca lanceolata)	6	32, 32, 31, 30	15-10	15-10	Excellent	Good	Mature	Medium term (15-40 yrs)		Good specimen. Good aesthetic form/value. Multi-stemmed from ground level. Looks to be two trees in close proximity that effectively form the one canopy. Low canopy may be limiting factor to its retention, although some low canopy may be able to be raised to some degree	canopy spread	Low: ok tree but form may be limiting factor to its retention	Section of its canopy will need to be removed/raised to accommodate footpath but not expected to have a major impact to the Tree
23	Norfolk Island Pine (Araucaria heterophylla)	14	39	4-5	6-7	Good	Good	Early-mature	Long term (>40 yrs)		Reasonably good specimen. Canopy slightly sparse. Remaining leaf still good condition.	4.7	High: prominent aesthetics	Footpath 1.9m away tree (proposed kerbline). Impact to root zone needs to be verified by way of exploratory excavations
24	Norfolk Island Pine (Araucaria heterophylla)	20	48	5-6	7-8	Good	Good	Early-mature	Long term (>40 yrs)		Reasonably good specimen. Canopy slightly sparse. Remaining leaf still good condition. Canopy is relatively one sided due to powerline clearance pruning	5.8	High: prominent aesthetics	Footpath 1.7m away tree (proposed kerbline). Impact to root zone needs to be verified by way of exploratory excavations for both Road and footpath



Town of Coatesville, Assessment of Trees
western verge of Railway Street opposite North Coatesville Primary School

March 26, 2019

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
25	Bottlebrush King Park Special (ColEiderman King Park Special)	5	14	3-4	3-4	Excellent	Acceptable	Early- mature	Medium term (15-40 yrs)		Reasonably good specimen. Multi-stemmed from ground level possibly more than one tree. Section of its canopy has previously been removed	1.7	Medium; ok tree no issues or concerns at this time	May be impacted by footpath
26	Tuart (Eucalyptus gomphocephala)	15	55	13-14	11-12	Excellent	Acceptable	Early- mature	Long term (>40 yrs)		Reasonably good specimen. Main stem bi-furcates. Swelling at the union. Union looks to be ok at this time but may cause future issue. Very low canopy western side can be raised if required	6.6	Low; structure likely to cause issues	Looks unlikely to be impacted based on the Plan Provided
27	Norfolk Island Pine (Araucaria heterophylla)	26	77	9-10	13-14	Excellent	Good	Early- mature	Long term (>40 yrs)		Good specimen. No issues or major concerns visible at this time. Canopy is relatively one sided due to past pruning for powerline clearance requirements	9.2	High; prominent aesthetics	Drainage culvert approximately 4m south, inspection lid approximately 4.5m SE. Proposed kerbline 1.9m from Tree. Impact to root zone needs to be verified by way of exploratory excavations for both Road and footpath
28	Norfolk Island Pine (Araucaria heterophylla)	28	64	9-10	9-10	Excellent	Good	Early- mature	Long term (>40 yrs)		Good specimen. Good aesthetic form/value. No issues or major concerns visible at this time. Canopy is relatively one sided due to past pruning for powerline clearance requirements	7.9	High; prominent aesthetics	Drainage culvert approximately 7m north. Proposed kerbline 2.3m from Tree. Impact to root zone needs to be verified by way of exploratory excavations for both Road and footpath



Town of Coatesloe, Assessment of Trees
western verge of Railway Street opposite North Coatesloe Primary School





March 26, 2019

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
29	River Yata (Eumyrtus laevis)	8.5	33, 30, 15, 14	11-12	10-11	Excellent	Acceptable	Mature	Medium term (15-40 yrs)		Ok specimen. Multi-stemmed from ground level. Low canopy spread particularly western side	4.0	Medium; ok tree - no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided
30	Bottlebrush Kings Park Special (Colletaria Kings Park Special)	5	27*	5-6	6-7	Excellent	Good	Mature	Medium term (15-40 yrs)		Reasonably good specimen. Main stem furcates into three. Union looks to be ok at this time but may cause future issue. Low canopy spread particularly southern and western sides may be limiting factor	3.2	Medium; ok tree - no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided
31	Bottlebrush Dawson River Weeper (Colletaria Dawson River Weeper)	4.5	12*	6-4	2-3	Excellent	Good	Early-mature	Long term (>40 yrs)		Reasonably good specimen. No issues or major concerns visible at this time.	3.5	Medium; ok tree - no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided
32	River Yata (Eumyrtus laevis)	4	17*	6-4	4-5	Good	Acceptable	Mature	Short-term (5-15 yrs)		Ok specimen. Canopy is one sided due to proximity of adjacent tree. Canopy is slightly sparse & suggests decline. Low canopy western side may be limiting factor	2.0	Medium; ok tree - no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided



Town of Coatesville, Assessment of Trees
 western verge of Railway Street opposite North Coatesville Primary School





March 26, 2019

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
33	River Yata (<i>Eucalyptus macrandra</i>)	6	17	4-5	4-5	Good	Acceptable	Mature	Short-term (5-15 yrs)		OK specimen. Area of decay. Not of a major concern at this time. Canopy is one sided due to proximity of adjacent tree. Decay may start to impact its structural integrity within the next 5 or so years	2.0	Low; structure likely to cause issues	Looks unlikely to be impacted based on the Plan Provided
34	Gemilton Wai (<i>Chamaelobos uncinatum</i>)	2	23*	3-4	3-4	Mostly dead	Acceptable	Mature	Limited (<5 yrs)		Mostly dead tree.	n/a	Very Low; mostly dead	In footpath alignment
35	Norfolk Island Pine (<i>Araucaria heterophylla</i>)	20	51	9-10	6-7	Excellent	Good	Early-mature	Long term (>40 yrs)		Reasonably good specimen. Canopy ever-so slightly sparse. Remaining leaf still good. Canopy is relatively one sided due to past pruning for powerline clearance requirements	6.1	High; prominent aesthetics	Proposed kerbline 2.1 m from Tree. Impact to root zone needs to be verified by way of exploratory excavations
36	Norfolk Island Pine (<i>Araucaria heterophylla</i>)	17	46	9-10	6-7	Good	Good	Early-mature	Long term (>40 yrs)		Reasonably good specimen. Canopy slightly sparse. Remaining leaf still good condition. Canopy is relatively one sided due to past pruning for powerline clearance requirements	5.4	High; prominent aesthetics	Proposed kerbline 2.2 m from Tree. Impact to root zone needs to be verified by way of exploratory excavations



Town of Coatesville, Assessment of Trees
western verge of Railway Street opposite North Coatesville Primary School

March 26, 2019

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
37	Bald Island Marlock (<i>Eucalyptus conferruminata</i>)	7.5	37*	5-6	7-8	Good	Good	Mature	Short-term (5-15 yrs)		Area of decay. Not of a major concern at this time. Main stem bifurcates. Union looks to be Ok at this stage. Canopy is one sided west due to proximity of adjacent tree. Canopy is slightly sparse. Species can be prone to issues of decay and termites	4.4	Low - structure likely to cause issues	Looks unlikely to be impacted based on the Plan Provided
38	Grass Tree (<i>Xanthorrhoea preissii</i>)	1.5	30	1-2	1-2	Excellent	Good	Mature	Long term (>40 yrs)		Good specimen. No issues or major concerns visible at this time.	2.0	Medium; ok tree but replaceable / transplantable at this site if required	Looks unlikely to be impacted based on the Plan Provided
39	Rattonst Island Tea Tree (<i>Melaleuca lanceolata</i>)	8	36, 23	8-9	8-9	Excellent	Acceptable	Mature	Medium term (15-40 yrs)		Reasonably good specimen. Co-dominant leader from near ground level. Was multi-stemmed but one side has previously been removed. Effectively forms the one canopy with the adjacent tree	4.3	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided
40	Rattonst Island Tea Tree (<i>Melaleuca lanceolata</i>)	8	29, 22, 16	8-9	7-8	Excellent	Acceptable	Mature	Medium term (15-40 yrs)		Reasonably good specimen. Multi-stemmed from near ground level. No issues or major concerns visible at this time. Effectively forms the one canopy with the adjacent tree	3.5	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided



Town of Coorabie, Assessment of Trees
western verge of Railway Street opposite North Coorabie Primary School





March 26, 2019

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
41	West Australian Peppermint (Agonis flexuosa)	7	42	5-6	7-8	Excellent	Good	Semi-mature	Long term (>40 yrs)		Reasonably good specimen. Main stem bi-furcates. Included bark at the union. Union looks to be ok at this time but may cause future issue.	5.0	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided.
42	Grass Tree (Xanthorrhoea preissii)	3	38	1-2	1-2	Good	Good	Mature	Long term (>40 yrs)		Large mature specimen. Very old	2.0	High; old specimen. Transplantable if required.	Looks unlikely to be impacted based on the Plan Provided.
43	Norfolk Island Pine (Araucaria heterophylla)	20	46	5-6	3-6	Good	Good	Early-mature	Long term (>40 yrs)		Reasonably good specimen. Canopy slightly sparse. Remaining leaf still good condition. Canopy is relatively one sided due to past pruning for powerline clearance requirements.	5.5	High; prominent aesthetics	Proposed kerbline 5.7m from Tree, footpath 2.8m from the Tree. Should be marginal impact but needs to be verified by way of exploratory excavations.
44	West Australian Peppermint (Agonis flexuosa)	4.5	17	4-5	4-5	Excellent	Acceptable	Juvenile	Long term (>40 yrs)		Reasonably good specimen. Union looks to be ok at this time but may cause future issue. Branch unions with included bark. Readily replaceable at this size.	2.0	Low; replaceable at this size/age	Will need to be removed to accommodate design.



Town of Coorsslo, Assessment of Trees
western verge of Railway Street opposite North Collis Primary School





March 26, 2019

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
45	West Australian Peppermint (<i>Agonis flexuosa</i>)	4	15	3-4	3-4	Excellent	Acceptable	Juvenile	Long term (>40 yrs)		Ok specimen. Main stem bi-furcates. Included bark at the union. Union looks to be ok at this time but may cause future issue. Readily replaceable at this size.	1.8	Low, replaceable at this size/age	Will need to be removed to accommodate design
46	Firewood Banksia (<i>Banksia menziesii</i>)	2	10	2-3	2-3	Excellent	Acceptable	Juvenile	Medium term (25-40 yrs)		Reasonably good specimen. Grown on a lean but not considered an issue at this time. Readily replaceable at this size.	1.5	Low, replaceable at this size/age	Will need to be removed to accommodate design
47	Rose Gum (<i>Eucalyptus granata</i>)	4.5	25*	1-2	1-2	Excellent	Undesirable	Juvenile	Limited (<5 yrs)		Looks to be regrowth off/around an old stump/original tree. Likely to cause issues with overhead powerlines	1.5	Very Low, stump regrowth	Will need to be removed to accommodate design
48	Spotted Gum (<i>Corymbia maculata</i>)	3.5	5	0.5-1	0.5-1	Excellent	Good	Juvenile	Limited (<5 yrs)		Ok specimen. Readily replaceable at this size. Likely to cause issues with overhead powerlines	1.5	Low, replaceable at this size/age	Will need to be removed to accommodate design



Town of Coatesville, Assessment of Trees
western verge of Railway Street opposite North Coatesville Primary School





March 26, 2019

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
49	Firewood Banksia (Banksia menziesii)	1.5	5	1-2	1-2	Excellent	Good	Juvenile	Medium term (15-40 yrs)		Reasonably good specimen. Multi-stemmed from ground level. Readily replaceable at this size	1.5	Low; replaceable at this size/age	Looks unlikely to be impacted based on the Plan Provided
50	Grass Tree (Xanthorrhoea preissii)	1	30, 30	2-3	2-3	Excellent	Good	Early-mature	Long term (>40 yrs)		Reasonably good specimen. Multi-stemmed from ground level possibly more than one tree.	2.0	Medium; ok tree but replaceable / transplantable at this site if required	Looks unlikely to be impacted based on the Plan Provided
51	Bracket Honey Myrtle (Melaleuca armillaris)	4.5	25, 20, 18, 18	15-16	12-13	Good	Good	Mature	Short-term (5-15 yrs)		Large mature specimen. Multi-stemmed from ground level. Section of canopy is dead. Remainder still good at this time. Very low spreading canopy may be limiting factor to its retention	canopy spread.	Low; ok tree but form may be limiting factor to its retention	A large section of its canopy will need to be removed/raised to accommodate footpath so retention of the Tree may become questionable pending results of pruning
52	Norfolk Island Pine (Araucaria heterophylla)	10	28	8-4	8-4	Excellent	Good	Semi-mature	Medium term (15-40 yrs)		Reasonably good specimen. Bark wound noted on main stem. Looks to be developing a co-dominant leader. Replaceable at this size if necessary	3.4	Low; structure likely to cause issues	Looks unlikely to be impacted based on the Plan Provided



Town of Coorssloe, Assessment of Trees
western verge of Railway Street opposite North Coorssloe Primary School





March 26, 2019

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
53	Grass Tree (Xanthorrhoea preissii)	1.5	36	1-2	1-2	Excellent	Good	Mature	Long term (>40 yrs)		Good specimen. Multiple heads. Transplantable if required	2.0	High: old specimen. Transplantable if required	Looks unlikely to be impacted based on the Plan Provided
54	Grass Tree (Xanthorrhoea preissii)	1	34	1-2	1-2	Excellent	Good	Mature	Long term (>40 yrs)		Good specimen. Grown on a lean but not considered an issue at this time. Transplantable if required	2.0	High: old specimen. Transplantable if required	Looks unlikely to be impacted based on the Plan Provided
55	Grass Tree (Xanthorrhoea preissii)	2	42	1-2	1-2	Excellent	Good	Mature	Long term (>40 yrs)		Good specimen. Old. Transplantable if required	2.0	High: old specimen. Transplantable if required	Looks unlikely to be impacted based on the Plan Provided
56	West Australian Peppermint (Agonis flexuosa)	7	41	4-5	3-4	Excellent	Acceptable	Early-mature	Long term (>40 yrs)		Reasonably good specimen. Main stem bi-furcates. Included bark at the union. Union looks to be ok at this time but may cause future issue. Borer holes noted which may impact its SULE	5.0	Medium: ok tree - no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided



Town of Coorool, Assessment of Trees
western verge of Railway Street opposite North Collis Primary School





March 26, 2019

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
57	West Australian Peppermint (Agonis flexuosa)	7	27	4-5	4-5	Excellent	Acceptable	Early-mature	Long term (>40 yrs)		Reasonably good specimen. Main stem bi-furcates. Included bark at the union. Union looks to be ok at this time but may cause future issue. Co-dominant leader/sucker from near ground level.	3.2	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided.
58	Grass Tree (Xanthorrhoea preissii)	1.5	35, 35	1-2	2-3	Excellent	Good	Mature	Long term (>40 yrs)		Good specimen. Multi-stemmed from ground level possibly more than one tree. Transplantable if required.	2.0	High; old specimen Transplantable if required	Looks unlikely to be impacted based on the Plan Provided.
59	Bottlebrush Kings Park Special (Callistemon 'Kings Park Special')	4	20*	3-4	4-5	Excellent	Good	Early-mature	Long term (>40 yrs)		Reasonably good specimen. Main stem furcates into three. Union looks to be ok at this time but may cause future issue. Broken branch in canopy. Low canopy may be limiting factor to its retention.	2.4	Medium; ok tree no issues or concerns at this time.	Looks unlikely to be impacted based on the Plan Provided.
60	Bottlebrush Kings Park Special (Callistemon 'Kings Park Special')	4.5	24*	3-4	4-5	Excellent	Acceptable	Early-mature	Medium term (15-40 yrs)		Reasonably good specimen. Canopy is one sided due to proximity of adjacent tree. Original main stem has previously snapped. Low canopy may be limiting factor to its retention.	2.8	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided.



Town of Coorabie, Assessment of Trees
western verge of Railway Street opposite North Coorabie Primary School





March 26, 2019

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
61	Grass Tree (Xanthorrhoea preissii)	1.5	35	1-2	1-2	Excellent	Good	Mature	Long term (>40 yrs)		Good specimen. Transplantable if required	2.0	High: old specimen. Transplantable if required	Looks unlikely to be impacted based on the Plan Provided
62	Grass Tree (Xanthorrhoea preissii)	2	40	2-3	2-3	Excellent	Good	Mature	Long term (>40 yrs)		Very good specimen of its species. Old. Multiple heads. Transplantable if required	2.0	High: old specimen. Transplantable if required	Looks unlikely to be impacted based on the Plan Provided
63	Northern River Red Gum (Eucalyptus camaldulensis 'Obuser')	9.5	34	9-10	11-12	Excellent	Good	Early-mature	Short-term (5-15 yrs)		Ok specimen. Grown on a lean but not considered an issue at this time. Possibly cross with Flooded Gum. Canopy is relatively one sided east. Ok at this time but species tend to have comparatively high probability for failures than most others	4.1	Low: generally considered to be a higher risk species	Looks unlikely to be impacted based on the Plan Provided
64	West Australian Peppermint (Agonis flexuosa)	9	63	7-8	7-8	Excellent	Good	Early-mature	Long term (>40 yrs)		Good specimen. Main stem furcates into three. Union looks to be ok at this time but may cause future issue	7.6	Medium: ok tree - no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided



Town of Coorool, Assessment of Trees
western verge of Railway Street opposite North Collis Primary School





March 26, 2019

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
65	Grass Tree (Xanthorrhoea preissii)	0.5	26	1-2	1-2	Excellent	Acceptable	Early-mature	Long term (>40 yrs)		Reasonably good specimen. Grown on a lean parallel to the ground but not considered an issue at this time. Multiple heads. Possibly not transplantable due to form	2.0	Medium; ok tree but replaceable / transplantable at this site if required	Looks unlikely to be impacted based on the Plan Provided
66	Grass Tree (Xanthorrhoea preissii)	1	26	1-2	1-2	Excellent	Good	Early-mature	Long term (>40 yrs)		Reasonably good specimen. Transplantable if required	2.0	Medium; ok tree but replaceable / transplantable at this site if required	Looks unlikely to be impacted based on the Plan Provided
67	Coolong (Acacia saligna)	4.5	38	2-3	2-3	Poor	Acceptable	Post-mature	Limited (<5 yrs)		Canopy condition suggests possibly limited life remaining. Typically very short lived species	2.2	Very Low; typically short lived species	Looks unlikely to be impacted based on the Plan Provided
68	Coolong (Acacia saligna)	4.5	25	3-4	3-4	Fair	Acceptable	Post-mature	Limited (<5 yrs)		Canopy is slightly sparse & suggests decline. Main stem bi-furcates. Union looks to be OK at this stage. Canopy is one sided east. Typically very short lived species	3.0	Very Low; typically short lived species	Looks to be in the alignment of the proposed footpath



Town of Coatesville, Assessment of Trees
western verge of Railway Street opposite North Coatesville Primary School





March 26, 2019

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
69	Limstone Manlock (Eucalyptus decipiens)	4	35*	6-7	6-7	Excellent	Acceptable	Mature	Medium term (15-40 yrs)		Ok specimen. Multi-stemmed from near ground level. Low spreading canopy form may be limiting factor verify species	4.2	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided
70	Rottnest Island Pine (Callitris prestonii)	5	32, 15*	3-4	3-4	Excellent	Acceptable	Mature	Short-term (5-15 yrs)		Ok specimen. Multi-stemmed from ground level. Section of its canopy has previously snapped. Low canopy eastern side may be limiting factor	3.8	Low; structure likely to cause issues	Looks unlikely to be impacted based on the Plan Provided
71	Botolphrauh Kings Park Special (Callitris prestonii Kings Park Special)	4.5	27	6-7	3-6	Excellent	Acceptable	Mature	Medium term (15-40 yrs)		Reasonably good specimen. Splitting branch noted. Low canopy southern and eastern side may be limiting factor	3.2	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided
72	Cooping (Acacia saligna)	6	33	6-7	10-11	Fair	Good	Post-mature	Limited (<5 yrs)		Large mature specimen. Canopy is slightly sparse & suggests decline. Typically very short lived species	4.0	Low; typically short lived species	Looks unlikely to be impacted based on the Plan Provided



Town of Coorsslo, Assessment of Trees
western verge of Railway Street opposite North Coorsslo Primary School





March 26, 2019

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
73	River Red Gum (Eucalyptus camaldulensis 'Camaldulensis')	6.5	35*	2-3	2-3	Excellent	Undesirable	Juvenile	Limited (<5 yrs)		Looks to be regrowth off/around an old stump/original tree. Likely to cause issues with overhead powerline	1.5	Very Low; stump regrowth	Will need to be removed to accommodate design
74	Grass Tree (Xanthorrhoea preissii)	1.5	35	1-2	1-2	Excellent	Good	Mature	Long term (>40 yrs)		Good specimen. Old. Multiple heads. Transplantable if required	2.0	High; old specimen. Transplantable if required	Will need to be removed to accommodate design
75	Grass Tree (Xanthorrhoea preissii)	0.5	30*	1-2	1-2	Excellent	Good	Early/mature	Long term (>40 yrs)		Good specimen. Multiple heads. Transplantable if required	1.5	Medium; ok tree but replaceable/transplantable at this size if required	Will need to be removed to accommodate design
76	Cooping (Acacia saligna)	2.5	20*	3-4	3-4	Excellent	Good	Mature	Limited (<5 yrs)		Reasonably good specimen. Multi-stemmed from near ground level. Typically very short lived species	2.4	Low; typically short lived species	Will need to be removed to accommodate design



Town of Cotswold, Assessment of Trees
western verge of Railway Street opposite North Cotswold Primary School




March 26, 2019

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
77	Cooching (Acacia palgona)	3.5	25*	3-4	6-7	Excellent	Good	Mature	Limited (<5 yrs)		Reasonably good specimen. Multi-stemmed from near ground level. Typically very short lived species	3.0	Low; typically short lived species	Will need to be removed to accommodate design
78	Tamarisk (Tamarix spthila)	14	42	9-10	10-11	Excellent	Good	Mature	Medium term (25-40 yrs)		Ok specimen. No issues or concerns visible at this time. Multi-stemmed from near ground level. Declared weed species	5.0	Low; declared weed species	Looks to be in the alignment of the proposed footpath
79	Swamp Sheoak (Casuarine glauca)	7	14	3-4	3-4	Excellent	Acceptable	Semi-mature	Medium term (15-40 yrs)		Ok specimen. No issues or concerns visible at this time. Multi-stemmed from near ground level	2.8	Medium; ok tree no issues or concerns at this time	May not be impacted by works
80	Coral Gum (Eucalyptus torquata)	4.5	23	3-4	3-4	Excellent	Acceptable	Early-mature	Medium term (15-40 yrs)		Ok specimen. No issues or concerns visible at this time. Grown on an angle but looks to be ok at this time	1.7	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided



Town of Coatesville, Assessment of Trees
western verge of Railway Street opposite North Coatesville Primary School

March 26, 2019

Tree No	Species	Height (metres)	DBH (cm)	Canopy Spread (metres diameter)		Health	Structure	Age Class	SULE	Image	Comments	TPZ (metres radius)	Retention Value	Impact from Development (Based on Plan Provided)
				N-S	E-W									
81	Jarraah (<i>Eucalyptus marginata</i>)	5	19	4-5	4-5	Good	Good	Semi-mature	Long term (>40 yrs)		Ok specimen. No issues or concerns visible at this time. Multi-stemmed from ground level possibly more than one tree	2.3	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided.
82	Jarraah (<i>Eucalyptus marginata</i>)	6	23	4-5	4-5	Good	Good	Semi-mature	Long term (>40 yrs)		Ok specimen. No issues or concerns visible at this time. Multi-stemmed from ground level possibly more than one tree	2.8	Medium; ok tree no issues or concerns at this time	Looks unlikely to be impacted based on the Plan Provided.
83	Showy Honey Myrtle (<i>Melaleuca neophila</i>)	3.5	21	5-6	6-7	Excellent	Good	Early-mature	Medium term (15-40 yrs)		Ok specimen. No issues or concerns visible at this time. Widespread canopy form	2.5	Low; shrub species	Looks to be in the alignment of the proposed footpath



*Town of Cottesloe: Assessment of Trees:
western verge of Railway Street opposite North Cottesloe Primary School*

March 2019

6. Potential Impact from Development and Further Considerations

6.1 Road Construction

- 6.1.1 Based on the Plan provided Trees #44, #48, and #73 - #77 will need to be removed to accommodate the proposed design. All of these Trees are small and look to only have been planted a few years ago. Two of these Trees are Grass Tree and could be transplanted if required as part of Site clearing works.
- 6.1.2 Potentially significant impact from the construction of the Road looks likely to occur to Trees #1, #7, #23, #24, #27, #28, #35, #36, and #43; particularly Trees #27, #28, #35, #36, and #43 given the proximity of the proposed road pavement and level of excavation anticipated to be required.



Trees #1, #7, #23 and #24 may have already been subject to some degree of root zone disturbance and possibly loss of root mass when the current existing car parking area was installed, so impact to these Trees may actually be less than to the others.

- 6.1.3 Full impact to these Trees will however be very much dependent on the level of root mass required to be removed to accommodate the depth of excavation required as part of construction.

6.1.4 Recommendations

At this time:

- a) Some exploratory excavation works are recommended to be undertaken to verify the actual root spread from each of these Tree along the alignment of the proposed excavation for the Road; from which a more informed opinion on the potential impact to the Trees can then be provided.

This is recommended to be undertaken by way of vacuum excavation to open a 100mm wide slot trench to the depth of any 'box-out'/excavation required to enable viewing of any roots that are present.

6. Potential Impact from Development and Further Considerations

- b) Delineation of any underground services also needs to be verified to ascertain what other excavations may need to occur in the vicinity of these Trees as part of the construction process.

6.2 Footpath Construction

- 6.2.1. Seven Trees look likely to be required to be removed, along with a number of other smaller tree and shrub specimens that look to have been recently planted into the Site.

This includes; Trees #13 (small low spreading Rottneet Island Tea-Tree), #25 (small Bottlebrush), #34 (dead Geraldton Wax), #68 (Coojong with limited life span remaining), #78 (Tamarisk declared weed species) and #83 (a low spreading Showy Honey Myrtle).

- 6.2.2. In addition to these Trees, Tree #8 (a small juvenile Red Flowering Gum) and #9 (a small juvenile Bottlebrush) may also be in the alignment of the proposed footpath.

- 6.2.3. A section of the canopy of Tree #22 will need to be removed to accommodate the footpath but would not be anticipated to have any major adverse impact to the Tree.

- 6.2.4. Potentially a large section of Tree #51 (a low spreading Bracelet Honey Myrtle) looks to be required to be removed to allow for construction of the footpath. Pending the results of the pruning, the retention of the remainder of this Tree can then be verified.

- 6.2.5. Other minor amounts of canopy works may be required on a select few other Trees to provide clearances over the footpath but would not be anticipated to have any major deleterious impact to their health or potential life span.

- 6.2.6. **Recommendations**

At this time:

- a) Levels for the footpath needs to be verified and extent of any 'box-out' required as part of its construction.
- b) Delineation of any underground services also needs to be verified to ascertain what other excavations may need to occur in the vicinity of these Trees as part of the construction process.

6.3 Other remaining Trees

Impact to the remaining Trees identified on the Site looks likely to be minimal at this time based on the Plans Provided although some of the physically smaller Trees may be damaged during the process due to their small size and proximity to the proposed works area.

Even though they may not look to be impacted by the Works, protection of their nominal TPZ areas in accordance with AS 4970 guidelines will still need to be implemented as part of the construction aspect of the development.

*Town of Cottesloe: Assessment of Trees:
western verge of Railway Street opposite North Cottesloe Primary School*

March 2019

7. Attachments to the Report

- Attachment 1; Tree Location Guide
- Attachment 2; Location Guide with Retention Value Overlaid
- Attachment 3; Location Guide (not all Trees) Overlaid onto Copy of the Plan Provided
- Attachment 4; Company Information & Disclaimer



Town of Cottesloe: Assessment of Trees:
western verge of Railway Street opposite North Cottesloe Primary School

March 2019

Attachment 1; Tree Location Guide



Town of Cottesloe: Assessment of Trees:
western verge of Railway Street opposite North Cottesloe Primary School

March 2019

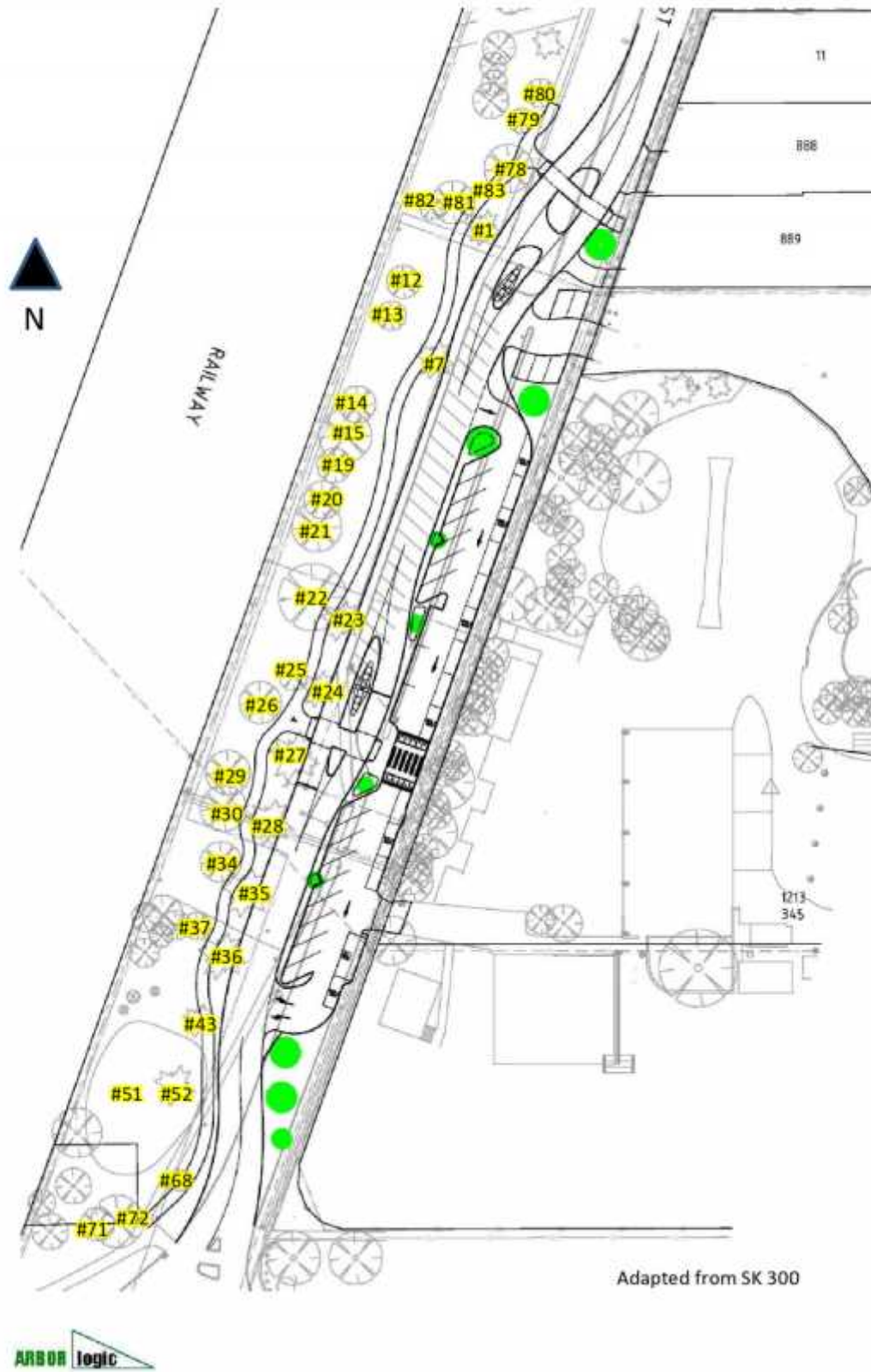
Attachment 2; Tree Location Guide with Retention Value Overlaid



Town of Cottesloe: Assessment of Trees:
western verge of Railway Street opposite North Cottesloe Primary School

March 2019

Attachment 3: Location Guide (not all Trees) Overlaid onto Copy of the Plan Provided



*Town of Cottesloe: Assessment of Trees:
western verge of Railway Street opposite North Cottesloe Primary School*

March 2019

Attachment 4; Company Information

Company Name: 
 A.C.N.: 107 194 061
 A.B.N.: 66 566 369 687

Insurance Details:

General Liability;	QBE	\$20 million
Professional Indemnity;	Vero	\$10 million
Personal Protection;	Zurich	

Office/Contact Details

Postal Address: PO Box 1025, Balcatta WA 6914
 Physical Office Address: 4c/5 Mumford Place, Balcatta
 Ph: (08) 9240 7555
 Fax: (08) 9240 7522

Consultant Details

Consultant Contact: **Jason Royal**
 Dip. Arboriculture (UK)
 Tech. Arbor A

Ph: (08) 9240 7555
 Mobile: 0409 105 745
 Email: jason@arborlogic.com.au



*Town of Cottesloe: Assessment of Trees:
western verge of Railway Street opposite North Cottesloe Primary School*

March 2019

Disclaimer

This Report has been provided in good faith and based upon the material information provided by the Client to Arbor logic, and/or based on the visual inspection of the tree(s) at the time this advice was prepared.

The contents of this Report should be read in full, and at no time shall any part of the Report be referred to unless taken in full context with the remainder of the document.

The contents of this Report may not be reissued to another party or published in part or full without Arbor logic's written permission.

Arbor logic does not accept liability arising out of loss or damage that results from: -

- Material information not being provided by the Client to Arbor logic at the time this advice was prepared.
- The provision of misleading or incorrect information by the Client or any other party to Arbor logic upon which this advice was prepared.
- This advice being used by the Client or any other party in circumstances or situations other than the specific subject of this advice.
- Failure by the Client to follow this advice.
- The action(s) or inaction(s) of the Client or any other party that gives rise to the loss of, or damage to, the tree(s) that are the subject of this advice.

It is also important to take into consideration that all trees are living organisms and as such there are many variables that can affect their health and structural properties that remain beyond the scope of reasonable management practices or the advice provided in this Report based on the visual inspection of the tree(s).

As such a degree of risk will still remain with any given tree(s) despite the adoption of any best management practices or recommendations made in this Report.



TOWN OF COTTESLOE



NORTH COTTESLOE PRIMARY SCHOOL TRAFFIC SAFETY COMMITTEE MEETING

ATTACHMENT

ITEM 8.1.1F: TRAFFIC ENGINEERING REPORT - NORTH COTTESLOE PRIMARY SCHOOL

North Cottesloe Primary School

**TRAFFIC ENGINEERING, SAFETY REVIEW AND TRAVEL MANAGEMENT
PLAN**

FINAL REPORT – V5

Prepared for: Town of Cottesloe
Prepared by: Move Consultants



Move consultants

Moving People Moving Commerce

P.O. BOX 525

APPLECROSS WA

AUSTRALIA 6953

P: +61 434 189 788

Abn 14 102 899 517

e-mail: heidi.herget@moveconsultants.com.au

www.moveconsultants.com.au

September 2019

Client Name: Town of Cottesloe
Project Name: North Cottesloe Primary School

September 2019

DOCUMENT ISSUE AUTHORISATION

Issue	Rev	Date	Description	Checked	Approved
1	0	06/12/18	DRAFT	HH	HH
2	1	07/12/18	DRAFT	HH	HH
3	2	25/02/19	DRAFT	HH	HH
4	3	16/03/19	FINAL	HH	HH
5	4	09/09/19	REV	HH	HH

The information contained in this document is solely for the use of the client identified for the purpose for which it has been prepared. It is not to be used by any third party and no responsibility is undertaken to any third party. All photographs remain the copyright of Move Consultants and are included for illustration only.

Client Name: Town of Cottesloe
 Project Name: North Cottesloe Primary School

September 2019

TABLE OF CONTENTS

	PAGE
1. EXECUTIVE SUMMARY	1
2. INTRODUCTION	3
2.1 OVERVIEW AND INTRODUCTION	3
2.2 SITE LOCATION	4
3. EXISTING SITUATION	7
3.1 ROAD INFRASTRUCTURE	7
3.2 PUBLIC TRANSPORT, PEDESTRIAN, AND CYCLIST FACILITIES	10
4. OVERVIEW OF NORTH COTTESLOE PRIMARY SCHOOL	12
5. REVISED TRAFFIC ENGINEERING REVIEW	13
5.1 EXISTING SCHOOL TRAFFIC OPERATIONS	13
5.2 REVIEW OF EXISTING OPERATIONS AT ROAD INTERSECTIONS	14
6. SAFETY REVIEW	15
6.1 EXISTING CRASH HISTORY AND SIGHTLINES	15
6.2 SPEED LIMIT ZONING	16
7. REVIEW OF PROPOSED PLAN	16
8. INFRASTRUCTURE ACTION PLAN	17
APPENDIX A: PROPOSED PLAN FOR RAILWAY PARADE (MODIFIED)	18
APPENDIX B: INDICATIVE INFRASTRUCTURE ACTION PLAN	23

1. EXECUTIVE SUMMARY

This Revised Traffic Engineering and Safety Review and Travel Management/Action Plan has been prepared by Move Consultants on behalf of the Town of Cottesloe with regard to the existing North Cottesloe Primary School, located at the north-east corner of Eric Street and Railway Street, North Cottesloe in the Town of Cottesloe. A meeting with the Town's Traffic and Safety Committee on 6 February 2019 to discuss the outcomes of the review resulted in a series of recommendations to progress the project. A subsequent meeting on 25 February to present and discuss the revised concept resulted in These included the following:

- Endorsement of the plan subject to the realignment of the western footpath adjacent to the eastern edge of the railway reserve to minimise impacts on existing vegetation with indicative connection of the existing footpath from Eric Street to Grant Street;
- Endorsement of a plan to proceed to formal public consultation and the preparation of a survey/questionnaire to be circulated to the Town's Traffic and Safety Committee.
- Endorsement of intent to engage with Main Roads WA to lower the speed limit to a permanent all-day 40kph between Eric Street and Grant Street, subject to the results of public consultation;
- A site-specific Tree Assessment report to identify trees of significance;
- Update of the Project Delivery Plan to include funding opportunities and a revised delivery timeframe; and
- Endorsement of consideration of preparing a brief for Stage 2 works to be undertaken as a separate project covering the section of Railway Road from the northern boundary of the existing project to the Grant Street intersection.

Following a detailed traffic operations and safety assessment, a review of the original proposed plan and subsequent revised plan(s) to upgrade and modify the existing road cross-section of Railway Street, north of Eric Street, was undertaken and the following summaries our review:

- The proposal to relocate the existing pick-up/drop-off activities associated with the school to the Railway Street frontage is supported from a traffic operations, safety and efficiency perspective. This will result in less conflict at the existing crossovers to Eric Street and minimise impacts to existing boundary road traffic operations between Curtin Avenue and Stirling Highway and will allow for increased safe ingress and egress for parents to access the higher order network, particularly north of the school via the fully controlled roundabout at Eric Street/Railway Street.
- There will be an increase in traffic along the Railway Street frontage (in the order of 200 to 300 vpd) due to redistribution of pick-up/drop-off traffic; however, this can be accommodated within the practical capacity of the road classification and the proposed road cross-section and potentially some minor redistribution in traffic associated with the school on the higher order roads in the area (i.e. Grant Street East and Stirling Highway) but these increases can be comfortably accommodated within the existing network operations.
- The upgrading and modification of the road cross-section of Railway Street to effectively separate through traffic from pick-up/drop-off traffic through realignment of the through carriageway to the western edge of the road reserve abutting the railway line will still allow for efficient north-south movement along the western boundary of the school for existing traffic demands.
- The proposed southbound one-way system within the new pick-up/drop-off area will allow for minimal conflict between through traffic on Railway Street and queuing vehicles entering the pick-up/drop-off area due to the increase in the number of parallel bays in the pick-up/drop-off area along the western edge of

the school. This increase in parallel bays within the 'Kiss n Ride' area will satisfactorily accommodate the demands associated with the existing a.m. and p.m. peak periods.

- The provision of additional angle parking within this dedicated area will supplement the overall car parking supply for the school with the existing angle parking located along the Eric Street frontage reallocated to either staff and/or visitors to the school or dedicated to parents of Kindy and Pre-Primary children.
- The additional proposed pedestrian crossing to the north of the school on Railway Street will assist in facilitating safe additional crossings which are now undertaken inappropriately north of the existing established crossing to the south. This crossing will require MRWA approval.
- The implementation of LATM or 'slow points' along the Railway Street frontage to encourage awareness of other road users, namely pedestrian, cyclists and school parents/caregivers entering and exiting the relocated pick-up/drop-off area will hopefully induce a degree of 'horizontal' friction to encourage lower travelling speeds.
- An application for a change in speed zoning to a permanent 40kph on Railway Street between Grant Street and Eric Street is recommended. This will need to be negotiated with MRWA.
- No other changes to speed zoning are justified.
- All changes to signage and line marking within Railway Street, Eric Street, inclusive of the future Kindy & Pre-Primary parking area, and other road frontages will require the approval of MRWA.

Following the Town's Traffic and Safety Committee meeting of 6 February 2019, the committee requested some modifications to the plan prior to release for public consultation and advertising. The modified concept plan incorporating a realignment of the western footpath adjacent to the eastern edge of the railway reserve along Railway Road has been undertaken and is reflected in the modified plan attached in Appendix B.

The proposed plan has also resulted in a significant change to existing formal and informal public car parking along the Railway Road frontage. The existing formal on-street supply consists of 24 bays plus an informal supply within the railway verge of approximately 10-15 bays. The proposed concept plan illustrates 31 formal on-street bays (within the realigned drive-through area) and effective elimination of the informal verge parking within the railway reserve.

Additional works between the northern boundary of the existing Railway Street plan and the Grant Street intersection will be addressed as Stage 2 of the project.

Based upon the results of this review going forward, a series of recommended actions have been outlined in an Action Plan documented in Appendix C. The tentative Action Plan options have been prioritised with regard to short-term (0-6 months), transition (6 months-2 years) and long-term (2+ years) timeframes and grouped by the 4 E's – Economic, Engineering, Effectiveness and Equity. Progression of Action Plan, subject to outcomes from the public consultation process.

2. INTRODUCTION

2.1 OVERVIEW AND INTRODUCTION

This Revised Traffic Engineering and Safety Review and Travel Management/Action Plan has been prepared by Move Consultants on behalf of the Town of Cottesloe with regard to the existing North Cottesloe Primary School, located at the north-east corner of Eric Street and Railway Street, North Cottesloe in the Town of Cottesloe. A meeting with the Town's Traffic and Safety Committee on 6 February 2019 to discuss the outcomes of the review resulted in a series of recommendations to progress the project. A subsequent meeting on 25 February to present and discuss the revised concept resulted in These included the following:

- Endorsement of the plan subject to the realignment of the western footpath adjacent to the eastern edge of the railway reserve to minimise impacts on existing vegetation with indicative connection of the existing footpath from Eric Street to Grant Street;
- Endorsement of a plan to proceed to formal public consultation and the preparation of a survey/questionnaire to be circulated to the Town's Traffic and Safety Committee.
- Endorsement of intent to engage with Main Roads WA to lower the speed limit to a permanent all-day 40kph between Eric Street and Grant Street; subject to the results of public consultation;
- A site-specific Tree Assessment report to identify trees of significance;
- Update of the Project Delivery Plan to include funding opportunities and a revised delivery timeframe; and
- Endorsement of consideration of preparing a brief for Stage 2 works to be undertaken as a separate project covering the section of Railway Road from the northern boundary of the existing project to the Grant Street intersection.

It is our understanding that the Town of Cottesloe is reviewing the updated plan to upgrade the existing car parking and pick-up/drop-off arrangements associated with the activities of North Cottesloe Primary School within the Railway Street Road reservation located along the western boundary of the school. An indicative plan has been prepared to relocate the existing angle parking located abutting the eastern edge of the railway reserve to the east within a widened road space and immediately adjacent to the school and to relocate the single carriageway to abut the eastern edge of the railway reserve. The proposal also indicates the relocation of the existing at-grade pedestrian crossing from the school further to the north between the relocated angle parking bays as well as additional on-street car parking in the form of parallel bays adjacent to the western edge of the school. A central one-way southbound aisle will separate the angle parking and the parallel parking adjacent to the school with entry via the northern edge and exit via the southern edge.

A detailed Traffic Engineering Review and safety review of the draft proposal for Railway Parade has been undertaken as well as the history associated with infrastructure upgrades on the local road network adjacent to and in the vicinity of the school and the impacts which these upgrades would have on peak school traffic operations. Key tasks have included the following:

- Collection of travel demand data during the school a.m. (8:00 to 9:00 a.m.) and p.m. (2:30 to 3:30 p.m.) peak periods inclusive of vehicular traffic and non-motorised modes.
- Liaison with the School Leadership team and Town staff to quantify staff and student numbers as well as to collect anecdotal information relating to staff car parking and travel demands.

Client Name: Town of Cottesloe
Project Name: North Cottesloe Primary School

September 2019

- A review of the draft proposal for modifications to Railway Parade with regard to established traffic engineering and 'best practice' standards.
- A review of existing traffic operations on Eric Street and Railway Parade as well as at the signalised intersections of Eric Street/Stirling Highway and Eric Street/Curtin Avenue to identify any potential to modify signal timing to allow for more efficient traffic dispersion and safe operations along Eric Street and Railway Parade during school peak periods.
- Review of the existing speed limits on both Eric Street and Railway Parade and to identify the potential and process to modify these speed limits, if warranted.
- A review of existing 'desire lines' for school-based vehicular traffic as well as pedestrian and cycling movements in the area.
- A brief safety review of the draft proposal inclusive of consideration of sightlines for exiting and entering traffic, expected impacts to the boundary road network, potential conflict points and crash history/impact to risk profile; identification of improvements/modifications to the proposal, where relevant, where required.
- Review of the existing signal cycle and optimisation of Stirling Highway/Eric Street and Curtin Avenue/Eric Street as well as the traffic operations at this location with regard to queuing northbound on Eric Street at Curtin Avenue and the capacity of existing right-turning movements, southbound queuing at Stirling Highway on Eric Street and overall capacity to allow for more throughput on the minor priority movements.
- Review of existing posted speed limits on both Eric Street and Railway Street in the context of MRWA guidelines and policy in consultation with Council.
- A review of impacts on all road users inclusive of pedestrians, cyclists, public transport users, ride share and taxi patrons and private motor vehicles will be considered as part of the assessment with regard to safety, equity of access, efficiency and wayfinding in the context of the proposed plan.
- Any recommended modifications or options relating to the proposed concept plan will be outlined in an Action Plan. These options will be prioritised with regard to short-, transition- and long-term timeframes and grouped by the 4 E's – Economic, Engineering, Effectiveness and Equity.

2.2 SITE LOCATION

North Cottesloe Primary School is located at the north-east corner of Eric Street/Railway Street, North Cottesloe in the Town of Cottesloe. It is served by two crossovers to the north side of Eric Street, east of the roundabout intersection with Railway Street. The westernmost crossover provides inbound only direct access into an informal unsealed staff parking area to the west of the crossover and to additional angle parking to the east of this crossover located within the Eric Street road reserve along the southern boundary of the school. The easternmost crossover is an exit-only crossover. Additional parallel parking is located along the southern edge of the school fence line north of the existing east-west pick-up/drop-off area with this area functioning as eastbound only. Additional on-street car parking is available within the public road reserve on Railway Street along the western boundary of the school.

Figure 1 shows the locational context of the primary school.

Client Name: Town of Cottesloe
Project Name: North Cottesloe Primary School

September 2019



Figure 1: Site Location

The detailed area context is shown in Figure 2. Figure 3 shows the existing crossover and pick-up/drop-off arrangements including the Railway Street on-street and verge car parking.

Client Name: Town of Cottesloe
Project Name: North Cottesloe Primary School

September 2019

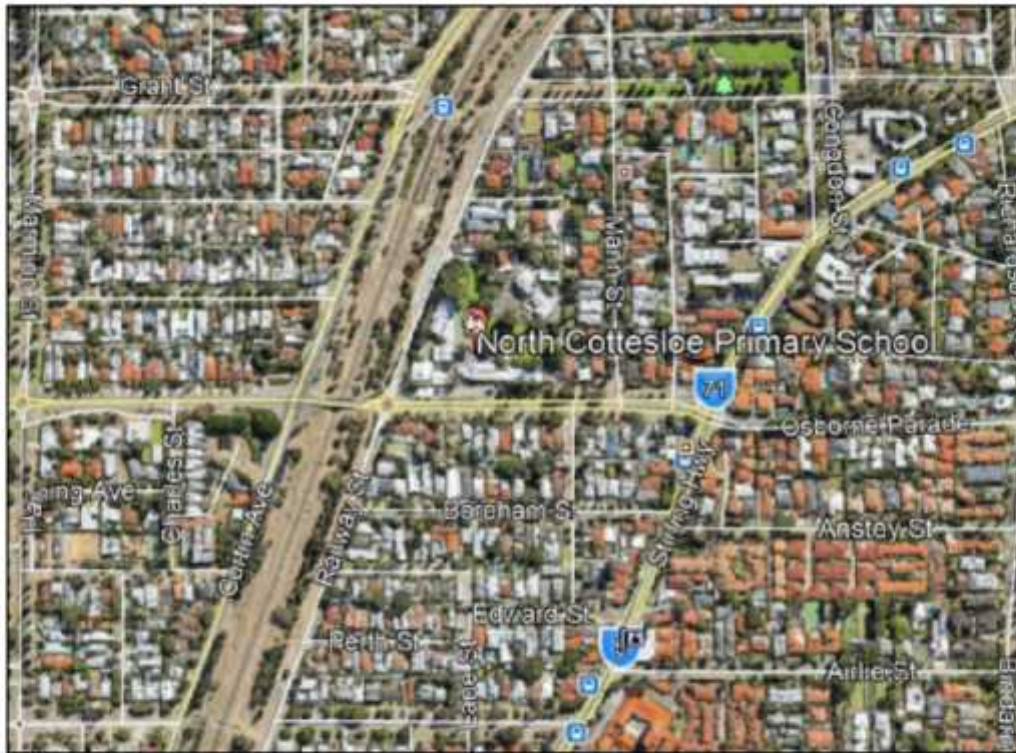


Figure 2: Aerial Context

Client Name: Town of Cottesloe
 Project Name: North Cottesloe Primary School

September 2019



Figure 3: Overview of Existing Crossover and Parking Arrangements

3. EXISTING SITUATION

3.1 ROAD INFRASTRUCTURE

Stirling Highway, to the east of the site, is a primary north-south connecting road serving a broad catchment of users between Fremantle to the south-west and the Perth CBD and Kwinana and Mitchell Freeways to the north and east as well as other major activity nodes, such as the Claremont Town Centre, the QE2 Precinct, the University the Western Australia and provides connections to Winthrop Avenue and Loftus Street. The school is located approximately 250m due west of the signalised intersection of Stirling Highway/Eric Street. Stirling Highway has been classified as a *Primary Distributor* road, under the Main Roads Western Australia Functional Road Hierarchy, and has been defined as "...[providing] for major regional and inter-regional traffic movement and carry large volumes of generally fast-moving traffic with some roads [designated] as strategic freight routes, with all designated as National or State roads and managed by Main Roads". It operates under a posted speed limit of 60kph and

MC_North Cottesloe_V5_090919

7

Move Consultants

Client Name: Town of Cottesloe
Project Name: North Cottesloe Primary School

September 2019

operates under the jurisdiction of Main Roads WA. It has been constructed as a dual undivided carriageway to the north and south of the signalised intersection with Eric Street and provides the primary access into the Perth CBD for the western suburbs.

Curtin Avenue, to the west of the site and running parallel to the western edge of the railway reserve, is a primary north-south road link connecting North Fremantle with West Coast Highway in Swanbourne to the north. It has been defined as a *District Distributor A* road, east of Railway Street, which is defined as a road "...carries traffic between industrial, commercial and residential areas and generally connect to Primary Distributors. These roads are likely to be truck routes and provide only limited access to adjoining property. They are managed by Local Government." It operates under a posted speed limit of 60kph and is owned, operated and maintained by the Town of Cottesloe. It has been constructed as a dual divided carriageway north of Eric Street.

Eric Street, along the southern boundary of the school, provides direct vehicular access into the school via two crossovers located on the north side between the intersections with Railway Street and Gordon Street. west of the site, has been defined been classified as a *District Distributor A* road, east of Railway Street, which is defined as a road "...carries traffic between industrial, commercial and residential areas and generally connect to Primary Distributors. These roads are likely to be truck routes and provide only limited access to adjoining property. They are managed by Local Government." It operates under a posted speed limit of 50kph with school speed zoning in place between Gordon Street to just north of Railway Street of 40kph on school days between 7:30 a.m. and 9:00 a.m. and 2:30 p.m. and 4:00 p.m. It has been constructed as a single undivided carriageway with a flush central painted median with a small section just to the east of the existing eastern exit-only crossover on the north side of Eric Street configured as a 'chicane' or 'slow point' to manage traffic speeds in the vicinity of the school. A limited amount of on-street parallel parking is in place on the south side of Eric Street opposite the school in the form of 2 to 3 bays.

Railway Street, along the western boundary of the site and running parallel to the eastern edge of the railway reserve, provides direct pedestrian and cycling access to the school and a link to Eric Street for vehicles wishing to either park on the site and/or undertake pick-up/drop-off activities during peak periods. It functions as an alternative de facto north-south reliever route between the Claremont Town Centre and the Town of Cottesloe to the south of the site as well as providing direct access to abutting properties on its eastern side and access to the Grant Street Railway Station located approximately 150m north of the school. Formalised angle parking is in place on the western side of Railway Street, north of Eric Street, in the form of 2-hour marked bays to minimise long-term or commuter parking at this location. Observations indicate that some vehicles park on the south-western verge of Railway Street opposite the school during peak periods. Railway Street has been classified as a *Local Distributor* road which has been defined as a road which "...carries traffic within a cell and link District Distributors at the boundary to access roads. The route of the Local Distributor discourages through traffic so that the cell formed by the grid of District Distributors only carries traffic belonging to or serving the area. These roads should accommodate buses but discourage trucks and are managed by Local Government." It operates under a posted speed limit of 50kph with school speed zoning in place between Greenham Street and just north of Boreham Street, south of Eric Street. of 40kph on school days between 7:30 a.m. and 9:00 a.m. and 2:30 p.m. and 4:00 p.m.

Figure 4 shows the functional road hierarchy in the vicinity of the site.

Client Name: Town of Cottesloe
 Project Name: North Cottesloe Primary School

September 2019



Figure 4: MRWA Functional Road Hierarchy

The following traffic controls are in place at the nearby intersections on the adjacent boundary road network:

- Eric Street/Curtin Avenue – 4-way signalisation
- Eric Street/Railway Street – single circulating 4-way roundabout
- Eric Street/Stirling Highway – 4-way signalisation
- Railway Street/Greenham Street – Give Way control on Greenham Street approach
- Eric Street/Gordon Street – Give Way control on Gordon Street approach
- Eric Street/Mann Street – Give Way control on Mann Street

Several detailed site visits were conducted in October and November 2018 to meet with staff and to conduct on-site observations relating to existing road geometry, speed limits, and sightlines and to observe existing traffic operations on the adjacent boundary road network.

Existing traffic volumes were obtained via Main Roads WA and the Town of Cottesloe as well as speed data and vehicle classification data for the major roads in the area. Table 1 outlines this data.

Client Name: Town of Cottesloe
 Project Name: North Cottesloe Primary School

September 2019

Table 1: Existing Traffic and Speed Zoning Data

Road Link	Daily Traffic Volume (vpd)	Speed Limit	Percentage Operating Over Speed Limit (%)
Stirling Highway at Eric Street	35,000 vpd (MRWA 2017/18)	60kph	N/A
Curtin Avenue (north of Eric Street)	25,200 vpd (MRWA 2017/18)	60kph	N/A
Curtin Avenue (south of Eric Street)	21,000 vpd (MRWA 2017/18)	60kph	N/A
Eric Street (West of Stirling Highway)	9,000 vpd (MRWA 2017/18)	50kph	N/A
Eric Street (Railway Street to North Cottesloe Primary School/Greenham Parade)	8,000 vpd (Town of Cottesloe 2018)	50kph	<2%
Railway Street (West of Eric Street)	5,200 vpd (MRWA 2014/15)	50kph	N/A
Railway Parade (East of Eric Street)	2,100 vpd (Town of Cottesloe 2018)	50kph	>50%

3.2 PUBLIC TRANSPORT, PEDESTRIAN, AND CYCLISTST FACILITIES

The subject site is served by high frequency bus services, including the Circle Bus Routes 999 and 998, along Stirling Highway which is within a 5-minute walking distance from the school as well as frequent railway service via Grant Street Railway Station located immediately to the north-west of the school.

High quality pedestrian and cycling facilities are in place adjacent to and in close proximity to the school including on-road cycle lanes on Eric Street along the southern boundary of the school and on Curtin Avenue to the west of

Client Name: Town of Cottesloe
 Project Name: North Cottesloe Primary School

September 2019

the site. Railway Street, along the western boundary of the school, has been designated as a *Bicycle Boulevard* within the *Perth Bicycle Network* with Eric Street also signed as a *Continuous Route (NW 16)* in the *PBN*. Footpaths are in place on both sides of Eric Street with the footpath on the north side located on the northern edge of the existing road reservation immediately adjacent to the southern fence line abutting the pick-up/drop-off area. There is also a footpath on the eastern side of Railway Street adjacent to the western boundary of the school with pedestrian crossings in place on Railway Street, north of Eric Street, providing direct access east of the railway line into the western section of the school. A formalised pedestrian crossing is also in place on Eric Street, east of Railway Street, through the established LATM or 'slow point' to facilitate safe refuge for pedestrians and cyclists to travel across Eric Street during peak periods.

Figure 6 shows the existing pedestrian and cycling infrastructure with Figure 6 showing the existing pedestrian crossings.



Figure 5: Existing Pedestrian and Cycling Infrastructure

Client Name: Town of Cottesloe
Project Name: North Cottesloe Primary School

September 2019



Figure 6: Existing Pedestrian Crossings

4. OVERVIEW OF NORTH COTTESLOE PRIMARY SCHOOL

North Cottesloe Primary School caters to approximately 400+ students and primarily operates out of the main location at Eric Street/Railway Parade. There is an off-site Early Childhood Learning Centre which eventually may be incorporated into the main school campus, but this is a long-term proposition and has not been considered as part of this assessment.

Primary vehicular access to the school is afforded via two crossovers on the north side of Eric Street, between Gordon Street and Railway Street with the western crossover functioning as entry-only (right-turns and left-turns permitted) leading to a one-way eastern aisle within the Eric Street road reservation along the southern edge of the school bounded by angle parking on the south side of the aisle and parallel parking on the north-side. The parallel parking on the north side currently functions as the pick-up/drop-off or 'Kiss n Ride' area for the school. Vehicle

Client Name: Town of Cottesloe
Project Name: North Cottesloe Primary School

September 2019

then travel in an easterly direction to exit via the exit-only crossover (eastern crossover) to turn left or right into Eric Street. Angle parking on the southern edge of the one-way aisle can be used by parents and/or staff, however, staff parking is also provided via the western crossover within an unsealed area at the south-western corner of the school. Additional right-angle parking is located along the south-eastern boundary of the school at the eastern end of the one-way aisle and is inclusive of an ACROD bay.

No direct access for vehicles is available via Railway Street; however, pedestrian and cycling access is afforded directly into the school via a designated pedestrian crossing north of Eric Street. An additional pedestrian crossing is in place between the two crossovers on Eric Street to facilitate north-south crossing from the south side and north side via the existing 'slow point' fixed central refuge in Eric Street. There is limited parallel parking on the south side of Eric Street opposite the school.

A significant level of angle parking is in place on Railway Street north of Eric Street opposite the western edge of the school and is signed as 2-hour only in order to limit the demands of long-term and commuter parking associated with the Grant Street Railway Station.

A significant level of consultation over the last several years, since 2015, has taken place with the Council and with MRWA in relation to securing funding to modify the access and parking arrangements as well as traffic controls and signage associated with the school's traffic operations. As a result, a Strategic Community Plan was developed in order to address traffic congestion, safe access and an updated Railway Street road cross-section to relocate the existing pick-up/drop-off activities to the western frontage of the school in order to redistribute demands to the lower order road frontage. However, a funding application to assist in paying for these improvements was deferred in 2017.

5. REVISED TRAFFIC ENGINEERING REVIEW

A detailed traffic engineering review relating to boundary road network operations, safety, effectiveness, crash history and sightlines as well as existing traffic patterns adjacent to and within the school car parking and pick-up/drop-off areas has been undertaken and is outlined below. The March 2019 review has been modified to incorporate feedback and discussion received from Council and the school.

5.1 EXISTING SCHOOL TRAFFIC OPERATIONS

Detailed demand surveys were undertaken by the School's P&C in 2017 with follow-up observations undertaken by Move Consultants in 2018 relating to vehicular demands on Eric Street and Railway Street as well as demands for the existing pick-up/drop-off area along the southern edge of the school. The following summarises the results of these surveys:

- Demands within the pick-up/drop-off area were consistent between 8:00 a.m. and 9:00 a.m. with average drop-off times ranging between 30s and 1 minute.
- Average queuing of vehicles in this area was in the range of 2 to 4 vehicles at any given time with occasionally queues ranging from 5 to 7 vehicles; however, this queue would dissipate quickly with no impacts to Eric Street operations.

Client Name: Town of Cottesloe
Project Name: North Cottesloe Primary School

September 2019

- Demands within the pick-up/drop-off areas differed during the afternoon peak period varied from the morning peak period with vehicles already queuing within the pick-up/drop-off area from 2:30 p.m. onwards with the queues averaging 4 to 6 vehicles prior to 3:00 p.m. and then extending into Eric Street from 3:00 p.m. to 3:10 p.m. These queues typically dissipated by 3:20 p.m. with no material impact on Eric Street southbound traffic operations.
- Some parents were observed to be parking on-site within the angle parking due to the need to collect children directly from the school gate. There was some minor conflict observed between parking and departing vehicles from these bays with vehicles queued in the pick-up/drop-off area and mainly impacting on exiting vehicles to Eric Street. No significant traffic delays were observed at the easternmost exit-only crossover.
- A number of parents parking on the Railway Street frontage within the existing established angle parking and on the verge closer to Eric Street were observed to access the school via the western gate.
- A high proportion of parents and/or students utilised the Railway Street pedestrian crossover to access the northern catchment of residential uses north of the railway reserve.
- Some parents were observed to park further west along Railway Street and on Gordon Street and then walking to school to collect their children.
- A higher than average (>25%) proportion of students were either walked or cycled to school or made their way to school on foot or via cycling by comparison to other primary schools in Perth.
- Significant queuing downstream queuing on Eric Street both eastbound on approach to Stirling Highway and westbound on approach to the signalised intersection at Curtin Avenue caused minor delays, mainly during the a.m. peak period which is coincident with the school a.m. peak period. No queuing delays were observed during the school p.m. peak period.
- A number of inappropriate pedestrian crossing movements were noted during the school p.m. peak period along the Railway Street frontage to the north of the formal crossing.
- The majority of pedestrians crossing the Eric Street frontage did so at the formal pedestrian crossing located to the north of the eastern crossover.

5.2 REVIEW OF EXISTING OPERATIONS AT ROAD INTERSECTIONS

A detailed SIDRA analysis at the Eric Street/Curtin Avenue, Eric Street/Railway Street and Eric Street/Stirling Highway intersections was undertaken for the weekday a.m. roadway peak (coincident with the school a.m. peak period) and the school p.m. peak period. The results of the analysis are as follows:

- Significant queuing on Eric Street, along the frontage of the school, in an eastbound direction on approach to Stirling Highway between 8:00 and 9:00 a.m. This is exacerbated by the recent upgrades to signal timing and signal cycles along Stirling Highway between Mosman Park and Nedlands to assign priority to northbound/eastbound traffic along Stirling Highway. As a consequence, the split phasing at this location has reduced green time on Eric Street eastbound resulting in longer queues which occasionally extend westbound through Gordon Street and the Railway Street roundabout intersection. However, an increase in green time for Eric Street approach has been allowed for during this period with a reduction in green time allocated to the Osborne Parade approach.
- Limited queuing observed on Eric Street, along the frontage of the school, in an eastbound direction on approach to Stirling Highway between 2:30 p.m. and 3:30 p.m. which does not impact operations at the school crossovers.

Client Name: Town of Cottesloe
Project Name: North Cottesloe Primary School

September 2019

- Significant queuing westbound on Eric Street on approach to the Curtin Avenue signalised intersection; however, this rarely impacted on the eastbound approach to the western crossover at the school during the a.m. peak period with only occasional queuing observed extending beyond the roundabout at Railway Street. This intersection has also assigned priority to the north-south route (Curtin Avenue) at the expense of the Eric Street approach; however, there is scope to modify the signal cycle timing to assist in the dispersal of westbound traffic during the a.m. peak period.
- No significant queuing observed westbound on Eric Street on approach to Curtin Avenue with no impacts to traffic operations at the crossovers to Eric Street or on the roundabout intersection at Railway Street.
- The recently installed roundabout at Eric Street/Railway Street has assisted in efficient access to and from Eric Street from Railway Street and has resulted in minimal queuing on Railway Street east of Eric Street. This has also minimised conflict between westbound queuing traffic on Railway Street and the existing established pedestrian crossing on Railway Street.
- It is unlikely that MRWA will approve any changes to the existing signal timing at Stirling Highway/Eric Street/Osborne Parade intersection at this time.

6. SAFETY REVIEW

6.1 EXISTING CRASH HISTORY AND SIGHTLINES

A review of the detailed crash history for the 5-year reporting period 2013-2017 along the respective frontages of the school indicate the following:

- 7 right-angle crashes at the intersection of Eric Street/Railway Street – it is assumed that these crashes occurred prior to the upgrade of the intersection to a single circulating roundabout which would significantly mitigate future right-angle crashes at this location.
- 1 rear end crash at the intersection of Eric Street/Railway Street – this is considered to be a very low crash rate by comparison to the annual rate of traffic demand through this location.
- 3 crashes along Railway Street between Eric Street and Mann Street involving 1 relating to manoeuvring into and/or out of a private driveway and 2 relating to car parking (presumably within either the established angle bays or reversing from the verge). This would indicate that a lower speed and more urban road cross-section could be justified which would assign a level of priority to vehicles parked along this road cross-section in the context of the low volumes currently using this section of road.

A sightline analysis along Railway Street indicates that there are sufficient sightlines to the north and south in the vicinity of the existing angle parking to the north of the school to allow for modifications and upgrades to the existing parking and road cross-section arrangements in accordance with Austroads guidelines.

A similar sightline analysis along Eric Street indicates that for exiting vehicles sightlines to the west are obstructed by existing vegetation along the northern edge of the existing kerb line between the two school crossovers.

A review of the existing safety issues on-site within the established pick-up/drop-off areas within the Eric Street road reserve indicate that while one-way system is currently accommodating the existing demands, localised queuing during the school p.m. peak period both into the Eric Street eastbound lane and occasionally past the western crossover and conflict between vehicles entering and exiting the angle parking south of the eastbound-

only aisle and through traffic within the pick-up/drop-off zone could potentially impact safe vehicle operations in this area as well as impacting efficient and effective ingress and egress to and from the school. No conflict between staff car parking within the unsealed area at the south-western corner of the school and other demands on the site were noted during the school a.m. and p.m. peak periods.

6.2 SPEED LIMIT ZONING

A review of the speed limit zoning on Eric Street and Railway Street indicates the following:

- Compliance with signed speed limits (both within and outside school travel times) on Eric Street is very high with less than 2% of vehicles travelling beyond the posted speed limit of 50kph, and 69% travelling between 30 and 40kph. This would also indicate a high compliance with school speed zoning.
- Compliance with signed speed limits on Railway Street is very low with >30% travelling greater than the posted speed limit of 50kph and only 15% travelling at a speed ranging between 30 and 40kph. The significantly lower traffic volumes on Railway Street by comparison to Eric Street with a significant proportion of daily weekday traffic associated with the school indicates that this non-compliance is a significant issue within the school speed zoning.

7. REVIEW OF PROPOSED PLAN

A review of the original proposed plan and subsequent revised plan(s) to upgrade and modify the existing road cross-section of Railway Street, north of Eric Street, was undertaken and the following summaries our review:

- The proposal to relocate the existing pick-up/drop-off activities associated with the school to the Railway Street frontage is supported from a traffic operations, safety and efficiency perspective. This will result in less conflict at the existing crossovers to Eric Street and minimise impacts to existing boundary road traffic operations between Curtin Avenue and Stirling Highway and will allow for increased safe ingress and egress for parents to access the higher order network, particularly north of the school via the fully controlled roundabout at Eric Street/Railway Street.
- There will be an increase in traffic along the Railway Street frontage (in the order of 200 to 300 vpd) due to redistribution of pick-up/drop-off traffic; however, this can be accommodated within the practical capacity of the road classification and the proposed road cross-section and potentially some minor redistribution in traffic associated with the school on the higher order roads in the area (i.e. Grant Street East and Stirling Highway) but these increases can be comfortably accommodated within the existing network operations.
- The upgrading and modification of the road cross-section of Railway Street to effectively separate through traffic from pick-up/drop-off traffic through realignment of the through carriageway to the western edge of the road reserve abutting the railway line will still allow for efficient north-south movement along the western boundary of the school for existing traffic demands.
- The proposed southbound one-way system within the new pick-up/drop-off area will allow for minimal conflict between through traffic on Railway Street and queuing vehicles entering the pick-up/drop-off area due to the increase in the number of parallel bays in the pick-up/drop-off area along the western edge of the school. This increase in parallel bays within the 'Kiss n Ride' area will satisfactorily accommodate the demands associated with the existing a.m. and p.m. peak periods.

Client Name: Town of Cottesloe
Project Name: North Cottesloe Primary School

September 2019

- The provision of additional angle parking within this dedicated area will supplement the overall car parking supply for the school with the existing angle parking located along the Eric Street frontage reallocated to either staff and/or visitors to the school or dedicated to parents of Kindy and Pre-Primary children.
- The additional proposed pedestrian crossing to the north of the school on Railway Street will assist in facilitating safe additional crossings which are now undertaken inappropriately north of the existing established crossing to the south. This crossing will require MRWA approval.
- The implementation of LATM or 'slow points' along the Railway Street frontage to encourage awareness of other road users, namely pedestrian, cyclists and school parents/caregivers entering and exiting the relocated pick-up/drop-off area will hopefully induce a degree of 'horizontal' friction to encourage lower travelling speeds.
- An application for a change in speed zoning to a permanent 40kph on Railway Street between Grant Street and Eric Street is recommended. This will need to be negotiated with MRWA.
- No other changes to speed zoning are justified.
- All changes to signage and line marking within Railway Street, Eric Street, inclusive of the future Kindy & Pre-Primary parking area, and other road frontages will require the approval of MRWA.

Following the Town's Traffic and Safety Committee meeting of 6 February 2019, the committee requested some modifications to the plan prior to release for public consultation and advertising. The modified concept plan incorporating a realignment of the western footpath adjacent to the eastern edge of the railway reserve along Railway Road has been undertaken and is reflected in the modified plan attached in Appendix B.

The proposed plan has also resulted in a significant change to existing formal and informal public car parking along the Railway Road frontage. The existing formal on-street supply consists of 24 bays plus an informal supply within the railway verge of approximately 10-15 bays. The proposed concept plan illustrates 31 formal on-street bays (within the realigned drive-through area) and effective elimination of the informal verge parking within the railway reserve.

8. INFRASTRUCTURE ACTION PLAN

- Based upon the results of this review, a series of recommended actions have been outlined in an Action Plan documented in Appendix C. This Action Plan (draft) options have been prioritised with regard to short-term (0-6 months), transition (6 months-2 years) and long-term (2+ years) timeframes and grouped by the 4 E's – Economic, Engineering, Effectiveness and Equity.
- Additional works between the northern boundary of the existing Railway Street plan and the Grant Street intersection will be addressed as Stage 2 of the project.
- Progression of Action Plan, subject to outcomes from the public consultation process.

Client Name: Town of Cottesloe
Project Name: North Cottesloe Primary School

September 2019

APPENDIX A: PROPOSED PLAN FOR RAILWAY PARADE (MODIFIED)

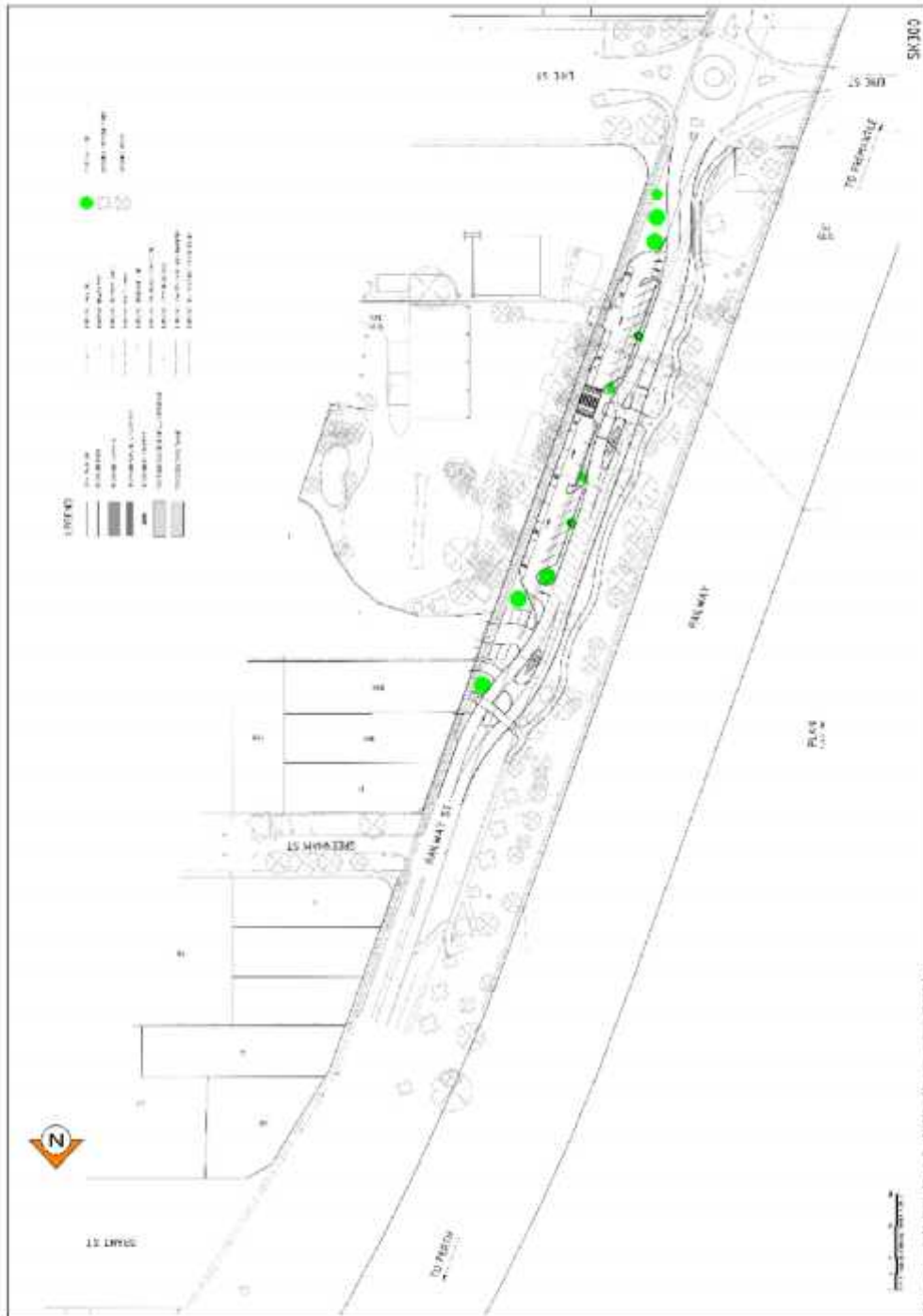
Client Name: Town of Cottesloe
Project Name: North Cottesloe Primary School

September 2019



Client Name: Town of Cottesloe
Project Name: North Cottesloe Primary School

September 2019



Client Name: Town of Cottesloe
Project Name: North Cottesloe Primary School

September 2019



Client Name: Town of Cottesloe
Project Name: North Cottesloe Primary School

September 2019



Client Name: Town of Cottesloe
Project Name: North Cottesloe Primary School

September 2019

APPENDIX B: INDICATIVE INFRASTRUCTURE ACTION PLAN

Client Name: Town of Cottesloe
 Project Name: North Cottesloe Primary School

September 2019

EFFECTIVENESS		SHORT TERM	TRANSITION TERM	LONG TERM
1.	On-going Monitoring of School-Based Travel Management Plan	APPROVE	ONGOING IMPLEMENTATION	
2.	Ongoing Engagement with Community re Alternative Travel Modes to School		ONGOING	
3.	Engagement with Road Safety Council and Department of Education and Training		ONGOING	
4.	Review of Existing On-Street Parking Arrangements on Railway Street	EVALUATE		
5.	Ongoing Engagement with MRWA	ONGOING		
ENGINEERING		SHORT TERM	TRANSITION TERM	LONG TERM
1.	Review of Infrastructure Opportunities & Constraints on Eric Street and Railway Street	PLAN		
2.	Finalise Options for Railway Street Upgrade		EVALUATE PLAN	
3.	Community Consultation		EVALUATE	
4.	Liaise with MRWA re Changes to Speed Zoning, Line Marking, Signage and Traffic Control Measures		EVALUATE	
5.	Prepare Council Engineering Report	PLAN		
6.	Road Safety Audit	UNDERTAKE		
7.	Undertake Upgrades		IMPLEMENT	
ECONOMIC		SHORT TERM	TRANSITION TERM	LONG TERM
1.	Cost Up to Two (2) Alternative Options	PLAN		
2.	Prepare Council Report Outlining Funding Options	UNDERTAKE		
3.	Seek Funding from MRWA and/or Grant Process		PLAN	
EQUITY		SHORT TERM	TRANSITION TERM	LONG TERM
1.	Community Consultation & Liaison with School Leadership Team	ONGOING		
2.	Preparation of School-Based Travel Management Plan (Short-Term)	DEVELOP/IMPLEMENT/MONITOR		
3.	Preparation of School-Based Travel Management Plan (Long-Term post Works)			IMPLEMENT
4.	Secure Approval for Additional Pedestrian Crossing on Railway Street	EVALUATE	PLAN	