Form 9 - Application for Resource Consent
Under Section 88, Resource Management Act 1991

To **Christchurch City Council**

1. **St Andrew's College Board of Governors** applies for a Land Use Consent as described below.

   Consent is sought to remove 6 trees and 7 shrubs located within a garden bed in legal road and to enable excavation within the required 5m setback from street trees to provide for an extension of the College's off-street drop-off zone. The extension of the drop-off zone will increase the usage of the College's western most vehicle access. A waiting shelter is proposed to be established which will be within the 10m road boundary setback. Plans showing the proposed works are contained in Appendix A, and which should be read as part of this application.

   Full details of the proposed activity are contained in the attached Assessment of Environmental Effects.

2. The **site** at which the proposed activity is to occur is as follows:

Street Address:	347 Papanui Road
Legal Description:	Pt RS 299 and Lots 1-2 DP 11943
Computer Freehold Register:	26F/267 and CB469/203
Total Land Area:	10.77349ha

3. There are no other activities that are part of the proposal to which this application relates.

4. **Additional resource consents** will be required in relation to this proposal:

   Licence to occupy the road

5. Attached, is an assessment of the proposed activity's effect on the environment that –

   (a) includes the information required by clause 6 of Schedule 4 of the Resource Management Act 1991; and

   (b) addresses the matters specified in clause 7 of Schedule 4 of the Resource Management Act 1991; and

   (c) includes such detail as corresponds with the scale and significance of the effects that the activity may have on the environment.

6. Attached is an assessment of the proposed activity against the matters set out in Part 2 of the Resource Management Act 1991.

7. Attached is an assessment of the proposed activity against any relevant provisions of a document referred to in section 104(1)(b) of the Resource Management Act 1991, including the information required by clause 2(2) of Schedule 4 of that Act.

DATED: 12 September 2018 .....

(Signature of applicant or person authorised to sign on behalf)

Title and address for service:	Address for applicant **and for all Council fees**:
St Andrew's College Board of Governors C/- Davie, Lovell-Smith P O Box 679 CHRISTCHURCH 8140 Attention: Julie Comfort Phone (03) 379 0793 Email: julie.comfort@dls.co.nz	St Andrew's College Board of Governors 347 Papanui Road Christchurch Attention Mr David Evans Email: dev@stac.school.nz

Table of Contents

Appendices

St Andrew's College Board of Governors – Normans Road Drop-Off Extension Assessment of Effects on the Environment

1. Introduction

Section 88(2)(b) of the Resource Management Act 1991 requires that any application for a resource consent should include an assessment of any actual or potential effects that the activity may have on the environment and the ways in which any adverse effects may be mitigated. Section 88(2)(b) requires that any assessment shall be in such detail as corresponds with the scale and significance of the actual or potential effects that the activity may have on the environment and shall be prepared in accordance with the Fourth Schedule to the Resource Management Act 1991. This assessment is made in accordance with those requirements.

2. Description of the Proposal

2.1 Background Information

St Andrew's College contains an off-street drop off area to enable students to be safely dropped off and picked up from school. A P5 parking area is provided on the street adjoining the drop off location. As a result, the buses that drop students off at the College have to compete with parents for the P5 parking area, and often end up having to double park to drop-off or pick-up students. The College considers that this is unsatisfactory, and has been in discussion with Council transportation staff regarding this matter.

The end result of the many discussions with Council staff, including two site visits, is that the 5m parking area is to be swapped to a bus park for the morning drop-off and afternoon pick-ups. To maintain the number of drop-off spaces, the College has decided to extend the existing drop-off area along the front of the site. This area is located mostly within the College's grounds however some work required to be undertaken is within legal road and necessitates the removal of 6 trees and 7 shrubs that are within a garden bed that is located within legal road. This work also enables a specific pedestrian entrance to be established immediately adjoining the kea crossing which will provide direct access into the College and also provides a larger gathering space for students waiting to cross the road at the end of each day.

As a result, consent is required for the removal of these street trees, to undertaken earthworks within 5m of other street trees, and to increase the traffic usage of the western most vehicle access on Normans Road.

The garden bed is surrounded by a raised concrete edging and a fence on the roadside. From examining historical aerials, the raised garden bed including the trees and shrubs and fencing appear to have been installed at the same time as the kerb extension and crossing were installed. This would appear to have occurred sometime between 1985 and 1992. Unfortunately, no records have been located to confirm this, as such it is unclear whether these structures were approved to be within legal road.

2.2 Proposal

Landuse consent is sought for the following activities:

- To remove 4 *Robinia psuedoacacia* that are over 6m in height, 2 Cherry trees and 7 shrubs (1 rhododendron and 6 camellias) from a planted area located within legal road; and
- To undertake earthworks associated with the construction of a vehicle drop-off area within 5m of the trunk of the remaining street trees.
- To increase the vehicle usage of the College's western-most vehicle access on Normans Road.
- To construct shelter for students that is located 8.575 meters back from the road boundary, inside the permitted 10m road boundary setback. The design for the shelter can be seen in plan LP-06 in Appendix A.

All work is to be undertaken in accordance with the plans and reports contained in Appendices A, B and D attached to this application, and which should be read as part of this application.

In addition to the above work, the College seeks the Council's permission under their Policy on Structures on Road (updated 2016), to enable raised garden bed and fencing to be retained, and the appropriate Structure on Street form is attached in Appendix F.

3. Description of the Environment

3.1 The Site

The property involved is located at 347 Papanui Road, at the intersection with Normans Road. The specific area of the site that is subject to this application is located near Normans Road, between the road and the main grounds of the College. The property is legally described as Pt RS 299 and Lots 1-2 DP 11943 and has a total site area of approximately 10.77 hectares. The property is held in Certificate of Title 26F/26 and CB469/203 respectively (Appendix F).

The application site is zoned Special Purpose School within the District Plan. The property contains a listed Heritage Building and Setting (Strowan House), and several protected trees located around St Albans Creek and the Normans Road and Papanui Road frontages.

3.2 Surrounding Environment

St Andrew's College sits at the intersection of Normans Road and Papanui Road. The surrounding environment consists primarily of residential activities to the north, east and west of the College. To the south of the College is a mix of residential properties and Heaton Intermediate School.

Aerial image showing the application site
Source: Google Earth, aerial from 2 October 2017

4. Consideration of Alternatives

The following assessment of effects indicates that the proposal will not have any significant adverse effects on the environment. Therefore an assessment of alternatives is not required.

5. Christchurch District Plan

The application site is contained within Special Purpose School Zone in the District Plan. The wider College site contains Heritage Item #434 (Strowan House) and its Heritage Setting #436, 36 individually listed Significant Trees, an environmental asset waterway (St Albans Creek) and is also subject to the Flood Management Area and Liquefaction Management Area overlays.

The specific part of the site in Normans Road that is subject to this application is located outside of the heritage setting and flood management area overlay and is not near the waterway.

Chapter 7 - Transport

Consent is required under Transport Rule 7.4.2.3 RD1, as the proposal is considered to be a high-traffic generator and the existing accesses have a non-compliant queuing space. Please see section 6 of the Abley Integrated Transport Assessment in Appendix C for a full compliance assessment.

Chapter 9.4 Natural and Cultural Heritage – Significant and Other Trees

Rule 9.4.4.1.1 P6 permits the felling of trees within road corridors if the *work being undertaken by, or under the supervision of, a works arborist employed or contracted by the Council or a network utility operator*, and the trees are not greater than 6m.

Rule 9.4.4.1.1 P12 permits the excavation of land within the road reserve within 5m of a street tree on the condition that the excavation is being *undertaken by, or under the supervision of, a works arborist employed or contracted by the Council or a network utility operator*.

As the *Robinias* are over 6m, and whilst the removal of the trees and associated earthworks the works will be supervised by an arborist, the works will be undertaken by the Council or a network utility operator. As such consent is required under Rules 9.4.4.1.3 RD4 and RD8.

Chapter 13.6 Specific Purpose (School) Zone

Built Form standard 13.6.4.2.3(i) requires that all buildings on the College's site are setback 10m from the road boundary. Part of the canopy of the proposed shelter intrudes into this setback by 1.425m. As such the canopy requires consent under Rule 13.6.4.1.3 RD3.

6. Assessment of Actual or Potential Effects on the Environment

6.1 Tree Removal and Associated Earthworks

The District Plan sets out in Rules 9.4.4.1.3 RD4 and RD8 the matters that Council has restricted its discretion to those matters relevant within Clauses 8.9.4.1, 8.9.4.3 and 9.4.6. The following assessment takes into account those matters that are relevant to this proposal.

The trees to be removed are 4 *Robinias psuedoacacia* and 2 flowering cherry trees, together with 7 shrubs. These plants sit within a garden bed located within legal road that is thought to have been established as part of on-street works some 20-25 years ago. The existing planted area can be seen in the visualisation shown on plan LP-05 in Appendix A. This shows the College's street front along this portion of Normans Road. The garden bed sits within a raised edging as shown in the photographs in Appendix C. This edging is backed along the road side by a wooden paling fence as shown in the visualisation. The garden bed is heavily planted as is evident from the landscape plans showing the existing planting. The result of this is that many of the trees are over-crowned with little of opportunity for full tree growth.

An Arborist's assessment of the trees within the garden bed has been undertaken and their report is contained in Appendix B. This report identifies that the two cherry trees have poor to very poor health and structure and that their removal is appropriate. Given their poor health, it is understood that the removal of these two cherry trees is supported by Council staff.

The 4 *Robinias* that are proposed to be removed are over 6m in height. These trees are planted closely together, and whilst their health and structure has been assessed as "fair", their removal is considered appropriate in these circumstances. *Robinia psuedoacacia* is not considered to be a desirable species, and it is noted that this species is contained in the Inappropriate Trees and Shrub list in the Council's Infrastructure Design Guide.

Tree 18 (one of the *Robinias)* is located between a substantial Norway Maple and a large cherry tree, both of which are considered to have more value from an aesthetic and amenity perspective than the *Robinia*. The removal of this tree will enable these two adjoining trees are able to grow uninhibited, ensuring their long-term survival.

In terms of the three remaining *Robinia*, they are being removed to provide for direct access into the College from the kea crossing, via a new 5.5m wide pedestrian entrance. This enables a clear, wide and safe path into the College for students. In addition the removal of these *Robinia* and the under-planted camellias in this area will enable the proposal to provide a larger area for students waiting to cross, which is a significant improvement on the existing situation. The improved safety outcomes for students provided for as part of this proposal and the improved on-street traffic management that will arise from the extension of the drop-off area are considered to outweigh any potential value that may be attributed to the trees that are to be removed.

To compensate for the removal of the trees, the College is proposing to plant a new Japanese Maple to the east of the new pedestrian entrance. This species has been chosen to complement the existing trees along the College's Normans Road frontage and this same species is also found within many of the residential gardens along the Normans Road to the west of the College.

To assist in assessing the potential impact of the removal of the identified trees and planting of the replacement tree on the character and amenity of the neighbourhood a visualisation has been prepared by the Jasmax are shown on plan LP-05 in Appendix A. The first photomontage shows the existing Normans Road frontage within the application area and the existing paling fence. The *Robinias* that are to be removed are also identified. As is clear from this photomontage, the existing trees and plants and fencing provide a high level of on-street amenity to both passers-by and local residents. The second photomontage visualisation shows the same frontage with the *Robinias* having been removed with the new pedestrian entrance into the College and the new planting proposed being a Japanese Maple (within legal road) and a new Cherry tree (within the College's site). This photomontage shows that the proposed removal of the *Robinias*, whilst removing some height, does not result in adverse impacts in terms of the character or amenity of this portion of Normans Road, as this essentially remains the same. It is therefore considered that the removal of the *Robinias* and other shrubs will not have any adverse effect on the amenity or character of the street. It is understood that this is also the preliminary view of Council staff.

All excavation work associated with the construction of the drop-off area and associated civil works that is within the identified drip line of the remaining street trees is to be undertaken in accordance with the *Tree Management Plan* contained in Arborists report in Appendix C. It is noted that with the retention of the raised garden beds that disturbance of the root areas of the street trees will be kept to a minimum. With these measures set out in the *Tree Management Plan* in place it is considered that the proposed works will have minimal impact on the remaining street trees.

The works will be undertaken to ensure that there is minimal disruption beyond the boundaries of the site, with access to the trees for removal occurring from within the College's grounds. The works will also be managed in accordance with best practice with regards to dust and sediment control. It is considered that the civil works to provide for the drop-off extension is unlikely to have an adverse effect on the environment.

6.2 Transport Matters

The extension of the drop-off area within the College's grounds results in an increase in vehicle usage of the existing western vehicle entrance nearest the Prep School. An Integrated Transport Assessment of the proposal has been undertaken by Abley for the College, and is contained in Appendix D. This report should be read as part of this Assessment.

The Abley report sets out the traffic aspects of the proposal, which involve a series of minor changes to the existing parking layout and the reconfiguration necessary to provide for the drop-off extension. The report notes that the parking located on the road side of the drop-off extension is to be allocated to staff, and this is identified as such on plan LP-03 in Appendix A.

The Abley report notes that whilst the proposed extension of the drop-off area will increase the vehicle usage of the western entrance, this is a redistribution of existing traffic from the existing drop-off exit, and as such is not an increase in the overall traffic generated by the College.

The Abley report considers the safety, efficient and accessibility aspects of the proposed changes. The overall proposal, which includes the changes to the short-term parking area to provide for bus parking, is considered to result in improvements to the existing traffic environment. Abley conclude by stating:

> *As the proposal is not anticipated to negatively impact safety efficiency or accessibility, there are no transport reasons why consent should not be granted.*

Given this conclusions, it is considered that this proposal will have no adverse effect on the traffic environment of Normans Road.

6.3 Shelter within Road Boundary Setback

A shelter for students waiting for to be picked up by parents or buses is proposed be established on the College side of the new drop-off area in front of the old Preschool building, which is now occupied by the College's uniform shop. The design of the shelter is shown in plan LP-06 in Appendix A, and is essentially a canopy roof over a seating area. Approximately 1.4m of the shelter's roof is located within the road boundary setback.

The shelter will not be visually dominant form the street as it will be viewed against an existing building and through the existing landscaping provided for between the drop-off area and the road. The site of the shelter was chosen to ensure that it sits close to the drop-off and bus stop and sits behind established trees along this frontage. Given the design, the limited intrusion and the location of the location of the shelter it is considered that the shelter will have no adverse visual impact on properties opposite the site or on the on-street amenity. On-street traffic safety is unlikely to be comprised by this shelter, and the proposed works are designed to improve the traffic safety of this section of Normans Road. Overall, it is considered that the shelter in the location shown is appropriate and is unlikely to have any adverse effects on the surrounding environment.

6.4 Structure on Road

The garden bed's raised edges and the fence on the roadside are located within legal road. The College is seeking permission from the Council as Road Controlling Authority for the retention of these structures, under clause 3.5 of the Council's *Structures on Roads Policy 2010 - Amended 2014 and 2016*. An application form to support this is contained in Appendix F.

The raised garden bed and fencing are understood to have been installed at the same time as the kerb extension which provides for the existing school crossing. This is understood to have occurred sometime between 1989 and 1994, but at this stage no records have been located to confirm this.

It is considered appropriate to retain the raised edging as this supports the soil and roots of the street trees located within the bed. The removal of this edging would have a detrimental effect on these trees. It is understood that the retention of the edging is supported by Council staff.

With regards to the fence, the retention of this is also considered appropriate for maintain the amenity and privacy of local residents. The fence also provides the roadside support to the garden beds around the street trees. The fence also provides for the safety of students, as it enables the ability to direct the students to the appropriate pedestrian entrance. Removal of the fence would have a detrimental effect on the visual amenity and character of the street, as it would reduce the screening of College and drop-off area for the neighbours. It is understood that this is the preliminary view of Council.

Given the factors above, it is considered appropriate to retain these structures.

7. Section 104 Matters

The proposal is considered to be in keeping with Part II of the RMA, as the proposal will provide for the retention and health of the remaining street trees. As such it is considered that the amenity values of the surrounding environment will be maintained.

The objectives and policies of the Christchurch District Plan of relevance to this proposal are contained within Chapter 7 Transport, Chapter 9.4 Significant and Other Trees, and Chapter 13.6 Specific Purpose (School) Zone. With regards to the objectives and policies within these chapters it is considered that as the proposal is likely to improve the on-street traffic environment and will maintain the existing amenity and character of this portion of Normans Road, that the proposal is generally consistent with the outcomes sought.

There are no relevant national policy statements or national environmental standards that are applicable to this proposal.

8. Mitigation Measures

As we consider that there will be no significant adverse effects on the environment, no mitigation measures are proposed, beyond those that are inherent to the proposal. It is considered appropriate that the conditions placed on the consent should require that all works are to be undertaken in accordance with the plans contained in Appendix A and the Tree Management Plan contained with the Arborlab report in Appendix B.

9. Identification of Persons Potentially Affected and Consultation

The applicant has undertaken significant consultation with Council staff with regards to this matter, including two site visits, and the outcome of those discussions are contained within this application. Preliminary feedback from Council staff with regards to this proposal is contained in Appendix E.

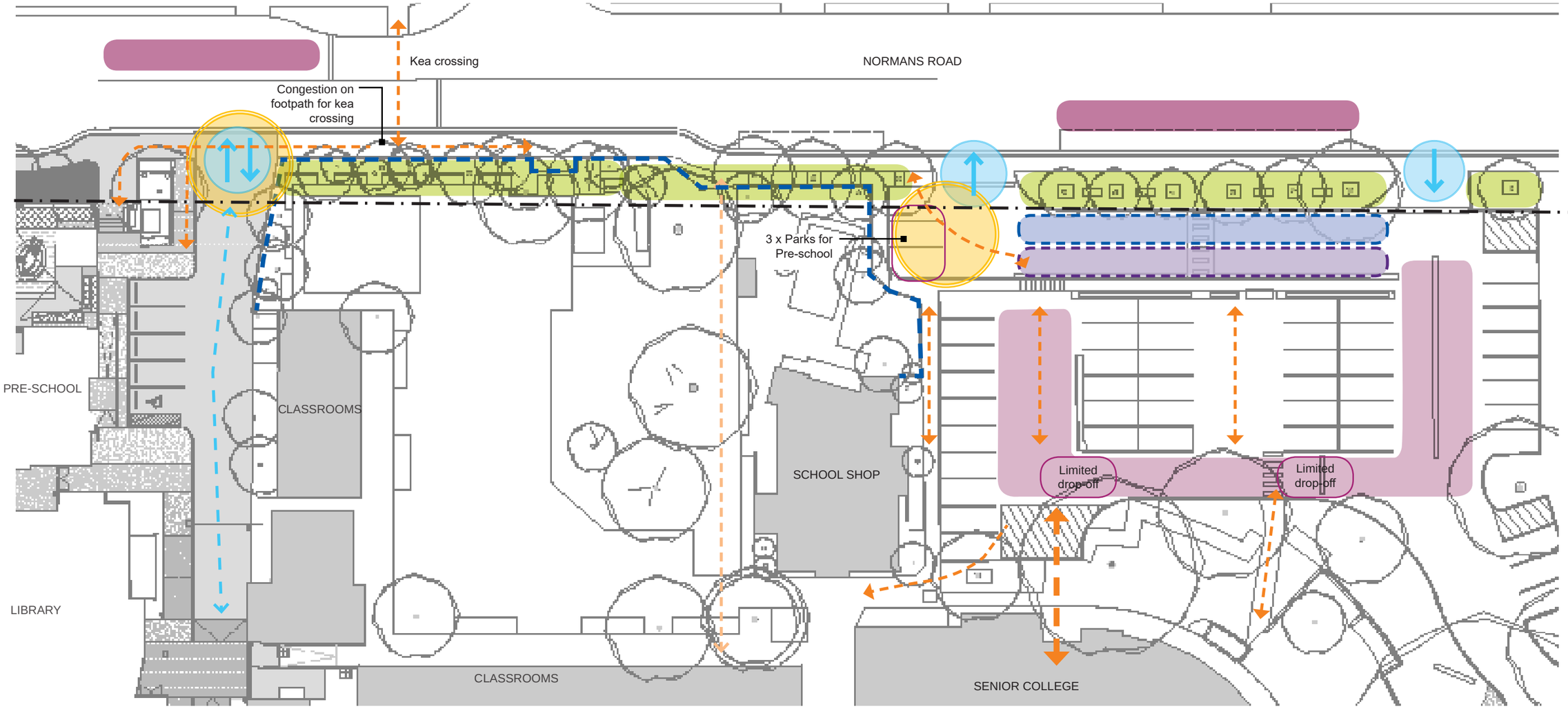
It is considered that no other party will be adversely affected as a result of this proposal, and as such no consultation in this regard has been undertaken.

10. Monitoring

It is considered that there would be no significant adverse effects on the environment and therefore no on-going monitoring of the proposal is required or proposed.

Davie Lovell-Smith Ltd
September 2018

LP-01 SITE ANALYSIS

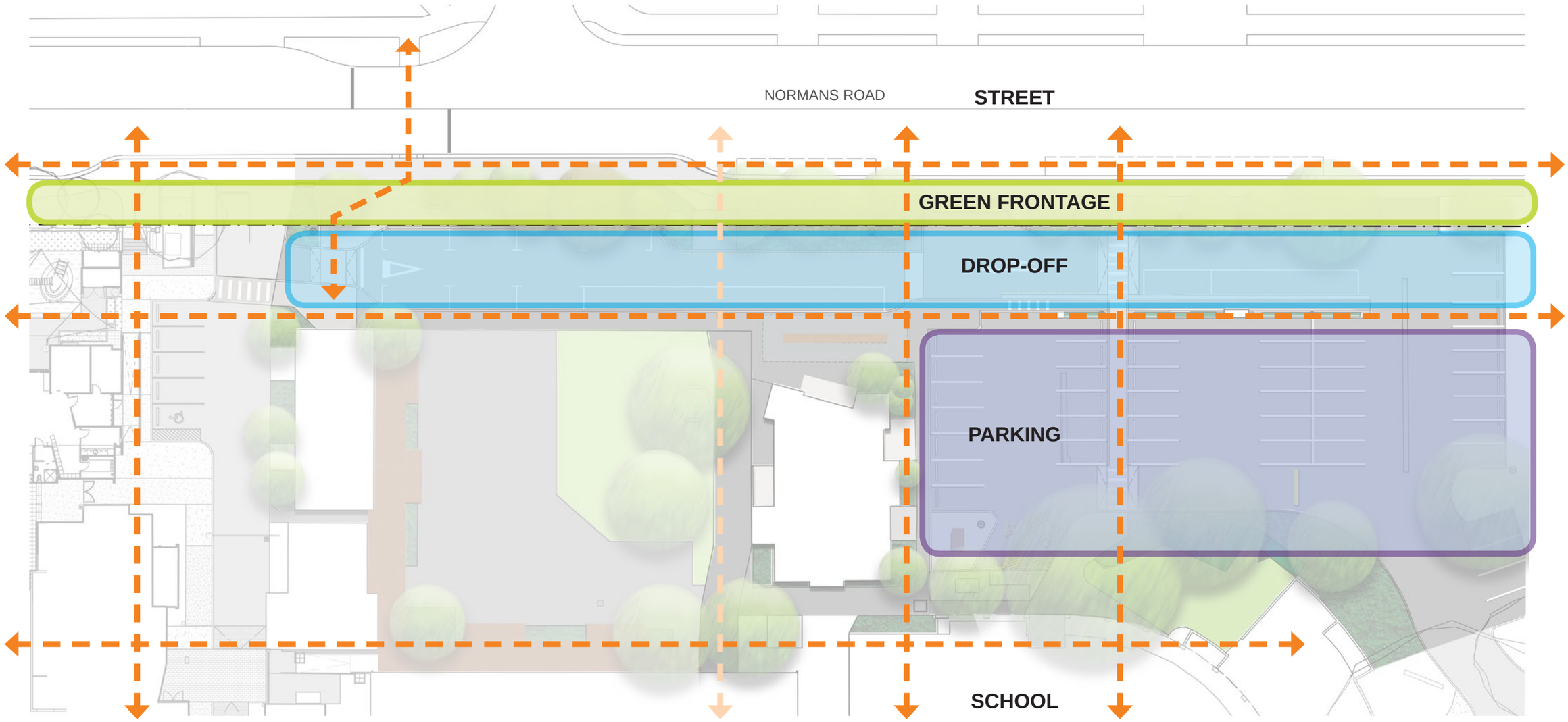


LEGEND

- Informal waiting- 3 abreast
- Entrance and exits
- Conflict zone
- Main drop-off/ pick-up (efficient)
- Through route - sporadic drop-off/ pick-up
- Bus drop off occaisionally happening in the carriageway
- Pedestrian movements
- Staff/ visitor vehicle access low controlled use
- Future construction route
- Scope of works
- Property boundary
- Existing fence
- Planting to retain (outside of property boundary)

FOR RESOURCE CONSENT

LP-02 CONCEPT PLAN



LEGEND

- Green frontage
- Drop-off
- Parking
- Pedestrian corridors
- Possible future site access
- Scope of works

FOR RESOURCE CONSENT

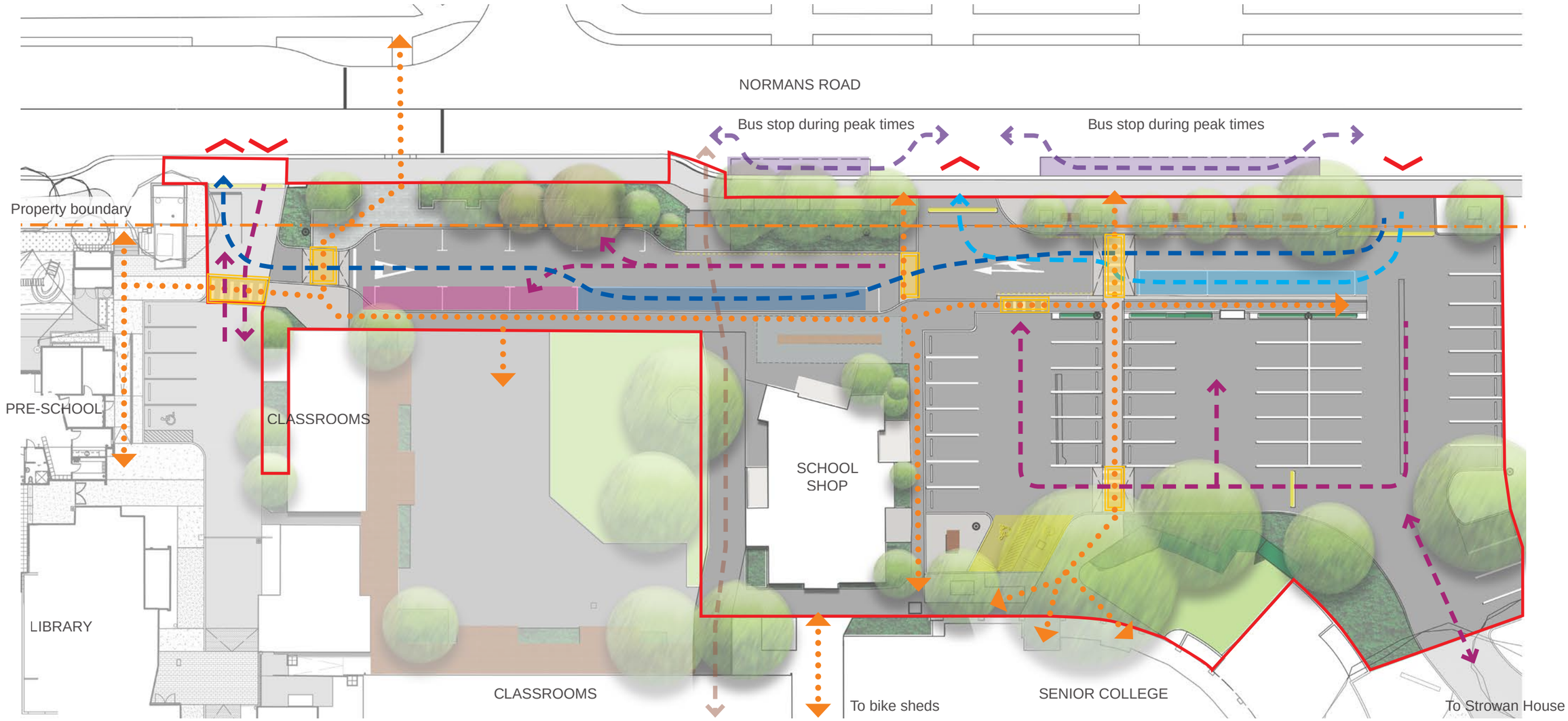
LP-03 LANDSCAPE PLAN

LEGEND

1 Landscaped entrance for existing kea crossing
2 Pedestrian crossing to Prep and Junior School (not raised)
3 Raised crossing - decorative concrete
4 Staff parking (4)
5 Pre-school parking (3)
6 Pre-school scooter and bike shelter (covered)
7 Future development area - to remain as existing
8 Possible route for future development
9 Prep and Junior School drop-off
10 Existing trees and with new gardens below
11 Student waiting shelter (indicative)
12 Threshold crossing - decorative concrete
14 Proposed bus stop during peak times
15 Raised pedestrian crossings and path - decorative concrete
16 Senior School drop-off
17 Sunny social space - timber platform and decorative concrete
18 Relocated accessible parks (compliant design)

FOR RESOURCE CONSENT

LP-04 CIRCULATION PLAN

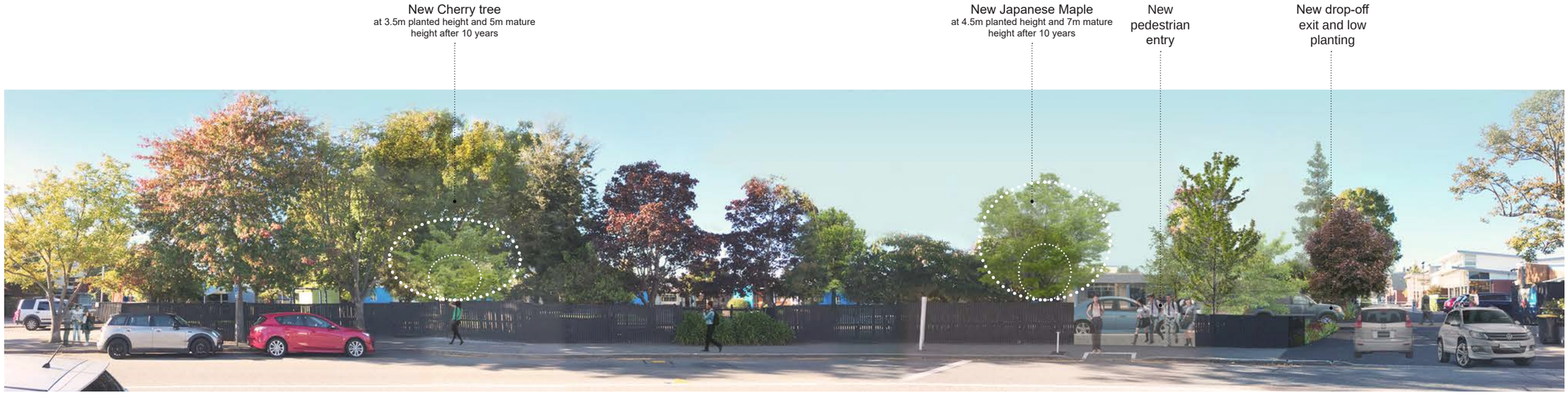


- Safe pedestrian movements
- Bus stop - during peak times (proposed)
- Possible future site access route
- Senior school drop-off route
- Prep school drop-off route
- Parking movements
- Vehicle entrance / exit
- Safe pedestrian crossing point - treatment varies
- Accessible parking
- Senior school drop-off zone
- Prep school drop-off zone
- Pre-school parking

FOR RESOURCE CONSENT

LP-05 NORMANS ROAD FRONTAGE VISUALISATION

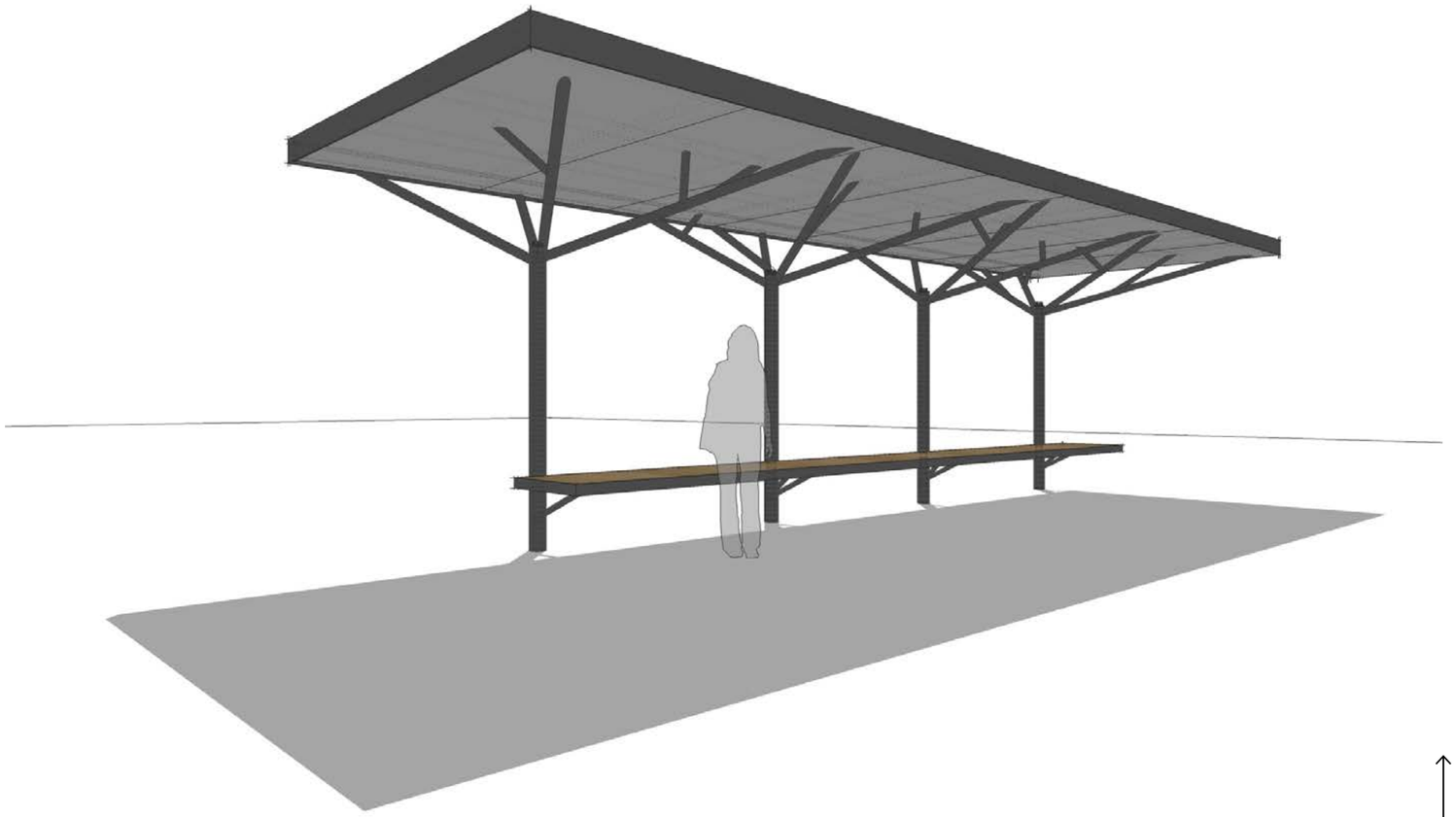
EXISTING

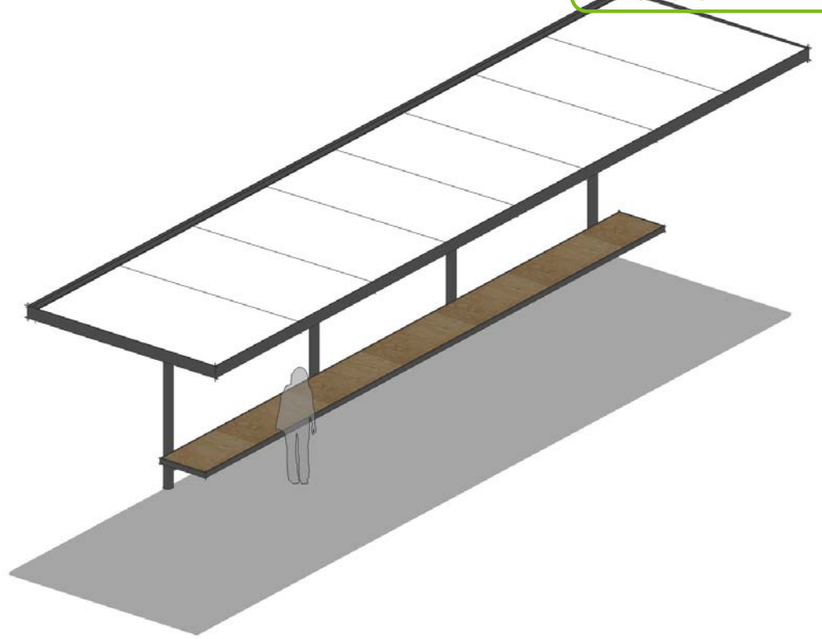


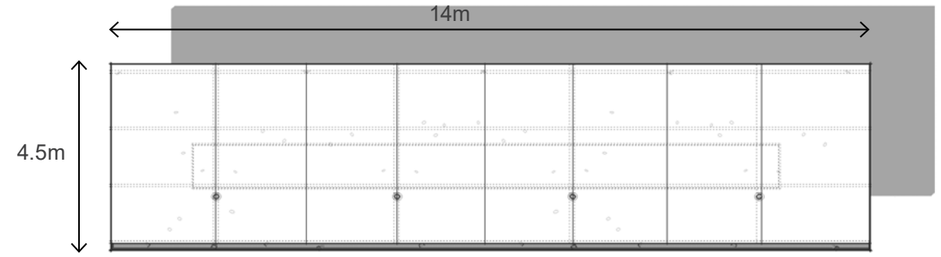
PROPOSED

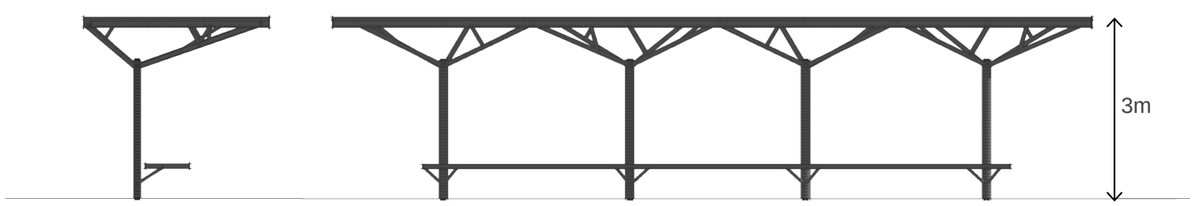
FOR RESOURCE CONSENT

LP-06 SHELTER - TREE CANOPY CONCEPT









Design Principles:

- **Shelter** – provides weatherproof shelter from rain and sun. A cool dry place to wait.
- **Social** – an equitable meeting point for students to gather. A sheltered communal platform extends the length of the shelter and possibly beyond for sunny seating.
- **Appearance** – clean, simple forms with a lightweight appearance. Sheltering under a grove of trees. A row of trunks that branch out to hold up the tree canopy.
- **Lighting** - Up-lights on the top of each column wash light onto the underside of the roof, enhancing the shelters lightweight appearance and creating a shadow pattern from the supports (branches).
- **Structure** - CHS steel columns (163mmØ) and supports (sizes vary) are fixed to a lightweight canopy steel structure, clad in roofing metal. The column foundations are tied together to form a nominal beam. Benches are supported by the columns.
- **Drainage** - the roof will have a single pitch and be drained through the CHS structure.

FOR RESOURCE CONSENT

DRAWING INDEX

DRAWING NUMBER	DRAWING NAME	SCALE @ A1	REVISION	NOTES
L8-0000	TITLE SHEET AND DRAWING INDEX	N/A	A	
L8-0030	KEYNOTES	N/A	A	
L8-0040	LOCATION AND REFERENCE PLAN	1:250	A	
L8-0050	TREE PLAN	1:100	A	
L8-1001	GENERAL ARRANGEMENT PLAN - ZONE 1	1:100	A	
L8-1002	GENERAL ARRANGEMENT PLAN - ZONE 2	1:100	A	
L8-1003	GENERAL ARRANGEMENT PLAN - ZONE 3	1:100	A	
L8-3001	PLANTING PLAN - ZONE 1	1:100	A	
L8-3002	PLANTING PLAN - ZONE 2	1:100	A	
L8-3003	PLANTING PLAN - ZONE 3	1:100		
L8-6001	TIMBER PLATFORM DETAILS	AS SHOWN	A	
L8-6002	TACTILE DETAILS	AS SHOWN	A	
L8-7001	PLANTING TYPICAL DETAILS	AS SHOWN	A	
L8-7002	PLANTING SCHEDULES	N/A	A	
L8-9000	SPECIFICATION	N/A	A	

ST ANDREW'S COLLEGE
NORMANS ROAD
LANDSCAPE

FOR TENDER AND CONSENT

REVISIONS

A FOR TENDER AND CONSENT 31.08.18

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URBAN DESIGNERS
INTERIOR DESIGNERS
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POWELL FENWICK CONSULTANTS
QUANTITY SURVEYORS
RAWLINSONS

Project Number: 218069.00

ST ANDREWS COLLEGE

NORMANS RD

Sheet

TITLE SHEET AND DRAWING INDEX

SCALE @ A1=

For Jasmax

APPROVED

Milestone Issues	Revision & Date
FIRST ISSUED	
RESOURCE CONSENT	31.08.18
BUILDING CONSENT	
SCHEDULING	
TENDER	31.08.18

LANDSCAPE

Drawing Number: L8-0000 Revision: A

DO NOT SCALE OFF THIS DRAWING

CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING ANY WORK

KEYNOTES: (ISSUE THIS SHEET WITH ALL DRAWINGS)

SURFACE FINISHES

ASPH — **ASPHALT**
REFER TO CIVIL DOCUMENTATION FOR DETAILS INCLUDING SPECIFICATIONS ON SUB BASES AND THICKNESS

CONC — **CONCRETE - EXPOSED AGGREGATE - LIGHT**
EXPOSED AGGREGATE CONCRETE- REFER TO SELECTION SECTION OF LANDSCAPE SPECIFICATION AND CIVIL ENGINEERS DOCUMENTATION

PAV1 — **PAVING TO MATCH EXISTING OR BE RELAID**
FIRTH HOLLAND BOARDER COURSE WITH PIAZZA PAVER INFILL (HERRINGBONE COURSE) - BOTH BLACK SANDS COLOUR.

REFER TO LANDSCAPE SPECIFICATION AND CIVIL DOCUMENTATION FOR DETAILS.

PAV2 — **FLOW PAVE**
200 x 100 x 80mm FIRTH FLOWPAVE. NATURAL COLOUR IN STRETCHER BOND PATTERN.

REFER TO LANDSCAPE SPECIFICATION AND CIVIL DOCUMENTATION FOR DETAILS.

LANDSCAPE FURNISHINGS

B01 — **TIMBER PLATFORM**
REFER TO L8-6001

R — **RUBBISH BIN**
REFER TO SPECIFICATION AND MANUFACTURERS DOCUMENTATION

F — **DRINKING FOUNTAIN**
REFER TO LANDSCAPE SPECIFICATION, HYDRAULIC ENGINEERS AND MANUFACTURERS DOCUMENTATION

WS — **WHEEL STOPS**
1650 x 150mm PLAIN BLACK RECYCLED RUBBER WHEEL STOP. FIXED TO CONCRETE FOOTING.
REFER TO SPECIFICATION AND CIVIL ENGINEERS DOCUMENTATION

T-WAR — **TACTILE INDICATORS - WARNING STUDS**
SOLID STAINLESS STEEL HAZARD TACTILE STUD WITH YELLOW CARB INNER WITH 20mm STEM (FREEDOM STRATEGIES GMSSS30)
REFER TO L8-6002, SPECIFICATION AND CIVIL ENGINEERS DOCUMENTATION

T-DIR — **TACTILE INDICATORS - DIRECTIONAL STRIPS**
SOLID STAINLESS STEEL HAZARD TACTILE STRIP WITH YELLOW CARB INNER WITH 20mm STEM (FREEDOM STRATEGIES GMSSD30)
REFER TO L8-6002, SPECIFICATION AND CIVIL ENGINEERS DOCUMENTATION

CANPY — **CANOPY SHELTER**
INDICATIVE ONLY - FINAL DESIGN AND LOCATION TO BE CONFIRMED

SOFT LANDSCAPE ELEMENTS

GB — **GARDEN BED**
REFER TO PLANTING PLANS IN L8-3000 SERIES AND L8-7000 SERIES FOR SCHEDULES AND DETAILS

REFER TO LANDSCAPE SPECIFICATION

MGB — **EXISTING GARDEN BED TO BE MODIFIED**
REFER TO PLANTING PLANS IN L8-3000 SERIES AND L8-7000 SERIES FOR DETAILS. TO BE ASSESSED BY LANDSCAPE ARCHITECT ON SITE BEFORE MODIFICATION OCCURS.
ALL PLANT REMOVAL BY THE SCHOOL.
ALL PLANTING AND SOIL CONDITIONING BY THE CONTRACTOR.

HEDGE — **EXISTING HEDGE TO REMAIN**
REFER TO PLANTING PLANS FOR LOCATION

HEDGE — **NEW HEDGE**
REFER TO PLANTING PLANS AND SCHEDULES FOR DETAILS

LAWN — **EXISTING LAWN**
EXISTING LAWN TO REMAIN

LAWN — **NEW LAWN - TURF**
NEW LAWN, REFER TO LANDSCAPE SPECIFICATION FOR DETAILS

EXISTING TREE
EXISTING TREE TO BE RETAINED

PROVIDE PROTECTION FOR ALL EXISTING TREES TO REMAIN WITHIN SITE BOUNDARY.
REFER TO L8-7001 AND SPECIFICATION.

PROPOSED TREE
REFER TO PLANTING PLANS L8-3000 SERIES AND L8-7000 SERIES FOR SCHEDULES AND DETAILS

REFER TO LANDSCAPE SPECIFICATION

ENGINEERING ELEMENTS

PROPOSED SUMP
REFER TO CIVIL ENGINEERS DOCUMENTATION

PROPOSED MAN HOLE
REFER TO CIVIL ENGINEERS DOCUMENTATION

LP — **PROPOSED LIGHTING COLUMN**
REFER TO ELECTRICAL ENGINEERS DOCUMENTATION

WALL 1 — **WALL 1 - NEW**
NEW CONCRETE ENTRANCE WALL
REFER TO CIVIL ENGINEERS DOCUMENTATION

SITE

EXTENT OF WORKS

PROPERTY BOUNDARY

SOP — **SET OUT POINT - ALL TO BE CONFIRMED ONSITE PRIOR TO CONSTRUCTION**

SAW CUT

CENTRE LINE

NOTES

ALL LEVELS, DRAINAGE AND SERVICES INFORMATION SHOWN IN THE LANDSCAPE DRAWINGS IS FOR INFORMATION AND CO-ORDINATION PURPOSES ONLY. REFER TO POWELL FENWICK DRAWINGS FOR ALL MANHOLE, SUMP AND SITE SERVICES LOCATIONS AND ASSOCIATED WORKS.

REFER TO POWELL FENWICK DRAWINGS FOR ALL HARD SURFACE DETAILING, KERB ALIGNMENTS, CONCRETE THICKNESS, STRENGTHS, REINFORCING, BASE COURSE AND PREPARATION. ALLOW FOR SAWCUTS, CONSTRUCTION AND ISOLATION JOINTS.

JASMAX TO SPECIFY SURFACE FINISHES AS PER GENERAL ARRANGEMENT DRAWINGS.

REFER TO POWELL FENWICK DRAWINGS FOR ALL RETAINING WALL CONSTRUCTION DETAILS INCLUDING FOOTINGS AND PRECAST REINFORCEMENT.

CIVIL ENGINEER (POWELL FENWICK) TO PROVIDE AND CONFIRM ALL LEVELS, OVERLAND FLOWS AND DRAINAGE FALLS FOR EXISTING AND PROPOSED SURFACES ON SITE TO ENSURE FUNCTIONAL DRAINAGE RESULT.
CONTRACTOR TO LIAISE DIRECTLY WITH CIVIL ENGINEERS.

REFER TO POWELL FENWICK PLANS AND SPECIFICATIONS FOR ALL ELECTRICAL AND TECHNICAL LIGHTING INFORMATION.

REFER TO WILKIE BRUCE DOCUMENTATION FOR ALL ARCHITECTURAL DETAILS INCLUDING THRESHOLDS, BUILDING PERIMETER AND CLADDING DETAILS.

A QUALIFIED ARBORIST (APPROVED BY CCC) IS TO UNDERTAKE ALL TREE REMOVALS AND SUPERVISE ALL EXCAVATION WORKS WITHIN THE DRIP LINE OF ALL TREES WITHIN THE CCC ROAD RESERVE.
REFER TO L8-7001 FOR TREE PROTECTION DETAIL, ARBORIST REPORT AND RESOURCE CONSENT CONDITIONS.

ORIGINAL DRAWINGS FOR PRINTING IN COLOUR

FOR TENDER AND CONSENT

REVISIONS

A	FOR TENDER AND CONSENT	31.08.18

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QUANTITY SURVEYORS
RAWLINSONS

Project Number: 218069.00

ST ANDREWS COLLEGE

NORMANS ROAD

Sheet

KEYNOTES

SCALE @ A1=

For Jasmax

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Milestone Issues	Revision & Date
FIRST ISSUED	<-
RESOURCE CONSENT	<31.08.2018
BUILDING CONSENT	<
SCHEDULING	<
TENDER	<31.08.2018

LANDSCAPE

Drawing Number: L8-0030
Revision: A

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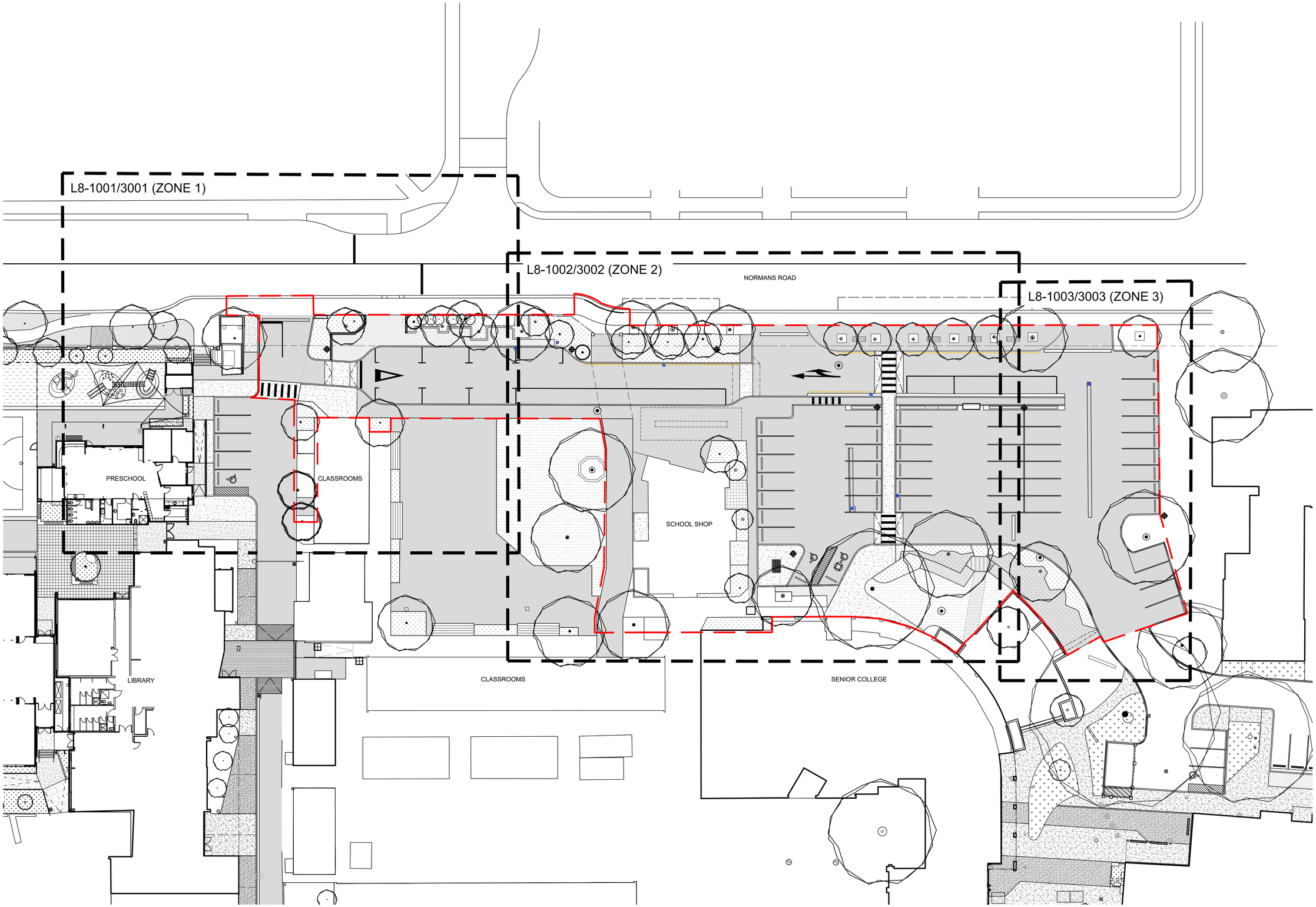
NOTES



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REVISIONS

A	FOR TENDER AND CONSENT	31.08.18

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LOCATION AND REFERENCE PLAN

SCALE @ A1= 1:100

For Jasmax

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Milestone Issues	Revision & Date
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RESOURCE CONSENT	
BUILDING CONSENT	
SCHEDULING	
TENDER	

LANDSCAPE

Drawing Number: L8-0040
Revision: A

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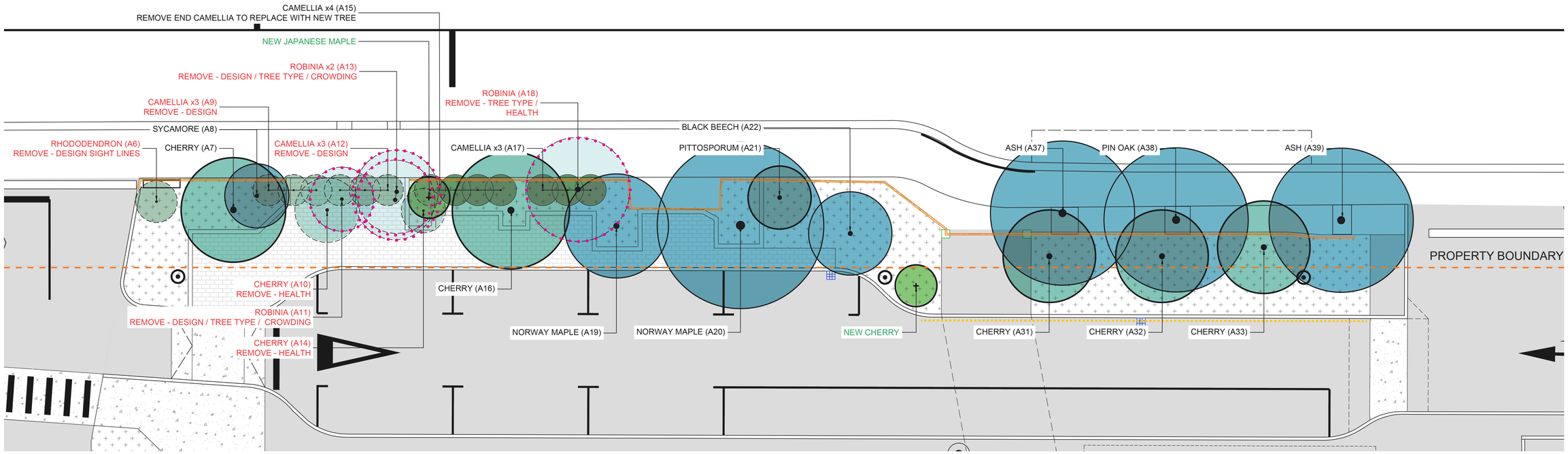

StAC Normans Road Project- Tree Plan (Proposed scheme)

1:100 @ A1 / 1:200 @ A3

Legend

Property boundary

Existing fence

New light column (on school land)

To retain:

Tree over 6m

Tree 3-6m

Small tree/large shrub 2-4m

To remove:

Tree over 6m

Tree 3-6m

Small tree/large shrub 2-4m

Proposed new tree (large grade)

Trees over 6m, on CCC land and proposed for removal.
All are Robinia trees.

ROBINIA (A18)
REMOVE - TREE TYPE / HEALTH

- Tree type
- Tree reference in arborist report
- Red = for removal
  Black = to remain
  Green = new tree
- Reason for removal

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REVISIONS

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TREE PLAN

SCALE @ A1= 1:100

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FIRST ISSUED	◁
RESOURCE CONSENT	◁31.08.18
BUILDING CONSENT	◁
SCHEDULING	◁
TENDER	◁31.08.18

LANDSCAPE

Drawing Number: L8-0050

Revision: A

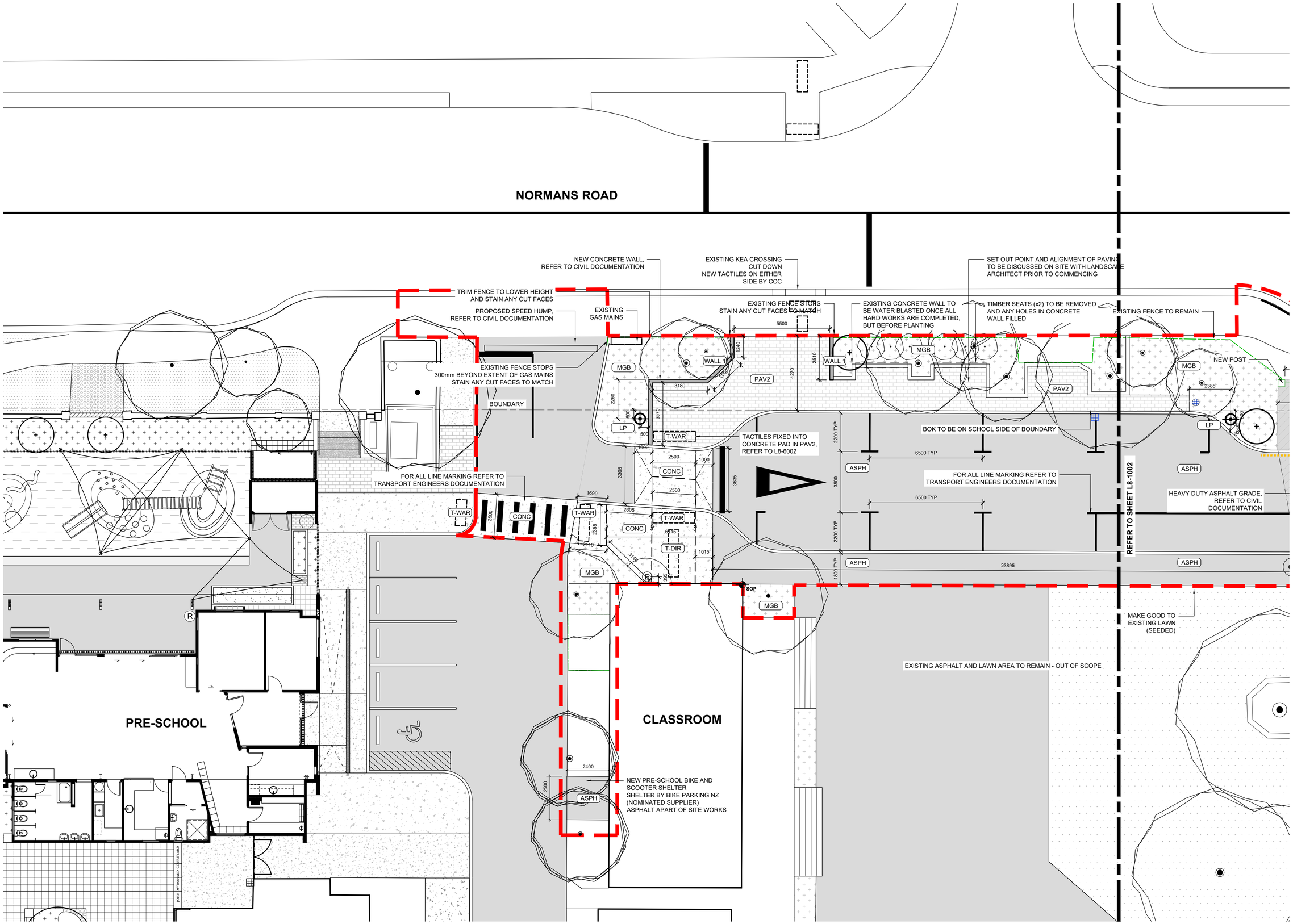
NOTES

- REFER TO ALL CIVIL DOCUMENTATION FOR EXTENT OF ASPHALT WORKS

- REFER TO TRANSPORT ENGINEERS DOCUMENTATION FOR ALL LINEMARKING AND PARKING SETOUT

REVISIONS

A	FOR TENDER AND CONSENT	31.08.18



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GENERAL ARRANGEMENT PLAN - ZONE 1

SCALE @ A1= 1:100

For Jasmax

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Milestone Issues	Revision & Date
FIRST ISSUED	A
RESOURCE CONSENT	A 31.08.2018
BUILDING CONSENT	A
SCHEDULING	A
TENDER	A 31.08.2018

LANDSCAPE

Drawing Number: L8-1001

Revision: A

NOTES

- REFER TO ALL CIVIL DOCUMENTATION FOR EXTENT OF ASPHALT WORKS

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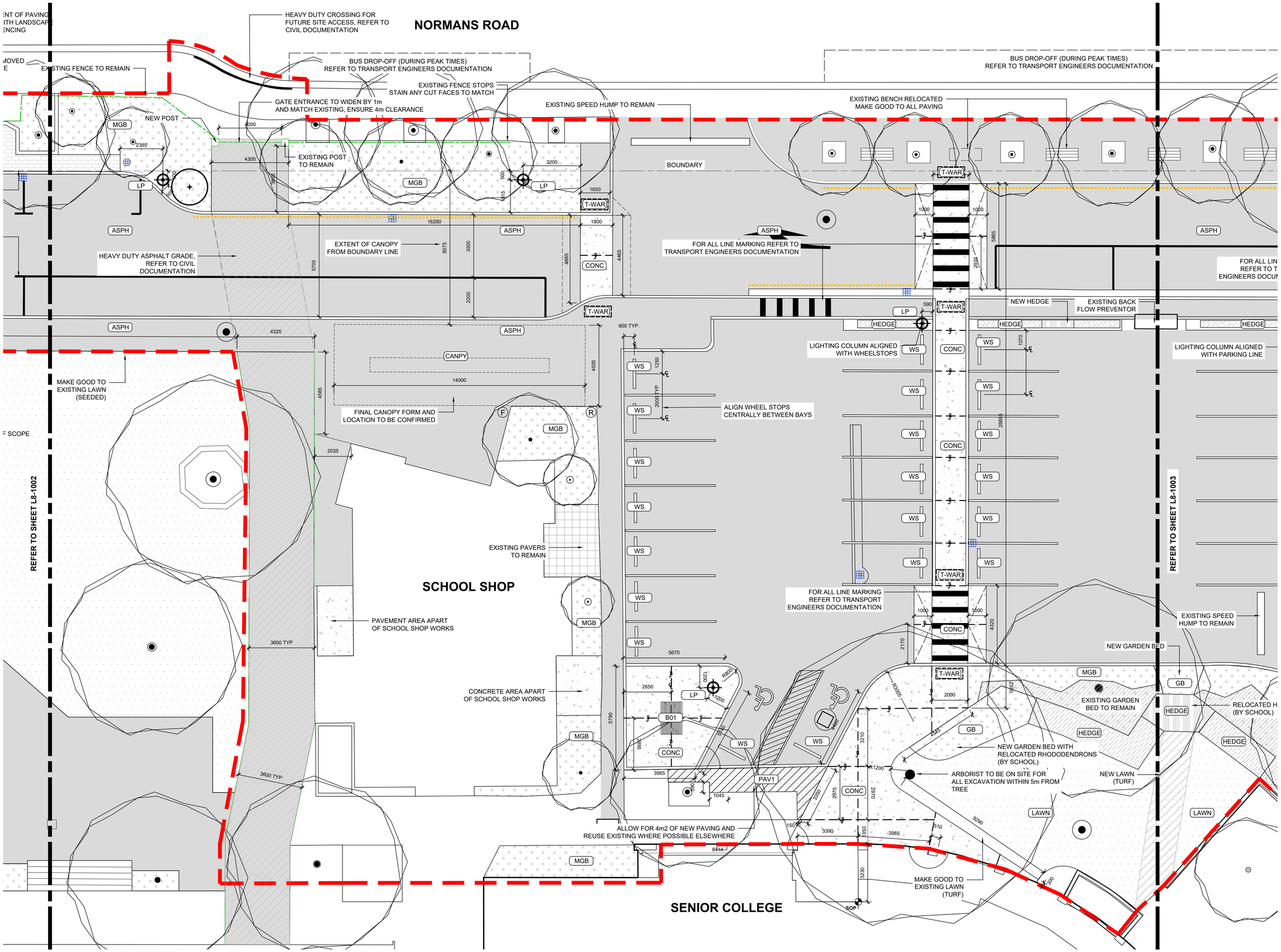
REVISIONS

A	FOR TENDER AND CONSENT	31.08.18



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NORMANS ROAD

Sheet

GENERAL ARRANGEMENT PLAN - ZONE 2

SCALE @ A1= 1:100

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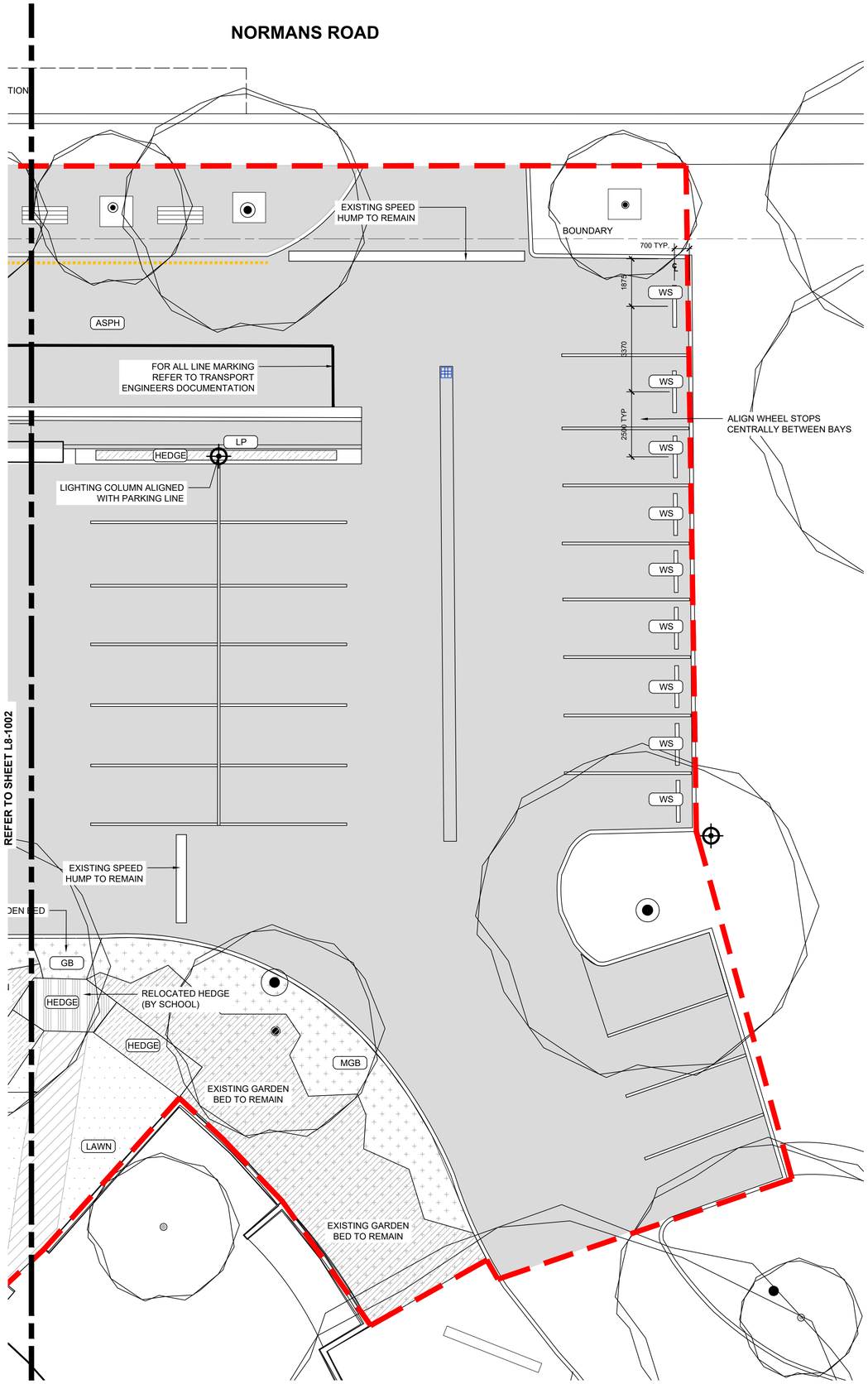
Milestone Issues	Revision & Date
FIRST ISSUED	A
RESOURCE CONSENT	A 31.08.2018
BUILDING CONSENT	A
SCHEDULING	A
TENDER	A 31.08.2018

LANDSCAPE

Drawing Number: L8-1002

Revision: A



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NOTES

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- REFER TO TRANSPORT ENGINEERS DOCUMENTATION FOR ALL LINEMARKING AND PARKING SETOUT

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GENERAL ARRANGEMENT PLAN - ZONE 3

SCALE @ A1= 1:100

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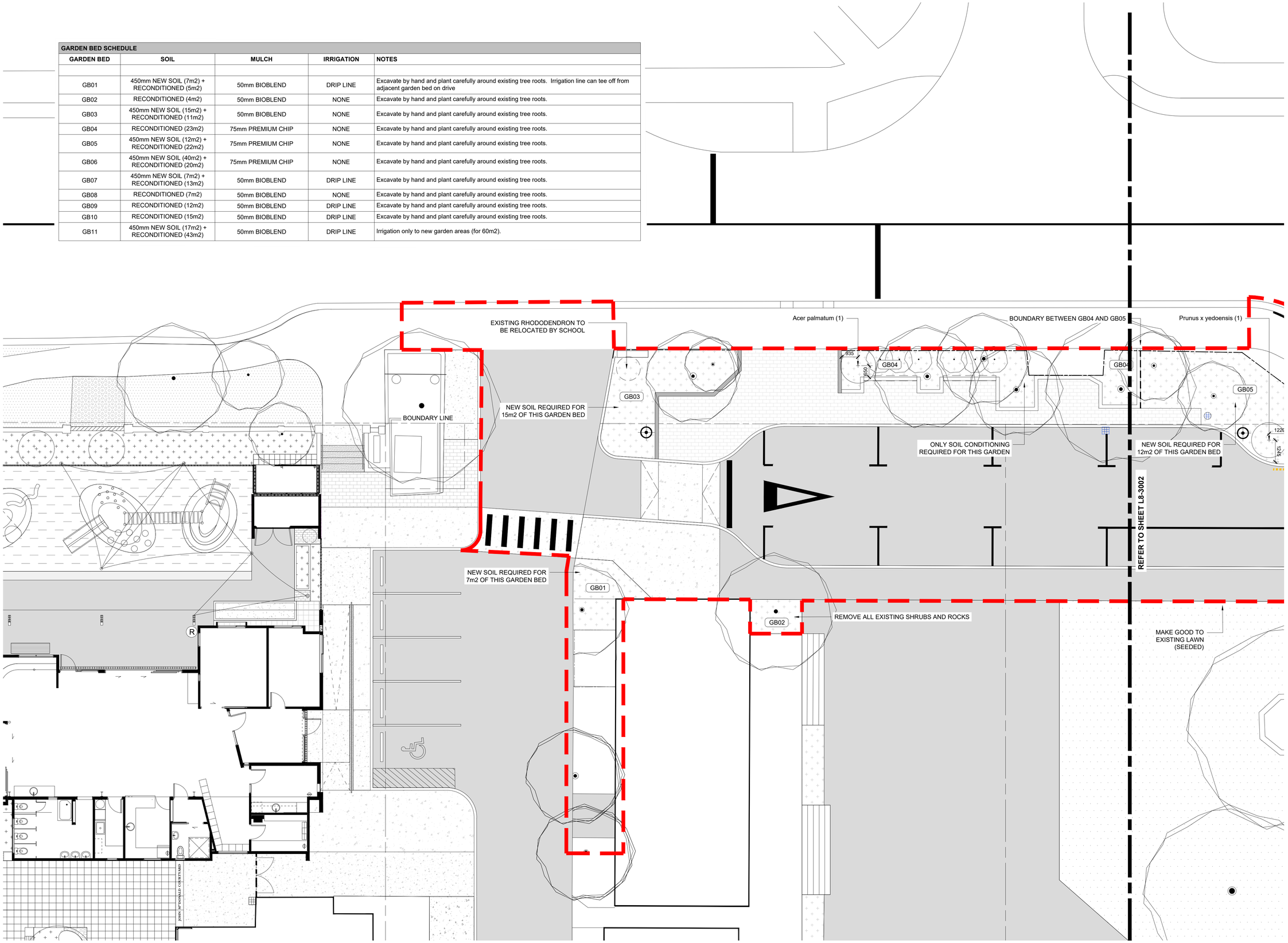
Milestone Issues	Revision & Date
FIRST ISSUED	◁
RESOURCE CONSENT	◁31.08.2018
BUILDING CONSENT	◁
SCHEDULING	◁
TENDER	◁31.08.2018

LANDSCAPE

Drawing Number: L8-1003

Revision: A

GARDEN BED SCHEDULE				
GARDEN BED	**SOIL**	**MULCH**	**IRRIGATION**	**NOTES**
GB01	450mm NEW SOIL (7m2) + RECONDITIONED (5m2)	50mm BIOBLEND	DRIP LINE	Excavate by hand and plant carefully around existing tree roots. Irrigation line can tee off from adjacent garden bed on drive
GB02	RECONDITIONED (4m2)	50mm BIOBLEND	NONE	Excavate by hand and plant carefully around existing tree roots.
GB03	450mm NEW SOIL (15m2) + RECONDITIONED (11m2)	50mm BIOBLEND	NONE	Excavate by hand and plant carefully around existing tree roots.
GB04	RECONDITIONED (23m2)	75mm PREMIUM CHIP	NONE	Excavate by hand and plant carefully around existing tree roots.
GB05	450mm NEW SOIL (12m2) + RECONDITIONED (22m2)	75mm PREMIUM CHIP	NONE	Excavate by hand and plant carefully around existing tree roots.
GB06	450mm NEW SOIL (40m2) + RECONDITIONED (20m2)	75mm PREMIUM CHIP	NONE	Excavate by hand and plant carefully around existing tree roots.
GB07	450mm NEW SOIL (7m2) + RECONDITIONED (13m2)	50mm BIOBLEND	DRIP LINE	Excavate by hand and plant carefully around existing tree roots.
GB08	RECONDITIONED (7m2)	50mm BIOBLEND	NONE	Excavate by hand and plant carefully around existing tree roots.
GB09	RECONDITIONED (12m2)	50mm BIOBLEND	DRIP LINE	Excavate by hand and plant carefully around existing tree roots.
GB10	RECONDITIONED (15m2)	50mm BIOBLEND	DRIP LINE	Excavate by hand and plant carefully around existing tree roots.
GB11	450mm NEW SOIL (17m2) + RECONDITIONED (43m2)	50mm BIOBLEND	DRIP LINE	Irrigation only to new garden areas (for 60m2).



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ST ANDREWS COLLEGE

NORMANS ROAD

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PLANTING PLAN - ZONE 1

SCALE @ A1= 1:100

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Milestone Issues	Revision & Date
FIRST ISSUED	
RESOURCE CONSENT	31.08.2018
BUILDING CONSENT	
SCHEDULING	
TENDER	31.08.2018

LANDSCAPE

Drawing Number: L8-3001

Revision: A

NOTES

GARDEN BED SCHEDULE				
GARDEN BED	**SOIL**	**MULCH**	**IRRIGATION**	**NOTES**
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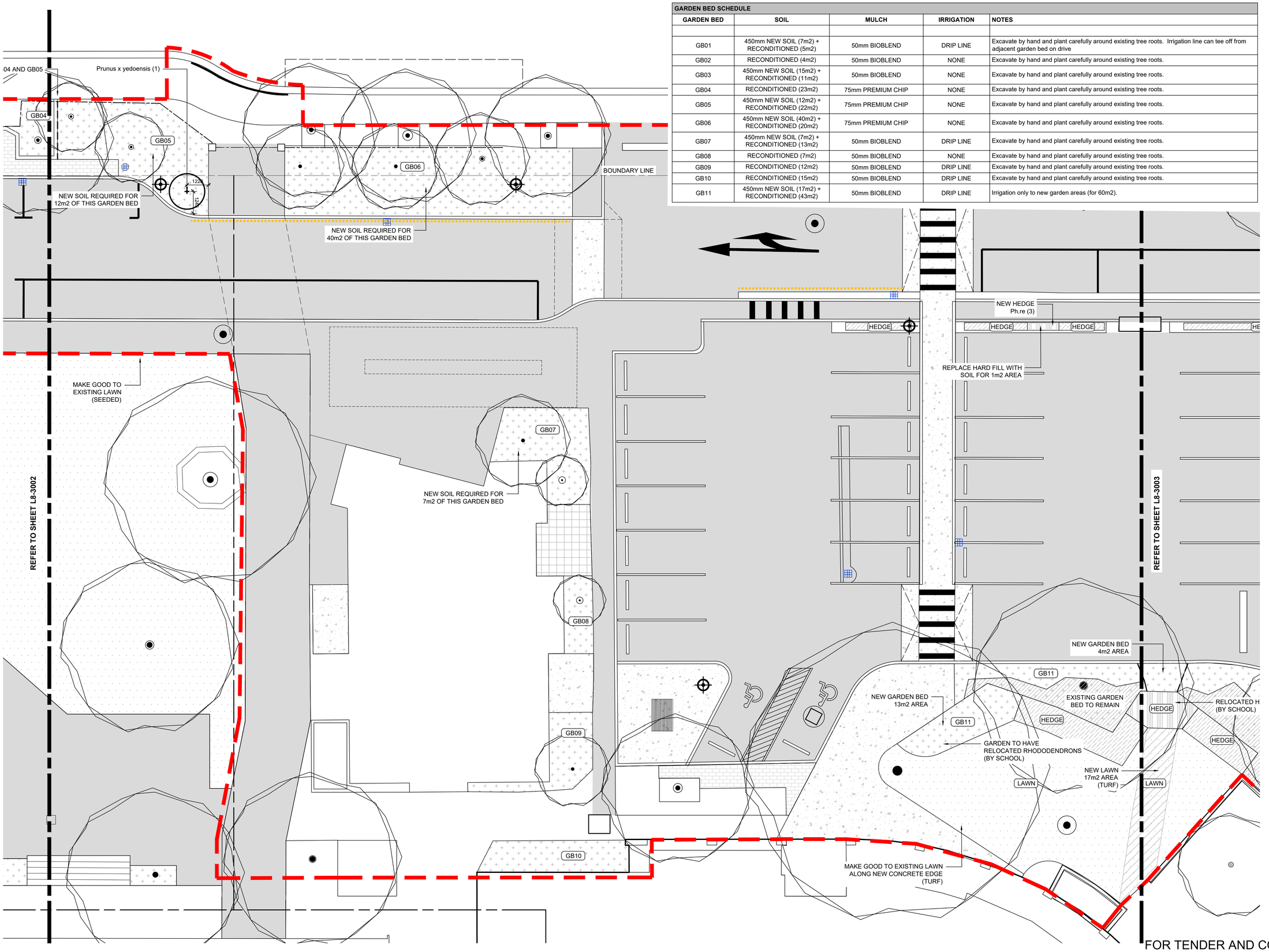

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PLANTING PLAN - ZONE 2

SCALE @ A1= 1:100

For Jasmax

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Milestone Issues	Revision & Date
FIRST ISSUED	31.08.2018
RESOURCE CONSENT	
BUILDING CONSENT	
SCHEDULING	31.0782018
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LANDSCAPE

Drawing Number: L8-3002

Revision: A

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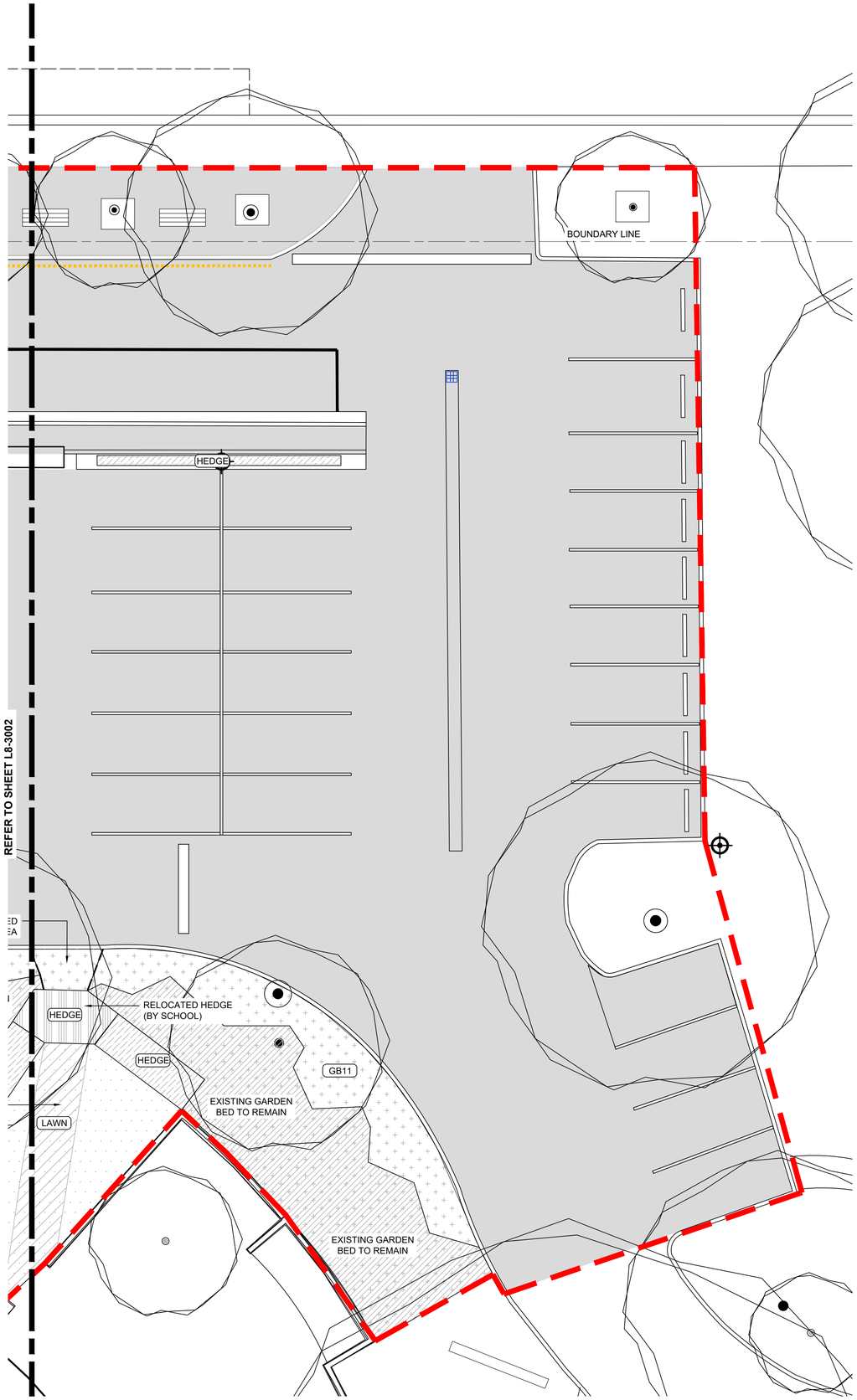

GARDEN BED SCHEDULE				
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FOR TENDER AND CONSENT

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REVISIONS

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CIVIL AND SERVICES ENGINEERS
POWELL FENWICK CONSULTANTS
QUANTITY SURVEYORS
RAWLINSONS

Project Number: 218069.00

ST ANDREWS COLLEGE

NORMANS ROAD

Sheet

PLANTING PLAN - ZONE 3

SCALE @ A1= 1:100

For Jasmax

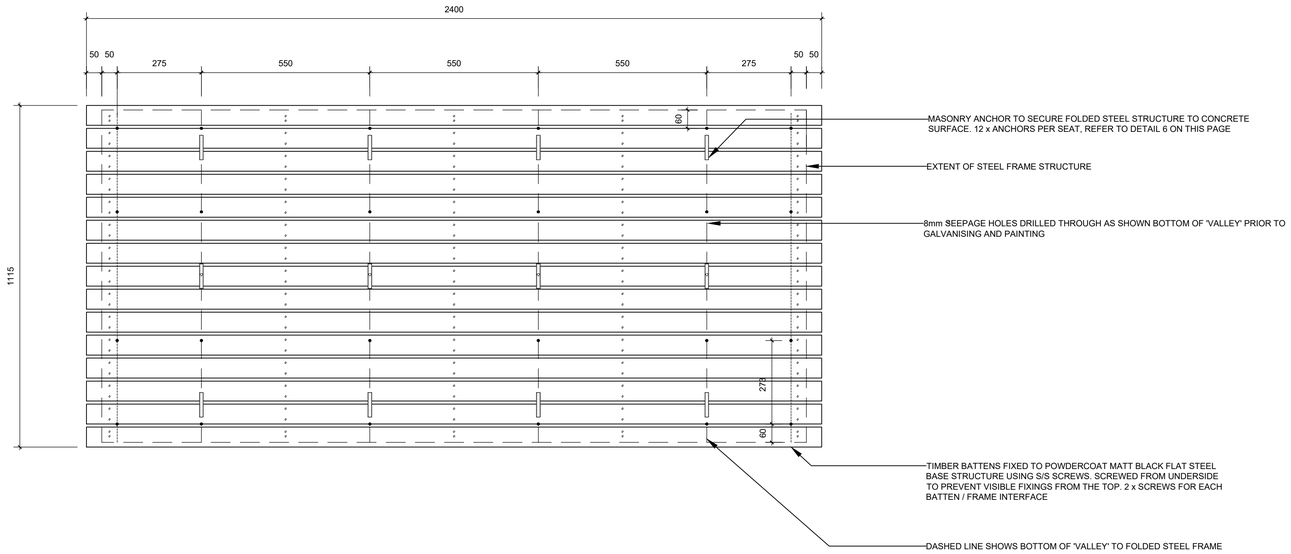
NORTH

APPROVED

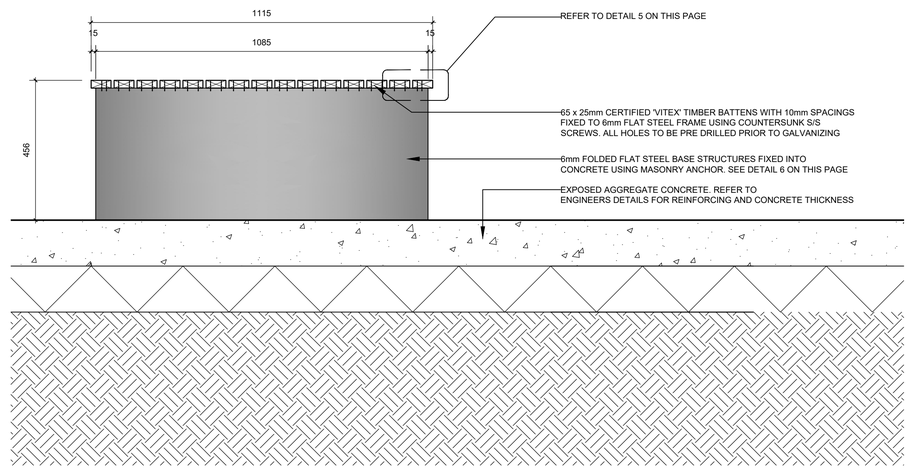
Milestone Issues	Revision & Date
FIRST ISSUED	
RESOURCE CONSENT	31.08.2018
BUILDING CONSENT	
SCHEDULING	
TENDER	31.08.2018

LANDSCAPE

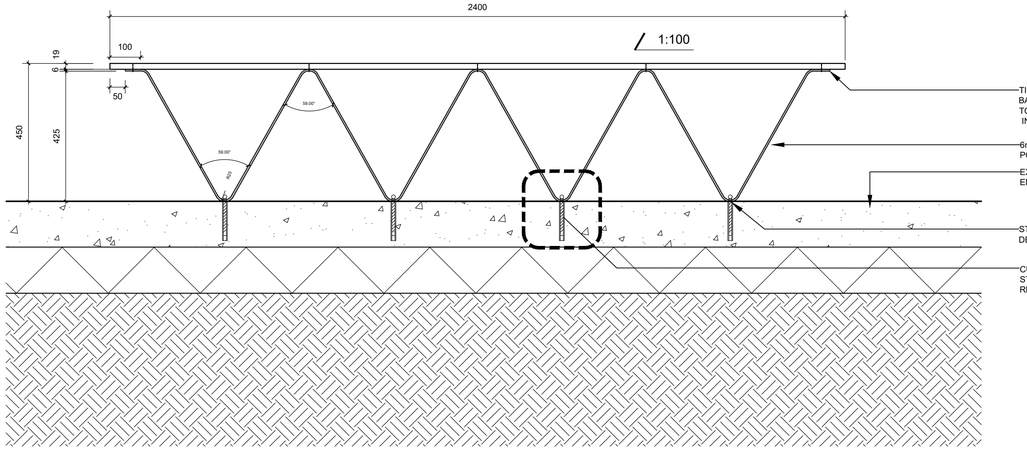
Drawing Number: L8-3003 Revision: A



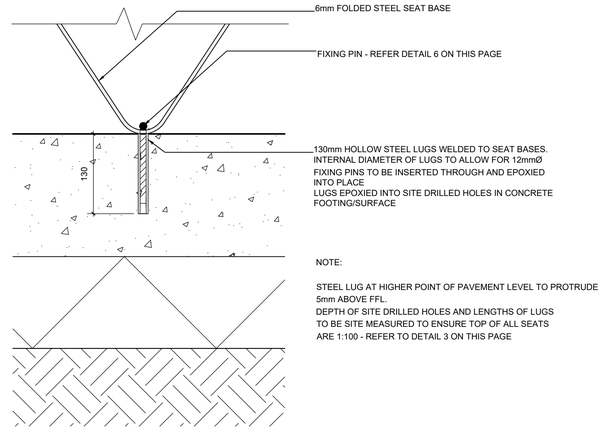
1 - 1:10 PLAN
TIMBER PLATFORM BENCH



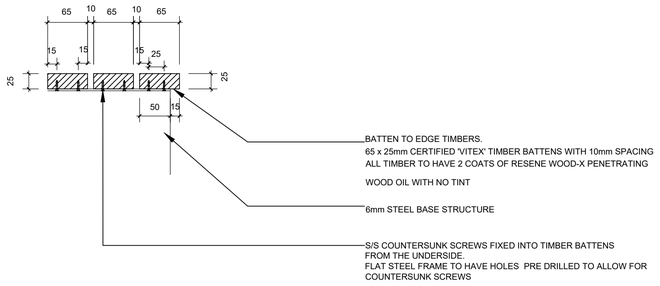
2 - 1:10 END ELEVATION
BENCH ON CONCRETE



3 - 1:10 ELEVATION
TIMBER PLATFORM BENCH



4 - 1:5 DETAIL
TYPICAL SEAT BASE FIXING TO CONCRETE



5 - 1:5 DETAIL
SEAT BENCH - TIMBER OVERHANG

6 - 1:5 DETAIL
MASONRY FIXING

GENERAL NOTES:
ALL STEEL TO BE ZINC SPRAY GALVANISED AND POWDERCOATED MATT BLACK
ALL HOLES PRE-DRILLED BEFORE GALVANISING
ALL TIMBER TO HAVE 2 COATS OF RESENE WOOD-X OIL

FOR TENDER AND CONSENT

NOTES

REVISIONS

A	FOR TENDER AND CONSENT	31.08.18

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Project Number: 218069.00

ST ANDREWS COLLEGE

NORMANS RD

Sheet

TIMBER PLATFORM DETAILS

SCALE @ A1=

For Jasmax

APPROVED

Milestone Issues	Revision & Date
FIRST ISSUED	-1
RESOURCE CONSENT	-1 31.08.18
BUILDING CONSENT	-1
SCHEDULING	-1
TENDER	-1 31.08.18

LANDSCAPE

Drawing Number: L8-6001
Revision: A

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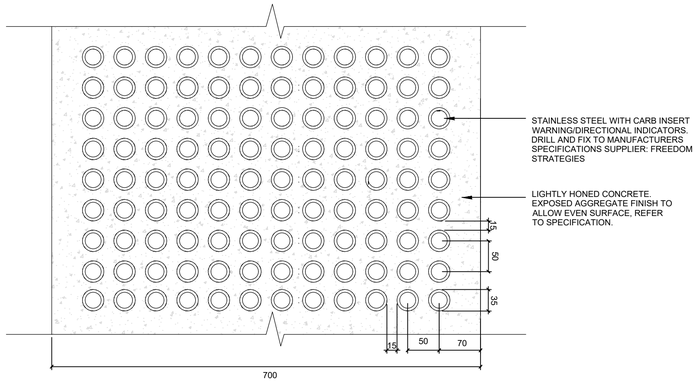
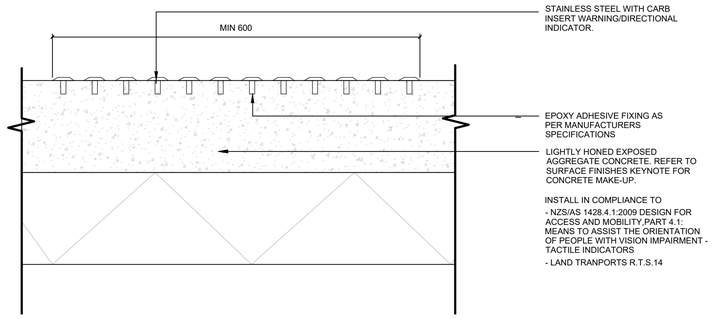


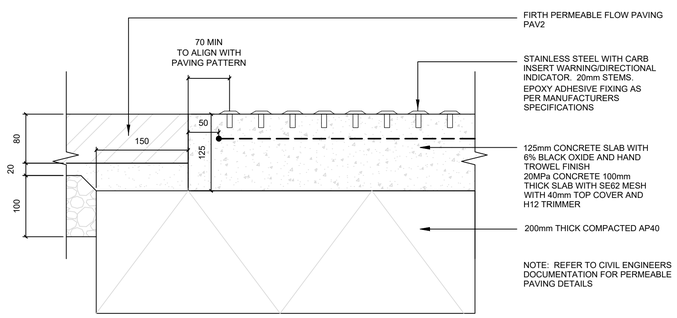
1 · 1:5 TYPICAL PLAN
TACTILE DETAILS

ALL TACTILE STUDS AND STRIPS ARE TO HAVE 20mm STEMS
THESE WILL HAVE A 2 MONTH LEAD TIME

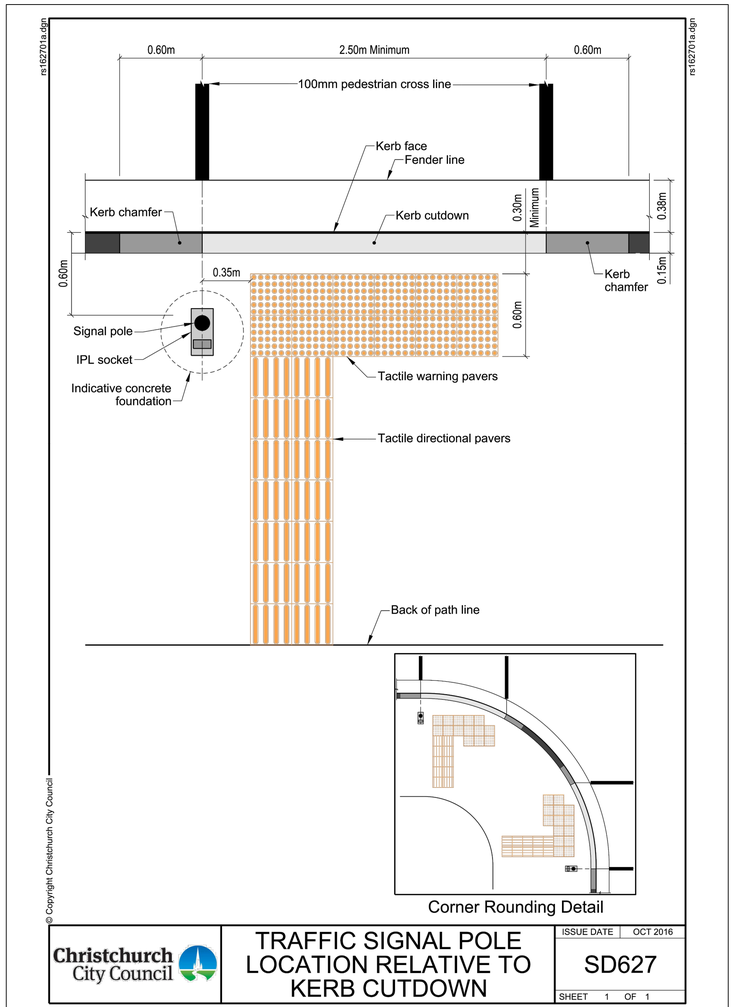
REFER TO CCC CSS SD 627 FOR SET OUT STANDARDS



2 · 1:5 EXPOSED AGGREGATE - TYPICAL SECTION
TACTILE DETAILS



3 · 1:5 PAV2 TACTILES - TYPICAL SECTION
TACTILE DETAILS



4 · CCC SCC SD 627 TYPICAL SET OUT
TACTILE DETAILS

FOR TENDER AND CONSENT

REVISIONS

A	FOR TENDER AND CONSENT	31.08.18

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Project Number: 218069.00

ST ANDREWS COLLEGE

NORMANS RD

Sheet

TACTILE DETAILS

SCALE @ A1=

For Jasmax

APPROVED

Milestone Issues	Revision & Date
FIRST ISSUED	◁-
RESOURCE CONSENT	◁31.08.18
BUILDING CONSENT	◁-
SCHEDULING	◁-
TENDER	◁31.08.18

LANDSCAPE

Drawing Number L8-6002 Revision A

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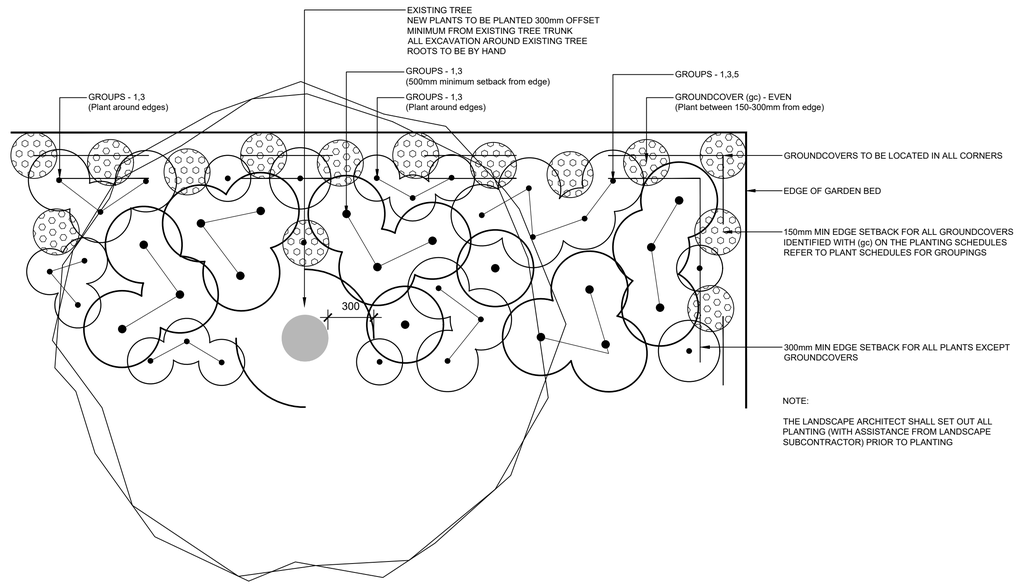
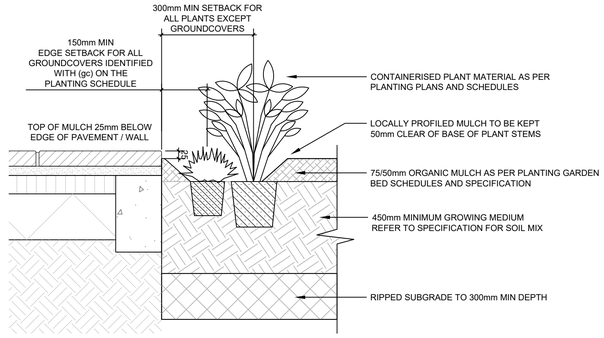
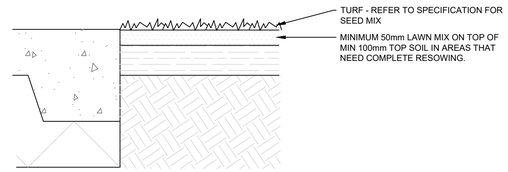


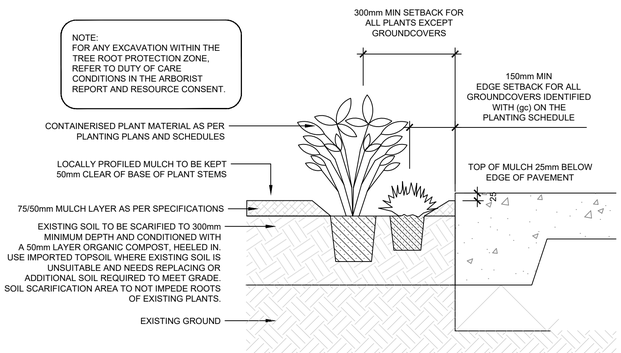
1 . 1:20 PLAN
TYPICAL GARDEN BED SET OUT



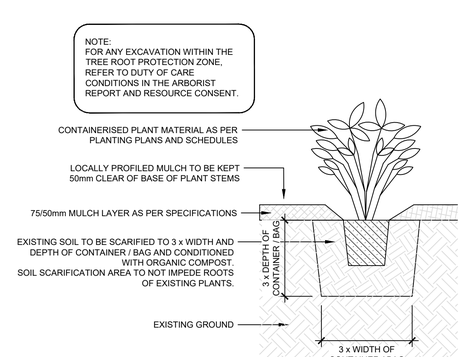
2 . 1:10 SECTION
TYPICAL SHRUB PLANTING DETAIL - NEW SOIL



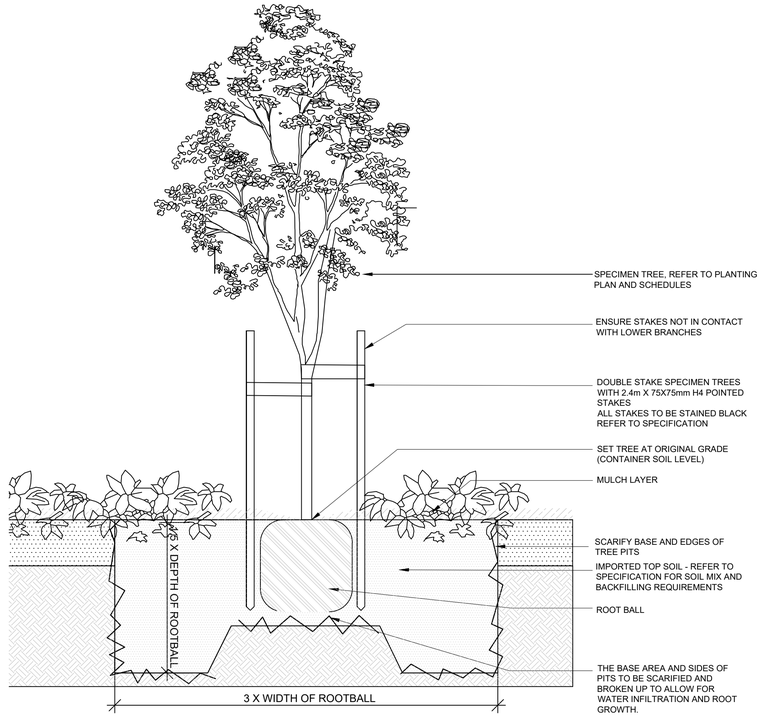
3 . 1:10 SECTION
TYPICAL LAWN DETAIL



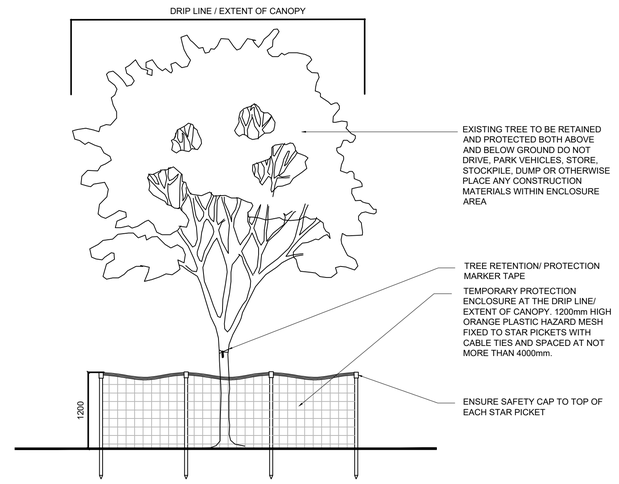
4 . 1:10 SECTION
TYPICAL SHRUB PLANTING DETAIL - RECONDITIONED SOIL



5 . 1:10 DETAIL
TYPICAL SHRUB PLANTING DETAIL - INTO EXISTING SOIL



6 . 1:10 DETAIL
TYPICAL TREE DETAIL



7 . 1:50 DETAIL
TYPICAL TREE PROTECTION

NOTE

A QUALIFIED ARBORIST (APPROVED BY CCC) IS TO UNDERTAKE ALL TREE REMOVALS AND SUPERVISE ALL EXCAVATION WORKS WITHIN THE DRIP LINE OF ALL TREES WITHIN THE CCC ROAD RESERVE.

REFER TO L8-7001 FOR TREE PROTECTION DETAIL, ARBORIST REPORT AND RESOURCE CONSENT CONDITIONS.

FOR TENDER AND CONSENT

REVISIONS

A	FOR TENDER AND CONSENT	31.08.18

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Project Number: 218069.00

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NORMANS RD

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TYPICAL PLANTING DETAILS

SCALE @ A1=

For Jasmax

APPROVED

Milestone Issues	Revision & Date
FIRST ISSUED	◁.
RESOURCE CONSENT	◁27.07.2018
BUILDING CONSENT	◁
SCHEDULING	◁
TENDER	◁27.07.2018

LANDSCAPE

Drawing Number: L8-7001
Revision: A

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NOTES

GB01 = 12m2 total					
BOTANICAL NAME	**COMMON NAME**	**GRADE**	**CENTRES (m)**	**QUANTITY**	**NOTES**
Bergenia 'Bressingham Ruby'	Siberian tea	Pb3	0.4	7	
Dianella 'Little Rev'		Pb3	0.4	6	
Felicia amelloides	blue marguerite	Pb3	0.5	5	
Hemerocallis 'Stella Bella'	day lily	Pb3	0.4	11	
Leptinella diorca (gc)		Pb3	0.4	9	Plant between 150-500mm from edge
Ligularia reniformis	tractor seat	Pb5	0.6	5	
Liriope muscari 'Monroe white'	lilyturf	Pb5	0.4	9	

GB02 = 4m2 total					
BOTANICAL NAME	**COMMON NAME**	**GRADE**	**CENTRES (m)**	**QUANTITY**	**NOTES**
Acaena novae-zelandiae (gc)	Bidibidi	RT	0.4	4	
Dianella 'Little Rev'		Pb3	0.4	5	Plant between 150-500mm from edge
Felicia amelloides	blue marguerite	Pb3	0.5	3	Plant in back corner
Hemerocallis 'Stella Bella'	day lily	Pb3	0.4	7	

GB03 = 26m2 total					
BOTANICAL NAME	**COMMON NAME**	**GRADE**	**CENTRES (m)**	**QUANTITY**	**NOTES**
Arthropodium 'Matapouri Bay'	rengarenga lily	Pb3	0.5	10	
Asplenium bulbiferum	hen and chicken fern	17.5cm	0.5	6	Plant is shaded area
Bergenia 'Bressingham Ruby'	Siberian tea	Pb3	0.4	8	
Dianella 'Little Rev'		Pb3	0.4	8	
Dietes grandiflora	wild iris	Pb5	0.6	8	Plant centrally
Helleborus 'Penny's Pink'		Pb3	0.3	9	
Helleborus 'White Magic'	hellebore	Pb3	0.3	9	
Helleborus 'Winter Sunshine'		Pb3	0.3	9	
Helleborus argutifolius	holly-leaved hellebore	Pb3	0.4	8	
Hemerocallis 'Stella Bella'	day lily	Pb3	0.4	13	
Heuchera 'Berry Smoothie'		Pb3	0.4	5	
Heuchera 'Glitter'		Pb3	0.4	5	
Leptinella diorca (gc)		Pb3	0.4	11	Plant between 150-500mm from edge
Ligularia reniformis	tractor seat	Pb3	0.6	13	
Liriope muscari 'Monroe white'	lilyturf	Pb3	0.4	8	
Persicaria affinis (gc)	Himalayan knotweed	Pb3	0.4	8	Plant between 150-500mm from edge

GB04 = 23m2 total					
BOTANICAL NAME	**COMMON NAME**	**GRADE**	**CENTRES (m)**	**QUANTITY**	**NOTES**
Arthropodium 'Matapouri Bay'	rengarenga lily	Pb3	0.5	14	Plant around bases of existing trees
Bergenia 'Bressingham Ruby'	Siberian tea	Pb3	0.4	14	
Fuchsia procumbens (gc)	creeping fuchsia	Pb3	0.4	8	Plant between 150-500mm from edge
Helleborus 'Penny's Pink'		Pb3	0.3	11	
Helleborus 'White Magic'	hellebore	Pb3	0.3	11	
Helleborus 'Winter Sunshine'		Pb3	0.3	11	
Helleborus argutifolius	holly-leaved hellebore	Pb3	0.4	6	
Hosta 'Colour Glory'	hosta	Pb3	0.6	3	
Hosta 'Moonlight'	hosta	Pb3	0.6	3	
Leptinella diorca (gc)		Pb3	0.4	16	Plant between 150-500mm from edge
Ligularia reniformis	tractor seat	Pb3	0.6	14	
Liriope muscari 'Monroe white'	lilyturf	Pb3	0.4	10	
Liriope muscari 'Royal purple'	lilyturf	Pb3	0.4	10	

GB05 = 34m2 total					
BOTANICAL NAME	**COMMON NAME**	**GRADE**	**CENTRES (m)**	**QUANTITY**	**NOTES**
Arthropodium 'Matapouri Bay'	rengarenga lily	Pb3	0.5	18	Plant around bases of existing trees
Astelia fragrans	kakaha / astelia	Pb5	0.7	7	Plant at back by fence
Bergenia 'Bressingham Ruby'	Siberian tea	Pb3	0.4	16	
Fuchsia procumbens (gc)	creeping fuchsia	Pb3	0.4	12	Plant between 150-500mm from edge
Helleborus 'Penny's Pink'		Pb3	0.3	16	
Helleborus 'White Magic'	hellebore	Pb3	0.3	16	
Helleborus 'Winter Sunshine'		Pb3	0.3	16	
Helleborus argutifolius	holly-leaved hellebore	Pb3	0.4	8	
Hosta 'Pietmont Gold'	hosta	Pb3	0.6	3	
Hosta plantaginea	hosta	Pb3	0.6	3	
Hydrangea 'Saxon pink maiden'	hydrangea	Pb3	0.6	5	
Leptinella diorca (gc)		Pb3	0.4	12	Plant between 150-500mm from edge
Ligularia reniformis	tractor seat	Pb3	0.6	15	
Liriope muscari 'Royal purple'	lilyturf	Pb3	0.4	10	
Polygonatum odoratum	solomons seal	Pb3	0.3	16	
Pulmonaria 'Raspberry Splash'	lungwort	Pb3	0.4	10	

GB06 = 60m2 total					
BOTANICAL NAME	**COMMON NAME**	**GRADE**	**CENTRES (m)**	**QUANTITY**	**NOTES**
Arthropodium 'Matapouri Bay'	rengarenga lily	Pb3	0.5	24	Plant around bases of existing trees
Asplenium bulbiferum	hen and chicken fern	17.5cm	0.5	8	
Astelia fragrans	kakaha / astelia	Pb5	0.6	11	Plant at back by fence
Bergenia 'Bressingham Ruby'	Siberian tea	Pb3	0.4	18	
Bergenia cordifolia	Siberian tea	Pb3	0.4	11	
Choisya ternata	Mexican orange blossom	Pb5	1.2	4	
Fuchsia procumbens (gc)	creeping fuchsia	Pb3	0.4	15	Plant between 150-500mm from edge
Helleborus 'Penny's Pink'		Pb3	0.3	22	
Helleborus 'White Magic'	hellebore	Pb3	0.3	22	
Helleborus 'Winter Sunshine'		Pb3	0.3	22	
Helleborus argutifolius	holly-leaved hellebore	Pb3	0.4	11	
Hosta 'Pietmont Gold'	hosta	Pb3	0.6	6	
Hosta plantaginea	hosta	Pb3	0.6	6	
Hydrangea 'Renate Steniger'	hydrangea	Pb3	0.6	6	
Leptinella diorca (gc)		Pb3	0.4	15	Plant between 150-500mm from edge
Ligularia reniformis	tractor seat	Pb3	0.6	26	
Liriope muscari 'Monroe white'	lilyturf	Pb3	0.4	15	
Liriope muscari 'Royal purple'	lilyturf	Pb3	0.4	15	
Polygonatum odoratum	solomons seal	Pb3	0.3	22	
Pulmonaria 'Raspberry Splash'	lungwort	Pb3	0.4	18	
Rhododendron 'Doc'	rhododendron	Pb5	0.7	4	
Rhododendron 'Sleepy'	rhododendron	Pb5	0.7	4	

GB07 = 20m2 total					
BOTANICAL NAME	**COMMON NAME**	**GRADE**	**CENTRES (m)**	**QUANTITY**	**NOTES**
Arthropodium 'Matapouri Bay'	rengarenga lily	Pb3	0.5	8	
Dianella 'Little Rev'		Pb3	0.4	12	
Dietes grandiflora	wild iris	Pb5	0.6	6	Plant centrally
Euphorbia characias 'Wulfenii'	milkweed	Pb5	0.7	3	Plant is shaded area
Euphorbia 'Martinii'	milkweed	Pb3	0.5	8	
Felicia amelloides	blue marguerite	Pb3	0.5	5	
Hemerocallis 'Stella Bella'	day lily	Pb3	0.4	18	
Heuchera 'Berry Smoothie'		Pb3	0.4	12	
Ligularia reniformis	tractor seat	Pb3	0.6	8	
Lobelia angulata (gc)	panakenake	Pb3	0.4	12	Plant between 150-500mm from edge
Persicaria affinis (gc)	Himalayan knotweed	Pb3	0.4	12	Plant between 150-500mm from edge

GB08 = 7m2 total					
BOTANICAL NAME	**COMMON NAME**	**GRADE**	**CENTRES (m)**	**QUANTITY**	**NOTES**
Dianella 'Little Rev'		Pb3	0.4	8	
Euphorbia 'Martinii'	milkweed	Pb3	0.5	5	
Felicia amelloides	blue marguerite	Pb3	0.5	3	
Hemerocallis 'Stella Bella'	day lily	Pb3	0.4	9	
Lobelia angulata (gc)	panakenake	Pb3	0.4	8	Plant between 150-500mm from edge

GB09 = 12m2 total					
BOTANICAL NAME	**COMMON NAME**	**GRADE**	**CENTRES (m)**	**QUANTITY**	**NOTES**
Arthropodium 'Matapouri Bay'	rengarenga lily	Pb3	0.5	7	Plant around bases of existing trees
Asplenium bulbiferum	hen and chicken fern	17.5cm	0.5	3	
Bergenia 'Bressingham Ruby'	Siberian tea	Pb3	0.4	6	
Bergenia cordifolia	Siberian tea	Pb3	0.4	6	
Fuchsia procumbens (gc)	creeping fuchsia	Pb3	0.4	5	Plant between 150-500mm from edge
Helleborus 'Penny's Pink'		Pb3	0.3	4	
Helleborus 'White Magic'	hellebore	Pb3	0.3	4	
Helleborus 'Winter Sunshine'		Pb3	0.3	4	
Helleborus argutifolius	holly-leaved hellebore	Pb3	0.4	3	
Hemerocallis 'Stella Bella'	day lily	Pb3	0.4	5	
Leptinella diorca (gc)		Pb3	0.4	5	Plant between 150-500mm from edge
Ligularia reniformis	tractor seat	Pb3	0.6	7	
Pulmonaria 'Raspberry Splash'	lungwort	Pb3	0.4	6	

GB10 = 15m2 total					
BOTANICAL NAME	**COMMON NAME**	**GRADE**	**CENTRES (m)**	**QUANTITY**	**NOTES**
Arthropodium 'Matapouri Bay'	rengarenga lily	Pb3	0.5	8	Plant around bases of existing trees
Asplenium bulbiferum	hen and chicken fern	17.5cm	0.5	3	
Asplenium oblongifolium	shining spleenwort	17.5cm	0.5	3	
Astelia fragrans	kakaha / astelia	Pb5	0.6	3	
Bergenia cordifolia	Siberian tea	Pb3	0.4	7	
Fuchsia procumbens (gc)	creeping fuchsia	Pb3	0.4	6	Plant between 150-500mm from edge
Helleborus 'Penny's Pink'		Pb3	0.3	5	
Helleborus 'White Magic'	hellebore	Pb3	0.3	5	
Helleborus 'Winter Sunshine'		Pb3	0.3	5	
Dianella nigra	turutu	Pb5	0.5	11	
Leptinella diorca (gc)		Pb3	0.4	6	Plant between 150-500mm from edge
Ligularia reniformis	tractor seat	Pb3	0.6	5	
Pulmonaria 'Raspberry Splash'	lungwort	Pb3	0.4	7	

GB011 = 60m2 total of new planted area					
BOTANICAL NAME	**COMMON NAME**	**GRADE**	**CENTRES (m)**	**QUANTITY**	**NOTES**
Acaena novae-zelandiae (gc)	piripiri	Pb3	0.4	11	
Achillea millefolium 'Hella Glashoff'		Pb3	0.3	8	Plant between 150-500mm from edge
Achillea millefolium 'Terracotta'		Pb3	0.3	8	
Armeria maritima (pink)	pink sea thrift	Pb3	0.3	15	Plant between 150-500mm from edge
Arthropodium 'Matapouri Bay'	rengarenga lily	Pb3	0.5	8	
Bergenia 'Bressingham Ruby'	Siberian tea	Pb3	0.4	8	
Bergenia cordifolia	Siberian tea	Pb3	0.4	8	
Dianella 'Little Rev'		Pb3	0.4	18	
Dianella nigra	turutu	Pb3	0.5	12	
Dietes grandiflora	wild iris	Pb5	0.6	8	Plant centrally
Euphorbia characias 'Wulfenii'	milkweed	Pb5	0.7	3	Plant is shaded area
Euphorbia glauca	milkweed	Pb3	0.5	5	
Federation daisy 'Summer Angel'		Pb3	0.6	8	Plant centrally
Felicia amelloides	blue marguerite	Pb3	0.5	8	
Gaura 'Ballerina Blush'		Pb3	0.6	11	
Gaura 'So White'		Pb3	0.6	11	Plant is shaded area
Helleborus 'Penny's Pink'		Pb3	0.3	8	
Helleborus 'White Magic'	hellebore	Pb3	0.3	8	
Helleborus 'Winter Sunshine'		Pb3	0.3	8	
Hemerocallis 'Stella Bella'	day lily	Pb3	0.4	22	
Heuchera 'Berry Smoothie'		Pb3	0.4	8	
Heuchera 'Glitter'		Pb3	0.4	8	
Heuchera 'Sweet Tart'		Pb3	0.4	8	
Liatris spicata	gayfeather	Pb3	0.6	4	
Libertia formosa	snowy mermaid	Pb5	0.5	17	
Libertia grandiflora	mikoikoi, NZ iris	Pb5	0.4	18	
Ligularia reniformis	tractor seat	Pb3	0.6	6	
Lobelia angulata (gc)	panakenake	Pb3	0.4	11	Plant between 150-500mm from edge
Muehlenbeckia axillaris (gc)	creeping pohuehue	Pb3	0.4	8	Plant between 150-500mm from edge
Penstemon 'Cha Cha Lavender'		Pb3	0.4	8	
Penstemon 'Snowstorm'		Pb3	0.4	8	
Persicaria affinis (gc)	Himalayan knotweed	Pb3	0.4	18	Plant between 150-500mm from edge
Sisyrinchium striatum	pale yellow-eyed grass	Pb3	0.5	12	

TREE SCHEDULE				
BOTANICAL NAME	**COMMON NAME**	**GRADE**	**HEIGHT**	**QUANTITY**
Acer palmatum	Japanese maple	160Lt	4.5m+	1
Prunus x yedoensis	cherry tree	160Lt	4.5m+	1

Hedge					
CODE	**BOTANICAL NAME**	**COMMON NAME**	**GRADE**	**DIMENSIONS**	**QUANTITY**
Ph.re	Photinia 'Red robin'	photinia	Pb5	1.5m+ prior to trimming	3

FOR TENDER AND CONSENT

REVISIONS

A	FOR TENDER AND CONSENT	31.08.18

Jasmax
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CIVIL AND SERVICES ENGINEERS
POWELL FENWICK CONSULTANTS
QUANTITY SURVEYORS
RAWLINSONS

Project Number: 218069.00

ST ANDREWS COLLEGE

NORMANS RD

Sheet

PLANTING SCHEDULES

SCALE @ A1=

For Jasmax

APPROVED

Milestone Issues	Revision & Date
FIRST ISSUED	◁
RESOURCE CONSENT	◁ 31.08.2018
BUILDING CONSENT	◁
SCHEDULING	◁
TENDER	◁ 31.08.2018

LANDSCAPE

Drawing Number: L8-7002 Revision: A

DO NOT SCALE OFF THIS DRAWING

CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING ANY WORK

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St Andrew's College

NORMANS ROAD PROJECT

ST ANDREW'S COLLEGE

CIVIL DRAWINGS

FOR CONSENT AND TENDER

REFERENCE - 180129

Powell Fenwick

NORMANS ROAD

C1.1

C1.2

Extg building (New shop)

Install new wheel stops. Details as per detail on sheet C3.1.

KEY:

1:200 @ A1
1:400 @ A3

- Approximate legal boundaries for information only
- 26.60 Extg levels
- × 26.60 New levels
- New 30mm asphalt
- New 50mm asphalt
- New concrete edge thickening
- New 150mm thick concrete
- New 100mm thick concrete
- New tiled paving
- New permeable paving
- New landscaped area
- Extg sump
- SUMP New sump with corner sump grate
- Extg sump
- (KO) New kerb only
- (K&C) New kerb and flat channel
- (TE) New timber edge
- (CD) New cutdown kerb and ramped asphalt or concrete
- Extg sewer manhole
- Extg sewer inspection chamber
- Extg stormwater manhole
- SMH New stormwater manhole
- Extg stormwater inspection chamber
- Extg overflow relief gully
- RP New rodding point
- Extg down pipe
- H Extg fire hydrant
- W Extg water meter
- P Extg phone connection
- PP Extg power pole
- LP Extg light pole
- Extg fence
- Tactile warning pavers to CCC CSS SD 627
- Tactile directional pavers to CCC CSS SD 627

4 2 0 4 8 12 16 20m

SCALE: 1:200 @ A1

NOTES:

CCC CSS SD - refers to Christchurch City Council Construction Standard Specifications Standard Detail.

All joints against existing asphalt shall be bandaged and sealed on the completion of the works

Origin of levels:
BM ECHM, corner of Watford & Halton Streets
RL 20.430 C.D.D
Datum Post June 2011 Quake

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St Andrew's College

NORMANS ROAD PROJECT
ST ANDREW'S COLLEGE

CIVIL DRAWINGS
SITEWORKS OVERVIEW

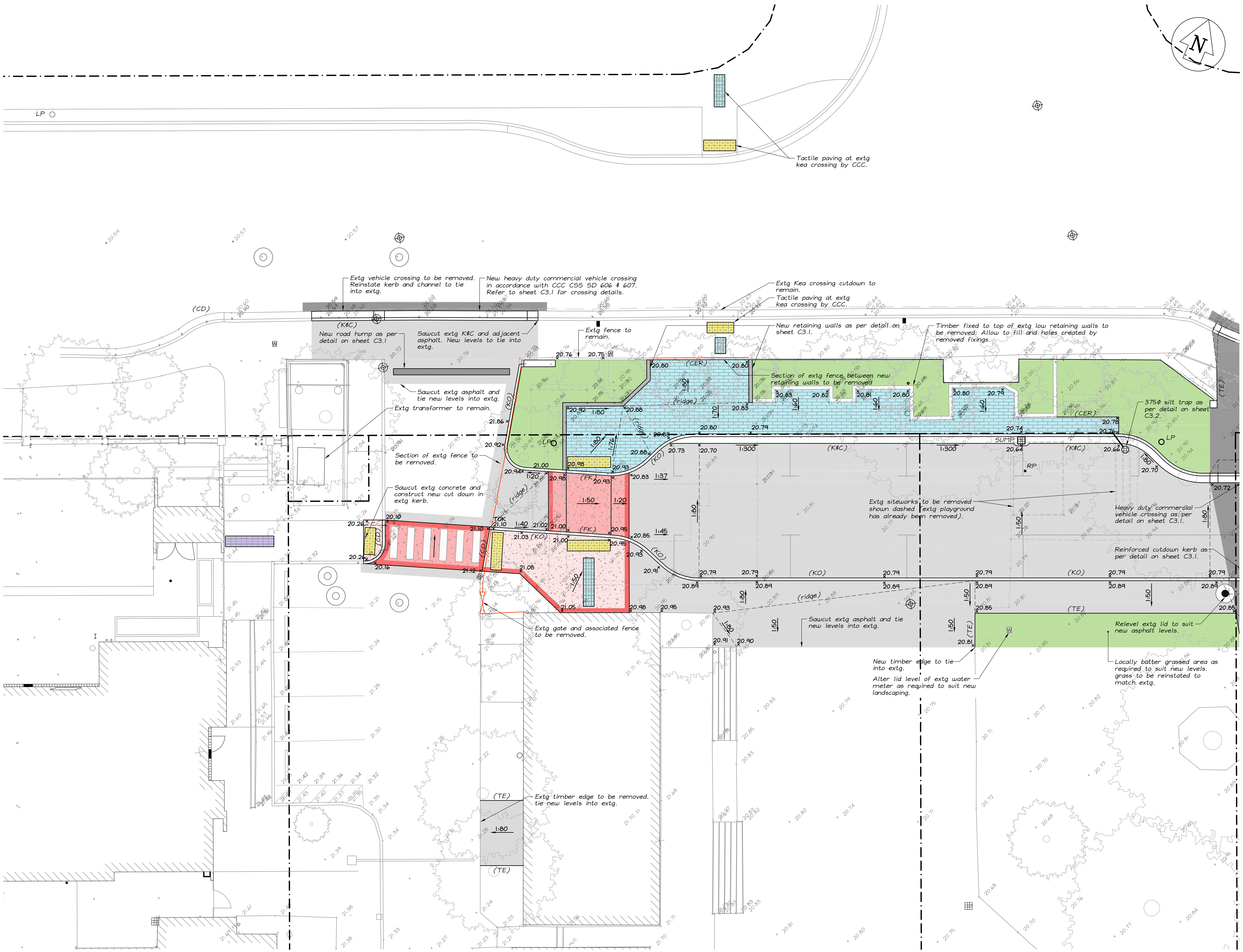
ISSUE	DATE	AMENDMENT
A	31.08.18	For Consent And Tender

Powell Fenwick

DESIGNED	SCALE AT A1	SHEET
RT	1:200	C1.0
DRAWN		
RT	REFERENCE	ISSUE
CHECKED	180129	A
-		

ACENZ

04.09.2018 S:\Jobs 180101-180200\180129\Civil\Drawings\00 Current\180129 C1.1 Siteworks


Tactile paving at extg kea crossing by CCC.
(CD)
Extg vehicle crossing to be removed. Reinstate kerb and channel to tie into extg.
New heavy duty commercial vehicle crossing in accordance with CCC CSS SD 606 & 607. Refer to sheet C3.1 for crossing details.
Extg Kea crossing cutdown to remain.
Tactile paving at extg kea crossing by CCC.
New road hump as per detail on sheet C3.1
Sawcut extg K&C and adjacent asphalt. New levels to tie into extg.
Extg fence to remain.
New retaining walls as per detail on sheet C3.1.
Timber fixed to top of extg low retaining walls to be removed. Allow to fill and holes created by removed fixings.
Section of extg fence between new retaining walls to be removed
Sawcut extg asphalt and tie new levels into extg.
Extg transformer to remain.
375Ø silt trap as per detail on sheet C3.2.
Section of extg fence to be removed.
Sawcut extg concrete and construct new cut down in extg kerb.
Extg siteworks to be removed shown dashed (extg playground has already been removed).
Heavy duty commercial vehicle crossing as per detail on sheet C3.1.
Reinforced cutdown kerb as per detail on sheet C3.1.
Extg gate and associated fence to be removed.
Sawcut extg asphalt and tie new levels into extg.
Relevel extg lid to suit new asphalt levels.
New timber edge to tie into extg.
Alter lid level of extg water meter as required to suit new landscaping.
Locally batter grassed area as required to suit new levels. grass to be reinstated to match extg.
Extg timber edge to be removed. tie new levels into extg.

KEY:

1:100 @ A1
1:200 @ A3

	Approximate legal boundaries for information only
× 26.60	Extg levels
× 26.60	New levels
	New 30mm asphalt
	New 50mm asphalt
	New concrete edge thickening
	New 150mm thick concrete
	New 100mm thick concrete
	New tiled paving
	New permeable paving
	New landscaped area
	Extg sump
SUMP	New sump with corner sump grate
	Extg sump
(KO)	New kerb only
(FK)	New flush kerb
(K&C)	New kerb and flat channel
(3VC)	New 300 wide v-channel
(TE)	New timber edge
(CD)	New cutdown kerb and ramped asphalt or concrete
(CER)	Concrete edge restraint
	Extg sewer manhole
	Extg stormwater manhole
	New stormwater manhole
	Extg stormwater inspection chamber
	Extg overflow relief gully
RP	New rodding point
	Extg down pipe
PP	Extg power pole
LP	Extg light pole
H	Extg fire hydrant
W	Extg water meter
P	Extg phone connection
	Extg fence
	Extg fence to be removed
	Tactile warning pavers to CCC CSS SD 627
	Tactile directional pavers to CCC CSS SD 627

SCALE: 1:100 @ A1

NOTES:

CCC CSS SD - refers to Christchurch City Council Construction Standard Specifications Standard Detail.

All joints against existing asphalt shall be bandaged and sealed on the completion of the works

Origin of levels:
BM ECHM, corner of Watford & Halton Streets
RL 20.430 C.D.D
Datum Post June 2011 Quake

04.09.2018 S:\Jobs 180101-180200\180129\Civil\Drawings\00 Current\180129 C1.1 Siteworks

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St Andrew's College

NORMANS ROAD PROJECT
ST ANDREW'S COLLEGE

CIVIL DRAWINGS
SITEWORKS

ISSUE	DATE	AMENDMENT
A	31.08.18	For Consent And Tender

Powell Fenwick

DESIGNED	SCALE AT A1	SHEET
RT	1:100	C1.1
DRAWN RT	REFERENCE	ISSUE
CHECKED -	180129	A

ACENZ

Heavy duty commercial vehicle crossing as per detail on sheet C3.1.

low retaining walls to
d holes created by

375ø silt trap as per detail on sheet C3.2.

Heavy duty commercial vehicle crossing as per detail on sheet C3.1.

Reinforced cutdown kerb as per detail on sheet C3.1.

50mm thick asphalt over construction access to future Performing arts development.

Relevel extg lid to suit new asphalt levels.

Locally batter grassed area as required to suit new levels. grass to be reinstated to match extg.

Replace grated lid with solid lid. New lid level to suit new asphalt levels.

Extg sandpit to be removed shown dashed.

New drinking fountain.

Water supply for drinking fountain to be taken from extg adjacent hose tap.

Levels at building face to match extg (typ.).

Care to be taken during excavations in this area not to disturb extg tree roots. Arborist to be consulted prior to the removal of any tree roots in this area.

New levels to suit extg pavment.

A minimum of 600mm cover is required for all pipework located within the extents of the provisional access for future works. Contractor to report to engineer if this cannot be achieved by the proposed levels shown

EXTG BUILDING FFL 21.02.

Extg sand pit to be removed and asphalted over.

Sawcut extg asphalt and tie new levels into extg.

Isolation valve in toby box for connection under future works.

Sawcut extg asphalt and tie new levels into extg.

Relay adjacent pavers as required.

Sawcut extg kerb and tie new into extg.

New pavers to tie into extg. allow to remove and relay extg pavers as required to form seamless transition.

Sawcut extg asphalt and tie new levels into extg.

Extg pedestrian crossing to remain.

Sawcut and remove section of extg K&C to allow for concrete ramping.

Sawcut extg asphalt and tie new levels into extg.

Sawcut extg kerb and tie new levels into extg.

Proposed structure, refer to Landscape Arch. for details. Implications on Civil design TBC.

Sawcut extg asphalt and tie new levels into extg.

Abrasive blast to remove extg carpark markings.

New wheel stops, refer to detail on sheet C3.1.

Sawcut extg asphalt and tie new levels into extg.

Sawcut extg asphalt and tie new levels into extg.

Extg raised pedestrian crossing to be removed shown dashed. reinstate asphalt to tie into extg.

Extg pipework laid within extg channel covered with asphalt to be removed.

Asphalt pedestrian crossing over extg channel to be removed.

Extg hardfill within garden areg to be removed and replaced with topsoil as per Landscape Arch. specification.

Sawcut extg asphalt and reshape to suit new levels.

Extg roadmarking to be removed.

Sawcut extg Kerb and tie new into extg.

Stormwater 360 stormfilter as per details on sheet C3.2,

Depth of edge thickening may reduced around base of extg tree if excavations around tree roots do not allow for thickening to be constructed as per detail on sheet C3.1: Hl2 trimmer shall be included in any case.

KEY:

1:100 @ A1
1:200 @ A3

Approximate legal boundaries for information only

- Extg levels
- × 26.60 — New levels
- New 30mm asphalt
- New 50mm asphalt
- New concrete edge thickening
- New 150mm thick concrete
- New 100mm thick concrete
- New tiled paving
- New permeable paving
- New landscaped area
- Extg sump
- SUMP — New sump with corner sump grate
- Extg sump
- (KO) — New kerb only
- (FK) — New flush kerb
- (K&C) — New kerb and flat channel
- (3VC) — New 300 wide v-channel
- (TE) — New timber edge
- (CD) — New cutdown kerb and ramped asphalt or concrete
- (CER) — Concrete edge restraint
- Extg sewer manhole
- Extg stormwater manhole
- New stormwater manhole
- Extg stormwater inspection chamber
- Extg overflow relief gully
- RP — New rodding point
- Extg down pipe
- PP — Extg power pole
- LP — Extg light pole
- H — Extg fire hydrant
- W — Extg water meter
- P — Extg phone connection
- Extg fence
- Extg fence to be removed
- Tactile warning pavers to CCC CSS SD 627
- Tactile directional pavers to CCC CSS SD 627

SCALE: 1:100 @ A1
0 1 2 4 6 8 10m

NOTES:

CCC CSS SD - refers to Christchurch City Council Construction Standard Specifications Standard Detail.

All joints against existing asphalt shall be bandaged and sealed on the completion of the works

Origin of levels:
BM ECHM, corner of Watford & Halton Streets
RL 20.430 C.D.D
Datum Post June 2011 Quake

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St Andrew's College

NORMANS ROAD PROJECT
ST ANDREW'S COLLEGE

CIVIL DRAWINGS
SITEWORKS

ISSUE	DATE	AMENDMENT
A	31.08.18	For Consent And Tender

Powell Fenwick

DESIGNED	SCALE AT A1	SHEET
MRT	1:100	C1.2
DRAWN		
RT	REFERENCE	ISSUE
CHECKED	180129	A
-		

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NORMANS ROAD

C2.1

C2.2

Extg building
(New shop)

KEY: 1:200 @ A1
1:400 @ A3

- Approximate legal boundaries for information only
- Extg sump
- SUMP — New sump with corner sump grate
- Extg sump
- Extg sewer
- New sewer
- Extg stormwater
- Assumed extg stormwater
- New stormwater
- 65ϕ novaflo pipework
- Extg water
- New water
- Extg power
- Extg comms.
- Extg gas
- Extg sewer manhole
- Extg sewer inspection chamber
- Extg stormwater manhole
- SMH — New stormwater manhole
- Extg stormwater inspection chamber
- Extg overflow relief gully
- RP — New rodding point
- H — Extg fire hydrant
- W — Extg water meter
- P — Extg phone connection
- PP — Extg power pole
- LP — Extg light pole
- Extg fence

4 2 0 4 8 12 16 20m
SCALE: 1:200 @ A1

NOTES:

CCC CSS SD - refers to Christchurch City Council Construction Standard Specifications Standard Detail.

All joints against existing asphalt shall be bandaged and sealed on the completion of the works

Origin of levels:
BM ECH1, corner of Watford & Halton Streets
RL 20.430 C.D.D.
Datum Post June 2011 Quake

04.09.2018 S:\Jobs 180101-180200\180129\Civil\Drawings\00 Current\180129 C2.1 Drainage

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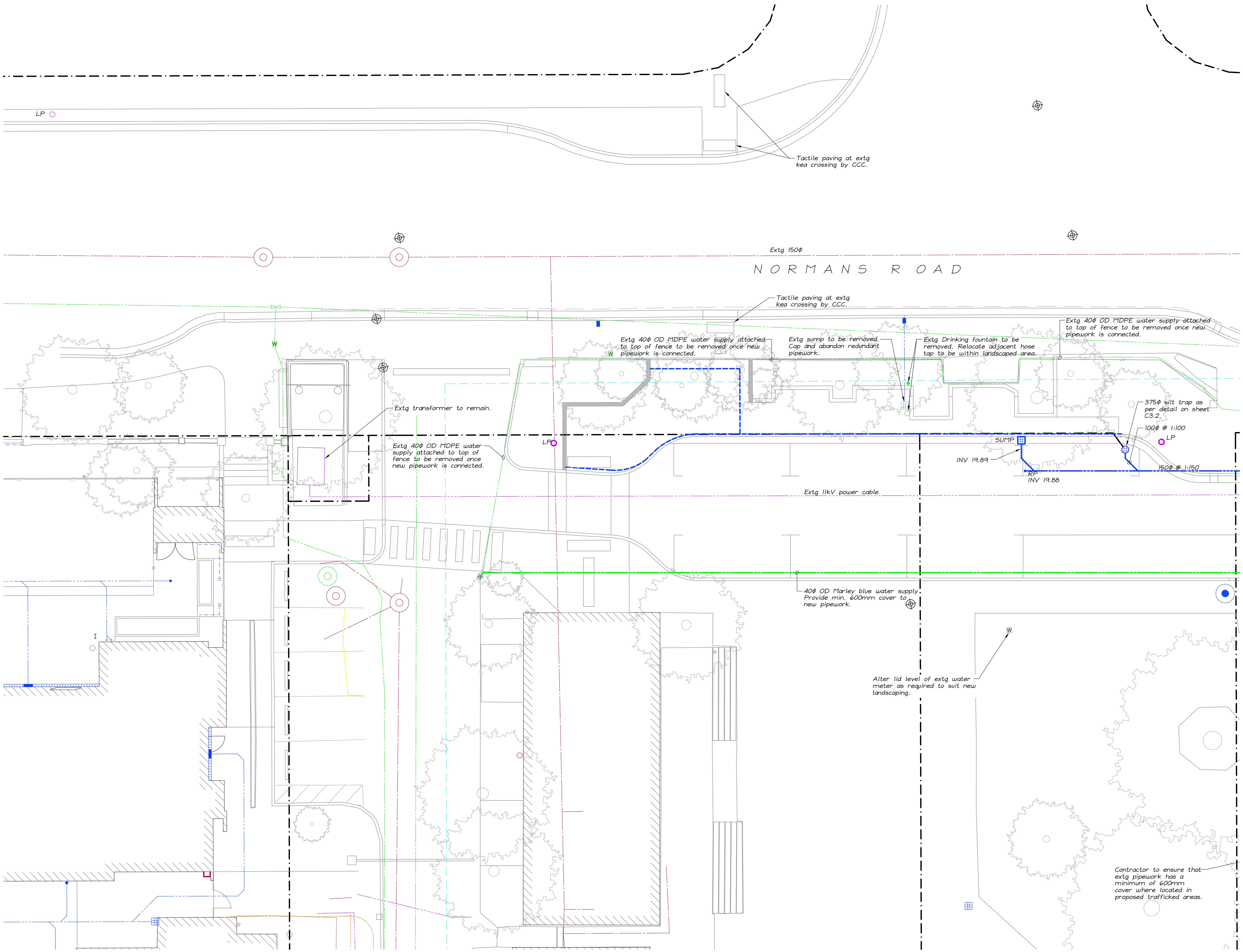
NORMANS ROAD PROJECT
ST ANDREW'S COLLEGE

CIVIL DRAWINGS
DRAINAGE OVERVIEW

ISSUE	DATE	AMENDMENT
A	31.08.18	For Consent And Tender

Powell Fenwick

DESIGNED RT	SCALE AT A1 1:200	SHEET C2.0	
DRAWN RT			
CHECKED -	REFERENCE 180129	ISSUE A	ACENZ



KEY:

1:100 @ A1
1:200 @ A3

- Approximate legal boundaries for information only
- SUMP — New sump with CCC slotted grate
- Extg sump
- SUMP — New sump with corner sump grate
- Extg sump
- Extg sewer
- Extg stormwater
- Assumed extg stormwater
- New stormwater
- 65Ø novaflo pipework
- Extg water
- New water
- Extg power
- Extg comms.
- Extg gas
- Extg sewer manhole
- Extg stormwater manhole
- SMH — New stormwater manhole
- RP — New rodding point
- DP — Extg downpipe sump to be sealed and leaf guard installed
- Extg down pipe
- PP — Extg power pole
- LP — Extg light pole
- H — Extg fire hydrant
- W — Extg water meter
- P — Extg phone connection
- Extg fence

N

NOTES:

CCC CSS SD - refers to Christchurch City Council Construction Standard Specifications Standard Detail.

It is a requirement that only CCC approved drainlayers are permitted to work within city street or road boundaries.

The Contractor is to confirm the invert levels of the relevant existing stormwater and sewer pipes prior to commencing work on site.

The stormwater pipework has been designed to NZBC E1 using a rainfall intensity of 55mm/hr and a duration of 10 minutes.

All pipework within the site boundary is to be SN4 unless otherwise stated.

All pipework beyond the site boundary is to be SN16 unless otherwise stated.

All joints against existing asphalt shall be bandaged and sealed on the completion of the works

Origin of levels:
BM ECHM, corner of Watford & Halton Streets
RL 20.430 C.D.D
Datum Post June 2011 Quake

SCALE: 1:100 @ A1 (0 – 10m)

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NORMANS ROAD PROJECT
ST ANDREW'S COLLEGE

CIVIL DRAWINGS
DRAINAGE

ISSUE	DATE	AMENDMENT
A	31.08.18	For Consent And Tender

Powell Fenwick

DESIGNED RT	SCALE AT A1 1:100	SHEET C2.1
DRAWN RT	REFERENCE 180129	ISSUE A
CHECKED -		

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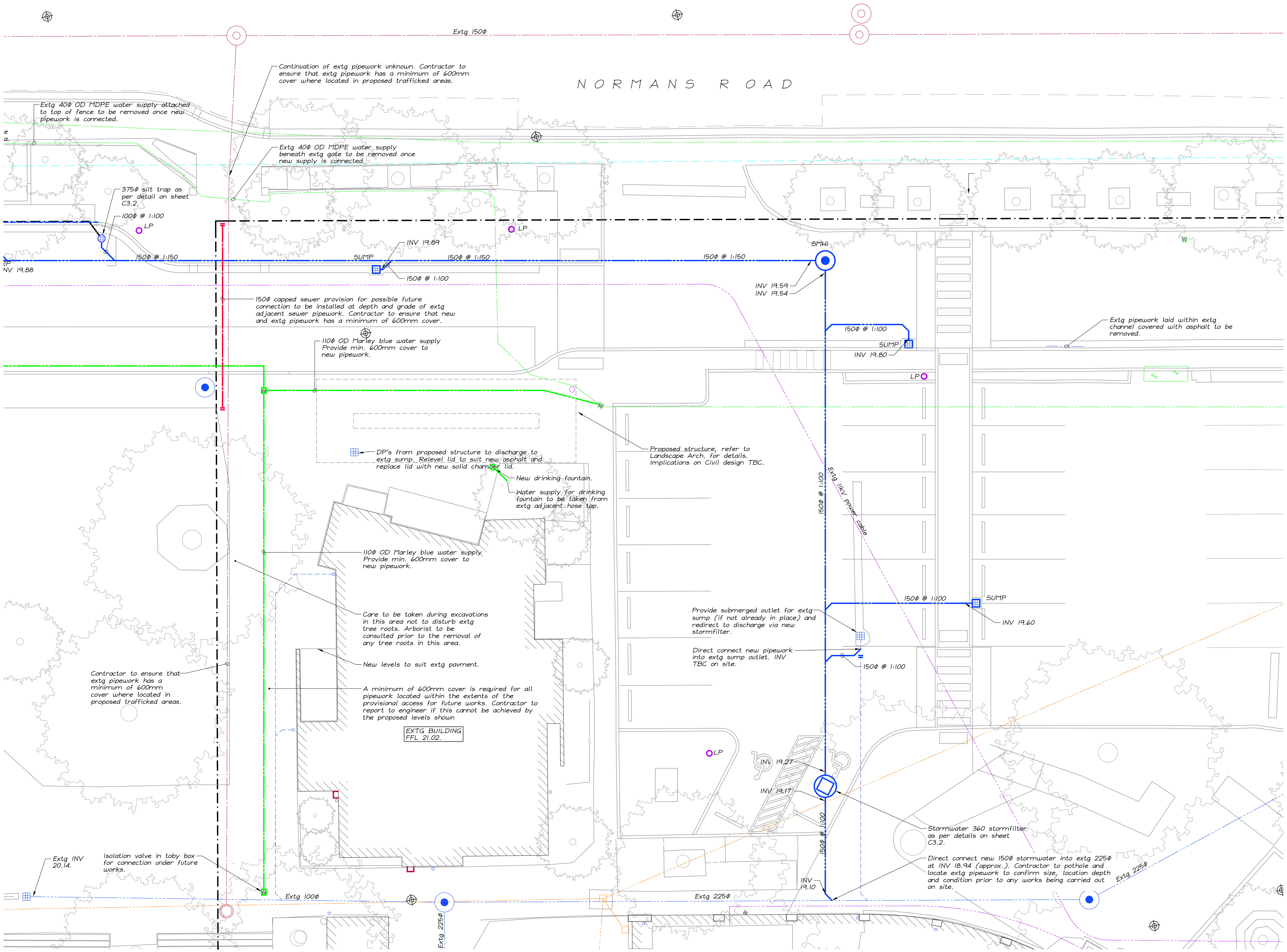
Extg 150Ø
NORMANS ROAD
Continuation of extg pipework unknown. Contractor to ensure that extg pipework has a minimum of 600mm cover where located in proposed trafficked areas.
Extg 40Ø OD MDPE water supply attached to top of fence to be removed once new pipework is connected.
Extg 40Ø OD MDPE water supply beneath extg gate to be removed once new supply is connected.
375Ø silt trap as per detail on sheet C3.2.
100Ø @ 1:100
LP
150Ø @ 1:150
SUMP
INV 19.89
150Ø @ 1:150
150Ø @ 1:150
SMH
150Ø @ 1:100
INV 19.88
INV 19.59
INV 19.54
150Ø capped sewer provision for possible future connection to be installed at depth and grade of extg adjacent sewer pipework. Contractor to ensure that new and extg pipework has a minimum of 600mm cover.
110Ø OD Marley blue water supply Provide min. 600mm cover to new pipework.
150Ø @ 1:100
SUMP
INV 19.80
LP
Extg pipework laid within extg channel covered with asphalt to be removed.
Proposed structure, refer to Landscape Arch. for details. Implications on Civil design TBC.
DP's from proposed structure to discharge to extg sump. Relevel lid to suit new asphalt and replace lid with new solid chamber lid.
New drinking fountain.
Water supply for drinking fountain to be taken from extg adjacent hose tap.
Extg HV Power cable
150Ø @ 1:100
110Ø OD Marley blue water supply Provide min. 600mm cover to new pipework.
Care to be taken during excavations in this area not to disturb extg tree roots. Arborist to be consulted prior to the removal of any tree roots in this area.
New levels to suit extg pavment.
A minimum of 600mm cover is required for all pipework located within the extents of the provisional access for future works. Contractor to report to engineer if this cannot be achieved by the proposed levels shown
EXTG BUILDING FFL 21.02
Contractor to ensure that extg pipework has a minimum of 600mm cover where located in proposed trafficked areas.
Provide submerged outlet for extg sump (if not already in place) and redirect to discharge via new stormfilter.
Direct connect new pipework into extg sump outlet. INV TBC on site.
150Ø @ 1:100
SUMP
INV 19.60
150Ø @ 1:100
LP
INV 19.27
INV 19.17
150Ø @ 1:100
Stormwater 360 stormfilter as per details on sheet C3.2.
Direct connect new 150Ø stormwater into extg 225Ø at INV 18.94 (approx.). Contractor to pothole and locate extg pipework to confirm size, location depth and condition prior to any works being carried out on site.
INV 19.10
Extg 225Ø
Extg INV 20.14.
Isolation valve in toby box for connection under future works.
Extg 100Ø
Extg 225Ø
Extg 225Ø

KEY:

1:100 @ A1
1:200 @ A3

(symbol)	Approximate legal boundaries for information only
SUMP	New sump with CCC slotted grate
(symbol)	Extg sump
SUMP	New sump with corner sump grate
(symbol)	Extg sump
(line)	Extg sewer
(line)	Extg stormwater
(line)	Assumed extg stormwater
(line)	New stormwater
(line)	65Ø novaflo pipework
(line)	Extg water
(line)	New water
(line)	Extg power
(line)	Extg comms.
(line)	Extg gas
(symbol)	Extg sewer manhole
(symbol)	Extg stormwater manhole
SMH	New stormwater manhole
RP	New rodding point
DP	Extg downpipe sump to be sealed and leaf guard installed
(symbol)	Extg down pipe
PP	Extg power pole
LP	Extg light pole
H	Extg fire hydrant
W	Extg water meter
P	Extg phone connection
(line)	Extg fence

N

NOTES:

CCC CSS SD - refers to Christchurch City Council Construction Standard Specifications Standard Detail.

It is a requirement that only CCC approved drainlayers are permitted to work within city street or road boundaries.

The Contractor is to confirm the invert levels of the relevant existing stormwater and sewer pipes prior to commencing work on site.

The stormwater pipework has been designed to NZBC E1 using a rainfall intensity of 55mm/hr and a duration of 10 minutes.

All pipework within the site boundary is to be SN4 unless otherwise stated.

All pipework beyond the site boundary is to be SN16 unless otherwise stated.

All joints against existing asphalt shall be bandaged and sealed on the completion of the works

Origin of levels:
BM ECHM, corner of Watford & Halton Streets
RL 20.430 C.D.D
Datum Post June 2011 Quake

SCALE: 1:100 @ A1 — 0 2 4 6 8 10m

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St Andrew's College

NORMANS ROAD PROJECT
ST ANDREW'S COLLEGE

CIVIL DRAWINGS
DRAINAGE

ISSUE	DATE	AMENDMENT
A	31.08.18	For Consent And Tender

Powell Fenwick

DESIGNED RT	SCALE AT A1 1:100	SHEET C2.2
DRAWN RT	REFERENCE 180129	ISSUE A
CHECKED -		

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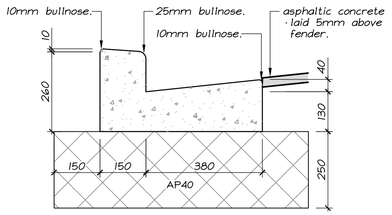
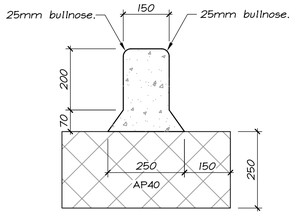
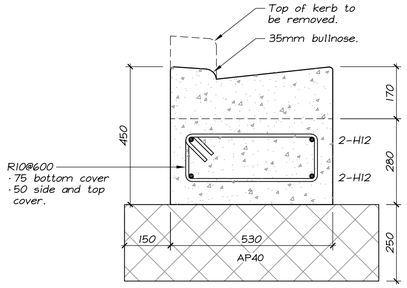
04.09.2018 S:\Jobs 180101-180200\180129\Civil\Drawings\00 Current\180129 C2.1 Drainage



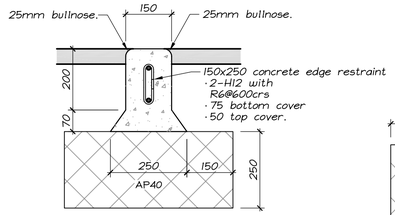
TYPICAL KERB AND FLAT CHANNEL (K&C)
1:10



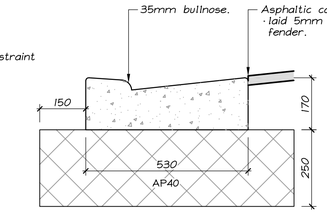
TYPICAL KERB ONLY (KO)
1:10



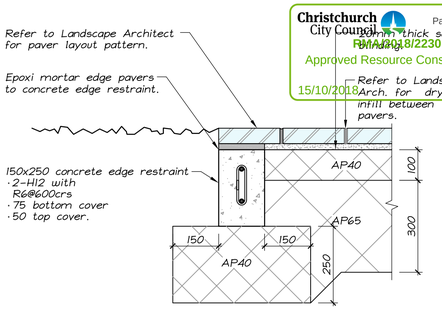
TYPICAL HEAVY DUTY COMMERCIAL CROSSING
1:10



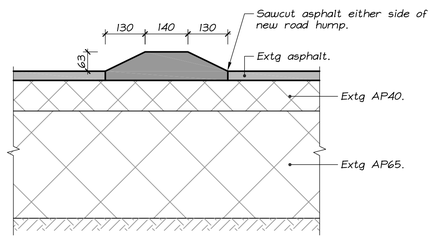
TYPICAL REINFORCED CUTDOWN KERB
1:10



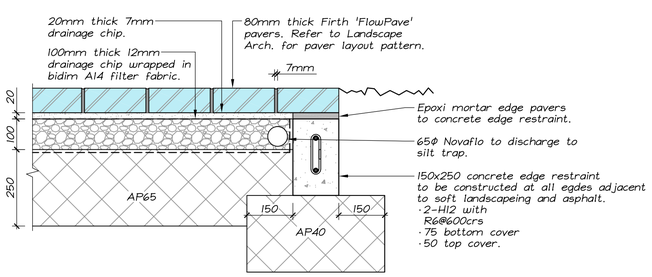
TYPICAL CUTDOWN KERB AND FLAT CHANNEL (CD)
1:10



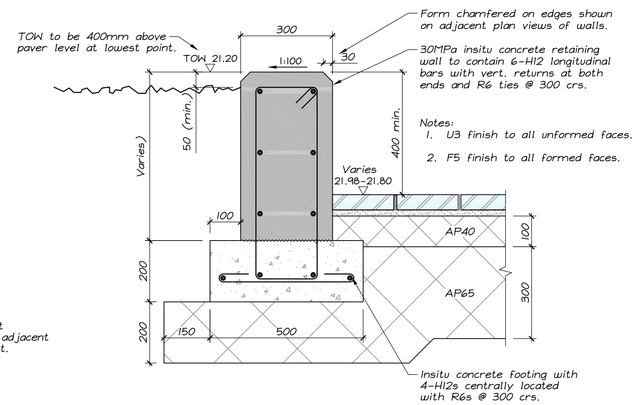
CONCRETE EDGE RESTRAINT
1:10



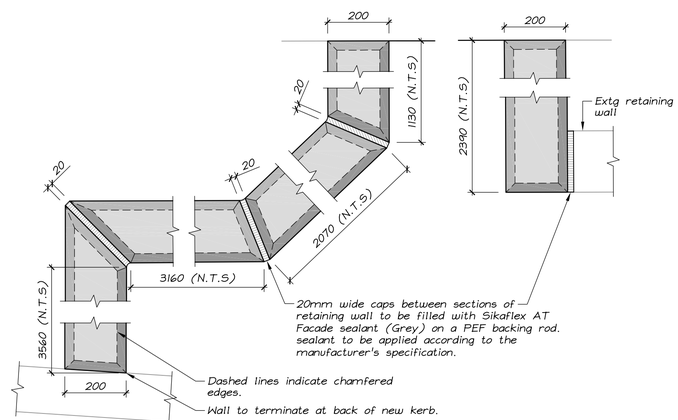
NEW ROAD HUMP
1:10



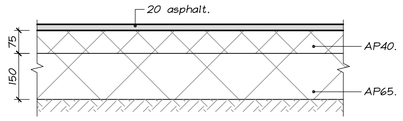
PERMIABLE PAVING SECTION
1:10



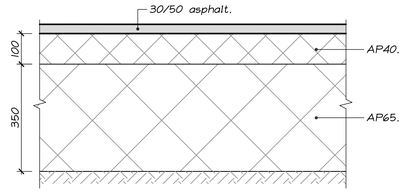
NEW RETAINING WALL DETAIL
1:10



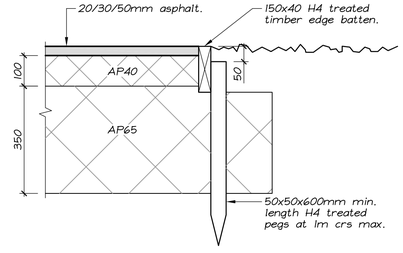
NEW RETAINING WALL PLAN VIEWS
1:10



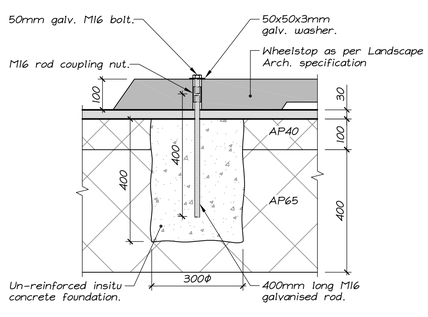
PEDESTRIAN PAVEMENT SECTION
1:10



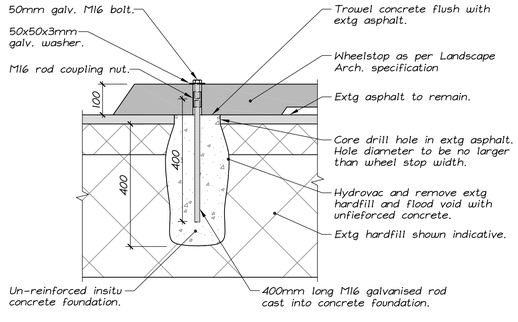
CARPARK PAVEMENT SECTION
1:10



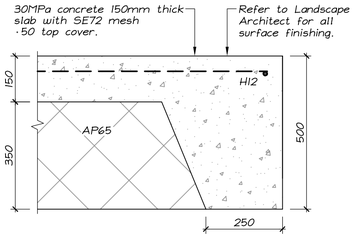
TIMBER EDGE DETAIL (TE)
1:10



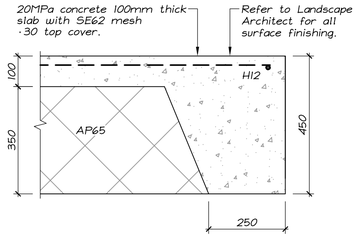
WHEELSTOP FIXING (NEW ASPHALT)
1:10



WHEELSTOP FIXING (EXTG ASPHALT)
1:10



TYPICAL 150MM EDGE THICKENING
1:10



TYPICAL 100MM EDGE THICKENING
1:10

Jasmax

St Andrew's College

NORMANS ROAD PROJECT
ST ANDREW'S COLLEGE

CIVIL DRAWINGS
DETAILS

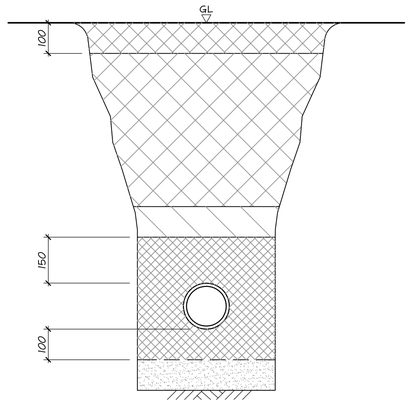
ISSUE	DATE	AMENDMENT
A	31.08.18	For Consent And Tender

Powell Fenwick

DESIGNED	SCALE AT A1	SHEET	
MRT	AS SHOWN	C3.1	
DRAWN			
RT	REFERENCE	ISSUE	
CHECKED	180129	A	
-			

ACENZ

ZONE	MATERIAL
	ROAD SURFACES
Base course	AP40
Sub-base	AP65
Trench fill	AP65
Bedding	AP20
Over-excavation	



NOTES:

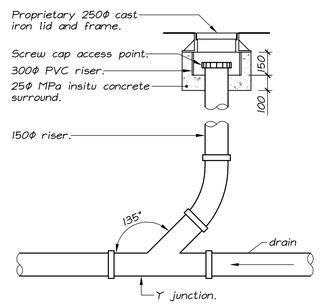
1. Compact and evenly grade finish trench floor.
2. Sides of excavation to be kept vertical to at least 150 above the pipe.

TRENCH CLEARANCE

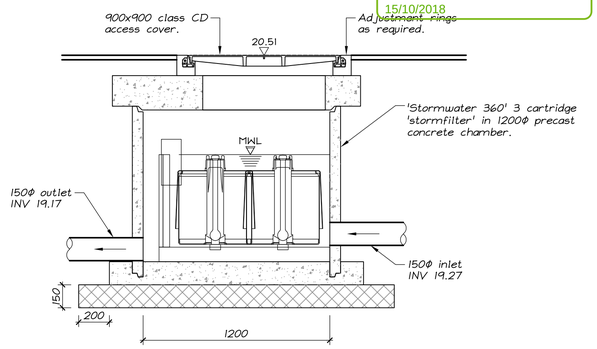
NOMINAL DIAMETER	MINIMUM CLEARANCE
100	100
150 - 300	150

·Trench width to enable pipe to be safely laid and compacted around the side support zone.

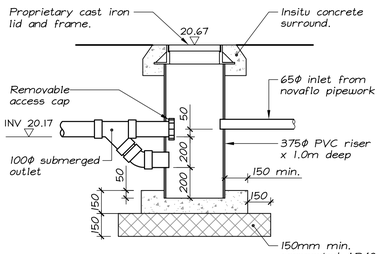
STANDARD TRENCH DETAIL - HARDSTAND AREAS
1:10



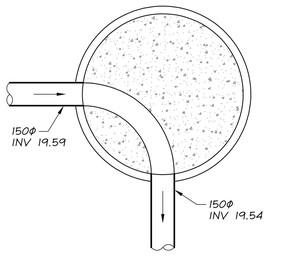
TYPICAL 150Ø RODDING POINT
1:20



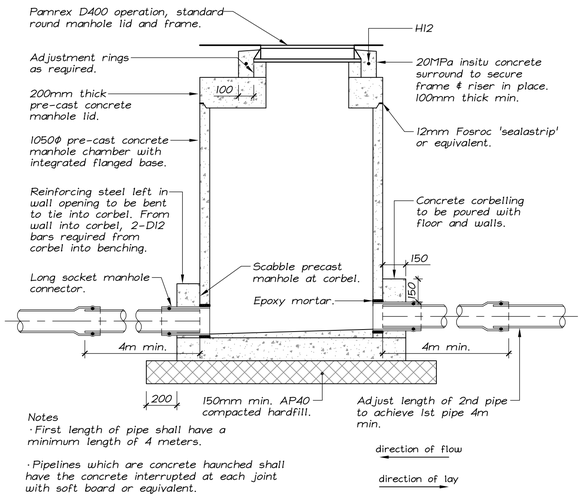
3 CARTRIDGE 'STORMFILTER' CHAMBER
1:20



375Ø PVC SILT TRAP
1:20



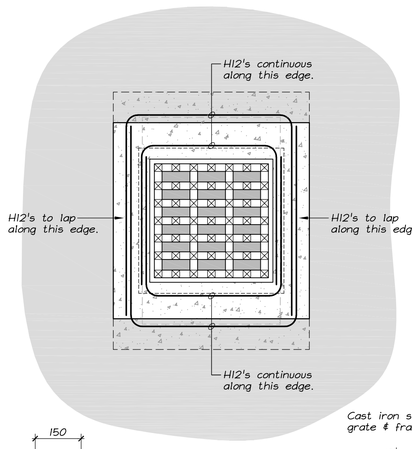
SMH1
LL: 20.67 approx.
1:20

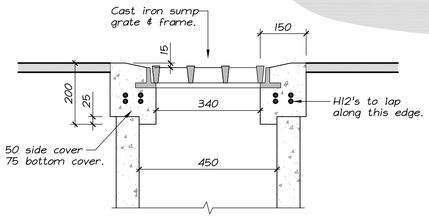


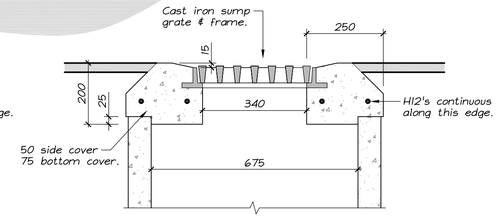
Notes
·First length of pipe shall have a minimum length of 4 meters.

·Pipelines which are concrete haunched shall have the concrete interrupted at each joint with soft board or equivalent.

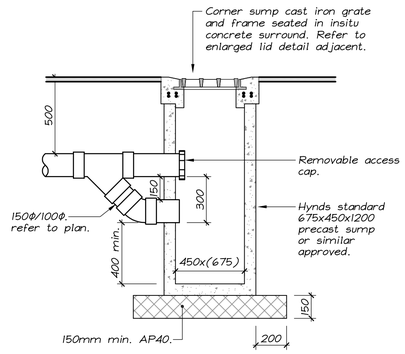
STANDARD MANHOLE DETAIL
1:20





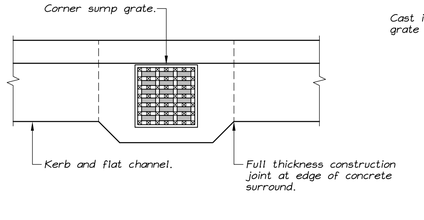


SUMP GRATE & CONCRETE SURROUND DETAIL
1:10

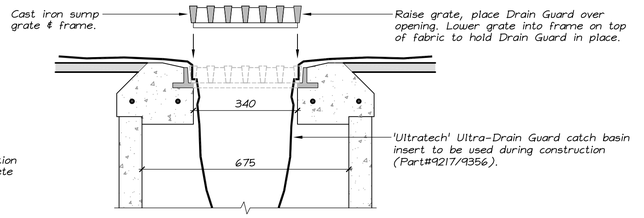


Surface entry sumps shall comply with NZBC E1/AS1/3.6.2 Type Two (Fig 9). They must be fitted with submerged or trapped outlet to comply with NZBC E1/AS1/3.6.1 (c) comprising of a ramped junction and 45° bend as shown above. Bends into the sump or, capped tees to form the trap are not permitted. All surface entry sumps shall have a concrete surround.

NEW SUMP
1:20



TYPICAL CONSTRUCTION JOINTS AT SUMPS
1:20



SUMP SURROUND WITH ULTRA-DRAIN GUARD
1:10

Jasmax

St Andrew's College

NORMANS ROAD PROJECT
ST ANDREW'S COLLEGE

CIVIL DRAWINGS
DETAILS

ISSUE	DATE	AMENDMENT
A	31.08.18	For Consent And Tender

Powell Fenwick

DESIGNED	SCALE AT A1	SHEET
MRT	AS SHOWN	C3.2
DRAWN		
RT	REFERENCE	ISSUE
CHECKED	180129	A
-		

ACENZ

28.08.2018 S:\Jobs 180101-180200\180129\Civil\Drawings\00 Current\180129 C3.1 Details

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PO Box
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Saint Andrews College, Papanui

Arboricultural Tree Survey

For	Hollands tree services 3 Bounty St Bryndwr Christchurch 8053
Site	Saint Andrews School Normans Road
Contact	Adam Hollands Hollands Tree Services info@hollandstreeservices.co.nz
Prepared by:	Toby Chapman 027 495 7441 Toby@arborlab.co.nz
Reviewed by:	Peter van Loon – Consultant, Arborlab
Brief:	Arboricultural assessment of proposed tree removal to assist in consent application.

Date: 28/08/2018

Introduction

1. Arborlab Limited has been engaged by Adam Hollands from Hollands Tree Services to assist in the assessment of the trees located within the Normans Road project for Saint Andrews School. The purpose of this report is to assess the trees located within the Christchurch City Council (CCC) road reserve with particular regard to the trees which have been identified for removal.

2. The findings and recommendations found herein are based on the visual ground based assessment undertaken during a site visit on the 16th March 2018 along with the following correspondence and documentations:

    - Email correspondence between Adam Hollands (Hollands tree services) and Adrian Taylor (landscape architect for Jasmax)
    - Scope of works diagrams produced by Adrian Taylor outlined extent of area of works
    - Concept plans L8-0050 Normans Road CCC Plan

Appendices

- Attachment A – Concept plans L8-0050 Normans Road CCC Plan
- Attachment B – Drawing TC-29478-02
- Attachment C – Tree management plan

Site details

3. The work site is within the Saint Andrew College grounds bordering Normans Road. The site location is depicted in Figure 1 below.

Figure 1: Site Location – Orange dashed line indicates extent of tree survey.

Scope and limitations

4. All observations were made from ground level only. Tree heights were attained through the use of the Nikon Forestry Pro, trunk girth was measured with a conventional tape and canopy spreads were an estimated based on surveyor experience.

5. No decay detecting equipment was used as part of the inspection process. All comments and recommendations that have been discussed and provided are based on the visual observations recorded during the site visit.

6. Where appropriate, the lower parts of stems were tested with a sounding hammer. This is done to help the surveyor detect acoustic anomalies which are indicative of modification to the wood's properties caused by decay or the production of dense wood in response to localised stresses. This technique can be limited by loose or soft bark.

7. In cases when trees are in close proximity and of the same species these have been grouped with the measurements taken being an average for the group.

8. Whilst the tree assessments carried out are intended to be comprehensive, it should be noted that trees are dynamic organisms exposed to varying weather conditions, which on occasion can be

severe. This is taken into account by assessing the most likely events and not those which could or might occur.

9. No detailed construction plans have been provided for the survey.

Visual Tree Assessment

10. Visual Tree Assessment is used internationally to evaluate the structural integrity and stability of trees and look for pests and pathogens.

11. The model is derived from the principles of biomechanics and uses the trees' growth response and form as a way of detecting and if necessary, investigating potential issues that can increase the likelihood of tree failure or branch failure.

12. VTA involves observing all parts of the tree visually, looking for signs of structural weakness and assessing response growth.

CCC Assessment criteria

13. The trees within the CCC road reserve have been assessed using the CCC assessment criteria as outlined in the table below:

Table 1: Condition Assessment Methodology

Description	Non-existent	Very Good	Good	Fair	Poor	Very Poor
Assessment of **Tree Health**	Asset is no longer present or cannot be found	No more than approximately 5% foliage density loss, discolouration or disease, below ideal leaf size or shoot growth, dieback, dead wood or other disorders.	Approximately 6-10% foliage density loss, discolouration or disease, below ideal leaf size or shoot growth, dieback, dead wood or other disorders.	Approximately 11-30% foliage density loss, discolouration or disease, below ideal leaf size or shoot growth, dieback, dead wood or other disorders.	Approximately 31-70% foliage density loss, discolouration or disease, below ideal leaf size or shoot growth, dieback dead wood or other disorders.	Tree dead or state of severe decline. More than approximately 70% foliage density loss, discolouration or disease, below ideal leaf size or shoot growth, dieback, dead wood or other disorders.
Assessment of **Tree Structure**		No structural defects or abnormalities (including roots and trunk taper).	Defects (including roots and trunk taper) do not affect structural integrity or continued well-being of tree.	Defects (including roots and trunk taper) present, but can be rectified in order to maintain the structural integrity and continued well-being of tree.	Tree maintenance may improve the framework or the continued well-being of tree. Defects (including roots and trunk taper) result in loss of structural integrity, may be mitigated but unlikely to be rectified.	Tree dead or state of severe decline. Total loss of structural integrity of tree. Tree maintenance cannot improve the framework or the continued well-being of tree. Defects (including roots and trunk taper) result in loss of structural integrity, and cannot be mitigated or rectified

The proposal

14. It is proposed to construct a new drop off area for the college off Norman's Road between the preschool and existing carpark.

15. The proposal includes the removal of 8 trees/groups, of which four are protected due to their position and stature.

16. The proposal also includes works within the rootzone of Council Protected trees.

Tree Protection Status

17. As per the 9.4.4.1.1 of the Christchurch City District plan, any removal of a tree over 6 meters within a council road reserve is a *restricted discretionary* activity.

Findings

18. Table 2 below contains the details of the trees identified as being within the Christchurch City Council Road Reserve. The tree numbers in this table correspond to the tree numbers in the appended drawing Concept plans L8-0050 Normans Road CCC Plan.

Tree ID	Number of trees	Botanical/ Common name	Ownership	Height	Protected	Proposal	Health Assessment	Structure Assessment	CRR	TPR
6	1	*Rhododendron sp.* / Rhododendron	Road Reserve	2	N/A	Remove	Fair	Fair	0.77	0.77
7	1	*Prunus yedoensis* / Yoshino cherry	Road Reserve	3	N/A	Retain	Fair	Fair	1.60	2.80
8	1	*Acer psuedoacacia* / Sycamore	Road Reserve	8	Protected	Retain	Fair	Fair	1.15	1.59
9	3	*Camellia* sp. / Camellia	Road Reserve	3	N/A	Remove	Fair	Fair	0.66	0.66
10	1	*Prunus yedoensis* / Yoshino cherry	Road Reserve	3	N/A	Remove	Very Poor	Very Poor	1.60	2.80
11	1	*Robinia pseudoacacia* / Black locust	Road Reserve	10	Protected	Remove	Fair	Fair	1.60	2.79
12	2	*Camellia* sp. / Camellia	Road Reserve	3	N/A	Remove	Fair	Fair	0.66	0.66
13	2	*Robinia pseudoacacia* / Black locust	Road Reserve	10	Protected	Remove	Fair	Fair	1.60	2.79
14	1	*Prunus yedoensis* / Yoshino cherry	Road Reserve	3	N/A	Remove	Poor	Poor	1.60	2.80
15	4	*Camellia sp.* / Camellia	Road Reserve	3	N/A	Retain	Fair	Fair	0.66	0.66
16	1	*Prunus yedoensis* / Yoshino cherry	Road Reserve	4	N/A	Retain	Fair	Good	1.87	3.62
17	3	*Camellia sp.* / Camellia	Road Reserve	3	N/A	Retain	Fair	Fair	0.66	0.66
18	1	*Robinia pseudoacacia* / Black locust	Road Reserve	12	Protected	Remove	Fair	Fair	2.20	4.77
19	1	*Acer platanoides* / Norway maple	Road Reserve	8	Protected	Retain	Fair	Fair	1.74	3.22
20	1	*Acer platanoides* / Norway maple	Road Reserve	8	Protected	Retain	Fair	Fair	2.39	5.49
21	1	*Pittosporum tenuifolium* / Kohuhu	Road Reserve	4	N/A	Retain	Fair	Fair	0.90	1.03
22	1	*Fuscospora truncata* / Hard Beech	Road Reserve	9	Protected	Retain	Fair	Fair	1.63	2.86
31	1	*Prunus yedoensis* / Yoshino cherry	Road Reserve	4	N/A	Retain	Fair	Fair	1.37	2.15
32	1	*Prunus yedoensis* / Yoshino cherry	Road Reserve	3	N/A	Retain	Fair	Fair	1.28	1.91
33	1	*Prunus yedoensis* / Yoshino cherry	Road Reserve	3	N/A	Retain	Fair	Fair	1.63	2.86
37	1	*Fraxinus excelsior* / Claret ash	Road Reserve	9	Protected	Retain	Fair	Fair	1.96	3.94
38	1	*Quercus palustris* / Pin oak	Road Reserve	12	Protected	Retain	Fair	Good	2.06	4.30
39	1	*Fraxinus excelsior* / Claret ash	Road Reserve	7	Protected	Retain	Fair	Fair	1.64	2.90

CRR = Critical Root Radius TPR= Tree Protection Radius

Arborist comments

19. When undertaking projects within the vicinity of trees it is important to balance the benefits of the project against the benefits provided by the trees. Trees which are of poor health or are of a small stature will provide less benefits then a tree in good health and of a large stature.

20. Trees 8,11,13,18,19,20,22,37,38 and 39 are protected as they are greater than 6 meters in height and are located within the council road reserve. Of these trees, four have been proposed for removal, two of which are within group 13. The removal of these trees is a restricted discretionary activity and would require resource consent.

21. In total, 23 trees and groups are located within the council road reserve. Of these, eight have been identified as requiring removal, five of which are less than 6 meters in height. A majority of the removals (five trees and groups) are to establish an opening for pedestrian access.

22. Of the eight trees being removed, two have been identified as being in either poor or very poor health based on the Christchurch City Council assessment criteria.

23. The road reserve is heavily planted and with many of the trees now being over crowded with little opportunity for the trees to fully develop. The *Robinia* have been selected for removal as they are considered to be an undesirable species and are likely to outgrow the narrow reserve over time.

24. Tree 18 has a cluster of fungal mushrooms located within the basal flare of the tree. The identification of the mushrooms is known to the surveyor however it has not been identified as any of the well-known fungal species generally associated with significant tree decay.

25. The remaining trees within the road reserve will have works undertaken within their tree protection zones (see table 2 above). A tree protection methodology has been attached for working around the trees to ensure that the works do not have an adverse effect on the tree health. A detailed construction plan will be required before a full assessment of the effect on the tree can be undertaken.

26. When working around trees it is important to consider their root zone. Direct root damage, soil compaction, chemical spillage and soil level changes (both temporary and permanent) can all have a detrimental effect on tree health. When considering development near trees it is necessary to protect the root system of any trees that are to be retained.

27. Conventional “drip lines” infrequently represent the extent of a tree’s root zone accurately. Tree protection radii and critical root radii have been provided for each of the trees captured during the survey and defined using the system developed by Harris et al (2004) and Coder (1994) respectively. These systems use allometric[1] relationships between trunk diameter and root spread and there is sufficient evidence to support the theory that this approach more accurately represents the extent of a tree’s root system (Day et al. 2010). The tree protection radius and critical root radius are given in metres and measured from the edge of the trunk.

[1] *Tree allometry establishes quantitative relations between some key characteristic dimensions of trees (usually fairly easy to measure) and other properties (often more difficult to assess).*

28. The tree protection radius defines a zone sufficient to protect the root system of trees to ensure there is no detrimental effect on health and structural viability. If development or alteration is to encroach within the prescribed tree protection zone of any retained trees, then this will need to be undertaken in an arboriculturally sensitive fashion, and designed in conjunction with arboricultural input.

29. The critical root radius defines a zone within which the main structural root plate is anticipated to be encountered. Essentially the critical root radius can be used to determine an area around each tree where construction activity should be avoided and the tree protection radius provides an area around the tree where strict protocols will be needed to avoid detrimental effects on tree health.

30. The British Standard BS5837:2005 (Trees in relation to construction) suggests that alterations should not affect any more than 20% of the permeable area of a tree's tree protection zone (TPZ). Since the derivation of the TPZ allows for consideration of species' tolerance to root pruning, age class and condition, it is considered that the 20% value may remain constant for each individual tree, as the aforementioned factors which may influence the viability of retention have already been considered.

Conclusion

31. The assessment has found that 23 trees and groups are located within the Christchurch City council Road Reserve. Of the 23 trees and groups 10 are over 6 meters in height.

32. Eight of the 23 trees and groups have been identified for removal based on the design or the removal of undesirable trees (*Robinia*).

33. Works are to be undertaken within the protected root zones of 19 trees and groups within the road reserve which are to be retained.

Recommendations

34. Trees 6,9,10,11,12,13,14 & 18 have been identified for removal due to either design reasons or as they are undesirable species.

35. All works within the tree protection zone should adhere to the attached tree protection methodology below.

36. Further arboricultural input should be sought throughout the design phase of the project to ensure that the benefits provided by the trees are considered in relation to the benefits of the project.

Attachment C: Tree Management Plan

1. Tree protection methodology

1.1. The pruning of any vegetation shall be undertaken by suitably trained and experienced individuals and in a manner which avoids any unnecessary damage or disturbance to any retained vegetation and their root zones.

1.2. A suitably qualified and experienced arborist shall be engaged by the project manager at the start of the project to supervise all works in the vicinity of the trees. The appointed works arborist must be experienced in tree protection systems and construction methodologies, and will need to be able to coordinate site works ensuring that the tree protection methodology is correctly implemented.

1.3. Prior to works commencing, the project manager shall arrange a pre-start meeting with the site foreman, contractor, and the appointed works arborist. At the meeting, the foreman shall agree with the works arborist:

- The methodology and timing of the works
- Site access and areas for manoeuvring vehicles and machinery
- Areas for storing and/or stockpiling materials, spoil and equipment
- The care needed when working around trees
- Conditions of any resource consents

1.4. At the completion of works, the works arborist at his or her discretion shall “sign off” the work of the contractor, and if requested, provide a brief account of the project (if necessary with photos). The account of works shall include, but not be limited to:

- The effects of the works to the subject tree(s)
- Any remedial work which may be necessary

1.5. No work shall take place within the root zone and/or drip line of any of the trees without prior approval from the works arborist.

1.6. No material is to be stored, emptied or disposed of in or around the root zone of any tree unless otherwise authorised to do so by the works arborist. Any material which is to be stored or temporarily placed in or around the root zone of the tree shall be stored carefully on an existing or temporary hard surface such as asphalt or plywood sheets respectively.

1.7. If during the course of the works, machinery or vehicle access/manoeuvring is required in or around the root zone of any tree, then depending on the nature of the loading of the machinery or vehicle, it may be necessary to cover those areas with a protective overlay sufficient to protect the ground from being muddied, compacted, churned up or otherwise disturbed (for example “Track Mats”, or a layer of mulch or sand/SAP7 overlaid if necessary with a raft of wire planks, plywood or similar).

1.8. If machinery/vehicles are to be operated or stored within the root zone area on an existing or temporary load bearing surface, then the machinery/vehicle shall not cause any detrimental effect

to the tree(s) through compaction, physical damage, spillage of lubricants and fuels or discharge of waste emissions.

1.9. All excavations which are to take place in or around the root zone of any tree shall be done so in conjunction with the works arborist, through hand digging, or air spade, and to the satisfaction of the works arborist.

1.10. Any roots which are encountered during any part of the process are to be retained where possible. Every effort shall be made to retain all roots 30mm in diameter or greater. The severance of any root less than 30mm shall be done so at the discretion of the works arborist. Where roots are to be severed, they shall be cut cleanly by the works arborist with a sharp hand saw or loppers, and the area around the root shall be backfilled with the original material.

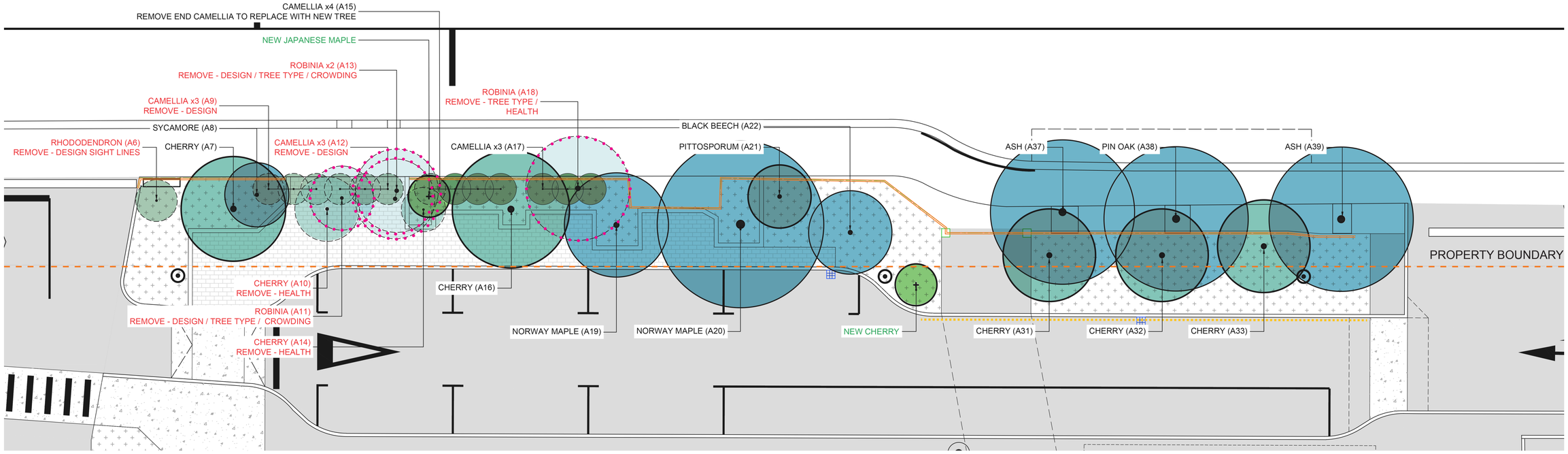
1.11. When a root greater than 30mm in diameter is impeding the construction and all other alternatives to work around the root have been exhausted, the supervising works arborist shall only remove the root if he/she determines that its removal will not be detrimental to the health and stability of the tree.

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

1.13. If during the works, there are large areas of root zones exposed, then it may be necessary to protect the exposed root zone with a protective overlay sufficient enough to protect the ground and roots from being disturbed, for example a layer of geotextile fabric laid over a 150mm thick layer of wood mulch.

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

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



StAC Normans Road Project- Tree Plan (Proposed scheme)

1:100 @ A1 / 1:200 @ A3

Legend

Property boundary

Existing fence

New light column (on school land)

To retain: Tree over 6m | Tree 3-6m | Small tree/large shrub 2-4m

To remove: Tree over 6m | Tree 3-6m | Small tree/large shrub 2-4m

Proposed new tree (large grade)

Trees over 6m, on CCC land and proposed for removal.
All are Robinia trees.

ROBINIA (A18)
REMOVE - TREE TYPE / HEALTH

- Tree type
- Tree reference in arborist report
- Red = for removal
  Black = to remain
  Green = new tree
- Reason for removal

FOR COORDINATION

REVISIONS
-

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RAWLINSONS

Project Number: 218069.00

ST ANDREWS COLLEGE

NORMANS ROAD

Sheet

CCC TREE PLAN

SCALE @ A1= 1:100

For Jasmax

NORTH

APPROVED

Milestone Issues	Revision & Date
FIRST ISSUED	-1-
RESOURCE CONSENT	-1-
BUILDING CONSENT	-1
SCHEDULING	-1
TENDER	-1

LANDSCAPE

Drawing Number: L8-0050
Revision: -

Aerial images may not accurately reflect the actual vegetation cover. Vegetation is plotted as accurately as possible. Unless otherwise stated, project specific vegetation only has been plotted and captured.

Vegetation alteration/removal may be subject to resource consent requirements/conditions. It shall be the client's responsibility to determine whether or not this is the case.

Works within the root zone of trees should be supervised by an appointed works arborist.

- Tree Plot
- Critical Root Zone
- Tree Protection Zone

Hollands Tree Services

ARBORLAB CONSULTANCY SERVICES LIMITED
09 379 3302 www.arborlab.co.nz

Tree Survey for proposed drop off area

Saint Arndrew High school

		Date
Requested by	Adrian Taylor	Aug 18
Surveyed by	Toby Chapman	Aug 18
Plotted by	Toby Chapman	Aug 18
Checked by	Peter van Loon	Aug 18

Drawing number TC29487-02 Rev B

Appendix C: Photographs

Photo 1 – Existing Raised Garden edging around street trees

Photo 2 – Existing Raised Garden edging around street trees, fence shown in background

St Andrews College Car Park Extension: Integrated Transport Assessment

St Andrews College

St Andrews College Car Park Extension: Integrated Transport Assessment

St Andrews College

Quality Assurance Information

Prepared for:	St Andrews College
Job Number:	STAC-J003-01
Prepared by:	Bridget Southey-Jensen, Senior Transportation Engineer
	Rebecca Tuke, Graduate Transportation Engineer
Reviewed by:	Tracy Fleming, Senior Transportation Engineer

Date issued	Status	Approved by
		Name
18 July 2018	Final	Tracy Fleming, Senior Transportation Engineer
19 July 2018	Revision A	Bridget Southey-Jensen, Senior Transportation Engineer
20 July 2018	Revision B – Image Update	Bridget Southey-Jensen, Senior Transportation Engineer

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Contents

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Figures

1. Introduction

1.1 Background

St Andrews College (StAC) commissioned Abley to assist with the transport components of the design and consenting for a new drop off area accessed from Normans Road. To support the resource consent application, an Integrated Transport Assessment (ITA) has been prepared.

This ITA is restricted to the "Scope of Works Boundary" as shown in **Figure 1.1**. The ITA provides an assessment of the transportation effects of the proposal. It has been prepared broadly in accordance with the guidance specified in the Integrated Transport Assessment Guidelines published by the New Zealand Transport Agency[1] and the Christchurch City Council ITA Guidelines[2]. However, as the proposal only redistributes existing trips, a **simplified** ITA has been prepared. The simplified ITA is restricted to matters relating to the access arrangements.

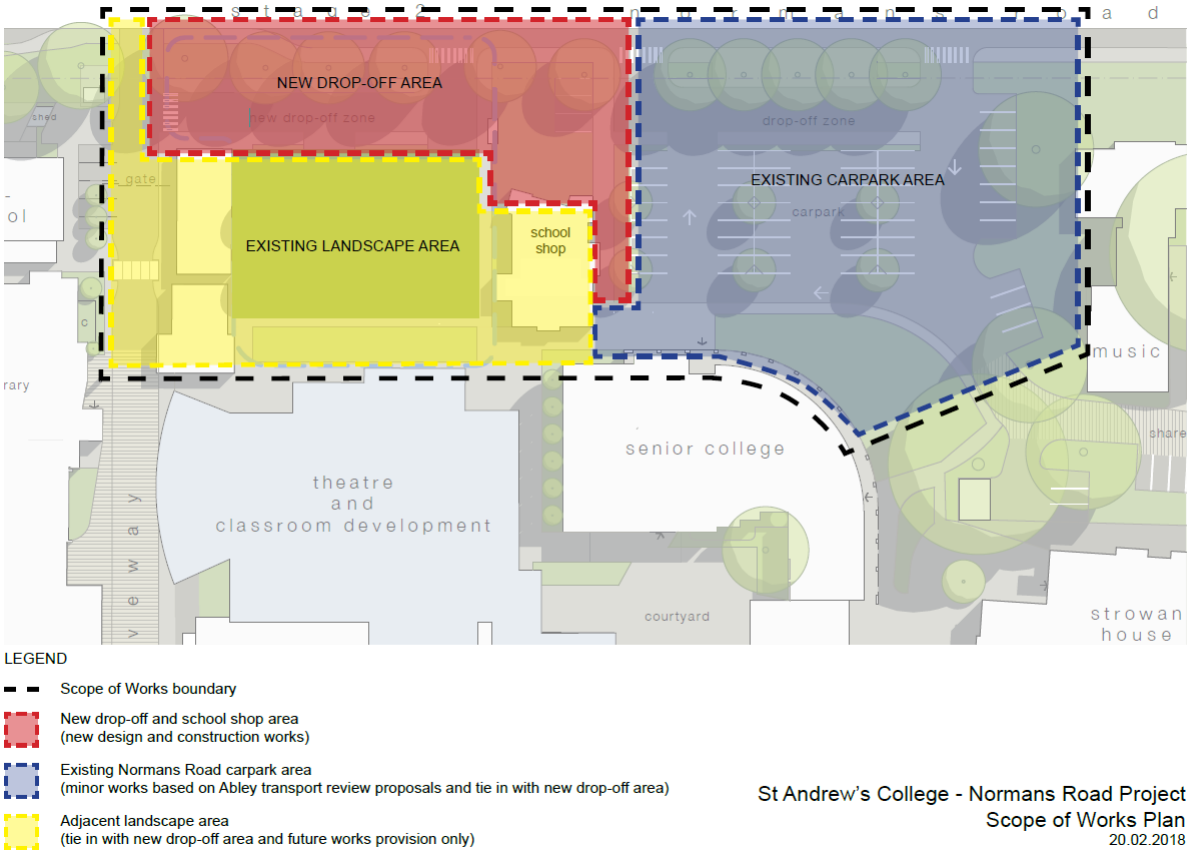


Figure 1.1 Scope of works

1.2 Discussions with Christchurch City Council

This project has been discussed with representatives from Christchurch City Council (CCC). Steve Dejong, the area engineer for Fendalton / Waimairi / Harewood has been consulted regarding the proposed on-street changes. These proposals are subject to the outcome of public consultation, which CCC will be undertaking in the near future.

[1] http://www.nzta.govt.nz/assets/resources/research/reports/422/docs/422.pdf
[2] https://www.ccc.govt.nz/assets/Documents/Consents-and-Licences/resource-consents/ITAGuidelines.pdf

A pre-application meeting (PRE40006541) was also attended for the project on 12 June 2018. Scott Blair (Senior Planner) and John Thornton (Arborist) were in attendance. At the meeting transport was briefly discussed, with council highlighting the requirement to review the increase in trips proposed at the existing access to see if the proposal would trigger the High Trip Generator Rule.

1.3 Report Structure

The report is divided into the following sections to aid understanding of the assessment methodology:

- Existing land data
  - A description of the site and locality
- Existing transport data
  - A description of the surrounding transport network, facilities for all road user groups, traffic flows and crash statistics
- Proposed activity
  - A description of the proposal giving specific attention to the transport related components
- Appraisal of transport effects
  - An assessment of the safety, efficiency and accessibility of the proposal
- District Plan assessment
  - An assessment of the proposal against the relevant access rules
  - An assessment of non-compliances
- Conclusions.

2. Existing Use

2.1 Location Plan

St Andrews College is located at 347 Papanui Road in Strowan, Christchurch. As shown in **Figure 2.1**, the surrounding land use is predominantly residential.

Figure 2.1 Aerial image of the site location

2.2 Site Plan

Figure 2.2 shows the plans for the existing drop off and car park area and **Figure 2.3** shows aerial imagery.

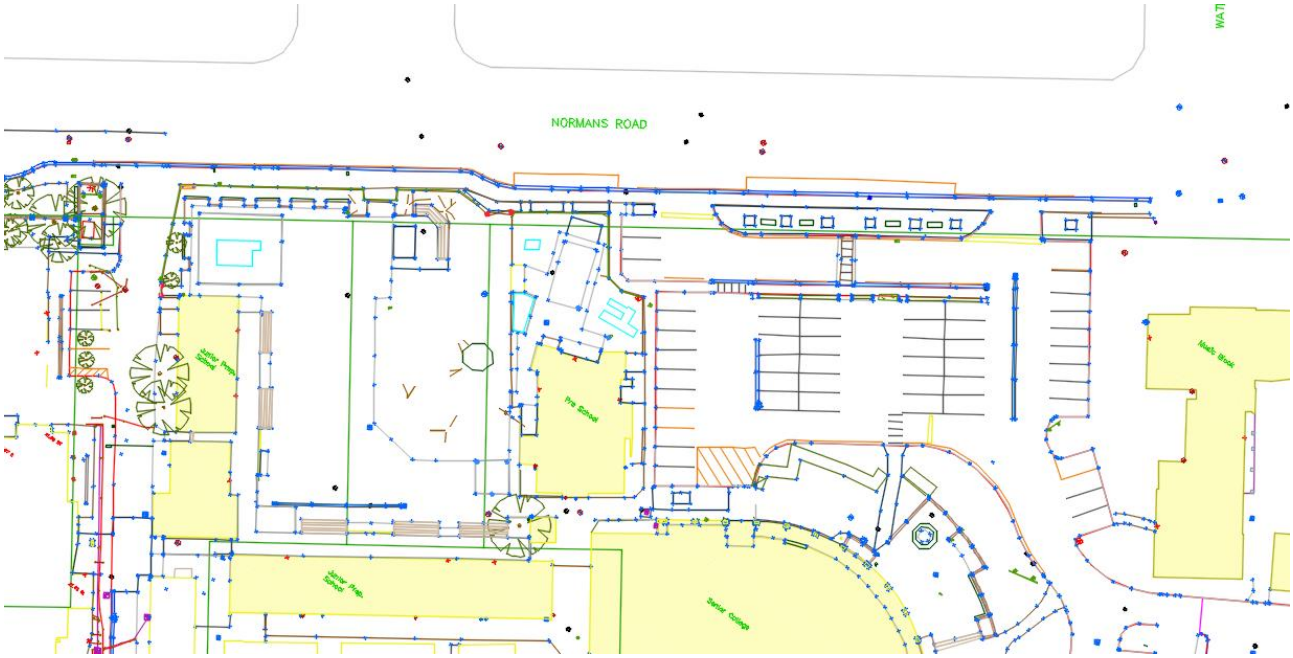


Figure 2.2 St Andrews College: Normans Road Car Park and Drop Off (Topographical Survey)

Figure 2.3 St Andrews College: Normans Road Car Park and Drop Off (Aerial Imagery obtained from Google Earth)

3. Existing transport data

3.1 Walking network

Normans Road and Papanui Road have footpaths on both sides of the street. Pedestrian entries to the site are located on both streets.

3.2 Cycling network

There is no dedicated provision for cyclists travelling on Normans Road. Cyclists must utilise the traffic lanes. On Papanui Road cycle lanes are provided for northbound cyclists. Southbound cyclists may utilise the wide bus lanes. Cyclists are able to enter the school from either road.

3.3 Public transport

The site is also well served by the public transport network, with high frequency buses travelling on Papanui Road.

StAC has two-three regular school bus services. Additional buses also service the school for school trips or for Wednesday afternoon sports. All buses drop off / pick up pupils from Normans Road. In the morning two buses unload passengers on the southern side of Normans Road and the remaining bus unloads passengers on the northern side of the road. In the afternoon all buses pick up from the southern side of Normans Road.

On-street car parking is typically near capacity and buses often unload passengers by stopping in the traffic lane.

3.4 Access arrangements

StAC have three accesses within the scope of works boundary. Two (one-way) accesses serve the car park and drop off. An additional two-way access services the Prep School driveway. The Prep School driveway services five staff car parks outside the preschool, and traffic to the boarding house at the rear of the school. Immediately beyond the preschool, a barrier arm restricts access to the those with swipe cards.

3.5 Service access

Service vehicles currently enter from the Normans Road Car Park Entry and exit from the Normans Road Car Park Exit.

3.6 Roading hierarchy

Normans Road looking east and west near the existing drop off / car park area can be seen in **Figure 3.1** and **Figure 3.2** respectively.

Normans Road between Strowan Road and Papanui Road is a *Collector Road*. The function of a collector road is to *"distribute and collect local traffic between neighbourhood areas and the arterial road network".* Collector Roads "*are of little or no regional significance, except for the loads they place on the arterial road network. They link to the arterial road network and act as local spine roads, and often as bus routes within neighbourhoods, but generally do not contain traffic signals. Their traffic movement function must be balanced against the significant property access function which they provide."*

Figure 3.1 Normans Road (looking east, from 73 Normans Road)

Figure 3.2 Normans Road (looking west, from 73 Normans Road)

3.7 Traffic flows

Traffic counts were conducted by Christchurch City Council on Normans Road in 2017. The survey found that the Average Daily Traffic is 4756 vehicles. As shown in **Figure 3.3**, the peak traffic on the street coincides with the start and finish of school. In the morning peak (8am) approximately 550 vehicles per hour were recorded. In the evening peak (3pm) approximately 500 vehicles per hour were recorded.

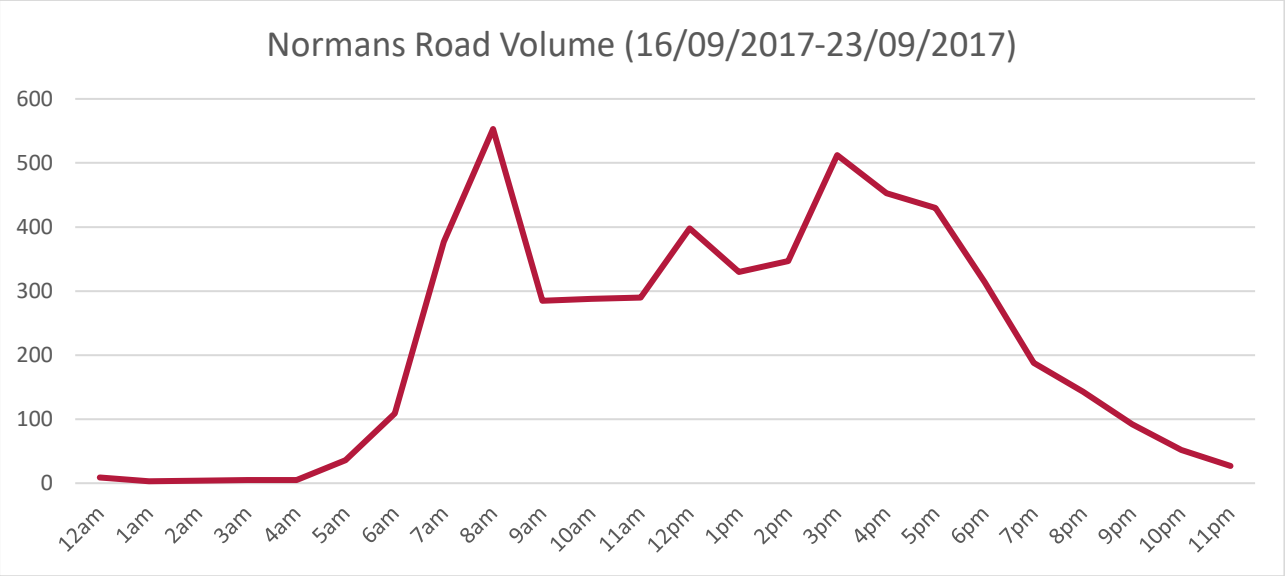


Figure 3.3 Traffic Counts for Normans Road (taken between Harley Ave and Watford St)

3.8 Crash records

A review of New Zealand Transport Agencies Crash Analysis System (CAS) found that in the past five years, only one crash has been recorded on Normans Road between Papanui Road and Urunga Avenue (as shown in the collision diagram in **Appendix A**). The crash occurred at the intersection of Normans Road and Papanui Road and resulted in minor injuries. The crash was a rear end crash related to a vehicle turning right into Normans Road from Papanui Road. The crash occurred at approximately 5pm and thus is unlikely to be related to school activities.

The Urban KiwiRAP[3] results for Christchurch show that the Collective[4] and Personal Risk for the corridor is Low. This confirms that at a strategic level there is no identified safety concerns on the street which could be exacerbated by the proposed changes.

[3] https://roadsafetyrisk.co.nz/maps/detailed-collective-risk#Canterbury
[4] https://roadsafetyrisk.co.nz/kiwi-rap

4. Proposal details

4.1 Site layout

Figure 4.1 outlines the proposed changes. A summary of the changes is outlined below:

- Remove the three preschool car parks near the exit to the existing drop off and extend the drop off area from the to the Prep School driveway
- Re-establish the preschool car parks in location 5 (note that this location is much closer to the preschool which recently relocated to west of the prep school driveway)
- Relocate the disabled car parks in line with best practice (location 18) so that they are close to the buildings they service.
- Improve the pedestrian connection from the street to the internal pedestrian network (locations 2, 3 and 15)
- Remove 1 staff car park near location 12 to provide additional capacity for pedestrians
- Install 4 new staff spaces at location 4 (resulting in a net gain of 3 spaces)

4.2 On-street changes

The proposal also includes on-street changes. These changes include converting existing on-street drop-off areas to bus stops (during peak periods). These on-street changes will undergo consultation in the near future and are subject to approval from the local community board.

4.3 Walking network

The proposal includes establishing a clear pedestrian route through the car park, including raised platforms where pedestrian movements conflict with motor vehicle traffic.

4.4 Public transport

The proposed on-street bus stops will resolve many of the unloading issues observed on site. The school also has the ability to provide an over-spill bus stop in location 16 if required.

4.5 Car parking

The proposal includes the relocation of 3 spaces, installation of 4 staff spaces (a net gain of 3 spaces) and the creation of a new drop-off zone which has capacity for 5 cars.

LEGEND

1 Landscaped entrance for existing kea crossing
2 Pedestrian crossing to Prep and Junior School (not raised)
3 Raised crossing - decorative concrete
4 Staff parking (4) with 1m wide asphalt path
5 Pre-school parking (3)
6 Pre-school scooter and bike shelter (covered)
7 Future development area - to remain as existing
8 Site access route for future development
9 Prep and Junior School drop-off
10 Existing trees and with new gardens below
11 Student waiting shelter (indicative)
12 Threshold crossing - decorative concrete
14 Proposed bus stop during peak times
15 Raised pedestrian crossings and path - decorative concrete
16 Senior School drop-off
17 Sunny social space - timber platform and decorative concrete
18 Relocated accessible parks (compliant design)

Figure 4.1 Proposal

4.6 Access arrangements

All cars entering the car park and drop-off area will utilise the existing entry access. Vehicles will then either be able to exit via the existing exit access, or proceed through to the new drop off area. From the new drop off area, drivers will exit via the Prep School Driveway. A summary of the access arrangements is depicted in **Figure 4.2**.

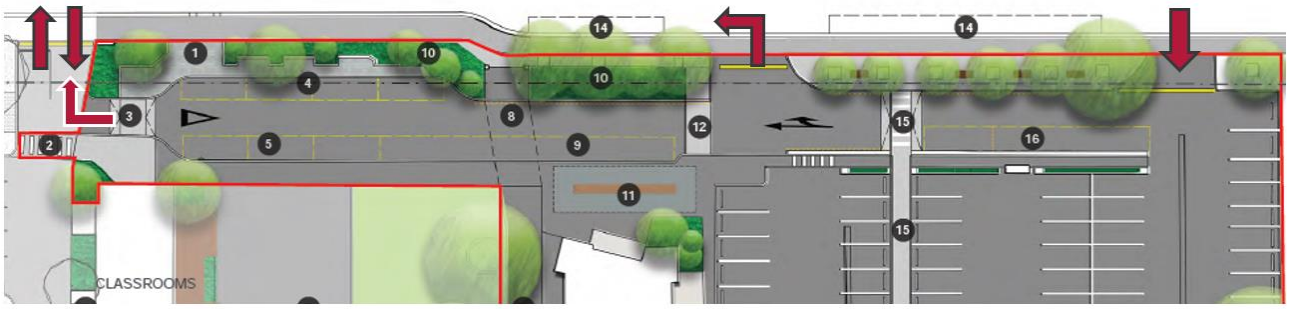


Figure 4.2 Access arrangements for the proposal

5. Appraisal of transportation effects

5.1 Trip generation

The proposed changes are not anticipated to result in any increased trips on the network, simply a redistribution of existing trips through existing accesses.

5.2 Safety

A road safety audit was conducted for the scheme. The safety audit identified 3 Moderate and 5 Minor issues. Several recommendations from the auditors were adopted and as such, there is only one unresolved safety concern remaining for the project within the scope of works (shown in **Table 5.1**). When the kea crossing is in use the traffic flow is busy and there will be pedestrians waiting to cross the road. There will be limited opportunities for a driver to turn right out of College Ave and if they have the opportunity to turn right then if the kea crossing sign is out it will be in the middle of their lane. The speed of the right turning driver will likely be slow and therefore the driver should be able to stop before the crossing. Also, if the right turning driver thinks the sign is out (so they are required to stop) they are likely to turn right more cautiously.

In the past 5 years, there have been no reported crashes associated with the drop-off (from right turning vehicles or otherwise) thus no action is considered appropriate. It is considered that the proposal will not result in any adverse safety outcomes.

Table 5.1 Unresolved issue identified in the safety audit

Issue	Ranking
Kea stop sign active or not During the site visit, it was apparent that drivers exiting College Avenue found it difficult to discern whether the KEA stop sign was active or not (as shown in image below). There could be a risk of visitor drivers turning right out of College Street when pedestrians are on the crossing.  The stop sign on the far side of the road looks to be out, but the stop sign on the near side is clearly in. There is a possibility that locals become familiar with reading this and use it safely where a visitor driver may become confused by the signs presented.	Minor

5.3 Efficiency

The intention of the proposal is to increase the on-site capacity for pick-up / drop-off. No additional trips will be generated as a result of the proposal and thus no negative impacts to the efficiency of the transport network are anticipated as a result of this development.

5.4 Accessibility

The proposal is not anticipated to adversely affect the accessibility of the site for any road user.

6. District Plan Assessment

6.1 Rules Assessment

The Christchurch District Plan sets out a number of transportation-related rules and requirements for developments. An assessment of the proposed drop off extension against the applicable/relevant rules has been undertaken and the results of this are summarised in **Table 6.1**.

The rules are summarised in the first column, an assessment of the proposal is described in the second and the resulting status is listed in the third column. Non-compliances are discussed in Section 6.2.

Table 6.1 District Plan Rules Assessment

Rule	Assessment	Status
7.4.3.4. Manoeuvring for parking and loading areas		
7.4.3.4.a Any activity with a vehicle access: **On-site manoeuvring area shall be provided in accordance with Appendix 7.5.6.**		
Appendix 7.5.6: **1. Parking spaces shall be located so as to ensure that no vehicle is required to carry out any reverse manoeuvring when moving from any vehicle access to any parking spaces, except for parallel parking spaces.**	The proposed new car parks are parallel spaces.	N/A
Appendix 7.5.6: **2. Parking and loading spaces shall be located so that vehicles are not required to undertake more than one reverse manoeuvre when manoeuvring out of any parking or loading space.**	Vehicles do not require more than one reverse manoeuvre to exit the new parking spaces	Compliant
Appendix 7.5.6: **3. For any activity, the vehicle access manoeuvring area shall be designed to accommodate the 85th percentile design motor car, as specified in Appendix 7.4, as a minimum.**	Manoeuvring areas have been designed to accommodate an 85th percentile car.	Compliant
7.4.3.4.b Any vehicle with a vehicle access to: a major / minor arterial road, or a collector road where there are 3 or more car parks provided on site, or six or more parking spaces, or a heavy vehicle bay is required by Rule 7.2.3.3 **On-site manoeuvring area shall be provided to ensure that a vehicle can manoeuvre in a forward gear on to and off a site.**	Vehicles can enter and exit the site in a forward gear.	Compliant
7.4.3.5 Gradient of parking and loading areas		
7.4.3.5.a All non-residential activities with vehicle access: **Gradient of surfaces at 90 degrees to the angle of parking (i.e. parking stall width) shall be ≤ 1:16 (6.25%)**	The site is flat and is anticipated to comply with the gradient requirements.	Compliant
7.4.3.5.b All non-residential activities with vehicle access: **Gradient of surfaces parallel to the angle of parking (i.e. parking stall length) shall be ≤ 1:20 (5%)**		
7.4.3.5.c All non-residential activities with vehicle access: **Gradient of mobility car park spaces shall be ≤ 1:50 (2%)**		

Rule	Assessment	Status
7.4.3.6 Design of parking and loading areas		
7.4.3.6.a All non-residential activities with parking and/or loading areas used during hours of darkness: **Lighting of parking and loading areas shall be maintained at a minimum level of two lux, with high uniformity, during the hours of operation.**	The lighting of parking areas will be maintained at a minimum of two lux with high uniformity during the hours of operation.	Compliant
7.4.3.6.b Any urban activity, except: residential activities containing less than three car parking spaces; or sites where access is obtained from an unsealed road; or temporary activities: **The surface of all car parking, loading, and associated access areas shall be formed, sealed and drained and car parking spaces permanently marked.**	The surface of the car park and drive through will be formed, sealed and drained. Car parks will be permanently marked.	Compliant
7.4.3.7 Access Design		
7.4.3.7.a Any activity with vehicle access, the vehicle access shall be provided in accordance with Appendix 7.5.7		
Appendix 7.5.7: **a. All vehicle access to and within a site shall be in accordance with the standards set out in Table 7.5.7.1**	Vehicle access widths are measured at the property boundary. No changes are proposed to the existing access widths.	Compliant
Appendix 7.5.7: **b. Any vehicle accesses longer than 50 metres and with a formed width less than 5.5 metres wide shall provide passing opportunities (with a minimum width of 5.5 metres) at least every 50 metres, with the first being at the site boundary.**	The formed width exceeds 5.5m wide.	N/A
Appendix 7.5.7: **c. Where a vehicle access serves nine or more parking spaces or residential units and there is no other pedestrian and/or cycle access available to the site then a minimum 1.5 metres wide space for pedestrians and/or cycle shall be provided and the legal width of the access shall be increased by 1.5 metres.**	Multiple pedestrian / cycle accesses are provided to the site.	N/A
Appendix 7.5.7: **d. All vehicle access to and within a site in a residential zone shall allow clear visibility above 1 metre for a width of at least 1.5 metres either side of the entrance for at least 2 metres measured from the road boundary.**	The school is located within a special purpose zone. However, visibility splays in accordance with the specifications are provided at each access.	N/A
Appendix 7.5.7: **e. Where parking spaces are provided in separate areas, then the connecting vehicle access between the parking areas shall be in accordance with the standards in Table 7.5.7.1 based on the number of parking spaces served.**	The new drop off area has 12 parking spaces. The (one way) vehicle access between parking areas is 4.0m wide.	Compliant

Rule	Assessment	Status
Appendix 7.5.7: **f. The minimum and maximum widths shall be measured at the road/property boundary and apply within the site until the first vehicle control point.**	Minimum and maximum widths were measured at the road/property boundary. The prep school driveway narrows prior to the first vehicle control point (to a width of 6.7m), however this reduced width is compliant.	Compliant
Appendix 7.5.7: **g. For the purposes of access for firefighting, where a building is either:** **located in an area where no fully reticulated water supply system is available; or** **located further than 75 metres from the nearest road that has a fully reticulated water supply system including hydrants (as required by NZS 4509:2008),** **vehicle access shall have a minimum formed width of 3.5 metres and a height clearance of 4 metres. Such vehicle access shall be designed to be free of obstacles that could hinder access for emergency service vehicles.**	Vehicle accesses have a formed width of 3.5m and a vertical clearance of 4m.	
Appendix 7.5.7: **h. In car park buildings there shall be a vertical clearance of not less than 2.5m above car park spaces for people whose mobility is restricted, and along the full length of any accessible route providing vehicular access to those car park spaces.**	N/A	N/A
Appendix 7.5.7: **i. Where a mix of activities is proposed, the largest relevant dimension is applicable.**	N/A	N/A
Appendix 7.5.7: **j. Emergency service facilities do not need to comply with the maximum formed width, unless located on a key pedestrian frontage.**	N/A	N/A
Appendix 7.5.7: **k. In Central City, height refers to the minimum clear height from the surface of the formed access.**	N/A	N/A
Appendix 7.5.7: **l. Any access located on a Central City 'Active Frontage and Verandas' as shown on the planning maps shall have a maximum formed width of 7 metres.**	N/A	N/A
Appendix 7.5.7: **m. The maximum gradient at any point on a vehicle access shall be in accordance with Table 7.5.7.2, except a maximum gradient of 1 in 5 (minimum 4.0m long transition ramps for a change of grade 1 in 8 or greater) shall apply for accesses that are identified in 1(f).**	No change to the existing accesses are proposed.	N/A

Rule	Assessment	Status
Appendix 7.5.7: **n. The maximum change in gradient without a transition shall be no greater than 1 in 8 (12.5%). Changes of grade of more than 1 in 8 (12.5%) shall be separated by a minimum transition length of 2 metres (see Figure 7.8 for an example).**	No change to the existing accesses are proposed.	N/A
Appendix 7.5.7: **o. Where the gradient exceeds 1 in 10 (10%) the vehicle access is to be sealed with a surface that enables safe access in wet or icy conditions.**	No change to the existing accesses are proposed.	N/A
Appendix 7.5.7: **p. Where a vehicle access serves more than six car parking spaces (or more than six residential units) and a footpath is provided on the frontage road, the gradient of the first 4.5 metres measured from the road boundary into the site shall be no greater than 1 in 10 (10%) (see Figure 7.9 for an example)**	No change to the existing accesses are proposed.	N/A
7.4.3.7.b Any activity providing 4 or more car parking spaces or residential units. Queuing Spaces shall be provided in accordance with Appendix 7.5.8		
Appendix 7.5.8: **1. On-site queuing spaces shall be provided for all vehicles entering a parking or loading area in accordance with Table 7.12.**	The existing accesses are non-compliant with regard to queuing space.	Non-Compliant
1a. Queuing spaces shall be available during hours of operation.	Queuing space is available during the hours of operation	Compliant
1b. Where the parking area has more than one access the number of parking spaces may be apportioned between the accesses in accordance with their potential usage for the calculation of the queuing space.	The proposal will redistribute the trips of vehicles exiting the site. Thus queuing space cannot be apportioned.	Compliant
1c. Queuing space length shall be measured from the road boundary to the nearest vehicle control point or point where conflict with vehicles already on the site may arise (see Figure 7.7).	Queuing space has been measured to the point where conflict with vehicles already on the site may arise.	Compliant
7.4.3.7.c Any vehicle access: **to an urban road serving more than 15 car parking spaces or more than 10 heavy vehicle movements per day; and/or on a key pedestrian frontage.** **Either an audio and visual method of warning pedestrians of the presence of vehicles or a visibility splay in accordance with Appendix 7.9 shall be provided. If any part of the access lies within 20m of a Residential Zone any audio method should not operate between 8pm and 8am.**	The existing accesses provide the required visibility splays.	Compliant
7.4.3.8 Vehicle crossings		
7.4.3.8.a Any activity with a vehicle access to any road or service lane **A vehicle crossing shall be provided constructed from the property boundary to the edge of the carriageway / service lane.**	No new vehicle crossings to be established.	Compliant

Rule	Assessment	Status
7.4.3.8.b Any vehicle crossing on an arterial road or collector road with a speed limit 70 kilometres per hour or greater **Design for vehicle crossing on arterial roads and collector roads with a speed limit of 70km/hr or greater shall comply with the relevant figure in accordance with Table 7.13 in Appendix 7.5.10.**	N/A	N/A
7.4.3.8.c Any vehicle crossing to a rural selling place **Vehicle Crossing shall be provided in accordance with Figure 7.13 in Appendix 7.5.10.**	N/A	N/A
7.4.3.8.d Any vehicle crossing on a road with a speed limit 70 kilometres per hour or greater **The minimum spacing to an adjacent vehicle crossing on the same side of the frontage road, shall be in accordance with Table 7.14 in Appendix 7.5.11.**	N/A	N/A
7.4.3.10 High trip generators		
7.4.3.8.d. v For the purposes of calculating the thresholds in Rule 7.4.3.10 (and table 7.4.4.19.1): **A. for existing activities with access to urban roads, the level of trip generation and scale of activity that existed prior to the plan becoming operative will not be included;** **B. for existing activities with access to rural roads, the level of trip generation and scale of activity that existed prior to the plan becoming operative shall be included;** **C. for education activities the thresholds in Rule 7.4.3.10 (and table 7.4.4.19.1) shall only apply to any additional traffic generation from a site which increases the number of children, students or FTE students.** **D. However, A. and C. do not apply if the existing activity's vehicle access arrangements change so that more than 50 vehicle trips per peak hour will use a new vehicle access to the activity and / or the volumes using any existing vehicle access to the activity increases by more than 50 vehicle trips per peak hour.**	The volumes using the Prep School driveway are expected to increase by more than 50 vehicle trips in the peak hour.	The proposal is a High Trip Generator

6.2 Assessment of non-compliances

Queuing Space

The queuing space is currently non-compliant. The site provides queuing space for approximately one vehicle before the first point where conflict may occur between vehicles.

The following are matters of discretion for Rule 7.4.3.7 b.: The effect of queuing vehicles on the safety of pedestrians and cyclists.

No changes to the existing queuing space are proposed. Review of the crash history shows that there are no crashes that would support adverse effects of the non-complying queuing space. While the proposal results in a redistribution of trips across the site, it is not expected to generate any additional trips. It is therefore anticipated that the existing queuing space will continue to operate effectively without causing adverse effects on the safety of pedestrians and cyclists.

As the site is a school, users are expected to be familiar with the environment. This means that most users will be aware of the queuing space available, recognise the needs of pedestrians and cyclists and choose to wait on-street rather than block pedestrian and cycle routes.

Overall, the existing queuing space for one vehicle is not expected to adversely affect the safety of pedestrians and cyclists.

6.3 Appraisal of the matters of discretion for High Trip Generators

The assessment matters for this proposal as a High Trip Generator (Rule 7.4.2.3) are as follows:

- Access and manoeuvring (safety and efficiency): Whether the provision of access and on-site manoeuvring area associated with the activity, including vehicle loading and servicing deliveries, affects the safety, efficiency, accessibility (including for people whose mobility is restricted) of the site, and the transport network (including considering the road classification of the frontage road).
- Design and Layout: Whether the design and layout of the proposed activity maximises opportunities, to the extent practicable, for travel other than by private car, including providing safe and convenient access for travel by such modes.

As detailed in Section 5, the proposal should not have any adverse effects on safety, efficiency or accessibility.

7. Conclusion

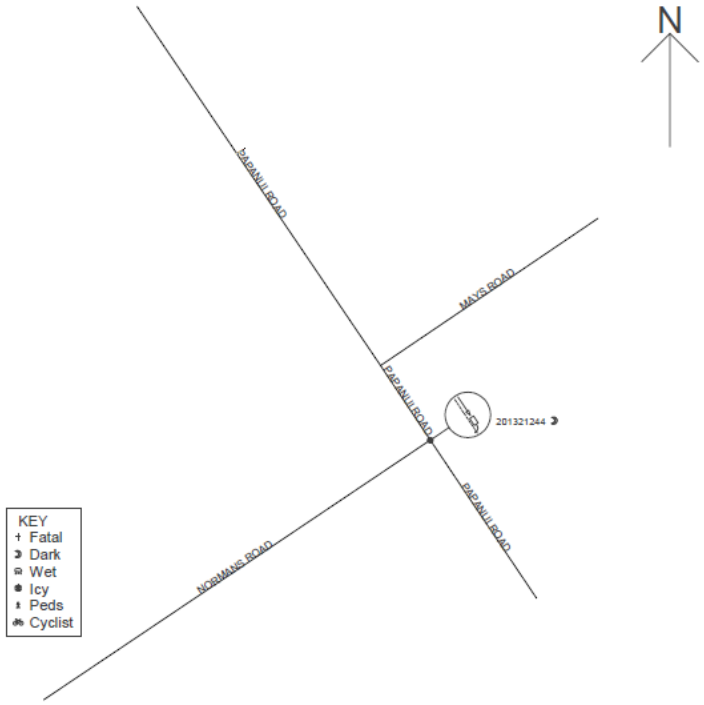
St Andrew's College wish to increase the capacity of their on-site drop off area. The proposal is a high trip generator as it will increase the use of the existing access serving the pre-school. It is expected that the use of this access will increase by more than 50 trips in a peak hour. Although the proposal is not expected to generate any additional traffic on the road network and should reduce demand for parking along Normans Road.

The proposal has been through a safety audit and there is one unresolved safety concerns relating to this proposal. It is not expected that the proposal will result in any adverse effects to the efficiency of the transport network or accessibility to the site.

The proposal has also been reviewed against the transport matters in the Christchurch District Plan. The proposal does not comply with the queuing space requirements and is a High Trip Generator. Assessment of these matters in section 6.2 and 6.3 shows that the non-compliances are acceptable. The proposal complies with all other transport related rules in the Plan.

As the proposal is not anticipated to negatively impact safety efficiency or accessibility, there are no transport reasons why consent should not be granted.

Appendix A
CAS Collision Diagram



Appendix B
Scheme Safety Audit

VIASTRADA

Transport Planning and Design
Level 1, 284 Kilmore Street
www.viastrada.co.nz

Normans Road at St Andrew's College

Updated scheme design stage safety audit

Kea crossing retained in current location

Report prepared for

St Andrew's College

July 2018

This document has been prepared for the benefit of St Andrew's College. No liability is accepted by ViaStrada Ltd, or any of its employees or sub-consultants with respect to its use by any other party.

Quality Assurance Statement		
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Project Number: Project Name:	1130 StAC Normans Road design safety audit	

Document Version	Date
Final Report	
Third Draft V03 (revised kea crossing location)	11 July 2018
Second Draft V02 (for designer response)	31 May 2018
First Draft V01 (to Jasmax for review)	30 May 2018

Contents

1 Introduction

1.1. Brief

ViaStrada (the safety auditors) have been commissioned by St Andrew's College (the client) to undertake a NZ Transport Agency (NZTA) compliant scheme design stage road safety audit of the proposed changes to the Normans Road frontage at St Andrew's College.

Figure 1-1: Location of audit

1.2. Project extents

The extent of the safety audit is shown in Figure 1-2 which is a clip from the Jasmax circulation plan, see Appendix A for the full set of plans.

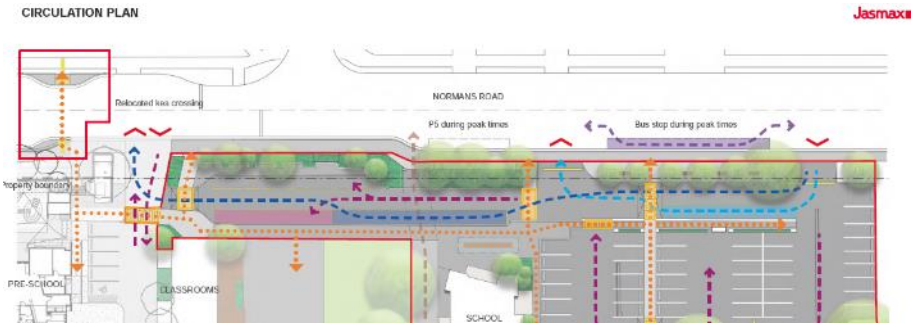


Figure 1-2: Project extents

The project includes relocating the existing KEA crossing, changes to the bus parking, vehicle access and pedestrian facilities.

1.2.1. Existing Kea crossing location to be retained

Further to public consultation on the proposed layout, the kea crossing is to be retained in its current location.

1.3. The safety audit team

The scheme design stage road safety audit was carried out in accordance with the "NZTA Road Safety Audit Procedure for Projects Guidelines - Interim release May 2013", by the Safety Audit Team (SAT) consisting of:

- Warren Lloyd, ViaStrada Ltd, safety audit team leader.
- Jon Ashford, ViaStrada Ltd, safety audit team member.

1.4. Site visits

Day time site visits were undertaken on Wednesday 23 May 2018 between 1:45 pm and 2:45 pm, Thursday 24 May between 8:40 am and 9:10 am and Friday 25 May between 7:45 am and 8:45 am.

1.5. The safety project team

The safety issues raised in this audit will require responses from the designer and the project safety engineer. The client decision and action taken against the safety issues will also be recorded. The following people are identified for these roles:

- Designer response: Bridget Southey-Jensen of Abley
- Safety Engineer: Name of XYZ
- Client Decision: David Evans of St Andrew's College
- Action Taken: Adrian Taylor of Jasmax

1.6. Crash history

The NZ Transport Agency holds a national database of vehicle crashes for New Zealand called the Crash Analysis System (CAS). Crashes are generally investigated for the previous five years to allow crash patterns to be identified, rather than one off events. The CAS database shows there have been no recorded crashes on Normans Road outside St Andrew's College since 2000.

1.7. Project information

1.7.1. Initial project information – initial KEA Crossing location

The SAT has received the following plans and information on the roads and traffic within the audit area:

Plans

- StAC Normans Rd - Developed Design Report.pdf
- ATC10147-SignsAndMarkings 180522.pdf
- ATC10147-180523.pdf

Information

- RE: Normans Road Project: Buses on a Wednesday (email from Mark McGregor of StAC Dated 14 May 2018)

- Abley Normans Road Drop-Off Design Considerations Technical Note 180523

The new KEA location plans referenced in this report are included in Appendix A and Appendix B

1.7.2. Subsequent project information – revised KEA crossing location

As noted in Item 1.2.1, further to public consultation on the proposed layout, the kea crossing is to be retained in its current location and the following revised plans have been received showing the latest layout:

Plans

- StAC Normans Road – Landscape Plans.PDF containing Jasmax drawings:
  L08-0040 rev 0, L8-1001 rev 0, L8-1002 rev 0, L8-1003 rev 0, L08-0030 rev 0
- ATC10147.pdf containing Abley drawings:
  ATC10147 Sheet 1 rev B, Sheet 2 rev E, Sheet 3 rev E & Sheet 4

Documents

- StAC Normans Road Design RSA_V02_Abley Response

The revised KEA location plans referenced in this report are included in in Appendix C and Appendix D

1.8. Audit procedure

The audit follows the NZ Transport Agency Road Safety Audit procedures for projects. The expected crash frequency is qualitatively assessed based on expected exposure (how many road users will be exposed to a safety issue) and the likelihood of a crash resulting from the presence of the issue. The severity of a crash outcome is qualitatively assessed based on factors such as expected speeds, type of collision, and type of vehicle/object involved. The audited facility caters for pedestrians and cyclists who are "vulnerable road users" with a higher likelihood of death or serious injury if involved in a conflict with a motor vehicle.

The frequency and severity ratings are used together to develop a combined qualitative risk ranking for each safety issue using the NZTA Concern Assessment Rating Matrix in

Table 1-1 below. The qualitative assessment requires professional judgement and experience from a wide range of projects of varying sizes and locations.

Table 1-1 Severity rating matrix

Likelihood of death or serious injury	Frequency (probability of a crash)			
	Frequent	Common	Occasional	Infrequent
Very likely	Serious	Serious	Significant	Moderate
Likely	Serious	Significant	Moderate	Moderate
Unlikely	Significant	Moderate	Minor	Minor
Very unlikely	Moderate	Minor	Minor	Minor

The ranking of the frequency of crashes has been assessed in accordance with Table 1-2.

Table 1-2: Indicative crash frequency

Crash Frequency	Indicative description
Frequent	Multiple crashes (more than 1 per year)
Common	1 every 1 – 5 years
Occasional	1 every 5 – 10 years
Infrequent	Less than 1 every 10 years

While all safety concerns should be considered for action, the client will make the decision as to what action will be adopted. This report gives safety ranking guidance and it is acknowledged the client must consider factors other than safety alone. The suggested action for each concern category is given in Table 1-3.

Table 1-3: Concern categories

Risk	Suggested Action
Serious	A major safety concern that must be addressed and requires changes to avoid serious safety consequences.
Significant	Significant concern that should be addressed and requires changes to avoid serious safety consequences.
Moderate	Moderate concern that should be addressed to improve safety
Minor	Minor concern that should be addressed where practical to improve safety.

It should be noted that the severity rating assigned to the likelihood assigned to 'Death or Serious Injury' is often "Likely" or "Very likely" because crashes between pedestrians and motorised vehicles often results in serious injury or fatality crashes.

1.9. Disclaimer

The findings and recommendations in this report are based on the site visit undertaken by the safety audit team (SAT), an examination of available relevant plans, the specified road and environs, and the SAT's professional knowledge and experience. However, it must be recognised that no audit can guarantee the elimination of all possible safety concerns as all traffic environments consist of a multitude of elements that are never completely within the control of engineering design.

Safety audits, by nature, focus on aspects relating to safety and therefore do not constitute a complete review of design or assessment of standards with respect to engineering or planning documents. Similarly, the safety audit focuses on the plans provided; it is not the role of the SAT to identify all elements such as signage, markings, pedestrian tactile pavers, or traffic signal hardware in the absence of more detailed plans.

This audit applies to the stated project. Whilst some issues covered are general and might be applicable to other locations, the SAT does not take any responsibility for transferral of concepts to other projects or locations.

While every effort has been made to ensure the accuracy of the report, it is made available on the basis that anyone relying on it does so at their own risk without any liability to the safety audit team or their organisations.

2. Safety audit findings – Initial KEA location

As noted in Items 1.2.1 & 1.7.2, further to public consultation on the initial proposed layout, the kea crossing will be retained in its current location and revised plans have been issued.

As a result, several of the issues raised in this audit are no longer applicable and are now noted as such in the item heading. Items that are still applicable but have changed in emphasis and new items arising from retaining the crossing are noted in a new Section 3.

2.1. General issues

2.1.1. Proposed KEA crossing location - NO LONGER APPLICABLE

Probability of crash occurring – **Infrequent**

Likelihood of serious / fatal injury – **Unlikely**

Ranking – **Minor**

The location of the new KEA crossing facility is considered safer than the existing KEA crossing as it is further way from a side street with restricted visibility, see 2.4.1. However, there is a potential safety concern that drivers turning left out of this driveway will be looking to their right (towards oncoming traffic) and the new KEA crossing is located on their left. There is a risk that drivers may leave this crossing at speed to get into a gap, without checking the KEA crossing is clear.

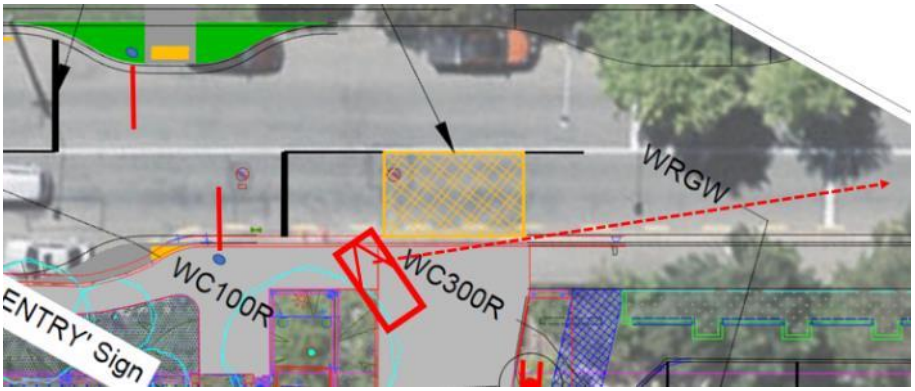
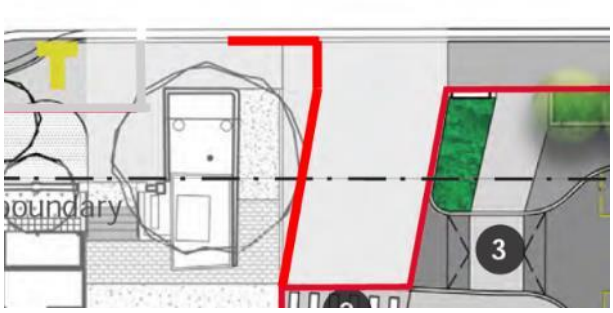


Figure 2-1: Anticipated sight line and vehicle angle at driveway

Recommendations:	
2.1.1.1.	The designer to consider options to reduce the potential for conflict for drivers exiting this driveway, including; • The designer to consider the recommendations in 2.2.3 as these will reduce the exit speed of vehicles from this driveway. • As this is a low volume car park, it may be possible to ban the left turn out • Keep the driveway parallel, having the drive on the angle facing east, away from the left turn movement as per Figure 2-2 This would make it easier for drivers to check in both directions as they exit.  Figure 2-2: Alternate driveway alignment • Utilising bollards on the path to stop vehicles cutting through the ramp area
Designer Response:	*The kea crossing only operates during the peak periods when congestion on Normans Road is high (and thus vehicle speeds are low). Drivers using the access during the peak periods are expected to be familiar with the drop-off area and thus should know to check for the kea crossing. In addition to this the kerb will be reinstated to better align with the driveway (as recommended in Section 2.2.3).* *The design team considers this mitigation to be enough and thus are not proposing to realign the driveway.*
SAT Comment:	*With the KEA crossing reverting back to the original location, this issue has been modified.*
Safety Engineer:	
Client Decision:	
Action Completed:	

2.1.2. Existing KEA crossing infrastructure - NO LONGER APPLICABLE

Probability of crash occurring – **Infrequent** Likelihood of serious / fatal injury – **Likely** Ranking – **Moderate**	
An important aspect of a new KEA crossing facility is to consider what will become of the existing KEA crossing facility. This is because people may continue to use the old crossing location which is less safe and potentially undermines the use of new KEA crossing. The drawings provided for audit make no reference to the removal of the existing facility and the existing crossing limit lines remain on the plans.	
Recommendations:	
2.1.2.1.	Designer to consider the removal of all existing KEA crossing infrastructure including, path connections, kerb cut downs, all (4) sign pole bases and pavement markings.
Designer Response:	*The existing KEA crossing infrastructure will be removed.* *CCC to advise whether path connection/cut down is also to be removed.*
SAT Comment:	*With the KEA crossing reverting back to the original location, this is no longer applicable.*
Safety Engineer:	
Client Decision:	
Action Completed:	

2.1.3. Bus operations at KEA crossing

Probability of crash occurring – **Infrequent** Likelihood of serious / fatal injury – **Likely** Ranking – **Moderate**
During the site visit, there were several occasions that buses stopped at the KEA crossing even though the KEA signs were not out. The main concern is that the bus stops when it doesn't have to and opposing drivers continue to drive through the crossing. The student crossing patrollers did extend the signs once the bus had stopped. In one instance, once the signs were out, the bus driver allowed students to exit the bus where they had direct access to the KEA crossing, see Figure 2-3. It is not known by the

auditor whether this is a routine operation or not. A safety concern is that some students exiting the bus were on their phones and may have wandered across the KEA crossing without knowing whether the signs were out or not.

Figure 2-3: Bus drop off at KEA crossing

Recommendations:

2.1.3.1.	That the College confirms if this is a standard operating procedure for the bus to release passengers at the crossing and if it is, that the College ensure that the KEA patrol students and supervising staff are aware of the risk and continue to operate the crossing safely. That the College liaise with all bus companies that service the College to ensure that bus drivers are aware of the potential risk and manage the release of passengers when it is safe to do so.
2.1.3.2.	If it is not a standard operation, then the bus should be accommodated somewhere safe for the students to exit the bus.

Designer Response:	*Bus stops are unable to be located on the northern side of the road due to driveway locations.* *St Andrews College to liaise with bus company about re-routing buses so they can utilise the new on-street bus stops.*
SAT Comment:	*Nothing further*
Safety Engineer:	
Client Decision:	
Action Completed:	

2.1.4. Bus parking provision on-street

Ranking – **Comment**	
The proposal will have a space for a double bus stop during peak times on the south side of Normans Road, adjacent to the car park. The bus stop will be utilised by buses during the Wednesday afternoon sports run, and it is assumed there will be at least one bus stopping here during the routine school drop off and collections times. For the balance of the day the space could operate as a time restricted parking area. This shared resource will need to be clearly defined and signed to ensure public understanding of the shared status and compliance with the need for the space to be exclusively available to buses when needed.	
Recommendations:	
2.1.4.1.	Designer to confirm the proposed time restriction and sign layout for this shared use space and ensure the signage for this area will be understood by the public.
2.1.4.2.	As most people likely to use this shared use space will be linked to the College, the College should be proactive in informing their community on the parking restrictions.
Designer Response:	*Bus stops x3 to operate on street during AM and PM pick-up Mon-Fri. Bus stop signage to reflect the hours of operation. Supplementary signage will designate the area P30 parking outside of these hours.*
SAT Comment:	*Nothing further*
Safety Engineer:	
Client Decision:	
Action Completed:	

2.1.5. KEA crossing and driveway conflict – NO LONGER APPLICABLE

Probability of crash occurring – **Infrequent** Likelihood of serious / fatal injury – **Unlikely** Ranking – **Minor**
There is no onsite manoeuvring at No 1 College Street and vehicles must back out of this driveway. This will be more complicated with the KEA crossing on the west side of the driveway. If they are heading east, drivers must reverse back towards crossing users

and the KEA patrol student with the barrier arm is on the opposite side of the crossing. If they are heading west, they may be able to back out into the cross hatched area shown on Abley plan ATC10147 Rev A. Should the kerb buildout be modified as discussed in 2.2.1.1 this may mitigate this concern.	
Recommendations:	
2.1.5.1.	Designer to confirm how vehicles will safely exit No 1 College Street while the KEA crossing is in operation.
2.1.5.2.	Designer to consider this issue in conjunction with 2.2.1.1.
Designer Response:	*Kerb to be modified as per Section 2.2.1.1.* *Kea Crossing supervisors to be informed of the risk and manage traffic/pedestrian movements in the unlikely event of this occurring.* *Give-way markings will also be installed on the prep school driveway to reinforce the need to give way to pedestrians and Normans Road traffic.*
SAT Comment:	*With the KEA crossing reverting back to the original location, this is no longer applicable.*
Safety Engineer:	
Client Decision:	
Action Completed:	

2.1.6. Sun strike

Probability of crash occurring – **Infrequent** Likelihood of serious / fatal injury –**Likely** Ranking – **Moderate**
Normans Road runs east/west which means there is a serious sun strike issue for east bound road users in the morning and west bound road users in the evening peak. This is more of a problem at certain times of the year when sun rise, and sun set coincides with the start and end of the school day. Drivers were seen to shade their eyes while driving which meant they didn't (couldn't) indicate when turning into the College. A driver on

Normans Road colliding with a pedestrian they couldn't see, because of the sun, is likely to result in a serious injury crash.	
Recommendations:	
2.1.6.1.	The SAT acknowledge there is little that can be done about sun strike, but the designer should be aware of the sun strike issue and consider this when locating signs and determining their size and the use of larger backing boards for signs.
Designer Response:	*Noted. Use of larger backing boards will be considered for any signage perpendicular to the road.*
SAT Comment:	*Nothing further*
Safety Engineer:	
Client Decision:	
Action Completed:	

2.1.7. College advertising signs

Probability of crash occurring – **Infrequent** Likelihood of serious / fatal injury –**Likely** Ranking – **Moderate**
There is a lot of street side advertising for St Andrew's College along the front fence, see Figure 2-4. The signs look to be targeted at drivers as there are good graphics and large text, big enough to be read while driving past. This location requires a high level of concentration with the increased demand on drivers' attention.  Figure 2-4: College advertising signs
Recommendations:

2.1.7.1.	The College to reconsider the use of large format advertising signs that target drivers along this stretch of road. It would be more desirable to have signs developed for pedestrians rather than drivers.
Designer Response:	*Advertising signage to be removed.*
SAT Comment:	*Nothing further.*

Safety Engineer:	
Client Decision:	
Action Completed:	

2.1.8. Street lighting – NO LONGER APPLICABLE

Ranking – **Comment**	
There is an existing street light pole on the north side of Normans Road that is close to the proposed KEA crossing. This is expected to give a good lighting level but will require checking to confirm it is to standard.	
Recommendations:	
2.1.8.1.	The designer to confirm that the level of lighting at the proposed KEA crossing is in accordance with AS/NZS 1158 and meets councils lighting requirements.
Designer Response:	*We have contacted Geoff English from CCC Transport, and this is their reply to the lighting associated with the Kea crossing:* *Normans Rd is lit to AS/NZS1158.1.1, subcategory V4.* *AS/NZS1158.4 Lighting of Pedestrian Crossings. See Clause 1.4.12 which provides the definition of a Pedestrian Crossing. A Kea crossing does not align with this definition of a pedestrian crossing.* *Generally, Kea crossings are not used at night and therefore additional street lighting is not required.*
SAT Comment:	*With the KEA crossing reverting back to the original location, this is no longer applicable.*
Safety Engineer:	
Client Decision:	
Action Completed:	

2.2. Road issues

2.2.1. Double build out layout – NO LONGER APPLICABLE

Probability of crash occurring – **Infrequent** Likelihood of serious / fatal injury – **Very unlikely** Ranking – **Comment**
The proposed KEA crossing buildout will result in two buildouts on the north side of Normans Road located two car lengths apart. This recessed area accommodates a double width cut down (the double driveway is not shown on the plans). The layout is considered nonintuitive and people will park in recessed space between the buildouts.
Recommendations:

2.2.1.1.	That the designer considers connecting the proposed and existing kerb build outs with a continuous kerb to eliminate the recessed space and improve channelisation through the crossing area. This may also help address the issue 2.1.5
Designer Response:	*Continuous kerb to be installed between build-outs.*
SAT Comment:	*With the KEA crossing reverting back to the original location, this is no longer applicable.*
Safety Engineer:	
Client Decision:	
Action Taken:	

2.2.2. Road related stormwater – NO LONGER APPLICABLE

Ranking – **Comment**
From the site visit, it appears that the storm water runs east to west along the north side of Normans Road, from College Street. The proposed buildout on the north side of Normans Road will impact on the stormwater flow.

Recommendations:	
2.2.2.1.	That the designer confirm how stormwater will be collected and discharged between the proposed and existing kerb build outs.
2.2.2.2.	See 2.2.1.1 as this would eliminate the need for any stormwater provision.
Designer Response:	*Kerb changes recommended in Section 2.2.1.1 to be adopted.*
SAT Comment:	*With the KEA crossing reverting back to the original location, this is no longer applicable.*
Safety Engineer:	
Client Decision:	
Action Completed:	

2.2.3. Wide vehicle crossing – ISSUE MODFIED

Refer to Item 3.1.1 for modified issue.

Probability of crash occurring – **Infrequent** Likelihood of serious / fatal injury – **Unlikely** Ranking – **Minor**
There is a very wide vehicle crossing at the restricted (with barrier arm) entry beside the St Andrew's Preparatory School sign. There is a pedestrian footpath with no vertical separation from the driveway and leads directly down to the kerb cut down (Figure 2-5). Vehicles can enter and exit wide driveways at higher speeds which increases the risk for footpath and ramp users. The additional width (right side photo Figure 2-5) allows drivers to park at an angle towards the new KEA crossing. However, they will be looking to their right which is away from the new KEA crossing. The speeds of vehicles exiting this driveway are not expected to result in serious injury crashes, but any conflict is undesirable.

Figure 2-5: Wide vehicle crossing and pedestrian ramp

Recommendations:	
2.2.3.1.	The designer to confirm if the vehicle cut down for this driveway needs to be this wide.
2.2.3.2.	The designer to confirm whether the footpath does need to lead directly to a cut down or whether the kerb should be raised here to increase protection for pedestrians in this location.
2.2.3.3.	That the designer also consider installing a speed hump similar to the existing speed humps at the car park entry / exit in this driveway.
Designer Response:	*Kerb will be reinstated to align with the driveway (full height kerb to be provided until edge of footpath).* *Speed hump to be installed at the entrance defining the space allocated for driveway and the footpath along Normans Road.*
SAT Comment:	*With the KEA crossing reverting back to the original location, this issue has been modified. Refer Item 3.1.1.*
Safety Engineer:	
Client Decision:	
Action Taken:	

2.2.4. On-street parking provision

Probability of crash occurring – **Infrequent**

Likelihood of serious / fatal injury – **Unlikely**

Ranking – **Minor**

As per most schools, the on-street parking provision is insufficient for the demand. The car parks along the north side of Normans Road are full. These cars may be St Andrew's staff and or students. There are drivers parking across driveways and on no-stopping lines. Another consequence is that the students observe this poor driving behaviour and think it is acceptable.	
Recommendations:	
2.2.4.1.	The designer and College consider discussing options with the council for optimising parking on the north side of Normans Road • Could teachers and students be encouraged to park further away, freeing up drop off parking space? • Are short term parking restrictions required on the north side of Normans Road? • Is a formal bus stop required on the north side of Normans Road? Also see 2.1.3.1
Designer Response:	*The project will significantly increase the capacity of on-site drop off. It is hoped that this will resolve some of the poor parking discipline / driving behaviour.* *A formal bus stop is unable to be established on the north side due to the location of driveways. However as mentioned in Section 2.1.3 the school will liaise with the bus company to get the bus route changed so all buses may utilise the new on-street but stops.*
SAT Comment:	*Nothing further.*
Safety Engineer:	
Client Decision:	
Action Taken:	

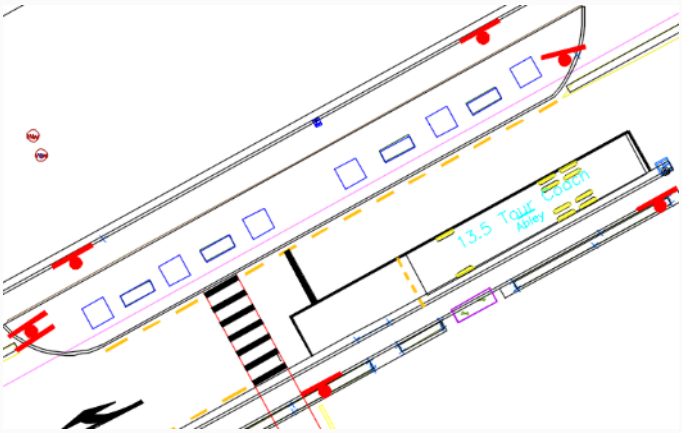
2.3. Car park issues

2.3.1. Proposed crossing conflict

Probability of crash occurring – **Infrequent** Likelihood of serious / fatal injury – **Unlikely** Ranking – **Minor**
The new and continuous pedestrian path across the car park is a desirable and safe feature until a bus parks in the drop off area and blocks the route. This 'blockage' is only

expected to occur on Wednesday afternoons, and pedestrians will probably revert to the old crossing location where the is no raised platform protection. There looks to be insufficient room for a bus to park forward of the new raised platform and exit the car park, without having to back up first. The SAT recognise that a bus should never reverse in a car park, particularly one that has pedestrian activity.

Recommendations:

2.3.1.1.	Designer to reconsider the new raised platform location with a view to; • Relocate the car park exit slightly west to allow a bus to exit from a stopped position just forward of the new raised platform • Relocating the proposed raised zebra crossing slightly back to allow one bus to park ahead of the crossing and turn out of the exit without having to reverse. • As students (many on phones) must walk out between buses, the bus stop immediately east of the new platform should be located as far from the raised platform as possible to provide some intervisibility between pedestrians and drivers.
Designer Response:	*Three on-street bus stops are now proposed during drop-off / pick-up periods. The existing drop-off area will provide overflow bus parking for up to one bus. The overflow bus stop will not block the new pedestrian crossing.* *On a Wednesday afternoon when the overflow bus parking may be required, buses arrive well before school finishes. As such, drivers are able to safely perform a reverse manoeuvre to position the bus at the rear of the drop off. This will provide good sight lines at the pedestrian crossing. To assist bus drivers, the plans have been updated to include a guide marker for where the front of the bus should be positioned.* 

SAT Comment:	*Nothing further.*
Safety Engineer:	
Client Decision:	
Action Completed:	

2.3.2. Raised platform for crossing

Ranking – **Comment**	
Jasmax have indicated that the pedestrian platforms may not be raised in the car park as they are not favoured by the bus drivers. The auditor supports using raised platforms for pedestrians and if the approach and departure ramps are relatively long, (between 1.4 m and 2.0 m) they are comfortable for the bus driver and passengers.	
Recommendations:	
2.3.2.1.	That the raised platforms are retained in the car park
Designer Response:	*Raised platforms to be retained.*
SAT Comment:	*Nothing further.*
Safety Engineer:	
Client Decision:	
Action Completed:	

2.4. Signs & markings

2.4.1. KEA stop sign active or not – ISSUE MODIFIED

Refer to Item 3.1.2 for modified issue.

Probability of crash occurring – **Infrequent** Likelihood of serious / fatal injury – **Unlikely** Ranking – **Minor**
During the site visit, it was apparent that drivers exiting College Avenue found it difficult to discern whether the KEA stop sign was active or not, see Figure 2-6. There is a risk of visitor drivers turning right out of College Street when pedestrians are on the crossing.

Figure 2-6: KEA crossing signs in or out?

The stop sign on the far side of the road looks to be out, but the stop sign on the near side is clearly in. There is a possibility that locals become familiar with reading this and use it safely.

Recommendations:

2.4.1.1.	The designer to confirm that this sight line risk will not occur for drivers exiting the driveway close to the proposed KEA crossing.

Designer Response:	*Our proposal will resolve the issue for vehicles exiting College Avenue. While confusion may occur at the new location, drivers exiting the driveway will be familiar with the environment. The design changes recommended in Section 2.2.3 will assist to discourage any poor driving behaviour.*
SAT Comment:	*With the KEA crossing reverting back to the original location, this issue has been modified. Refer to Item 3.1.2.*
Safety Engineer:	
Client Decision:	
Action Taken:	

2.4.2. Noncompliance with signs and markings

Probability of crash occurring – **Occasional**

Likelihood of serious / fatal injury –**Unlikely**

Ranking – **Minor**

During the site visits, there was a low level of noncompliance with the no right turn and no entry signs. This will be partially addressed with the correctly oriented and gated signs shown on Abley plan ATC10147 Rev A. However, more signs are required at the standard height and correctly oriented. The sign in Figure 2-7 is too low to be seen by approaching traffic, is easily obscured and only visible to traffic approaching from the west.

Figure 2-7: Sign too low and incorrect orientation

The No Right Turn sign shown in Figure 2-8 is also too low and can be obscured by small children. It is also a regulatory sign which should be mounted at the standard height and gated, where practical.

Figure 2-8: Single low regulatory sign

Recommendations:

2.4.2.1.	Designer to ensure all No Entry signs are gated, oriented correctly and installed at the correct height.
2.4.2.2.	Designer to consider No Entry signs on the back of the entry signs (to be confirmed, see 2.4.3) on Abley plan ATC10147 Rev A that are oriented correctly and installed at the correct height.
2.4.2.3.	Designer to consider gated No Right Turn signs on the back of the No Entry signs (to be confirmed, see 2.4.3) on Abley plan ATC10147 Rev A.

2.4.2.4.	Designer to relocate the RG6 Give Way sign to the left side of the car park access lane on Abley plan ATC10147 Rev A or consider gated RG6 Give Way signs.
Designer Response:	*New signage to be orientated and mounted correctly. Existing "No Entry" sign and "No Right Turn" sign to be re-installed at the correct height.* *No Entry signs to be mounted on rear of Entry signage* *No Right Turn signs to be gated on rear of No Entry signs* *Give way signage to be gated at drop-off exit*
SAT Comment:	*Nothing further.*
Safety Engineer:	
Client Decision:	
Action Completed:	

2.4.3. College entry sign

Ranking – **Comment**	
There is no sign showing visitor drivers where the College car park entry is. This may be addressed by the Abley plan ATC10147 Rev A however, it is unclear what format these signs will take. There is no standard MOTSAM Entry sign and it may be desirable to include reference to the St Andrew's College car park entry.	
Recommendations:	
2.4.3.1.	Designer to confirm the format and layout of the proposed car park entry sign/s.
2.4.3.2.	Designer to consider referring to the St Andrew's College car park entry on this sign.
Designer Response:	*St Andrews College are currently reviewing wayfinding signage in the school. Entry sign to be provided by St Andrews College.*
SAT Comment:	*Designer or project team to ensure the entry sign is not too complex (a distraction) and does not obscure or restrict intervisibility at the entrance, nothing further.*
Safety Engineer:	

Client Decision:	
Action Taken:	

2.4.4. Sign progression

Ranking – **Comment**

The only sign at the entry to the St Andrew's car park is a 'No Parking in drop off zone' sign, see the left most photo in Figure 2-9. However, there is no corresponding drop off zone (designated or signed) within the car park or on road. This won't bother regular users, but it will result in confusion every time someone new visits the College.

Figure 2-9: No sign progression or coherence

As discussed in 2.4.3 a new entry sign is proposed.

Recommendations:

2.4.4.1.	The designer to ensure that all the signage and markings for the proposed and existing on-street and off-street parking and pick up / drop off areas are consistent and coherent.
Designer Response:	*Signage and markings to be updated. White parking lane to be marked in the drop off area and modified PP22 signage to be used on either side of the drop off.*
SAT Comment:	*Nothing further.*

Safety Engineer:	
Client Decision:	
Action Taken:	

2.4.5. Misleading signs

Ranking – **Comment**
The P5 parking signs look like 5 Kph speed signs. Although this is quite a good message to have in a car park, they are misleading and may be not be interpreted as a time restricted park. One of the outcomes of standard road signs is that they are readily seen, interpreted and understood by most road users. Having mixed message signs does not help achieve this outcome.

Figure 2-10: 5 km/h or 5 Mins

Recommendations:	
2.4.5.1.	Where time restricted parking is provided, provide the standard parking signs. Also see 2.4.4.1
Designer Response:	*Where time restricted parking is provided, modified P22 sign to be used.*
SAT Comment:	*Nothing further.*
Safety Engineer:	
Client Decision:	
Action Taken:	

3. Safety audit findings – Revised KEA crossing location

3.1.1. Wide vehicle crossing – ISSUE MODFIED

Refer to Item 2.2.3 for old issue.

Probability of crash occurring – **Infrequent**

Likelihood of serious / fatal injury – **Unlikely**

Ranking – **Minor**

There is a very wide vehicle crossing at the restricted (with barrier arm) entry beside the St Andrew's Preparatory School sign. There is a pedestrian footpath with no vertical separation from the driveway and leads directly down to the kerb cut down (Figure 3-1). Vehicles can enter and exit wide driveways at higher speeds which increases the risk for footpath and ramp users. The additional width (right side photo Figure 3-1) allows drivers to cut across the footpath as they exit. However, they will be looking to their right which is away from approaching pedestrians.

The speeds of vehicles exiting this driveway are not expected to result in serious injury crashes, but any conflict is undesirable.

Figure 3-1: Wide vehicle crossing and pedestrian ramp

Recommendations:

3.1.1.1.	The designer to confirm if the vehicle cut down for this driveway needs to be this wide.
3.1.1.2.	The designer to confirm whether the footpath does need to lead directly to a cut down or whether the kerb should be raised here to increase protection for pedestrians in this location.
3.1.1.3.	That the designer also consider installing a speed hump similar to the existing speed humps at the car park entry / exit in this driveway.

Designer Response:	*Kerb will be reinstated to align with the driveway (full height kerb to be provided until edge of footpath).*

	Speed hump to be installed at the entrance defining the space allocated for driveway and the footpath along Normans Road.
SAT Comment:	*With the KEA crossing reverting back to the original location, the issue of the very wide driveway and no vertical separation between the footpath and the driveway remains and the SAT support making the changes as described in the Designer Response.*
Safety Engineer:	
Client Decision:	
Action Taken:	

3.1.2. KEA stop sign active or not – ISSUE MODIFIED

Refer to 2.4.1 for previous issue.

Probability of crash occurring – **Infrequent**

Likelihood of serious / fatal injury – **Unlikely**

Ranking – **Minor**

During the site visit, it was apparent that drivers exiting College Avenue found it difficult to discern whether the KEA stop sign was active or not, see Figure 3-2. There could be a risk of visitor drivers turning right out of College Street when pedestrians are on the crossing.

Figure 3-2: KEA crossing signs in or out?

The stop sign on the far side of the road looks to be out, but the stop sign on the near side is clearly in. There is a possibility that locals become familiar with reading this and use it safely where a visitor driver may become confused by the signs presented.

Recommendations:	
3.1.2.1.	The designer to confirm that the position of the KEA sign on the south side of Normans Road can be easily seen and interpreted by right turning drivers from College Street.
Designer Response:	*The scope of the project has changed and there are now no proposed changes to the kea crossing or the intersection of Normans/College Ave.* *Nonetheless, when the kea crossing is in use the traffic flow is busy and there will be pedestrians waiting to cross the road. There will be limited opportunities for a driver to turn right out of College Ave and if they have the opportunity to turn right then if the kea crossing sign is out it will be in the middle of their lane. The speed of the right turning driver will likely be slow and therefore the driver should be able to stop before the crossing. Also, if the right turning driver thinks the sign is out (so they are required to stop) they are likely to turn right more cautiously.* *In the past 5 years, there have been no reported crashes associated with the drop-off (from right turning vehicles or otherwise) thus no action is considered appropriate.*
SAT Comment:	
Safety Engineer:	
Client Decision:	
Action Taken:	

4. Audit statement

We certify that we have used the available plans, and have examined the specified roads and their environment, to identify features of the project we have been asked to look at that could be changed, removed or modified to improve safety.

The safety issues identified and noted in this report for the initial KEA crossing location and the revised KEA crossing location are summarised in Table 4-1 below.

Table 4-1: Summary of Issues

KEA	Serious	Significant	Moderate	Minor	Comments	Total
2.0 Initial NA			1	2	3	6
2.0 Initial retained			3	3	5	11
3.0 Revised				2		2

Designer: Bridget Southey-Jensen Position Senior Transportation Engineer

Signature  Date 08/06/2018

Auditor response: Position

Signature Date

Safety Engineer: Position

Signature Date

Project Manager: Position

Signature Date

Action Completed: Position

Signature Date

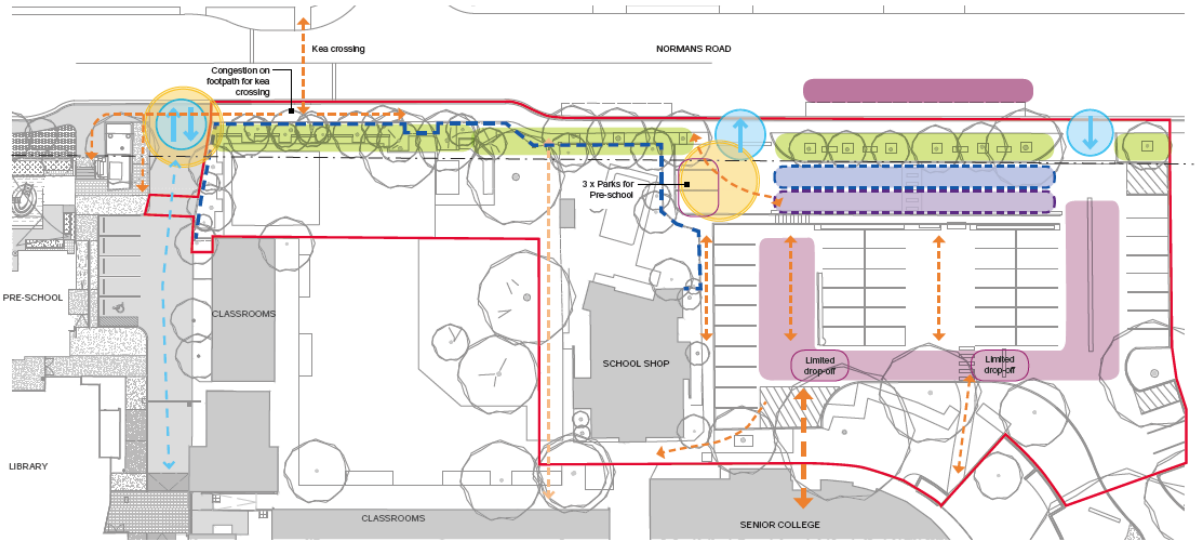
Project sponsor to distribute audit report incorporating decision to designer, Safety Audit Team Leader, Safety Engineer and project file

Date .....

Appendix A Jasmax plans - initial KEA crossing location

SITE ANALYSIS

Jasmax



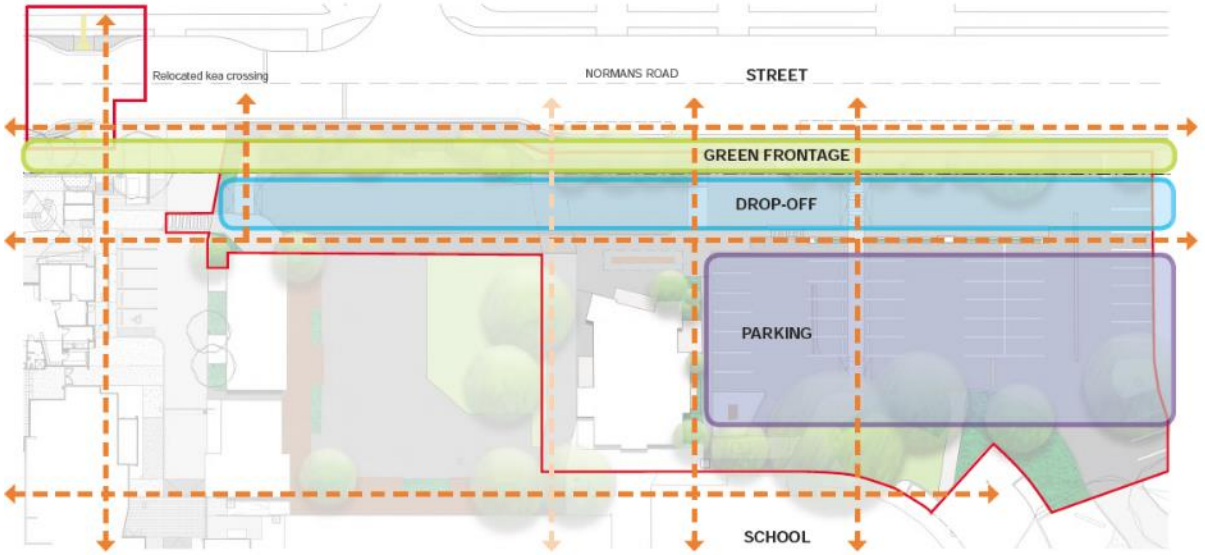
LEGEND

- Informal waiting- 3 abreast
- Main drop-off/ pick-up (efficient)
- Pedestrian movements
- Scope of works
- Planting to retain (outside of property boundary)
- Entrance and exits
- Through route - sporadic drop-off/ pick-up
- Staff/ visitor vehicle access low controlled use
- Property boundary
- Conflict zone
- Bus drop off occaisionally happening in the carriageway
- Future construction route
- Existing fence

ST ANDREWS COLLEGE | NORMANS ROAD | MAY 2018 1

CONCEPT PLAN

Jasmax



LEGEND

- Green frontage
- Drop-off
- Parking
- Pedestrian corridors
- Future site access
- Scope of works

ST ANDREWS COLLEGE | NORMANS ROAD | MAY 2018 2

LANDSCAPE PLAN

Jasmax

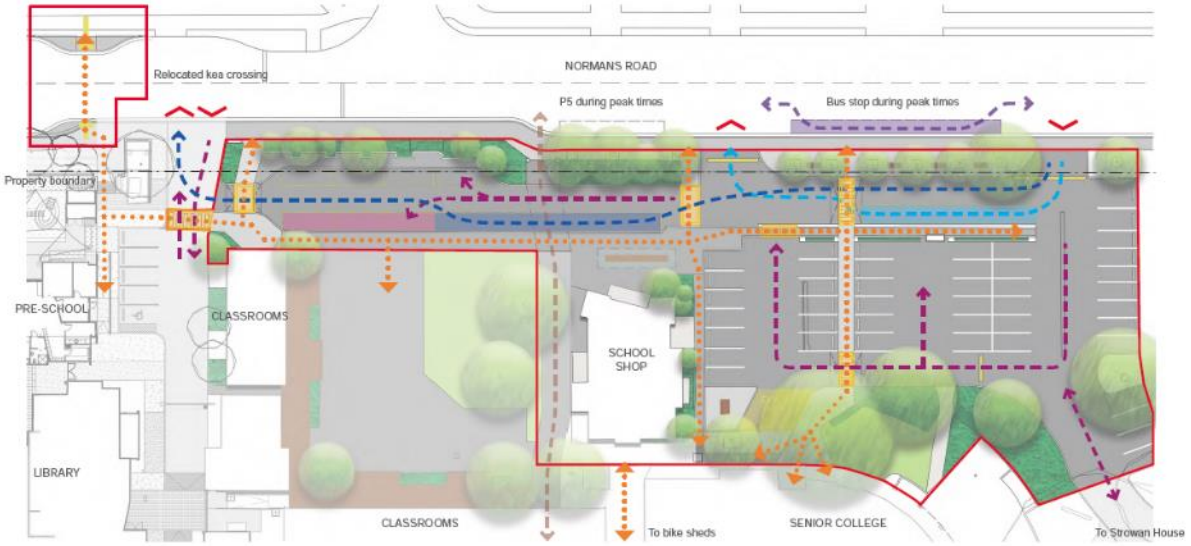
LEGEND

1 Relocated kea crossing to align with new entrance
2 Pedestrian crossing to Prep and Junior School (not raised)
3 Raised crossing - decorative concrete
4 Staff parking (4) with 1m wide asphalt path
5 Pre-school parking (3)
6 Pre-school scooter and bike shelter (covered)
7 Future development area - to remain as existing
8 Site access route for future development
9 Prep and Junior School drop-off
10 Existing trees and with new gardens below
11 Student waiting shelter (indicative)
12 Threshold crossing - decorative concrete
13 Existing P5 during peak times
14 Proposed bus stop during peak times
15 Raised pedestrian crossings and path - decorative concrete
16 Senior School drop-off
17 Sunny social space - timber platform and decorative concrete
18 Relocated accessible parks (compliant design)

ST ANDREWS COLLEGE | NORMANS ROAD | MAY 2018 3

CIRCULATION PLAN

Jasmax

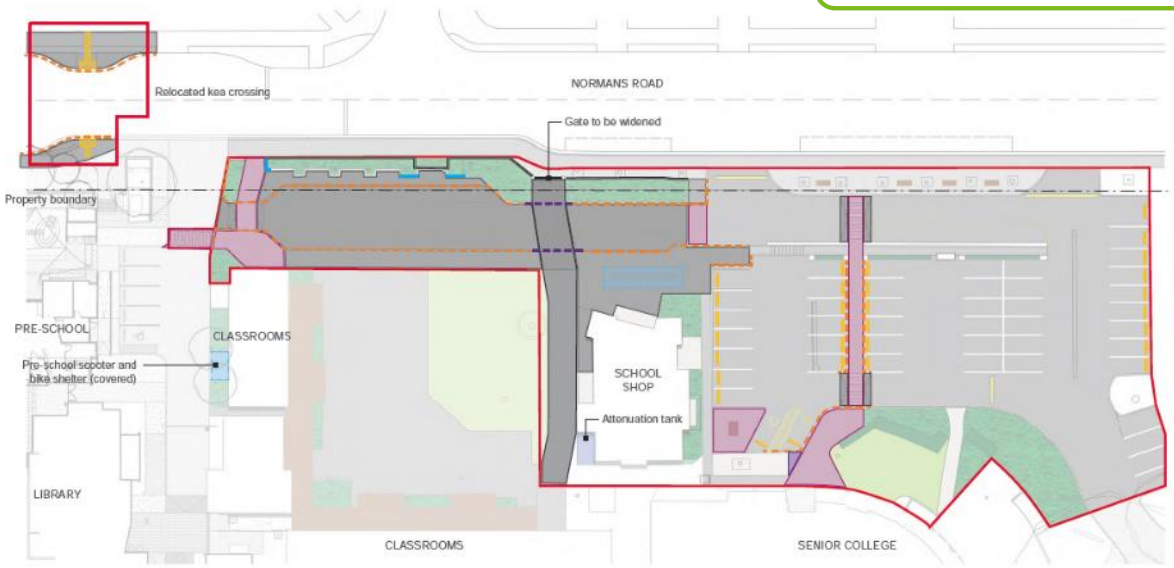


Safe pedestrian movements
Bus stop - during peak times (proposed)
Future site access route
Senior school drop-off route
Prep school drop-off route
Parking movements
Vehicle entrance / exit
Safe pedestrian crossing point - treatment varies
Accessible parking
Senior school drop-off zone
Prep school drop-off zone
Pre-school parking

ST ANDREWS COLLEGE | NORMANS ROAD | MAY 2018 4

PROPOSED WORKS AND FEATURES

Jasmax



New concrete kerb
New concrete kerb - heavy duty
Existing fence to remain
New wheel stops
New sections of concrete wall
New asphalt - standard
New asphalt - heavy duty
Future shelter (indicative)
New decorative concrete
New paving - extension of existing

ST ANDREWS COLLEGE | NORMANS ROAD | MAY 2018 5

LIGHTING AND FURNITURE PLAN

Jasmax

LEGEND

- EWO light column - CN600 (6)
- Rubbish bin (2)
- Water fountain (1)
- Timber platform (1)

LED lighting column

6 Seater timber platform

1200 x 2100mm

ST ANDREWS COLLEGE | NORMANS ROAD | MAY 2018 6

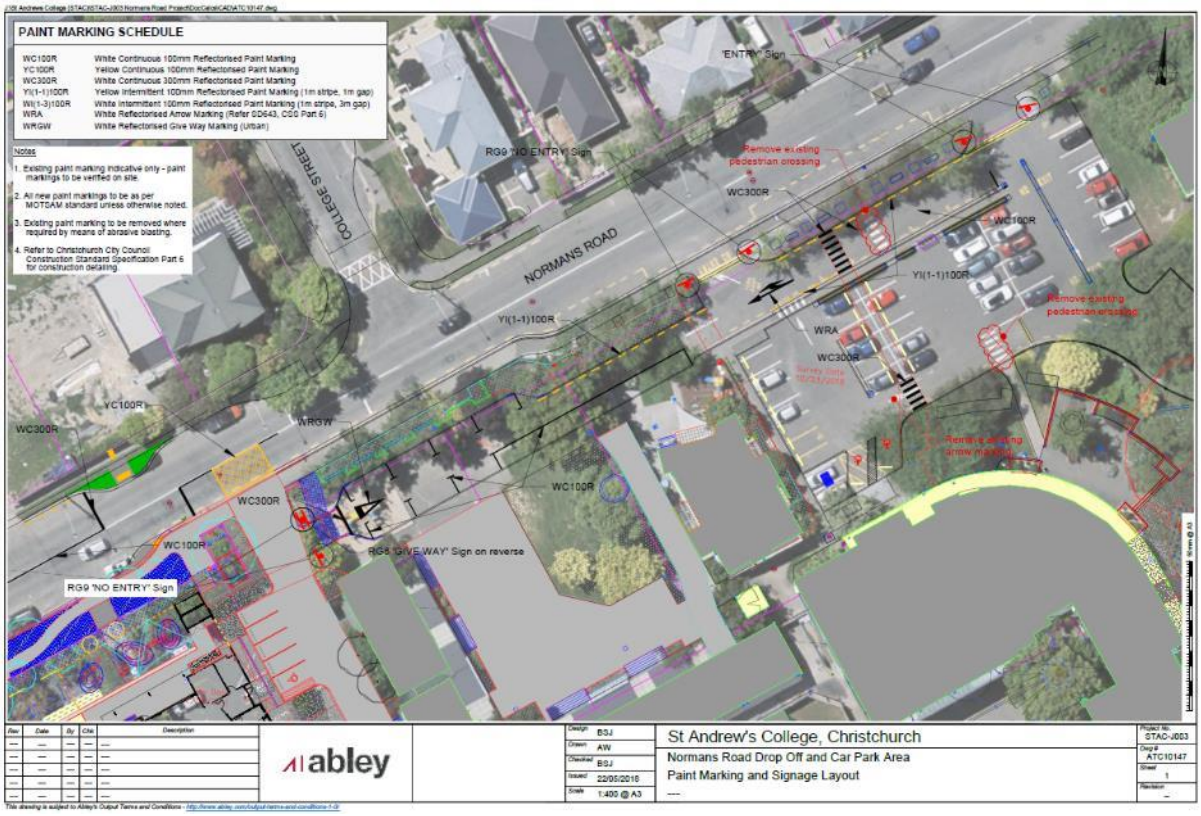
PLANTING

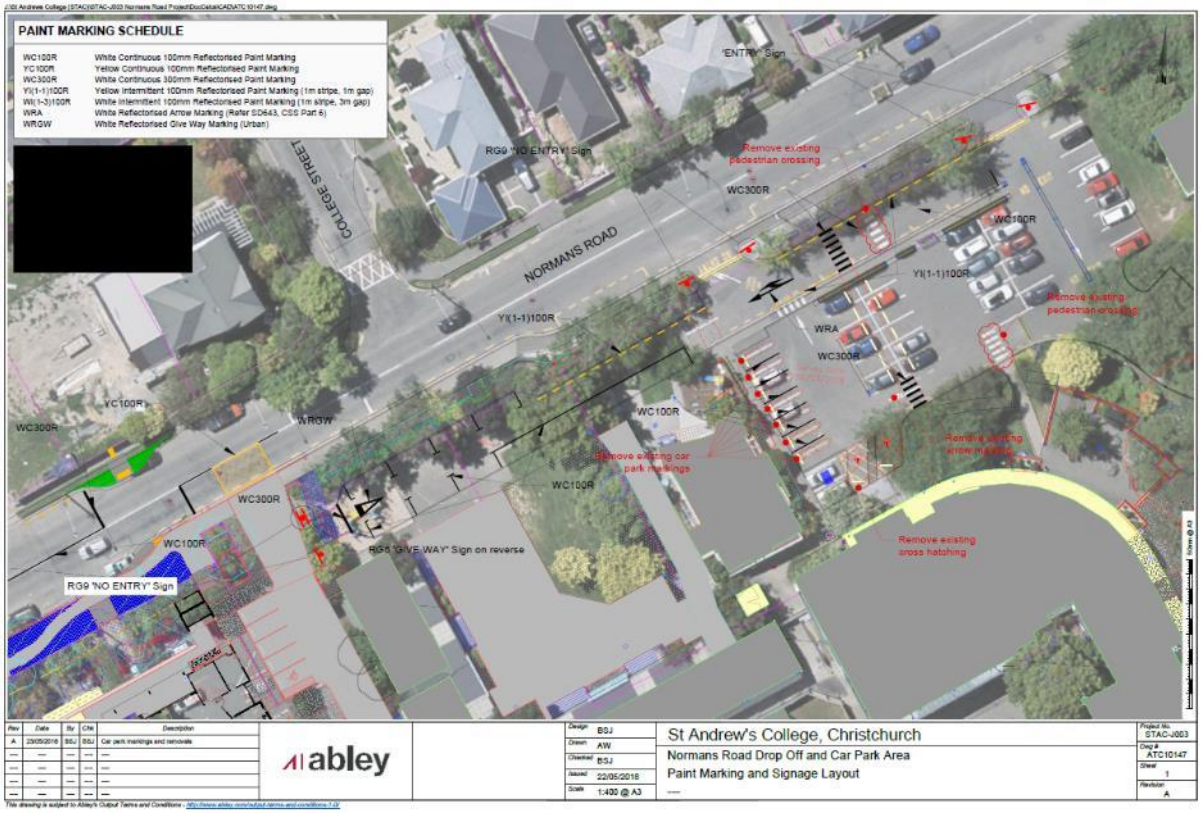
LEGEND

- New garden bed - irrigated
- Modified existing garden bed
- Retain existing garden bed
- Existing tree to remove - design constraints
- Existing tree to remove - poor health/safety risk (arborist report)
- Existing tree to be retained

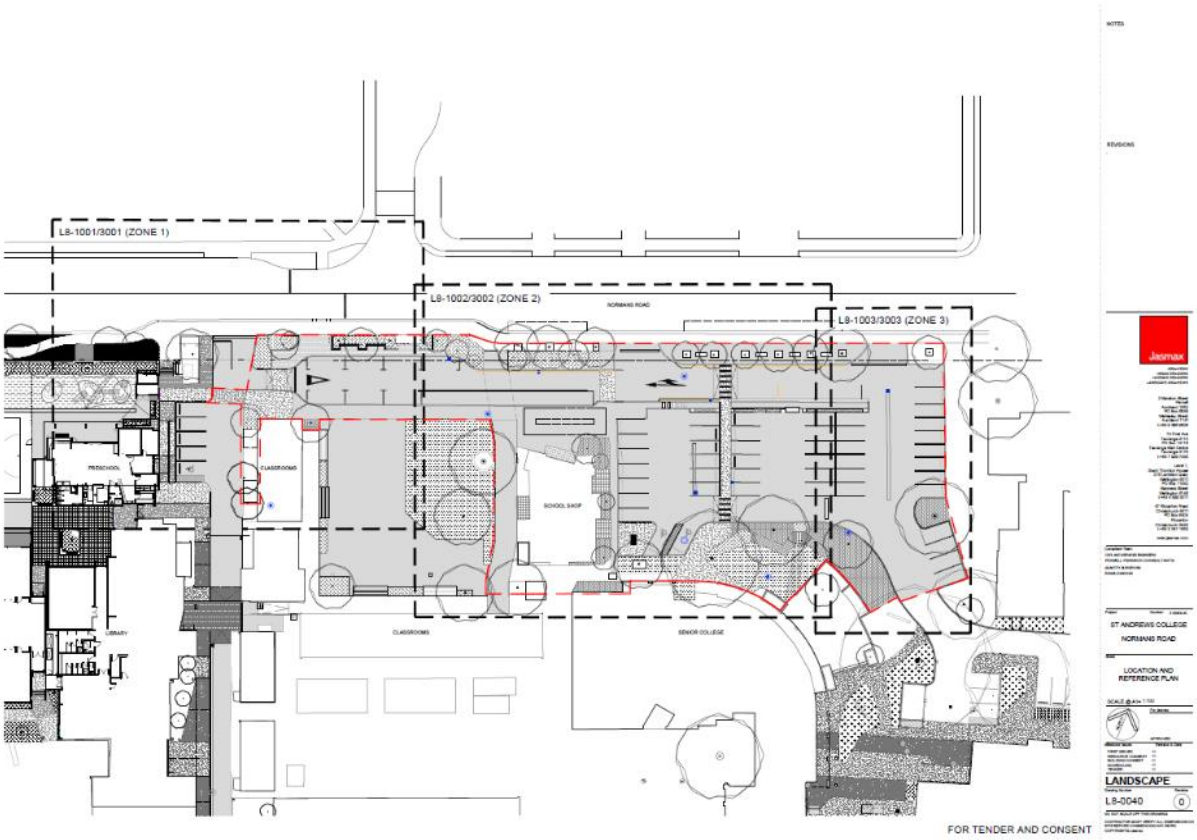
ST ANDREWS COLLEGE | NORMANS ROAD | MAY 2018 7

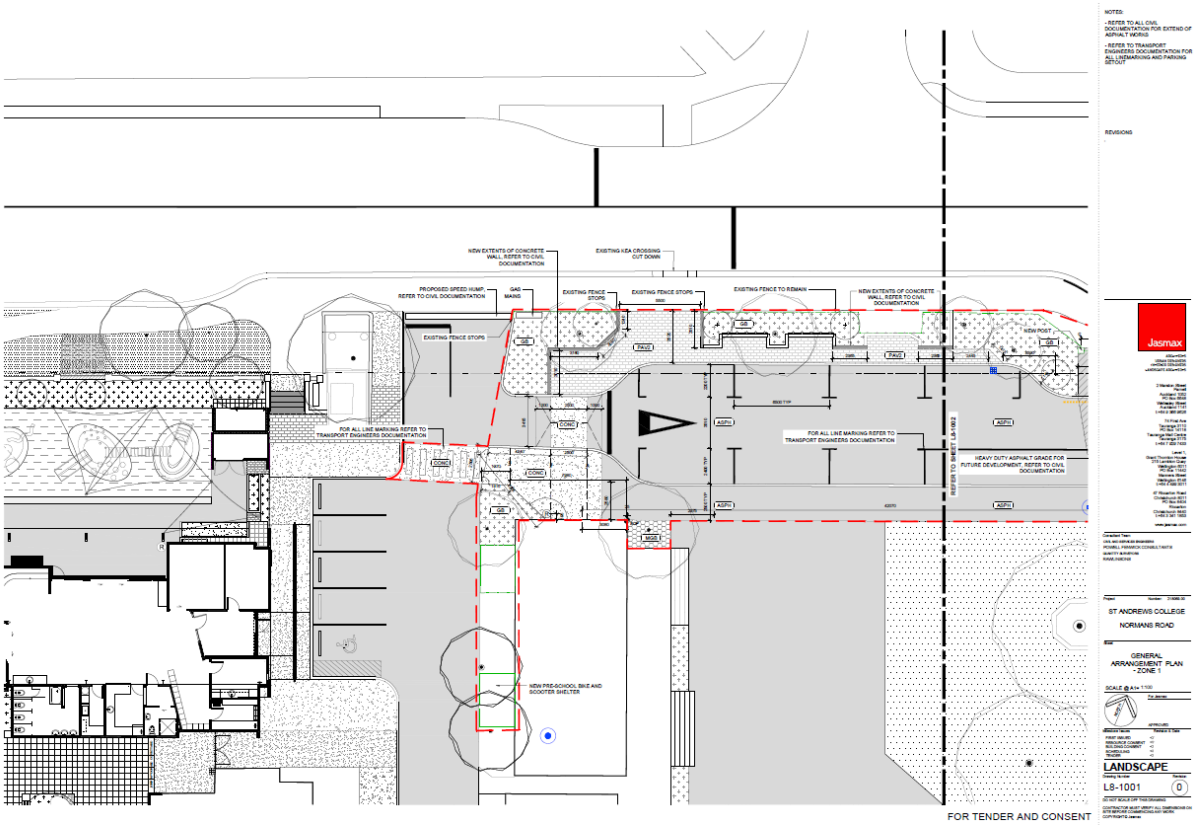
Appendix B Abley plans – initial KEA crossing location

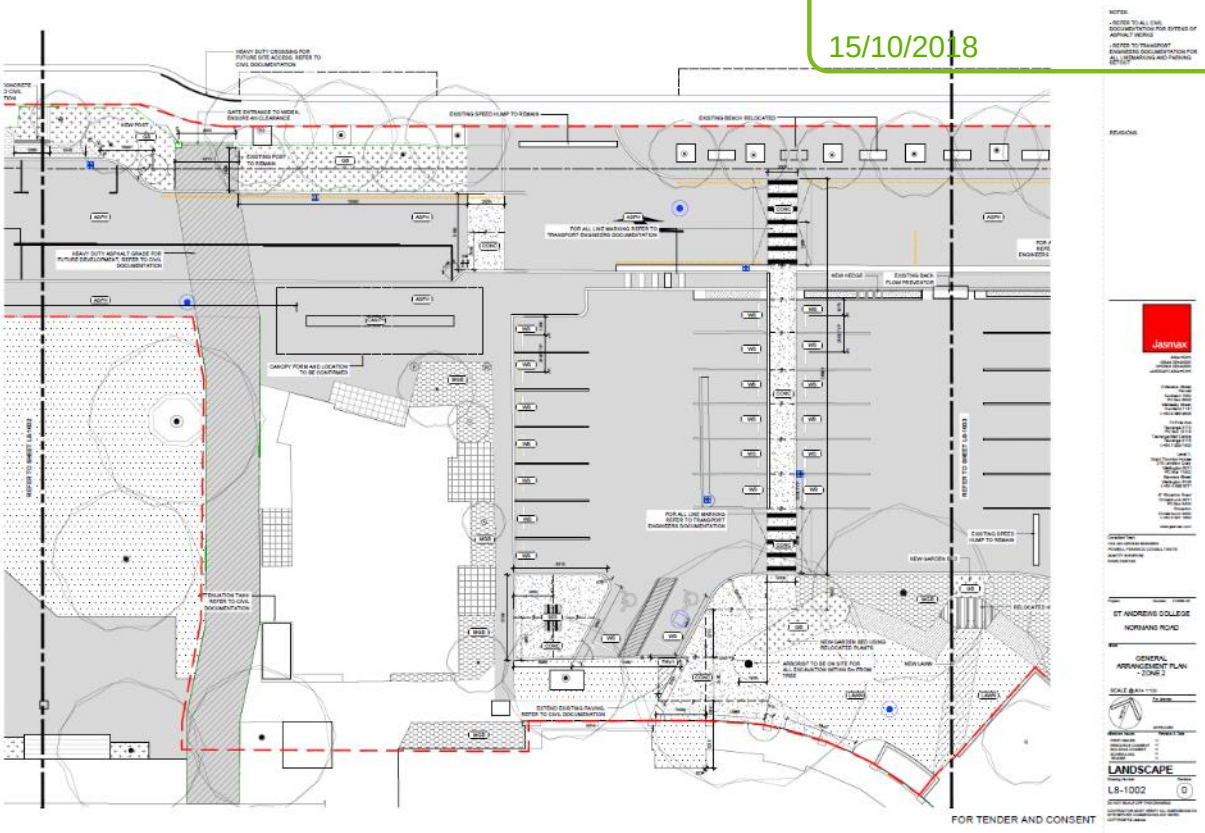




Appendix C Jasmax plans - revised KEA crossing location





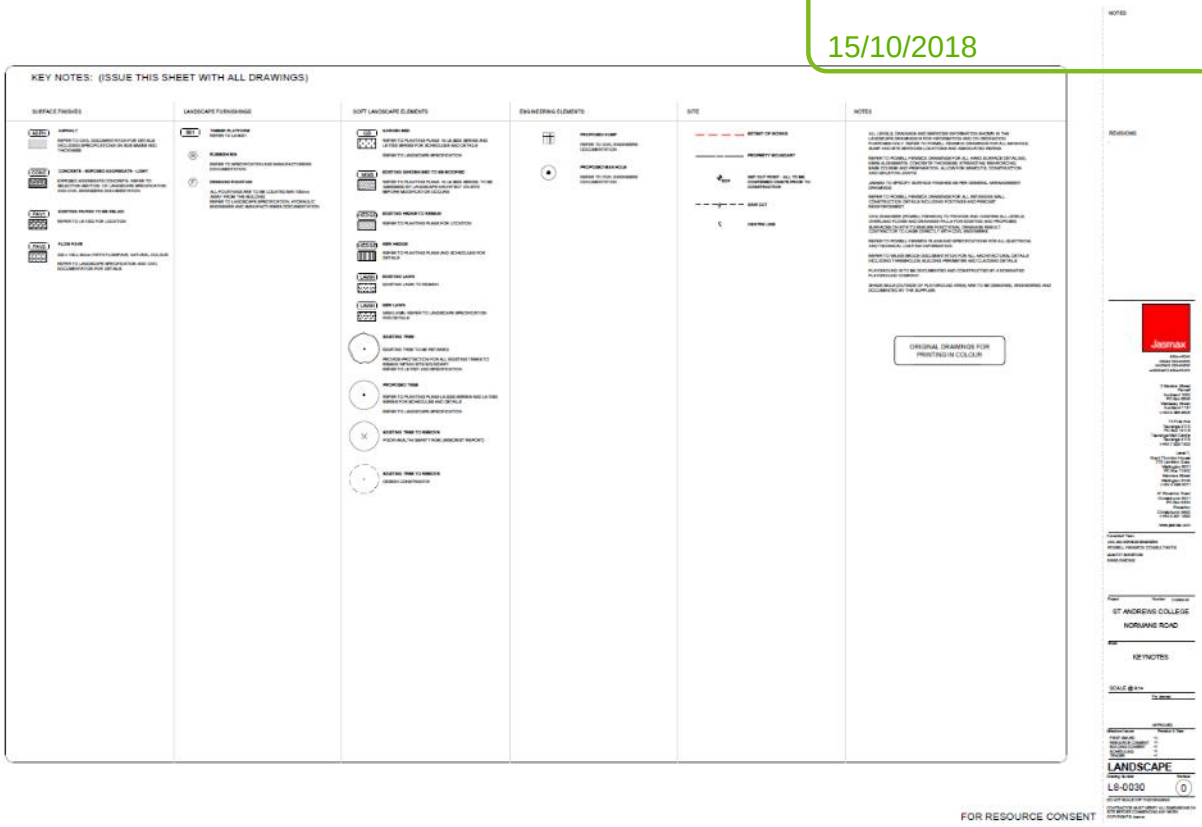


Christchurch City Council

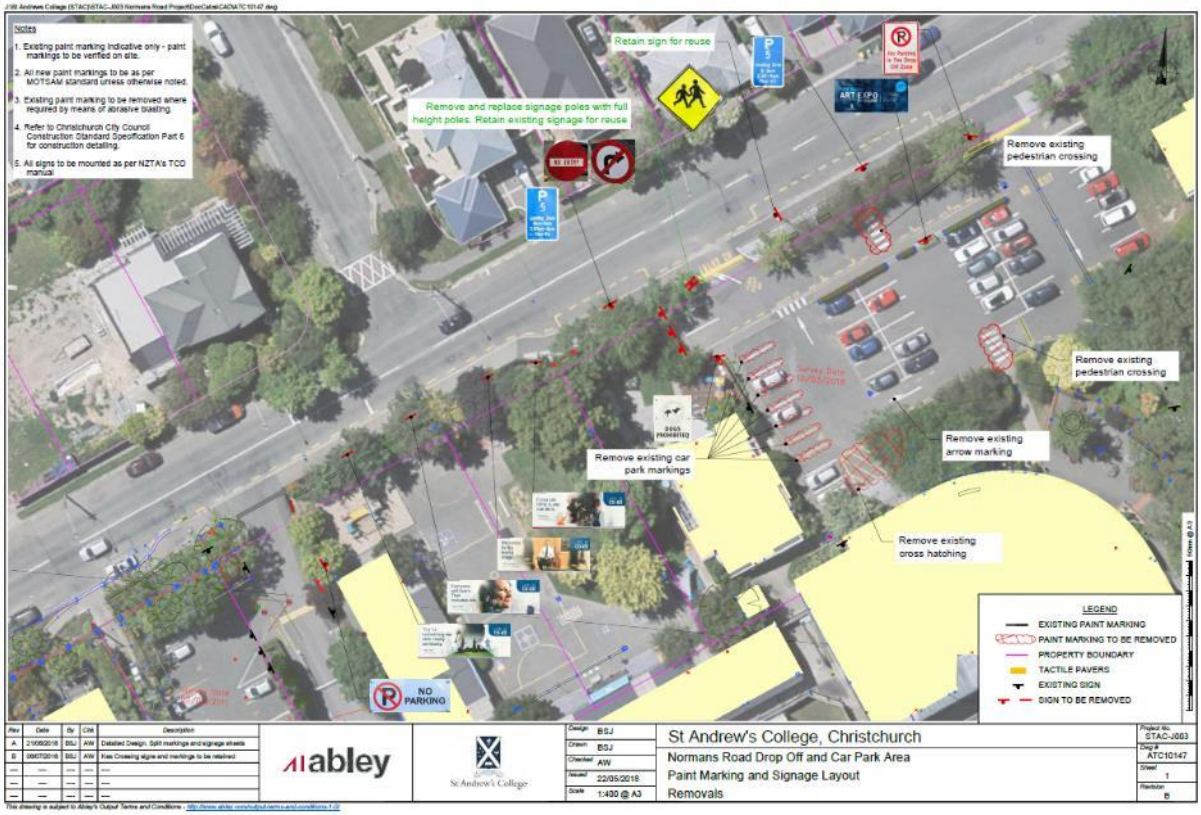
RMA/2018/2230

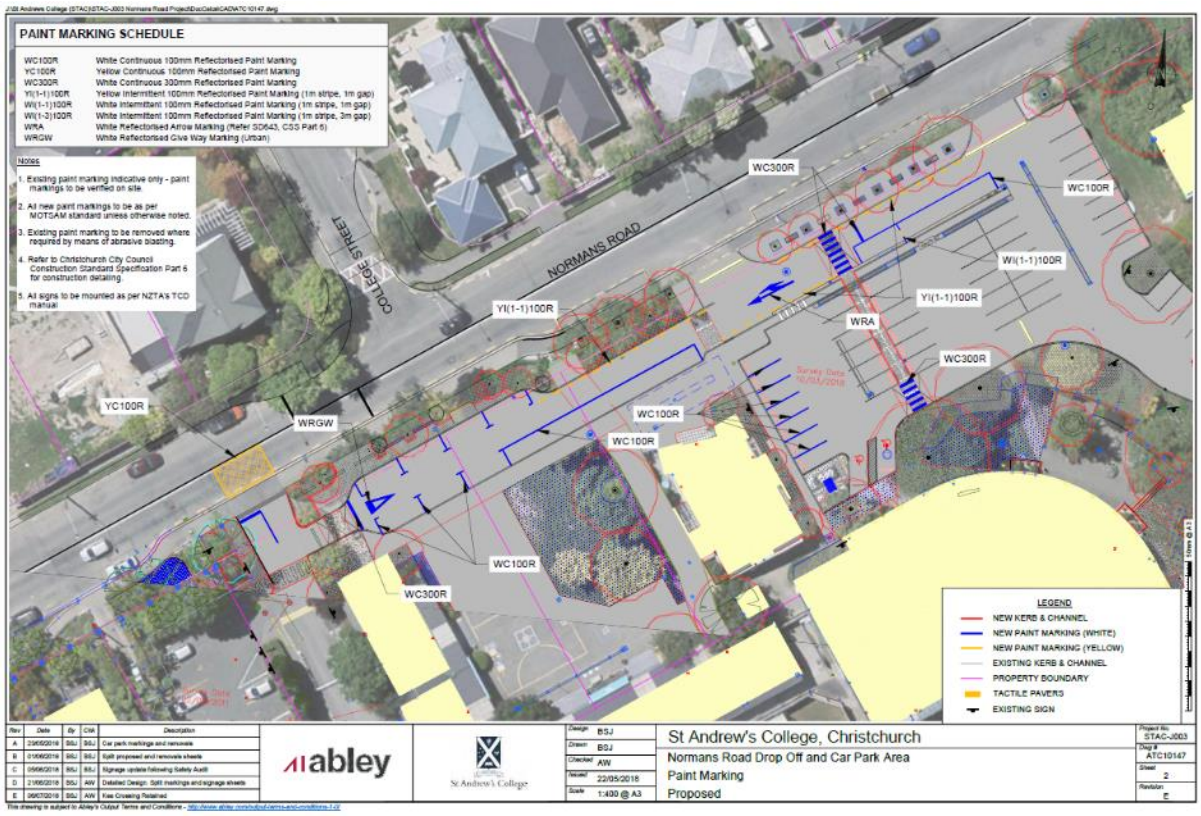
Approved Resource Consent Plan

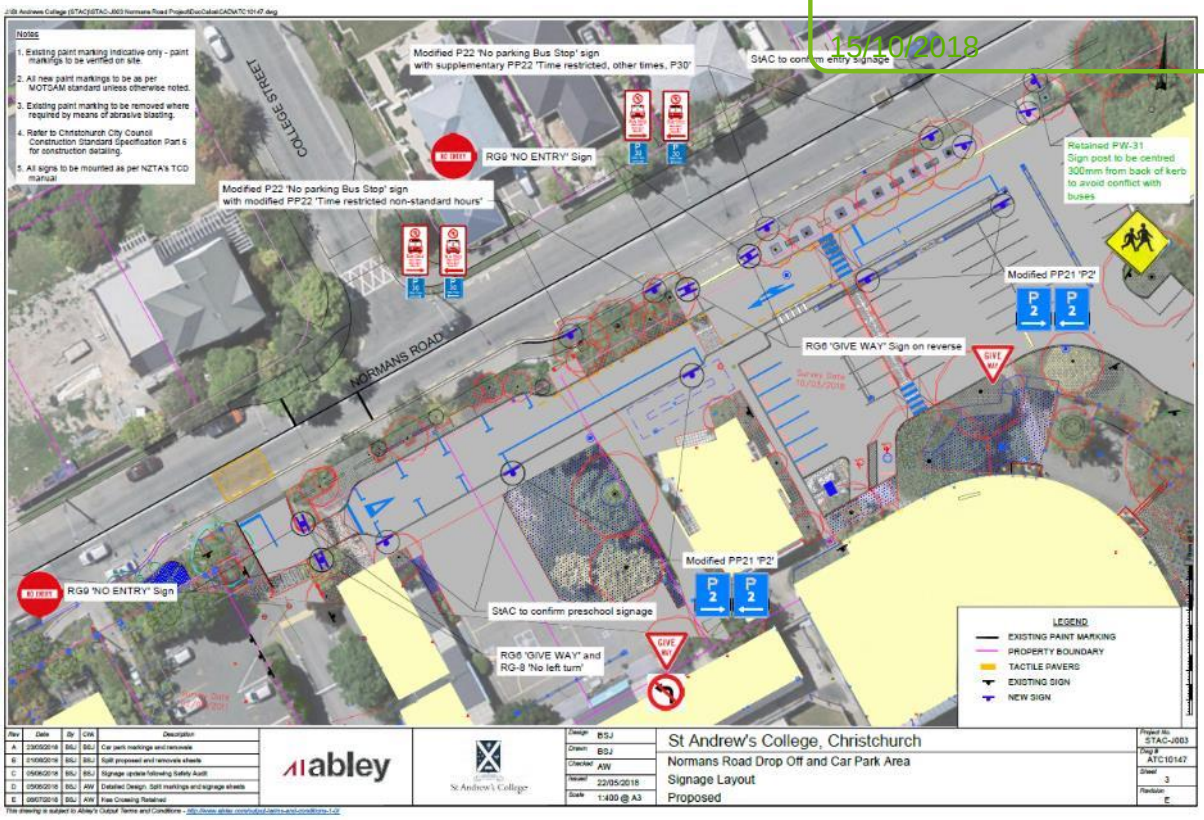
15/10/2018

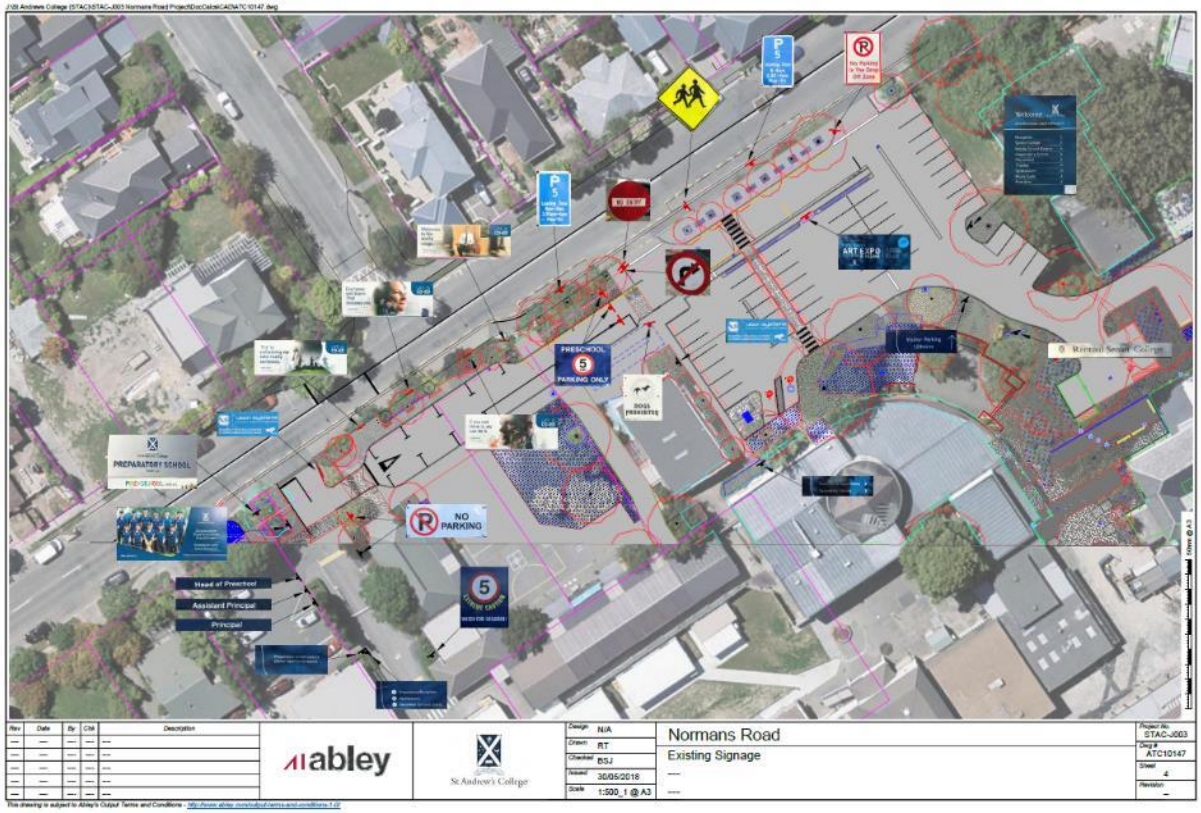


Appendix D Abley plans - revised KEA crossing location









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Notes

1. Existing paint marking indicative only - paint markings to be verified on site.
2. All new paint markings to be as per MOTSAM standard unless otherwise noted.
3. Existing paint marking to be removed where required by means of abrasive blasting.
4. Refer to Christchurch City Council Construction Standard Specification Part 6 for construction detailing.
5. All signs to be mounted as per NZTA's TCD manual

Retain sign for reuse

by CCC

Remove and replace signage poles with full height poles. Retain existing signage for reuse

by CCC

Remove existing pedestrian crossing

Remove existing pedestrian crossing

Remove existing arrow marking

Remove existing car park markings

Remove existing cross hatching

Survey Date 10/03/2018

Survey Date 02/09/2011

LEGEND

- EXISTING PAINT MARKING
- PAINT MARKING TO BE REMOVED
- PROPERTY BOUNDARY
- EXISTING SIGN
- SIGN TO BE REMOVED

50mm @ A3

Rev	Date	By	Chk	Description
A	21/06/2018	BSJ	AW	Detailed Design. Split markings and signage sheets
B	06/07/2018	BSJ	AW	Kea Crossing signs and markings to be retained
C	28/08/2018	BSJ	BSJ	Implementing markup from Jasmax
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abley

St Andrew's College

Design	BSJ
Drawn	BSJ
Checked	AW
Issued	22/05/2018
Scale	1:400 @ A3

St Andrew's College, Christchurch

Normans Road Drop Off and Car Park Area

Paint Marking and Signage Layout

Removals

Project No.	STAC-J003
Dwg #	ATC10147
Sheet	1
Revision	C

PAINT MARKING SCHEDULE

WC100R	White Continuous 100mm Reflectorised Paint Marking
YC100R	Yellow Continuous 100mm Reflectorised Paint Marking
WC300R	White Continuous 300mm Reflectorised Paint Marking
YI(1-1)100R	Yellow Intermittent 100mm Reflectorised Paint Marking (1m stripe, 1m gap)
WI(1-1)100R	White Intermittent 100mm Reflectorised Paint Marking (1m stripe, 1m gap)
WI(1-3)100R	White Intermittent 100mm Reflectorised Paint Marking (1m stripe, 3m gap)
WRA	White Reflectorised Arrow Marking (Refer SD643, CSS Part 6)
WRGW	White Reflectorised Give Way Marking (Urban)
YDS	Yellow Distabled Symbol

Notes

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2. All new paint markings to be as per MOTSAM standard unless otherwise noted.
3. Existing paint marking to be removed where required by means of abrasive blasting.
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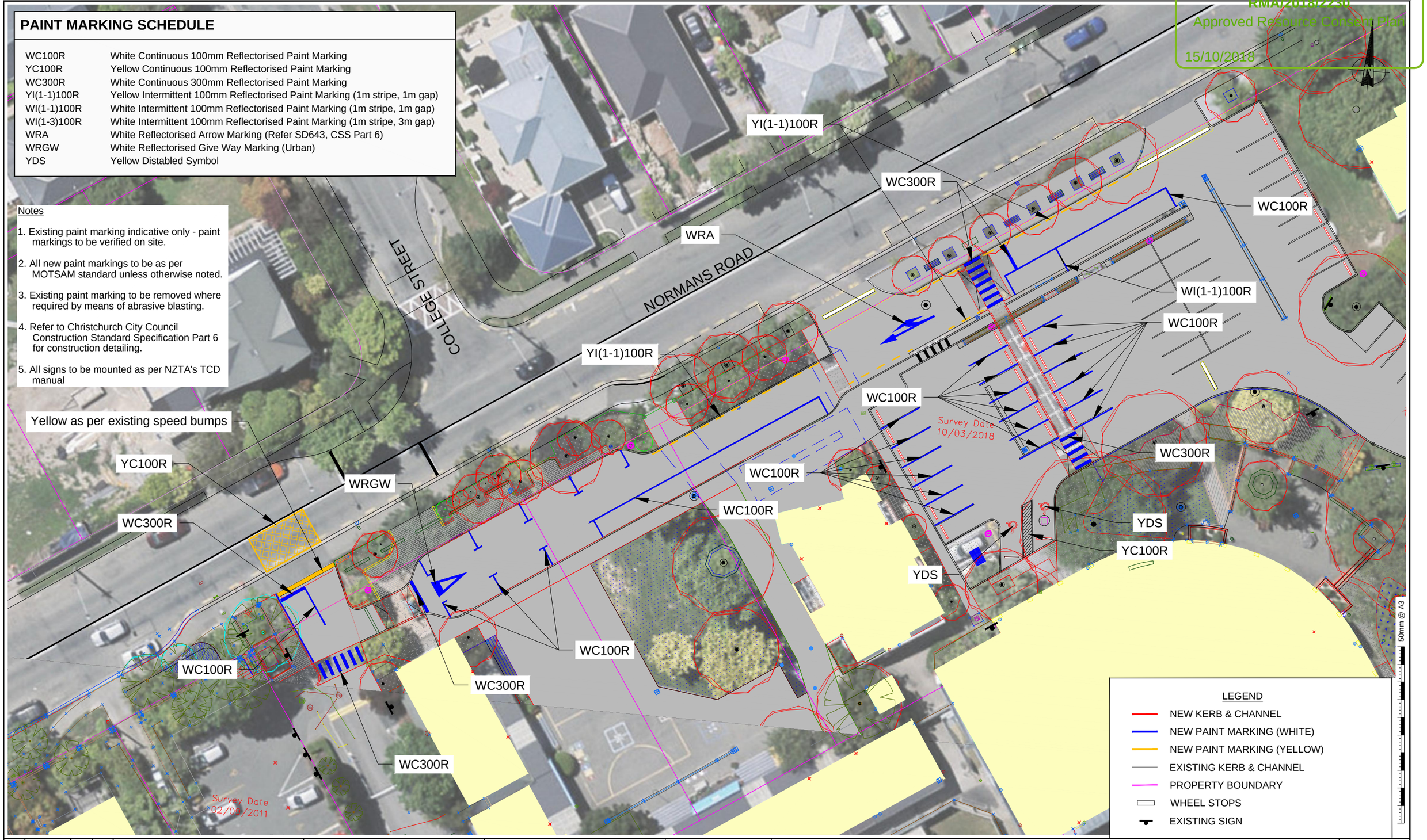
5. All signs to be mounted as per NZTA's TCD manual



Rev	Date	By	Chk	Description
F	28/08/2018	BSJ	BSJ	Implementing markup from Jasmax
B	01/06/2018	BSJ	BSJ	Split proposed and removals sheets
C	05/06/2018	BSJ	BSJ	Signage update following Safety Audit
D	21/06/2018	BSJ	AW	Detailed Design. Split markings and signage sheets
E	06/07/2018	BSJ	AW	Kea Crossing Retained

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St Andrew's College

Design	BSJ
Drawn	BSJ
Checked	AW
Issued	22/05/2018
Scale	1:400 @ A3

St Andrew's College, Christchurch

Normans Road Drop Off and Car Park Area

Paint Marking

Proposed

Project No.	STAC-J003
Dwg #	ATC10147
Sheet	2
Revision	F

J:\St Andrews College (STAC)\STAC-J003 Normans Road Project\DocCalcs\CAD\ATC10147.dwg

Notes

1. Existing paint marking indicative only - paint markings to be verified on site.
2. All new paint markings to be as per MOTSAM standard unless otherwise noted.
3. Existing paint marking to be removed where required by means of abrasive blasting.
4. Refer to Christchurch City Council Construction Standard Specification Part 6 for construction detailing.
5. All signs to be mounted as per NZTA's TCD manual

COLLEGE STREET

NORMANS ROAD

Custom Blue P22 'No parking Bus Stop' sign with supplementary PP22 'Time restricted non-standard hours' by CCC

RG9 'NO ENTRY' Sign

Custom Blue P22 'No parking Bus Stop' sign with supplementary PP22 'Time restricted non-standard hours' by CCC

StAC to confirm entry signage

Retained PW-31
Sign post to be centred 300mm from back of kerb to avoid conflict with buses

Modified PP21 'P2'

RG6 'GIVE WAY' Sign on reverse

Survey Date 10/03/2018

RG9 'NO ENTRY' Sign

StAC to confirm preschool signage

RG6 'GIVE WAY' and RG-8 'No left turn'

Modified PP21 'P2'

Survey Date 02/09/2011

LEGEND
- EXISTING PAINT MARKING
- PROPERTY BOUNDARY
- EXISTING SIGN
- NEW SIGN

50mm @ A3

Rev	Date	By	Chk	Description
F	29/07/2018	BSJ	BSJ	Change to school bus signage
G	28/08/2018	BSJ	BSJ	Implementing markup from Jasmax
C	05/06/2018	BSJ	BSJ	Signage update following Safety Audit
D	05/06/2018	BSJ	AW	Detailed Design. Split markings and signage sheets
E	06/07/2018	BSJ	AW	Kea Crossing Retained

Abley

St Andrew's College

Design	BSJ
Drawn	BSJ
Checked	AW
Issued	22/05/2018
Scale	1:400 @ A3

St Andrew's College, Christchurch

Normans Road Drop Off and Car Park Area

Signage Layout

Proposed

Project No.	STAC-J003
Dwg #	ATC10147
Sheet	3
Revision	G

J:\St Andrews College (STAC)\STAC-J003 Normans Road Project\DocCalcs\CAD\ATC10147.dwg

Rev	Date	By	Chk	Description
A	28/08/2018	BSJ	BSJ	Implementing markup from Jasmax
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Abley

St Andrew's College

Design	N/A
Drawn	RT
Checked	BSJ
Issued	30/05/2018
Scale	1:500_1 @ A3

Normans Road

Existing Signage

Project No.	STAC-J003
Dwg #	ATC10147
Sheet	4
Revision	B

Julie Comfort

From: Dray, Jennifer <Jennifer.Dray@ccc.govt.nz>
Sent: Monday, 20 August 2018 2:57 p.m.
To: 'Adrian Taylor'; Armstrong, Tony
Cc: Blair, Scott; Dejong, Steve; David Evans; Mark McGregor; Jonathan Bierwirth; Julie Comfort; Tucker, Neville
Subject: RE: StAC Normans Road - updated CCC information

Hi Adrian,

Further to our site meeting this afternoon, I noted the following aspects of the proposal;

- The retention of the existing 1.8m high timber paling fence, with the exception of 5.5m section to be opened up to provide pedestrian access to the existing kea crossing on Normans Road.
- The removal of 4 Robinia trees within the road reserve (Tony Armstrong has given his approval).
- The removal of 6 Camelia shrubs at the new fence opening and 1 Rhododendron shub for sightlines adjacent to the driveway.
- Planting of a new Japanese Maple (4+m) and a new Cherry Tree on the road frontage

We viewed the proposal from within the site and from the opposite side of Normans Road to ascertain the likely effects on visual amenity for neighbours and road users. My preliminary assessment is as follows;

- The retention of the existing fence will minimise the effects on visual amenity.
- I consider the 5.5m opening to be wider that an average pedestrian opening in a fence but understand that this is necessary to allow for efficient flow of large numbers of school children, and to align with the existing kea crossing.
- The removal of the Robinia trees and Camelia shrubs within the road reserve will represent a change in the appearance of the road frontage, however visual amenity will not be adversely affected, and the planting of a new semi-mature Maple tree in this location will offset the tree removals.
- There is already existing a variety of landscape treatments along the Normans Road frontage of St Andrews College, which are mostly domestic in appearance and include a pre-dominance of tree and shrub planting. The proposal will not present a major departure from what already exists on the site and my opinion is that any adverse effects on landscape character and visual amenity will be to an acceptable degree.

Regards

Jennifer

Jennifer Dray
Senior Landscape Architect (BSc, BLA, Reg.NZILA)
Technical Services & Design Team, ASSETS AND NETWORK UNIT
Christchurch City Council
53 Hereford Street
Christchurch 8011
T 03 941 8734
E jennifer.dray@ccc.govt.nz
M 02108413421

From: Adrian Taylor [mailto:adrian.taylor@jasmax.com]
Sent: Thursday, 9 August 2018 5:30 p.m.
To: Dray, Jennifer <Jennifer.Dray@ccc.govt.nz>; Armstrong, Tony <Tony.Armstrong@ccc.govt.nz>
Cc: Blair, Scott <Scott.Blair@ccc.govt.nz>; Dejong, Steve <Steve.Dejong@ccc.govt.nz>; David Evans <DEV@stac.school.nz>; Mark McGregor <MMC@stac.school.nz>; Jonathan Bierwirth <JBI@stac.school.nz>; Julie Comfort <Julie.Comfort@dls.co.nz>; Tucker, Neville <Neville.Tucker@ccc.govt.nz>
Subject: StAC Normans Road - updated CCC information

Hi All

After our meeting last week and in advance of meeting with Jennifer, I have attached the following drawings:

- **Developed Design** – updated scheme to relocate all parking and associated kerbs on school land
- **Tree Plan** – updated scheme now means the two Norway Maples remain, with the only trees above 6m on CCC land for removal being the 4 Robinia's (most in poor health and overcrowded)
- **Arborist Report** – updated in context of land ownership information and correlates with the Tree Plan
- **Visualisation** – existing and proposed frontage of the updated scheme

Jennifer – this will give you some context to the project, which we can discuss on site on Monday 20th August
Tony – as you can't make this meeting, can you still make an assessment from our site meeting and the attached information, about removing the 4 Robinia's? Emailing any comments and/or confirmation of agreement should suffice and be useful when presenting to the Community Board for their approval.

For any further information or questions, don't hesitate to ask. Note that I am on holiday next week, so please contact Julie (cc'd) in my absence.

Thanks

Adrian Taylor | Landscape Architect | Registered Landscape Architect
Jasmax, Level 3, 47 Riccarton Road, Riccarton, PO Box 8404, Christchurch, NZ
Tel: +64 3 341 1853 **Ext:** 9080 **| DDI:** +64 3 974 9080 | **Mob:** +64 21 117 1121 | www.jasmax.com

Julie Comfort

From: Armstrong, Tony <Tony.Armstrong@ccc.govt.nz>
Sent: Thursday, 9 August 2018 5:38 p.m.
To: Adrian Taylor; Dray, Jennifer
Cc: Blair, Scott; Dejong, Steve; David Evans; Mark McGregor; Jonathan Bierwirth; Julie Comfort; Tucker, Neville
Subject: Re: StAC Normans Road - updated CCC information
Attachments: image001.jpg

Thanks Adrian,

I have no issue with the removal of the robinia trees.

Regards,

Tony

On Thu, Aug 9, 2018 at 5:30 PM +1200, "Adrian Taylor" <adrian.taylor@jasmax.com<mailto:adrian.taylor@jasmax.com>> wrote:

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Thanks
Adrian Taylor | Landscape Architect | Registered Landscape Architect Jasmax, Level 3, 47 Riccarton Road, Riccarton, PO Box 8404, Christchurch, NZ
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