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Lincoln Town Centre Streetscape Report Stage 2

Selwyn
DISTRICT COUNCIL

Lincoln Town Centre Streetscape Stage 2 Report

Selwyn District Council

Quality Assurance Information

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Executive Summary

As part of developing the Lincoln Town Centre Plan transport related matters have been considered and it was concluded that changes to Gerald Street were required to meet the vision of the Plan. Scheme design plans for the changes have been developed in conjunction with proposed future intersection upgrades along Gerald Street and on-street parking changes to three side streets. The scheme designs have been costed to understand in more detail the level of capital investment required to achieve the transport components of the Lincoln Town Centre vision.

Gerald Street

The Gerald Street road reserve width is approximately 20m. Accommodating traffic movements, walking, cycling and parking can create competing demand on the available space. There is no realistic opportunity to widen the existing road reserve as it has been all fully built out along the more eastern parts of Gerald Street. There may be an opportunity along the north side of the western and transitional precincts to collaborate with the Lincoln Hub to utilise some of their amenity road frontage land for relocated footpaths etc.

The selection of the recommended design was undertaken in conjunction with Council staff (options and the selection process are outlined in the Stage 1 report). The proposed design includes protected cycle lanes on each side of Gerald Street, through all three precincts, to connect to the other cycle facilities in the District and provide easy access to and through the town centre by bicycle. The proposal also includes a widened footpath area in front of the recessed town centre shops on the southern side of the street, this gives pedestrians more space within the town centre and could accommodate outdoor dining. Additional pedestrian crossings and rearranged bus stops are part of the design, which, when developed, will be 'transformational'.

Intersections

Three intersections on Gerald Street are proposed to be upgraded to signalised intersections as part of the Gerald Street upgrade, these include the Springs Road / Ellesmere Junction Road intersection, the West Belt intersection and the James Street / Edward Street intersection. Only the West Belt intersection is located within the Town Centre. The intersection of Gerald Street and Vernon Drive will also be upgraded in the future in collaboration with the developers of Te Whāriki relating to a District Plan rule on the staging of this residential development.

Parking Precincts

The implementation of the Gerald Street design and intersection upgrades will result in some on-street parking loss. To mitigate parking loss on Gerald Street several side streets are proposed to be become 'Parking Precincts', these include West Belt (north), Lyttelton-street and Maurice Street. Creating a parking precinct will involve changing existing parallel on-street parking to angle parking where possible. Overall the implementation of the street design changes, intersection upgrades and parking precincts results in 51 on-street car park spaces being removed to make space for the design features. Given the phasing of the works over time this loss is likely to be offset with the provision of new communal off street parking areas.

Costs

The Gerald Street upgrade and parking precincts are estimated to costs $6,870,000, a further $850 000 would be required if the overhead services within these project boundaries were undergrounded to improve the amenity of the streetscape. The intersection upgrades are estimated to cost $4,800,000. Funding for these works will require approval by Council through an Annual Plan and/or Long Term Plan process. Realistically this would likely occur in preparation for the 2018-2028 Long Term Plan. Currently some funding allowance has been allocated in Councils 30 year financial forecast projections used to

inform the 2015-25 Long Term Plan. This was based on the setting of priorities undertaken by Council at the time, and prior to the more accurate information subsequently provided by this report.

Implementation

An implementation plan for the projects in terms of recommended timing has been established. In the short term (1-3 years) parking improvements and investigations into communal parking areas and potential 'park and ride' sites are proposed.

In the medium term (4-7 years) the following projects are proposed:

- Develop parking precincts on West Belt, Lyttelton-street, Maurice Street
- Upgrade Gerald Street within Retail Core East Precinct
- Traffic signals for Gerald/James/Edwards Street
- Traffic signals for Gerald Street/West Belt
- Relocate unofficial park and ride to a new location
- Establish communal parking areas

In the long term (8 years plus) the following projects are proposed:

- Upgrade Gerald Street within Transitional Precinct
- Upgrade Gerald Street within Retail Core West Precinct
- Traffic signals for Springs/Gerald/ Ellesmere Junction Rd
- Traffic Signals for Gerald/Vernon (timing may alter based on growth & triggering of District Plan rules)

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Contents

1. Introduction

Following the cross section design (Stage 1) undertaken as part of developing the Lincoln Town Centre Plan further detail of the proposed changes to Gerald Street was required. Abley Transportation Consultants were commissioned to advance the cross section designs to a scheme design level including plan view drawings. The scheme designs have also been costed to understand in more detail the level of capital investment required to achieve the transport components of the Lincoln Town Centre vision. Overall the work to date on the transport aspects of the Lincoln Town Centre has consisted of two parts:

- **Stage 1 –** Gerald Street cross section development[1], supported by: Parking demand and occupation survey[2], preparation of a Parking Management Plan[3] and traffic modelling.
- **Stage 2 –** Prepare street plans for consultation (this report).

In Stage 1 design objectives were developed for the overall Gerald Street corridor and also for each of the three defined precincts. The precincts are shown in in **Figure 1.1** and described in more detail in **Section 2** along with background to the design process.

The proposed design includes protected cycle lanes on each side of Gerald Street to connect to the other cycle facilities in the District and provide easy access to and through the town centre by bicycle. The design is considered to be 'transformational' and is explained in more detail in **Section 3**.

Three intersections on Gerald Street are proposed to be upgraded to signalised intersections as part of the Gerald Street upgrade, these include the Springs Road / Ellesmere Junction Road intersection, the West Belt intersection and the James Street / Edward Street intersection. Only the West Belt intersection is located within the Town Centre. Scheme plans have been developed for the three intersections, these are presented in **Section 4**.

The intersection of Gerald Street and Vernon Drive will also be upgraded in the future in collaboration with the developers of Te Whāriki relating to a District Plan rule on the staging of this residential development. The Stage 1 work determined traffic signals would be more appropriate at this location compared to the originally identified option to use a roundabout. This also is also consistent with the intentions for the upgrade of the other intersections as mentioned above. A scheme plan for this intersection to inform its upgrade will be developed in the near future.

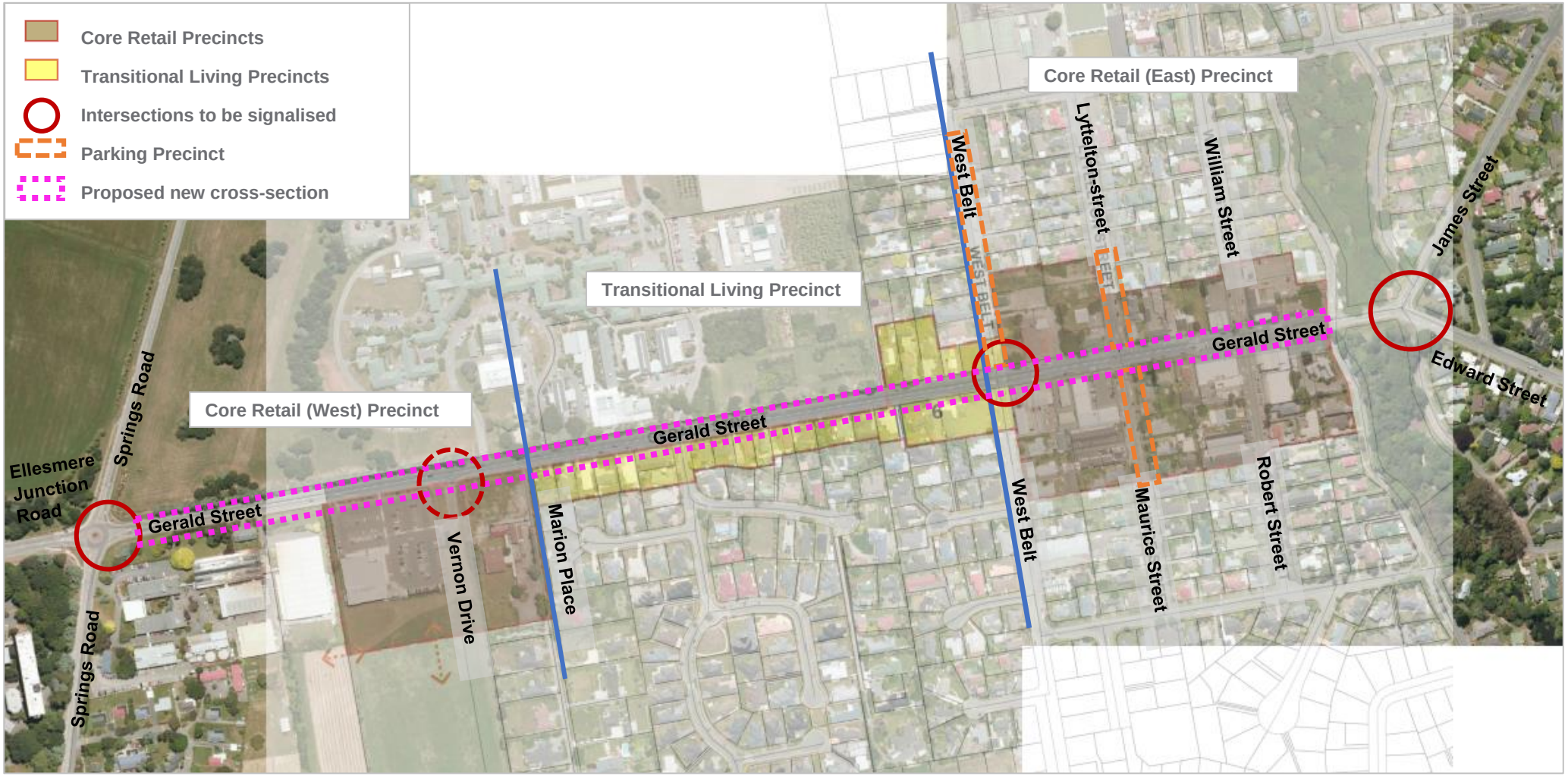
The implementation of the Gerald Street design and intersection upgrades will result in some on-street parking loss. To mitigate parking loss on Gerald Street several side streets are proposed to be become 'Parking Precincts' (as shown in **Figure 1.1**). Parking precincts include West Belt (north), Lyttelton-street and Maurice Street. Creating a parking precinct will involve changing existing parallel on-street parking to angle parking where possible.

Cost estimates for each of the street and intersection upgrades have been established and are included in **Section 6**.

An implementation plan for the projects in terms of recommended timing is outlined in **Section 7**.

[1] Lincoln Town Centre Streetscape Report (Abley Transportation Consultants, 2015)
[2] Lincoln Town Centre Parking Survey (Abley Transportation Consultants, 2015)
[3] Lincoln Town Centre Parking Management Plan (Abley Transportation Consultants, 2015)

Figure 1.1 Scope of the Stage 2 Design



2. Background

2.1 Transport Aspects

Traffic flow

Gerald Street has a dual function, it provides the main arterial route through Lincoln and also access to destinations within the town centre. The current traffic volume on Gerald Street is approximately 6,000 vehicles per day, including approximately 5% heavy and medium commercial vehicles. Traffic surveys confirmed that Lincoln is an origin or destination for most trips along Gerald Street and nearly all heavy vehicle trips are on the local network with few, if any, through trips occurring.

Traffic growth has been forecasted for the next 30 years. By 2041 the volumes on Gerald Street can be expected to vary between 11,100 and 13,000 vehicles per day along the corridor. When these levels occur will depend on the rate of growth of the Lincoln, which could advance these predictions by 10 years if higher growth rates eventuate. Another influence could be around a proposal to combine the existing Lincoln University and Crown Research Institutes together to form an 'Innovation Hub'. This may alter access and road use in the western areas of Gerald St that may need further consideration. However the level of future traffic flow reasonably expected can be accommodated within a two-lane two way road without the need to incorporate additional traffic lanes.

Traffic modelling showed that four intersections along Gerald Street will require upgrading to traffic signals, these are; James Street/Edward Street, West Belt, Vernon Drive and Ellesmere Junction Road /Springs Road.

Walking and Cycling

Gerald Street is an important walking connection through the town centre, as well as providing access to town centre activities (on both sides of the street) and bus services. Catering for pedestrian movement along and across Gerald Street, including crossing side roads, is important.

Gerald Street connects the eastern (Liffey River) and western (University) ends of the town centre, the existing and proposed cycle facilities in Lincoln and the wider Selwyn District like the Little River to Christchurch Rail Trail and the pathways to Springston and Rolleston.

Currently on Gerald Street cyclists are generally required to share the lane with motor vehicles; the exception being some on-road cycle lanes west of West Belt. Given the arterial road function of Gerald Street a similar level of protection as the rest of the off road network is recommended to support an appropriate level of service for cycling. A continuous, segregated cycle facility is therefore proposed for Gerald Street to connect the eastern and western precincts of the town centre. This was a recommendation of the Stage 1 report.

Public Transport

There is currently a bus route operating along Gerald Street, Service 80 (Lincoln / Parklands). Bus stops are located on both sides of Gerald Street between Springs Road and Edward Street. There is also a school bus service between Lincoln and Upper Riccarton schools (Route 76) provided by Environment Canterbury (ECan) that travels along Gerald Street from the Lincoln University to James Street.

Parking

Parking in the Lincoln Town Centre is currently provided through a combination of on-street spaces and a number of privately-owned and Council managed off-street parking areas. Lincoln is one of the main urban centres of the Selwyn District and as the population grows and parking demand increases, management of the parking resource will become an increasingly important priority for Council. Efficient provision of parking is paramount to the ongoing growth and development of the Lincoln Town Centre.

A parking survey was undertaken on Thursday 26 March 2015 to inform the development of a Parking Management Plan to support the Lincoln Town Centre Plan.

It is understood that the community, including the businesses in the town centre, are concerned that the current level of parking supply is insufficient. The parking survey showed that at peak times the occupancy in some Council owned off-street parking areas and in a private off-street car park (Lincoln Vale car park) was high, exceeding 80% occupancy during the peak 30-minute parking period (1pm-1.30pm). Also a total of five on-street parking areas also exceeded 80% occupancy and another two on-street parking areas reached 80% occupancy during the peak 30-minute period. However across the entire day the survey showed that the overall the parking occupancy is below the 80% to 85% optimum occupancy range. Occupancies higher than 85% create difficulties for motorists searching for a car parking space. The new carpark behind the Lincoln Library was half complete at the time of the survey.

The Parking Management Plan recommends a range of parking management methods that could be utilised including future parking supply, parking time restrictions, parking search routes, parking regulation (District Plan), reducing parking demand and improving user information. Currently the Market Square car park is catering for a small number of 'Park n Ride' users, but as demand grows for this type of longer term parking other more sustainable options will need to be considered. An Action Plan with short, medium and long term actions was developed to ensure parking is managed in a manner which supports a sustainable, prosperous, vibrant and easily accessible Town Centre.

2.2 The Precincts

The Lincoln Town Centre consists of three precincts that generally align with the proposed Key Activity Centre District Plan zoning; the Core Retail (East), the Transitional Living and the Core Retail (West). The precinct extents are shown in **Figure 1.1**. Each of the precincts are described below to provide context to the street and intersection designs. District and wider Land Use Recovery Planning requirements seek to encourage the growth and development of retail and commercial areas in Lincoln, as well as the other eastern townships in Selwyn.

Core Retail (East)

The Core Retail (East) Precinct generally covers the existing town centre area from James / Edward intersection to West Belt. The Lincoln Library is located at the western end of the precinct and there are generally high levels of pedestrian and parking activity. Existing development is small scale and has a 'village feel', which is sought to be retained were possible through the upgrading proposed.

Transitional Living

The Transitional Living Precinct predominantly contains residential activities with some small service businesses on its southern side. The current Lincoln Research Hub consisting of a number of Crown Research Institutes occupies the majority of the land on the north side of Gerald Street, which sits outside the identified Key Activity Centre/town centre boundary. A stormwater drainage ditch is located along the boundary of the Hub and the Gerald Street road reserve. At the eastern end, on the northern side, there are some residential and businesses activities, however the landuse may change from residential to business over time. Some off-street parking is provided on the majority of the sites within the precinct and no on-street parking provided on the north side of Gerald Street, except at the eastern end of the precinct.

Core Retail (West)

The Core Retail (West) Precinct runs from Marion Place to the western boundary of the New World supermarket. The land on the north side of Gerald Street, and in the south western quadrant of the precinct, forms part of the Lincoln Research Hub. The New World supermarket and a service station are located on the south side of Gerald Street. Business within this precinct generally provide on-site parking. The businesses within this precinct will be abutted by medium density residential development and the development of a neighbourhood centre, as the town centre develops.

3. Gerald Street Precinct Designs

3.1 Introduction

The designs for each of the three Gerald Street precincts are described below. The design objectives from the first stage of the project and issues to be resolved are also outlined. The plans showing the design are included in Appendix A.

It is important to note that the design has been established based on aerial photographs, no topographical survey has been undertaken at this stage. This will need to be carried out prior to progressing any designs in detail. The design also requires review processes such as safety audits prior to progressing to detailed design.

The Gerald Street road reserve width is approximately 20m. Accommodating traffic movements, walking and cycling and parking can create competing demand on the available space. There is no realistic opportunity to widen the existing road reserve as it has been all fully built out along the more eastern parts of Gerald Street. There may be an opportunity along the north side of the western and transitional precincts to collaborate with the Lincoln Hub to utilise some of their amenity road frontage land for relocated footpaths etc. The design options and their rationale are explained in detail in the Stage 1 Streetscape report. The selection of the recommended design was undertaken in conjunction with Council staff.

The speed limit on Gerald Street is 50km/hour. Traffic speeds are observed to be significantly lower in the Core Retail (East) precinct than along the remainder of Gerald Street. This is due to the level of activity that currently exists in this precinct creating a lower speed environment including people crossing the road and cars parking/unparking. Travel speeds in other precincts are also likely to decrease over time as the levels of activity increase. The average speeds through the Core Retail (West) precinct and the Transitional Living precinct are anticipated to be in the order of 47-48 km/h once the anticipated growth is fully developed, as predicted by the micro-simulation model.

Retaining a low speed environment (30km/h) in the Core Retail (East) precinct is not anticipated to have any impact on capacity based on the micro-simulation model. A design that supports the low speed environment in this precinct would significantly increase safety and likely improve the number of crossing opportunities for pedestrians.

3.2 Key design feature

The key feature of the design is protected cycle lanes; cycle facilities that are physically separated from the general traffic lane and any adjacent parking that improves safety for cyclists. This connects the three precincts together to firmly establish an enhanced cycling opportunity that not only links the University to the town centre, but also to the other wider cycleways in the area such as the Rail Trail and to Springston and Rolleston. These types of protected facilities are becoming more common in New Zealand and are aimed at improving safety and encouraging cycling as a mode of transport, two Christchurch examples are shown in **Figure 3.1**.

Figure 3.1
Examples of protected cycle lanes in Christchurch

Tuam Street, Christchurch

Ilam Road, Christchurch

Cycle lanes on Gerald Street will be 1.8m due to the limited amount of available space. This is a minimum width and does not allow for cyclists to easily overtake within the facility but this is not expected to be an issue given the type of users expected. The separator will be 800mm wide next to parking (allows for car door opening) and 600mm wide next to the traffic lane. It is proposed that the protected cycle lanes will look similar to the Tuam Street example in **Figure 3.1**.

The interaction between pedestrians and cyclists at bus stops, pedestrian crossing facilities and between areas of high turnover parking and the footpath has been considered carefully and is restricted by space availability. **Figure 3.2** shows two treatments that are proposed to be used on Gerald Street. The Tuam Street example, although not a bus stop, shows how the cycle lane has been ramped up to the same height of the separator at a mobility parking space so that people can move between the footpath and the parking space on a flush surface. This approach can be used at any bus stops that are in line with parking. The Ilam Road example can be used when a bus stop is located in line with the cycle lane. When there is no bus in the stop a cyclist can continue along the cycle lane but when there is a bus in the stop they can bypass the bus via a short length of shared path to the left of the bus shelter.

Figure 3.2
Examples of bus stop treatments

Tuam Street, Christchurch

Ilam Road, Christchurch

How the cycle lane is managed at driveways and side streets is also an important consideration. At driveways where there are high traffic volumes (such as access to the Lincoln Research Hub), low profile humps can be used to highlight to drivers the presence of the cycle lane. For all other driveways and side streets the use of green surfacing is recommended. On the approach to side streets the use of 'thresholds' is recommended, these will be described in more detail later. **Figure 3.3** shows examples of driveways treatments.

Figure 3.3
Examples of treatments at driveways

Beach Road. Auckland

Ilam Road. Christchurch

Where on-street parking is retained it is important to set this back from the driveways to allow visibility between drivers exiting the driveway and the drivers approaching from the right.

Practical matters such as waste collection need to be considered. Where the protected cycle lane is not adjacent to on-street parking the waste collection truck can straddle the low separator during the collection process. Where the protected lane is next to parking it is important that residents are able to safely and practically position wheelie bins onto the separators. This could be having a ramp at each end of the separator enabling residents to push the wheelie bin down their driveway and then up the ramp onto the separator. Discussions with the waste collection contractor will be required before proceeding to detailed design.

3.3 Gerald Street - Core Retail (East) Precinct

Design Objectives

The Core Retail (East) Precinct incorporates relatively small scale retail activities and is currently recognisable as the town centre. The design objectives for this precinct are to develop a streetscape that:

1) **Creates a high quality public space, where people want to spend time and retains the village atmosphere.**
2) **Facilitates safe and user friendly pedestrian movements (along and across the street).**
3) **Facilitates safe and user friendly bicycle infrastructure that recognises the many cycle destinations within the precinct.**
4) **Facilitates safe motor vehicle movements (along the street and whilst accessing parking and side streets).**
5) **Accommodates some on-street parking activities, recognising that consolidated on-street parking will be developed in this precinct.**
6) **Integrates appropriately with adjacent land uses (existing and proposed).**
7) **Facilitates public transport access including bus stops.**

Description of design

General Cross section

The cross section developed in Stage 1 is shown in **Figure 3.4** and consists of 3m wide footpaths (as per existing), 1.8m wide protected cycle lanes on each side of the street, 3.3-3.5m wide traffic lanes and parking on the south side of the street where possible. The layout plan for this precinct is included in Appendix A (sheets 7 to 9).

Figure 3.4 Cross section for Core Retail (East)

Currently a flush median provides space for vehicles to wait when turning right into driveways and side streets. The median also assists able bodied pedestrians crossing the road along the length of the precinct. The proposed cross section cannot accommodate a flush median and it is considered that in this precinct waiting for drivers to turn right from the through lane is consistent with the lower speed environment that results from high levels of activity in this precinct generated by the businesses.

For this section of Gerald Street the existing kerb and flat channel kerb aligns with the proposed cross section so no new kerb will be required. Between Kildare Terrace and Lyttelton/Maurice Street the street lights are located on the north side of the street just behind the kerb and there are no overhead power lines. Between Maurice Street and West Belt, just behind the kerb, there are power poles on both sides of the road with overhead power lines and street light fittings on the power poles on the south side of the street. The cost estimate for this precinct includes an allowance to underground the overhead services and install new street lighting. No land purchase is required to implement the recommended cross section.

Cycle facilities

The design of the cycle facility adjacent to the recessed angle parking on the south side of the street was considered and two options developed. Option 2 is shown on the design plans as a preferred option for this section of Gerald Street.

Option 1 which is not the preferred option, would utilised a wide area of separation between both the vehicles reversing out of the angle spaces and the traffic lanes. This could be provided by using a protector that can be driven over, such as the low profile humps used on the Beach Road, Auckland as shown in Figure 3.3, but using a more attractive design for this precinct. This option is shown in **Figure 3.5**.

Figure 3.5

Option 1 - cycle lane continues past the angle parking

Option 2 is to move the angle parking closer to the traffic lane so that a wide space is created along the building frontage, less confident cyclists could use this space (shared with pedestrians) to avoid cycling behind the angle parking. There would still be enough space for more confident cyclists to continue alongside the traffic lane and enter the protected cycle lane where it commences again. This option is shown in **Figure 3.6**. It should be noted that confident cyclists who do not use the plaza area in this layout would be travelling closer to the rear of angle parked vehicles than in the current scenario, this may have safety implications.

Figure 3.6

Option 2 - create a shared plaza area

Option 2 allows the creation of a plaza area that could also be used for outdoor dining in a north facing environment. The design would need to highlight to cyclists the path they are encouraged to travel through plaza. This could be achieved through the use of bespoke pavers such as the example shown in **Figure 3.7**.

Figure 3.7

Example of cycle path pavers

Pedestrian facilities

There are currently two pedestrian zebra crossings within the Core Retail (East) Precinct. The proposed design retains these crossings. Zebra crossings are appropriate in this environment where pedestrian volumes are relatively high and the traffic speed environment is low, despite this being an arterial road. The upgrade of the West Belt/Gerald Street intersection to traffic signals will also provide another priority crossing location for pedestrians. An additional mid-block crossing facility in the block between Maurice Street and West Belt is proposed between the Lincoln Library and Lincoln Vale shopping complex. This crossing includes a refuge island crossing where pedestrians are required to find a gap in traffic but undertake the crossing in two stages. The provision of a crossing in this location would provide pedestrian crossing opportunities every 80 to 100m throughout the Core Retail (East) precinct.

Figure 3.8
Example of side street thresholds

Side Streets

The design includes the creation of side street 'thresholds'. These treatments highlight to approaching drivers that pedestrians and cyclists could be crossing ahead. These could be paved and either flush with the road or raised. An example threshold treatment is shown in **Figure 3.8**.

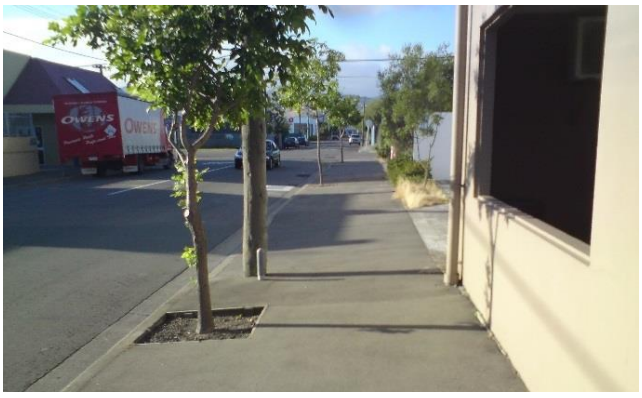


Figure 3.9
Example of street trees retrofitted in footpaths

Landscaping

Although not shown on the design plans there will be opportunities to provide street trees in the footpath and berm area, this would create localised footpath narrowings as shown in **Figure 3.9**. Therefore tree placement needs to be considered in the context not unduly hindering pedestrian access and the adjacent land use. Tree pits to plant the trees in would need to be installed which generally incorporate root guard barriers to prevent future damage to pathways and underground services from the tree roots. Any intentions to provide these would have to be designed and constructed as part of any street upgrades.

Bus stops

The bus stops at the eastern end of the precinct are retained in the design. The area in front of the shelters/seats is paved to create a continuation of the plaza concept, cyclists can use this space if a bus is in the stop. Cycle parking will be installed in these locations as it appears people cycle to the bus stops then catch the bus and currently lock their bikes to power poles and trees. No new bus stops are proposed in this precinct.

Design issues to be addressed in the next stage

The exact location of current infrastructure needs to be determined through the following:

- A topographical survey of all above ground features within the road reserve
- The location of underground services need to be sought from Service Authorities to check for any conflicts. It is noted that the Council water main is located close to the cycle lane protector on the south side of the street, this will need to be investigated once more accurate plans are prepared following a topographical survey.

The following design features to be added/considered in the detailed design phase:

- Tactile pavers for visually impaired pedestrians at pedestrian crossings
- Street trees where possible
- Cycle parking
- Seating and the incorporation of artwork
- Coordinated Utility Upgrades

3.4 Gerald Street - Transitional Living Precinct

Design Objectives

The design objectives of the Transitional Living Precinct are to develop a streetscape that:

1) **Creates a public space that complements the adjacent precincts while recognising the difference in land use between the precincts.**
2) **Facilitates safe and user friendly pedestrian movements (along and across the street).**
3) **Facilitates safe and user friendly bicycle travel.**
4) **Facilitates safe motor vehicle movements (along the street and whilst accessing adjacent activities, parking and side streets).**
5) **Accommodates on-street parking activities.**
6) **Integrates with adjacent existing and proposed land uses (e.g. the Research Hub and its proposed expansion) and recognises their transitional nature.**
7) **Facilitates public transport access including bus stops.**

Description of design

Cross section

The cross section developed in Stage 1 is shown in **Figure 3.10** and consists of 1.5-2m wide footpaths with adjacent berms, 1.8m wide protected cycle lanes on each side of the street, 3.3-3.5m wide traffic lanes and parking on the south side of the street where possible. The layout plan for this precinct is included in Appendix A (sheets 4 to 7 It is proposed that this cross section only apply to the section of Transitional Living east of Murray Place/Hasendene Drive. The section west of here would not include parking along the south side of Gerald Street in preference to including a flush median to facilitate right turns as shown in **Figure 3.11**. This is because there is some relatively high turning movements into the existing adjoining land use areas that would benefit from retaining this facility as it currently exists.

Figure 3.10

Cross section for Transitional Living (east of Murray Place/Hasendene Drive)

The cross section shown in **Figure 3.10** provides for parking on one side only, 11 parking spaces are retained. Narrower footpaths are appropriate for this precinct due to the nature of the anticipated activities generating less pedestrian demand and allows for the existing berms to be retained. In the longer term, as business develops in this precinct, the width of the footpath could be increased. Street trees should be incorporated in the footpath where possible.

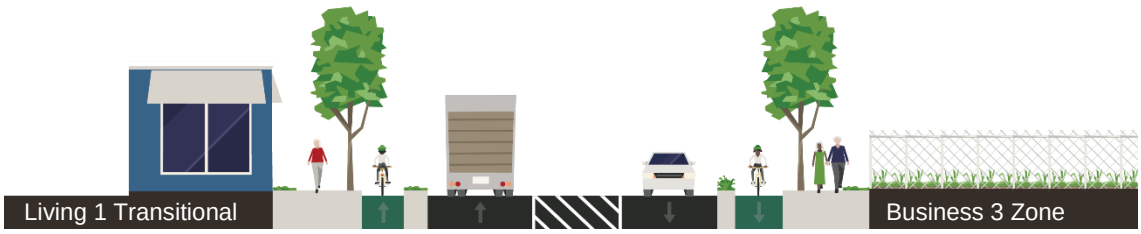


***Figure 3.11** Cross section for Transitional Living (west of Highstead Drive)*

In this precinct the southern kerb generally aligns with the proposed cross section however the majority of this kerb is old dish channel and will require replacement to accommodate the cycleway as the shoulders are very steep. On the north side of the street the existing kerb is not aligned with the design cross section. There is also a hedge along the northern boundary of the road, the exact location of the hedge relative to the road boundary needs to be established. If the hedge straddles the boundary and it is decided that the hedge be retained the design on the north side of the road may need to be altered. Opportunities to work with the Research Hub to accommodate a footpath on their land or providing a wide shared path on the northern side of Gerald Street that accommodates eastbound cyclists and pedestrians could be considered.

Between West Belt and Vernon Drive there are power poles, with street light fittings, on the south side of the road, just behind the kerb. The cost estimate for this precinct includes an allowance to underground the overhead services and upgrade street lighting.

Pedestrian facilities

There are currently no pedestrian crossings within the Transitional Living Precinct however the existing flush median does facilitate crossing opportunities. A mid-block crossing facility just east of Murray Place/Hasendene Drive is proposed, this assists with access to the bus stops east of this location. This crossing includes a refuge island crossing where pedestrians are required to find a gap in traffic but undertake the crossing in two stages.

Bus stops

The bus stops at the eastern end of the precinct are currently located close to the West Belt intersection. The traffic signals design for this intersection results in insufficient space for the bus stops to be retained in their current location. The bus stops are therefore proposed to be moved to the west of their current location. These bus stops would also replace the stops currently located immediately west of Murray Place/Hasendene Drive reducing the overall provision of bus stop pairs along Gerald Street from four to three. The spacing of the stops will be 450m and 500m, these are considered acceptable spacings however the reduction in bus stop provision will need to be discussed with Environment Canterbury (ECan).

Figure 3.12 shows the current bus stops and the proposed bus stops with the distance between them.

The bus stop on the southern side in this precinct is in line with the parking lane and therefore cyclists can continue along the cycle lane when there is a bus in the stop. A ramped up section of the cycle lane to create a flush area between the footpath and the separator will be created for passengers to board and disembark the bus as discussed in Section 3.2, and shown in **Figure 3.2**. Cyclists in the cycle lane will be required to give way to the passengers; this needs to be clear in the layout and marking of the facility in detailed design.

The bus stop on the north side of the street is located in line with the cycle lane. When there is no bus in the stop a cyclist can continue along the cycle lane. When there is a bus in the stop they can bypass the bus via a short length of shared path behind the bus stop facilities.

Figure 3.12 *Existing vs. proposed bus stop locations*

Design issues to be addressed in the next stage

The exact location of current infrastructure needs to be determined through the following:

- A topographical survey of all above ground features within the road reserve
- The location of underground services need to be sought from Service Authorities to check for any conflicts. It is noted that the Council sewer main is located close to the cycle lane protector on the south side of the street, this will need to be investigated once more accurate plans are prepared following the topographical survey.

The following design features to be added/considered in the detailed design phase:

- Tactile pavers for visually impaired pedestrians at pedestrian crossings
- Street trees where possible
- Coordinated Utility Upgrades
- Cycle parking

Design aspects to be discussed with other parties:

- Discuss the northern boundary with Lincoln Research Hub as required
- Discuss the proposed bus stops locations with ECan

3.5 Gerald Street - Core Retail (West) Precinct

Design Objectives

The design objectives for developing a streetscape for the Core Retail Precinct (West) are:

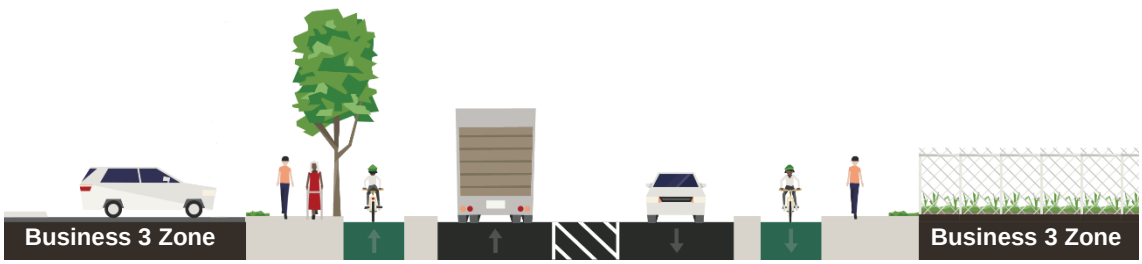
1) **Creates a public space that compliments the adjacent street environments but recognises the difference in land use.**
2) **Facilitates safe and user friendly pedestrian movements (along and across the street)**
3) **Facilitates safe and user friendly bicycle travel**
4) **Facilitates safe motor vehicle movements (along the street and whilst accessing adjacent activities, parking and side streets)**
5) **Integrates with adjacent land uses (existing and proposed).**
6) **Facilitates public transport access including bus stops.**

Description of design

Cross section

The cross section developed in Stage 1 is shown in **Figure 3.13** and consists of 1.5-2m wide footpaths with adjacent berms, 1.8m wide protected cycle lanes on each side of the street, 3.3-3.5m wide traffic lanes, a 3m wide flush median and no parking (as per the current design). The layout plan for this precinct is included in Appendix A (sheets 2 to 4).

Figure 3.13 *Cross section for Core Retail (West) Precinct*



Narrower footpaths are appropriate for this precinct due to the nature of the anticipated activities generating less pedestrian demand. Narrower footpaths allow for the existing berms to be retained. In the longer term as business develops in this precinct the width of the footpath could be increased. Street trees should be incorporated in the footpath where possible.

Retaining the median in the precinct accommodates continuous traffic flow, e.g. past stopped buses and right turning vehicles, this is considered appropriate for this section of Gerald Street where pedestrian activity is lower but access demands are higher to the adjoining land uses.

Along this section of Gerald Street the southern kerb generally aligns with the proposed cross section. The majority of this kerb is old dish channel that will require replacement to accommodate the cycleway. There are some sections of pavement that may need to be reconstructed due to consistent failures. On the north side of the street the existing kerb is not aligned with the design cross section. On the north side of the street there is also a row of established trees that appear to be partially located in road reserve. Their position relative to road the boundary needs to be determined. There is also an open drain on the

north side and the existing kerb and flat channel is located approximately 5.6 m from the boundary. The drain would require piping and the kerb relocated to replicate the proposed cross section. As with the Transitional Living Precinct there are possibilities to alter the design of the north side to retain the trees if they are well within the road reserve. There are no overhead power lines in this section of Gerald Street. Street lighting will be upgraded.

Pedestrian facilities

There are currently no pedestrian crossings within this precinct however the existing flush median does facilitate crossing opportunities. A mid-block crossing facility to assist with access between the bus stops is proposed, it will be located along the New World frontage. This crossing includes a refuge island where pedestrians are required to find a gap in traffic but can undertake the crossing in two stages. The provision of traffic signals along Gerald Street also provide pedestrian crossing opportunities.

Bus stops

The single pair of bus stops in this precinct will remain in the current location. Both of the bus stops are located in line with the cycle lane. When there is no bus in the stop a cyclist can continue along the cycle lane but when there is a bus in the stop they can bypass the bus via a short length of shared path located behind the bus stop facilities.

Design issues to be addressed in the next stage

The exact location of current infrastructure needs to be determined through the following:

- A topographical survey of all above ground features within the road reserve
- The location of underground services need to be sought from Service Authorities to check for any conflicts. It is noted that the Council water main is located close to the cycle lane protector on the south side of the street, this will need to be investigated once more accurate plans are prepared following the topographical survey.

The following design features to be added/considered in the detailed design phase:

- Tactile pavers for visually impaired pedestrians at pedestrian crossings
- Street trees where possible
- Cycle parking

Design aspects to be discussed with other parties:

- Discuss the northern boundary with Lincoln Research Hub as required
- Upgrade intentions for the Gerald St/Vernon Dr intersection
- Proposals as they come to light from the Lincoln Innovation Hub initiative
- Discuss potential incorporation of footpath on the Landcare/ Ag Research site

4. Intersection Designs

4.1 Introduction

Three intersections on Gerald Street are proposed to be upgraded by Council to signalised intersections as part of the Gerald Street upgrade, these include:

- Gerald Street / Springs Road / Ellesmere Junction Road intersection
- Gerald Street / West Belt intersection
- Gerald Street / James Street Edward Street intersection

Scheme plans have been developed for these three intersections and are described in this section.

The intersection of Gerald Street and Vernon Drive will also be upgraded in the future in collaboration with the developers of Te Whāriki relating to a District Plan rule on the staging of this residential development. The Stage 1 work determined traffic signals would be more appropriate at this location compared to the originally identified option to use a roundabout. This also is also consistent with the intentions for the upgrade of the other intersections as mentioned above. A scheme plan for this intersection to inform its upgrade will be developed in the near future.

The intersection designs developed in this stage are based on aerial photographs, no topographical survey has been undertaken at this stage. This will need to be carried out prior to progressing any designs in detail. The designs also require review processes such as safety audits prior to be progressing to detailed design.

When designing an intersection there are a number of key aspects to consider, these are discussed below to provide context to the designs outlined in this section. Often aspects of the conflict for different users/uses, for example a large radius to provide for heavy vehicles may encourage higher turning speeds for drivers of smaller vehicles.

- **Design vehicle** - The type of vehicles predicted to use an intersection is an important consideration, larger vehicles require more space to turn. The 19m quad-axle semi-trailer truck requires the most space to turn. Some activities in the Lincoln Town Centre such as the New World supermarket will be serviced by semi-trailers on a regular basis, therefore the relevant intersections have been designed accordingly. The design vehicles are different across the intersections as summarised in Appendix B.
- **Traffic volumes** - The growth in residential areas and the town centre has been modelled in a micro-simulation model (S-Paramics) to understand the implications for the transport network. The design traffic volumes for all three intersections are based on the forecast 2031 traffic volumes extracted from the micro-simulation model. The design peak hour traffic volumes at each intersection are provided in Appendix E.
- **Design speed** - All of the intersections are within a 50km/hour speed limit. The speed used in the design influences geometric features such as tapers on right turn bay transitions. For the Core Retail (East) Precinct a design speed of 30km/hour will be used, this is consistent with the speed environment that already exists.
- **Catering for cyclists and pedestrians –** providing continuity for mid-block facilities and designs to supplement existing pedestrian crossing opportunities. Cycle facility design is currently limited by NZ give way legislation.

4.2 Gerald St / Springs Rd / Ellesmere Junction Rd Intersection

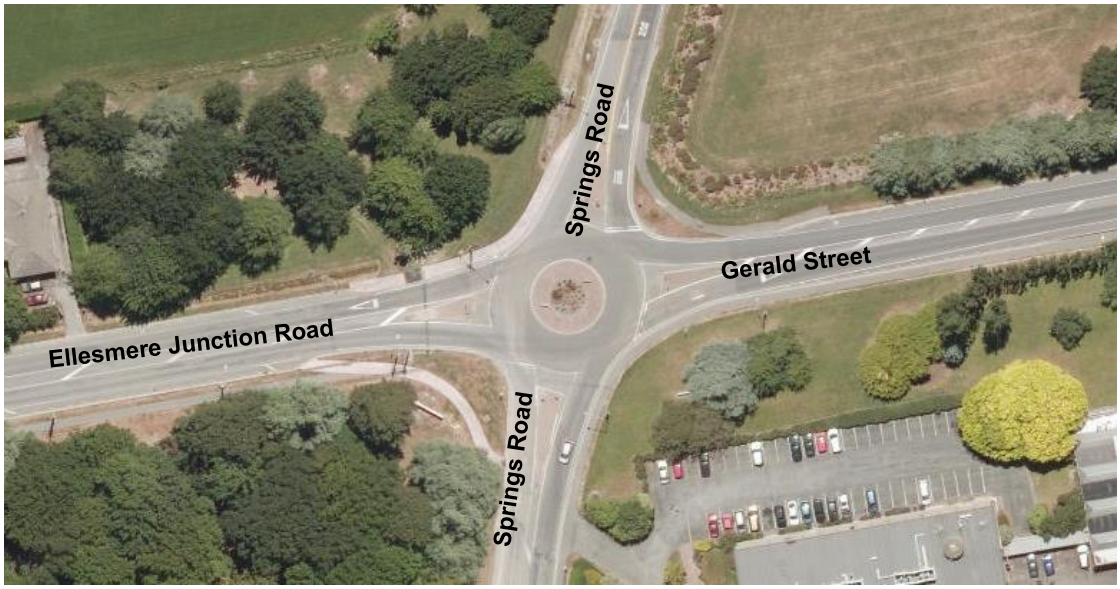
Description of the intersection

The intersection of Gerald Street/Springs Road/Ellesmere Junction Road is currently a single lane roundabout with a 14m diameter central island, as shown in **Figure 4.1**. There are splitter islands on each approach, the island on the south approach is also a pedestrian crossing refuge island. Cyclists currently have the opportunity to use paths on the outside of roundabout rather than cycling through the roundabout.

Although this intersection sits outside the Town Centre for the purpose of providing a comprehensive plan for Gerald Street the scheme plan has been developed and the cost estimated.

Figure 4.1

Current Springs Rd/Ellesmere Junction Rd intersection



Description of the design

The scheme design for this intersection to become traffic signals controlled is included in Appendix A (sheet 2). It should be noted that the alignment of Springs Road is not at right angles to the Gerald Street and Ellesmere Junction Road corridor and the north-south legs of Springs Road are not on the same angle to each other. This presents some challenges when determining the geometric design of traffic signals at this intersection. The scheme design attempts to address this however it should be noted that the design is based on aerial photographs and no topographical survey has been undertaken.

The intersection scheme design fits within the current road reserve boundaries. These boundaries were established previously based on the intersection being upgraded to a double lane roundabout in the future when the need for further capacity was required. The first stage of this project concluded that a double lane roundabout would not provide good pedestrian crossing options and would be unsafe for cyclists. In order to facilitate good connection by all modes between the town centre and the university campus a signalised intersection was recommended.

A further factor was that initial plans for the proposed Lincoln Innovation Hub suggested that this intersection would play a key role in linking the new developments together for walking and cycling across Gerald St which would be best catered for by a signalised crossing.

Pedestrian crosswalks are provided on the all legs except Springs Road (north).

Based on the predicted traffic volumes the approach configuration for each leg is as follows:

- Gerald Street
  - A right turn traffic lane
  - A through traffic lane
  - A through cycle lane
  - A left turn lane
- Ellesmere Junction Road
  - A right turn lane
  - A through traffic lane
  - A through cycle lane
  - A left turn lane
- Springs Road (north)
  - A right turn lane
  - A through traffic lane
  - A through cycle lane
  - A left turn slip lane to accommodate semi-trailer movements, at one location the outer edge of the slip is on the boundary, this is likely to create practical issues relating stormwater etc. It is noted that the existing roundabout does not currently accommodate a semi-trailer left turn.
- Springs Road (south)
  - A right turn lane
  - A through traffic lane
  - A through cycle lane
  - Note that a left turn lane is not provided on this approach for two reasons; the predicted volumes are low (less than 100 vehicles per hour) and there is no space for this lane without encroaching onto University land. As it stands any footpath on the west side of Springs Road alongside the University would need to be located on University land. Further discussions will be held with the University to ascertain if there is a mutual benefit to including a left turn lane at design stage predicated on the easy availability of land to cater for it and any other associated realignment works.

Design issues to be addressed in the next stage

The exact location of current infrastructure needs to be determined through the following:

- A topographical survey of all above ground features within the road reserve, this will allow the geometry to be established in more detail and some of the issues highlighted above may be able to be resolved.
- The location of underground services need to be sought from Service Authorities to check for any conflicts.

The following design features to be added in the detailed design phase:

- Traffic signal hardware
- Tactile pavers for visually impaired pedestrians at pedestrian crossings

Design aspects to be discussed with other parties:

- Discuss the boundary issues with Lincoln University and Lincoln Research Hub as required.
- Proposals as they come to light from the Lincoln Innovation Hub initiative

4.3 Gerald Street / West Belt Intersection

Description of the intersection

The intersection of Gerald Street and West Belt is currently a priority controlled intersection with priority to Gerald Street as shown in **Figure 4.2**.

Figure 4.2 *Current Gerald Street and West Belt intersection*

Description of the design

The scheme design for this intersection to be traffic signal controlled is included in Appendix A (sheet 7).

Pedestrian cross walks are provided on all legs. This adds to the overall pedestrian crossing provision in the busiest part of the town centre. As discussed in Section 3.4 the bus stops in the vicinity of this intersection will need to be relocated due to space constraints.

Based on the predicted traffic volumes the approach configuration for each leg is as follows:

- Gerald Street (west)
  - A right turn lane
  - A shared through and left lane
- Gerald Street (east)
  - A right turn lane
  - A shared through and left lane

- West Belt (north)
  - A right turn lane
  - A shared through and left lane
- West Belt (south)
  - A right turn lane
  - A shared through and left lane

Design issues to be addressed in the next stage

The exact location of current infrastructure needs to be determined through the following:

- A topographical survey of all above ground features within the road reserve.
- The location of underground services need to be sought from Service Authorities to check for any conflicts.

The following design features to be added in the detailed design phase:

- Traffic signal hardware
- Tactile pavers for visually impaired pedestrians at pedestrian crossings

4.4 Gerald Street / James Street / Edward Street Intersection

Description of the intersection

The intersection of Gerald Street/James Street/Edward Street is currently a priority controlled intersection with priority to Gerald Street and Edward Street as shown in **Figure 4.3**.

Although this intersection sits outside the Town Centre for the purpose of providing a comprehensive plan for Gerald Street the scheme plan has been developed and the cost estimated.

Figure 4.3 *Current Gerald St James St Edward St intersection*

Description of the design

The scheme design for this traffic signal controlled intersection is shown in Appendix A (sheet 9).

The design of this intersection needed to integrate with the Core Retail East Precinct design. In particular how cyclists would access and egress from the protected cycle lanes. The road width over the Liffey River culvert is limited by the extent of the existing structure. Widening the footpaths so they could be shared and narrowing the traffic lanes is considered the best use of the space, this layout essentially creates a gateway to the town centre.

The addition of a 250m long shared pedestrian/cycle pathway along the east side of James Street from East Belt to the signalised intersection and crossing point at Edward St will improve the link from the existing Rail Trail pathway to the cycling facilities being proposed for along Gerald St. Conversely this provides a link from Gerald Street to the schools and the Lincoln to Rolleston cycleway

By signalising the Gerald/James/Edward intersection Leinster Terrace becomes too close to the Edward Street approach to the intersection. An option of creating a left-in, left-out for the Leinster/Edward intersection was considered, however the safety issues of the left-out being too close to the intersection still existed. Given that Leinster Terrace is a crescent and can be accessed 220m to the east of the intersection both the left-in and left-out arrangement were removed for the proposed design with Leinster Terrace closed at the western end and a cul de sac created.

Pedestrian crosswalks are provided on all legs of the intersection.

Based on the predicted traffic volumes the approach configuration for each leg is as follows:

- Gerald Street (east)
    - A shared through and right turn lane
- Edward Street (west)
    - A right turn lane
    - A through lane
- James Street (north)
    - A shared right and left lane

Design issues to be addressed in the next stage

The exact location of current infrastructure needs to be determined through the following:

- A topographical survey of all above ground features within the road reserve.
- The location of underground services need to be sought from Service Authorities to check for any conflicts.

The following design features to be added in the detailed design phase:

- Traffic signal hardware
- Tactile pavers for visually impaired pedestrians at pedestrian crossings

Design aspects to be discussed with other parties:

- Discuss the closure of the west end of Leinster Terrace with the residents/residents committee.

5. Side Road Parking Precincts

5.1 Introduction

To implement the design of Gerald Street and the intersection upgrades the removal of some on-street parking will be required. As a way to mitigate car parking reduction on Gerald Street several side streets are proposed to be become 'Parking Precincts'. These are West Belt (north), Lyttelton-street and Maurice Street as shown by the orange dashed line in **Figure 5.1**.

***Figure 5.1** Extent of the proposed Parking Precincts (extract from Figure 1.2)*

Creating the precincts will involve changing existing parallel on-street parking arrangements to angle parking where possible. Proposed parking layouts for these side streets have been developed and are described below.

Right angle parking spaces are considered to offer the most flexibility in terms of access. When stalls are at 60 or 45 degrees they are only accessible from one direction of travel unless a road is very wide. The side streets discussed below are 12.8m to 13.3m wide. Accommodating angle parking on one side while retaining parallel parking on the other side requires the use of shorter than desirable angle park spaces. 4m long spaces have been used in the designs accepting that the cars will overhang the kerb and footpath as shown in **Figure 5.2**. To achieve this any old dish channel needs replacing otherwise the cars will not

be able to overhang due to the depth of dish channel. Footpaths also require widening and some power poles may need to be removed.

To ensure that the spaces are user friendly they are wider than the standard 2.5m, in most cases 3m wide. It is also important to ensure the traffic movement area behind the spaces (the aisle) is wide enough for vehicles to easy manoeuver out of the spaces, the minimum used is 7m. The parallel spaces are 2.0m wide.

Figure 5.2

4m angle parking spaces

To define each of the parking precincts threshold treatments are proposed between the parking part of the street and the remainder of the residential street. These will consist of a raised and/or cobble areas on the road surface and landscaping, these also provide a traffic calming effect.

Some of the work to implement the layouts is renewal work (replacing old dish channel and footpaths) and some work is improvements (the parking spaces line work, thresholds to define the precinct).

5.2 West Belt

West Belt north of Gerald Street is currently a two-way carriageway of approximately 12.8m wide which incorporates parallel parking on both sides of the road as shown in **Figure 5.3**. There are no parking space markings in place. Drivers often angle park on the east side of the street on the unsealed shoulder, predominantly at the northern end, which is well used at by those attending the sports facilities on North Belt at peak times e.g. Saturday sports.

Figure 5.3

West Belt – Looking North from Gerald Street

The proposed layout in shown in Appendix A (sheet 11).

The proposed layout includes angle parking on the eastern side. There is insufficient space to retain parallel parking on the west side of the street. An indented bay to create 4-5 parallel spaces to the southern end of the street has been included in the design given the demand closer to Gerald Street.

To create this parking precinct works would include replacing the old dish channel along the east side of the street with a flat profile kerb and reforming the footpath, sealing the current gravel/grass shoulder and installing a threshold. A further future project could be to underground the overhead lines and upgrade the street lighting.

5.3 Lyttelton-street

Lyttelton-street is approximately 13.3m wide which includes two traffic lanes with on-street parallel parking as shown in **Figure 5.4**. There are no parking space markings in place.

Figure 5.4
Lyttelton-street - Looking North from Gerald Street

The proposed layout in shown in Appendix A (sheet 12).

The layout includes angle parking on the west side and parallel parking on the east side of the street.

To create this parking precinct works would include replacing the old dish channel along both sides of the street with a flat profile kerb and reforming the footpath. A further future project could be to underground the overhead lines and upgrade the street lighting.

5.4 Maurice Street

Maurice Street is a two-way street with a 13m wide carriageway with parallel parking on both sides as shown in **Figure 5.5.** There are no parking space markings in place.

Figure 5.5 *Maurice Street - Looking South from Gerald Street*

The proposed layout in shown in Appendix A (sheet 13)

The layout includes angle parking on the west side and parallel parking on the east side of the street.

To create this parking precinct works would include replacing the old dish channel along both sides of the street with a flat profile kerb and reforming the footpath. To facilitate these works part of the carriageway may have to be reconstructed to lower the road centre line to reduce the existing steep cross falls, this will be confirmed following the topographical survey. A further future project could be to underground the overhead lines and upgrade the street lighting.

5.5 Summary of number of parking spaces

Table 5.1 outlines the existing spaces and the number of spaces created in the proposed layouts. Given the existing spaces are not marked out the number has been estimated based on 6m long parallel parking spaces.

Lyttelton-street creates the most new spaces. Because of the number of driveways on Maurice Street the overall gain in spaces is low. The width of West Belt is limiting the provision of parallel parking on the west side of the street. If the dish channel is being replaced anyway to allow cars to overhang widening the street should be considered. This would require the east side to be shifted closer to the boundary.

An overall stocktake of the on-street parking on Gerald Street and side streets proposed as parking precinct are shown in **Table 5.1**. This compares the current parking provision and the provision under the projects proposed in this report.

The parking changes on Gerald Street are a combination of providing protected cycle lanes, new pedestrian crossing points and the intersection upgrades (as road space is required for the development of right turning lanes). Establishing these upgrades are necessary for Gerald Streets function as a major transport route and to create safe crossings points.

Table 5.1 Table of on-street car park volumes

Project	Existing	Proposed	Change
Lyttelton-street	24	36	**+12**
Maurice Street	19	22	**+3**
West Belt	54	50	**-4**
Gerald Street (Core Retail East)	52	23	**-29**
Gerald Street (Transitional Living)	41	8	**-33**
Gerald Street (Core Retail West)	0	0	**0**
TOTAL	**190**	**139**	**-51**

Overall the implementation of the street design changes, intersection upgrades and parking precincts results in 51 on-street car park spaces being removed to make space for the design features.

It is important that the on-street parking supply is considered in the wider context of parking supply. The parking survey in March 2015 found that across the entire day the overall parking occupancy is below the 80% to 85% optimum occupancy range. Occupancies higher than 85% create difficulties for motorists searching for a car parking space. The new carpark behind the Lincoln Library was half complete at the time of the survey.

Table 5.2 shows the parking supply at the time of the survey and the off street parking supply now with the on-street parking reduction resulting from the proposed projects.

Table 5.2 Town Centre Parking Overview by type

Parking Type	March 2015 (at time of the survey)	October 2015 and allowing for proposed projects
On Street	306	255
Off Street - Council	76	108[4]
Off Street - Private	118	118
TOTAL	**500**	**481**

Investigations into additional public or communal off street car parks will be undertaken prior to the implementation of the proposed projects so that parking supply for the town centre is provided at an appropriate level.

The new public carpark running between West Belt and Lyttelton-street north of the Library is an example of this type of communal facility for town centre visitors. Council will also continue to work with developers to create car parking opportunities, this could include provision for a Park and Ride facility. Given the phasing of the works over time this loss is likely to be offset with the provision of new communal off street parking areas.

[4] The Library Car Park was not complete at the time of the survey, 32 spaces had yet to be formed

6. Cost Estimate Summary

The cost estimates are summarised below in **Table 6.1** and **Table 6.3**. They include a 20% allowance for professional fees (topographical survey, design and contract administration) and 30% contingency sum to account for unforeseen works. The details of the estimates and the assumptions made are included in Appendix D. The cost estimates for the undergrounding only apply to the project extents with the KAC Precinct boundaries.

***Table 6.1** Town Centre Cost Estimate Summary*

No.	Project Name	Project Cost estimate	Undergrounding
1	Gerald Street Parking - Minor Improvements	$50,000	NA
2	Gerald Street - Core Retail East Precinct	$1,900,000	$75,000
3	Gerald Street – Transitional Living Precinct	$2,000,000	$500,000
4	Gerald Street - Core Retail West Precinct	$1,750,000	NA
5	West Belt Parking Precinct	$490,000	$140,000
6	Lyttelton-street Parking Precinct	$370,000	$75,000
7	Maurice Street Parking Precinct	$310,000	$60,000
	TOTAL	**$6,870,000**	**$850,000**

***Table 6.2** Intersection Upgrade Cost Estimates*

No.	Project Name	Cost estimate
8	Gerald St/James St/Edward Street Traffic Signals	$1,200,000
9	Gerald St/West Belt Traffic Signals	$1,300,000
10	Gerald St/Springs Road Traffic Signals	$2,000,000
11	Gerald St/Vernon Drive Traffic Signals (cost over and above a roundabout originally anticipated to be provided by developers)	$300,000
	TOTAL	**$4,800,000**

Funding for these works will require approval by Council through an Annual Plan and/or Long Term Plan process. Realistically this would likely occur in preparation for the 2018-2028 Long Term Plan. Currently some funding allowance has been allocated in Councils 30 year financial forecast projections used to inform the 2015-25 Long Term Plan. This was based on the setting of priorities undertaken by Council at the time, and prior to the more accurate information subsequently provided by this report.

7. Implementation Plan

The street and intersection upgrade will need to occur over time. **Table 7.1** outlines the works for the short, medium and long term.

The key findings from the overall design exercise, and the basis for the implementation order below are:

- The Core Retail East Precinct street works requires the James Street and West Belt traffic signals to be implemented at the same time to ensure cycle facilities are transitioned safely.
- The side street parking precincts should be established prior to the Core Retail East Precinct street works to ensure sufficient parking supply is maintained.
- The need for additional parking supply is likely to be required in the medium term and therefore options on how this can be achieved need to be investigated in the short term.

Table 7.1
Implementation Plan over time

Short term (1-3 years) Actions that can be funded through existing budgets	Medium term (4-7 years) Capital Projects that require introduction through the LTP process.	Long term (8 years +) Capital Projects that require introduction through the LTP process.
Parking Action Plan • Mark individual car parks on Gerald Street (in particular mobility parks) (Project 1) • Introduce parking time restrictions for Retail Core East Precinct • Develop parking search route signage (can be altered once the parking precincts are developed) (Project 1) • Develop parking brochure/web page in correspondence with signage • Investigate communal car parking options • Investigate use of parking wardens/officers to better control parking behaviour **Public Transport** • Investigate options for park and ride location	**Street works** • Develop parking precincts on West Belt, Lyttelton-street, Maurice Street (Projects 5, 6 and 7) • Upgrade Gerald Street within Retail Core East Precinct (Project 2) • Traffic signals for Gerald/James/Edwards Street (Project 8) • Traffic signals for Gerald Street/West Belt (Project 9) **Public Transport** • Relocate unofficial park and ride to a new location **Parking** • Establish communal parking areas	**Street works** • Upgrade Gerald Street within Transitional Precinct (Project 3) • Upgrade Gerald Street within Retail Core West Precinct (Project 4) • Traffic signals for Springs/Gerald/ Ellesmere Junction Rd (Project 10) • Traffic Signals for Gerald/Vernon (timing may alter based on growth & triggering of District Plan rules) (Project 11)

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Appendix A

Scheme Design Plans for consultation

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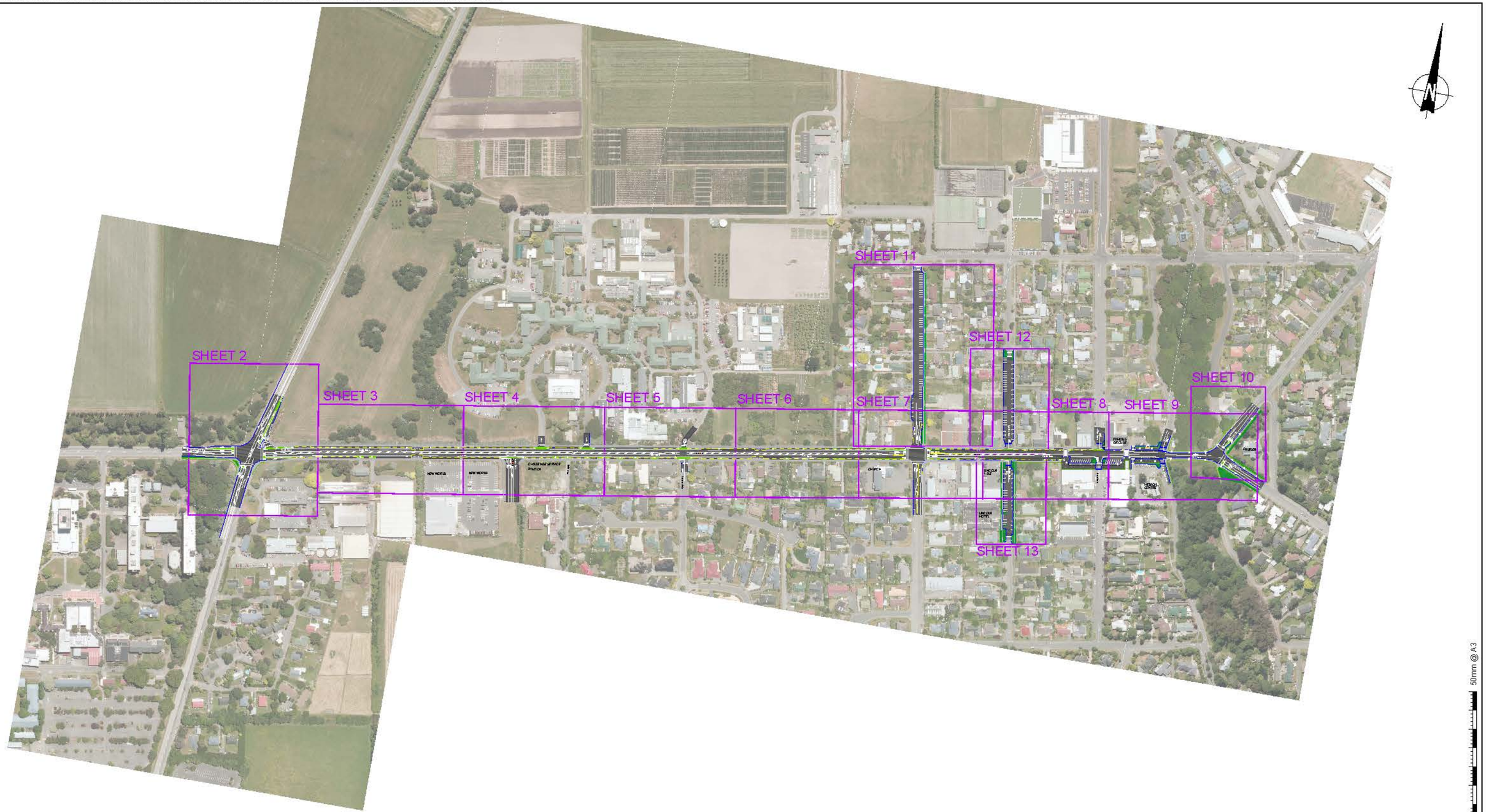

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Rev	Date	By	Chk	Description
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Selwyn DISTRICT COUNCIL

Design	AW, BSJ, WW
Drawn	AW, BSJ
Checked	JW
Issued	02/10/2015
Scale	1:5000 @ A3

SDC Lincoln Town Centre

Final Scheme Plans

Overview

Ref	SDC-J015
Sheet	1
Revision	A

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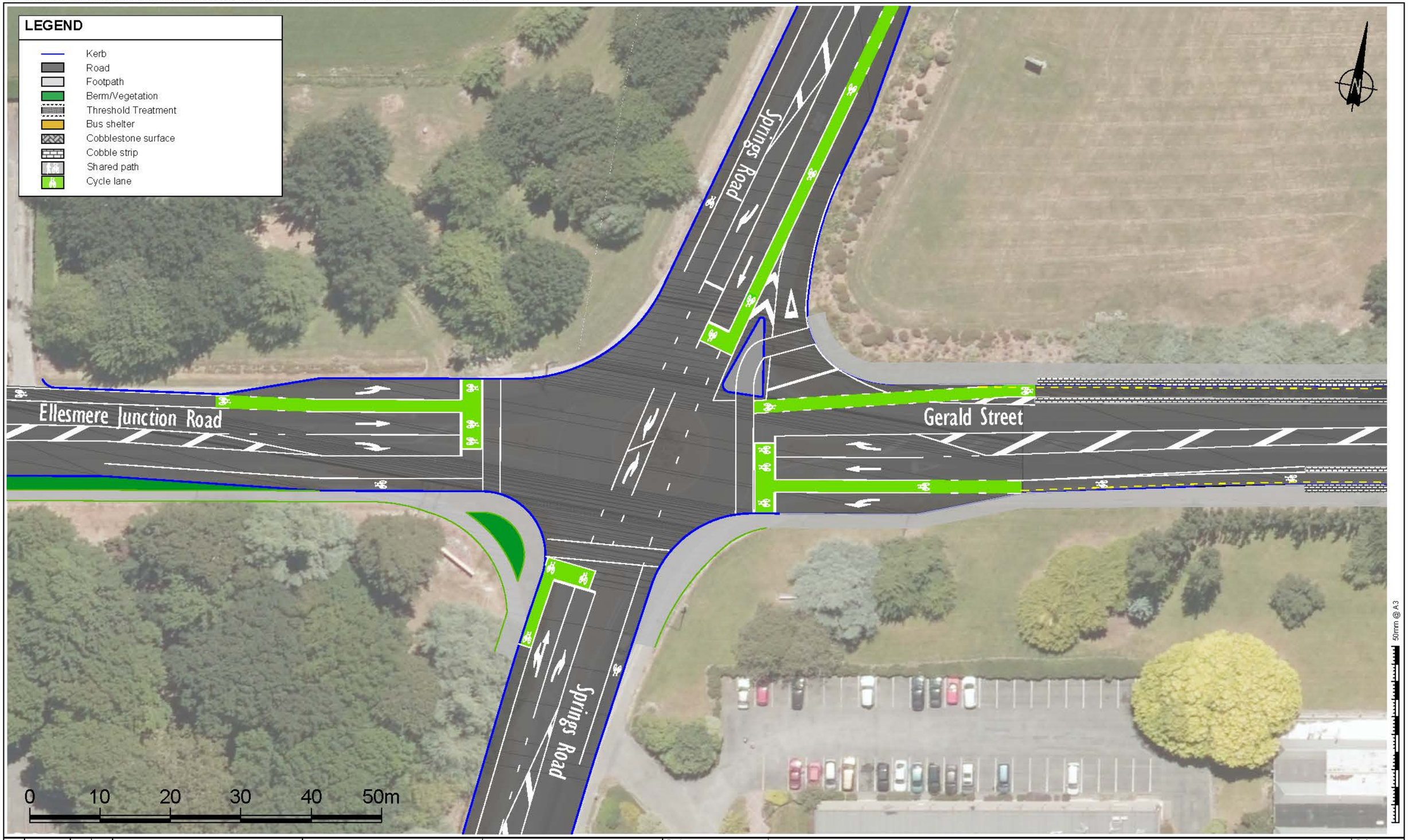

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Selwyn DISTRICT COUNCIL

Design	WW
Drawn	AW
Checked	JW
Issued	02/10/2015
Scale	1:500 @ A3

SDC Lincoln Town Centre

Final Scheme Plans

Gerald Street / Springs Road / Ellesmere Junction Road Intersection

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Ref	SDC-J015
Sheet	2
Revision	A

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LEGEND

- Kerb
- Road
- Footpath
- Berm/Vegetation
- Threshold Treatment
- Bus shelter
- Cobblestone surface
- Cobble strip
- Shared path
- Cycle lane

BUS STOP

Gerald Street

BUS STOP

NEW WORLD

0 10 20 30 40 50m

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Rev	Date	By	Chk	Description
A	10/05/2016	AW	JW	Change to cross section and drawing title
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Design	BSJ
Drawn	BSJ
Checked	JW
Issued	02/10/2015
Scale	1:500 @ A3

SDC Lincoln Town Centre

Final Scheme Plans

Gerald Street

Ref SDC-J015

Sheet 3

Revision A

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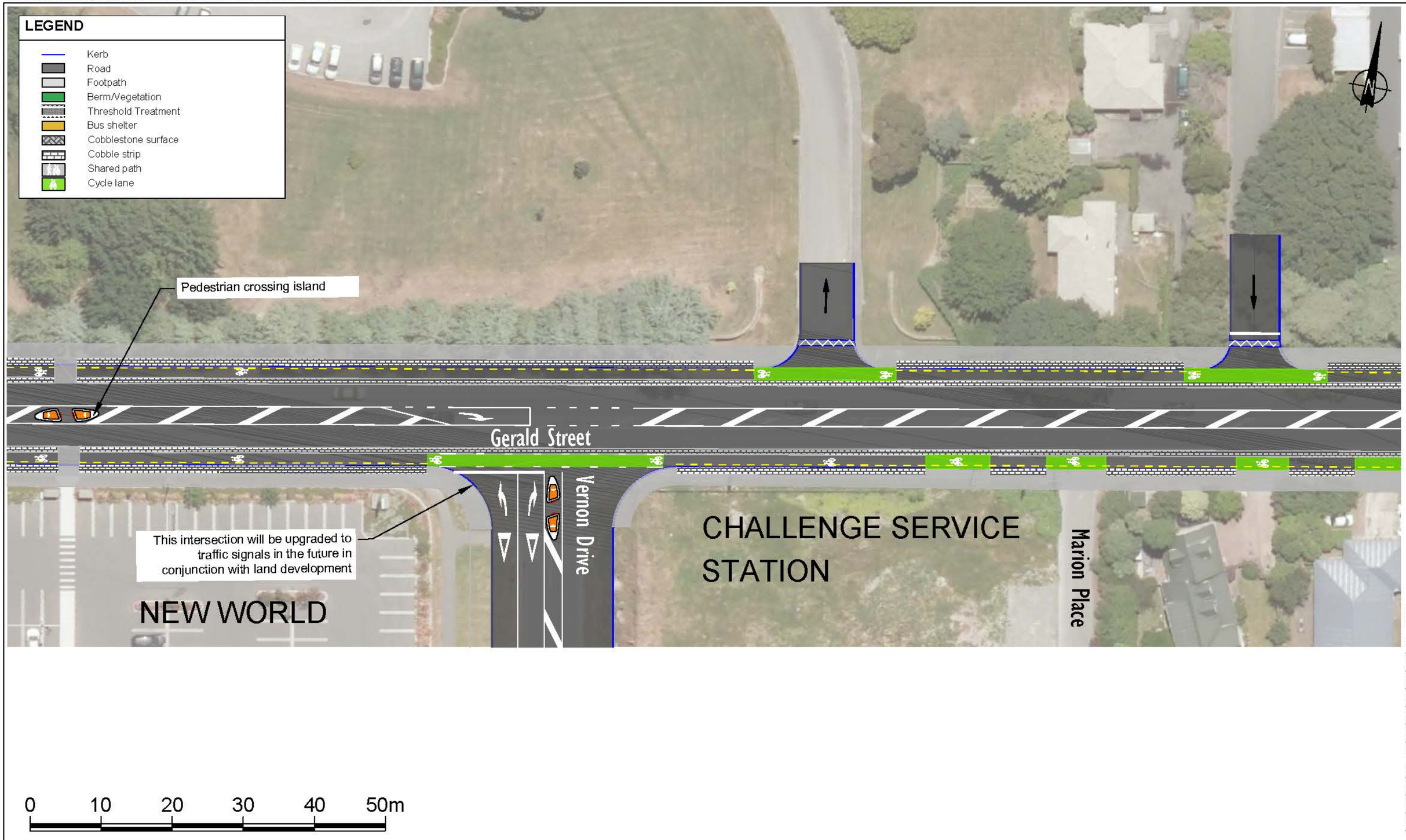

Rev	Date	By	Chk	Description
A	10/05/2016	AW	JW	Change to cross section and drawing title
B	18/05/2016	BSJ	JW	Addition of right turn bay at Vernon Drive intersection
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Design	BSJ
Drawn	BSJ
Checked	JW
Issued	02/10/2015
Scale	1:500 @ A3

SDC Lincoln Town Centre

Final Scheme Plans

Gerald Street

Ref	SDC-J015
Sheet	4
Revision	B

J:\Selwyn District Council (SDC)\SDC-J015 Lincoln Town Centre Streetscape Stage 2\DocCalcs\CAD\SDC_LincolnTC_FinalSchemePlans Rev A.dwg

LEGEND

- Kerb
- Road
- Footpath
- Berm/Vegetation
- Threshold Treatment
- Bus shelter
- Cobblestone surface
- Cobble strip
- Shared path
- Cycle lane

N

Pedestrian crossing island

Gerald Street

Hasendene Drive

0 10 20 30 40 50m

50mm @ A3

Rev	Date	By	Chk	Description
A	10/05/2016	AW	JW	Change to cross section and drawing title
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Design	BSJ
Drawn	BSJ
Checked	JW
Issued	02/10/2015
Scale	1:500 @ A3

SDC Lincoln Town Centre

Final Scheme Plans

Gerald Street

Ref	SDC-J015
Sheet	5
Revision	A

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Design	BSJ
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Issued	02/10/2015
Scale	1:500 @ A3

SDC Lincoln Town Centre

Final Scheme Plans

Gerald Street

Ref	SDC-J015
Sheet	6
Revision	A

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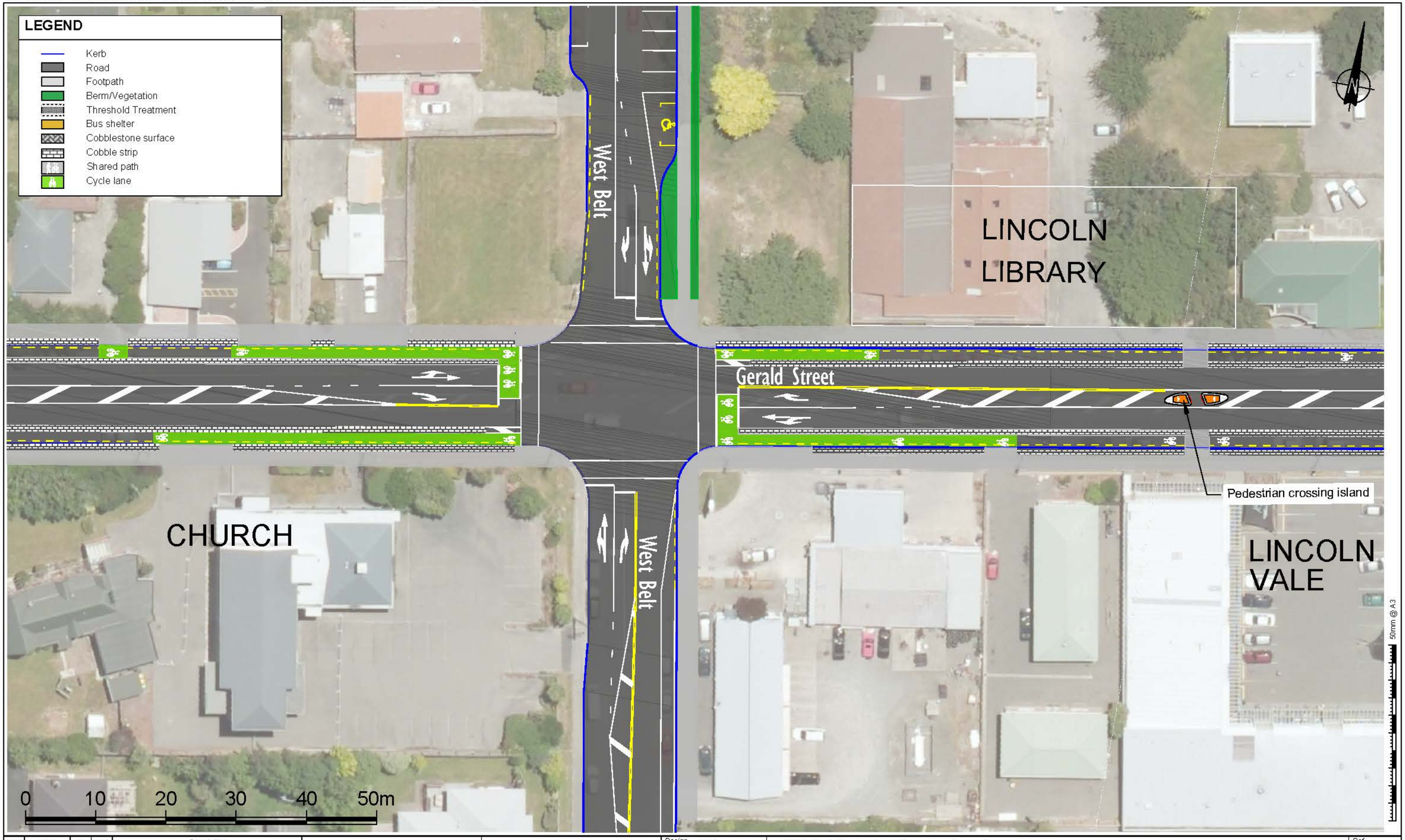

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Design	BSJ
Drawn	BSJ
Checked	JW
Issued	02/10/2015
Scale	1:500 @ A3

SDC Lincoln Town Centre

Final Scheme Plans

Gerald Street / West Belt Intersection

Ref	SDC-J015
Sheet	7
Revision	A

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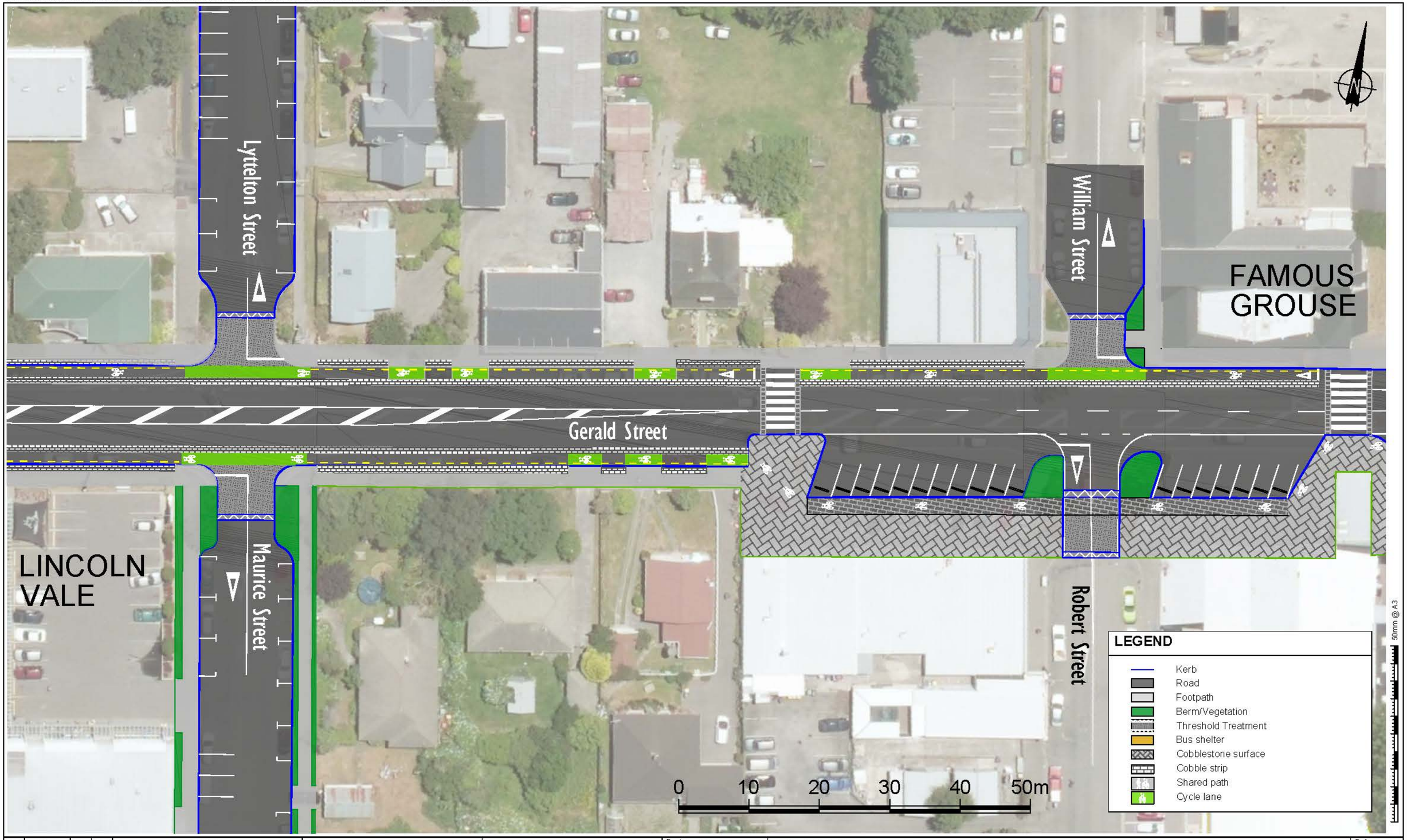

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Design	BSJ
Drawn	BSJ
Checked	JW
Issued	02/10/2015
Scale	1:500 @ A3

SDC Lincoln Town Centre

Final Scheme Plans

Gerald Street

Ref	SDC-J015
Sheet	8
Revision	A

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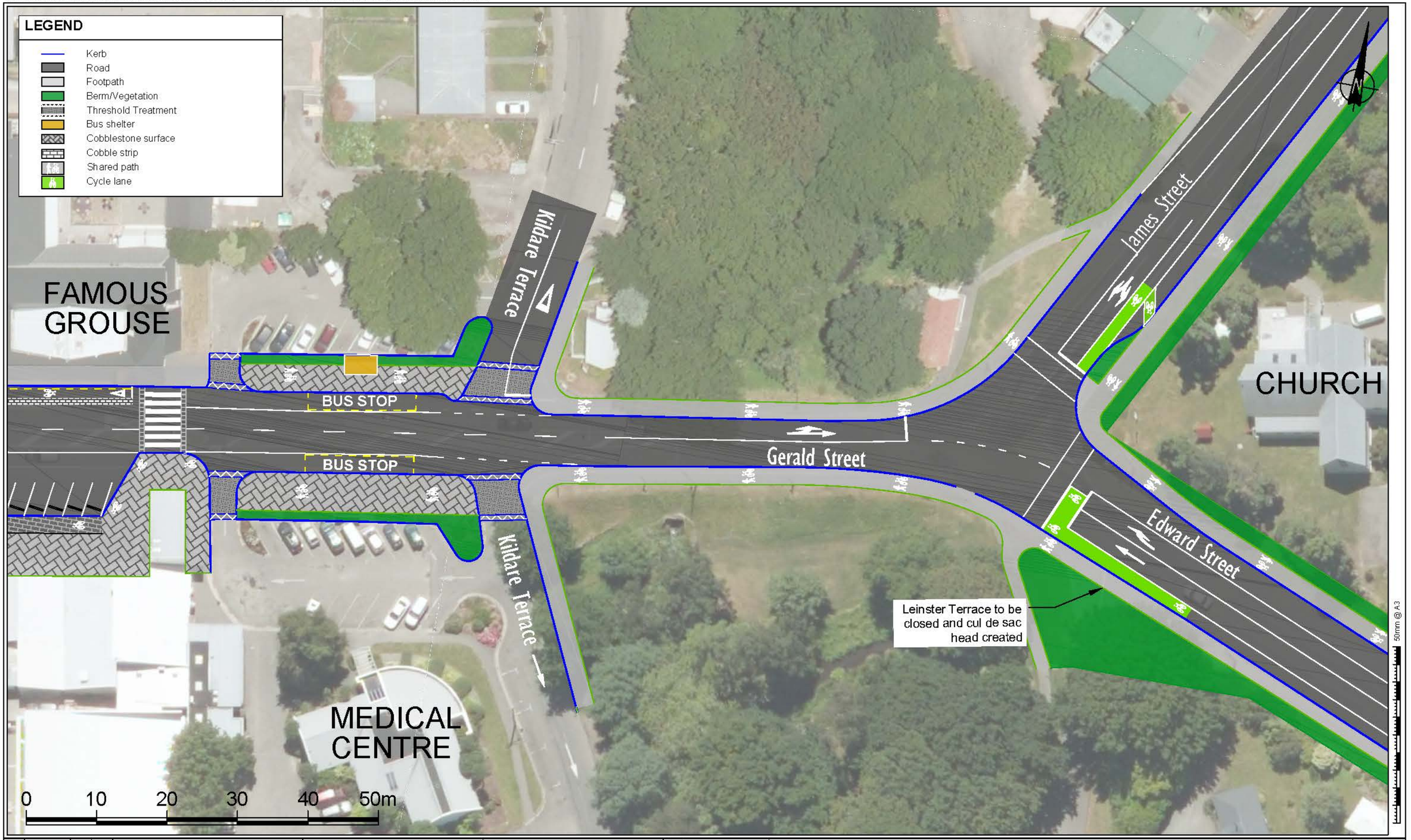

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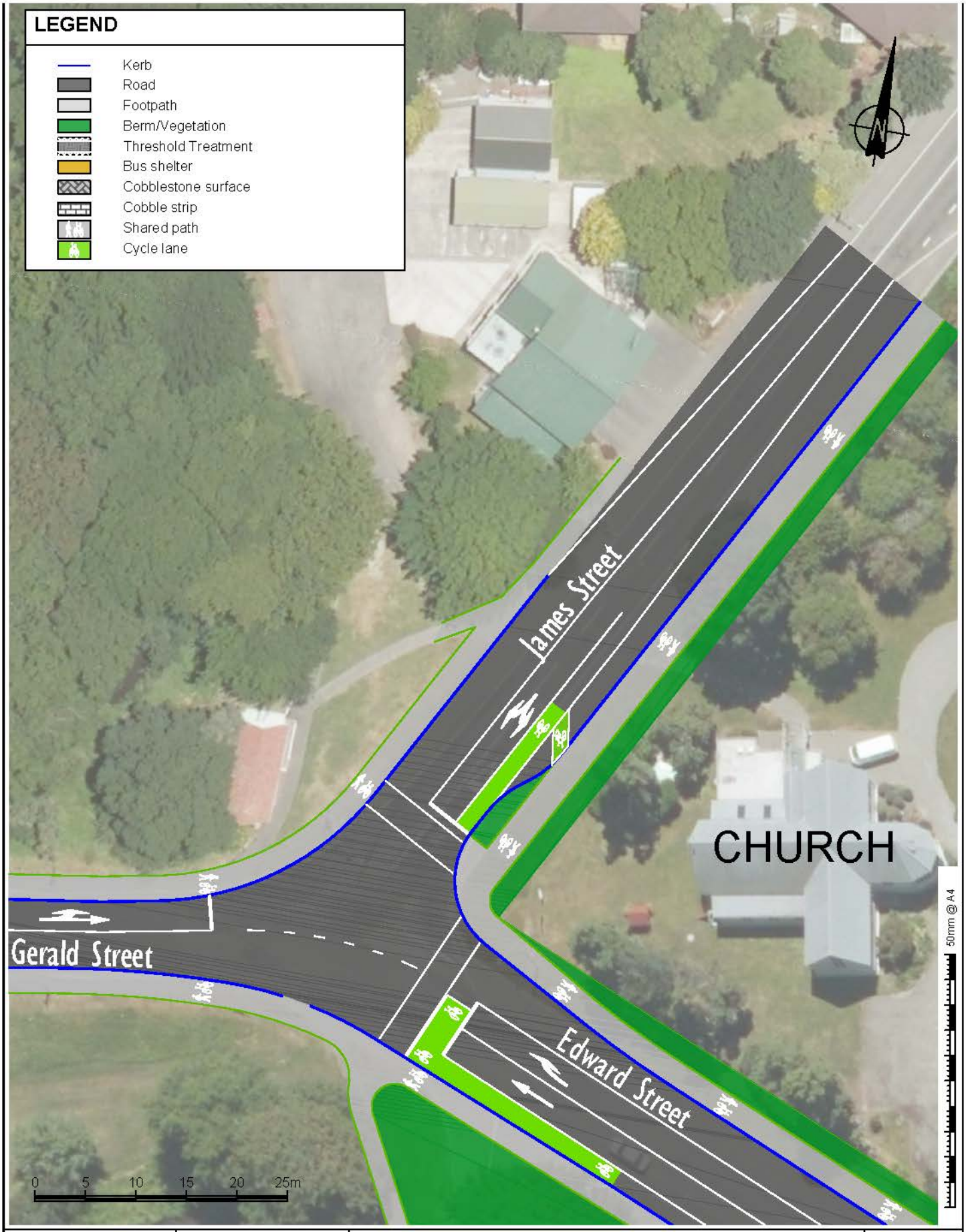
Design	AW, BSJ
Drawn	AW, BSJ
Checked	JW
Issued	02/10/2015
Scale	1:500 @ A3

SDC Lincoln Town Centre

Final Scheme Plans

Gerald Street

Ref	SDC-J015
Sheet	9
Revision	A



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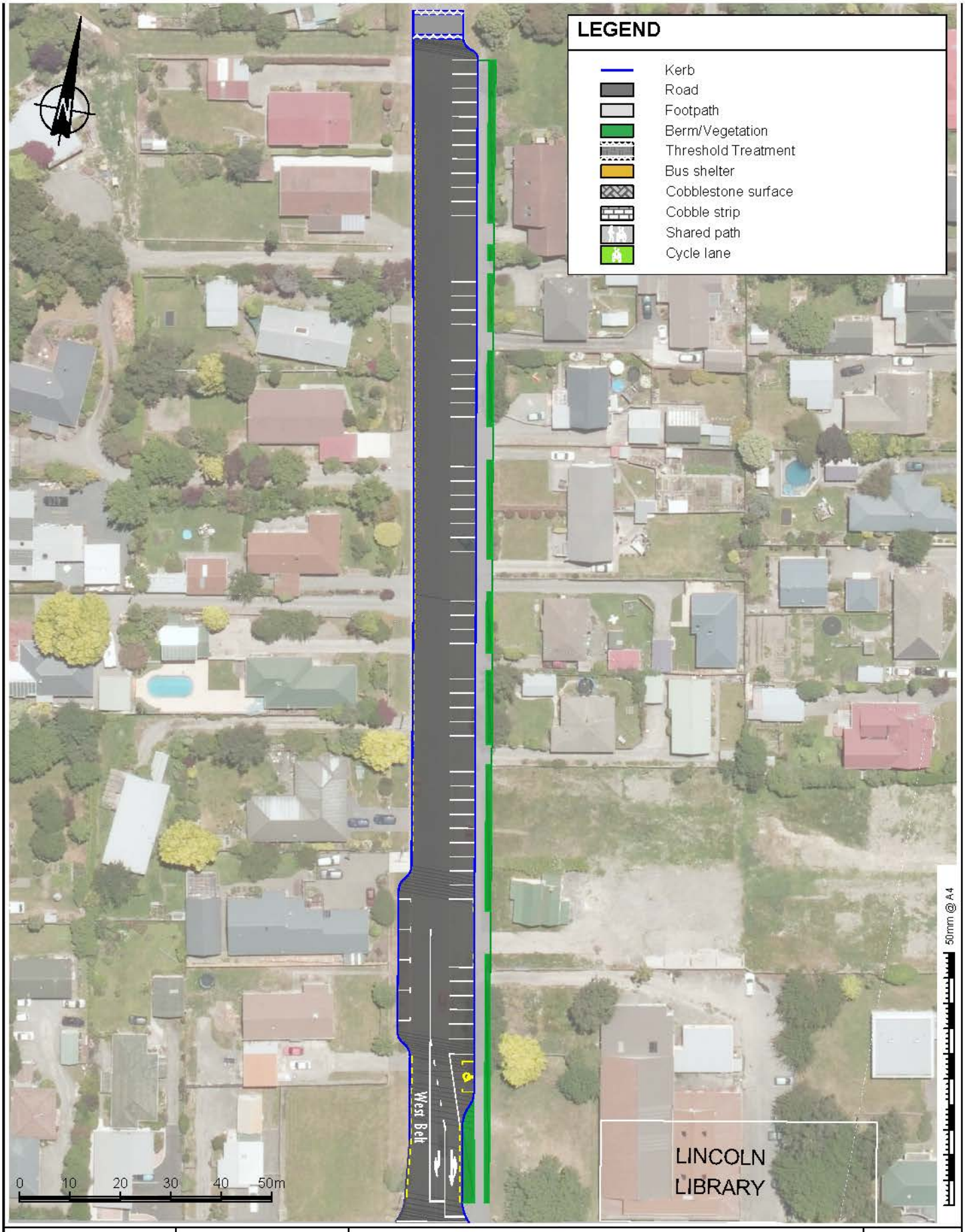
SDC Lincoln Town Centre

Final Scheme Plans

Gerald St / James St / Edward St Intersection

Ref	Drawn	Rev	Date	Scale
SDC-J015	BSJ	A	02/10/2015	1:500 @ A4

10



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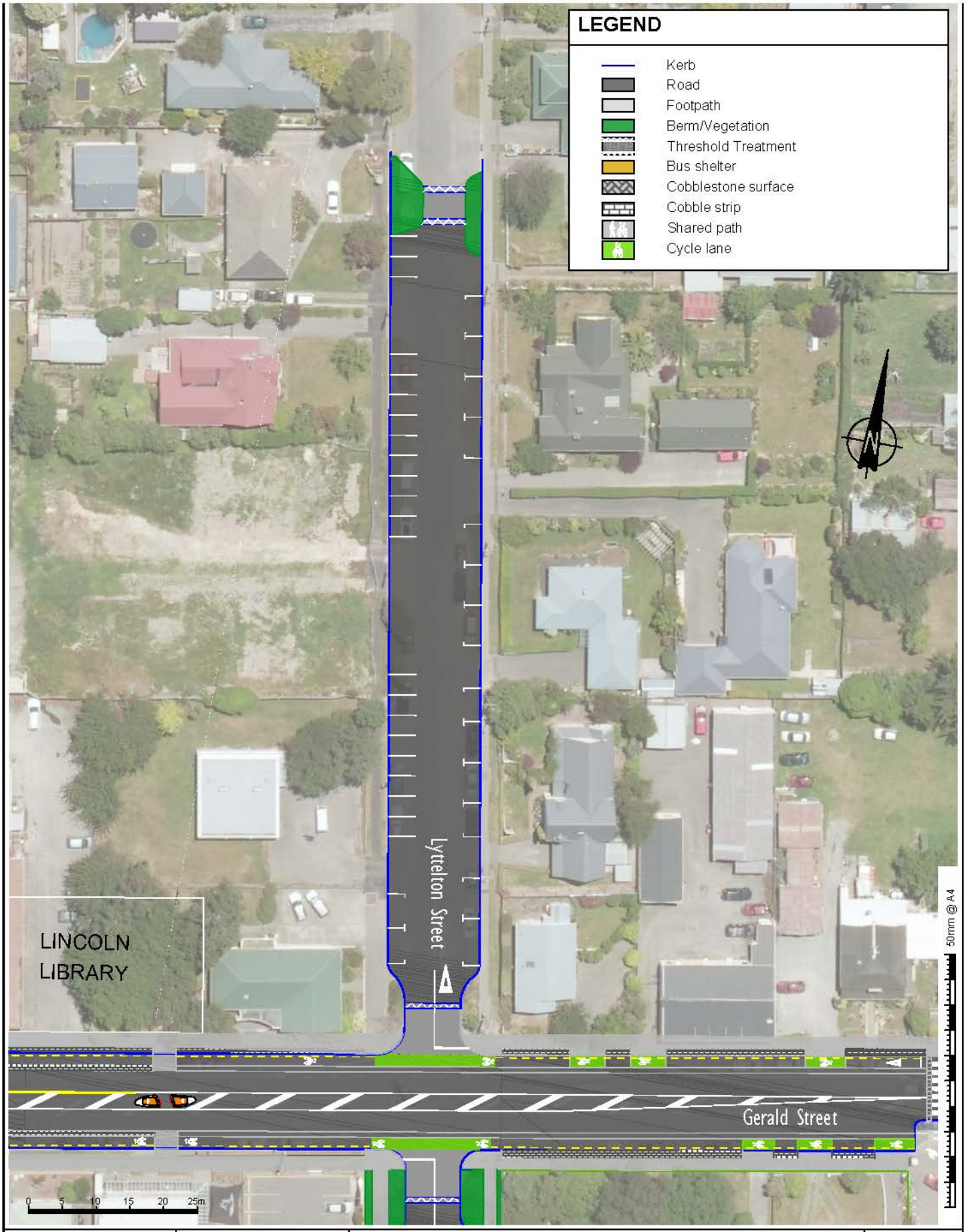
SDC Lincoln Town Centre

Final Scheme Plans

West Belt Parking

Ref	Drawn	Rev	Date	Scale
SDC-J015	BSJ	A	02/10/2015	1:1000 @ A4

11



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SDC Lincoln Town Centre

Final Scheme Plans

Lyttelton Street Parking

Ref	Drawn	Rev	Date	Scale
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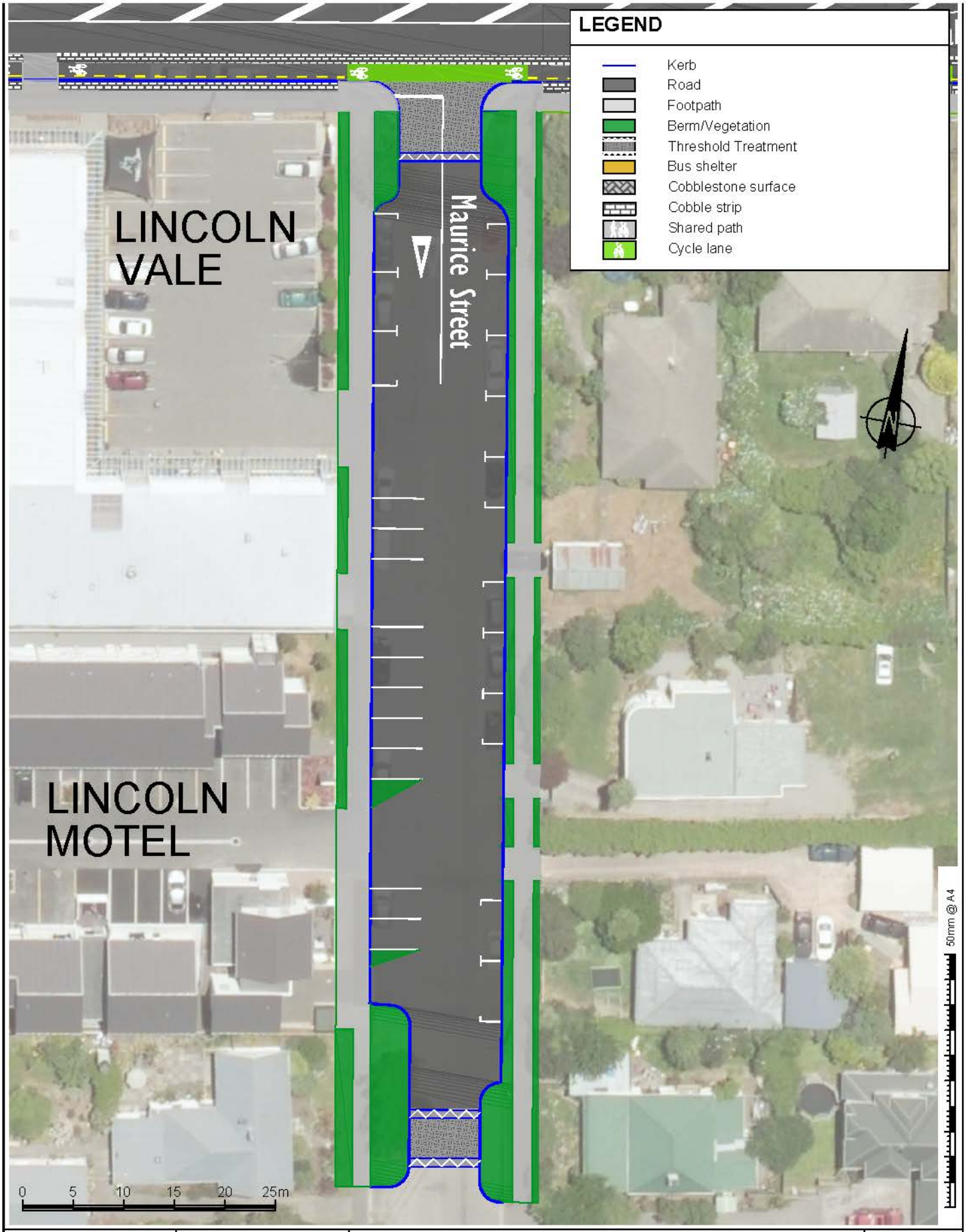
12



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SDC Lincoln Town Centre

Final Scheme Plans

Maurice Street Parking

Ref	Drawn	Rev	Date	Scale
SDC-J015	BSJ	A	02/10/2015	1:500 @ A4

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Appendix B

Gerald Street Intersections – Design Vehicles

Design vehicles

Table B-1 Gerald Street / Springs Road / Ellesmere Junction Road

Approach	Movement	Existing Intersection	Proposed Intersection
Springs Road (N)	Left	RTS 18 Large Rigid Truck (11.5m)	RTS 18 Semi-trailer truck (19m)
	Through	RTS 18 Large Rigid Truck (11.5m)	RTS 18 Semi-trailer truck (19m)
	Right	RTS 18 Large Rigid Truck (11.5m)	RTS 18 Semi-trailer truck (19m)
Gerald Street (E)	Left	RTS 18 Large Rigid Truck (11.5m)	RTS 18 Semi-trailer truck (19m)
	Through	RTS 18 Large Rigid Truck (11.5m)	RTS 18 Semi-trailer truck (19m)
	Right	RTS 18 Large Rigid Truck (11.5m)	RTS 18 Semi-trailer truck (19m)
Springs Road (S)	Left	RTS 18 Large Rigid Truck (11.5m)	RTS 18 Semi-trailer truck (19m)
	Through	RTS 18 Large Rigid Truck (11.5m)	RTS 18 Semi-trailer truck (19m)
	Right	RTS 18 Large Rigid Truck (11.5m)	RTS 18 Semi-trailer truck (19m)
Ellesmere Junction Road (W)	Left	RTS 18 Large Rigid Truck (11.5m)	RTS 18 Semi-trailer truck (19m)
	Through	RTS 18 Large Rigid Truck (11.5m)	RTS 18 Semi-trailer truck (19m)
	Right	RTS 18 Large Rigid Truck (11.5m)	RTS 18 Semi-trailer truck (19m)

Table B-2 Gerald Street / West Belt Intersection

Approach	Movement	Existing Intersection	Proposed Intersection
West Belt (N)	Left	RTS 18 Large Rigid Truck (11.5m)	RTS 18 Large Rigid Truck (11.5m)
	Through	RTS 18 Large Rigid Truck (11.5m)	RTS 18 Large Rigid Truck (11.5m)
	Right	RTS 18 Large Rigid Truck (11.5m)	RTS 18 Large Rigid Truck (11.5m)
Gerald Street (E)	Left	RTS 18 Large Rigid Truck (11.5m)	RTS 18 Large Rigid Truck (11.5m)
	Through	RTS 18 Large Rigid Truck (11.5m)	RTS 18 Large Rigid Truck (11.5m)
	Right	RTS 18 Large Rigid Truck (11.5m)	RTS 18 Large Rigid Truck (11.5m)
West Belt (S)	Left	RTS 18 Large Rigid Truck (11.5m)	RTS 18 Large Rigid Truck (11.5m)
	Through	RTS 18 Large Rigid Truck (11.5m)	RTS 18 Large Rigid Truck (11.5m)
	Right	RTS 18 Large Rigid Truck (11.5m)	RTS 18 Large Rigid Truck (11.5m)
Gerald Street (W)	Left	RTS 18 Large Rigid Truck (11.5m)	RTS 18 Large Rigid Truck (11.5m)
	Through	RTS 18 Large Rigid Truck (11.5m)	RTS 18 Large Rigid Truck (11.5m)
	Right	RTS 18 Large Rigid Truck (11.5m)	RTS 18 Large Rigid Truck (11.5m)

Table B-3 Gerald Street / James Street / Edward Street

Approach	Movement	Existing Intersection	Proposed Intersection
James Street (N)	Left	RTS 18 Large Rigid Truck (11.5m)	RTS 18 Large Rigid Truck (11.5m)
	Right	RTS 18 Semi-trailer truck (19m)	RTS 18 Semi-trailer truck (19m)
Edward Street (E)	Through	RTS 18 Semi-trailer truck (19m)	RTS 18 Semi-trailer truck (19m)
	Right	RTS 18 Large Rigid Truck (11.5m)	RTS 18 Large Rigid Truck (11.5m)
Gerald Street (W)	Left	RTS 18 Large Rigid Truck (11.5m)	RTS 18 Large Rigid Truck (11.5m)
	Through	RTS 18 Semi-trailer truck (19m)	RTS 18 Semi-trailer truck (19m)

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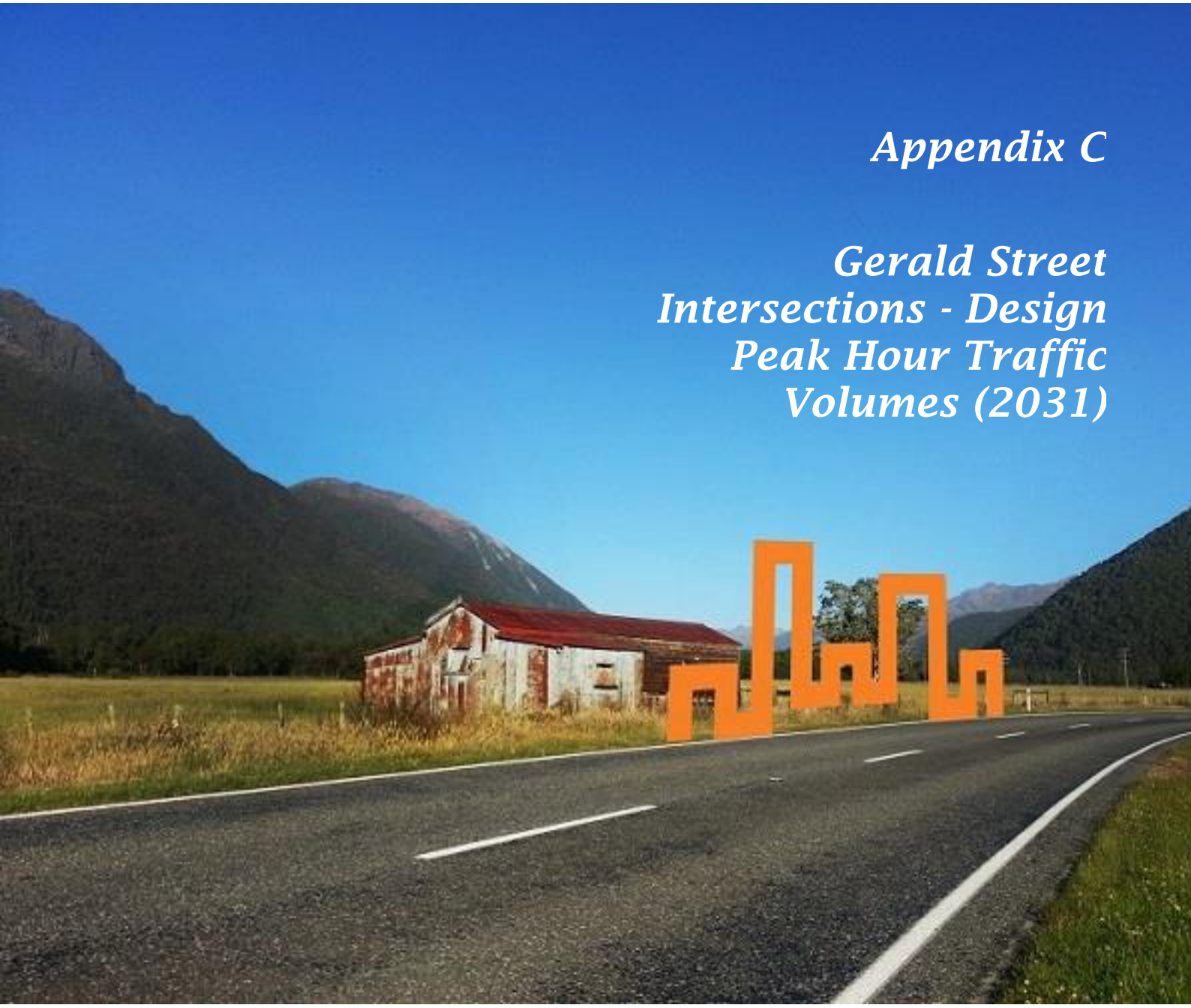

Appendix C

Gerald Street Intersections - Design Peak Hour Traffic Volumes (2031)

Design Traffic Volumes

Table C-1 Gerald Street / Springs Road / Ellesmere Junction Road

Approach	Movement	Hour Starting			
		7:00	8:00	16:00	17:00
Springs Road (N)	Left	53	74	73	69
	Through	208	320	263	268
	Right	57	107	36	36
Gerald Street (E)	Left	64	143	121	116
	Through	186	274	327	380
	Right	136	135	69	76
Springs Road (S)	Left	28	47	78	77
	Through	313	356	200	199
	Right	51	110	122	110
Ellesmere Junction Road (W)	Left	38	79	190	199
	Through	191	342	348	371
	Right	29	48	84	96
TOTAL		**1,352**	**2,036**	**1,912**	**1,997**

Table C-2 Gerald Street / West Belt Intersection

Approach	Movement	Hour Starting			
		7:00	8:00	16:00	17:00
West Belt (N)	Left	14	55	53	58
	Through	226	369	612	603
	Right	23	38	112	124
Gerald Street (E)	Left	18	49	53	65
	Through	298	564	463	486
	Right	8	13	11	11
West Belt (S)	Left	58	91	31	35
	Through	8	19	14	10
	Right	35	73	49	56
Gerald Street (W)	Left	9	8	14	10
	Through	2	10	5	9
	Right	25	50	37	40
TOTAL		**725**	**1,338**	**1,455**	**1,507**

Table C-3 Gerald Street / James Street / Edward Street

Approach	Movement	Hour Starting			
		7:00	8:00	16:00	17:00
James Street (N)	Left	216	395	302	321
	Right	16	61	19	19
Edward Street (E)	Through	108	232	232	234
	Right	152	208	403	413
Gerald Street (W)	Left	11	33	20	20
	Through	112	266	240	262
TOTAL		**616**	**1,195**	**1,216**	**1,269**

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Appendix D

Cost Estimate Details

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Appendix D

Street work cost estimate details

1. Introduction

Cost estimates for the street and intersection works described in this report have been prepared and are outlined below. The works were estimated by consultants GHD.

The estimates are based on scheme design plans at this stage, not detailed design plans. More accurate cost estimates can be undertaken as the design progresses.

All the estimates include the following general allowances:

- 20% professional fees (topographical survey, road and lighting design, landscape design, contract supervision)
- 12.5% preliminary and general (this accounts for the contractor to establish on site and their ongoing contract management).
- 30% contingency (this allows for unforeseen costs that could be encountered during construction). This percentage can be reduced following the topographical survey and all the services locations and potential conflicts are determined.

The indicative power undergrounding costs were obtained from Orion. An allowance for the telecommunications undergrounding has been estimated at 50% of the power undergrounding costs.

The costs to relocate any water and/or sewer pipes has not been included, discussions within the SDC will be required once any location conflicts are identified during detailed design.

The extent of the projects are shown on the following page and the assumption for each precinct and intersection are outlined in Section 2.

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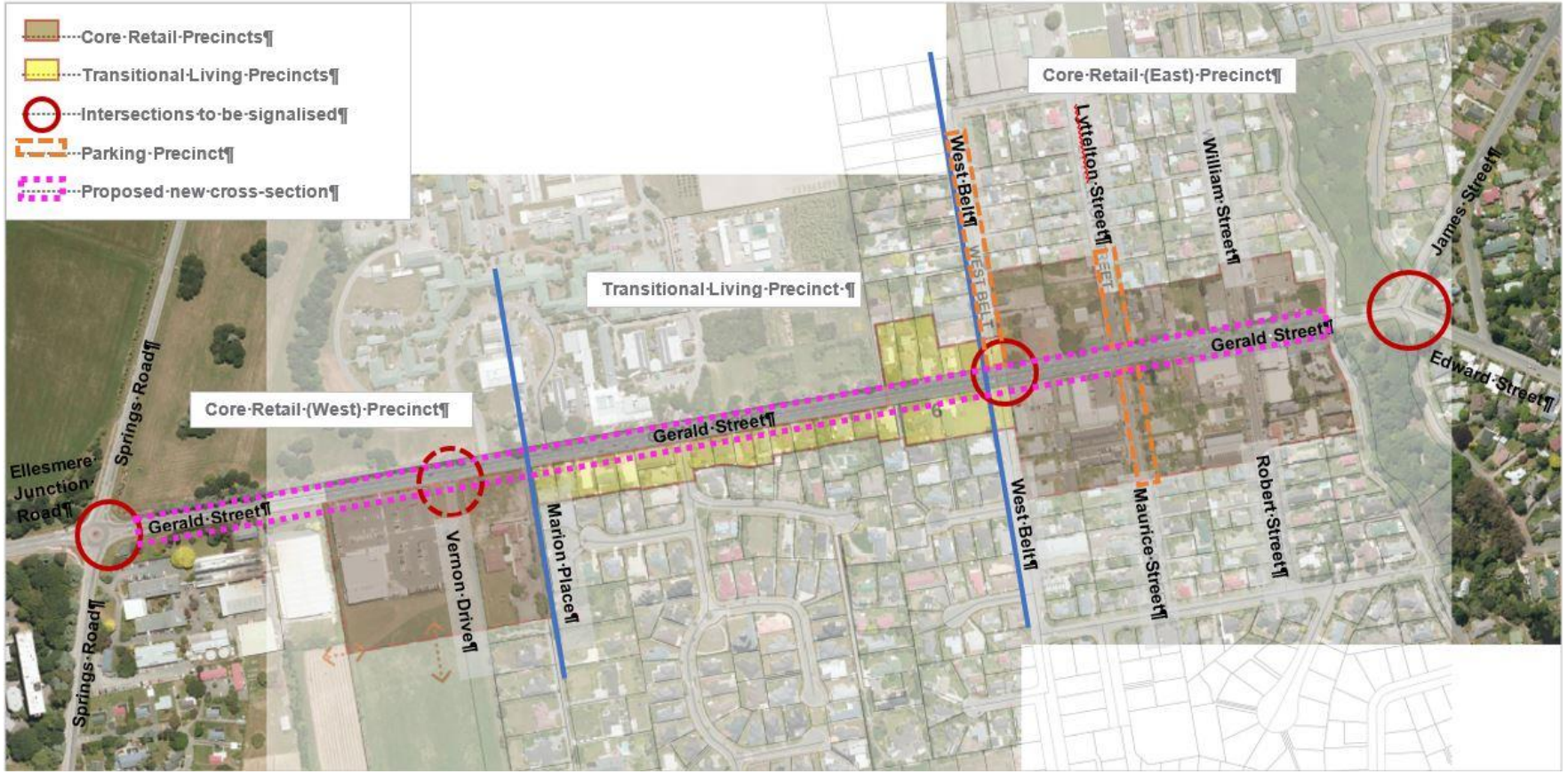

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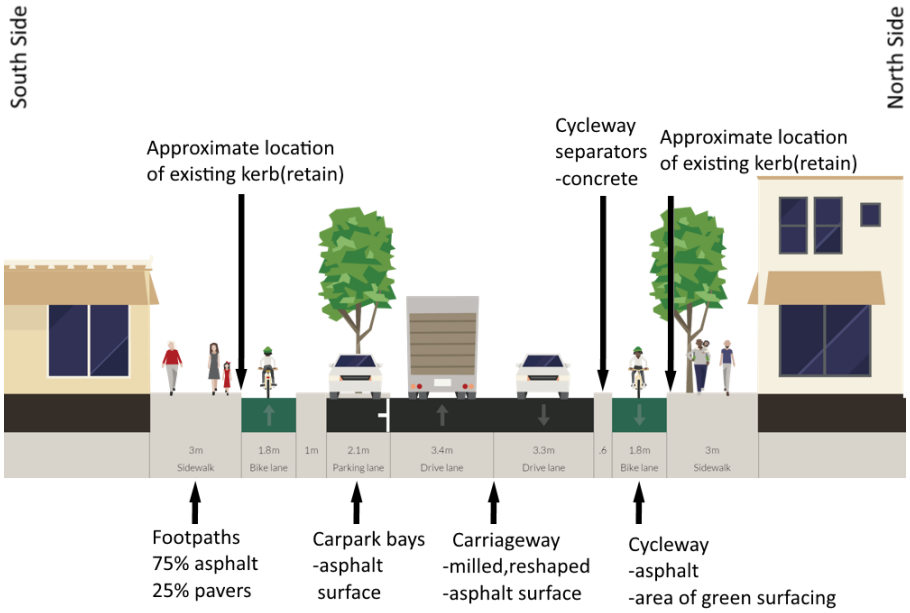
2. Estimate assumptions and allowances

2.1 Core Retail (East) Precinct

Component	Assumption/allowance
Carriageway works	• Kerb and channel not renewed as position aligns with the cross section • Allowance for milling and reshaping the carriageway works • All side road thresholds to be cobblestone
Footpaths	• Areas shown as cobblestone (plaza) have an allowance for pavers equivalent to blue stone pavers. • Allow for other footpaths to be 75% asphaltic concrete, 25% cobbles (feature strips) • Allow for 500mm flush cobblestone strips each side of zebra crossings
Landscaping/street furniture	• $50,000 lump sum allowance for street trees, cycle parking, rubbish bins, seating etc.
Cycleway	• Allow for green surfacing at all driveways • Allow for 2 stick on separators at business driveways (boundary and interface with traffic lane) • Separator based on raised pressed concrete islands
Utilities/services	• Undergrounding overhead services estimated as optional • Allowance for street light upgrade to LED and decorative poles
Temporary traffic management	• Assumed a 20 week construction period @$1000/per week



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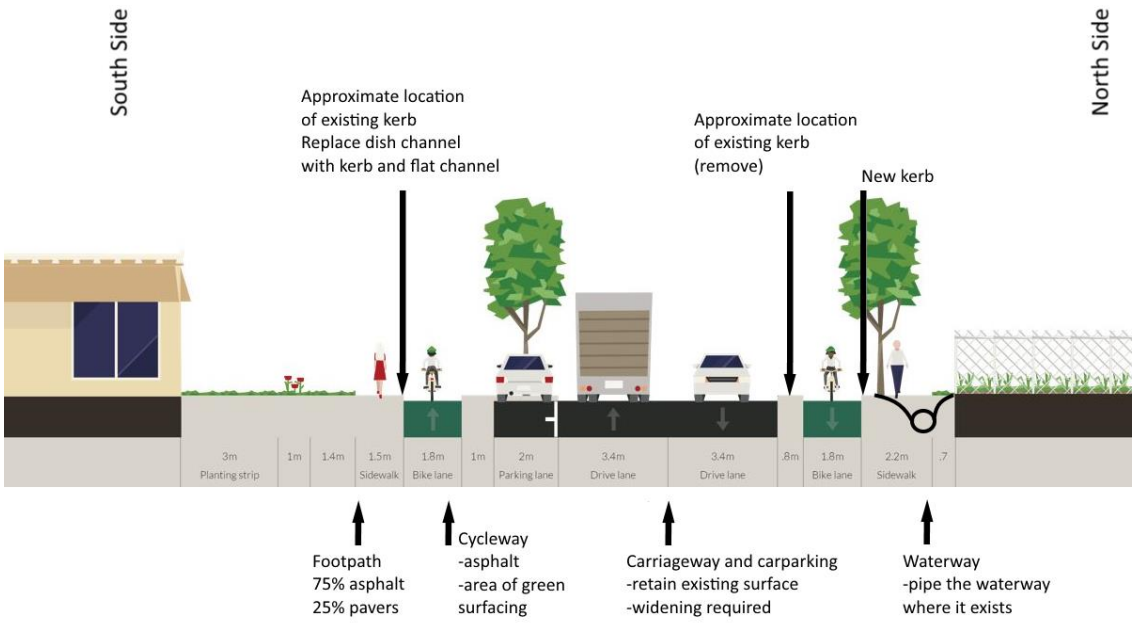
2.2 Transitional Living Precinct

Component	Assumption/allowance
Carriageway works	• Kerb and channel on north side renewed as position does not aligns with the cross section • Kerb and channel on south side renewed as old dish channel • Allowance for milling road surface and asphaltic concrete overlay
Footpaths	• Allow for footpaths to be 75% asphaltic concrete, 25% cobbles (feature strips)
Landscaping/street furniture	• $17,000 allowance for street trees and landscaping
Cycleway	• Allow for green surfacing at all driveways • Allow for 2 stick on separators at business driveways (boundary and interface with traffic lane) • Allowance for regular cycle symbol markings • Separator based on raised pressed concrete islands
Utilities/services	• Undergrounding overhead services estimated as optional • Allowance for street light upgrade to LED and decorative poles • Assumed all power and telecommunications infrastructure currently in the footpath except at road crossings • Allowance for piping of 170m open waterway (525mm diameter pipe)
Temporary traffic management	• Assumed a 16 week construction period @$1000/per week



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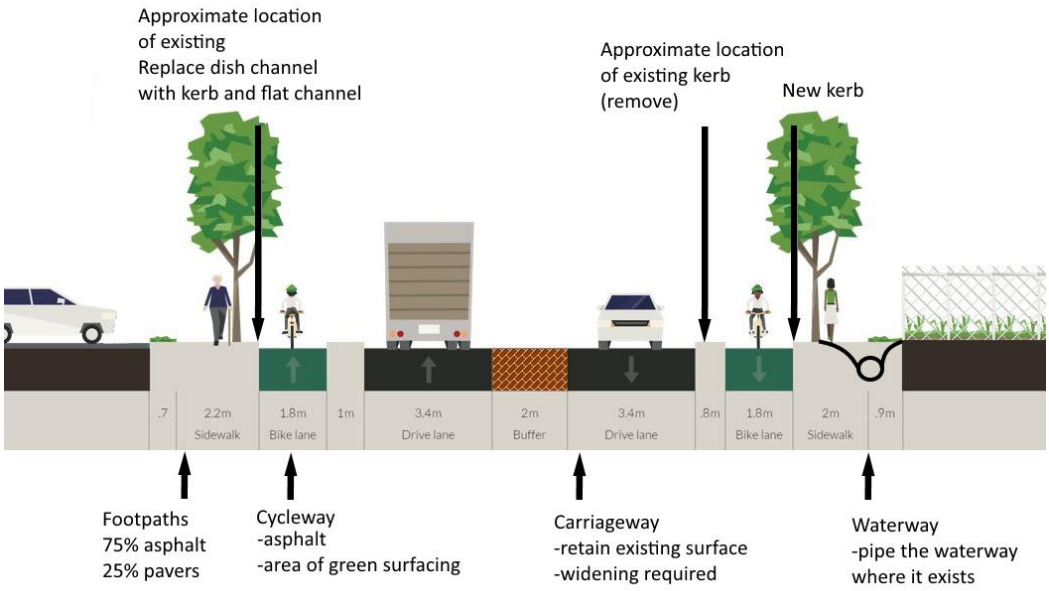
2.3 Core Retail (West) Precinct

Component	Assumption/allowance
Carriageway works	• Kerb and channel on north side renewed as position does not aligns with the cross section • Kerb and channel on south side renewed as old dish channel
Footpaths	• Allow for footpaths to be 75% asphaltic concrete, 25% cobbles (feature strips)
Landscaping/street furniture	• $17,000 allowance for street trees and landscaping
Cycleway	• Allow for green surfacing at all driveways • Allow for 2 stick on separators at business driveways (boundary and interface with traffic lane) • Separator based on raised pressed concrete islands
Utilities/services	• Undergrounding overhead services estimated as optional • Allowance for street light upgrade to LED and decorative poles • Allowance for piping of 280m open waterway (525mm diameter pipe)
Temporary traffic management	• Assumed a 16 week construction period @$1000/per week



2.4 Westbelt Parking Precinct

The cost is create the parking precinct is made up of renewal works and improvements works as follows:

- Renewal (new kerb, new footpath) $320,000
- Improvements (carriageway works to create spaces, threshold, landscaping) $170,000
- Undergrounding $140,000

Component	Assumption/allowance
Carriageway works	• Kerb and channel on east side renewed as old dish channel • Add new pavement in 50% of the unsealed eastern shoulder and chip seal eastern shoulder • Create indented car park bay on west side
Footpaths	• Allow for new 2.5m wide asphaltic concrete footpath on east side
Amenity	• Cobblestone threshold at northern end with street trees
Utilities/services	• Undergrounding overhead services estimated as optional
Temporary traffic management	• Assumed a 5 week construction period @$1000/per week

2.5 Maurice Street Parking Precinct

The cost is create the parking precinct is made up of renewal works and improvements works as follows:

- Renewal (new kerb, new footpath) $225,000
- Improvements (carriageway works to create spaces, threshold, landscaping) $85,000
- Undergrounding $60,000

Component	Assumption/allowance
Carriageway works	• Kerb and channel on east side renewed as old dish channel • Shoulder reconstruction
Footpaths	• Allow for new 2.5m wide asphaltic concrete footpath on west side
Amenity	• Cobblestone threshold at southern end with street trees • Landscaping beds with nib kerb edging
Utilities/services	• Undergrounding overhead services estimated as optional
Temporary traffic management	• Assumed a 5 week construction period @$1000/per week

2.6 Lyttelton Street Parking Precinct

The cost is create the parking precinct is made up of renewal works and improvements works as follows:

- Renewal (new kerb, new footpath) $245,000
- Improvements (carriageway works to create spaces, threshold, landscaping) $125,000
- Undergrounding $75,000

Component	Assumption/allowance
Carriageway works	• Kerb and channel on east side renewed as old dish channel • Create carriageway where grass berm exists
Footpaths	• Allow for new 2.5m wide asphaltic concrete footpath on east side
Amenity	• Cobblestone threshold at southern end with street trees • Landscaping beds with nib kerb edging
Utilities/services	• Undergrounding overhead services estimated as optional •
Temporary traffic management	• Assumed a 5 week construction period @$1000/per week

2.7 Intersection of Gerald Street/Springs Road

Component	Assumption/allowance
Carriageway works	• Kerb and channel renewed to align with design • Allowance for carriageway reshaping
Footpaths	• Allow for footpaths to be 75% asphaltic concrete, 25% cobbles (feature strips) • Allowance for tactile pavers
Traffic signal hardware	• $490,000 allowance for signals hardware
Cycle facilities	• Allow for green surfacing at conflict points and advanced stop boxes • Allowance for cycle holding rails
Utilities/services	• Allowance for undergrounding overhead services • Allowance for street light upgrade to LED and decorative poles • Allowance for piping of 100m open water race (525mm diameter pipe)
Temporary traffic management	• Assumed a 10 week construction period @$1000/per week

2.8 Intersection of Gerald Street/Vernon Drive

The costs of constructing this intersection either as a roundabout or traffic signals are likely to be of the same magnitude, the difference is that a signalised intersection will require signals hardware. In the absence of either a roundabout or traffic signals designs it is assumed the cost difference will be approximately the cost of the traffic signals hardware. This is estimated to be approximately $300,000.

2.9 Intersection of Gerald Street/Westbelt

Component	Assumption/allowance
Carriageway works	• Kerb and channel renewed to align with design • Allowance for carriageway reshaping
Footpaths	• Allow for footpaths to be 75% asphaltic concrete, 25% cobbles (feature strips) Allowance for tactile pavers
Traffic signal hardware	• $375,000 allowance for signals hardware
Cycle facilities	• Allow for green surfacing at conflict points and advanced stop boxes • Allowance for cycle holding rails
Utilities/services	• Allowance for street light upgrade to LED and decorative poles
Temporary traffic management	• Assumed a 8 week construction period @$1000/per week

2.10 Intersection of Gerald Street/James Street/Edward Street

Component	Assumption/allowance
Carriageway works	• Kerb and channel renewed to align with design • Allowance for some carriageway reshaping
Footpaths	• Allow for footpaths to be 75% asphaltic concrete, 25% cobbles (feature strips) • Allowance for tactile pavers
Traffic signal hardware	• $340,000 allowance for signals hardware
Cycle facilities	• Allow for green surfacing at conflict points and advanced stop boxes • Allowance for cycle holding rails
Utilities/services	• Allowance for street light upgrade to LED and decorative poles
Temporary traffic management	• Assumed a 8 week construction period @$1000/per week