



**Ryman Healthcare Retirement Village
Park Terrace, Christchurch**

Construction Traffic Management Plan (CTMP)

4 November 2020



4 Leek Street, Newmarket
PO Box 128259, Remuera 1541, Auckland
Ph. 09 869 2825
www.commute.kiwi



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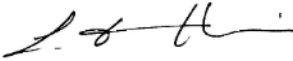
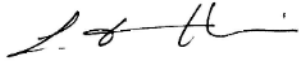
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1 INTRODUCTION

This draft Construction Traffic Management Plan ("CTMP") has been produced to detail possible temporary traffic management measures that may be employed during the construction of a retirement village across two sites on Park Terrace, Christchurch. The two sites are located at 78 Park Terrace ("Peterborough site") and 100 Park Terrace and 20 Dorset Street ("Bishopspark site").

The construction process is generally confined on-site, with works in the road corridor occurring for establishment of the pedestrian gantries & offices, all on-street construction loading areas, temporary and permanent site access points together with the construction works for the proposed signalised pedestrian crossing on Salisbury Street (if required). It will not be necessary to limit vehicles or pedestrian access along any roads during the general operations. Some on-street parking will need to be temporarily removed to accommodate truck tracking and on-street loading areas.

The primary traffic effects relate to the traffic generation associated with the removal of excavated material, concrete pours and the transport of materials and staff to and from the site and how portions of site will operate with elderly residents while the construction is completed. By way of summary, it is noted that these effects can be managed with minimal effect to the road network and elderly residents.

The CTMP has been based on the best available information regarding the earthworks and construction for the proposed development at this time. However, it cannot be guaranteed that the methodology described herein will be that employed verbatim at the time of construction.

2 EXISTING ENVIRONMENT

2.1 TRANSPORT ENVIRONMENT

Park Terrace and Salisbury Street are classified as 'Central City Local Distributors' in the District Plan, while Dorset Street has no roading classification. The speed limit on Park Terrace, Dorset Street and Salisbury Street in the area is 50 km/hr.

Park Terrace runs in a general north-south alignment connecting to Bealey Avenue to the north and transitioning to Rolleston Avenue to the south. Bealey Avenue is classified as a major arterial road in the District Plan and is located approximately 300-500m north of the Site.

Park Terrace in front of the Bishopspark site has two lanes in either direction separated by a solid yellow line, with no on-street parking permitted on both sides of the road. Park Terrace adjacent to the Peterborough site has two northbound lanes and one southbound lane, with indented parking spaces provided on the southbound lane (along the frontage of the Peterborough site). Pedestrian footpaths are provided on either side of the road near the Site.

Salisbury Street connects to Park Terrace at its western end and allows for one-way movement only (eastbound). A total of two lanes are provided, with on-street parking permitted on both sides of the road. Salisbury Street provides four approach lanes (two through lanes, one left turn and one right turn lane) and a cycle lane at the intersection with Montreal Street and Victoria Street. Pedestrian footpaths are provided on either side of the road.

The Park Terrace / Salisbury Street intersection provides a separate left turn and right turn slip lane into Salisbury Street, with no access provided onto Park Terrace from Salisbury Street. Park Terrace at the intersection with Salisbury Street provides a right turn bay for vehicles turning into Salisbury Street and a solid pedestrian refuge island.

Figure 2-1 is an aerial photograph showing the Site in relation to the surrounding road network.

Figure 2-1: Site Location



Dorset Street adjoins Park Terrace at its western end and provides one single lane in either direction. Indented on-street parking is permitted on both sides of the road. Pedestrian footpaths provided on either side of Dorset Street.

The intersection between Park Terrace and Dorset Street is a give-way controlled intersection with priority onto Park Terrace.

The Bishopspark site was previously occupied by the Bishops Park Retirement Village, and the remaining buildings on the Bishopspark site are currently being demolished. The Peterborough site is currently unoccupied.

Park Terrace is categorised as a Level 2 road in terms of the Code of Practice for Temporary Traffic Management (CoPTTM) while all other surrounding roads are Level 1.

2.2 EXISTING TRAFFIC VOLUMES

Traffic data from Christchurch City Council indicates that Park Terrace (along the Site frontage) had an estimated annual daily traffic (ADT) of 16,915 vehicles per day ("vpd") and peak hour volume of 1,856 vehicles per hour ("vph") in March 2018¹.

¹ Christchurch City Council Traffic Count Data <http://ccc.interpret.co.nz/trafficcount/>

Traffic count data along Salisbury Street and Dorset Street is not available in the Christchurch City Council Traffic Count Database.

Recent traffic surveys commissioned by Commute have been undertaken at the intersection of Park Terrace and Salisbury Street during the peak hours of 7am-9am and 3pm to 6pm on the 25th June 2019. These recent counts are outlined in Table 2-1

Table 2-1: Peak traffic volumes

	AM				AM Total	PM				PM Total
	Cars	Trucks	Buses	Cyclists		Cars	Trucks	Buses	Cyclists	
Park Terrace (North)	1221	10	9	57	1297	550	9	3	18	580
Left into Salisbury St	377	2	2	3	384	227	3	1	4	235
Thru to Park Terrace (South)	844	8	7	54	913	323	6	2	14	345
Park Terrace (South)	658	12	6	38	714	1271	8	3	47	1329
Thru to Park Terrace (North)	612	10	6	11	639	1197	8	3	24	1232
Right into Salisbury St	46	2	0	27	75	74	0	0	23	97
Grand Total	1879	22	15	95	2011	1821	17	6	65	1909

2.3 ROAD SAFETY

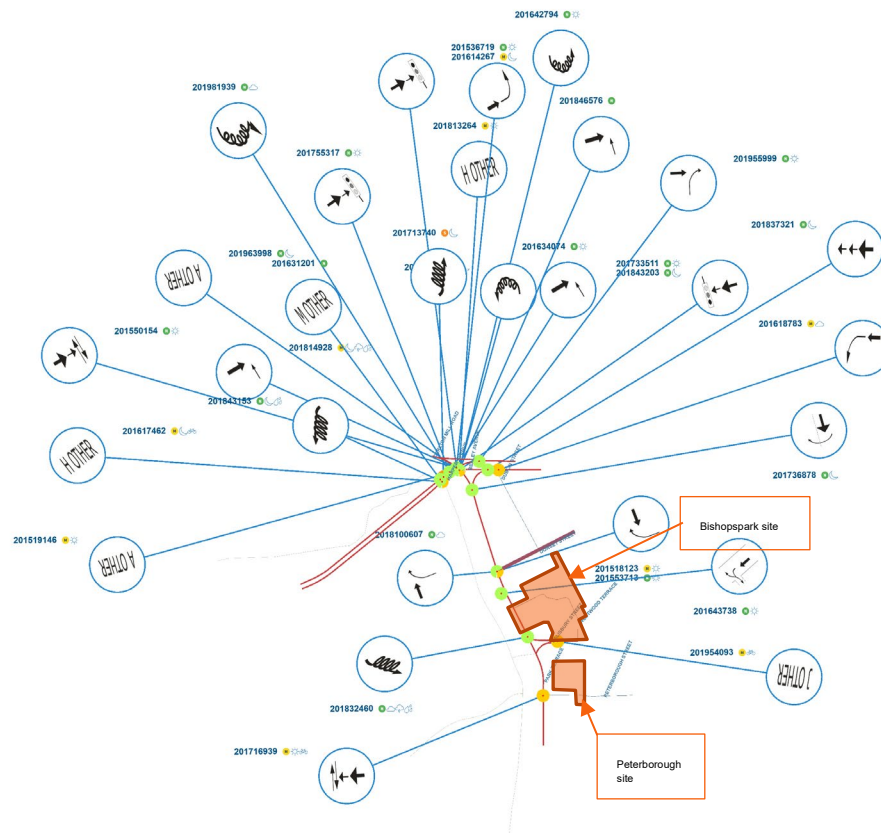
A search of the New Zealand Transport Agency's ("NZTA") Crash Analysis System ("CAS") has been carried out to identify all reported crashes in the vicinity of the Site during the five-year period 2015 – 2019. The search area included the length of Dorset Street (including intersection with Dublin Street) and Salisbury Street near the Site and the length of Park Terrace between Bealey Avenue and Kilmore Street, including the intersections of Park Terrace / Bealey Avenue / Harper Avenue, Park Terrace / Dorset Street, Park Terrace / Salisbury Street and Park Terrace / Peterborough Street.

The crash history can be summarised as follows:

- Three crashes occurred at the Dorset Street / Park Terrace intersection, of which one crash resulted in four minor injuries when the driver misjudged the intentions of another party. The remaining non-injury crashes resulted from failing to give-way at a priority traffic control;
- 16 crashes occurred at the Park Terrace / Bealey Avenue / Harper Avenue intersection. Five of these crashes resulted in a minor injury with 2 as a result of failure to stop at a red light, one rear end crash and two crashes relating to mopeds.
- One non-injury crash occurred at the Park Terrace / Salisbury Street intersection caused by loss of control;
- One minor injury crash occurred at the Park Terrace / Peterborough Street intersection when a vehicle hit the rear end of a cyclist slowing to cross traffic;
- Two non-injury crashes occurred on Park Terrace near the Site, both as a result of failing to check / notice another party; and
- One minor injury crash occurred on Salisbury Street near the Site when a cyclist riding in the wrong direction was hit by an oncoming vehicle.

The collision diagram for the surrounding area is provided in Figure 2-2 below.

Figure 2-2: Collision Diagram



There is no history of accidents occurring that relate specifically to movements into and out of the former Bishopspark Retirement Village, which is located in a similar location to the proposed access for the Bishopspark site.

There are no noticeable patterns in the reported crashes in the area and therefore no issues with the form of the intersections in the area have been identified.

From the assessment of the crash history, there is no indication that the Proposed Village will have a negative effect on road safety in the surrounding road network.

3 THE PROPOSAL

Ryman proposes to construct and operate a comprehensive care retirement village comprising of the following:

- At the Bishopspark site:
 - 85 Apartments;
 - 54 Assisted Living Suites;
 - 35 Dementia care rooms;
 - 20 Hospital care rooms;
 - 15 Rest Home care rooms;
 - 138 basement parking spaces; and
 - 6 at grade spaces.

- At the Peterborough site:
 - 80 independent apartments;
 - 77 basement parking spaces; and
 - 6 on grade spaces.

The main access (for residents and staff) for the Bishopspark site will be provided off Park Terrace. Loading access will be provided from Dorset Street. No vehicle access will be provided onto Westwood Terrace. Ryman has Right Of Way over this private way and once construction is complete, will only use this road for pedestrian access to Salisbury Street.

Access to the Peterborough site will be provided via Park Terrace (entrance only) and Salisbury Street (exit only). Figures 3-1 and 3-2 show the proposed layouts for each of the sites.

Figure 3-1: Bishopspark site proposed layout

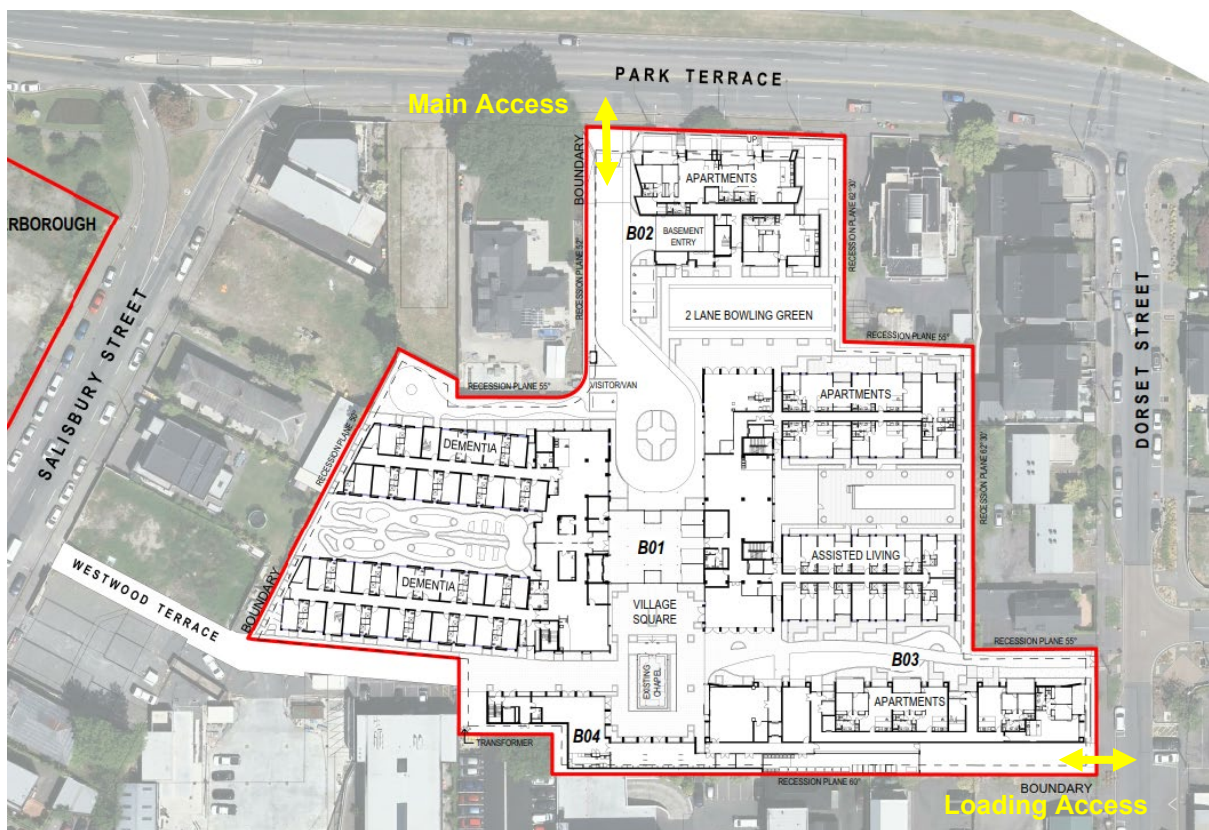
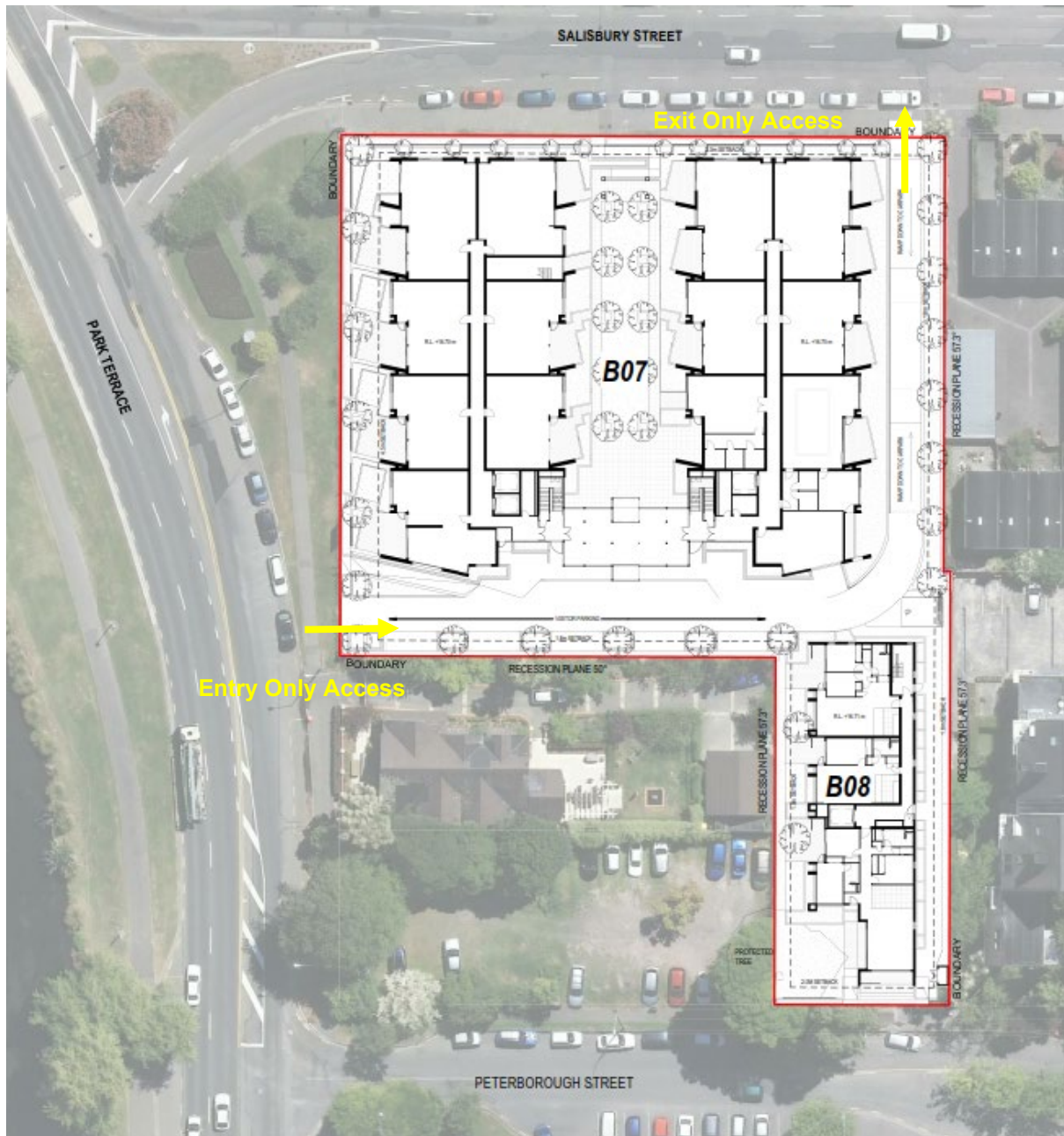


Figure 3-2: Peterborough site proposed layout



4 OCCUPATION OF ROAD AND ROAD RESERVE REQUIREMENTS

Work in the roading corridor will be confined to:

- installation of the pedestrian gantries / containers along site frontages (as applicable);
- establishment of temporary construction access points;
- establishment of the on-street loading zones (once excavation works are complete);
- construction of permanent access points;
- any works associated with utilities;
- (if required) upgrade of Salisbury Road; and
- fencing works (although this may be able to occur from wholly within the site).

In all cases, for work within the roading corridor a specific TMP for each operation that minimises disruption to motorists and pedestrians will be prepared and approved (separate to this CTMP approval).

No materials or plant will be stored within the road reserve.

5 CONSTRUCTION OPERATIONS

5.1 SITE ACCESS

The site access provisions are discussed within each stage of construction below. It is anticipated that over the course of construction there will be a numerous access points for each site.

For the Bishopspark site, this will include three access points on Park Terrace (two temporary), one access point on Dorset Street and one temporary informal access on Westwood Terrace.

For the Peterborough site, this will include three access points on Salisbury Terrace (two temporary) and one onto Park Terrace.

At this stage, a temporary sales office is not proposed to be on either site. If one is established that requires the use of a different access point, this will need to be approved (separate to this CTMP).

5.2 STAGING OF WORKS

5.2.1 CONSTRUCTION DATES

It is anticipated that site preparation works will commence in June 2021 and continue until around June 2025 (four years).

5.2.2 HOURS OF OPERATION

The site will operate Monday to Friday 7:00am to 6:00pm and 7:30am to 6:00pm on Saturdays.

Given trucks are not travelling on residential roads to access points, restrictions to truck movements during morning and evening peak periods are not considered necessary.

5.2.3 CONSTRUCTION PROGRAMME

It is understood that within each site the construction operation is to be divided into four main stages, from site preparation works through to the vehicle crossing upgrades, although stages will overlap with earthworks being undertaken over two earthworks seasons. A portion of each site may be opened up to elderly residents while the remainder of the construction on the sites is completed.

Table 5-1 below identifies the stages, estimated duration and expected truck movements per day for the Bishopspark site.

Table 5-1: Proposed construction programme for Bishopspark site

Stage	Activity	Hours of Operation	Approximate Duration (weeks)	Expected No. of Truck Movements Per Day
1	Initial site works including chapel strengthening	Mon to Fri 7:00am – 6:00pm Sat 7:30am – 6:00pm	Initial site works: 8 weeks Chapel : 26 weeks	14/60 ^a 6
2	Earthworks / foundations	Mon to Fri 7:00am – 6:00pm Sat 7:30am – 6:00pm	52 to 65 weeks	50/?100 ^b
3	Construction and Fitting out	Mon to Fri 7:00am – 6:00pm Sat 7:30am – 6:00pm	Staged over 156 weeks	50/200 ^b
4	Vehicle Crossings / road upgrade fence	Mon to Fri 7:00am – 6:00pm Sat 7:30am – 6:00pm	6 weeks	10

- a) additional truck movements for portacom /pedestrian gantry delivery
b) additional truck movements during each concrete pour

The above truck number are movements per day (ie a truck entering and then leaving the site is counted as two movements).

Table 5-2 below identifies the stages, estimated duration and expected truck movements per day for the Peterborough site.

Table 5-2: Proposed construction programme for Peterborough site

Stage	Activity	Hours of Operation	Approximate Duration (weeks)	Expected No. of Truck Movements Per Day
1	Initial site works	Mon to Fri 7:00am – 6:00pm Sat 7:30am – 6:00pm	6 weeks	14/120 ^a
2	Earthworks / foundations	Mon to Fri 7:00am – 6:00pm Sat 7:30am – 6:00pm	108 weeks spread over three earthworks seasons (worst case operating for only 786 weeks)	86/100 ^b
3	Construction and Fitting out	Mon to Fri 7:00am – 6:00pm Sat 7:30am – 6:00pm	Staged over 104 weeks	50/200 ^b
4	Vehicle Crossings / road upgrade fence	Mon to Fri 7:00am – 6:00pm Sat 7:30am – 6:00pm	6 weeks	10

- a) additional truck movements for portacom /pedestrian gantry delivery
b) additional truck movements during each concrete pours

Each of these stages is discussed further below.

5.2.4 STAGE 1: INITIAL WORKS

Initial site works will allow for safe access to each of the sites. This stage typically involves the delivery of machinery/ plant and getting the site ready for the following stages including the erection of safety fences around the sites to prevent unauthorised vehicle or pedestrian access.

The pedestrian gantries will be installed on the footpaths before the earthworks commence. This includes on Park Terrace for the Bishopspark site and on Salisbury Street and Park Terrace for the Peterborough site.

With limited room on the site once construction starts, site offices, toilets and lunchrooms will also be installed on top of the pedestrian gantries. This will likely occur at the same time.

Site Access points may be upgraded/established during this time.

For the Bishopspark site, the existing chapel needs to be strengthened prior to the construction of any retaining walls and earthworks.

For the Bishopspark site, the establishment works are estimated to take eight weeks with the chapel strengthening some six months. Heavy vehicle volume into the site is expected to be minimal with up to 14 movements per day (seven trucks) for the set up works and 6 truck movements per day for the chapel strengthening works. Approximately 20-30 trucks delivering the portacoms/gantries will be required. Container footings may need to be installed to accommodate the gantries. The extent of the preparation works will need to be finalised, however, it is expected that during concrete pours, concrete truck movements would be concentrated with up to six concrete trucks expected per pour.

For the Peterborough site, these works are estimated to take six weeks. Heavy vehicle volume into the site is expected to be minimal with up to 14 movements per day (seven trucks). Approximately 45 - 60 trucks delivering the portacoms/gantries will be required. Container footings may need to be installed to accommodate the gantries. The extent of the preparation works will need to be finalised, however, it is expected that during concrete pours, concrete truck movements would be concentrated with up to six concrete trucks expected per pour.

5.2.5 STAGE 2: EARTHWORKS / FOUNDATIONS

This stage of work covers the demolition of excavation and removal of earth from each site, retaining wall construction and all foundations/ basement slab works.

This stage is expected to comprise the higher truck volumes and will likely cause the main impact to the local road network / egress point as all exiting trucks will be fully laden.

The earthworks stage for the Bishopspark site will occur over one earthwork season. This phase provides for the removal of 37,000m³ of material from the site. It is likely that this material will be imported / removed using truck and trailer units with capacity of up to 17m³ (likely average of 15 m³). This translates to a total of 2,470 truck and trailer loads of material to be removed from the site. Allowing for a 36 week earthworks period (essentially worst case of all in one earthworks season), this translates to 69 truck and trailer loads per week.

Using 5.5 days per week this is 13 truck and trailer loads per day (25 movements). Given natural variations in weather / operation a total of 30 truck movements per day for earthworks removal has been assumed. On average, over an 8 hour day, this equates to 4-6 truck and trailers entering or leaving the site per hour for each day of the earthworks season.

There will also be up to 10 other truck units per day associated with earthworks entering and leaving the site during the earthworks phase.

Vehicle trips by construction staff and contractors would be additional to this but would typically be in vehicles of smaller dimensions.

For the Peterborough site, this phase provides for the removal of 18,000m³ of material from the site. This translates to a total of 1,200 truck and trailer loads of material to be removed from the site. Allowing for a 36 week earthworks period (essentially worst case of all in one earthworks season), this translates to 33 truck and trailer loads per week. As for the Bishopspark site, using 5.5 days per week this is 6 truck and trailer loads per day (12 movements). Given natural variations in weather / operation a total of 15 truck movements per day for earthworks removal has been assumed. On average, over an 8 hour day this equates to 2-4 truck and trailers entering or leaving the site per hour for each day of an earthworks season.

There will also be up to 10 other truck units per day associated with earthworks entering and leaving the site during the earthworks phase.

Vehicle trips by construction staff and contractors would be additional to this but would typically be in vehicles of smaller dimensions.

The destination for removed material has not yet been finalised but is expected to be via the arterial and State Highway network supporting Christchurch.

5.2.6 STAGE 3 CONSTRUCTION AND FIT OUT

Building construction and fitting out will follow the completion of the site excavation and foundation works. It is understood for the Bishopspark and Peterborough sites that this stage of construction will occur over approximately 104 weeks (each site).

For each of the sites, general traffic volumes are understood to be similar to the excavation stage. For the Bishopspark site this is approximately 40-50 trucks movements per day with a maximum of 6 movements per hour, although a higher peak of up to 200 heavy vehicle movements in a day (approximately 20 vehicle movements per hour) may occur during large scale concrete pours. For the Peterborough site, approximately 40-50 trucks movements per day are expected with a maximum of 6 movements per hour. Similar to the Bishopspark site, a higher peak of up to 200 heavy vehicle movements in a day (approximately 20 vehicle movements per hour) may occur during large scale concrete pours.

Most traffic will be by vehicles smaller than truck and trailer units (8m trucks) although some semi-trailer movements may be required to bring in structural framing components and tilt slabs. It is likely that a large mobile crane or tower crane will be used.

Vehicle trips by construction staff and contractors would be additional to this but would typically be in vehicles of smaller dimensions.

5.2.7 STAGE 4: ROADING CORRIDOR WORKS

Work in the roading corridor will be confined to:

- installation of the pedestrian gantries along site frontages (as applicable). To enable the pedestrian gantries on Park Terrace at the Bishopspark site, some street lighting will need to be removed together with a large street sign;
- establishment of temporary construction access points;
- establishment of the on-street loading zones (once excavation is complete);
- construction of permanent access points;
- any works associated with utilities;
- upgrade works to Salisbury Terrace (establishment of pedestrian crossing if required); and

- fencing works (although this may be able to occur from wholly within the site).

In all cases, for work within the roading corridor a specific TMP that minimises disruption to motorists and pedestrians will be prepared and approved for each of these works (separate to this CTMP approval).

The establishment of temporary access points and widening of the existing access points will occur early in the construction programme. The proposed permanent vehicle crossings will need to be finished during this stage. These works are expected to take one-two weeks depending on the standard of finish that was provided at the initial stages of the development. All temporary vehicle crossings will need to be reinstated as kerb and channel and footpath/cycleway.

Each vehicle crossing works will be undertaken by mostly concrete trucks of approximately 8m in length. Six-wheeler trucks will transport the materials. For each of the larger crossings there could be up to 6 trucks per day equating to 12 vehicle movements with a maximum of 5 trucks per hour.

The construction of the fence is expected to take up to 8 weeks for the Bishopspark site and 6 weeks for the Peterborough site. For each site, it is expected that there will be up to 4 trucks per day (8 vehicle movements) with a maximum of 3 trucks per hour.

5.3 TRAFFIC MANAGEMENT FOR TRUCK ACCESS

5.3.1 BISHOPSPARK SITE

The location of the proposed construction access points for the Bishopspark site are shown in Figure 5-1.

Figure 5-1: Site Access Points for Bishopspark site



Five access points will be available (at some stage). This includes:

- two temporary access points on Park Terrace;
- the proposed permanent access point on Park Terrace;
- the proposed service access on Dorset Street (not used for construction); and
- an informal access on Westwood Terrace (limited use).

Initially, it is proposed to establish two temporary access points on Park Terrace (with loading/unloading occurring wholly within the site) until construction within the site reaches the boundary line. Once this occurs, an on-street loading zone on Park Terrace will need to be established to enable delivery of construction materials to the site. For public safety, pedestrian gantries will be installed along the footpath (prior to any earthworks). Some signage and lighting will need to be temporarily removed to accommodate the gantries. With limited room on-site for construction facilities, offices, lunchrooms and toilet portacoms will be installed on top of the gantries with lighting overhead.

The proposed permanent site access points on Park Terrace could also be used for construction. The Park Terrace access may also be used for resident access if the site is partially opened to elderly residents while the remainder of the site construction is completed.

No specific access point will be established onto Westwood Terrace or Dorset Street as these are not intended to be generally used by staff or construction vehicles. However, some limited access may be required on the Westwood Terrace private lane to enable concrete pours for foundations that are located in this portion of the site.

At all access points TCs/ spotters will be in place to ensure the safety of pedestrians during truck manoeuvres.

5.3.1.1 PARK TERRACE (CONSTRUCTION ACCESSES 1 TO 3)

The location of the Park Terrace proposed construction access points are shown in Figure 5-1. This includes:

- use of two temporary site access points until the excavation and foundation works are complete; and
- use of the permanent site access points (potentially constructed initially as a temporary crossing).

5.3.1.1.1 TEMPORARY SITE ACCESS POINTS (CONSTRUCTION ACCESSES 1 AND 2)

For the excavation works, it is proposed to establish a temporary construction entry access at the northern end of the site on Park Terrace and a temporary construction egress access towards the southern boundary on Park Terrace. Pedestrian gantries will be installed along the footpath between these temporary site access points.

Figure 5-2 shows the tracking of a truck and trailer unit into and from the site on Park Terrace.

Figure 5-2: Truck tracking into and from Park Terrace temporary access points



All trucks will enter from the north and exit via a left turn to the south.

Once the foundations extend out towards the boundary, it will no longer be possible to use these access points. At this time, an on-street loading zone will be established.

5.3.1.1.2 PERMANENT SITE ACCESS POINT (CONSTRUCTION ACCESS 3)

Once the temporary site access points are no longer being used, the proposed permanent access on Park Terrace will be available to use by vans and other light vehicles. This access (once upgraded to permanent status) could be used by residents if a portion of the site (potentially BO3) is opened while the remainder of the site construction is completed.

Over 100m of clear sight distance is provided from the proposed access point on Park Terrace in both directions, meeting the Land Transport Safety Authority "Guidelines for visibility at driveways" (RTS-6 Guide), as shown in Photographs 1 and 2.

Photograph 1: Bishopspark site - Park Terrace access: Sight distance looking north



Photograph 2: Bishopspark site - Park Terrace access: Sight distance looking south



The access will cater for all turning movements.

5.3.1.2 DORSET STREET (CONSTRUCTION ACCESS 4)

Typically, no construction vehicles will use the permanent Dorset Street access.

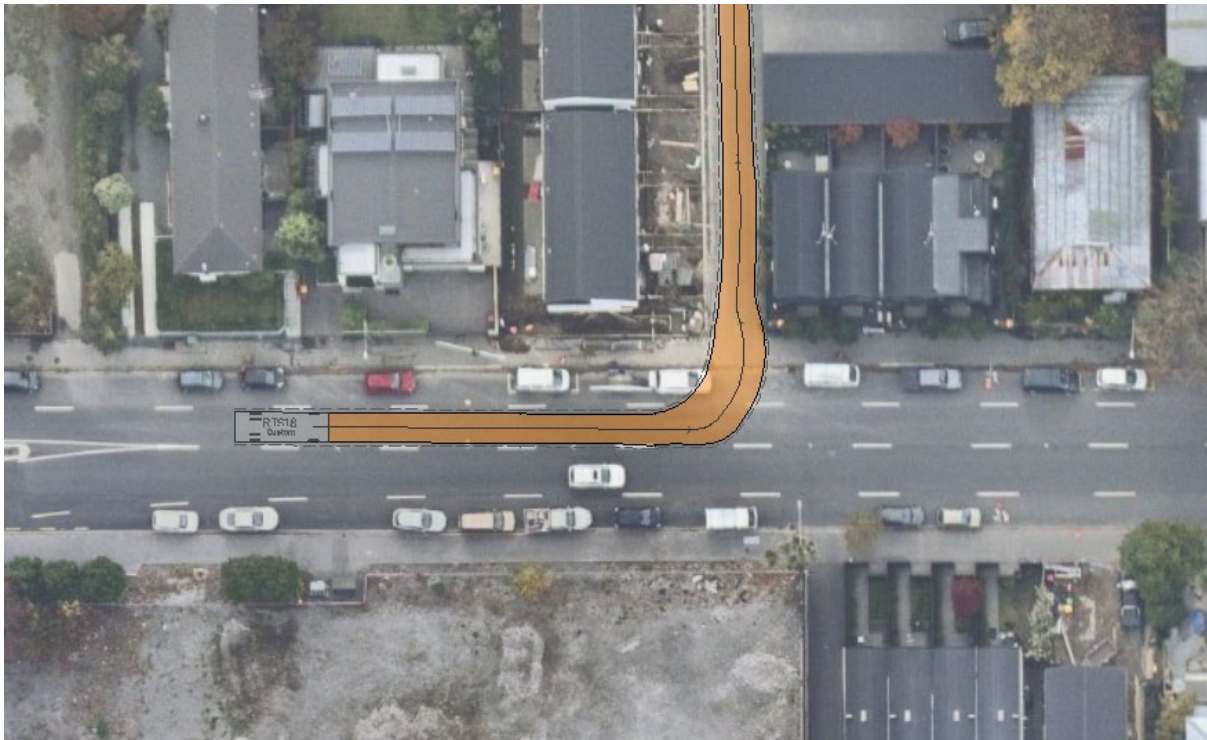
5.3.1.3 WESTWOOD TERRACE (LIMITED CONSTRUCTION ACCESS 5)

The location of the proposed construction access from Westwood Terrace is shown in Figure 5-1. No permanent access is proposed from this location.

Westwood Terrace has a narrow width and as such it is not recommended that this private way is used for general staff / contractors vehicles. Given this, a specific construction vehicle crossing/access will not be established at this location. It may, however, be necessary to use this entry/exit point to the site for some concrete pours located in this portion of the site.

Figure 5-3 shows an 8m truck turning into and from the site. These trucks will need to turn around within the site so as not to reverse along Westwood Terrace.

Figure 5-3: Truck movements at Westwood Terrace access



Any activity on Westwood Terrace will need a number of “spotters” (both near the road and on the lane itself) to control vehicle and pedestrian use.

5.3.1.4 GENERAL MEASURES

A specific TMP will likely need to be established to cover the general movement of trucks and signage for access points. Some traffic management measures could include:

- all trucks / vehicles will enter the site from Park Terrace (and Westwood Terrace when in use) in a forwards direction;
- trucks restricted to a maximum length of 8m at the Westwood Terrace access and the permanent Park Terrace access;
- TCs in place at all site access points to ensure the safety of pedestrians during truck manoeuvres. Given that the site may be operational with elderly residents while construction on the remainder of the site is taking place, it is recommended that additional measures are considered at this time including providing a fence between the open portion of the site and the work site to prevent unauthorised access from residents and operation staff;
- Site Access signs will likely be installed together with Gate identification numbers when more than one access is open. The Advanced Warning T2A sign with supplementary “Trucks Crossing” T217 sign are generally used where a large number of heavy commercial vehicles are required to turn into and out of a site. However, CoPTTM specifies that this Trucks

Crossing sign (along with the Advanced Warning sign) are not used in urban areas. As such, at this time, no Trucks Crossing signage is proposed; and

- a wheel wash facility is recommended at all times where trucks will be travelling over exposed ground within the site. In the unlikely event that any material spillage does occur, the material will be immediately removed from the road. No silt or sediment will be discharged directly into the public stormwater system.

5.3.1.5 DELIVERY OF PLANT & PEDESTRIAN GANTRY INSTALLATION

A digger / excavator will be required to assist with demolition and the excavation/foundations works. Pedestrian gantries together with any site offices/lunchrooms/toilets etc will also need to be delivered and installed at the site.

The following traffic management measures could be included in the TMP:

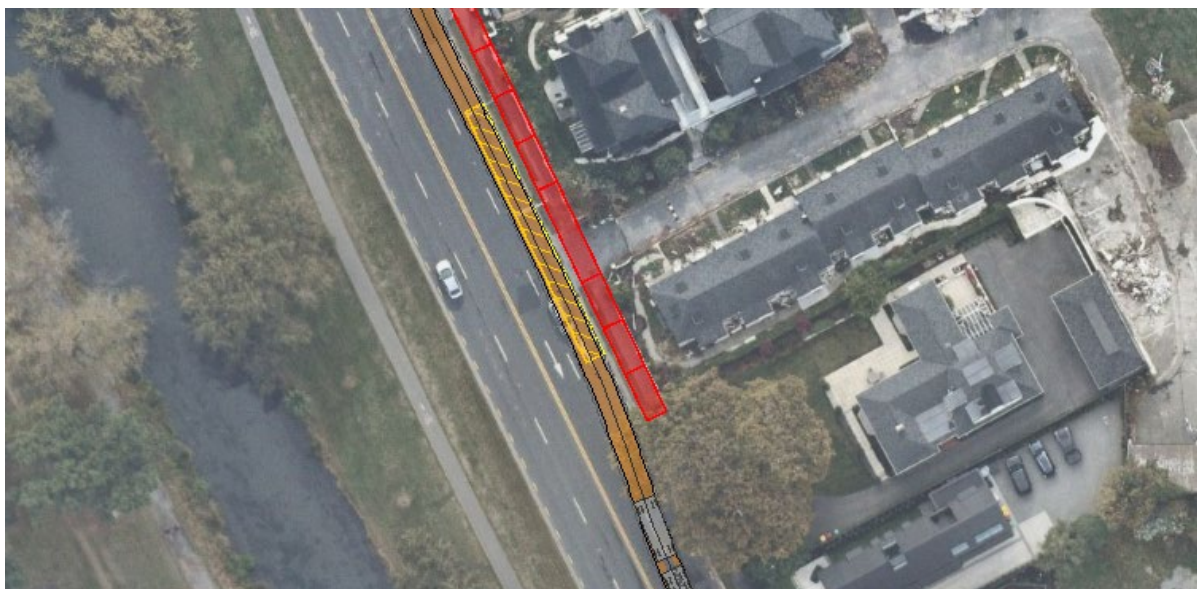
- the installation and removal of the gantry may need to be a night-time operation to minimise disruption to pedestrians, specifically as pedestrians will need to be temporarily stopped while each container is lifted into place;
- specific approval will likely be needed to undertake works outside of general permitted construction hours;
- the containers should be able to be installed from within the site without the need for a shoulder closure on the frontage road. Should any containers not be able to be installed from within the site, a shoulder closure would be required;
- concrete plinths will likely need to be constructed to support the containers (via separate TMP or as part of the overall gantry TMP).

5.3.1.6 ON-STREET LOADING ZONE

The two temporary site access points on Park Terrace will be utilised until construction within the site reaches the Park Terrace boundary. At this time, a loading zone will need established along the site frontage on Park Terrace.

Figure 5-4 shows an 11m truck tracking into the loading zone on Park Terrace. Trucks will need to arrive from the north.

Figure 5-4: 11m truck tracking into Park Terrace on-street loading



Some of the key transportation management measures that could be included in the general loading TMP on Park Terrace:

- an assessment would need to be undertaken as to whether the southbound traffic lane could be temporarily removed so that a semi-permanent loading zone could be installed 24/7 (for use during construction hours) or whether given the traffic volumes, all traffic management for the loading zone would need to be installed daily after 9am and removed before 4pm to allow the traffic lane to be clear in peak periods if necessary;
- no reverse manoeuvres to occur within the loading zone;
- Ryman to co-ordinate deliveries to ensure that up to two large trucks are within the loading zone at any one time as there will not be sufficient room in the loading zone for a third truck to unload. Should an additional truck arrive at the same time, this truck will need to continue along Park Terrace and then legally park in accordance with NZ traffic laws and Council regulations before heading back to the site to enter the loading zone from the north;
- truck to approach from the north and exit to the south upon leaving the loading zone;
- a truck using the loading area will immediately vacate the loading space should access by emergency vehicles be required;
- signs will be covered when the loading zone is not in use. They will not need to be removed daily (save costs and time on installation/removal). Delineation devices (such as a cone) will be provided even when the signs are covered;
- for general operations a pedestrian gantry would need to be installed for deliveries to ensure the safety of pedestrians while materials are unloaded (separate TMP, see above);
- adjacent vehicle access points to remain open at all times.

5.3.1.7 TOWER CRANE & PILING RIGS

Two tower cranes will be erected on the site to enable construction of the buildings. Piling rigs may also be required.

It is understood that the tower cranes will not be able to be erected from inside the of the site. As such, each crane will need to be erected on one of the site frontages. A specific TMP will be required for the operation to erect and dismantle each of the cranes. The following is noted about the traffic management measures likely:

- a mobile tower crane is usually required to erect the tower crane. It is likely that the footpath (possibly need to be strengthened), and traffic lanes will be required to enable sufficient width for the mobile crane outriggers to be accommodated (the width of crane with outriggers could be up to 10m);
- based on the volumes on Park Terrace, the erection operation would need to take place on the weekend;
- Ideally at least one traffic lane would remain open at all times on Park Terrace;
- a temporary speed limit of 30km/hr will likely be required given the likely deflections around the operation with narrow cones and 3m wide traffic lanes (minimum width required for buses);
- while it is expected that the works can be completed within one day, should there be any delays for any reason, a second day should be allowed for in the TMP. Generally, an operation such as this cannot be a night time operation due to safety of workers with the heights involved;
- TCs will need to be on-site to maintain vehicle access to residential and commercial properties within vicinity of the works;

- TCs will also need to be on-site to manage pedestrians. The footpath across the site frontage will need to be closed to ensure pedestrian safety (due to the mobile crane arm regularly extending across the footpath from the carriageway into the site).

5.3.1.8 VEHICLE CROSSINGS

A new/permanent vehicle crossing will be established on Park Terrace and Dorset Street to provide access to the future site. The permanent crossing will likely be constructed near the end of the fit out stage. Temporary crossings on Park Terrace will also be constructed. These will be established before the earthworks commence.

A specific TMP will need to be prepared closer to the time that will outline the specific traffic management measures. Some of these measures include:

- a short-term shoulder closure will be required to complete the works;
- for the Dorset Street crossing, the footpath will likely be closed and pedestrians diverted across the road during the works. Ramps will need to be provided to ensure accessible access, particularly overnight while the concrete is curing;
- for the Park Terrace crossings, the crossings may need to be constructed in sections to ensure that pedestrians do not need to cross the road (diverted around the worksite);
- any excavation approvals, together with the necessary vehicle crossing permits will need to be prepared and approved by Council prior to the works.

Similarly, for the front fence works, should it be necessary to utilise a portion of the road reserve to enable the fence construction, a specific TMP will be prepared and approved prior to commencement of the works to ensure pedestrians are appropriately managed.

5.3.2 PETERBOROUGH SITE

The location of the proposed site access locations for the Peterborough site is shown in Figure 5-8.

Figure 5-5: Site Access Points for Peterborough site



Four access points will be used for construction. This includes

- two temporary access points on Salisbury Street;
- the proposed permanent access point on Salisbury Street; and
- the proposed permanent access point on Park Terrace.

Initially, it is proposed to use two temporary access points on Salisbury Street until construction within the site reaches the boundary lines. Once this occurs, an on-street loading zone on both Park Terrace and Salisbury Street will need to be established to enable concrete pours and the delivery of construction materials to the site. For public safety, pedestrian gantries will be installed along the footpath on both frontages. With limited room on-site for construction facilities, offices, lunchrooms and toilet portacoms will be installed on top of the gantries.

At all access points TCs/ spotters will be in place to ensure the safety of pedestrians during truck manoeuvres.

5.3.2.1 SALISBURY STREET (CONSTRUCTION ACCESSSES 6 TO 8)

The location of the Salisbury Street proposed construction access points are shown in Figure 5-8. This includes

- use of two temporary site access points until the excavation and foundations works are complete; and
- use of the permanent site access point (potentially constructed initially as a temporary crossing).

5.3.2.1.1 TEMPORARY SITE ACCESS POINTS (CONSTRUCTION ACCESSES 7 AND 8)

For the excavation works, it is proposed to establish a temporary construction entry access at the eastern and western ends of the site on Salisbury Street. Pedestrian gantries will be installed along the footpath between these temporary site access points.

Figure 5-9 shows the tracking of a truck and trailer unit into and from the site.

Figure 5-6: Truck tracking into and from Salisbury Street temporary access points



All trucks will enter from the west and exit via a left turn to the east.

Once the foundations extend out towards the boundary, it will no longer be possible to use these access points. At this time, an on-street loading zone will be established.

5.3.2.1.2 PERMANENT SITE ACCESS POINT (CONSTRUCTION ACCESS 9)

Once the temporary site access points are no longer being used, the proposed permanent access on Park Terrace will be available for use by smaller trucks (less than 8m in length).

For permanent operations of the retirement village, the Salisbury Street site access will operate as an exit only access. For construction, this access will provide for entry and exit movements.

The Salisbury Street vehicle egress has a clear sight distance of 90m to the Park Terrace / Salisbury Street intersection meeting the RTS-6 Guide, as shown in Figure 5-11.

Figure 5-7: Salisbury Street access: Sight distance looking west (noting one-way exit)



Figure 5-8 shows a truck turning into and from the site

Figure 5-8: 8m truck movements at Salisbury Street permanent access



Given Salisbury Street is a one-way street, all vehicles will turn left into the site and then right out of the site (unopposed).

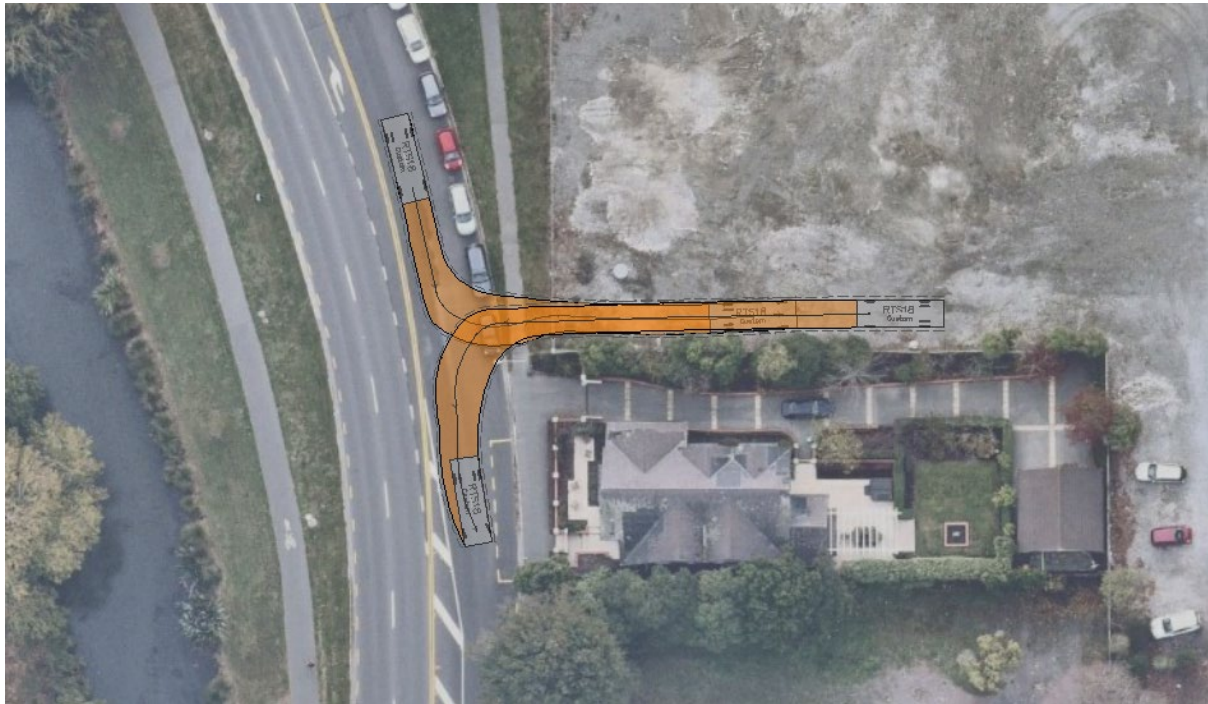
5.3.2.2 PARK TERRACE (CONSTRUCTION ACCESS 9)

The location of the Park Terrace proposed construction access is shown in Figure 5-8. This is the location for the permanent site access on Park Terrace. For permanent operations of the retirement

village, the Park Terrace site access will operate as an entry only access. For construction, this access will operate as an entry and exit (with management).

Figure 5-9 shows a truck turning into the site access.

Figure 5-9: Truck movements into Park Terrace access



The access can cater for both left and right turn movements of an 8m truck.

5.3.2.3 GENERAL MEASURES

As for the Bishopspark site, a specific TMP will likely need to be established for the Peterborough site to cover the general movement of trucks and signage for access points. (A combined TMP may also be sought).

Some traffic management measures could include:

- all trucks / vehicles will enter and exit the site in a forwards direction;
- TC in place at site access points to ensure the safety of pedestrians during truck manoeuvres. Given that the site may be operational with elderly residents while construction on the remainder of the site is taking place, it is recommended that additional measures are considered at this time including providing a fence between the open portion of the site and the work site to prevent unauthorised access from residents and operation staff;
- Site Access signs will likely be installed together with Gate identification numbers when more than one access is open. The Advanced Warning T2A sign with supplementary "Trucks Crossing" T217 sign are generally used where a large number of heavy commercial vehicles are required to turn into and out of a site. However, CoPTTM specifies that this Trucks Crossing sign (along with the Advanced Warning sign) are not used in urban areas. As such, at this time, no Trucks Crossing signage is proposed; and
- a wheel wash facility is recommended at all times where trucks will be travelling over exposed ground within the site. In the unlikely event that any material spillage does occur, the material will be immediately removed from the road. No silt or sediment will be discharged directly into the public stormwater system.

5.3.2.4 DELIVERY OF PLANT

A digger / excavator will be required to assist with demolition and the excavation/foundations works. Pedestrian gantries together with any site offices/lunchrooms/toilets etc will also need to be delivered and installed at the site. These will be installed before the earthworks commence. Gantries are proposed along the Park Terrace frontage and the Salisbury Street frontage.

The following traffic management measures could be included in the TMP:

- the installation and removal of the gantry may need to be a night-time operation to minimise disruption to pedestrians, specifically as pedestrians will need to be temporarily stopped while each container is lifted into place;
- specific approval will likely be needed to undertake works outside of general permitted construction hours;
- the containers should be able to be installed from within the site without the need for a shoulder closure on the frontage road. Should any containers not be able to be installed from within the site, a shoulder closure would be required;
- concrete plinths will likely need to be constructed to support the containers (via separate TMP or as part of the overall gantry TMP).

5.3.2.5 ON-STREET LOADING ZONES

The two temporary site access points on Salisbury Street will be utilised until construction within the site reaches the Salisbury Street boundary/ loading area. At this time, loading cannot occur from within the site and as such, it is proposed to establish two on-street loading zones. For the Peterborough site, a loading zone is to be established both on Salisbury Street and on Park Terrace.

Figure 5-10 shows an 11m truck tracking into the loading zone on Park Terrace. Trucks will need to arrive from the north.

Figure 5-10: 11m truck tracking into Park Terrace on-street loading area



The on-street parking along Park Terrace will need to be removed to accommodate the loading zone.

An area of the road reserve (berm) could be used together with the on-street parking area to enable a loading area that is clear of passing southbound vehicles on Park Terrace. This would also allow the loading zone to be installed 24/7. This berm area would need to be strengthened etc. to accommodate the anticipated heavy vehicles.

Figure 5-11 shows an 11m truck tracking into the loading zone on Salisbury Street.

Figure 5-11: 11m truck tracking into Salisbury Street on-street loading



As per the Park Terrace frontage, on-street parking will need to be removed to accommodate the loading zone.

Some of the key transportation management measures that could be included in the general loading TMP on Park Terrace and Salisbury Street include:

- no reverse manoeuvres to occur within either of the loading zones;
- Ryman to co-ordinate deliveries to ensure that up to two large trucks are within either loading zone at any one time as there will not be sufficient room in either loading zone for a third truck to unload. Should an additional truck arrive at the same time, this truck will need to continue past the site and then legally park in accordance with NZ traffic laws and Council regulations before heading back to the site to enter the loading zone on Park Terrace from the north or Salisbury Street from the west;
- truck to approach from the north and exit to the south upon leaving the loading zone on Park Terrace and from the west to the east on Salisbury Street;
- a truck using the loading area will immediately vacate the loading space should access by emergency vehicles be required;
- signs will be covered when the loading zone is not in use;
- for general operations a pedestrian gantry would need to be installed for deliveries to ensure the safety of pedestrians while materials are unloaded (separate TMP, see above); and
- adjacent vehicle access points to remain open at all times.

5.3.2.6 TOWER CRANE & PILING RIGS

Two tower cranes will be erected on the site to enable construction of the buildings. Piling rigs may also be required.

It is understood that the tower cranes will not be able to be erected from inside the of the site. As such, each crane will need to be erected on one of the site frontages. A specific TMP will be required for the operation to erect and dismantle each of the cranes. The following is noted about the traffic management measures likely:

- a mobile tower crane is usually required to erect the tower crane. It is likely that the footpath (possibly need to be strengthened), and traffic lanes will be required to enable sufficient width for the mobile crane outriggers to be accommodated (the width of crane with outriggers could be up to 10m);
- based on the volumes on Park Terrace and Salisbury Street, the erection operation would need to take place on the weekend;
- ideally at least one traffic lane would remain open at all times (one way road) on Salisbury Street or one lane in each direction at all times on Park Terrace;
- a temporary speed limit of 30km/hr will likely be required given the likely deflections around the operation with narrow cones and 3m wide traffic lanes (minimum width required for buses);
- while it is expected that the works can be completed within one day, should there be any delays for any reason, a second day should be allowed for in the TMP. Generally, an operation such as this cannot be a night time operation due to safety of workers with the heights involved;
- TCs will need to be on-site to maintain vehicle access to residential and commercial properties within vicinity of the works;
- TCs will also need to be on-site to manage pedestrians. The footpath across the site frontage will need to be closed to ensure pedestrian safety (due to the mobile crane arm regularly extending across the footpath from the carriageway into the site).

5.3.2.7 VEHICLE CROSSINGS

A new/permanent vehicle crossing will be established on Park Terrace and Salisbury Street to provide access to the site. The permanent crossing will likely be constructed near the end of the fit out stage. Temporary crossings on Salisbury Street will also be constructed. These will be established before the earthworks commence.

A specific TMP will need to be prepared closer to the time that will outline the specific traffic management measures. Some of these measures include:

- a short-term shoulder closure will be required to complete the works;
- for both crossings, the crossings may need to be constructed in sections to ensure that pedestrians do not need to cross the road (diverted around the worksite);
- any excavation approvals, together with the necessary vehicle crossing permits will need to be prepared and approved by Council prior to the works.

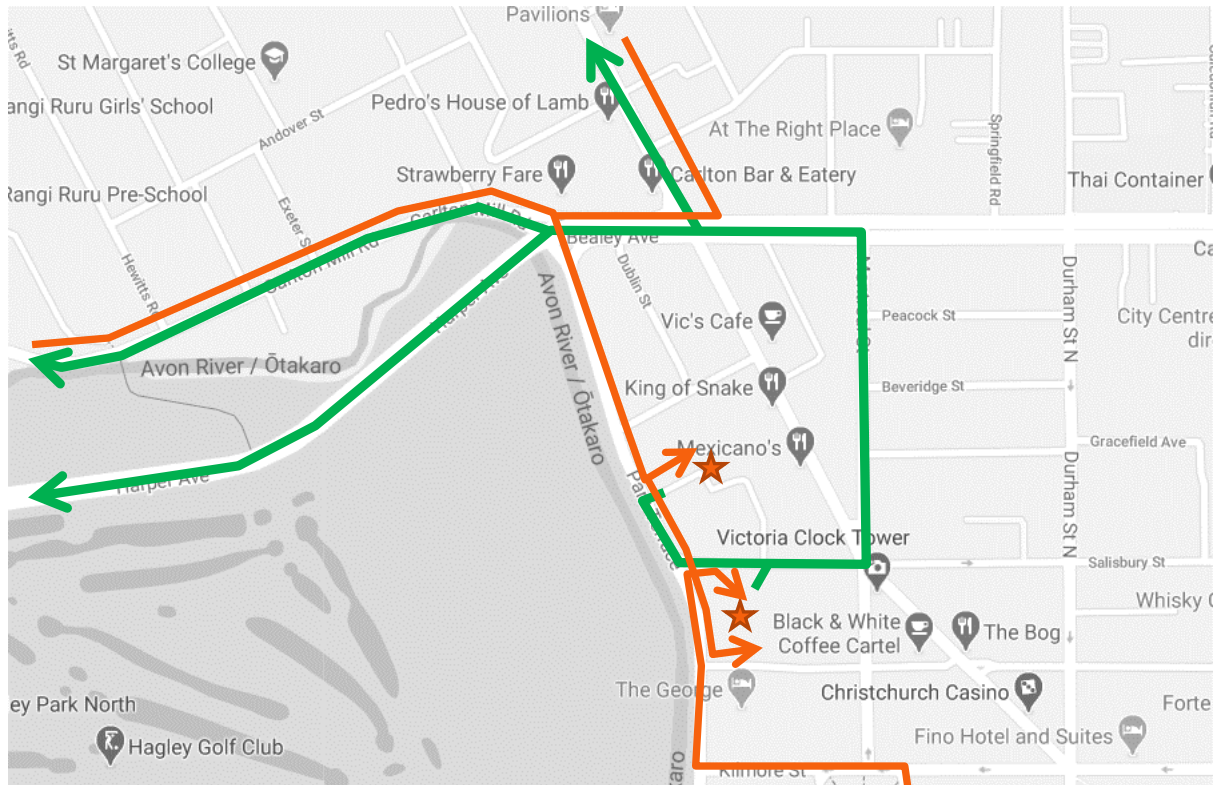
Similarly, for the front fence works, should it be necessary to utilise a portion of the road reserve to enable the fence construction, a specific TMP will be prepared and approved prior to commencement of the works to ensure pedestrians are appropriately managed.

5.4 TRUCK MOVEMENTS TO THE SITE

Due to the location of the strategic road network in relation to the site, it is considered appropriate to provide truck routes that enable direct access to the site from the State Highway network via Arterial Roads.

Figure 5-12 shows the recommended routes near the site.

Figure 5-12: Recommended truck routes to and from the site



5.5 WAITING AREAS FOR TRUCKS

With ample room available in the site, all waiting of site establishment and excavation trucks can be accommodated within each of the sites. Additionally, for the construction and fit out stages, there should be room within the site to accommodate concrete trucks adjacent to the location of the pour.

For the last stage that involves the construction or widening of the vehicle crossings, concrete trucks will likely unload from the road (from within a shoulder or lane closure). Additional trucks will need to park on adjacent roads in accordance with NZ laws and Council regulations and be called to the site as there will likely not be sufficient room within the closure to accommodate a second truck.

5.6 TRUCK CLEANING

There may be truck traffic over exposed ground during the excavation works and as such a wheel wash facility should be in place near the egress of any driveway for exiting trucks during the excavation stage. In the unlikely event that any material spillage does occur, the material will be immediately removed from the road.

5.7 MATERIALS STORAGE

Materials are to be stored on-site. No berms or roads will be used for material storage at any time.

6 PEDESTRIAN SAFETY

No reverse movements onto the road network are permitted and indeed will not be required. There is sufficient room within the site for all vehicles to turn around whether these are truck and trailer units as part of the excavation stage or concrete trucks as part of the construction works. Truck drivers using the site should be warned of the potential for pedestrians at the site access points. It is recommended that TCs are placed at access points to ensure pedestrian safety during any truck manoeuvres.

When alterations to vehicle crossings are being undertaken within the road corridor, pedestrians will be managed in accordance with CoPTTM and footpaths temporarily closed (if required) with appropriate signage provided to direct pedestrians (as will be detailed in separate TMPs to be prepared by the contractor and approved separate to this CTMP).

It is considered prudent that appropriate barriers / safeguards are in place around the perimeter of the site to prevent inadvertent / unauthorised access into the site by pedestrians.

In later stages of construction some elderly residents may be on-site at the same time as construction vehicles. It is recommended that all construction areas be fenced off to internal residents and pedestrian footpaths constructed to ensure minimal interaction between residents and construction. It is recommended that when details of these later stages are known, this CTMP should be reviewed in relation to on-site pedestrian safety.

7 GENERAL

7.1 WORKERS AND SUBCONTRACTORS VEHICLES

There will initially be no parking contractors vehicles within the site. All vehicles will need to park on adjacent roads in accordance with NZ laws and Council regulations. As the project progresses there will be available parking within the basements.

7.2 PROJECT MANAGER FOR THE PROJECT

The project manager for the site from Ryman Healthcare Limited is:

TBA

7.3 AFFECTED PARTIES

It is not anticipated that access to the adjoining properties will be impeded during the excavation process, nor is it considered that there will be notable disruption to pedestrians on the footpath or to road users of the adjacent road network.

A letter drop to neighbouring properties is recommended prior to the start of the all of the works advising of the proposed construction schedule.

7.4 UTILITY SERVICES

Some limited disruption to utility services may occur whilst these works to construct the access points occur, but it is not foreseen that outside of these works there will be a need to restrict access to utility services.

8 CONCLUSIONS

The traffic management measures detailed in this management plan will ensure that any adverse effects on both the operating traffic environment and the local residents, due to the proposed construction operations, will be minimised. In particular:

- all workers' vehicles will initially need to park off-site until the basements are constructed;
- nine access points are proposed, all of which are considered appropriate to cater for the expected construction vehicles;
- on-road loading zones will be used (Park Terrace and Salisbury Street) to undertake loading once on-site truck movements are not possible;
- construction vehicles should be limited on Westward Tce (and then used only with spotters)
- site is to be clearly fenced around the perimeter and within the site between operational areas and construction areas to protect pedestrians;
- CTMP should be reviewed when the site is partially opened to ensure pedestrian safety;
- a wheel wash facility should be installed for exiting trucks at all egress points during the excavation stage;
- TCs /spotters to be located at each site access point to ensure the safety of pedestrians during truck manoeuvres;
- specific approvals will be required for the works that fall within the road corridor;
- a general letter drop should be undertaken to those surrounding the site; and
- truck routes as detailed in this report should be followed and trucks should undertake turning movements at signalised intersections (where possible).

It is understood that this report shall be submitted to Christchurch City Council, for certification, prior to the commencement of works.

It is therefore concluded that the traffic management measures identified in this report will ensure that the site works necessary for the construction of the proposed retirement village development at Park Terrace can occur with minimum disruption to neighbouring residents and the road network.

Commute Transportation Consultants Ltd