ANNEXURE D:

TRAFFIC ASSESSMENT

Kailua Ltd

Proposed Car Storage Facility - Johns Road, Christchurch

Transportation Assessment Report

March 2017

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Kailua Ltd

Proposed Car Storage Facility - Johns Road, Christchurch

Transportation Assessment Report

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Table of Contents

Executive Summary 1

1. Introduction 5

2. Site Locality 7
   - 2.1 Strategic Location 7
   - 2.2 Local Area Reference 8
   - 2.3 Johns Road 8
   - 2.4 Waimakariri / Harewood Road Intersection 9
   - 2.5 Waimakariri Road 10
   - 2.6 Waimakariri Road / Sawyers Arms Road Intersection 11

3. District Plan Zoning 13

4. Existing Travel Patterns 15
   - 4.1 Existing Daily Traffic Volumes 15
   - 4.2 Existing Hourly Traffic 15
   - 4.3 Existing Turning Volumes 17

5. Road Safety 19

6. Existing CDG Operations 21
   - 6.1 New Imports 21
   - 6.2 Relocation of Rentals 21
   - 6.3 Ex-Rental Cars 21
   - 6.4 Consolidation 22
   - 6.5 Airport Deliveries 22

7. Future Infrastructure 23
   - 7.1 Roads of National Significance 23
   - 7.2 Other Road Projects 23

8. Future CDG Operations 25
   - 8.1 Proposed Site 25
   - 8.2 Site Accesses 25
   - 8.3 Movement Changes 29
   - 8.4 Expansion 33

9. Transportation Effects 34
   - 9.1 Travel Benefits 34
   - 9.2 Traffic Generation 34
   - 9.3 Traffic Effects 36
   - 9.4 Public Consultation 37

9.5 Sawyers Arms Road / Waimakariri Road Intersection 38

10. District Plan Compliance 40

11. Conclusions 41

Appendix A
Christchurch City Council Transportation Rules Compliance

Executive Summary

Kailua Limited has purchased a 14.4 hectare site at 711 Johns Road, Christchurch with the intention that it will become the main South Island depot for its 100% owned Car Distribution Group business (CDG).

Figure 1 shows the location of the proposed site in the block formed by Johns Road, Harewood Road, Waimakariri Road and Sawyers Arms Road. The site has frontage to Johns Road which is part of State Highway 1 (SH1) and Waimakariri Road.

It is proposed that the new depot will initially utilise some 8.5 hectares of the site to store 2,500-5,000 vehicles over an annual cycle. These vehicle inventories are managed by CDG on behalf of their owners being the main new vehicle importers (Toyota, Ford, Holden, Hyundai, Nissan, Mitsubishi, Chrysler, Honda and SsangYong). These inventories are currently stored at the CDG depot at Bromley and five other temporary locations around Christchurch. It is planned to relocate these inventories to 711 Johns Road with a small number remaining at Bromley.

Johns Road is a four-lane divided highway that has limited access road status. Accordingly the New Zealand Transport Agency (NZTA) would prefer that all access to the site be obtained off Waimakariri Road. Waimakariri Road is a Local Rural road which generally has a 6.5m wide sealed carriageway except over the 200m section south of Sawyers Arms Road and between Whitchurch Place and Harewood Road where it is wider.

Currently there are some 26,000 vehicles per day (vpd) using Johns Road adjacent to the site while Harewood Road has a two-way vehicle volume of some 13,000 vpd and Sawyers Arms Road 9,000 vpd. Recent surveys of Waimakariri Road indicate that it carries a volume of approximately 700 vpd. This involves movements to/from Harewood Primary School and other through movements particularly northbound between Harewood Road and Sawyers Arms Road in the evening peak.

There are only some 22 residential dwellings along the length of Waimakariri Road and accordingly the locally generated traffic volume on Waimakariri Road would be expected to be no more than 220 vpd. Some of the additional movements are generated by existing car storage activities on the east side of Waimakariri Road as well as further residential dwellings and commercial activities along Watsons Road, but there is still considered to be a through movement amounting to some 300 vpd.

As a Local Rural road, the Council design guide indicates that Waimakariri Road is expected to accommodate only up to 200 vpd. Accordingly it is clear that Waimakariri Road is not currently acting as a typical Local Rural road. Therefore the traffic effects of the proposed activity should not necessarily be assessed in terms of effects on a Local Rural road.

Previous consents for the site, when it was a gravel pit, have identified that adding 80 vpd including mainly trucks would have less than minor effects on the Waimakariri Road environs. The Plan anticipates up to 100 vpd being generated by permitted activities on a "site" in the Rural Urban Fringe zone but it does not indicate any minimum size for a site. The CDG site is very large being more than twice the size of other Rural lots in the area and could therefore be expected to generate at least 200 vpd.

Under the Rural Urban Fringe zoning a tourist activity for the site would be permitted attracting up to 60 visitors and therefore generating up to 120 vpd. This accordingly establishes a permitted baseline for development of the site in terms of traffic generation. However a case can be made for a baseline of 200 vpd under the Replacement Plan if the site were subdivided.

The new CDG depot will accommodate:

(i) Storage for 2,500-5,000 vehicles with an average of 3,500;

(ii) 15 car transporters;

(iii) Office/staff facilities for 10 staff (manager 1, despatch 2, office 2, yard 5);

(iv) A truck wash facility;

(v) Car washing facilities.

The turnover of vehicles stored at the site will not be high as they are stored on average for 45 days. The result is that the activity is relatively passive in terms of vehicle movements as evidenced by a yard staff of only five and an average traffic generation of only 130 vpd (60 car transporter movements and 70 car movements). On certain days at peak times of the year the site generation could increase to about 170 vpd. However the proposed activity would still only add relatively few vehicle movements to Waimakariri Road (and the wider road network) traffic flows and be comparable to the identified permitted baseline. Furthermore the traffic movements generated will not increase traffic volumes on Waimakariri Road significantly because of the relatively high volume already using the road and because the generated movements will only be added to certain sections of the road.

An access that fully complies with highway geometric design standards could be provided directly from the southbound carriageway of SH1 with a deceleration lane ahead of a left turn (only) entry lane into the CDG site. This facility would be located near the southern boundary of the wider site with a driveway doubling back to the proposed storage area as indicated in **Figure 10**. The extreme southerly location has been identified to avoid any conflict with a possible upgrade of the SH1 / Sawyers Arms Road intersection in the future. This access option would still require some access to and from Waimakariri Road but would minimise effects on Waimakariri Road. However it is not expected that the direct access from SH1 would be approved by NZTA.

Accordingly the best option in terms of minimising traffic effects on Waimakariri Road is considered to be an access arrangement that would involve a modification to the existing Sawyers Arms Road / Waimakariri Road intersection to reinstate the right turn from Sawyers Arms Road into Waimakariri Road. All access in and out of the CDG site could then be provided via Sawyers Arms Road using the northern access on Waimakariri Road only as indicated in **Figure 11**.

The change to the layout of the Sawyers Arms Road / Waimakariri Road intersection would involve the addition of a right turn lane and the reconfiguration of the median that currently prevents the right turn into Waimakariri Road. The median would continue to prevent the right turn out of Waimakariri Road. NZTA have expressed some concerns with the proximity of the right turn lane to the SH1 / Sawyers Arms Road roundabout and a safety audit has identified issues with pedestrians needing to cross a wide carriageway on the exit from the SH1 roundabout. This has been resolved by producing a design that reduces the exit to a single lane as indicated in **Figure 12.**

If the reintroduction of the right turn into Waimakariri Road were to attract through traffic, it would be possible to install a suitable traffic calming device north of the Watsons Road intersection to discourage the through movement. CDG have indicated a willingness to fund such a device if it proved necessary as a condition of consent. Waimakariri Road has wide grassed berms on both sides with a footpath only extending over 420m along the east side from Harewood Road. As part of mitigating traffic effects, CDG are also prepared to extend the footpath to Sawyers Arms Road specifically in response to concerns expressed by residents during public consultation.

If the above option were not approved then it would be necessary to have some CDG vehicles approaching the proposed site from Harewood Road. However of the 130 vpd generated by the site, it is expected that only 45 vpd would turn left into Waimakariri Road from Harewood Road. They would use the southern access to the site as indicated in **Figure 13** while the other 20 vpd approaching the site would turn left into Waimakariri Road from Sawyers Arms Road and turn into the northern access to the site. As with the previous option all vehicles leaving the site (65 vpd) would be instructed to turn left from the northern exit onto Waimakariri Road. They would then be required to turn left into Sawyers Arms Road, as the right turn would be prevented by the median in Sawyers Arms Road. Any vehicles which preferred to travel east along Sawyers Arms Road would be able to u-turn around the roundabout at Johns Road but this is expected to be a very minor movement.

It can be noted that with this option and the specific movements associated with access to/from the proposed storage facility only 45 vpd would be added to the southern section of Waimakariri Road, an increase of only approximately 6% in existing traffic movements. It is also noted that there would be no increase in traffic movements over the section of Waimakariri Road between the two accesses to the CDG site where there are seven residential dwellings and which are the only dwellings on the road that are not well shielded by trees or set back from the road.

Specific consultation has been conducted with Harewood Primary School which is located on the south side of Harwood Road just east of Waimakariri Road. The school is particularly concerned with having the car transporters turning left into Waimakariri Road if they cannot be directed via a right turn at Sawyers Arms Road even though there would only be 23 such movements per day. If that were to eventuate, it is not possible to guarantee that transporters would not make the movement when children are arriving and leaving school because some of the transporters travel from Picton and Queenstown and it is not practical to reschedule their arrival if it happens to coincide with peak school times. However given the good standard of the recent intersection reconstruction, it is not considered that the left turn manoeuvre by a relatively small number of transporters would create an unacceptable road safety condition.

CDG are prepared to guarantee that its vehicles will not make any other turning movements at the Harewood Road intersection. Therefore none of their vehicles will directly pass the school and the controlled pedestrian crossing. CDG also consulted with St James Church in an endeavour to get the new carpark for the church land relocated near the corner of Harewood Road / Waimakariri Road so that it could be shared by the school. However the church decided to go ahead with the special arrangement it had with the contractor who has been doing roading works in the area. CDG have offered to construct a path from the carpark to the Harewood Road footpath if the church and the school come to an arrangement to share the carpark. There has also been consultation with both NZTA

and the City Council who have agreed that CDG could fund the construction of a central pedestrian refuge island on the Waimakariri Road approach to the Harewood Road intersection to improve the safety of pedestrians crossing Waimakariri Road and as a mitigation measure if CDG vehicles are required to turn left into Waimakariri Road. CDG would also consider widening the carriageway of the remainder of the southern section of Waimakariri Road to 7m if that section of Waimakariri Road was required as a primary access to the site.

With most of the CDG operation consolidated to the new site in Johns Road and some of the remaining activity retained at only one other site (the depot in Bromley) there will be significant efficiencies created for both the company and road network travel in general. Not only will there be considerable savings because car transporters will not need to travel around the temporary sites consolidating loads, but there will also be major savings associated with trips to the north and south of Christchurch being able to access SH1 immediately and without needing to travel across Christchurch to/from Bromley depot or the temporary sites. There will also be considerable savings associated with having the Johns Road storage site very close to the airport where deliveries of new and relocated rental cars are undertaken for many of the rental car companies. A total of approximately 100,000 vehicle-kms per year are anticipated to be saved with the proposed operation.

It is concluded that on balance and irrespective of which access option is approved, any effects of traffic generated by the site on the Waimakariri Road environs would be more than offset by the benefits of the travel savings identified over the wider road network, particularly as it is proposed that there would be mitigation measures to minimise the traffic effects on properties along Waimakariri Road. These will include: sealing the entire site area to avoid dust, building a landscaped bund around the perimeter of the site to reduce visual effects and requiring most vehicles to travel along Waimakariri Road between the northern access and Sawyers Arms Road. The latter measure will result in most generated traffic movements only passing two dwellings one of which is shielded from the road by trees and one of which is affected by much greater traffic volumes by being immediately adjacent to Johns Road and Sawyers Arms Road.

Accordingly it is concluded that the local traffic effects on the Waimakariri Road environs, particularly when compared with alternative or permitted uses of the site, should not prevent the application being approved. Indeed the traffic operations of the proposed CDG site will be relatively passive and as such would provide a buffer between the rural / residential areas to the east and the high speed, high traffic volumes on Johns Road to the west and the industrial areas beyond.

1. Introduction

This report records the transportation assessment undertaken of a car storage facility proposed for an 8.5 hectare site at 711 Johns Road, Christchurch. The site forms the northern part of a 14.4 hectare land parcel purchased by Kailua Limited for its 100% owned Car Distribution Group (CDG) business to use as its main South island depot. The report was prepared to support an application for a resource consent to the Christchurch City Council for the new facility to be located on a site once used as a quarry or gravel pit which is zoned Rural Urban Fringe in the Replacement District Plan.

It is proposed that the depot will initially utilise the site to store 2,500-5,000 vehicles over an annual cycle. These vehicle inventories are managed by CDG on behalf of their owners being the main new vehicle importers (Toyota, Ford, Holden, Hyundai, Nissan, Mitsubishi, Chrysler, Honda and SsangYong). These inventories are currently stored at the CDG depot at Bromley and five other temporary locations around Christchurch. It is planned to relocate these inventories to 711 Johns Road with a small number remaining at Bromley.

Figure 1 shows the location of the proposed site in the block formed by Johns Road, Harewood Road, Waimakariri Road and Sawyers Arms Road.

Figure 1: Location of the Proposed Site

The site was previously included within the North West Review Area (NWRA1) which was investigated along with two other areas adjacent to the eastern side of Johns Road for industrial development in a planning review conducted prior to the preparation of the Replacement District Plan. An industrial zoning was not adopted for various reasons including concerns regarding transportation effects. It is understood that the intention behind the use of the Rural Urban Fringe zoning rather than the previous Rural zoning was because the site is not suitable for the major rural uses and thus was expected to be utilised for some non-rural activity in due course.

With regard to transportation effects it is noted that the NWRA1 assessment undertaken for the site previously, adopted a business park as a potential worst case development. This estimated a traffic generation of 5,000 vehicle movements per day (vpd) for the area whereas the proposed car storage facility being investigated for CDG is expected to generate about 170 vpd at peak times and generally about 130 vpd. This will involve approximately 60 car transporter movements and 70 car movements per day.

The site will be used to store new motor vehicles, relocated rental vehicles and rental cars bought back from rental companies or vehicles coming off lease to rental companies. Car transporter trucks will move most of the vehicles to and from the proposed new site, except for rental vehicles moved to/from nearby Christchurch Airport.

The adjacent section of Johns Road, as part of State Highway 1 (SH1), is a limited access road and has recently been upgraded to a divided four lane highway. Therefore access may not be possible from Johns Road. Accordingly all access to the site will probably need to be provided from the only other road frontage of the site along Waimakariri Road to the east.

CDG currently have a depot in Bromley where they can store some 3,000 vehicles per annum but at present they have a demand to store up to a total of 5,000 vehicles per annum and they are required to also use temporary leased sites which are scattered at up to five locations around the city. This leads to various transportation inefficiencies most notably the need to often consolidate transporter truckloads of vehicles from different sites.

It is proposed that the depot in Bromley will be retained for a smaller number of vehicles but that all of the temporary leased sites will be replaced by the proposed Johns Road site. Having a consolidated larger site will overcome the current inefficiencies and will also improve the frequent interaction with rental car companies located at Christchurch International Airport. These and other advantages will create very significant benefits in terms of reduced travel distance and time on the road network by the CDG vehicles.

Three different possible access options have been assessed for the site. The first option involves an access provided from the southbound carriageway of SH1 with a left turn (only) slip entry lane into the CDG site that complies with all highway geometric design standards. All other access would be to / from Waimakariri Road. The next option would involve all access to / from the northern section of Waimakariri Road with the modification of the Sawyers Arms Road / Waimakariri Road intersection to allow right turns into Waimakariri Road while still preventing right turns out. The final option also involves the use of Waimakariri Road with all exit movements via Sawyers Arms Road but with the majority of the entry movements into the site approaching from Harewood Road.

There will be differing local transportation effects associated with each of these options governed primarily by the sections of Waimakariri Road utilised by CDG traffic in each option. However these effects are not as significant as might be anticipated of a site capable of storing up to 5,000 motor vehicles because access movements are relatively infrequent with the average stay of each vehicle in the order of 45 days. Furthermore because most motor vehicles are to be moved to and from the site on transporter trucks carrying up to 10 cars, the number of vehicle movements in and out of the site will be surprisingly low.

2. Site Locality

2.1 Strategic Location

Figure 2 shows the location of the proposed new car storage site relative to the overall road network of Christchurch City including the sections of SH1 north and south of Christchurch which are used by CDG to move motor vehicles to/from Christchurch from various external locations. The figure also includes the location of the existing depot in Newton Street, Bromley and the various temporary leased sites at Airpark Canterbury within the airport grounds; Greywacke Road; Te Rama Place, Bromley; Corsair Drive, Wigram and Raymond Road in Bromley.

Figure 2: Location of Proposed and Existing CDG Sites

Each of these sites has the capacity to store the following numbers of motor vehicles indicated in **Table 1.**

Leased Sites	No. of Vehicles Stored
Newtown Street, Bromley (Depot)	1,500
Airpark Canterbury	700
Greywacke Road	700
Te Rama Place, Bromley	450
Corsair Drive, Wigram	180
Raymond Road, Bromley	600
Total	4,130

Table 1: Existing Storage Site Capacities

The depot in Bromley is the largest of the existing sites. It is irregular in shape and it includes some storage buildings which are used to undertake minor preparation and refurbishment tasks for new vehicles and returned rental vehicles respectively. Some of these tasks will continue to be undertaken at the existing depot and others will be transferred to the new Johns Road site. However it is not proposed to provide storage buildings at the new site.

2.2 Local Area Reference

Figure 1 shows the local area surrounding the proposed new site located between Johns Road and Waimakariri Road. The northern section of the NWRA1 has already been developed with an electrical substation facility, while the southern sector, which is also owned by CDG, is not intended to be developed at this stage. The proposed car storage site will share the existing access to the substation that runs off Waimakariri Road some 200m south of Sawyers Arms Road. All exit manoeuvres will use this, while the number of entries using it will depend on the preferred access option. The first option would also have entries from Johns Road and the third option could also have entries from a second access off Waimakariri Road.

2.3 Johns Road

The section of Johns Road between Harewood Road and Sawyers Arms Road is a four-lane divided state highway managed by New Zealand Transport Agency (NZTA). This section of road has a speed limit of 80km/hr along its length and has limited access road status. Accordingly NZTA would prefer to have no direct site access and for all access to the site to be obtained off Waimakariri Road. The four-lane upgrade of this road was completed as part of the Roads of National Significance (RoNS) project upgrading the SH1 Western Corridor between the Northern Motorway and Yaldhurst Road.

2.4 Waimakariri / Harewood Road Intersection

The south end of Waimakariri Road connects to Harewood Road at a T-intersection some 200m east of the roundabout controlled intersection of Harewood Road and Russley Road/Johns Road (SH1). This roundabout has recently been upgraded as part of the RoNS project. The upgrade improves the capacity of Harewood Road at SH1 by providing two lane circulation through the roundabout to and from both legs of Harewood Road.

The intersection of Harewood Road and Waimakariri Road has also been upgraded as part of the RoNS project which includes a pedestrian/cyclist underpass being constructed underneath the SH1 roundabout linking to Whitchurch Place which connects to Waimakariri Road some 100m north of Harewood Road. The upgrading of the Harewood Road/Waimakariri Road intersection includes new kerb and channel around the northwest corner of the intersection and the installation of a stormwater swale on the western side of Waimakariri Road as indicated in **Figure 3**.

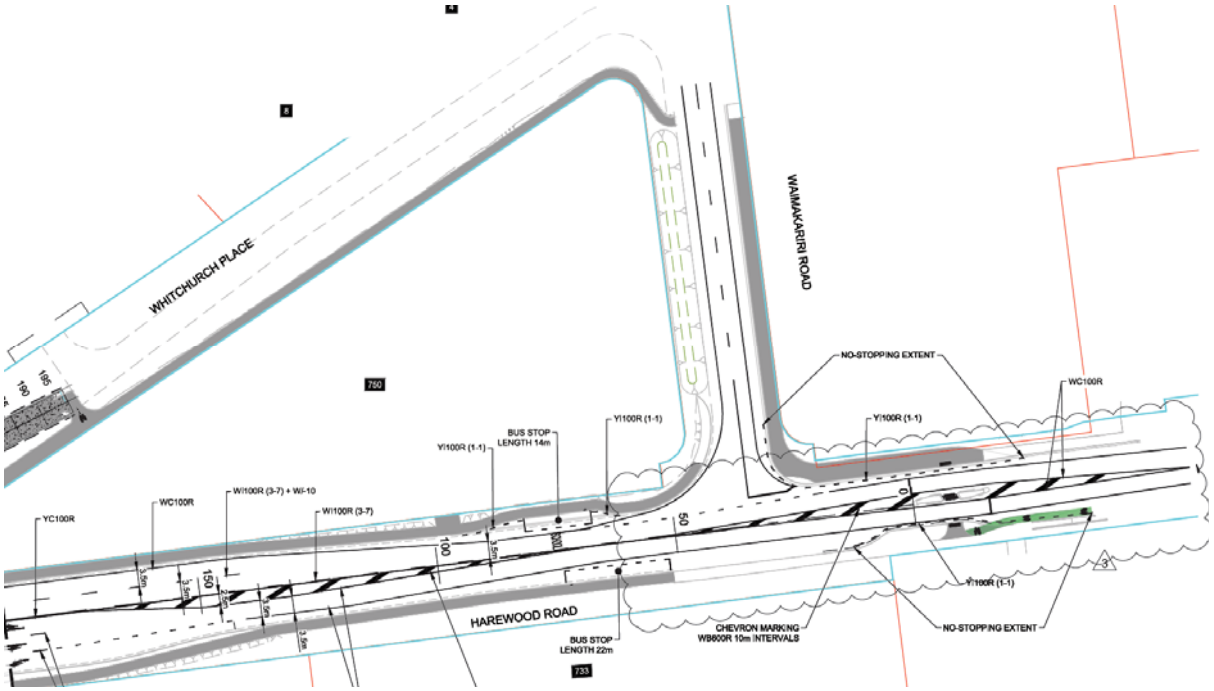

Figure 3: Harewood Road / Waimakariri Road Intersection Upgrade

The latter involved the upgrading of the casual car parking which was previously at right angles on a gravel shoulder and was utilised by parents of children attending the Harewood Primary School that is located on the south side of Harewood Road immediately east of the Waimakariri Road intersection. The construction involved the provision of sealed parallel parking areas along both sides of Waimakariri Road for parents to use at the beginning and end of the school day.

A new pedestrian and cycle shared path has been constructed along the eastern side of Waimakariri Road from the intersection with Whitchurch Place to Harewood Road. This forms a connection from the underpass in Whitchurch Place that leads to the pedestrian crossing across Harewood Road on the eastern side of the Waimakariri Road intersection, and to the footpaths and on-road cycling facility provided along Harewood Road. The pedestrian crossing facility includes a central pedestrian refuge island that allows two stage

crossing of the two lanes along Harewood Road. However at peak times a school patrol operates at the crossing, stopping traffic in both directions for brief periods.

While Harewood Road has two lanes on the approach and exit for the SH1 roundabout, at the Waimakariri Road intersection there is only one lane in each direction. There are bus stops provided on each side of Harewood Road to the west of the Waimakariri Road intersection. Kerbside parking is allowed along the southern side of Harewood Road for some 20m to the west of the pedestrian crossing but car parking on the northern side of Harewood Road is banned to the west of Waimakariri Road and only allowed to the east of the pedestrian crossing. This restricts the amount of car parking available for the school within convenient walking distance along Harewood Road and therefore the provision of kerbside parking along Waimakariri Road is an important resource.

CDG has consulted with St James Church in an endeavour to get the new carpark proposed for the church land relocated near the corner of Harewood Road / Waimakariri Road so that it could be shared by the school. However the church decided to go ahead with the special arrangement it had with the contractor who has been doing roading works in the area. CDG have offered to construct a path from the carpark to the Harewood Road footpath if the church and the school come to an arrangement to share the carpark.

The intersection of Waimakariri Road with Harewood Road is not controlled by Give Way or Stop signs but by the normal priority rules that require vehicles turning out of Waimakariri Road to give way to traffic on Harewood Road. There is only one exit lane from Waimakariri Road but it flares out with a kerb radius of approximately 10m that will accommodate both a left and right turning vehicle at the intersection. There are no marked turning lanes for right turns or left turns into Waimakariri Road from Harewood Road. However the flush painted median associated with the pedestrian crossing does allow space for a right turning vehicle to wait if necessary clear of westbound through traffic. Similarly the new kerbline on the northwest corner of the intersection does allow a left turn vehicle to decelerate clear of eastbound through traffic along Harewood Road.

2.5 Waimakariri Road

The current speed limit along Waimakariri Road is 70 km/h. In total there are about 22 residential dwellings served by Waimakariri Road.

The section of Waimakariri Road immediately north of Harewood Road has 3.0m wide traffic lanes marked in each direction between the kerbside parking. Previously the traffic lanes were effectively some 3.5m wide because the parking on the west side was on a wide gravel shoulder. The kerbside parking lanes are 2.5m wide and the full carriageway width 11m.

Further to the north Waimakariri Road has a good quality sealed carriageway with a width of some 6.5m with narrow gravel shoulders and wide grass berms. There are no kerbs and drainage is dealt with by swales in the berms. The footpath from Harewood Road extends along the eastern side of Waimakariri Road for some 300m beyond the intersection with Whitchurch Place but there are no other footpaths.

In this first section of Waimakariri Road there are two properties on the east side which have already been used for the storage of motor vehicles on-site, as indicated on the following aerial photo.

Photograph 1: Vehicle Storage at Waimakariri Road Properties

Some 300m south of Sawyers Arms Road, Waimakariri Road is intersected from the east by Watsons Road which is a 6.0m wide rural standard road that turns through a right angled bend and also connects to Harewood Road. It serves a mix of rural activities, some of which are commercial ventures, and residential properties. No footpaths are provided however.

2.6 Waimakariri Road / Sawyers Arms Road Intersection

The carriageway along the section of Waimakariri Road between the existing northern access to the CDG site and Sawyers Arms Road is generally wider, at least 7.0m. There is a tapered, wider section north of the access for a distance of some 60m that appears to have been provided to accommodate the movement of large trucks associated with the previous quarry operation on the site.

At its northern end Waimakariri Road connects with Sawyers Arms Road at a T-intersection. The SH1 RoNS project has seen the construction of an extended island from the roundabout controlled intersection of Sawyers Arms Road/SH1 that prevents right turns to and from Waimakariri Road. It is understood that this configuration was originally proposed because of road safety concerns associated with the slip lane from Sawyers Arms Road into Johns Road that was subsequently not constructed. However after the deletion of the slip lane concerns were raised regarding the road safety implications of drivers using Waimakariri Road as a short cut between Sawyers Arms Road and Harewood Road. On this basis the right turn restriction was implemented.

Sawyers Arms Road exiting from the SH1 roundabout has two lanes (eastbound) even though the opposite approach at Sawyers Arms Road only has one lane that accommodates through traffic and there are only single lanes for the respective left and right turns from Johns Road into Sawyers Arms Road eastbound. Accordingly the two lanes on the exit are not actually needed, particularly as Sawyers Arms Road merges from two lanes to one shortly after this section. This was acknowledged in a safety audit undertaken as part of the RoNS project but the two lanes were retained.

On the approach to Sawyers Arms Road, Waimakariri Road has only one lane in each direction but the lanes widen out to be at least 6m wide at the limit line. The respective corner kerb radii are also sufficiently large (approximately 12m) to safely accommodate the left turn manoeuvres in both directions by the largest legal truck. Although not entirely necessary a Give Way control is applied to the Waimakariri Road approach to the Sawyers Arms Road intersection.

3. District Plan Zoning

Under the Replacement District Plan the CDG site for the proposed storage facility is located in the Rural Urban Fringe zone as illustrated in **Figure 4**. It is noted that this is therefore primarily a rural zone and that the car storage facility is not a permitted activity, hence the need for a resource consent.

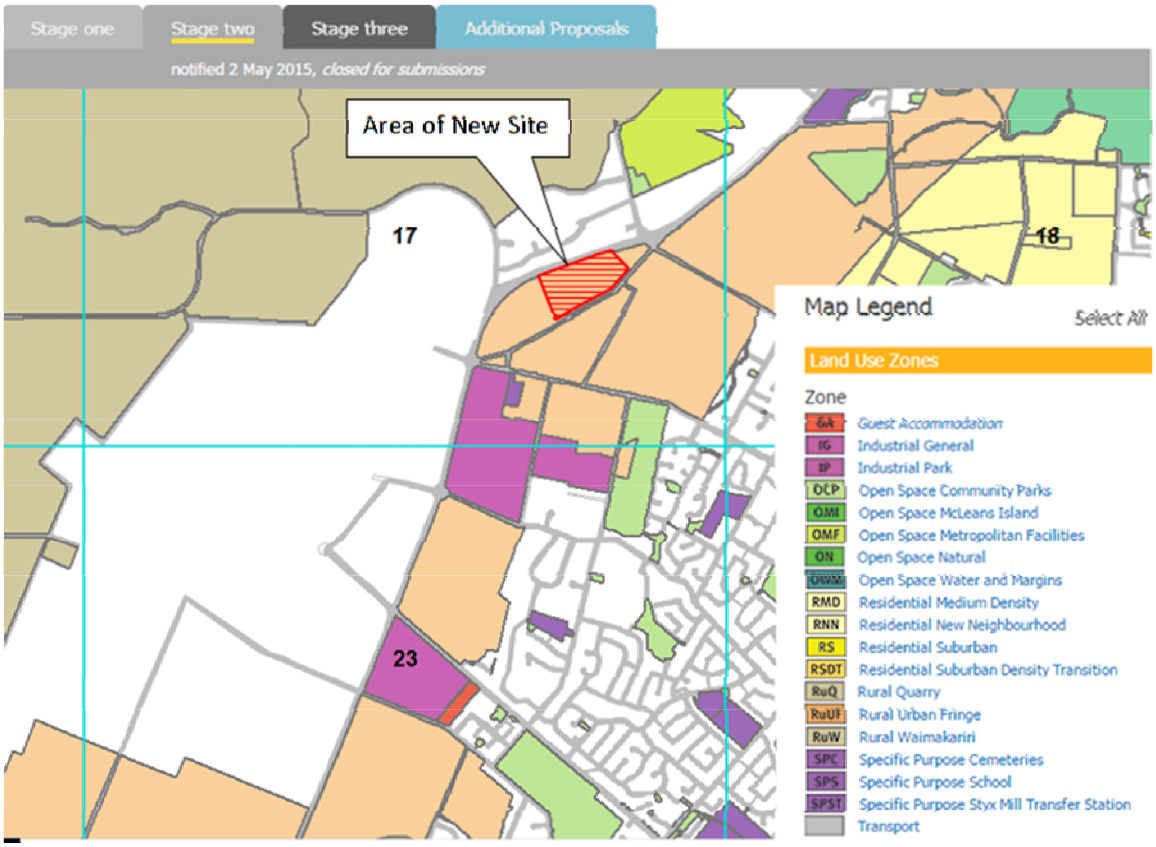

Figure 4: District Plan Zoning of CDG Site

It is noted that the adjacent property on both sides of Waimakariri Road is also rural and therefore the adjacent residential dwellings are not necessarily subject to the full residential sensitivities. For example, the presence of heavy goods vehicles on a Local Rural road like Waimakariri Road is to be expected as opposed to the situation on a local road in an urban residential area.

The Council design guide indicates that a Local Rural road is expected to accommodate up to 200 vpd. With 700 vpd it is clear that Waimakariri Road is not currently acting as a typical Local Rural road when compared to the city's design guide. Therefore the traffic effect of the proposed activity should not necessarily be assessed in terms of effects on a Local Rural road environment.

While the site and the rest of the Waimakariri Road catchment is zoned Rural Urban Fringe in the District Plan, an industrial zoning was investigated as part of the land-use planning review undertaken prior to the preparation of the Replacement District Plan. Under the industrial zoning considered for the site (North West Review Area - Area1), a potential traffic generation of 5,000 vpd (vehicle movements per day) was identified.

Previous consents for the site, when it was a gravel pit, have identified that adding 80 vpd including mainly trucks would have less than minor effects on the Waimakariri Road environs. The District Plan anticipates up to 100 vpd being generated by permitted activities on a "site" in the Rural Urban Fringe zone but it does not indicate any minimum size for a site. The CDG site is very large being more than twice the size of other rural lots in the area and could therefore be expected to generate at least 200 vpd.

Under the existing Rural Urban Fringe zoning a tourist activity for the site would be permitted attracting up to 60 visitors and therefore generating up to 120 vpd. This accordingly establishes a permitted baseline for development of the site in terms of traffic generation. However a case can be made for a baseline of 200 vpd under the existing zoning if the site were subdivided.

The proposed activity is estimated to generate only 130 vpd on a regular day and possibly up to 170 vpd on occasions. This would still only add relatively few additional vehicle movements to the existing Waimakariri Road traffic flows and be comparable to the identified permitted baseline. The traffic movements generated will not increase traffic volumes on Waimakariri Road significantly because of the relatively high volume already using the road and because the different movements will only be added to certain sections of the road.

Across SH1 from the site there is an Industrial Heavy zone centred around Logistics Drive and to the south of Harewood Road there is an Industrial General zone extending all the way to Wairakei Road. Therefore the proposed use is not out of context from a general transportation planning perspective, particularly being adjacent to SH1 which is one of the busiest major arterials in the city.

While the site was previously zoned Rural 5 (Airport Influences) it was used for quarrying purposes and therefore the presence of large trucks with heavier loads than are carried by car transporters would have been a common occurrence. Subsequently a consent was approved to facilitate the backfilling of the quarry and other activities including concrete crushing and gravel storage for a period of approximately two years. Accordingly the reappearance of trucks on Waimakariri Road will not be unfamiliar to the local residents and other users of the road.

It is understood that the site, although zoned for rural use, could not practically be used for the major typical rural activities because there is very little soil as a result of the previous quarrying. The substation demonstrates the need to consider other uses. Accordingly it is expected that it is most likely to only be able to be used for other permitted activities or non-rural activities, which could generate higher traffic movements. Therefore the proposed car storage use might be the most benign use from a transportation perspective.

4. Existing Travel Patterns

4.1 Existing Daily Traffic Volumes

The magnitude of the respective existing daily traffic volumes on the roads surrounding the proposed car storage site at Johns Road provides an indication of their respective roles. Existing traffic movements in the area are clearly dominated by SH1 and the two-way daily movement of 26,000 vehicle movements per day (vpd).

Harewood Road is the next heaviest used road with some 13,000 vpd on the section east of SH1. This is consistent with its status in the District Plan as a Minor Arterial. The Christchurch City Council has decided that Sawyers Arms Road should be upgraded to a Major Arterial road even though it currently carries a lower volume.

However it is expected the existing traffic volume of 9,000 vpd will increase in the future when Northcote Road is four-laned and traffic signals are provided at its intersection with Sawyers Arms Road.

In comparison Waimakariri Road has been observed to accommodate only 700 vpd. It has been estimated from turning movement counts undertaken for the morning and evening peak periods at the intersections at either ends of Waimakariri Road at Harewood Road and at Sawyers Arms Road and also at the Watsons Road intersection that a considerable proportion of this volume is related to through movements rather than trips generated by properties along Waimakariri Road.

4.2 Existing Hourly Traffic

Figure 5 indicates the hourly traffic pattern on SH1 over the course of the day for an average week day. It can be seen that there are significant peak periods in the morning and the evening but that there are also very high volumes of traffic throughout the middle of the day.

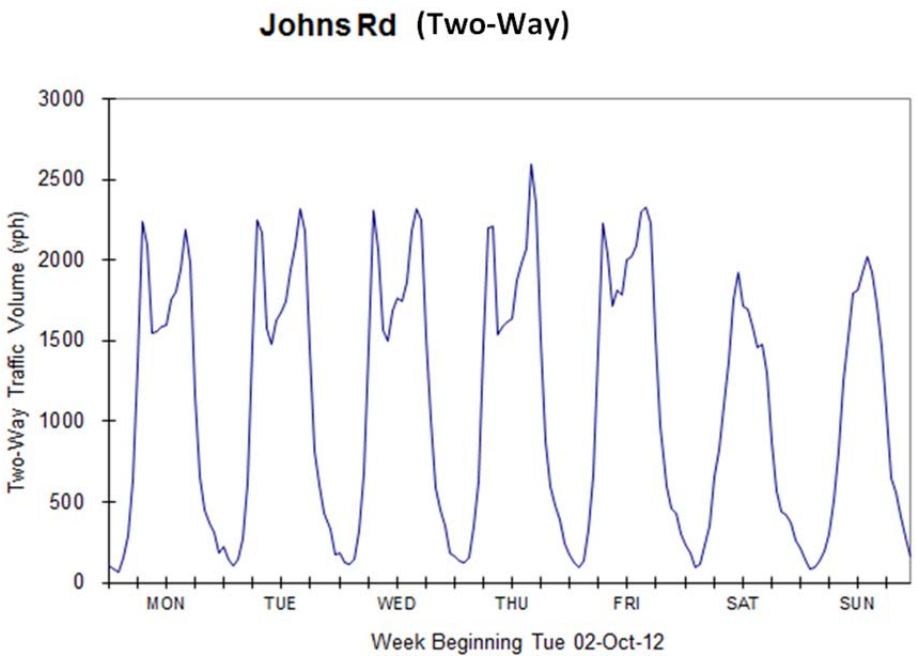

Figure 5: State Highway 1 Hourly Traffic Pattern

Figure 6 shows a similar hourly pattern for an average week day on Harewood Road east of Waimakariri Road. Again it can be seen that there are significant morning and evening peak periods and relatively lower traffic volumes throughout the intervening period and around 3:00pm when the local primary school ends for the day.

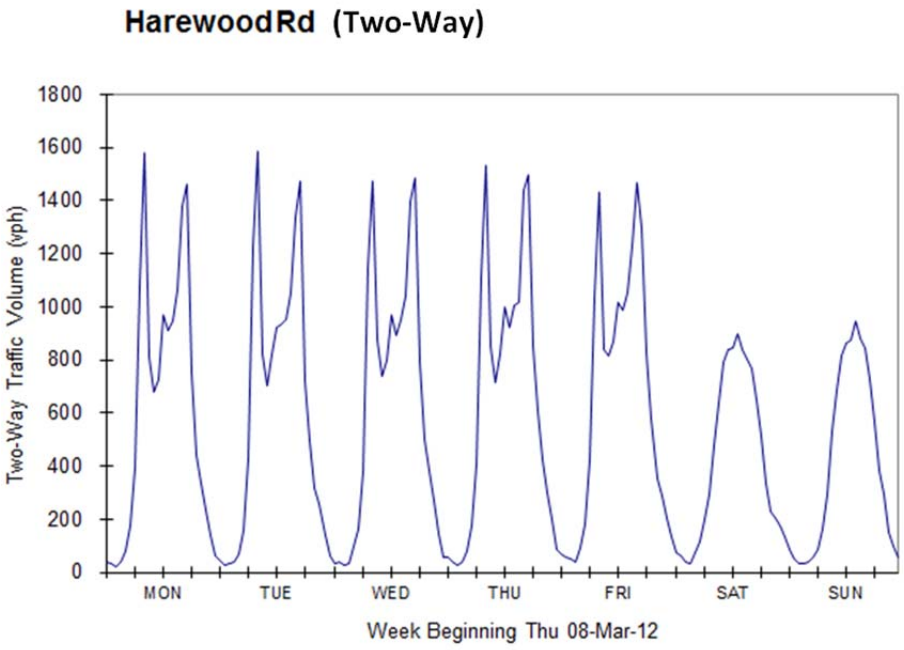

Figure 6: Harewood Road Hourly Traffic Pattern

4.3 Existing Turning Volumes

The following tables indicate the observed turning movements at the intersections of Waimakariri Road with Harewood Road and Sawyers Arms Road respectively. It can be seen that the turning movements in and out of Waimakariri Road are very much less than the through movements along Harewood Road and Sawyers Arms Road. Of course there are no right turns in and out of Waimakariri Road at Sawyers Arms Road because of the recent construction of a solid median across the end of Waimakariri Road.

SIDRA computer files have been created using the observed movements and delays calculated as follows in **Table 2** and **Table 3**.

APPROACH	MOVEMENT	AM PERIOD		PM PERIOD	
		Volume	Delay	Volume	Delay
Harewood Road East	Through	440	0	298	0
	Right	22	6.1	123	10.2
Waimakariri Road	Left	58	8.2	20	15.4
	Right	17	6.0	7	9.1
Harewood Road West	Through	335	0	725	0
	Left	13	4.6	38	4.6

Table 2: Existing Waimakariri Road / Harewood Road Intersection Performance

APPROACH	MOVEMENT	AM PERIOD		PM PERIOD	
		Volume	Delay	Volume	Delay
Sawyers Arms Road East	Through	417	0.6	278	0.3
	Left	55	0.6	18	0.3
Waimakariri Road	Left	23	6.1	201	5.7

Table 3: Existing Waimakariri Road / Sawyers Arms Road Intersection Performance

It can be seen that volumes in and out of Waimakariri Road are relatively low and suffer minimal delays at both intersections. However it can be noted that the right turn into Waimakariri Road from Harewood Road in the PM peak is disproportionately higher representing a “rat-run” through Waimakariri Road.

An analysis of the base year traffic forecasts from the CAST model for the roundabout controlled intersections on SH1 at Harewood Road and Sawyers Arms Road have highlighted the dominance of the through movements along SH1. At Harewood Road there are also heavy turning movements between SH1 in the north and Harewood Road heading west into the airport land. In contrast, the turning movements between SH1 north and Harewood Road in the east are extremely low. Similarly the turning movements between SH1 south and either leg of Harewood Road are not high.

At the SH1 / Sawyers Arms Road intersection the through movements on SH1 are again dominant. In the morning peak, there are relatively low through movements in both

directions between the Sawyers Arms Road legs and the turning movements between SH1 north and Sawyers Arms Road east are also small. There are higher movements between Sawyers Arms Road west and SH1 north in the evening peak. While there are relatively small turning movements between SH1 south and Sawyers Arms Road west in both peaks, there are higher turning movements between SH1 south and Sawyers Arms Road east.

With some particularly low turning movements, there will be spare capacity for the relatively low turning movements to/from SH1 expected to be associated with the CDG site on Waimakariri Road.

5. Road Safety

The New Zealand Transport Agency (NZTA) Crash Analysis System (CAS) database was used to extract reported crashes for the complete five years from 2011-2015 inclusive. **Figure 7** shows crash locations in the proximity of the Johns Road site. There has been one fatal injury crash, five serious injury crashes and six minor injury crashes.

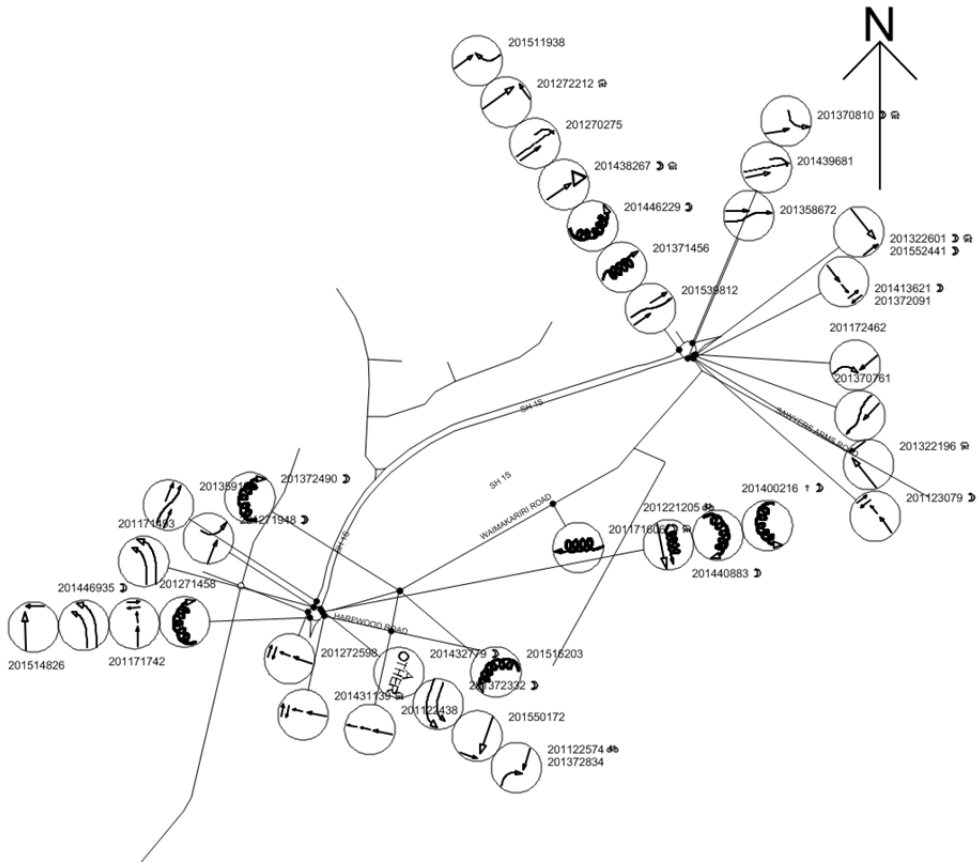

Figure 7: Reported Crashes in the Vicinity of Waimakariri Road

The two roundabouts at the Harewood Road / Johns Road and the Sawyers Arms Road / Johns Road intersections have also had a large number of non-injury crashes in their vicinity. This is at least partially due to the large volumes of traffic on these roads. The general trend of the accidents at the roundabouts involve a few recurring causes including rear end crashes, failing to give way and loss of control crashes. It is expected that the RoNS upgrade of these roundabouts to latest design standards will ensure that their road safety record does not deteriorate, particularly the occurrence of injury accidents.

The fatal injury crash involved a motorcyclist who lost control whilst turning left at the Harewood Road roundabout and the individual was under the influence of alcohol. Therefore this incident cannot be attributed to deficient road design or critical traffic conflicts.

The serious injuries that occurred were due to various reasons with no common trend. One of the serious injury crashes occurred on Waimakariri Road at the intersection of Whitchurch Place. This was a loss of control crash and was caused by the driver

approaching the corner too fast. The other two crashes on Waimakariri Road were also loss of control crashes and were reported to involve new drivers. Both of these were non-injury crashes. All three accidents occurred before the turn restrictions at Sawyers Arms Road were imposed but there has not been sufficient time since to establish that through traffic using Waimakariri Road necessarily created a road safety issue.

Another serious injury crash occurred on SH1 near Harewood Road, involving a cyclist and an SUV which failed to give way at the roundabout.

Most of the minor injury crashes were either rear end crashes or failed to give way crashes. A rear end crash occurred on Sawyers Arms Road near the Waimakariri Road intersection and resulted in a minor injury. Another minor injury crash occurred on Harewood Road near Waimakariri Road and involved a cyclist being hit by a truck travelling too far to the left. The remainder of the minor injury crashes occurred at the two SH1 roundabouts.

It is concluded that there are no obvious road safety deficiencies associated with the existing road network that would indicate that the proposed use of the Johns Road site would adversely affect road safety.

6. Existing CDG Operations

6.1 New Imports

CDG currently pick up approximately 16,000 new cars per year through Lyttelton and another 15,000 per year are transported by road from Picton. The vehicles unloaded from boats at Lyttelton are stored temporarily on Cashin Quay and then transported from the port by CDG car transporter trucks. It can take up to five days to clear the unloaded vehicles from the port storage area and typically the most transporter loads are undertaken on the first day.

Of the new vehicles 4,500 go directly to car dealerships around Christchurch and the South Island. Some 11,500 of the new cars are for rental companies. Some loads go directly to rental car agencies but most go to the CDG Depot at Bromley.

Most of the 15,000 motor vehicles per annum transported from Picton go directly to the Bromley depot.

Generally new cars are stored at the Bromley depot for dealers. They are stored indefinitely as stock for car dealerships and will only be delivered when on-site stock is sold or a particular vehicle (eg colour) is requested by a buyer.

6.2 Relocation of Rentals

The nature of the rental car market is such that rental cars tend to accumulate at airports as tourists pick up cars in the north, such as at Picton, and depart from Christchurch or Queenstown airports. Accordingly CDG are engaged by rental car companies to relocate cars from Queenstown to Christchurch and also from Christchurch to Picton. Christchurch is CDG's main storage location for the South Island with a surplus number of vehicles to account for the ebb and flow of the rental car demand.

For the majority of the year seven transporters per day relocate rental vehicles from Queenstown back to Christchurch. On the return journey to Queenstown the transporters will carry new cars for dealerships in the lower half of the South Island or ex rental cars for delivery to used car sales businesses.

Again for the majority of the year, seven transporters per day will relocate rental cars from Christchurch to Picton and return with new cars imported through North Island ports.

There are other occasions when rental car agencies in various other locations have a surplus of vehicles or a deficiency and CDG transporters will be engaged to help out. However the majority of the existing transporter movements in and out of Christchurch are as described above.

6.3 Ex-Rental Cars

Rental cars may be sold or leased to rental car agencies by CDG. The main rental agencies use new cars for some six months and then they are generally returned to CDG. They are then refurbished and either leased or sold to the second tier rental companies or

alternatively sold to the general public usually through used car sales firms. It should be noted that further variations of the activities associated with ex rental cars are described in the Operations Report received from CDG.

6.4 Consolidation

With many of the cars stored in Christchurch being distributed around five temporary leased sites, inefficiencies are created when it comes to, for example, delivering a particular collection of ex-rental cars to a particular destination. While cars are stored in a manner which will most likely result in those in one site being moved together, this is not always possible and often a transporter will be required to visit more than one site to consolidate a load to avoid travelling without a full load. Either way there are transport inefficiencies or disbenefits because of the additional travel required to consolidate a load or to deliver a less than full load.

6.5 Airport Deliveries

Currently transporter trucks are generally used to deliver rental cars from the storage sites to Christchurch airport. As well as the potential consolidation issue at the supply end, there are some difficulties at the airport where most rental car companies do not typically have adequate space within their sites for the unloading of cars from the transporter. Accordingly the transporters are required to park on streets, sometimes double parked, while offloading cars. Similarly if rental cars are required to be relocated away from Christchurch airport, typically to Picton, then loading problems occur on the airport roads.

7. Future Infrastructure

7.1 Roads of National Significance

Figure 8 shows the RoNS proposals for the Western Corridor extending from the Northern Motorway via the new Western Belfast Bypass to the four-lane divided carriageway upgrade for Johns Road and extending into Russley Road. The project involves the construction of a flyover along Russley Road over Memorial Avenue and upgrades to the roundabouts at Harewood Road and Sawyers Arms Road which will increase the overall capacity of the road network in the area particularly for traffic on the Western Corridor.

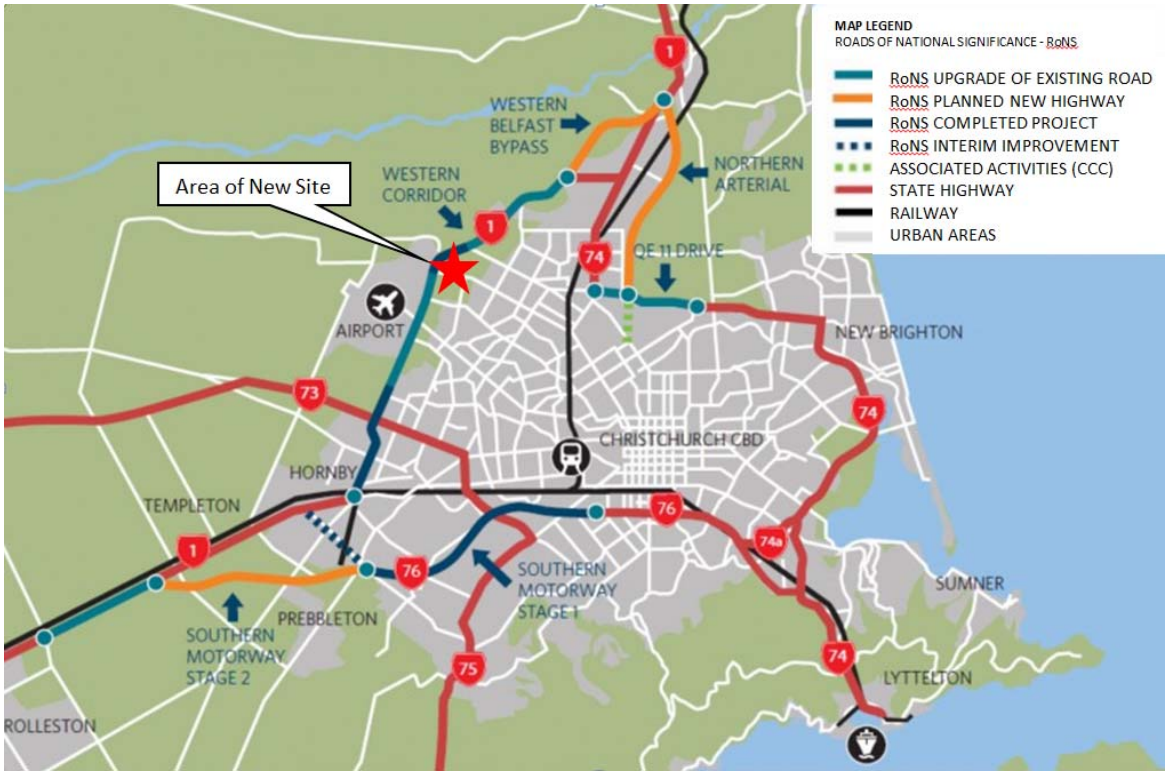

Figure 8: Roads of National Significance Proposals for Christchurch

While traffic movements across Russley Road will be restricted by the removal of the roundabout at Wairakei Road, the additional capacity for this movement provided by the Memorial Avenue flyover and the upgraded roundabouts at Harewood Road and Sawyers Arms Road will ensure that adequate capacity is provided for a considerable future period.

The four-laning of Johns Road / Russley Road has largely been completed in the vicinity of the proposed CDG site in Waimakariri Road and it is expected that it will be fully operational before the car storage site could begin operation.

7.2 Other Road Projects

Figure 9 indicates the location of several other roading projects in the vicinity of the CDG site which will have some influence on access to the site.

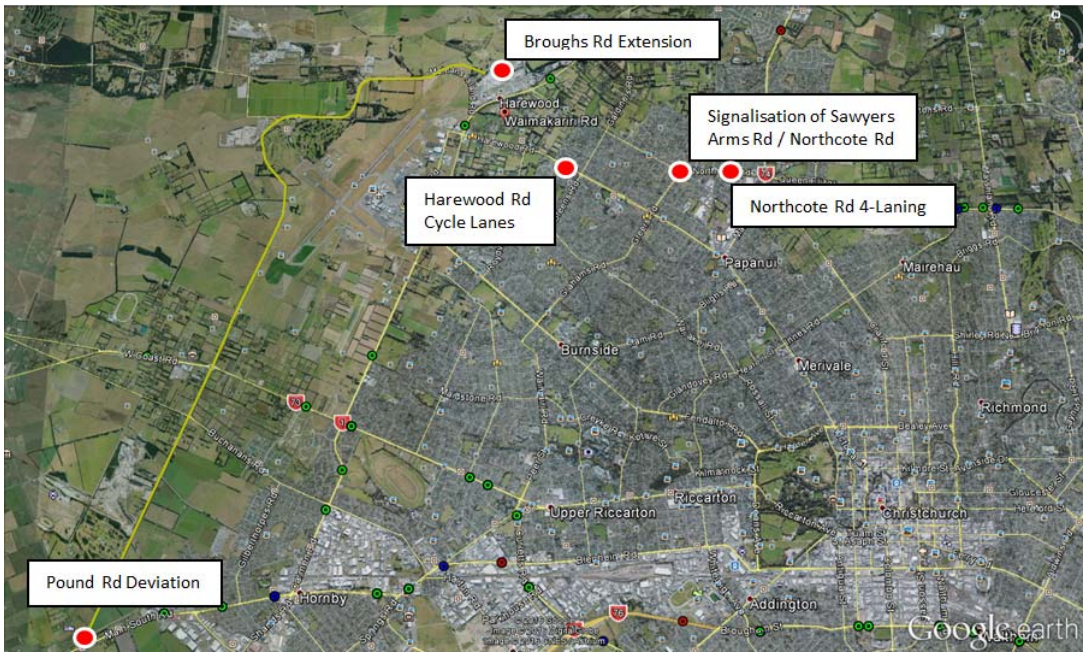

Figure 9: Other Roading Projects Near the CDG Site

It is proposed that Harewood Road be downgraded to a minor arterial road and as part of these proposals some four lane sections will be reduced to two lanes to accommodate cycle lane facilities. This is expected to discourage the use of Harewood Road as a route to the airport from the northern suburbs and to reduce traffic volumes on Harewood Road.

As an alternative, it is proposed that Sawyers Arms Road be upgraded from a minor arterial to a major arterial route. The main work to support this upgrade will be the installation of traffic signals at the intersection of Sawyers Arms Road with Northcote Road and Greers Road. Traffic from the northern suburbs will then be more encouraged to use the QEII Drive-Northcote Road-Sawyers Arms Road route as a major access to the Western Corridor and the airport. In that regard it is noted that QEII Drive is being upgraded to a four lane facility as part of the overall RoNS project and is particularly associated with the construction of the Northern Arterial which will have a major interchange with QEII Drive. Northcote Road is also proposed to be upgraded to four lanes.

On the opposite side of SH1 from the CDG site, Sawyers Arms Road will be connected to McLeans Island Road via a new road link called the Broughs Road Extension. This is mainly intended to encourage a bypass route to the west of the airport using Pound Road to avoid travel through Yaldhurst and the critical intersection of Russley Road with Yaldhurst Road and also to bypass the section of SH1 through Hornby. A roundabout has already been provided at the intersection of Pound Road and Yaldhurst Road and further improvements are proposed at the southern end of Pound Road to overcome the current delays associated with the existing connection to SH1 at Barters Road. To achieve this, it is proposed to extend Pound Road through the Islington Park site, provide a new railway crossing and a signalised intersection with SH1 (Main South Road).

This bypass to the west of the airport is expected to divert some traffic and further increase the efficiency of the upgraded Johns Road-Russley Road section of SH1 that provides very convenient access routes for the proposed CDG site.

8. Future CDG Operations

8.1 Proposed Site

CDG's proposal is to retain their existing Bromley Depot but to restrict operations there mostly to the handling of new vehicles. However that will not be the only site dealing with new vehicles as the proposed Johns Road site will also deal with the delivery and storage of new vehicles, mostly for the rental car industry. The vast majority of the other operations associated with relocation of rental cars and the processing of rental cars that are repurchased or returned following their lease will also be undertaken at the new site.

The new CDG depot will accommodate:

(i) Storage for 2,500-5,000 vehicles with an average of 3,500;

(ii) 15 car transporters;

(iii) Office/staff facilities for 10 staff (manager 1, despatch staff 2, office staff 2, yard staff 5);

(iv) A truck wash facility;

(v) Car washing facilities.

The turnover of vehicles stored at the site will not be high as they are stored on average for 45 days. The result is that the traffic activity associated with the site is relatively passive as evidenced by a yard staff of only five and an average traffic generation of only 130 vehicle movements per day (vpd). This will involve approximately 60 car transporter movements and 70 car movements. On certain days at peak times of the year the site generation could increase to about 170 vpd. The relocation of rental cars from the south and to the north will be carried out using the Johns Road site as the principal storage area and using car transporters. On the other hand the movement of rental cars between the Johns Road site and the rental car agencies at Christchurch airport will be undertaken by driving individual vehicles because the distance is so short that it does not justify the use of transporters.

8.2 Site Accesses

Three different arrangements have been assessed for access to the CDG site. These are discussed in detail below with most access off Waimakariri Road via Sawyers Arms Road but with options that include access from Johns Road and Waimakariri Road via Harewood Road.

Johns Road (SH1) is a four-lane divided highway that has limited access road status. Accordingly the New Zealand Transport Agency (NZTA) would prefer that all access to the site be obtained off Waimakariri Road. Waimakariri Road is a Local Rural road which generally has a 6.5m wide sealed carriageway.

An access that fully complies with highway geometric design standards could be provided on the southbound carriageway of SH1 with a deceleration lane ahead of a left turn (only) entry lane into the CDG site. This facility would be located near the southern boundary of

the wider site with a driveway doubling back to the proposed storage area as indicated in **Figure 10**. The extreme southerly location has been identified to avoid any conflict with a possible upgrade of the SH1 / Sawyers Arms Road intersection in the future.

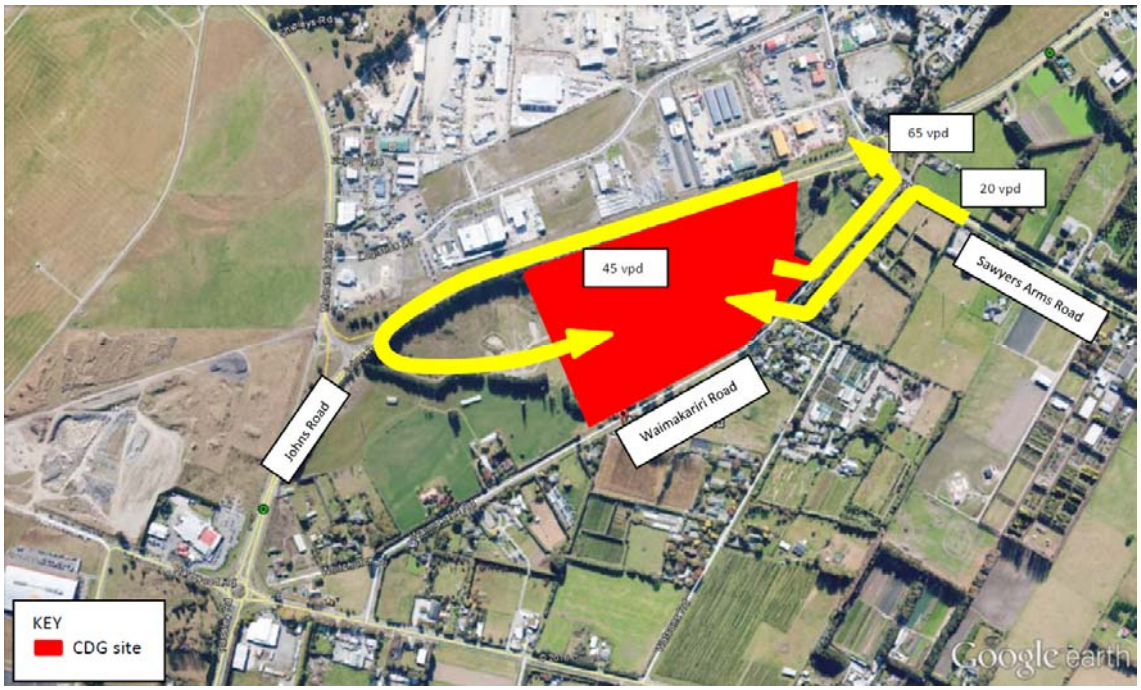

Figure 10: Access Option 1 with SH1 Left Turn Deceleration Lane

All exit movements from the site would need to use the existing (northern) access onto Waimakariri Road as a direct exit onto SH1 would not be practical because the proximity of the Harewood Road intersection would prevent an appropriate merge. All drivers would be instructed to turn left onto Waimakariri Road and use Sawyers Arms Road which is only 200m to the north. This would minimise the traffic effects on properties along Waimakariri Road. Traffic approaching the site from the east along Sawyers Arms Road would also use Waimakariri Road but no movements generated by the site would use the southern section of Waimakariri Road that connects with Harewood Road.

It is expected that the direct (left-turn) access from SH1 would prove to be impractical because of NZTA opposition and uncertainty about the practicality of having direct access into a private site where a vehicle might not be able to enter and could be required to turn back out onto SH1 without appropriate facilities. Accordingly it is proposed to promote an option (Option 2) which has all access to/from Waimakariri Road using the site's existing (northern) driveway. All access in and out of the CDG site could then be provided via Sawyers Arms Road as indicated in **Figure 11** if a modification were made to the existing Sawyers Arms Road / Waimakariri Road intersection to reinstate the right turn from Sawyers Arms Road into Waimakariri Road. .

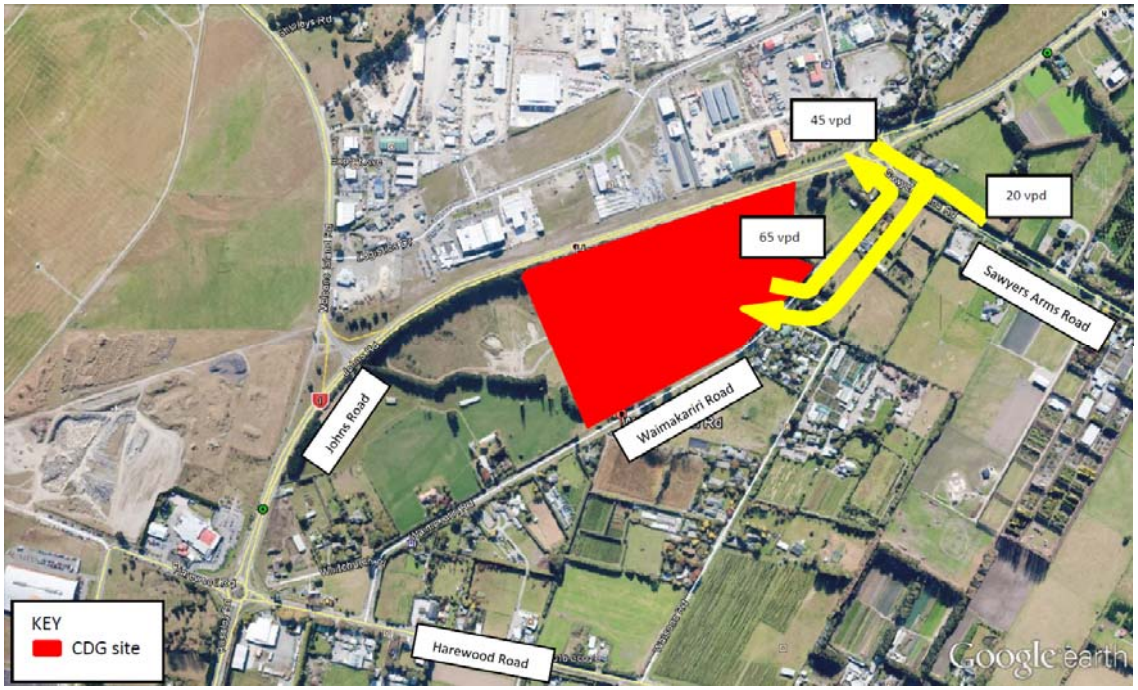

Figure 11: Access Option 2 with Right Turn Movement from Sawyers Arms Road

Figure 12 provides a detailed layout of the proposed Sawyers Arms Road / Waimakariri Road intersection modification which involves reducing the number of lanes on the Sawyers Arms Road east exit from two to one as recommended in an NZTA safety audit. This would enable the addition of a right turn lane and the reconfiguration of the median to provide for the right turn into Waimakariri Road. The median would continue to prevent the right turn out of Waimakariri Road and any vehicles needing to travel east on Sawyers Arms Road could execute a U-turn at the SH1 roundabout.

NZTA have expressed some concerns with the proximity of the right turn lane to the SH1 / Sawyers Arms Road roundabout. A new safety audit, supported by a capacity analysis that indicates a very low probability of a critical queue for the right turn, has indicated that there are no major problems anticipated in terms of right turn bay queue storage. If too many drivers chose to use the right turn as part of a through trip along Waimakariri Road then the queuing could become an issue. However it could be resolved by introducing an appropriate traffic calming device on Waimakariri Road south of the access to the CDG site or immediately north of the Watsons Road intersection to discourage through movements.

The recent safety audit also highlighted the distance pedestrians and cyclists would be required to travel when crossing the Sawyers Arms Road east exit if the right turn lane were simply added to the existing lanes. This is resolved by the proposed exit lane reduction.

Earlier NZTA investigations associated with the RoNS project indicated that traffic taking short cuts along Waimakariri Road between Sawyers Arms Road and Harewood Road could be creating a road safety issue. This is not necessarily confirmed by accident records and the upgrading of SH1 should make such rat-running unnecessary. However if the reintroduction of the right turn from Sawyers Arms Road into Waimakariri Road were to create such an issue then it could also be resolved by introducing the traffic calming device on Waimakariri Road referred to above.

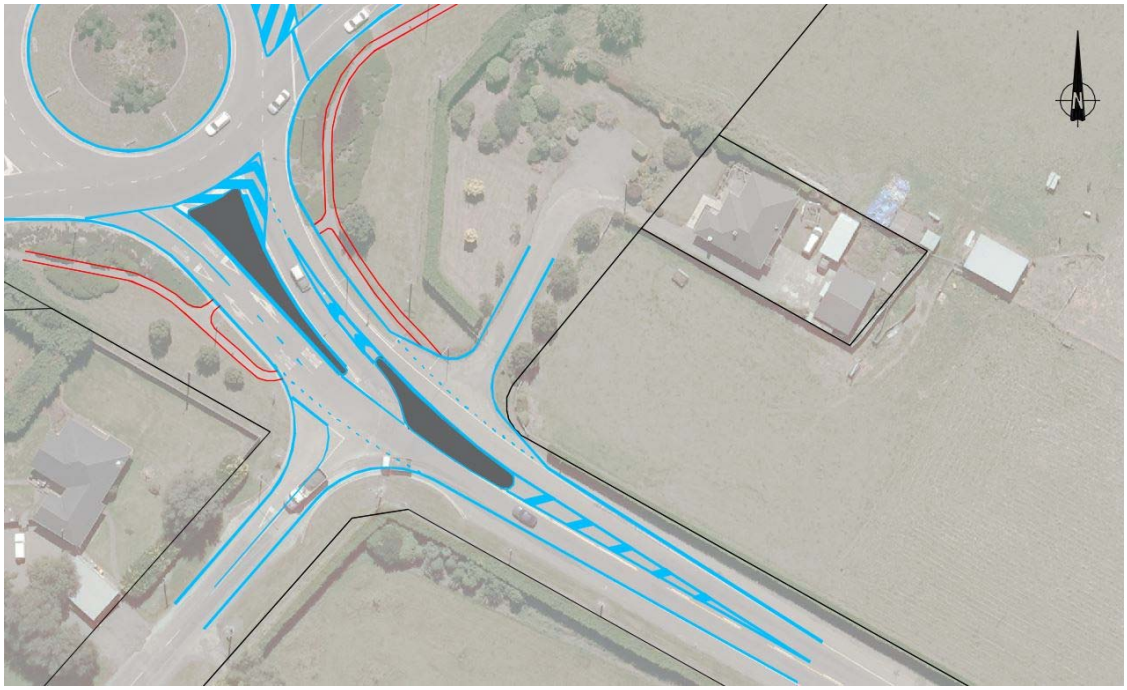

Figure 12: Proposed Right Turn Layout at Sawyers Arms Road / Waimakariri Road Intersection

If the reintroduction of the right turn in the preferred option were not acceptable to the roading authorities, then it would be necessary to have some CDG vehicles approaching the proposed site from Harewood Road. Of the 130 vpd generated by the site, it is expected that no more than 45 vpd would turn left into Waimakariri Road from Harewood Road. They would use a southern access to the site as indicated in **Figure 13.**

This entry only access would be provided along the paper road from Waimakariri Road leading to the southern end of the site. All other entry / exit movements would be provided at the existing accessway some 200m south of Sawyers Arms Road that already provides access to the electrical substation adjacent to the northern end of the CDG site.

Some of the vehicles approaching the site from the north along SH1 might not need to use Harewood Road and instead utilise Gardiners Road to reach the site using Sawyers Arms Road. However it is considered appropriate to maximise use of SH1 for this option (Option 3). That would leave 20 vpd that would turn left into Waimakariri Road from Sawyers Arms Road and turn into the northern access to the site.

All drivers leaving the site (65 vpd) would again be instructed to use the northern exit and turn left onto Waimakariri Road and then Sawyers Arms Road because of the median island would prevent right turns at that intersection. For vehicles heading north or south they would be able to simply turn onto SH1 at the roundabout at the intersection of Sawyers Arms Road and Johns Road. For vehicles heading to the east they would be able to execute a u-turn at the roundabout and head back along Sawyers Arms Road.

While CDG can enforce these instructions on the drivers of their transporters and can encourage their staff to drive their own vehicles in this fashion, it is possible that some of the relatively few visitors to the site might turn right and travel along Waimakariri Road to Harewood Road to travel east towards the city. Similarly some visitors might approach the site from the east using Harewood Road and then right turn into Waimakariri Road. These small numbers of potential movements are not expected to create a significant effect on

the environment along Waimakariri Road or on Harewood Road in the vicinity of the Harewood Primary School.

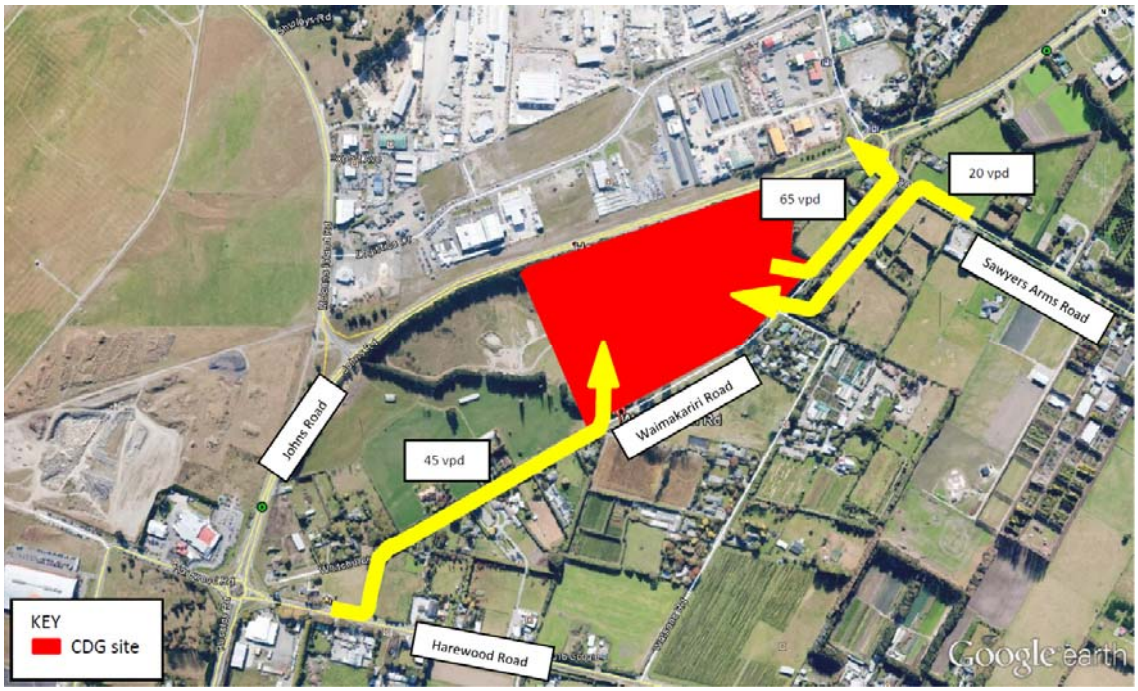

Figure 13: Access Option 3 with Left Turn from Harewood Road to Waimakariri Road

Of the specific movements associated with this access option for the proposed storage facility 85 vpd (two-way) would be added to the northern section of Waimakariri Road, an increase of only approximately 10% in existing traffic movements. An even lower increase of about 6% is expected on the southern section of Waimakariri Road with the generated traffic volume only 45 vpd. It is noted that there would be no increase in traffic movements over the section of Waimakariri Road between the two accesses to the site where there are seven residential dwellings and which are the only dwellings on the road that are not well shielded by trees or set back from the road.

8.3 Movement Changes

The travel distances associated with the delivery of new vehicles from Lyttelton will not change significantly with the future site as some new vehicles will continue to be delivered directly to dealerships and most other new cars will continue to be delivered to the Bromley depot. If some new cars for the rental car industry are delivered to the new site at Johns Road, it will result in some additional travel as part of the delivery from the port but this would be recouped subsequently when the cars are delivered to the rental car companies at the airport from Johns Road rather than having to be transported all the way from Bromley.

The delivery of new cars to the airport from the Johns Road site will have the added benefit of not requiring car transporters and the unloading issues that that entails. Instead rental cars will be driven individually from the Johns Road site. Overall the movement of new cars ex-Lyttelton is seen as being travel distance neutral.

However the delivery of new cars from Picton is expected to result in some significant savings. Currently the transporter generally travels directly to the Bromley depot. With the new site the transporter will travel the shorter distance to the Johns Road site. The situation is similar for the delivery trip of existing rental cars to the north. Currently the transporter has to cross town to the airport from the Bromley depot to load cars and then travel to the Main North Road. With the new site the transporter will be based at Johns Road and will be able to take on a full load of rental cars at that site before heading north directly along SH1. Clearly there is some significant saving here in terms of travel without the need to traverse the city, as illustrated in **Figure 14.**

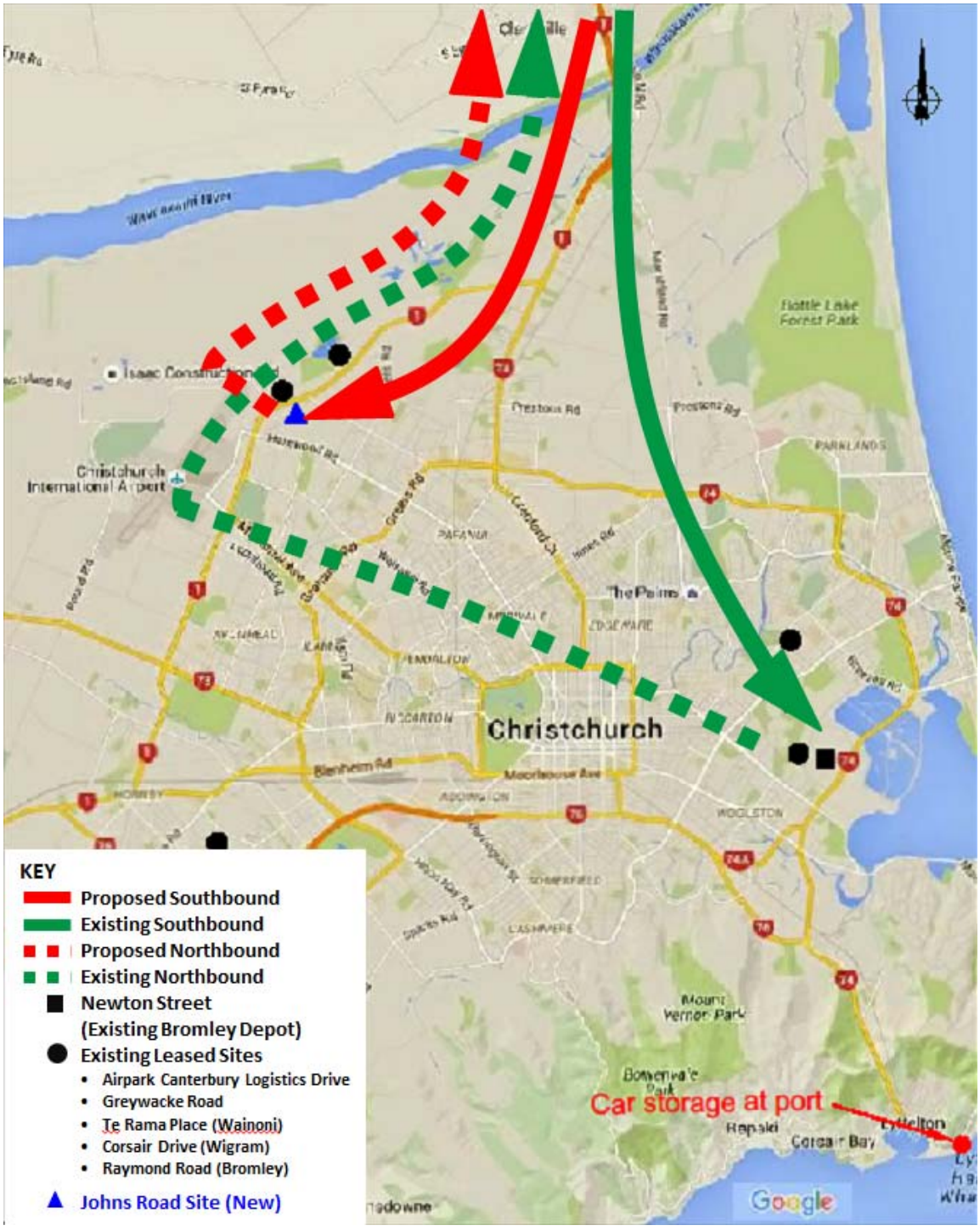

Figure 14: Transporter Routes North

In terms of the relocation of new cars out of Christchurch to the south, the saving in travel distance will also be significant because of the ease of access for the Johns Road site to the Main South Road. However the return trip will be even more efficient as indicated in **Figure 15**. Even though rental cars from the south are currently often returned directly to the rental car companies at the airport, the transporter then has to return to the Bromley depot empty. In the future the transporter vehicles will be stored at the Johns Road site close to the airport. Again, as illustrated above, for each trip there will be the saving of the distance across the city to/from Bromley.

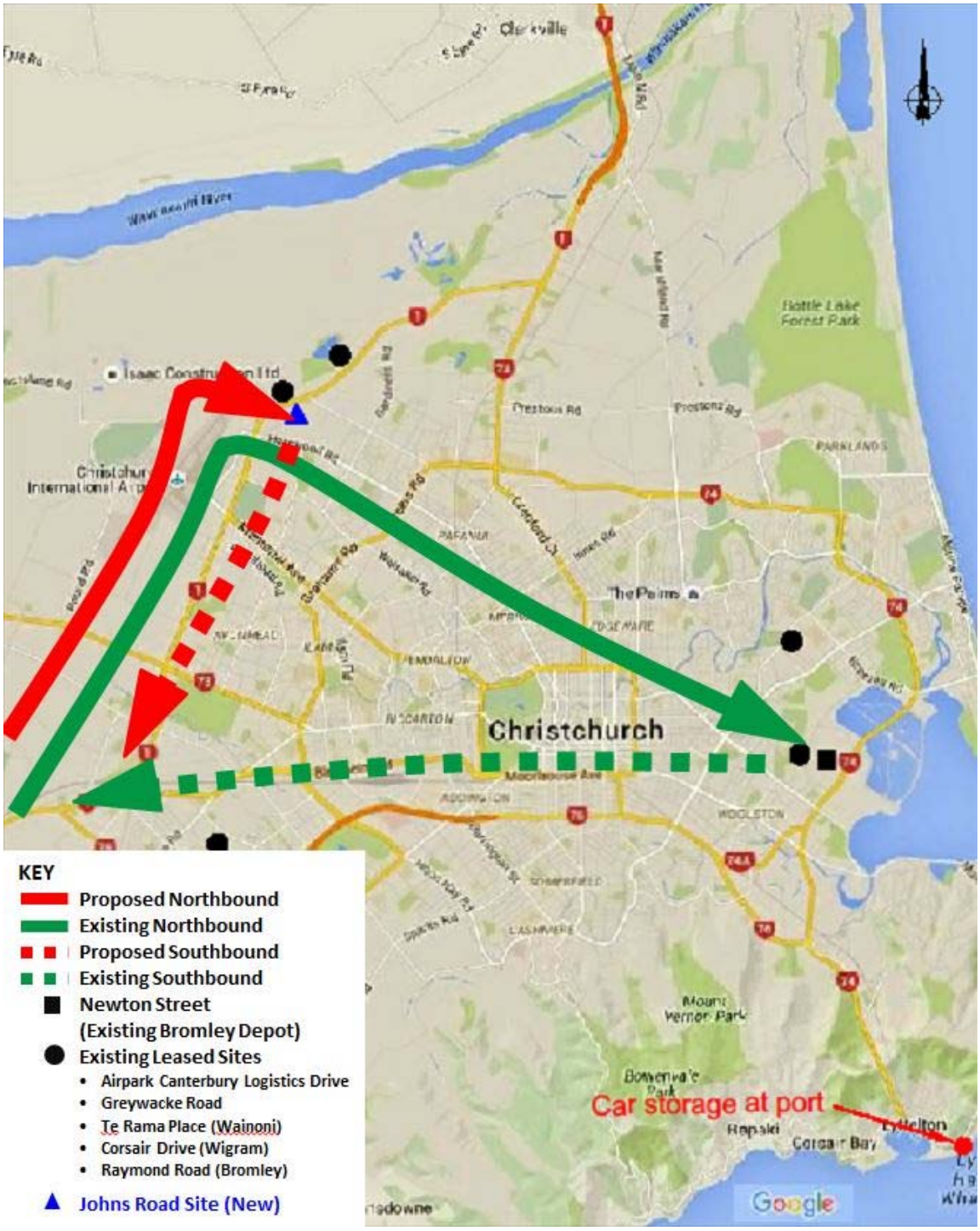

Figure 15: Transporter Routes South

There will not be significant changes in the delivery of new cars to local dealerships from storage at CDG sites. Currently they are mostly stored at the depot in Bromley and this may well continue into the future because of the covered storage. However there will be some new cars stored at Johns Road particularly those delivered from Picton which will then be able to be delivered to dealerships closer to Johns Road, such as those at Sockburn. So again there should be some economies but these are not expected to be as large as the ones described previously.

Generally the interaction with the rental car companies at the airport will involve new rental cars being delivered from the Johns Road site to the airport or existing rental cars being moved from one site to the other depending on the accumulation or (unusually) the depletion of stocks at the airport, or collecting existing rental cars which are being retired from the rental fleet. The short distance between the new site and the airport therefore makes for a very efficient and convenient service. It should be noted that these movements would be made with additional van movements to transport the drivers back to the Johns Road site after the rental cars have been delivered or vice versa. It is expected that one van would be required for each group of up to seven rental vehicles delivered.

The other large saving which is difficult to quantify is removing the current need to consolidate transporter vehicle loads when cars are stored at more than one of the existing temporary sites. This involves extra travel between sites and the added time involved in undertaking more than one loading or unloading exercise.

8.4 Expansion

In the future it is expected that the CDG business will increase and the Johns Road site provides very convenient scope for expanding into the land immediately to the south of the currently proposed site. In the past the business has expanded by acquiring further temporary leased spaces and/or parked vehicles more closely. This has added to inefficiency and extra travel. The flexibility afforded by Johns Road site in terms of ensuring that there are sufficient numbers of the vehicle type required for a transporter load being on the one site will mean both time and staff savings going forward. Also, it will not be necessary to move a lot of cars to get access to the required vehicles as happens at the existing sites because of the limited area and the closely parked arrangements necessitated by that.

9. Transportation Effects

9.1 Travel Benefits

As indicated in the previous chapter, the consolidation of five temporary sites scattered around the city into one large site at Johns Road will lead to considerable transportation benefits both in travel distance and time savings. This involves less fuel consumption, fewer emissions and less depreciation of vehicles as well as man hour savings.

It is has been estimated that the major savings will be with the transporter trips to the north and south described previously. Based on there being 260 working days in a year, it has been calculated that the new operating configuration would lead to a saving of at least 70,000 vehicle kms per year. For the trips to the south it is estimated that the seven transporter trucks will travel 8km less northbound and 6 km less southbound because of the convenience of the Johns Road site to SH1 and the Main South Road. Similarly the trips to the north will involve the seven transporters per day travelling 11km less northbound and southbound 8 km less. These equate to savings of 30,000 vehicle kms per annum and 40,000 vehicle kms per annum respectively. Using the economic evaluation manual value for vehicle operating costs and for travel time costs, equates to a total of some $100,000 per annum benefits to the New Zealand economy. There will also be secondary benefits from the travel savings because the transporters will have less effect on other traffic on the city network.

As mentioned before, there will be other travel savings associated with the transporting of the various vehicle types handled by CDG particularly those related with having to consolidate loads from the various existing temporary sites and instead being able to use the consolidated site on Johns Road. However these are too difficult to quantify as there are a relatively large number of different activities and each is rather minor in comparison to the savings already assessed. However it is estimated that they could accumulate to something like 30,000 vehicle kms per annum meaning that the overall proposal would provide benefits of some $150,000 per annum.

9.2 Traffic Generation

Based on the various vehicle relocation activities proposed by CDG for the new Johns Road site, the traffic generation of the site has been calculated in order to assess the effects of the new traffic that would be associated with the site. The traffic generation will include the car transporter truck movements that have been outlined previously. They will also include the rental car vehicles that are transferred between the CDG site and the rental car agencies at Christchurch airport. This will also require the movement of a van with every seven rental cars in order that the drivers can be delivered to the airport or returned from the airport. These have been added to the traffic generation forecast. Also the movement of staff vehicles has been included.

It is not expected that there will be many service vehicles required to visit the site because there will be very little infrastructure involved with the facility. There will be an office and a vehicle cleaning apparatus but little else. On-site staff will clean the vehicles but there will be various other servicemen from time to time required, for example, to maintain

landscaping. A miscellaneous traffic generation element of some 10 vehicle movements per day has been added to be conservative.

Table 4 below indicates the various components of the traffic generation that have been estimated for the Johns Road site.

CATEGORY		TRAFFIC GENERATION (vpd)	
		Average	Maximum
Car transporters	New cars from port	12	28
	Northern transporter trips	14	14
	Southern transporter trips	14	14
	Other local deliveries	20	20
Rental cars		36	59
Staff vehicles		24	24
Miscellaneous		10	10
Total		**130**	**169**

Table 4: Traffic Generation Johns Road

It can be seen that although there are up to 5,000 vehicles stored on this site at any one time, the traffic movements into and out of the site are amazingly low. If all relocation activities could be spread evenly over the year, then the number of traffic movements in and out of the site would total less than 130 vehicle movements per day. Taking the worst case scenario that could occur on the first day of unloading of a new car vessel at Lyttelton, the maximum number of vehicle movements in and out of the site is predicted to be approximately 170 vehicle movements per day. The District Plan allows for some 100 vehicle movements per day (two way) to be generated by a site in the rural zone and therefore the dispensation being sought for the operation of this site is not excessive.

The rural tourism activity mentioned earlier in the report provided a baseline traffic generation of a permitted activity in the Rural Urban Fringe District Plan zone. The Tekapo Springs as an example of a rural tourism facility has a yearly average traffic generation of 270 vpd which is much larger in comparison to the CDG traffic generation average of 130 vpd. On this basis the traffic generation of the CDG site is expected to be less than the traffic generation from a permitted activity in the Rural Urban Fringe zone.

9.3 Traffic Effects

A large percentage of the traffic generated by the site will involve car transporter trucks. However these vehicles are not particularly heavy even when loaded and they are highly manoeuvrable. Therefore they are unlikely to cause excessive noise or vibration and they will not conflict with other vehicles when turning into and out of the site or Waimakariri Road. To demonstrate this latter point the swept path of the transporter vehicles have been investigated turning from Waimakariri Road left into Sawyers Arms Road and also turning left from Sawyers Arms Road into Waimakariri Road.

Because of the increased capacity associated with the current upgrading of the Western Corridor and the relatively minor nature of the traffic flows generated by the CDG facility compared with traffic volumes on the adjacent roads, this transport assessment has focussed on the short term and the traffic effects on Waimakariri Road and its immediate intersections with Harewood Road and Sawyers Arms Road.

Even with the relatively high volumes of traffic on Sawyers Arms Road, Harewood Road and the SH1 corridor, there will be no adverse traffic effects anticipated as far as wider network delays and traffic flow efficiency are concerned because of the low traffic generation of the proposed site. In general the vehicle movements associated with the site will be added to relatively low movements through the roundabouts on SH1. Accordingly they will not suffer significant delays and will not significantly affect the operation of the roundabouts.

The only transportation effects likely to be of concern will be those associated with impacts on the residential properties along Waimakariri Road and on the Harewood Primary School on Harewood Road. The degree to which Waimakariri Road residents and Harewood Primary School would be affected is dependent on which of the two practical access options is consented. The preferred option with a new right turn bay at the Sawyers Arms Road / Waimakariri Road intersection would have the least impact because all the vehicles would be travelling along the northern section of Waimakariri Road where there are very few dwellings adjacent to the road. Therefore there would be very little impact on Waimakariri Road residents and no impact on Harewood Primary School.

The option with some entry movements using Harewood Road would involve that traffic travelling to the site passing more residential properties as well as Harewood Primary School. Therefore this option is anticipated to have a greater impact on Waimakariri Road. However it should be noted that this option, like the preferred option, also avoids generated traffic passing a number of residential properties located close to Watson Road and eliminates any potential for conflict at the Watson Road/Waimakariri Road intersection because of the southern accessway proposed.

The access option involving Harewood Road would retain the current layout of the Waimakariri Road / Sawyers Arms Road intersection where all right turns are restricted. Therefore there are not expected to be any road safety concerns at that location if Option 3 were adopted. Although Option 2 involves the proposed right turn from Sawyers Arms Road into Waimakariri Road, it is anticipated that the proposed intersection design would provide a safe bay for vehicles turning right and not result in significant queuing for vehicles travelling through the intersection.

It is not expected that there will be significant adverse road safety effects along Waimakariri Road because of the relatively small number of traffic movements that will be

added to the road. At times in the recent past there have been significant rat run movements through Waimakariri Road (and Watsons Road) because of the congestion on SH1 both prior to the commencement of the RoNS projects and during the construction of the RoNS projects. Accordingly there have been significantly higher traffic movements than there are now and higher than what are expected for the future with the development of the CDG site. Even so the accident rate has been very low as identified in Section 4.

As well as road safety it is understood that the effects of the transporter vehicles on the residential dwellings due to noise and vibration have also been discounted as having significant effects. This will be achieved partly because it is proposed that there should be mitigation measures specifically to minimise the effects on properties along Waimakariri Road. These will include sealing the entire trafficable area of the site to avoid dust, building a landscaped bund around the site to reduce noise and visual effects.

9.4 Public Consultation

Consultation has been conducted with local residents and also with the Harewood Primary School and the Harewood Play Centre which are located on the south side of Harewood Road just east of Waimakariri Road. The school are particularly concerned with having the car transporters turning left into Waimakariri Road from Harewood Road even though there will only be some 23 such movements per day. They and some local residents considered that the CDG site should have access directly from SH1. However they also supported having all access or via Sawyers Arms Road.

If option (Option 3) were adopted, it is not possible to guarantee that transporters would not access the site via Harewood Road when children are arriving and leaving school because some transporters travel from Picton and Queenstown and it is not practical to reschedule their arrival if it happens to coincide with peak school times. Whichever option were adopted CDG are prepared to guarantee that its vehicles will not make any other turning movements at the Harewood Road intersection. Accordingly none of their vehicles will directly pass the school and travel through the controlled pedestrian crossing of Harewood Road.

As discussed previously, the southern end of Waimakariri Road has been recently reconstructed and parallel kerbside parking provided for vehicles picking up and dropping off children. Swept path diagrams showing the transporter vehicles indicate that there will be no conflict between the movements of transporter vehicles turning into Waimakariri Road and the parked vehicles. A shared footpath and cycleway has been constructed along the east side of Waimakariri Road and an underpass is being constructed underneath SH1 from Whitchurch Place. Accordingly there will be no need for cyclists to use Waimakariri Road or the intersection with Harewood Road.

As noted before, it is not expected that trucks will pass the school site, cross the school pedestrian facility or turn right into Waimakariri Road. Therefore there would be minimal conflict with school children. The potential 45 vehicle movements turning left into Waimakariri Road can be compared with the 13,000 vehicle movements per day currently travelling along Harewood Road of which some 300 vehicles movements per day are expected to be heavy goods vehicles. Of the additional 45 vehicle movements per day added to the left turn into Waimakariri Road from Harewood Road some 23 vehicles per day are expected to be transporter trucks which would add only 10% to the existing heavy

vehicle component on Harewood Road. In terms of the total traffic flow on Harewood Road, the site would add less than 1% to the existing volume.

CDG has also consulted with St James Church in an endeavour to get the proposed carpark on the church land relocated near the corner of Harewood Road / Waimakariri Road so that it could be shared by the school. However the church has decided to go ahead with the special arrangement it has with the contractor that has been doing roading works in the area. CDG would still be prepared to construct a path from the proposed carpark to the Harewood Road footpath if Option 3 is specified as a condition of consent and the church and the school come to an arrangement to share the carpark.

There has also been consultation with both NZTA and the City Council who have agreed that if CDG vehicles are required to turn left into Waimakariri Road, CDG could fund the construction of a central pedestrian refuge island on the Waimakariri Road approach to the Harewood Road intersection to improve the safety of pedestrians crossing Waimakariri Road and to address the concern of the local school.

Waimakariri Road has wide grassed berms on both sides with a footpath only extending about 420m along the east side from Harewood Road. CDG are prepared to extend the footpath to Watsons Road and to Sawyers Arms Road if that is physically possible and irrespective of which access option is approved. If Option 3 is approved then CDG would also widen the carriageway of Waimakariri Road to 7m over its entire length. This offer is specifically in response to concerns expressed by residents during public consultation about the safety of pedestrians and cyclists (particularly children) using Waimakariri Road.

Currently there are some 26,000 vehicles per day (vpd) using Johns Road adjacent to the site while Harewood Road has a two-way vehicle volume of some 13,000 vpd and Sawyers Arms Road 9,000 vpd. Recent surveys of Waimakariri Road indicate that it carries a volume of approximately 700 vpd This involves movements to/from Harewood Primary School and other significant through movements particularly northbound between Harewood Road and Sawyers Arms Road in the evening peak.

There are only some 22 residential dwellings along the length of Waimakariri Road and accordingly the locally generated traffic movements on Waimakariri Road would be expected to be no more than 220 vpd. Some of the additional movements are generated by existing car storage activities on the east side of Waimakariri Road and further residential dwellings and commercial activities along Watsons Road, but there is still considered to be a through movement amounting to some 300 vpd. In spite of comments from local residents about high speeds, the average speed on Waimakariri Road was recorded during the recent traffic survey at close to the speed limit of 70 km/h. However if speeds and/or through traffic remain a concern they can be controlled by implementing a traffic calming device as discussed previously.

9.5 Sawyers Arms Road / Waimakariri Road Intersection

Access Option 2 would add the most (65) vehicle movements in and out of Waimakariri Road at Sawyers Arms Road. This amounts to a maximum of about 1.4% being added to the existing two way movement along Sawyers Arms Road. This is very minor and therefore cannot be considered to have a significant effect on the operation or the environment along Sawyers Arms Road.

It is noted that a previous Council report relating to a resource consent for the quarry site indicated that a traffic generation of 80 vehicle movements per day would not be considered to have an adverse effect on Waimakariri Road. In that case the traffic was to be directed to use the northern access to the site and travel only to and from Sawyers Arms Road. The report specifically referred to the use of a relatively short section of Waimakariri Road and indicated no concern with effects with generated traffic passing the two residential dwellings on either side of that section.

With the CDG proposal it is expected that a similar vehicle movement pattern (minimum of 85 vpd and maximum of 130 vpd) would be anticipated on an average day for this section of Waimakariri Road. For the previous proposal there would have been two right turn movements at the Sawyers Arms Road / Waimakariri Road intersection and therefore an additional conflict(s). With the preferred Option 2 for this proposal the right turn into Waimakariri Road would introduce one extra conflict but a safer arrangement is proposed than the previous activity as a result of the modified intersection design. The third access options would eliminate the need for right turn movements completely and therefore would also be safer.

10. District Plan Compliance

A table has been included in Appendix A indicating the level of compliance of the proposal with the transportation rules in the Christchurch District Plan. Many of the District Plan rules would only apply to the office/staff activity on site due to the nature of the proposal. All rules considered to be applicable to the office/staff activity or the site as a whole are expected to be met.

It is important to note that the proposed operation is not a high traffic generator despite the fact that there will be a large number of vehicles stored at the site.

The northern crossing to the site is longer than specified by the District Plan but this is not considered relevant as the major reason for restricting the width of vehicle crossings is because of concerns about the speed of vehicles entering and exiting and the safety implications for pedestrians on footpaths crossing the access. In this case there is no footpath provided along the west side of Waimakariri Road and very few reasons for pedestrians to be using the west side berm of Waimakariri Road and cross either of the potential access points particularly with the offer to complete the footpath on the east side.

The site is entitled to two accesses onto Waimakariri Road and the accesses are adequately separated from each other and from adjacent intersections. The Watsons Road intersection involves a road entering from the opposite side and therefore the separation distance of 85 metres is considered to be acceptable.

It is not clear how the parking requirements of the District Plan would apply to this activity at this site. Suffice to say the site will have in the order of 5,000 car parking spaces but that is the very purpose for the activity and therefore cannot be considered to contravene policies and objectives regarding reducing parking to discourage vehicle movements and encourage active travel. Reducing the number of car parking spaces on this site would not deter overall vehicle movement as they would simply be parked somewhere else.

11. Conclusions

Having examined the existing and proposed operation of CDG's car storage sites, it is concluded that the proposed site at Johns Road would provide vast improvements in terms of operating efficiency and transportation benefits for the company's operation compared with the current arrangement which involves the use of five temporary leased sites that will be replaced by the consolidated operation at the Johns Road site.

It is expected that direct access from Johns Road would not be approved by NZTA as there are some insurmountable road safety concerns. Accordingly that option (Option 1) is not recommended. The effects of the other two options on road safety on the adjacent road network and particularly adjacent to the Harewood Primary School have been investigated in detail and it is concluded that they would not be sufficiently adverse to prevent the proposed activity from being approved. Traffic effects on the school could be avoided by adopting access Option 2 which focusses access via Sawyers Arms Road but Option 3 would also not have significantly adverse effects with or without the mitigation measures outlined.

Irrespective of which of the access options identified is approved, it is considered that the effects of traffic generated by the site on the Waimakariri Road environs would be more than offset by the benefits associated with the travel savings over the wider road network produced by the improved CDG operation. To minimise the traffic effects on properties along Waimakariri Road, it is proposed that mitigation measures would be implemented. These include: sealing the entire site area to avoid dust, building a landscaped bund around the entire site to reduce noise and visual effects, extending the footpath on the east side of Waimakariri Road as far as possible, constructing a threshold immediately north of Watsons Road and requiring as many vehicles as possible to use the Waimakariri Road northern access to travel to/from Sawyers Arms Road.

The latter measure would result in most generated traffic movements only passing two dwellings in Waimakariri Road. One of those is shielded from the road by trees and one is affected by much greater traffic volumes being immediately adjacent to Johns Road and Sawyers Arms Road. If the third access option is adopted, further specific measures have been proposed to mitigate any traffic effects on the southern section of Waimakariri Road. These include widening the sealed road carriageway to 7m and adding a pedestrian refuge island at the Harewood Road intersection.

Accordingly it is concluded that the local traffic effects of the CDG proposal on the Waimakariri Road environment, particularly when compared with some permitted uses of the site, should not prevent the application being approved no matter which of the latter two access options is utilised. However Option 2 is preferred because it avoids effects on residents along much of Waimakariri Road and on the school. Otherwise it is expected that the traffic operations of the proposed CDG site will be relatively passive and as such would provide an appropriate buffer between the rural / residential areas to the east and the high speed, high traffic volumes on Johns Road to the west and the industrial areas beyond.

TDG

Appendix A

Christchurch City Council Transportation Rules Compliance

Requirement	Provision	Compliance
Rule 7.2.3.1 Minimum number and dimension of car parks required a. At least the minimum number of car parking spaces in Table 7.2 in Appendix 7.1 shall be provided on the same site as the activity	Will be provided for the office/staff activity at the detailed design stage. Approximately 5000 storage parking spaces proposed on site.	No reason for non-compliance however the rule is not applicable to the whole site
Rule 7.2.3.1 Minimum number and dimension of car parks required b. Car parking spaces shall be provided with the minimum dimensions in Table 7.4 in Appendix 7.1	Will be provided for the office/staff activity at the detailed design stage.	No reason for non-compliance however the rule is not applicable to the whole site
Rule 7.2.3.1 Minimum number and dimension of car parks required c. At least the minimum number of mobility car parking spaces in accordance with Table 7.3 in Appendix 7.1 shall be provided on the same site as the activity	Will be provided for the office/staff activity at the detailed design stage	No reason for non-compliance as the rule is not applicable to the whole site
Rule 7.2.3.2 Minimum number of cycle parking facilities required a. At least the minimum amount of cycle parking facilities in accordance with Appendix 7.2 shall be provided on the same site as the activity	Will be provided for the office/staff activity at the detailed design stage	No reason for non-compliance
Rule 7.2.3.3 Minimum number of loading spaces required a. At least the minimum amount of loading spaces in accordance with Appendix 7.3 shall be provided on the same site as the activity	This will be addressed at the detailed design stage	No reason for non-compliance
Rule 7.2.3.4 Manoeuvring for parking and loading areas a. On site manoeuvring shall be provided in accordance with Appendix 7.6	Will be provided for the office/staff activity at the detailed design stage	No reason for non-compliance however the rule is not applicable to the whole site
Rule 7.2.3.4 Manoeuvring for parking and loading areas b. On site manoeuvring shall be provided to ensure that a vehicle can manoeuvre in a forward gear on to and off a site	Will be **provided** at the detailed design stage	No reason for non-compliance
Rule 7.2.3.5 Gradient of parking and loading areas a. The gradient of surfaces at 90 degrees to the angle of parking shall not exceed 1:16	The site is generally level	Yes
Rule 7.2.3.5 Gradient of parking and loading areas b. The gradient of surfaces parallel to the angle of parking shall not exceed 1:20	The site is generally level	Yes
Rule 7.2.3.5 Gradient of parking and loading areas c. The gradient of mobility car parking spaces shall not exceed 1:50	The site is generally level	Yes
Rule 7.2.3.6 Design of parking and loading areas a. Lighting of parking and loading areas shall be maintained at a minimum level of two lux, with high uniformity, during the hours of operation	Will be provided for the office/staff activity at the detailed design stage	No reason for non-compliance however the rule is not applicable to the whole site
Rule 7.2.3.6 Design of parking and loading areas b. The surface of all car parking, loading, and associated access areas shall be formed, sealed and drained and car parking spaces permanently marked	Will be provided at the detailed design stage. All parking areas are proposed to be sealed	Yes
Rule 7.2.3.7 Access design a. Access shall be provided in accordance with Appendix 7.7	Will be addressed in detailed design stage	No reason for non-compliance
Rule 7.2.3.7 Access design b. Queuing space shall be provided in accordance with Appendix 7.8	Will be addressed in detailed design stage	No reason for non-compliance

Requirement	Provision	Compliance
Rule 7.2.3.7 Access design c. Either an audio and visual method of warning pedestrians of the presence of vehicles or a visibility splay in accordance with Appendix 7.9 shall be provided	Adjacent roads have no footpaths but visibility splay should be possible if needed	No reason for non-compliance
Rule 7.2.3.8 Vehicle crossings a. A vehicle crossing shall be constructed from the property boundary to the edge of the carriageway / service lane	Will be addressed in detailed design stage	No reason for non-compliance
Rule 7.2.3.8 Vehicle crossings b. Any vehicle crossing on a road with a speed limit of 70km/h or more shall have a minimum spacing from an adjacent vehicle crossing on the same side of the frontage road in accordance with Table 7.14 of Appendix 7.11 Waimakariri Road speed limit – 70km/hr Type of road – Local Minimum required distance between vehicle crossings – 40m	Nearest adjacent vehicle crossing to the southern access is located 60m away and 160m away from the northern access on Waimakariri Road	Yes
Rule 7.2.3.8 Vehicle crossings c. The maximum number of vehicle crossing shall be in accordance with Table 7.15 of Appendix 7.11 Frontage length - >100m Road frontage – Local – Max number of crossings – 3 Road frontage – Major Arterial – Max number of crossings - 2	SH1 – 1 crossing (possibly) Waimakariri Road – 2 crossings (maximum)	Yes
Rule 7.2.3.8 Vehicle crossings d. The minimum distance between a vehicle crossing and an intersection shall be in accordance with Table 7.16 of Appendix 7.11	Northern access on Waimakariri Rd to Watsons Rd – 75m All accesses exceed crossing / intersection separation requirements	Yes (See report)
Rule 7.2.3.8 Vehicle crossings e. Any vehicle crossing on a rural road shall provide minimum sight lines in accordance with Figure 7.15 of Appendix 7.11 Speed limit – 70km/hr. Sight distance required – 170m.	All sight distance requirements are expected to be met	No reason for non-compliance.
Rule 7.2.3.10 High trip generators	This facility is not a high trip generator	Yes