Before the Commissioner appointed by
the Selwyn District Council

Under	the Resource Management Act 1991
In the matter of	Resource consent application for Foodstuffs (South Island) Properties Limited to establish and operate a PAK'nSAVE supermarket and associated access, loading, car parking, signage, earthworks and landscaping at 157 Levi Road, Rolleston (RC216016)

Statement of evidence of David John Robert Smith

18 July 2022

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Qualifications and experience

1 My full name is David John Robert Smith

2 I hold a Bachelor of Technology (with Honours) in Industrial Operations Research and Master of Philosophy in Operations Research from Massey University. I am a Chartered Member of the Institute of Logistics and Transport (CMILT), a member of Engineering New Zealand (MEngNZ) and a member of the NZ Modelling User Group sub-group of ENZ. I have been appointed to the NZ Transport Agency Independent Professional Advisors panel for Transportation Modelling. I am also certified as a Hearings Commissioner having completed the Making Good Decisions course in 2019.

3 I hold the position of Technical Director of Transportation Planning at Abley. I have been in this position since 2018 and have been at Abley for ten years. I lead a range of development planning and transportation planning projects for both public and private sector clients.

4 My previous work experience includes 21 years of transportation planning and engineering experience. I have managed and led numerous projects related to transportation business cases, transportation research and Resource Management Act (**RMA**)-related matters for public and private sector clients. I have recently represented a range of clients in RMA hearings including Foodstuffs South Island Limited, Auckland Council, Selwyn District Council, Queenstown-Lakes District Council, Fonterra and Ports of Auckland as an expert witness.

5 My role in relation to Foodstuffs (South Island) Properties Limited's (**Foodstuffs**) application to establish and operate a PAK'nSAVE supermarket and associated access, loading, car parking, signage, earthworks and landscaping at 157 Levi Road, Rolleston (**Application and Site**) has been to provide advice in relation to traffic and transport. I drafted the Integrated Transportation Assessment report to the Assessment of Environment Effects (**AEE**) accompanying the Application, which appears at Appendix E of the AEE. I have also prepared two Request For Information (RFI) responses and an Outstanding Transportation Matters report which is attached to this statement of evidence as Attachment A.

6 My assessment is based upon the Application description attached to the evidence of Mr Mark Allan as **Appendix 1**.

7 In preparing this statement of evidence I have considered the following documents:

(a) the AEE accompanying the Application;

(b) submissions relevant to my area of expertise;

(c) planning provisions relevant to my area of expertise; and

(d) Section 42A report and Appendices 9 and 10 to the Section 42A report prepared by Carriageway Consulting;

8 I have visited the Application Site on several occasions to understand the local traffic environment.

Code of Conduct for Expert Witnesses

9 While this is not a hearing before the Environment Court, I confirm that I have read the Code of Conduct for expert witnesses contained in the Environment Court of New Zealand Practice Note 2014 and that I have complied with it when preparing my evidence. Other than when I state I am relying on the advice of another person, this evidence is within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

Scope of evidence

10 I have prepared evidence in relation to:

(a) the existing and future environment of the Application Site;

(b) the key findings of my assessment of effects;

(c) matters raised by submitters to the Application;

(d) matters raised in the Selwyn District Council's (**SDC**) report (report issued under s42A of the RMA); and

(e) Proposed conditions of consent.

Executive Summary

11 I have assessed the Foodstuffs Application to establish, operate and maintain a supermarket and associated click and collect facility, car parking, access, signage and landscaping at 157 Levi Road in Rolleston, Canterbury. I consider that with the Site located on the corner of Levi Road and Lincoln Rolleston Road, the Site presents an optimal location for vehicles travelling between Rolleston and Christchurch (on Levi Road) and between Rolleston and Prebbleton / Lincoln (on Lincoln Rolleston Road) to drop in on their way past the Site.

12 The evidence of Mr Colegrave is that the supermarket in Rolleston will reduce the current and future reliance on trips to Christchurch for supermarket shopping. I consider that this reduction on reliance will also reduce traffic volumes between Rolleston and Christchurch, and consequent vehicle-related emissions.

13 I have identified the key transport related features of the Application including:

(a) the inclusion of 513 car parks designed for efficient two-way vehicle movement throughout the Site;

(b) 24 cycle parks including secure staff parking to encourage uptake of cycling to access the supermarket;

(c) there are five accesses provided onto Levi Road and Lincoln Rolleston Road to efficiently distribute traffic across the local network;

(d) pedestrian connections through the Site to provide safe movement and support uptake for active modes;

(e) the installation of a shared path and a footpath along the site frontages on Levi Road and Lincoln Rolleston Road (respectively) are included within the application and integrate well with the external pedestrian and cycle networks;

(f) there is access to public transport 200 metres from the Site and based on my experience I consider there will likely be improved public transport connectivity delivered in the future, evident within the Christchurch Public Transport Futures Combined Business Case[1].

(g) separate delivery vehicle routes have been provided through the Site supported by wayfinding signage and I have assessed this to minimise conflicts with supermarket customers.

14 I have conducted an assessment of the transportation effects of the Application, including transportation modelling using the Rolleston Traffic Model. The assessment has several conservative assumptions and I conclude that the local network and accesses all operate well during the evening peak hour which is the period with highest network demands and levels of activity at the supermarket. I highlight that the Levi Road / Lowes Road / Masefield Drive / Lincoln Rolleston Road intersection in its current form operates well out to 2024 and is programmed to be signalised by SDC around 2025/26.

15 Within the modelling assessment I have considered the cumulative effect of supermarket traffic with potential urban development promoted by current Private Plan Changes, so it provides a robust assessment of the long-term performance of the network and demonstrates that the network will operate safely and efficiently. I have concluded that this assessment is conservative in that the model anticipated growth which may occur over a 30-year period out to 2048 is based on Statistics New Zealand high growth projections.

[1] https://api.ecan.govt.nz/TrimPublicAPI/documents/download/4106274

16 I have assessed the relevant transport-related rules within the operative Selwyn District Plan (**SDP**) and identified six non-compliances. Mr Carr identified a further two non-compliances relating to the site accesses and rules specific to the residential zone. I have provided an assessment for the applicable rules and consider them acceptable in the context of the Application, the receiving transport environment, the modelling assessment undertaken and other design and mitigation measures associated with the Application.

17 I have read the Section 42A report and transport report of Mr Carr on behalf of SDC. Mr Carr has requested further information to be provided to fully assess the transportation effects of the supermarket. I have provided additional assessment including:

(a) demonstrating how the transport effects of the adjacent Plan Change 71 (**PC71**) have been included in the assessment;

(b) revisiting the transportation modelling assessment to address traffic diverting through residential streets;

(c) addressing my indicative sketch of a signalised layout of Levi Road / Lincoln-Rolleston intersection to demonstrate that no third-party land is required;

(d) recommending a suite of additional transportation conditions which Mr Allan has included in Appendix 2 of his evidence: proposed conditions of consent;

(e) confirming Foodstuffs' approach towards providing public access to its land for shared path users; and

(f) reinforcing the importance of retaining Access C onto Levi Road.

18 Following consideration of transport-related submissions and matters raised through the Section 42A and Mr Carr's report, I am of the view that the Application can be supported from a traffic and transportation perspective, and that any transportation effects have been mitigated through design features or conditions of consent so they are acceptable.

19 I conclude that the traffic generated by the supermarket is within the capacity of the local transport network with both frontage roads being Arterial Roads that (unlike residential streets) are intended to cater for this level of traffic. In my view the proposed supermarket development integrates well with the transportation networks and future growth of Rolleston township and can be fully supported on transportation grounds.

Existing transport environment

20 The existing site information is reported in Section 2 of the ITA. This describes the location, surrounding road network, zoning, site characteristics and existing land use activities on the site as shown in Figure 1 along with context to the wider area.

Figure 1 Application site location in the context to the wider area

21 A summary of the key transport features in the vicinity of the Application are as follows:

(a) The site has road frontage to Levi Road and Lincoln Rolleston Road, both being classified as Arterial Roads under Appendix 7 of the Selwyn District Plan (**SDP**). Levi Road is the main corridor between the Rolleston Town Centre and the SH1 Weedons Road interchange. The interchange provides connectivity to the wider regional network and allows full movements with roundabouts to manage flows to and from Christchurch via the Christchurch Southern Motorway Stage 2 which opened in 2020.

(b) The existing vehicle flows for Levi Road and Lincoln Rolleston Road are recorded to be approximately 5,500 and 6,000 vehicles respectively. Therefore, both roads are operating well within the capacity of typical urban road corridors. I have estimated that the capacity of these corridors is in the order of 1,200-1,400 vehicles per hour per lane which typically translates to approximately 20,000 vehicles per day.

(c) Existing walking and cycling facilities are available close to the site including footpaths on the north side of Levi Road and a shared path on the west side

of Lincoln-Rolleston Road. The shared path on Lincoln Rolleston Road continues to the west along Lowes Road with a continuous shared path on the south side of Lowes Road connecting to further shared paths along Tennyson Street. There are kerb cutdowns to provide for pedestrian crossing movements across the Masefield Drive and Lowes Road approaches at the roundabout intersection of Levi / Lowes / Lincoln Rolleston / Masefield Drive. Wayfinding is located on the corner of Levi Road and Masefield Drive directing pedestrians and cyclists to the Rolleston Town Centre (1 kilometre away) and Lincoln township.

(d) The closest bus route to the site is Service #5 linking Rolleston to New Brighton though Central Christchurch operating at headways of 30 minutes each way 6 days a week and 60 minutes on Sundays and after 6pm. There are two bus stops in the immediate vicinity of the Site, both within a 5-minute walking distance providing excellent public transport accessibility.

(e) I have conducted a search of the Waka Kotahi Crash Analysis System (CAS) database for a five year period from 2016-2020 and concluded that there are no obvious safety concerns at the existing site or surrounding road network. There were on average 2.4 crashes per annum in the vicinity over this period with one minor injury and two non-injury crashes adjacent to the Site. I have subsequently drawn down crash records from 2021 through to 2022 year-to-date and observed three further minor injury crashes (1.5 per annum) over the wider vicinity with two occurring on the Levi Road site frontage. One of these three crashes was due to a distressed driver, a second due to a driver being distracted by their cellphone and the third occurred due to a driver stopping unexpectedly to allow a vehicle to turn into traffic. I consider that none of these recent crashes show a pattern which demonstrates that there any underlying safety concerns along the corridor.

Future transport environment

22 I have assessed the future transport environment and note there are several planned and funded transport infrastructure works in the vicinity of the site which anticipate future urban transport growth in Rolleston. These are included in the Selwyn District Long Term Plan 2021-31 (LTP) which I have summarised in Table 1.

Table 1 Selwyn LTP transport projects close to the site

Intersection	Proposed upgrade	Year
Springston Rolleston Road / Selwyn Road	Roundabout	2024/25
Lowes Road / Levi Road / Lincoln Rolleston Road / Masefield Drive	Signalised	2025/26
Lincoln Rolleston Road / Selwyn Road	Roundabout (dual lanes)	2027/28
Selwyn Road / Weedons Road	Roundabout (dual lanes)	2027/28

23 I have discussed the future transport environment with SDC and understand that Levi Road is intended to be upgraded in the future. This includes a shared path on Levi Road to connect with the Lowes Road shared path, and the Regional Park proposed by SDC east of the site near Weedons Road.

24 I have identified several other relevant transport infrastructure line items in the LTP demonstrating SDC's commitment to improving provision for public transport and active modes including the Rolleston Bus Stop improvement programme, provision for relocating and expanding Park N Ride, and new cycleways including Rolleston to Burnham and Jones Road.

25 I understand that Waka Kotahi is currently undergoing the SH1 Rolleston Flyover and Speed Review which intends to provide a flyover connection between the residential and industrial sides of Rolleston. The flyover is located 1.4km to the north of the Application Site. This will provide a direct connection between the Application Site and the industrial area to the north of the township, via Masefield Drive and Rolleston Drive.

Modelling Urban Growth in Rolleston

26 The transport infrastructure upgrades are intended to manage ongoing residential and commercial growth in Rolleston and the wider Selwyn District. I have assisted SDC with transportation modelling using the Rolleston Transportation Model (the Model) to support a range of development applications including providing the basis for identifying Long Term Plan infrastructure requirements and inputs to the Development Contributions Policy.

27 A plethora of Private Plan Change applications[2] have been received by SDC in response to the underlying demographic growth since 2020 including nine in Rolleston. A Model scenario of 2033 has recently been developed for SDC and used to assess various Private Plan Changes around the township and I have agreed with Mr Mazey at SDC that this model would be used to assess the effects of the proposed supermarket. I note that Mr Carr agrees that the model is appropriate for assessing the effects of the Application[3]. Notably this modelling includes full development of the current Urban Growth Overlay as well as the traffic generated by Private Plan Changes 71, 75 and 78 on the east side of Rolleston township that all front onto Lincoln Rolleston Road. As such, this includes the cumulative effect of the full development of these areas on the transportation network. The supermarket site in relation to these Private Plan Changes is show in Figure 2.

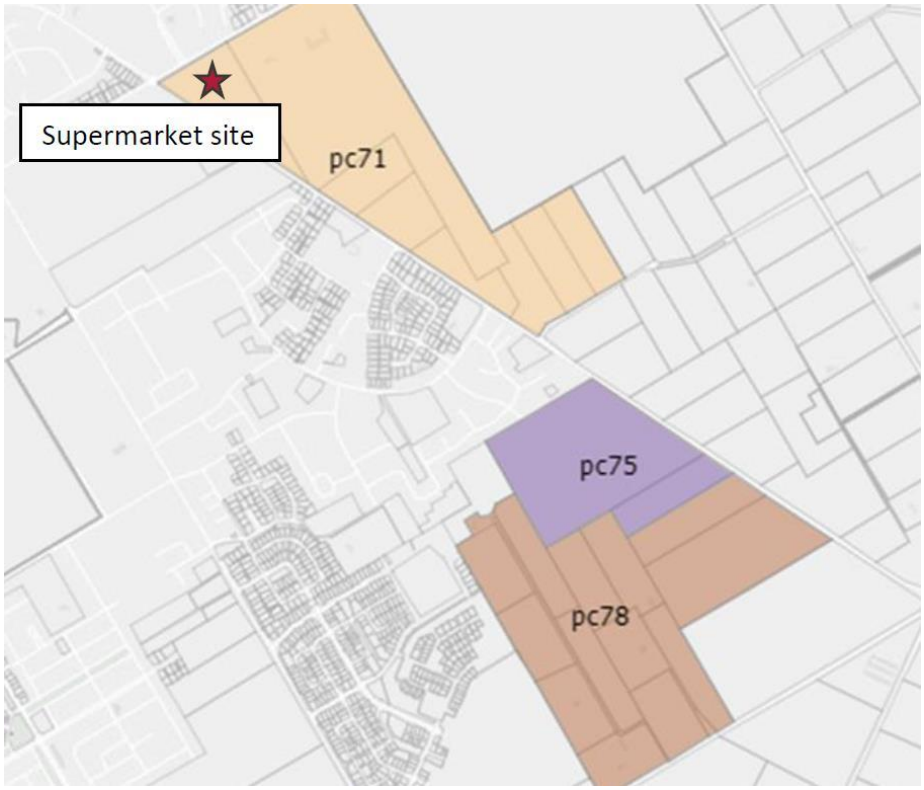

Figure 2 Location of Supermarket Relative to Plan Change Requests

28 Collectively, these three Plan Change areas yield 1690 households, with 6410 households potentially enabled should all of the Plan Changes be approved, and the developed as per the Plan Change applications at the time at which the model was developed in May 2021. I consider the supermarket is well located to meet

[2] https://www.selwyn.govt.nz/property-And-building/planning/strategies-and-plans/selwyn-district-plan/plan-changes

[3] Refer page 5 of Mr Carr's peer review evidence included as Appendix 10 to the Section 42A report.

the needs of the new development areas, especially the residents of PC71, PC75 and PC78. The supermarket in my view is well located for shoppers to drop in on their way to/from Christchurch for supermarket shopping so has the potential to reduce traffic volumes and corresponding vehicle-related emissions on the wider network.

29 Significantly, the 2033 modelled year is a nominal year at which all of the current residential zoned land and the Plan Changes are fully developed. As such, the 2033 transportation model includes 15843 households compared to 6745 households in 2018, a 135% increase. The total growth is then 9098 households over 15 years, as well as extensive commercial and industrial development over this period. This equates to 9% growth per annum. As noted in section 2.2.1 of the AEE report, population growth in the past 10 years in the Selwyn District has been very high at 5.4% per annum but this is well below the modelled growth included in my modelling assessment. I note that in paragraph 17 in Mr Colegrave's evidence that residential growth in Selwyn District has exceeded Statistics New Zealand high growth population projections

30 I have accessed the Selwyn District Population Projections from the Statistics New Zealand website 'NZ-Stat' service and identified that across the Statistical Areas in Rolleston the medium and high population growth forecasts anticipate 58% and 76% growth (respectively) between 2018-2033 which equates to 3.9% and 5.1% growth per annum over this period. The modelled scenario with 9% growth per annum is clearly well in excess of even the highest population projection. I have further identified that the quantum of development in the 2033 model aligns with the Statistics New Zealand 2048 high growth forecast, so by proxy represents a 30 year high-growth forecast.

31 As such the 2033 future year is a nominal year which corresponds to the full development of all of the Plan Changes that have been lodged and assessed, and is realistically a high growth 30 year forecast model. It is important to bear this in mind when considering my modelling assessment.

Table One Statistics New Zealand Rolleston Medium/High Population Projections

Medium forecasts by year for:	**2018**	**2033**	**2048**
Rolleston Izone	40	40	50
Rolleston North West	3980	4490	4560
Rolleston Central	3410	3890	4350
Rolleston North East	4780	5910	6710
Rolleston South West	2970	4510	5540
Rolleston South East	3220	10250	15100
Total Rolleston Medium	**18400**	**29090**	**36310**

Growth from 2018		**58%**	**97%**
Growth pa		**3.9%**	**3.2%**
High forecasts by year for:	2018	2033	2048
Rolleston Izone	40	60	80
Rolleston North West	3980	5050	5800
Rolleston Central	3410	4270	5200
Rolleston North East	4780	6630	8340
Rolleston South West	2970	4920	6430
Rolleston South East	3220	11500	17450
Total Rolleston High	**18400**	**32430**	**43300**
Growth from 2018		**76%**	**135%**
Growth pa		**5.1%**	**4.5%**

Proposal

32 I have summarised the key transportation elements of the Application within the ITA, as follows:

(a) The Application involves constructing a new PAK'nSAVE supermarket (approximately 8,105m^2 GFA) in the northernmost part of the site, with integrated Click & Collect facility and associated vehicle and pedestrian access, on-site carparking and goods delivery arrangements, signage and landscaping. The supermarket will be operative seven days a week from 7am to 10pm.

(b) The proposed development provides for flexibility by including five vehicle accesses; two main, two secondary and one exit only. Semi-trailers are restricted to entering via Levi Road (Access E on figure 3) and exiting via Lincoln Rolleston Road (Access A on figure 3).

(c) The Application includes a total of 513 parking spaces inclusive of 14 staff spaces, ten mobility parking spaces and eight Click & Collect vehicle spaces. There will be ten visitor cycle parks and 14 staff cycle parks.

(d) Loading operations will occur within the site behind the PAK'nSAVE building within the dedicated loading and yard area on the east side of the building. There are no formal loading spaces proposed as all loading will occur within the designated yard area adjacent to the bulk store.

(e) Frontage upgrades will be provided and encourage uptake of walking and cycling including the installation of a footpath on the eastern side of Lincoln-Rolleston Road and a shared path on the south side of Levi Road with safety design features at each access location. Pedestrian crossings are also

provided across both Levi Road and Lincoln-Rolleston to safely connect the supermarket with the wider Rolleston pedestrian and cycle network. Concept plans for the proposed frontage upgrades are included in Attachment A.

33 The site layout plan is found within Figure 3, highlighting the location of each of the proposed accesses.

Figure 3 Site layout and location of accesses

Assessment of effects

Location

34 From a transport perspective I consider that the supermarket is optimally located with respect to the current and future transport network, being located on two key corridors accessing the Rolleston town centre and connecting Rolleston with Christchurch (in the case of Levi Road) and Prebbleton and Lincoln (Lincoln Rolleston Road).

35 Currently 11,500 vehicles per day pass the Application Site daily travelling between Rolleston and Christchurch or other parts of the Selwyn District. Trips which are already passing by the site that drop in on their journey are expected to be a substantial portion of supermarket trip generation with recent surveys undertaken in Christchurch (for which I provided an advisory role) demonstrating these make

up as much as 33% of total travel demand[4]. This is important especially during peak periods as the pass by supermarket shoppers are already driving along the frontage road and do not add traffic to the wider transport network. By locating the supermarket on two key arterial roads the potential to serve pass by trips is maximised. As Rolleston continues to grow into the future this will become more important as a means of optimising the performance of the wider network.

36 Locating a large supermarket outside of the town centre (where the current supermarkets are located) will in my view also reduce the extent to which supermarket traffic exacerbates congestion associated with existing and future traffic visiting the town centre. I further note that if the supermarket were located in the Rolleston Industrial Zone (RIZ) to the north of SH1, there would be a significant increase in cross-SH1 traffic as all of the residential development in Rolleston is situated to the south. In my view this will likely result in a significant amount of traffic travelling through the town centre to access the RIZ with consequent conflicts between town centre traffic and supermarket traffic. By contrast the Application Site is located such that the vast majority of shoppers will not need to travel through the town centre, with Lowes Road, Lincoln Rolleston Road and Levi Road providing connectivity to the majority of Rolleston residents. Being located 1km from the town centre, the Application Site is also readily accessible for shoppers and workers in the town centre and for service vehicles.

37 Rolleston is forecast to experience significant residential growth with much of this occurring to the south and west of the township and supermarket Site. This means that the supermarket will be 'on the way' to the town centre and to Christchurch and destinations further afield for these new development areas. In my view the location of the PAK'nSAVE compliments this residential growth and will assist in minimising longer-distance travel to and from the wider Christchurch metropolitan area.

38 I further understand from Mr Colegrave (paragraph 34c of evidence) that locating a PAK'nSAVE in Rolleston has the potential to reduce spend by Rolleston residents at Christchurch supermarkets. I expect that this would be accompanied by a corresponding reduction in travel between Rolleston and Christchurch for shopping, and a resultant reduction in vehicle-related emissions throughout the day. The potential for the supermarket to reduce travel will likely increase as Rolleston continues to grow as an urban centre and this will be further supported as the walk and cycle network expands and the Regional Council expands the public transport services in the town.

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[4] Research source is available at https://www.researchgate.net/publication/322159912_Pass-By_and_Diverted_Trip_Rates_of_Supermarkets_in_Christchurch

Parking

39 I confirm that the proposed 513 parking spaces are conveniently located with strong pedestrian connections to the supermarket and an area of staff parking is provided in a separate and clearly marked car park adjacent to the yard area. This level of provision in my view ensures that there will be no overspill of parking associated with the supermarket onto neighbouring residential streets with associated potential safety and amenity effects.

40 Carparks are 2.6 metres wide and 5 metres depth with no encroachment on landscaping. The proposed mobility spaces are at least 3.6 metres wide and are 5 metres deep. The proposed aisle width is 7 metres which exceeds the minimum District Plan requirement ensuring comfortable manoeuvring to access car parks and navigate throughout the site.

41 Pedestrian connections lead from the public carparking areas directly to the front doors accessing the supermarket and connect to the external pedestrian network including providing crossing facilities to safely access the west side of Lincoln-Rolleston Road and north side of Levi Road. All internal pedestrian crossings are proposed to be marked as zebra crossing and include raised treatments to enhance safety of pedestrians within the site and manage the speed of vehicles manoeuvring in the carpark.

42 Visitor cycle parks are located at the southwest corner of the supermarket frontage adjacent to the main supermarket access where there is good passive surveillance. Staff cycle parking is located on the southeast corner of the supermarket building and will be located in a secure and covered facility.

43 The layout of the carpark has been carefully designed to reduce conflicts within the Site including a two-way spine between the two primary accesses, and conveniently located secondary accesses to provide customers with flexibility to access and egress the Site. All aisles are two-way to provide flexibility in accessing car parking and reducing circulation of traffic locating car parks.

Access

44 I have identified the attributes of each of the five proposed accesses shown in Figure3 above and these attributes are as follows:

(a) Access A – Main access on Lincoln Rolleston Road allows access and egress all movements with give way control. It is 11.2 metres wide at the site boundary and has a queueing length of 30m. This access will be available to delivery vehicles to access and egress, but not for semi-trailers to enter.

(b) Access B – Secondary access on Lincoln Rolleston Road allows access and egress left in and left out only with give way control. It is 7.8 metres wide at the site boundary and has a queueing length of 11.3m.

(c) Access C – Exit only on Levi Road for left turning vehicles leaving the site only. It is 6.3 metres wide at the site boundary and has a queueing length of 6m.

(d) Access D – Main access on Levi Road allows access and egress all movements with give way control. It is 16.3 metres wide at the site boundary and has a queueing length of 28.3 metres. A pedestrian refuge is included to assist pedestrians and cyclists on Levi Road to safely cross this access.

(e) Access E – Secondary access on Levi Road for left turning vehicles accessing the site only. It is 7.4 metres wide at the site boundary and has a queueing length of 3.8 metres. This access will be available for semi-trailer and other delivery vehicle access as well as access to the Click & Collect facility.

45 The five accesses have been designed to provide flexibility and safety for customers, staff and other visitors to the supermarket. Access C and Access E serve different areas of the carpark, with Access D serving as the main access "spine" of the car park. Based on the size of this car park, I consider it is important to provide multiple accesses and to separate heavy vehicle traffic from customer traffic as far as practical.

46 Access C provides a left turn exit for the 167 parks in the northeast corner to improve the efficiency of Access D and serves the purpose of mitigating internal conflict within the site with both vehicles and pedestrians. Without the access there would likely to be more conflict in the vicinity of Access D.

47 I consider that Access D is necessary for the operation of the site. It is the only exit for right turners onto Levi Road and will be used the most by vehicles as it provides access to the closest parking spaces to the site entrance.

48 Access E is an entry point open to both customers and service/goods vehicles. It is required for 19m semi-trailers to access the Yard Area without conflicting with customer vehicles and pedestrians within the car park.

49 Goods vehicles access will be via the secondary access on Levi Road (Access E) and main access on Lincoln Rolleston Road (Access A) only, with semi-trailers restricted to entering via Levi Road and exiting via Lincoln Rolleston Road.

50 Pedestrians and cyclists can access the site via the shared path delivered through a frontage upgrade as part of the application on Levi Road. In previous discussions

I have had separately with both Mr Mazey from SDC and Mr Carr, it is agreed that this will be provided on the south side of the Levi Road corridor with design treatments to provide safe access for all road users in the vicinity of the supermarket. This is shown in the proposed frontage upgrade drawings in Attachment A.

Servicing

51 Loading operations will occur within the Site behind the PAK'nSAVE building within the dedicated loading and yard area on the east side of the building. I have identified through a vehicle tracking assessment that these areas are well designed to accommodate multiple heavy vehicles and the associated loading operations.

52 I have summarised the expected delivery operations based on a typical 7-day week within Table 2 below. I note that there may be up to four 21 metre truck and trailer deliveries per day but typically this would be two deliveries per day.

Table 2 Delivery operation details for a typical day

Delivery Time	Vehicle Type	Delivery Type	Number of Vehicles	Duration of Stay (Minutes)
4:30am	Large bread truck	Bread	1	30
4:45am	Large truck and trailer	Chilled and frozen goods	1	30
7:00am	Large milk truck	Milk	1	15
8:00am to 10:00am	Vans and 12 metre rigid trucks	Small goods	30 to 40	5-10
12:00pm	21 metre truck and trailer	Ambient temperature goods	1	45

53 Delivery and service vehicles will be limited to entering the site using Access A or Access E, noting that semi-trailers will only enter using Access E and exit using Access A. I have concluded that this access arrangement will minimise any conflict with car park users. A service lane is provided at the rear of the site to provide access to the loading areas which will only be available to goods vehicles.

Pedestrian Connectivity

54 I have assessed the pedestrian connectivity both internal and external to the site. I consider the Site to be located where there is excellent pedestrian and cycle connections with an existing shared path on Lincoln Rolleston Road and Lowes

Road and an intended future shared path planned for Levi Road. As part of the application, Foodstuffs will provide a footpath immediately outside the site on Lincoln Rolleston Road and will deliver the SDC's intended shared path on Levi Road along the Site frontage. This will fully integrate the site with the wider pedestrian and cycle network by connecting to the Lowes Road and Lincoln-Rolleston Road facilities as well as the footpaths on both sides of Masefield Drive and north side of Levi and Lowes Roads. This is shown in the proposed frontage upgrade layouts including in Attachment A.

55 Consideration has also gone into the design of the accesses to manage conflicts with pedestrians and cyclists passing the accesses, by adopting signage and markings consistent with Waka Kotahi NZ Transport Agency guidance on the shared path for Accesses C and E and installing a pedestrian refuge island within the site for Access D.

56 All internal pedestrian crossings are marked as zebra crossing and include raised treatments to enhance safety of pedestrians within the site and manage the speed of vehicles manoeuvring in the carpark. I consider there to be legible pedestrian connections through the site to provide for safe movement and support uptake of active modes.

Trip Generation and Transport Modelling

57 SDC developed a Paramics model of Rolleston which has been used to support transportation planning across the township since 2014. A model scenario of 2033 has recently been developed for SDC and used to assess various Private Plan Changes around the township and SDC have requested that this model is used to assess the effects of the Application. As many of the Plan Changes have not been heard or recommendations are yet to be made, this provides a conservative and robust assessment of the cumulative effects of future likely and potential development. As noted in paragraphs 29-31 the model includes 30 years of residential growth under the Statistics New Zealand high growth forecast so is essentially a 2048 high-growth model.

58 I have identified the key intersections adjacent to the proposed development include the Levi Road / Lowes Road / Masefield Drive / Lincoln Rolleston Road intersection which is currently a roundabout and proposed to be upgraded by SDC to a signalised intersection in 2025/26, and the Levi Road / Beaumont Drive priority-controlled intersection. The modelled performance of each of the key intersections is presented as Level of Service (LoS) in Table 3. This compares the intersection LoS in 2024 and 2033 (being a nominal year in line with 2048 high growth projections) with and without the development traffic. I have assumed the signals for the Levi Road / Lowes Road / Masefield Drive / Lincoln Rolleston Road intersection are included in the 2033 scenario only.

59 LoS is a qualitative metric used by traffic engineers to describe the performance of an intersection or road corridor. The descriptions of each LoS category from A through to F are included in Table 7.1 of the ITA and are synonymous with the quantum of delay faced by general traffic. Most importantly I note that LoS F (where average delay across the hour exceed 80 seconds at signals/roundabouts and 50 seconds on minor leg of give way/stop controlled intersections) is generally considered to describe an environment which is at or over capacity. I consider that LoS E or better would generally be acceptable in urban areas during peak periods.

60 The modelling assessment focuses on the weekday evening peak hour which is when the supermarket trip generation is at its highest level and the wider network is experiencing peak commuter hour traffic demands and associated congestion. The morning peak hour has not been tested as supermarket trip generation at this time is typically very low.

Table 3 Intersection Level of Service Summary

Intersection	Approach Road	2024 no PnS	2024 with PnS	2033 no PnS	2033 with PnS
Masefield/Levi/Lincoln Rolleston/Lowes	Masefield Dr	A	A	B	C
	Levi Rd	C	E	D	D
	Lincoln Rolleston Rd	B	B	B	B
	Lowes Rd	B	B	B	C
Levi/Beaumont	Levi Rd	-	-	A	A
	Beaumont Dr	-	-	B	B

61 The results demonstrate that between 2024 and 2033 there is minimal change in LoS as a result of the signalisation of the Masefield/Levi/Lincoln Rolleston/Lowes intersection, and background traffic growth and all intersection approaches are operating at acceptable LoS of A through D without the supermarket traffic. It is further noted that the operation of the Levi / Beaumont intersection demonstrates excellent LoS out to 2033.

62 The introduction of supermarket traffic results in some worsening of LoS at the Levi Masefield / Levi / Lincoln-Rolleston / Lowes intersection however all approaches are operating at LoS E or better in 2024 (with the existing roundabout retained) and at LoS D or better in 2033 (with signals in place). LoS E or better is considered to be acceptable and not atypical for intersection performance in an urban area during peak hour. This demonstrates several things:

(a) The supermarket is not reliant on the upgrade to signals as the current roundabout configuration at the intersection still has residual capacity (that is it is operating better than LoS F) on all approaches. At the request of Mr Carr on behalf of SDC, I have undertaken a further sensitivity test out to 2033 with the roundabout retained, and discuss this assessment later in paragraphs 106-114 of this brief of evidence. I have concluded that the signals will be required in the next few years to accommodate traffic associated with future Plan Change areas.

(b) The impact of the supermarket following the installation of the signals and taking into account the cumulative effect of all Plan Changes out to 2033 is anticipated by the signals and these will operate well in the evening peak hour.

63 I have also undertaken a LoS assessment for the performance of the main site accesses and secondary site accesses on Levi Road and Lincoln Rolleston Road and the results are summarised within Table 4. These results correspond to 2033 during the evening peak hour and reflect the LoS for vehicles existing the supermarket accesses.

Table 4 Site access Level of Service summary

Access Point	Approach	LoS
Main Access – Levi Road	Levi Road East	A
	Levi Road Site Access	C
	Levi Road West	A
Lincoln Rolleston Road – Main Access	Lincoln Rolleston Site Access	B
	Lincoln Rolleston Road South	A
	Lincoln Rolleston Road North	A

Lincoln Rolleston Rd – Secondary Access	Lincoln Rolleston Road LILO	A
Levi Road Slip	Levi Road Slip	B

64 The results demonstrate that the LoS for the site access and the respective approaches is satisfactory with a minimum LoS C demonstrating stable operation and low levels of delay exiting the site. Both secondary accesses have treatments applied to them with Access E being a slip entry from Levi Road and a Left In Left Out (LILO) treatment applied to Access B onto Lincoln Rolleston Road.

District Plan Assessment

65 The proposed development has eight non compliances with the Selwyn District Plan, including road frontage requirements, maximum vehicle crossings, vehicle crossing width, arterial road access, trip generation and visiting hours. I have assessed each of these non-compliances in the paragraphs below and conclude that they are considered acceptable in the context of the proposed supermarket activity, the receiving transport environment, modelling assessment undertaken, and other design and mitigation measures associated with the Application. I have also addressed additional matters relating to the compliance assessment raised by Mr Carr in Appendix 10 to the Section 42A report.

Rule 5.3.1.2 Access to frontage roads

66 Any site with more than one road frontage to a road that is formed and maintained by SDC, shall have access to the formed and maintained (and legal) road with the lowest classification. Given the nature and the scale of the activity I consider that providing access to both roads is considered necessary to integrate the activity with the wider transport network. I have identified that approximately one third of supermarket trips are pass-by trips and by providing access from both Levi and Lincoln Rolleston Roads, the pass-by vehicles do not need to deviate off their chosen route which would place additional demands on the Levi / Lowes / Masefield intersection. I note that Mr Carr agrees with my assessment on page 9 of his report.

Rule 5.3.1.4 Access to Arterial roads

67 A site is only permitted to have access directly onto an arterial road where it generates less than 100 equivalent car movements per day. The site is proposed to have access to Lincoln Rolleston Road and Levi Road, both of which are classified as arterial roads. Arterial roads are designed to accommodate higher volumes of traffic and can (and in this case do) accommodate the flows that are

generated by the supermarket. I have undertaken an extensive modelling assessment demonstrating that the network will operate safely and efficiently including an assessment of the cumulative effects. I have concluded that there is sufficient capacity to comfortably accommodate the traffic generated by the supermarket both before and after the planned and SDC-funded upgrade of the adjacent Levi / Lincoln Rolleston / Lowes / Masefield intersection. A new footpath and shared path are proposed and designed on the site frontages to link the development to footpaths and shared paths on the surrounding road network. I note that Mr Carr agrees with my assessment on page 9 of his report.

Rule E13.2.4.2 Number of vehicle crossings

68 For all sites in a Living Zone there shall be a maximum of one vehicle crossing per site. I consider it appropriate to have several accesses available to provide maximum flexibility to integrate the activity with the wider transport network. Multiple accesses also reduce any additional traffic movements through the Levi / Lincoln Rolleston / Lowes / Masefield intersection which would otherwise occur if the supermarket were only accessed at one location or off one of the two frontage roads. Consideration has also gone into the design of the accesses to manage conflicts with pedestrians and cyclists passing the accesses, by adopting markings on the footpath for Accesses C and E and installing a pedestrian refuge island within the site for Access D. The secondary accesses have limited vehicle movements including a left in only access on Levi Road, a left out only egress on Levi Road, and a left in and left out only access on Lincoln Rolleston Road. I have assessed the sightlines from each access and with both road frontages having straight horizontal and vertical alignment there is generous and unobstructed sight distances in all directions.

Rule E13.2.4.5 Vehicle crossing width

69 The maximum spacing and width of any vehicle crossing shall comply with Table E13.7 which states that for the Living Zone vehicle crossings should have a minimum width of 4m and a maximum width of 7m. The key issue with vehicle crossings that may be perceived to have excess width relates to pedestrian safety. Footpaths are proposed as part of the Application and would be subject to a series of safety audits. To ensure that pedestrian safety is not compromised, no vegetation greater than 0.5m in height or permanent structures will be located within the 2.5m x 5m pedestrian visibility splays at all vehicle crossings. Markings will be installed on the footpaths for Accesses B, C and E to clearly mark the intended use of this space and a pedestrian refuge island is proposed between the ingress and egress lanes for Access D to reduce the crossing distance required in a single movement. I note Mr Carr agrees with this approach on page 9 of his report.

Rule 10.8.1.3 Scale of activity

70 More than 40 vehicle movements plus four heavy vehicle movements will be generated by the Site and the Application is for a non-residential activity. I have conducted an extensive transportation modelling assessment to provide a robust assessment of the effects of the development on the local and wider transport network. I have concluded that the current and anticipated future transport network has sufficient capacity to comfortably accommodate traffic associated with the supermarket.

Rule 10.9.1.2 Hours of operations

71 The supermarket opening hours are 7am to 10pm which means that the supermarket will be closed outside of these hours and not generating customer traffic however there will be a small number of vehicles movements associated with the Site outside of these hours. Each access will have speed limit roundels installed to limit the speed of vehicles on site to 10 kph to minimise noise. Staff and delivery vehicles will be advised to use the Lincoln Rolleston Road main access to prevent light spill. The only exceptions will be the refrigerated semi-trailer which will access via Levi Road (Access E) which will result in no light spill as all residential properties are on the opposite side of Levi Road.

Rule E13.2.2.1 Distance of vehicle crossing from intersections

72 Mr Carr has raised concerns over a non-compliance of Rule E13.2.2.1 as Access C located on Levi Road is less than 30m from the Levi Road/ Beaumont Drive intersection. I agree with Mr Carr that Access C is technically 22m away from the Beaumont Drive/Levi Road intersection when following the site boundary as per Rule E13.2.2.2. Rule E13.2.2.1 refers to Table 13.5 which states that minimum distances of any vehicle crossing from intersections on a 50 km/hr between a local and arterial road is 30m which in this case is exceeded by a shortfall of 8m.

73 I have assessed the non-compliance and consider the non-compliance to have no noticeable effect on the operation of Access C or the Levi Road/ Beaumont Drive intersection. Access C is a secondary access and only provides for a left exit movement. The only potential for conflict between the access and the Beaumont Drive/Levi Road intersection is when a left turning vehicle out of Access C is required to identify a right turner out of Beaumont Drive. I have measured the distance between Access C and the Beaumont Drive exit lane in accordance with E13.2.2.2 and determine the separation is 37m as shown in Figure 4.

74 As such the 22m leads to a technical non-compliance but in reality (based on the limited potential for conflict between Access C and the Beaumont Drive intersection) this exceeds minimum requirements by seven metres. I consider that

this technical non-compliance is acceptable and there are no adverse safety concerns.

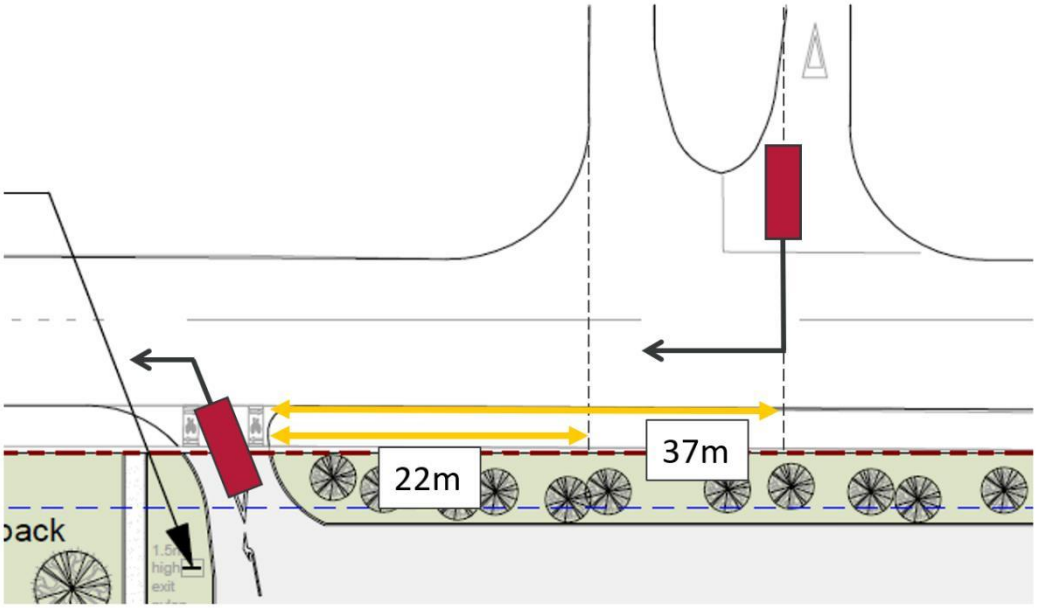

Figure 4 Assessment of Access C separation from Beaumont Drive

Rule E13.1.10.1 Queuing space

75 Mr Carr has agreed that the revised assessment of this rule in the Outstanding Transportation Matters Response is acceptable which highlighted a very small shortfall of 5.5m in queuing space at Access E within the Site. I consider that Access E will experience a modest amount of use in line with my assessment. As mitigation, give way markings have been included in the car park design at the end of the adjacent aisle to there is no conflict as vehicles entering the site have priority and extends the queuing space within the site. The effective queuing space is therefore increased such that the nearest conflict point and effective queuing space is well within the Site. Mr Carr notes on page 9 of his report that he does not consider adverse effects will arise under this arrangement.

Rule 5.5.1.4 Disabled Car Parking

76 With the site having a total of 513 parking spaces, Mr Carr has identified in his report that the site requires 12 parking spaces whilst only 10 are proposed resulting in a non-compliance with Rule 5.5.1.4. Two additional parking spaces will be converted to mobility parking spaces to be compliant with this rule. I recommend these to be located adjacent to the existing 4 mobility parking spaces closest to the nearest pedestrian crossing as shown in the figure 5 below.

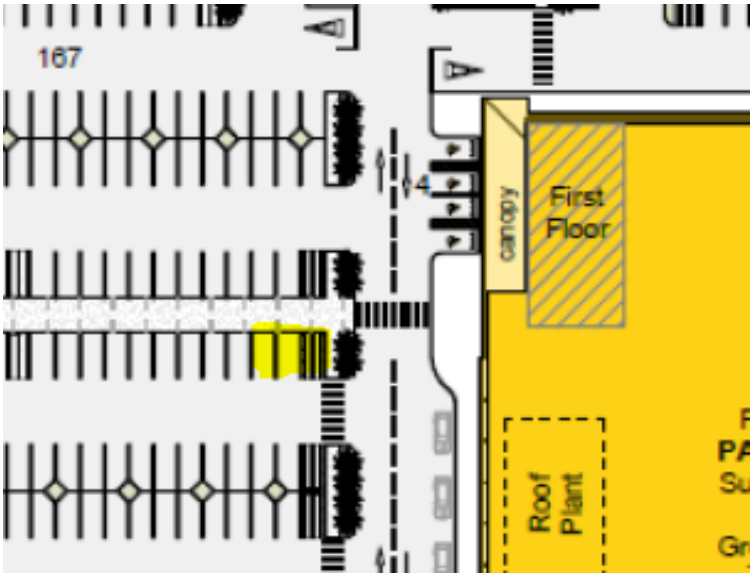

Figure 5 Proposed location of additional two mobility parks (highlighted)

Matters raised by submitters

Network Issues and Congestion

77 Submissions #1, #3, #5-7, #9, #14, #16, #18, #20, #24, #28, #38-39, #40-46 and #48-49 have raised concerns about network issues, intersection capacity and congestion. All submissions oppose the development except for submission #9 who is in support but concerned about congestion and the network and submission #20 who requires more information.

78 I have carried out extensive transportation modelling for the Application Site for both the surrounding road network and site accesses. The modelling I have undertaken to assess the impact on the surrounding road network is reported in Section 7 of the ITA and paragraphs 57-64 of evidence, with additional modelling presented in Attachment B of this statement of evidence and discussed further in paragraphs 106-114.

79 A key concern for the majority of submitters is the existing congestion present on Levi Road since the opening of the CSM2 / Weedons Interchange. I note that Levi Road is an Arterial Road within Appendix 7 of the Selwyn District Plan and is a key connection between the Rolleston township and the Christchurch Southern Motorway for travel to and from Christchurch and further north. Levi Road currently has approximately 6,300 vehicles per day[5] and I have concluded that the capacity of road corridors with similar attributes accommodate in the order of 1,200-1,400 vehicles per hour per lane which typically translates to 20,000-25,000 vehicles per day.

[5] https://mobileroad.org

80 The modelling within Table 3 demonstrates that the supermarket is not reliant on the installation of the proposed signal upgrade at the Levi / Lincoln-Rolleston / Lowes / Masefield Drive intersection included within the LTP in the medium-long term and the development can operate satisfactorily. Furthermore, land owned by SDC has been set aside on the northwest corner (between Lowes Road and Masefield Drive as shown in Figure 8 and discussed in detail in paragraphs 117-118) for the signalisation of the intersection as it is a planned upgrade.

81 Submissions have also expressed concern over Beaumont Drive being used as an alternative access to Masefield Drive to get to the Rolleston Town Centre. This type of driver behaviour would be unusual considering that the Beaumont Drive route is twice the distance (1.2km) to the Rolleston Town Centre compared to the Masefield Drive route (600m). Additionally, Beaumont Drive is designed to accommodate low vehicle speeds with two 90-degree bends so rat-running would in my view be highly unlikely. I further consider that any such behaviour that may occur in the future would not be exacerbated by the supermarket development.

82 Submitters #1, #7, #20, #24, #38, #43-44 and #49 have raised concerns over reduced residential access due to the congestion Levi Road.

83 I have undertaken a comprehensive modelling assessment that has demonstrated that during peak hour, including supermarket traffic, there are approximately 900 vehicles travelling westbound and 400 travelling eastbound on Levi Road. An urban road with similar attributes to the future Levi Road corridor has capacity in the range of 1,200-1,400 vehicles per lane per hour[6]. This demonstrates that there is residual capacity to ensure satisfactory operation of the corridor including to enable vehicles to enter the traffic stream. This is consistent with my visual assessment of the traffic simulation within the transportation modelling undertaken to determine the effects of the Application.

Pedestrian and Road User Safety

84 Submissions #1, #3, #6, #33, #38-42, #45 and #49 have expressed concern over pedestrian and road user safety, with some specifically mentioning school children. I have conducted a CAS query search within Section 3.5 and concluded that the number and nature of the crashes in the vicinity of the site does not indicate there are outstanding safety concerns with respect to the existing road environment.

85 Additionally, I consider the pedestrian environment will be much improved through the Application with the provision of a shared path on Levi Road with safety treatments at each proposed access and installation of a footpath on Lincoln-

[6] Austroads, 2020, *Guide to Traffic Management Part 3: Transport Studies and Analysis Methods*. Section 6.2.1, p. 64.

Rolleston Road. The Application also proposes the installation of formal pedestrian crossings prior to the supermarket opening on both Levi Road and on Lincoln-Rolleston Road and indicative locations for these are shown on the frontage upgrade concept plans included here in Attachment A. Should the supermarket open prior to SDC's Levi / Lincoln-Rolleston / Lowes / Masefield Drive intersection upgrade, a temporary crossing of Lincoln-Rolleston Road to connect the Levi Road shared path to Lowes Road and Lincoln-Rolleston Road shared paths is also proposed.

86 Consideration has also gone into the design of the accesses to manage conflicts with pedestrians and cyclists passing the accesses, by adopting markings on the footpath for Accesses C and E and installing a pedestrian refuge island within the site for Access D. Other than the two main accesses, the secondary accesses have limited vehicle movements including a left in only access on Levi Road, a left out only egress on Levi Road, and a left in and left out only access on Lincoln Rolleston Road to minimise the potential for conflicts arising. To ensure that pedestrian safety is not compromised, no vegetation greater than 0.5m in height or permanent structures will be located within the 2.5m x 5m pedestrian visibility splays at all vehicle crossings.

Infrastructure and Intersection Deficit

87 Submissions #1. #4, #20, #41, #45, #47 and #49 have raised concerns over the roading infrastructure not being sufficient especially on Levi Road with its inability to accommodate not only future growth but also the proposed development. Submissions believe there are other areas better suited for the development.

88 The Application delivers improvements to both the Levi Road and Lincoln-Rolleston Road which will benefit existing and future road users in addition to supermarket customers, staff and service vehicles. The concept plan for Levi Road included in Attachment A provides for corridor widening, installation of a flush median to enable vehicles to safely turn on and off the corridor, the installation of a formal pedestrian crossing and construction of a shared path for pedestrians and cyclists on the south side of the corridor. This futureproofs the corridor in anticipation of an increased volume of traffic, pedestrians and cyclists and has been carefully designed to meet the operational requirements of the supermarket whilst ensuring enhanced safety on the corridor.

89 Although I have concluded that the development is not reliant on the upgrade of the Levi Road / Lowes Road / Masefield Drive / Lincoln Rolleston Road intersection programmed within the LTP to be upgraded in 2025/26, this planned upgrade signalled to be delivered by SDC will further improve the operation and safety in the vicinity of the Application Site and futureproof the Levi Road corridor.

On-Street Parking Spill Over

90 Submissions #1, #7, #24, #45 and #49 have expressed concern over vehicles associated with the supermarket spilling over and parking on Levi Road. It is proposed that No Stopping At All Time (NSAAT) lines would be installed on Levi Road to ensure supermarket parking does not occur on the Levi Road corridor. The current extent of parking provision on the north side of the road corridor is in my view substandard. The eastbound lane in its current form is in my view too narrow to safely accommodate kerbside vehicle parking as well as accommodate through traffic within the traffic lane regardless of whether or not a supermarket is proposed on the Site. I note that this is highlighted in submission #1 which states the narrow lanes on Levi Road are inadequate for on street parking. The current road carriageway width of Levi Road is 7.5 metres which is not sufficient to provide for a lane of parking and two traffic lanes. Typically a parking lane would be 2.2-3 metres in width and traffic lanes would be 3.5 metres in width according to Part 8 of the SDC Engineering Code of Practice, requiring a minimum carriageway width of 9.2 metres. This demonstrates a shortfall of 1.7 metres against engineering standards. An additional 1.7 metres of width is required for the current carriageway to satisfactorily accommodate parking on the northern kerb.

91 I further consider that any spill over would be highly unlikely due to the quantity of parking provided on site. Prior to the implementation of the NPS-UD removing the minimum parking requirements from the Selwyn District Plan, the minimum parking requirements for commercial activities stated that the number of on-site parking spaces is 3 parking spaces per 100m² GFA plus 1 space per 100m² outdoor storage or display area, plus 1 staff space per 100m² floor space. The development has a GFA of 8,108m^2 and the yard area is 1,376m^2 GFA, requiring 338 parking spaces in total. The development will provide a total of 513 parking spaces for staff and customers. I consider the development to have sufficient parking provision such that all vehicle parking will be comfortably contained within the Site. I consider that overspill parking is extremely unlikely to occur from the development.

92 Submission #24 and #7 confirm there is currently parking available outside their property and they can enter and exit their property without the impediment of traffic islands and pedestrian refuges. I acknowledge there is currently the ability to park on both sides of the Levi Road corridor however as noted in paragraph 90 the existing lane width is too narrow to safely accommodate parking on the north side and informal parking only is available on the grass berm on the south side of the corridor. The proposed concept layout for Levi Road included in Appendix A includes indicative locations for pedestrian crossings and demonstrates that they can be located to ensure that resident's vehicle movements into and out of accessways is not impeded. The final design would be agreed with SDC and be subject to SDC's approval processes.

Heavy Vehicles and Deliveries

93 Submissions #7, #39-40, #42-44 and #47 have raised concerns over the number of heavy vehicles in the residential environment or the impact delivery vehicles will have during the early morning hours.

94 I have assessed the loading requirements of the development within Section 5.4 of the ITA and concluded that there will be a maximum of 44 delivery vehicles per day with many of these being smaller vehicles and only four vehicles per day being larger than a 12-metre rigid truck.

95 I have undertaken a conservative assessment of the quantity of heavy vehicle traffic movements assuming all delivery vehicles are heavy vehicles and are entering Levi Road from Access E and exiting onto Lincoln Rolleston Road from Access A. Based on the traffic volume data on SDC's website[7] the increase in delivery vehicle volumes will be an approximate 0.8% and 0.7% increase in total traffic volumes on Levi Road and Lincoln Rolleston Road respectively. I further note that there are already a significant number of heavy vehicle movements on both corridors with approximately 330 (6% of 5500 vehicles per day from August 2020 count) heavy vehicles per day on Levi Road and 540 (9% of 6000 vehicles per day on Lincoln Rolleston Road from October 2020 count). Acknowledging that many of the maximum 44 delivery vehicles per day will be vans and only four vehicles per day are larger than 12m rigid trucks, the net increase in total heavy vehicles is proportionately small. . I also note that no large trucks deliveries will be during peak times.

Matters raised in Section 42A report

96 I have reviewed the transportation section of the Section 42A report and the report prepared by Andy Carr and appended to the Section 42A Report as Appendix 10. I note this Appendix 10 report is an updated peer review assessment report which essentially supercedes the earlier report appended as Appendix 9.

97 I note that there are a wide range of matters which Mr Carr and I agree on including:

(a) Existing transport environment including traffic flows and description of road network, walking and cycling facilities and public transport provision;

(b) The potential for improved public transport provision in the future;

[7] https://www.selwyn.govt.nz/s/redirect?collection=selwyn-web&url=https%3A%2F%2Fwww.selwyn.govt.nz%2F__data%2Fassets%2Fexcel_doc%2F0015%2F410280%2FTraffic-Counts-at-April-2021.xlsx&auth=BGyHWgVhzIOzHpRLNJzLig&profile=_default&rank=2&query=traffic+count

(c) SDC's intent to upgrade the Levi Road / Lincoln-Rolleston Road intersection acknowledging there is some uncertainty around timing;

(d) The quantity of parks provided and layout of the supermarket carpark including quality of provision for pedestrians;

(e) The use of the Rolleston Transportation Model and underlying modelling methodology including assessment period and years modelled;

(f) The traffic generation assumptions including split of pass-by and diverted traffic associated with the supermarket activity;

(g) Calculation of trips to be undertaken by alternative modes;

(h) Vehicle tracking undertaken to demonstrate deliver vehicles servicing the site; and

(i) The compliance assessment against the Selwyn District Plan other than several matters which I address further below.

98 In essence the areas of disagreement or where further information is requested are narrow. Mr Carr sets out five transportation matters at the top of page 16 of this report where he seeks additional information to complete his assessment of the effects of the supermarket Application. I address each of these five matters in turn below.

99 Further to this Mr Carr, arising from his assessment of non-compliances, recommends that Access C (being the left turn out of the supermarket carpark into Levi Road as shown in Figure 2) be removed from the application. I do not agree with this conclusion and have included this as a sixth issue in my response below. I also note Mr Carr provides helpful commentary regarding the Applicant's conditions of consent which I address under the more general concern raised as Issue Four.

100 Many of the comments relate to the Outstanding Transportation Matters Response dated 14th June 2022 which I prepared to address matters which were unresolved following the first two RFI responses.

101 Whilst I have addressed the matters raised by Mr Carr as far as practicable within the evidence preparation timeframes, I propose to discuss these matters further with Mr Carr prior to the hearing to further narrow areas of disagreement as far as possible.

Issue One – PC71 effects

102 Mr Carr requests information pertaining to Plan Change 71 (PC71), specifically "*Whether transportation-related effects arise through PC71 that have not been identified?*"

103 The comprehensive transportation modelling assessment presented in the ITA (and subsequent RFI responses) includes modelling at 2033 which includes the full development of lodged and anticipated Plan Changes lodged within the Rolleston urban area including PC71. This includes traffic corresponding to the full development of each Plan Change and includes the corresponding Outline Development Plans (ODP) as lodged. The land use development assumptions and network assumptions are consistent with the modelling undertaken by Abley under my direction for SDC to assess the cumulative effects of these Plan Changes. The portion of PC71 that sits within the supermarket application site has been removed from the ODP roading and replaced with a supermarket. This has been compared to a modelled baseline which includes residential development across the entire PC71 site including the supermarket site.

104 The following figures shows excerpts of the modelled transportation network in the vicinity without (figure 6) and with (figure 7) the supermarket in place. This shows how PC71 ODP roading and traffic generation has been incorporated into the baseline model and how the PC71 roading and corresponding traffic flows has been adjusted for the scenario where the supermarket is in place.

Figure 6 Road network in model baseline including PC71 links

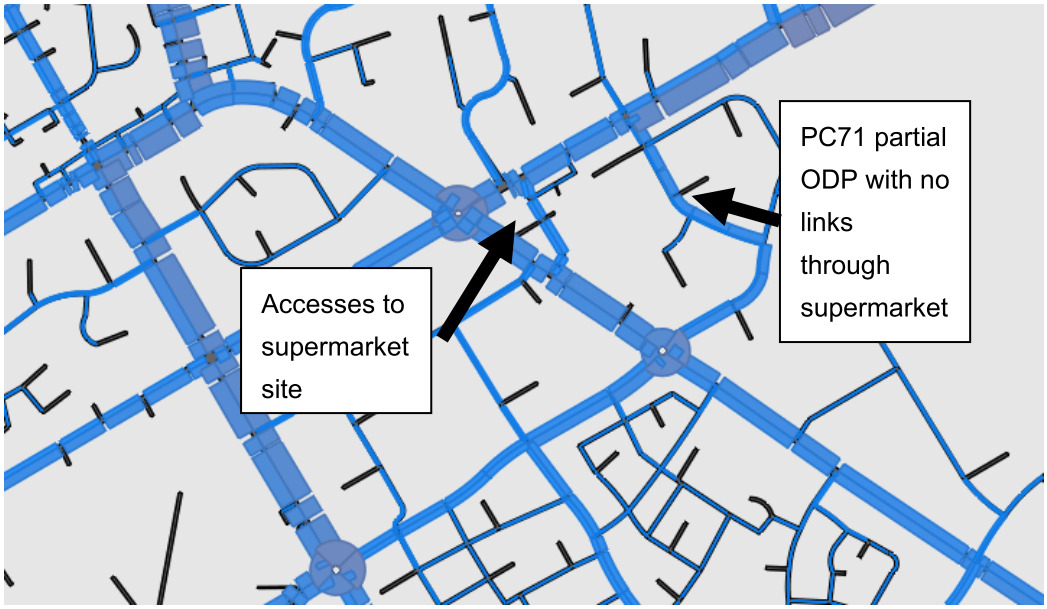

Figure 7 Road network in model with supermarket and adjusted ODP

105 I have concluded that the modelling with the supermarket established demonstrates that PC71 traffic can be accommodated on the local and wider transportation network with the supermarket in place and no ODP roading available on the supermarket site.

Issue Two – Diverted trips within the transportation modelling

106 Mr Carr questions "w*hether the model has over-estimated the extent of diverted trips with the Lincoln Rolleston Road / Levi Road intersection retained as a roundabout, and if so, what the effects of this will be, both at the roundabout and also at other intersections along Levi Road*."

107 The focus of Mr Carr's concern is set out on pages 14-15 of his report, and stems from the data presented in Table 2.1 of my Outstanding Transportation Matters technical note appended to this brief of evidence as Attachment A. I agree with Mr Carr's interpretation that the model results infer that with the supermarket in place and the existing roundabout retained at 2033, there is a significant amount of traffic being diverted onto other corridors.

108 I have undertaken a detailed investigation into the 2033 model runs with the existing roundabout in place from the Rolleston Transportation Model (the Model) to conform the extent to which this is occurring and isolate the reasons for this behaviour in the transportation model. I reiterate that the model includes 30 years of growth so is essentially a 2048 high-growth forecast.

109 I have identified an inadvertent error in the distribution of supermarket traffic loading onto and off the transport network across the five supermarket accesses within this model run. Specifically, the Lincoln-Rolleston Road Access D (the

secondary LILO access) was the most attractive access, pulling traffic away from the main access on Levi Road (Access B) and resulting in no traffic is using Access E (the main access). The result of this is that traffic heading to/from Rolleston town centre and western suburbs was diverted away from the Levi Road corridor and Levi Road / Lincoln Rolleston Road intersection and travels south along Lincoln-Rolleston Road and the Broadlands Drive extension. This has now been corrected in a revised assessment included in Attachment B. I have also observed that the manner within which the intersection delays were being calculated in the previous assessment did not account for traffic queues blocking back past adjacent intersections on Levi Road so were underestimating impacts. I further note this only affects the 2033 scenario when the existing roundabout is in place.

110 At the conclusion of this modelling exercise I have concluded the following:

(a) The more comprehensive assessment demonstrates that the overall approach delay for the eastern Levi Road approach to the roundabout is poor in the 2033 baseline at LOS F so is operating over capacity without the supermarket in place. The updated modelling confirms that the roundabout requires an upgrade prior to 2033 irrespective of the supermarket development.

(b) The proposed traffic signals are shown to relieve the congestion and resultant upstream effects and will result in improved (reduced) travel times for vehicles travelling westbound on the Levi Road corridor in the evening peak. The westbound travel time performance with the addition of the supermarket development results in a 12-15 second increase in delays at the signalised intersection with all intersection approaches performing with good Level of Service.

111 With reference to Mr Carr's concerns included as the first bulletpoint at the bottom of page 15 of his report, my view is that the roundabout is required before the extent of modelling development included in the 2033 model (that is 30 years of growth) materialises.

112 Furthermore, I note from my involvement in several of the Rolleston Private Plan Changes that the cumulative effects modelling relied upon by SDC has consistently assumed this intersection will be signalised. I understand this has been the basis for SDC's assessment of traffic effects of all of the Plan Changes in Rolleston including PC71, PC75 and PC78. I have used the same model for this assessment of the supermarket, and I consider that it is reasonable to assume that the intersection will be signalised as a response to the residential growth across the Rolleston township over the next 30 years.

113 As these Plan Change areas develop, I expect that SDC would schedule this upgrade to occur at a time which would maintain appropriate level of service for

road users in the vicinity. Whilst this is currently scheduled in the LTP to occur at 2025/26, I accept Mr Carr's (and Mr Mazey of Selwyn DC's view) that this timing may change depending on the timing and rate of uptake of neighbouring development areas and potential other factors such as funding availability, the timing and form of the SH1 Rolleston flyover works and other development and infrastructure projects in the township.

114 My modelling has demonstrated that the current intersection will operate well out to 2024 without or with the supermarket. I consider that the currently programmed 2025/26 upgrade or shortly thereafter reflects the likely date at which residential growth would necessitate an upgrade to the intersection.

Issue Three – Third party land requirement

115 Mr Carr raises a concern as to "*how the scheme for the signalisation of the Lincoln Rolleston Road / Levi Road intersection could be constructed without third party land being (or alternatively, the effects of supermarket traffic at a smaller intersection with less capacity)*".

116 I reiterate that it is my view that the supermarket is not reliant on the signals and this has been demonstrated through extensive transportation modelling at 2024 and at 2033 with the existing roundabout in place.

117 However, the signalised layout tested in the ITA was a concept developed in the absence of any design work being available from SDC, acknowledging that the intersection upgrade is included within the Selwyn District Long Term Plan. The layout was modelled under my direction as a potential future scenario which provides a suitable level of service for traffic passing through the upgraded signalised intersection without the supermarket application. The purpose was to understand the incremental increase in delays and queuing should the supermarket be established. I have included the layout in Figure 8 which was presented in the Abley RFI response and referred to as a 'sketch', and reiterate this was never intended to be reviewed as a proposed concept design.

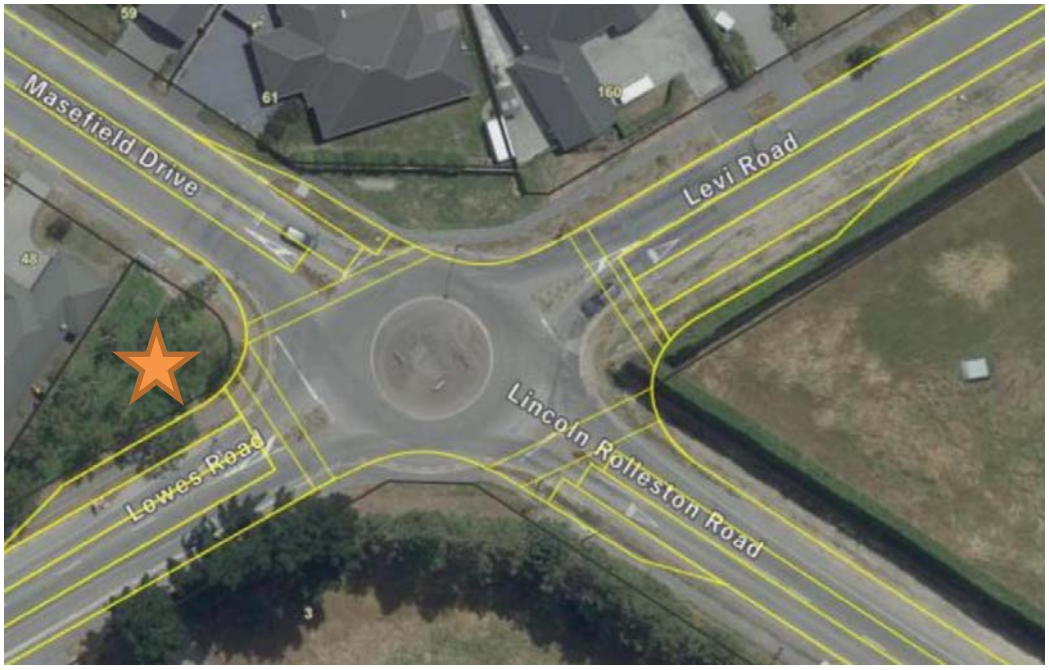

Figure 8 Sketch of possible signalised intersection layout

118 Mr Carr states that under this layout a small quantity of third-party land would be required on the Lowes Road (western) and Masefield Drive (northern) approaches to accommodate a footpath. I disagree with Mr Carr as:

(a) the land on the northwestern corner denoted with a star is owned by SDC so is not third-party land.

(b) I have undertaken lane width measurements from the sketch from which I calculate that the middle (or through) lane on Masefield Drive is 3.9m in width which exceeds typical lane widths of up to 3.5m. I further note that there is approximately 1.4m between the edge of the left turn bay into Levi Road and the property boundary at 61 Masefield Drive. By slightly reducing the over-dimensioned 3.9m through lane or shortening the left turn lane by approximately two metres, a 1.5m footpath or greater can easily be accommodated. I consider that a 1.5m wide footpath would be appropriate in this context and note that section 8.5 of the SDC Subdivision Code of Practice states "*the minimum clear width of formed paths in legal road is 1.5m for pedestrian-only paths*".

(c) Several other lane widths in this indicative sketch are well over standard dimensions including the through lane on the Levi Road approach which is 4.2 wide. Therefore the overall intersection footprint would be reduced through a concept design process.

119 Mr Carr also notes that Foodstuffs land is required on the northwestern corner of the Site to accommodate the proposed shared path. Foodstuffs propose an

easement over the northwestern corner of the site where the shared path is located outside of the road reserve to ensure public access.

120 I am confident that signals of appropriate design standard can be accommodated within the road reserve without encroaching on third party land.

Issue Four – Conditions of consent

121 Mr Carr considers there to be "*a lack of precision around the wording of the conditions of consent which mean that the mitigation proposed is not specific and open to interpretation*."

122 On page 11 of his report, Mr Carr addresses the conditions of consent and seeks more detail in relation to several conditions. In the final paragraph of page 11 Mr Carr also requests several additional conditions based on largely operational matters set out in the ITA. I have redrafted the conditions accordingly and include these in the Proposed Consent Conditions section later in this brief of evidence.

Issue Five – Public access to shared path on Foodstuff's land

123 Mr Carr asks for information to be provided to demonstrate "*how the Council can have certainty regarding the public use of the proposed walking/cycling route at the northwestern corner of the site and around the main access, since it is on the Applicant's land*."

124 The proposed frontage improvements which are attached to this statement of evidence as Attachment A include the walking and cycling shared path being located on Foodstuffs land. Foodstuffs propose an easement over the northwestern corner of the site and around the main access where the shared path is located outside of the road reserve to ensure public access.

125 This is not an unprecedented situation and is very similar to the main access to Prestons New World on Prestons Road in Christchurch which is shown in figure 9 below. An easement has been provided by Foodstuffs in this instance which is acceptable to Christchurch City Council.

Figure 9 Prestons New World Access with easement for public access to shared path

Issue Six – Recommended closure of Access C

126 Mr Carr seeks for Access C to be closed as the access crosses a shared walking/cycling path and he considers there is the potential for drivers to undertake other turning movements, which I interpret to mean right turn manoeuvres out of the supermarket carpark.

127 I consider that this access should be retained and note that there are several design features which prioritise the safety of shared path users. These include:

(a) Restricting the access to a left turn out only so there is minimal conflict at this location;

(b) The access approach has been squared up to ensure excellent intervisibility between shared path users and vehicles egressing the supermarket;

(c) Design treatments are to be installed including signage, pavement markings and raised treatments at the access based on guidance from Waka Kotahi's '*High-use driveway treatment for cycle paths and shared paths'* guidance[8]. This ensures that the design of Access C has shared path users at front of mind and includes best practice treatments to achieve the best safety outcomes for all users; and

(d) All roading improvements including these frontage upgrades will require a road safety audit under the SDC Subdivision Code of Practice. For the avoidance of doubt, a condition of consent has been added requiring detailed design and post-implementation road safety audits.

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[8] https://nzta.govt.nz/assets/pub-resources/high-use-driveway-treatment-for-cycle-paths-and-shared-paths-design-guidance-note/High-use-driveway-treatment-for-cycle-paths-and-shared-paths-design-guidance.pdf

128 I consider it unlikely that vehicles would turn right out of the site as there is a main access (Access B) which permits this movement located approximately 60-70 metres to the east. However, I accept that the installation of a short length of raised median would preclude any such movements from occurring should Mr Carr's concerns materialise. I recommend that a monitoring condition of consent be added to identify and address any safety issues that may arise at this access, and have drafted a suitable condition in the following section addressing proposed consent conditions.

129 Should Access C be closed, I agree with Mr Carr that having only two vehicle accesses will result in one less conflict point for pedestrians and cyclists using the shared path on the Levi Road frontage. This however will be at the expense of more vehicle conflicts and potential conflicts with pedestrians within the site. For example, if Access C was removed vehicles would use access D to exit the site resulting in greater potential conflict with pedestrians crossing Access D as there is a greater number of vehicles. Additionally, vehicles will be required to exit an area which has greater pedestrian activity.

Traffic Amenity Effects

130 Paragraphs 109-116 of the Section 42A Report refers to traffic amenity effects (whereby the supermarket could lead to an increase in traffic using residential streets) and builds off the Issue 2 concerns raised by Mr Carr to conclude that the "*proposed diversion of traffic will bring additional traffic movements onto local roads and create amenity effects into quiet residential neighbourhoods.*" I have revisited the transportation modelling of the scenario upon which Mr Carr has raised this matter as discussed in paragraphs 106-114.

131 The updated modelling demonstrates that the extent of diversion or 'rat-running' through local streets is no longer evident. I consider that the updated modelling would provide assurance that the supermarket will not result in substantial amounts of traffic through local streets. Those corridors which experience a substantial increase in traffic volumes in my view are limited to arterial roads which are designed for this purpose including Levi Road, Lincoln-Rolleston Road, Lowes Road and Broadlands Drive.

Transport Effects – Section 42a Report Summary

132 Paragraphs 124-142 of the Section 42A Report summarises the matters raised by Mr Carr in his report included as Appendix 10 to the Section 42A Report. Paragraph 141 states that Mr Carr "*has been unable to fully identify the transportation effects of the proposal on the adjacent roading network*", a view accepted by the Reporting Officer in paragraph 142. I consider that the additional information that I have provided in response to Mr Carr's concerns is sufficient to fully address the matters raised in the Section 42A report.

Proposed consent conditions

133 I recommend the following transport conditions be added to those set out on page 46 in the Section 42a report:

(a) The Consent Holder shall establish a shared path along the Levi Road frontage and a footpath along the Lincoln-Rolleston Road frontage to be formed with kerb and channel and shared path and footpath dimensions as required under the Selwyn District Council Subdivision Code of Practice Part 8 (February 2012)[9];

(b) Prior to opening the Consent Holder shall provide a formal pedestrian crossing across Levi Road to the east of the main access (Access D) and across Lincoln-Rolleston Road. Advice note: the pedestrian crossing shall be in line with the pedestrian crossings through the supermarket car park as shown on the proposed frontage upgrade in drawing S103 in Attachment A (of this statement of evidence);

(c) Should the supermarket open prior to SDC's planned signalisation of the Levi / Lincoln-Rolleston / Lowes / Masefield Drive intersection, the Consent Holder shall provide a temporary crossing of Lincoln-Rolleston Road to connect the Levi Road shared path to Lowes Road and Lincoln-Rolleston Road;

(d) The Consent Holder shall install signage banning right turns into and out of the northernmost Lincoln-Rolleston Road access (Access B) and undertake post-opening monitoring to determine any safety issues relating to non-compliant right-turning vehicles at Access B. Monitoring shall be undertaken by an independently qualified professional within 3 months of the supermarket opening, and annually thereafter for the first two years of operation. Should any safety issues be identified through Waka Kotahi Crash Analysis System crash records or observations on site due to non-compliant right-turning vehicles at Access B, additional design treatments such as installing a median to physically restrict right turns shall be implemented at Access B at the request of the Selwyn District Council;

(e) The Consent Holder shall undertake monitoring of the easternmost access on Levi Road (Access E) to confirm that left-turning vehicles into the Site are not impeding through vehicles during the evening peak hour resulting in safety concerns in the vicinity of Access E. Monitoring shall be undertaken by an independently qualified professional within 3 months of the supermarket opening, and annually thereafter for the first two years of

[9] https://www.selwyn.govt.nz/__data/assets/pdf_file/0014/35402/Part08_Roading-transport_final.1908.pdf

operation. Should any safety issues be identified through Waka Kotahi Crash Analysis System crash records or observations on site due to westbound through vehicles being impeded by left-turning vehicles into Access E resulting in sudden braking or swerving manoeuvres, suitable mitigation shall be agreed with Selwyn District Council in the form of additional design treatments or restricting use of Access E to the public.

(f) Access for semi-trailers shall be restricted to entering the Site via the easternmost access on Levi Road (Access E) and egressing the Site via the southernmost access on Lincoln Rolleston Road (Access A)

(g) Signage shall be installed at the internal entrance to the staff parking area near the service yard to prohibit public access.

(h) There shall be no obstructions to visibility within pedestrian visibility splays at each of the Site's vehicle accesses (Accesses A-E).

(i) Signage shall be installed at each entry vehicle access location (Accesses A, B, D and E) to reinforce a 10km/hr speed limit within the Site.

134 Mr Carr seeks a condition of consent to be added to include a road safety audit for all roading improvements. I agree with this in principle as being best practice, but I note that there is a requirement for a road safety audit under section 8.4.2 of the Selwyn District Council Subdivision Code of Practice Part 8[10]. For the avoidance of any doubt, I have recommended the following condition of consent or advice note to be added as follows:

(a) A concept design and detailed design road safety audit is required for all works in the road reserve including the formation of accesses. The audits are to be undertaken in alignment with Waka Kotahi road safety audit procedures[11].

135 In responding to submissions concerning construction traffic on page 14 of his report, Mr Carr correctly states that a Temporary Traffic Management Plan (TTMP) is required under Waka Kotahi's Code of Practice for Temporary Traffic Management for any works which encroach on the road reserve. The purpose of the TTMP is to ensure the safe and efficient operation of the transport network and in my view a TTMP will be required during the much of the construction period including the period over which the road frontages and accesses are formed. For the avoidance of any doubt, I have recommended the following condition of consent to be added:

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[10] https://www.selwyn.govt.nz/__data/assets/pdf_file/0014/35402/Part08_Roading-transport_final.1908.pdf

[11] https://www.nzta.govt.nz/resources/road-safety-audit-procedures/

(a) A Construction Temporary Traffic Management Plan (TTMP) will be prepared in line with Waka Kotahi's Code of Practice for Temporary Traffic Management procedures.

136 I do not support the addition of condition 16 in the Section 42A report which seeks to remove Access C. I consider that this is necessary to provide sufficient choice to supermarket customers and to minimise conflicts from occurring within the Site. As such I propose the following additional monitoring condition to ensure that should Mr Carr's concerns materialise they can be readily identified and addressed.

(a) The Consent Holder shall install signage banning right turns out of the westernmost Levi Road access (Access C) and undertake post-opening monitoring to determine any safety issues relating to non-compliant right-turning vehicles at Access C. Monitoring shall be undertaken by an independently qualified professional within 3 months of the supermarket opening, and annually thereafter for the first two years of operation. Should any safety issues be identified through Waka Kotahi Crash Analysis System crash records or observations on site due to non-compliant right-turning vehicles at Access C, additional design treatments such as installing a median to physically restrict right turns shall be implemented at Access C at the request of the Selwyn District Council;

Conclusion

137 I have undertaken an assessment of the transportation effects of the proposed Rolleston PAK'nSAVE supermarket and am the lead author of the Integrated Transport Assessment prepared by Abley. I have concluded that the traffic generated by the supermarket is within the capacity of the local transport network with both frontage roads being Arterial Roads that (unlike residential streets) are intended to cater for this level of traffic. In my view the proposed supermarket development integrates well with the transportation networks and future growth of Rolleston township and can be fully supported on transportation grounds.

138 Following consideration of transport-related submissions and the Section 42A report and transport report of Mr Carr on behalf of SDC, I remain of the view that the application can be supported from a traffic and transportation perspective, and that any transportation effects have been mitigated through design features or conditions of consent and are acceptable.

David John Robert Smith

Dated this 18th day of July 2022

Attachment A - Rolleston Pak'nSave Resource Consent Application

Outstanding Transportation Matters Response

Prepared for	Foodstuffs South Island Limited
Job Number	FSIL-J085
Revision	A
Issue Date	17 July 2022
Prepared by	Dave Smith, Technical Director
Reviewed by	Jay Baththana, Principal Transportation Engineer

1. Introduction

The purpose of this technical note is to present the proposed frontage upgrades included within the Rolleston PAK'n SAVE resource consent application. These are consistent with the frontage upgrades presented in the Outstanding Transportation Matters Response (published on 14th June 2022) other than the PAK'nSAVE proposed pylon sign in drawing S103 has been updated to reflect the most recent sign dimensions.

The contents are as follows:

Drawing S101

Levi Road supermarket frontage upgrade with the addition of a temporary pedestrian crossing of Lincoln-Rolleston Road, in the event that the supermarket opens prior to Council's planned signalisation of the Levi Road / Lincoln-Rolleston Road Intersection (that is with the existing roundabout remaining in place).

Drawing S102

Lincoln-Rolleston Road supermarket frontage upgrade with an indicative layout for Council's planned signalisation of Levi Road / Lincoln-Rolleston Road Intersection.

Drawing S103

Levi Road supermarket frontage upgrade with an indicative layout for Council's planned signalisation of Levi Road / Lincoln-Rolleston Road Intersection.

J:\Foodstuffs South Island Ltd (FSIL)\FSIL-J085 Rolleston Pak'nSave\DocCalcs\CAD\Levi Rd Roundabout Scheme.dwg

LEGEND (LEVI ROAD AND LINCOLN-RELLESTON ROAD ONLY)

- EXISTING PAINT MARKING
- NEW PAINT MARKING
- EXISTING ISLAND, FOOTPATH, KERB, DISH & CHANNEL
- NEW KERB, DISH & CHANNEL
- NEW REFUGE ISLAND
- PROPERTY BOUNDARY

Rev	Date	By	Chk	Description
1	09/06/2022	JN	JB	LEVI ROAD FRONTAGE CONCEPT
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Abley

Design	JN
Drawn	JN
Checked	DS
Issued	09/06/2022
Scale	1:800 @ A3

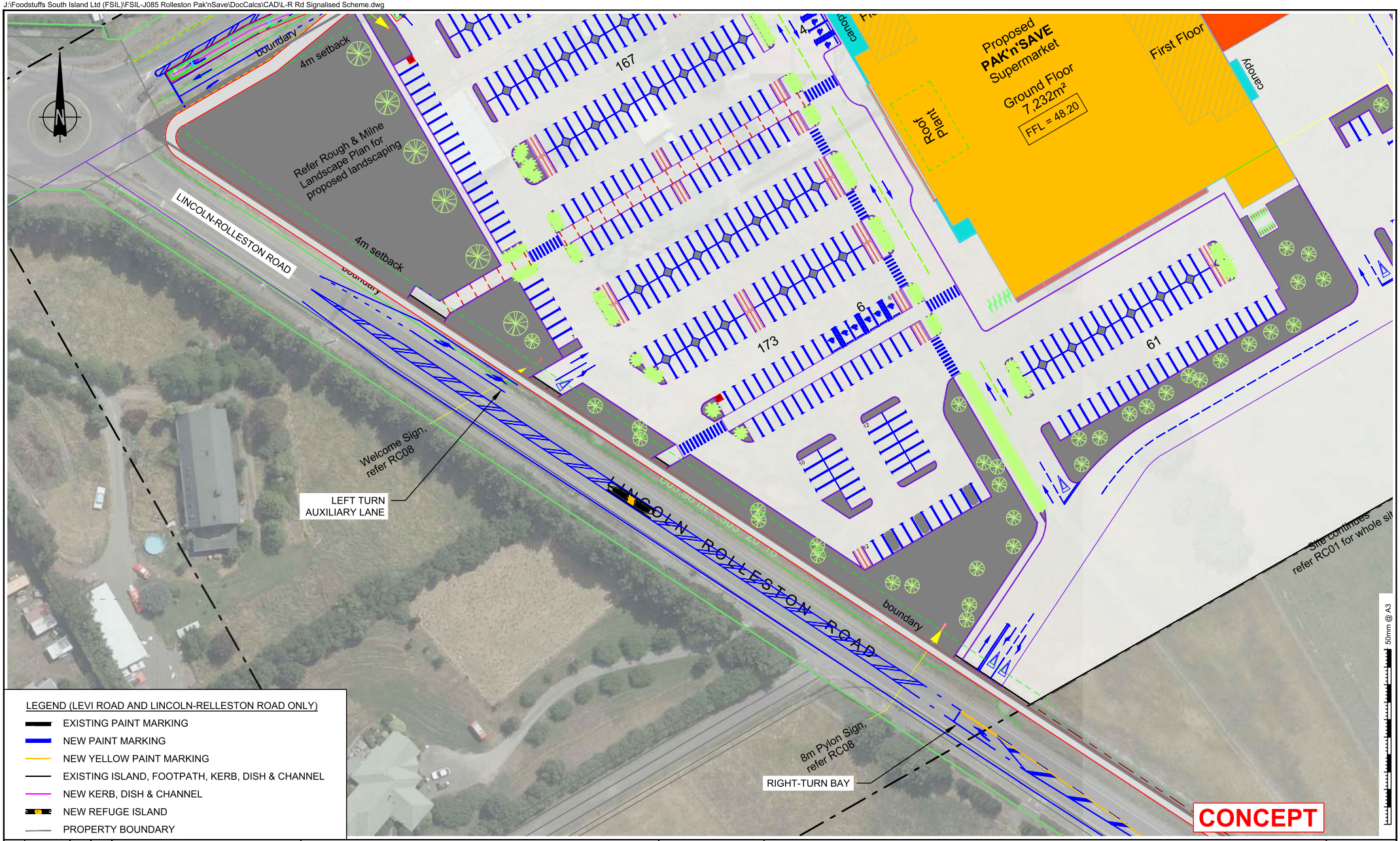
Rolleston Pak'nSave

Levi Road Frontage

Roundabout Scheme Concept Design

Project No.	FSIL-J085
Dwg #	S101
Sheet	1
Revision	1

J:\Foodstuffs South Island Ltd (FSIL)\FSIL-J085 Rolleston Pak'nSave\DocCalcs\CAD\L-R Rd Signalised Scheme.dwg



LEGEND (LEVI ROAD AND LINCOLN-RELLESTON ROAD ONLY)

- EXISTING PAINT MARKING
- NEW PAINT MARKING
- NEW YELLOW PAINT MARKING
- EXISTING ISLAND, FOOTPATH, KERB, DISH & CHANNEL
- NEW KERB, DISH & CHANNEL
- NEW REFUGE ISLAND
- PROPERTY BOUNDARY

Rev	Date	By	Chk	Description
1	09/06/2022	JN	JB	LINCOLN-ROLLESTON RD FRONTAGE
----	----	----	----	----
----	----	----	----	----
----	----	----	----	----
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Abley

Design	JN
Drawn	JN
Checked	DS
Issued	09/06/2022
Scale	1:800 @ A3

Rolleston Pak'nSave

Lincoln-Rolleston Road Frontage

Signalised Scheme Concept Design

Project No.	FSIL-J085
Dwg #	S102
Sheet	1
Revision	1

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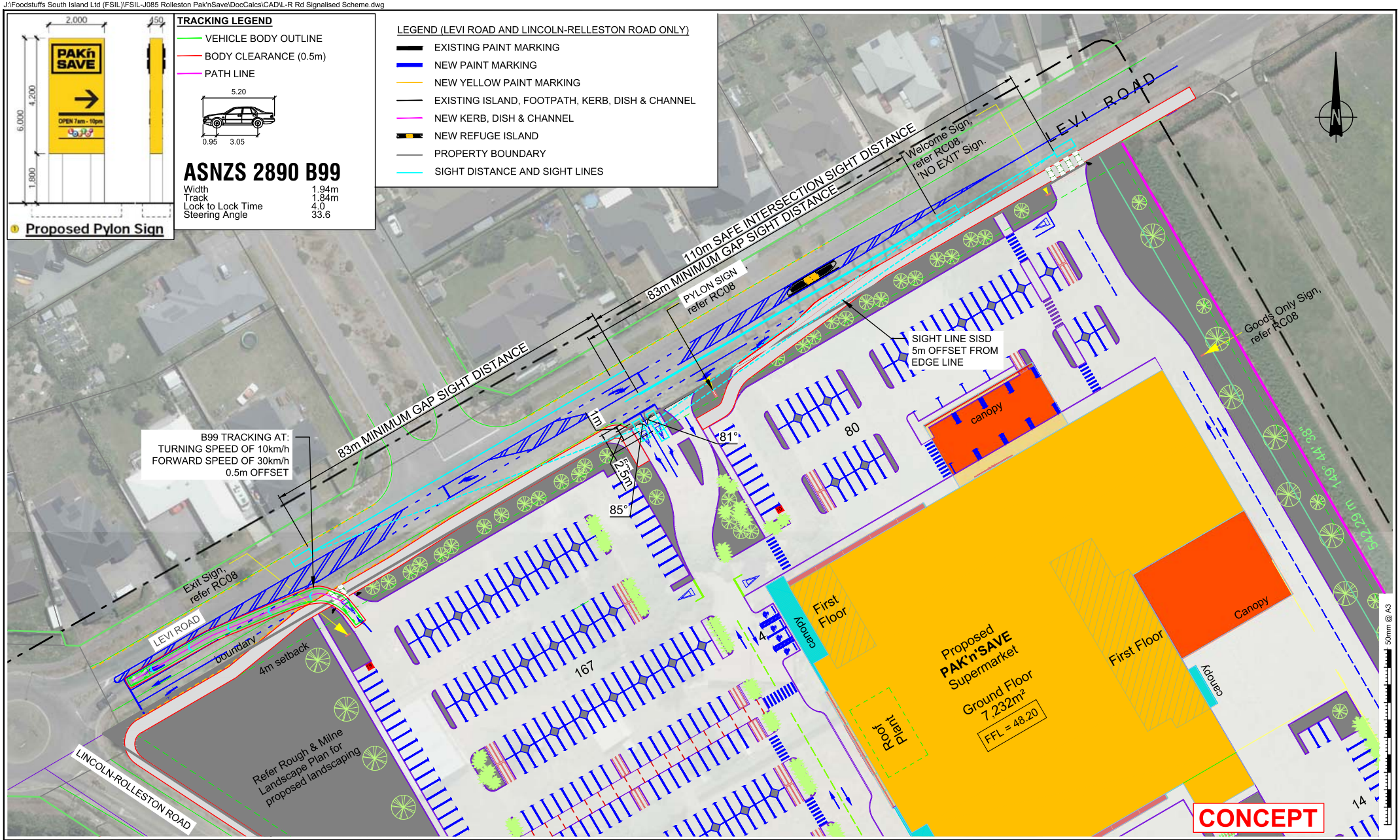

Rev	Date	By	Chk	Description
1	09/06/2022	JN	JB	SIGHT DISTANCE & VEHICLE TRACKING CHECKS
2	15/07/2022	JN	DS	PROPOSED PYLON SIGN DETAILS UPDATE
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----	----	----	----	----
----	----	----	----	----

Abley

Design	JN
Drawn	JN
Checked	DS
Issued	09/06/2022
Scale	1:800 @ A3

Rolleston Pak'nSave

Levi Road Frontage - Signalised Scheme

Safe Intersection Sight Distance (SISD) Check

Vehicle Tracking Check - Left Turn Out to Intersection Right Turn Bay

Project No.	FSIL-J085
Dwg #	S103
Sheet	1
Revision	2

Attachment B: Rolleston PAK'nSAVE Resource Consent Application

Additional Traffic Modelling for Dave Smith Evidence

Prepared for	Foodstuffs South Island Limited
Job Number	FSIL-J085
Revision	B
Issue Date	18 July 2022
Prepared by	Jared White, Principal Transportation Engineer
Reviewed by	Dave Smith, Technical Director

1. Introduction

The purpose of this technical note is to provide and summarise updated traffic modelling regarding the Rolleston PAK'nSAVE resource consent application.

The Selwyn District Council (SDC) Rolleston Traffic Model (the 'Model') was used to inform the initial assessment in the Integrated Transportation Assessment (ITA) and some elements were refined to inform the assessment in this note. Primarily, this included further analysis on the effects at the Levi Road / Lowes Road / Lincoln Rolleston Road roundabout which is planned to be upgraded to signals in the Selwyn District Long Term Plan (LTP) 2021-31. The focus of the analysis was the performance of the roundabout in 2033, with and without the proposed supermarket development, to understand the long-term implications should the intersection upgrade be deferred beyond the currently scheduled year of 2025/26 in the LTP.

The model analysis results supersede the prior 2033 model run with roundabout reported in the 14 June 2022 'Outstanding Transportation Matters' technical note prepared by Dave Smith and addresses concerns raised by Mr Carr of Carriageway Consulting regarding the extent of traffic diverting onto quiet residential streets in the June 2022 assessment.

2. Model Results

Prior to running the models, they were analysed to address any issues that may be affecting route choice in the area. Overall, the model setup was found to be sound, however the model allows full route choice for the site traffic to utilise the least cost access point for each destination. This was found to inadvertently favour the left-in/left-out access (Access D) on Lincoln Rolleston Road over other accesses and forcing traffic away from the Levi Road / Lincoln Rolleston Road roundabout. The access was closed for this analysis making better use of the main access points.

The traffic flows of the 2033 baseline model in the evening peak are shown in **Figure 2.1** in the vicinity of the site. The baseline model demonstrates the following traffic patterns:

- Traffic is concentrated on key roads.
- Plan Change 71 to the east of site connects through the site in Baseline.

- The roads through the site carry traffic bypassing the roundabout.

Figure 2.1 General Traffic Flow Patterns near site in 2033 Baseline PM Peak 1700-1800

Figure 2.2 shows the traffic flows from the 2033 model with the supermarket development in the evening peak. The following traffic patterns are observed:

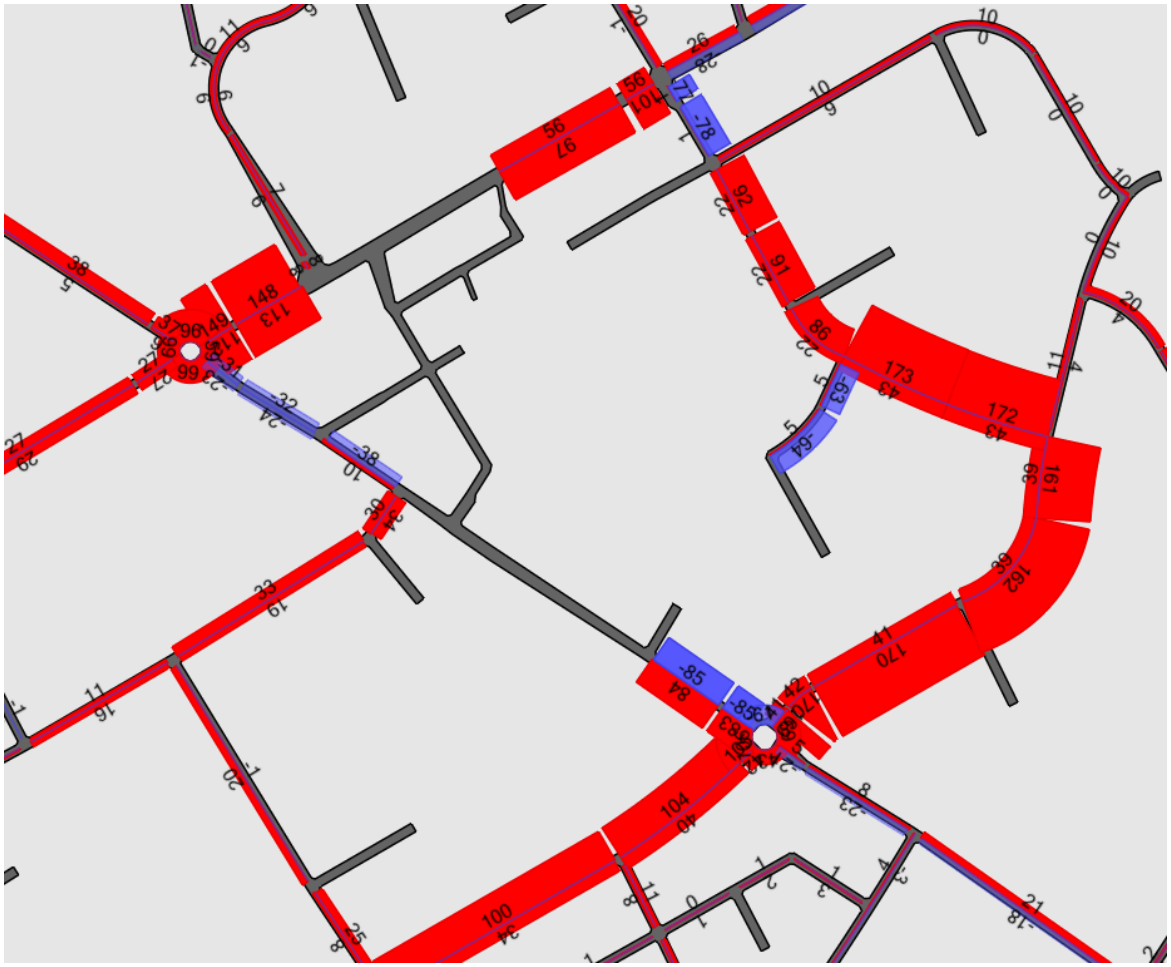
- Traffic patterns are generally similar to the baseline with traffic concentrated on key roads.
- Traffic no longer passes through the site and uses the Broadland Drive extension instead.
- Development traffic is approximately evenly split between the two main access points.

Figure 2.2 General Traffic Flow Patterns near site in 2033 with PnS Development PM Peak 1700-1800

The change in traffic flow in 2033 with the development in operation is shown in **Figure 2.3.** Note that where the underlying model road network included in the baseline and the development scenarios differ, a volume change is not shown even if a change occurs (that is a road link needs to be consistent in both scenarios to display a change in volume). In most cases the change patterns are still evident however the following traffic patterns were observed:

- A large proportion of the increase in trips through PC71 is existing trips that were bypassing the roundabout and driving through the site to Lincoln Rolleston Road using the ODP links which are now severed by the supermarket.
- There is a net increase of 113 trips approaching the roundabout from the east and a net increase of 148 trips departing the roundabout towards the east. This is more line with the 2033 scenario with the signalised intersection layout presented in the ITA.
- Circulating flows at the roundabout have increased by approximately 100 vehicles on each approach.

Figure 2.3 Traffic volume change to Baseline in 2033 with PnS Development PM peak 1700-1800



The key observation relating to the roundabout performance is that the critical approach to the intersection is the eastern approach. On this approach queues will occasionally propagate back past Beaumont Drive and the access point under the 2033 scenario. This is prevalent in the baseline (no supermarket) and 'with supermarket' models and will fluctuate as the model responds to operations across the wider network.

With queues propagating back past other intersections, calculating intersection delays is difficult at 2033 as far more paths are needed to assess the impact along a corridor. It is also noted that vehicles that are delayed may form a queue which at times is stationary, and at other times may move relatively slowly. In this instance, a helpful measure is to capture the overall modelled travel time along a longer route that covers the full extent of congestion and is more representative of the average delay experienced along a route.

There are four paths set up in the model that are used to measure the travel times on each of the four approaches of the Levi Road / Lowes Road / Lincoln Rolleston Road intersection. For example, the route to capture the westbound travel time and associated delay on the Levi Road approach at the roundabout is calculated from a path that begins on Levi Road at Strauss Drive in the east finishing just west of the roundabout on Lowes Road. This ensures that the delay calculation captures all time associated with deceleration and queuing between Strauss Drive and the roundabout.

The travel times of the key routes are shown in **Table 2.1**. The results show the average time to travel the route in each scenario and the average excess travel time over the effective free flow travel time. The excess travel time is a good indicator for the average approach delays of the roundabout aggregated along the corridor.

The key travel time observations in 2033 (with the roundabout remaining) are summarised as follows:

- Westbound between 4-5pm, the average delay without the supermarket is 47 seconds which increases by 5 seconds to 52 seconds with supermarket traffic. This equates to LOS D and E.
- Westbound between 5-6pm, the travel times for the baseline increase and the average delay increases to 73 seconds which is LOS F. This indicates this approach is operating over capacity without the inclusion of traffic associated with the supermarket.
- When supermarket traffic is added, the average delay between 5-6pm increases by an additional 19 seconds to 92 seconds which remains still in the LOS F range for roundabouts.
- Other approaches are less critical with delays in the range of 16-23 seconds (LOS B/C) without supermarket traffic.
- Average delays on the other approaches increase by 3-9 seconds from 4-5pm and 12-15 seconds from 5-6pm, remaining in the LOS B/C range.

Table 2.1 Key Travel Time Outputs with Roundabout in Place

Travel Time Route	2033 16:00 to 17:00				2033 17:00 to 18:00			
	Baseline		With Dev		Baseline		With Dev	
	Avg Time	Avg Delay	Avg Time	Avg Delay	Avg Time	Avg Delay	Avg Time	Avg Delay
Levi to Lowes Westbound	114	47	114	52	140	73	154	92
Lowes to Levi Eastbound	84	17	105	26	86	19	99	31
Masefield to Lincoln Rolleston Southbound	96	20	100	27	99	23	111	35
Lincoln Rolleston to Masefield Northbound	83	16	78	19	86	19	101	34

The same assessment has been undertaken using the 2033 model with the planned signalisation of the intersection included. This is consistent with the modelling undertaken and presented in the ITA but includes the updated travel time analysis to derive intersection delays, most notably on the westbound Levi Road approach as shown in **Table 2.2**.

Table 2.2 Key Travel Time Outputs with Traffic Signals in Place

Travel Time Route	2033 16:00 to 17:00				2033 17:00 to 18:00			
	Baseline		With Dev		Baseline		With Dev	
	Avg Time	Avg Delay	Avg Time	Avg Delay	Avg Time	Avg Delay	Avg Time	Avg Delay
Levi to Lowes Westbound	92	35	93	40	96	39	94	41
Lowes to Levi Eastbound	93	33	61	34	93	33	95	35
Masefield to Lincoln Rolleston Southbound	112	43	82	40	115	46	114	46
Lincoln Rolleston to Masefield Northbound	87	29	75	28	91	33	89	31

The key observations relating to the signals are summarised as follows:

- Westbound between 4-5pm, the average delay without the supermarket is 35 seconds which increases by 5 seconds to 40 seconds with supermarket traffic. This equates to LOS C and D.
- Westbound between 5-6pm, the average delay remains similar at 39 seconds which is LOS D and indicates this approach is now operating well within its capacity as a result of the signals.
- When supermarket traffic is added, the average delay between 5-6pm increases only 2 seconds to 41 seconds which remains LOS D and well below the intersection capacity.
- Other approaches operate with delays in the range of 29-46 seconds (LOS C/D) without supermarket traffic.
- Average delays on the other approaches change by 0-3 seconds remaining in the LOS C/D range.

For completeness, the isolated intersection performance for both scenarios for the Levi / Lincoln-Rolleston / Lowes / Masefield Drive roundabout is shown in **Table 2.3**. This is an updated output to replace Table 2.1 in the Outstanding Transport Matters technical notes, addressing the routing issue identified. The performance is summarised as follows:

- The data from the corridor travel time checks indicate much higher delays on the eastern approach for westbound movement through the intersection. Delays in the table below in the westbound direction (that is the Levi Road approach) only measure delays as far back as Beaumont Drive and any westbound delay experienced by vehicles (associated with the roundabout) prior to Beaumont Drive is not accounted for. The evening peak performance in the westbound direction would be in the LOS F range for both with and without supermarket scenarios.
- For all other approaches, excellent LOS of B-D is experienced with isolated intersection delays increasing in the order of 13-16 seconds. This is generally consistent with the delays derived from total travel time along the corridor.

Table 2.3 2033 Levi / Lincoln-Rolleston / Lowes / Masefield Drive roundabout intersection modelling results

Road		Baseline					With Development				
		Volume (veh/hr)	AvgDly (sec)	LOS	AppDly (sec)	App LOS	Volume (veh/hr)	AvgDly (sec)	LOS	AppDly (sec)	App LOS
Masefield Drive North	L	114	10	B	11	B	200	24	C	24	C
	T	423	11	B			383	24	C		
	R	45	11	B			35	22	C		
Levi Road East	L	149	38	D	37	D	163	39	D	39	D
	T	329	37	D			384	39	D		
	R	79	39	D			122	41	D		
Lincoln Rolleston Road South	L	95	14	B	14	B	77	28	C	30	C
	T	358	14	B			326	30	C		
	R	82	15	B			109	30	C		
Lowes Road West	L	60	22	C	18	B	55	37	D	32	C
	T	250	17	B			284	32	C		
	R	63	21	C			61	28	C		
Intersection	All	2046	20	C	20	C	2197	31	C	31	C

3. Summary

The revised modelling of the Levi / Lincoln Rolleston Road intersection focuses on the 2033 scenario with the existing roundabout being retained and replaces the prior assessment in the Outstanding Transportation Matters technical note. The revision includes addressing an imbalance in the distribution of traffic between the access points of the supermarket. A more comprehensive assessment of the intersection performance is provided which calculates the total delay on each approach based on the travel times along each corridor including deceleration and queuing time. Most notably, this

occurs in the 2033 roundabout scenarios and affects the Levi Road corridor in the westbound direction where delays and queues increase as background traffic levels increase and extend beyond the Beaumont Drive intersection.

The more comprehensive assessment demonstrates that the overall delay for the eastern Levi Road approach to the roundabout is poor in the 2033 baseline at LOS F, so is operating over capacity without the supermarket in place. The updated modelling confirms that the roundabout should be upgraded prior to 2033 irrespective of the supermarket development.

The proposed traffic signals will relieve congestion and resultant upstream effects and will result in improved (reduced) travel times for vehicles travelling westbound on the Levi Road corridor in the evening peak. The westbound travel time performance, with the addition of the supermarket development, results in a 12-15 second increase in delays at the signalised intersection with all intersection approaches performing with good Level of Service.