



HOLCIM (NEW ZEALAND) LIMITED PROPOSED CEMENT SUPPLY PROJECT REVIEW OF TRANSPORT ASSESSMENT

TrafficPlan Limited has been appointed by the Waitaki District Council to peer review the transport assessment report prepared by Traffic Design Group (TDG) in support of an application by Holcim (New Zealand) Limited (Holcim) for resource consents to establish a cement manufacturing plant and associated quarries and pits. I have visited the sites and I am familiar with the existing roading network.

The following notes highlight various comments, concerns and conclusions etc. from a peer review of the above document. In general, the Transport Assessment (February 2007) is a refinement of earlier drafts and has dealt with most of the points raised during the preparation of this more formal document, but with one exception – there is no Technical Note or discussion addressing the Rail Corridor.

For convenience, all *quotes (in italics)* are from the *Transport Assessment* document produced by Traffic Design Group (February 2007):

1. Introduction:

... the majority of the cement product would be transported from the plant by either rail or road to the Port of Timaru or Port Chalmers. The former option will require the reinstatement of the branch line ...

2. Proposal:

... It is considered that using rail rather than road for the cement product is fully in accordance with the Zealand Transport Strategy, both of which seek to enhance ...

The traffic generation and possible routes are reviewed for:

2.2.1 Limestone, Siltstone and Tuff

2.2.2 Coal ... 20 loads ... per day ... expected peak of 36 loads ... six days per week ... 7am to 10pm Monday to Friday ... 7am to 7pm on Saturday... increase of between three to six vehicle movements per hour on Weston-Ngapara Road...

2.2.3 Sand ... 11 loads ... peak 18 ... same days / hours as above ... increase ... two to three vehicle movement s per hour on Peaks Road / Victoria Hill Road, Windsor Road and Weston-Ngapara Road...

2.2.4 Oil ... 3 loads of oil ... delivered per day ... peak of 4 loads ... same days / hours as above ... increase of less than one vehicle movement per hour.

2.2.5 Gypsum ... every six months ... ship-load of 15,000 to 20,000 tonnes ... Timaru ... stockpiled ... 5 loads ... per day ... peak of 15 loads ... same days / hours as above ... increase ... one of between one and three vehicle movements per hour on the roading network.

2.2.6 Cement ... finished product ... towards the north and the Port of Timaru or Port Chalmers ... smaller amount being delivered locally ... anticipated that the loads to Timaru or Port Chalmers would be carried by train, rather than road. ... single dedicated unit train, which would make two return trips per day ... six days a week.



Regarding ... Timaru, the loaded train would depart the cement plant around 11am ... return ... around 6pm. ... loaded for a second trip, departing ... just before 10pm ... returning to the site at around 7am the next day. ... the schedule for a train to Port Chalmers ... not available.

In the unexpected event that the train is unable to run for a period of three days or more, a contingency arrangement will be need to be put in place with tankers used to transport the cement to the relevant port. ... operating at maximum capacity, to transport the equivalent quantity ... would require tankers to operate 24 hours per day, 7 days per week, 50 weeks per year, with an average of 85 loads (or 170 vehicle movements) per day, equivalent to an average of seven vehicle movements each hour.

Local cement deliveries ... 7am to 10pm Monday to Friday ... 7am to 7pm on Saturday. However, trucks may be required to enter and leave the site outside these times and consequently, trucks may leave the plant 24 hours per day, 7 days per week.

2.2.7 Operational Requirements ... average of 190 vehicle movements per day ... may rise to a maximum of around 360 vehicle movements per day. ... also be a night shift, but this will be skeleton staff only and the vehicle movements associated with these have not been included in this analysis.

... Holcim is considering running a company bus ... no reduction has been made in the trip rates of employees. ... Allowing for all workers to travel to the plant in the morning and depart in the evening, as well as around a fifth of couriers, company vehicles and visitors, this suggests that between 70 and 130 vehicle movements could be generated in the morning and evening peak periods.

Table 3/4 on Page 15/16 indicates the *Additional Maximum Vehicle Movements per day, hour* ... *Operational Traffic**; Coal, Sand, Oil; Gypsum; Local Cement; Day; Hour

SH1 North of Seven Mile Rd	9	6	30	5	50	7
Seven Mile Rd to Oamaru	9	6	30	5	50	7
Oamaru to Weston Rd	204	6	30	10	250	78
Weston Rd to Whiterocks Rd	-	6	30	10	46	5
South of Whiterocks Rd	9	2	-	40	51	6
Whiterocks Rd	9	8	30	51	98	10
Weston Road (south)	204	6	30	10	250	79
Weston Rd / West View Dr	399	6	30	10	445	143
Saleyards Road	195	-	-	-	195	70
Weston to plant site	425	8	30	56	519	160
Plant site to Coal Pit Rd	98	108	-	-	206	36
Coal Pit Rd to Windsor Rd	56	108	-	-	164	24
Northwest of Windsor Rd	42	72	-	-	114	18
Windsor Road	10	36	-	-	46	4
Airedale Rd / Horse Gully Rd	-	6	30	26	62	6
Gibsons Road	-	6	30	5	41	4
SH83 Horse Gully Gibsons	-	6	30	31	67	6
SH83 West of Gibsons Rd	-	-	-	26	26	2
Seven Mile Road	-	6	30	5	41	4

** includes for operational traffic relating to the quarries and pits*

... the greatest effects occur on Weston-Ngapara Rd / Main St (west), Weston Rd / West View Drive, and SH1 ... due to the movement of materials would be on Weston-Ngapara Rd, northwest of the cement plant, where the maximum increase of nine truck movements per hour equates to one additional vehicle every six minutes.



2.3 Construction Traffic

2.3.1 Cement Plant ... the likely amount of equipment and materials ... 31 truck movements per day ... may rise to 60 truck movements per day ... Additionally, there will be a further 500 truck movements over the construction period ... a further one or two truck movements per day.

... construction staff, ... maximum of 430 personnel on-site at any one time. ... likely to be one shift, ... arrivals will occur over a two-hour period, with departures occurring over at least six hours. Taking into account travel by company bus, construction staff travel is estimated to lead to around 350 vehicle movements per day ... in the order of 90 vehicles movements in the morning peak period.

2.3.2 Limestone /Siltstone and Tuff Quarries ... total workforce is expected to be in the order of 35 ... with work between 7am to 10pm on weekdays and 7am to 7pm on Saturdays. Allowing for some car-sharing amongst workers, staff travel ... around 50 vehicle movements per day, which could be in the order of 25 vehicle movements in the morning and evening peak periods.

2.3.3 Coal and Sand Pits ... total workforce ... in the order of 20, with work generally occurring between 7am to 10pm on weekdays and 7am to 7pm on Saturdays. ... some car-sharing amongst workers, staff travel ... around 30 vehicle movements per day, ... in the order of 15 vehicle movements in the morning and evening peak periods. ... equipment and plant ... an average of around 5 truck movements per day ... may rise to 10 truck movements per day ...

2.3.4 Total Trip Generation due to Construction

Table 6/7 on Page 19/20 indicates the Additional Maximum Vehicle Movements per day, hour ... *Operational Traffic**; Cement Plant; Quarries; Coal-Sandpits; Day; Hour

SH1 North of Seven Mile Rd	20	62	10	10	102	14
Seven Mile Rd to Oamaru	20	62	10	10	102	14
Oamaru to Weston Rd	215	62	10	10	297	72
Weston Rd to Whiterocks Rd	-	62	10	10	82	7
South of Whiterocks Rd	20	-	-	-	20	7
Whiterocks Rd	20	62	10	10	102	14
Weston Road (south)	215	62	10	10	297	72
Weston Rd / West View Dr	410	62	10	10	492	130
Saleyards Road	195	-	-	-	196	58
Weston to plant site	430	62	10	10	512	137
Plant site to Coal Pit Rd	80	-	10	10	100	42
Coal Pit Rd to Windsor Rd	30	-	-	10	40	16
Northwest of Windsor Rd	15	-	-	5	20	9
Windsor Road	15	-	-	5	20	8
Airedale Rd / Horse Gully Rd	-	62	10	10	82	7
Gibsons Road	-	62	10	10	82	7
SH83 Horse Gully Gibsons	-	62	10	10	82	7
SH83 West of Gibsons Rd	-	-	-	-	-	-
Seven Mile Road	-	62	10	10	82	7

* includes for operational traffic relating to the quarries and pits

... the greatest increase in vehicle movements occurs on Weston-Ngapara Road /Main Street (west), ... maximum of 512 additional vehicles per day ... of these (84%) are associated with commuting personnel.... Of the expected additional 137 vehicle movements per hour on Weston-Ngapara Road / Main Street (west) to the southeast of the cement plant, 95% are associated with employee travel.



3 Current Conditions

3.1 Roading Network

The document discusses the following portions of the existing network:

3.1.1 *Adjacent to the Cement Plant Site*

3.1.2 *North of Weston – with an incorrect reference to the SH83 - Airedale Road intersection rather than Horse Gully Road*

3.1.3 *South of Weston*

3.1.4 *Northwest of the Cement Plant Site*

3.1.5 *Sight Distances – including the SH83's intersections with Gibsons Road and Horse Gully Road*

3.2 Railway Alignment

... The particular traffic engineering issues relating to the level crossings are not included in this report, since the reinstatement of the railway line will be subject to a separate outline plan to be approved by Waitaki District Council.

... Ontrack has provided ... the number and times of trains passing through the existing level crossing at Severn Street in Oamaru. It is understood that ten freight trains pass through the level crossing each day (Monday to Friday) with five trains on Saturday

Ontrack has also noted that the level crossing may be closed to road traffic during shunting activities, but no record is kept of these movements ...

... Allowing for the barriers to be closed for an average of one minute ... Over the course of a week, it is estimated that a total of 268 minutes delay are incurred due to the operation of the level crossing, assuming that trains run to time. However, this could increase to 305 minutes delay if the train times varied and coincided with the greatest traffic flows on State Highway 1

3.3 Roading Hierarchy – A list is included

3.4 Traffic Volumes

3.4.1 Motorised Traffic

... Traffic volumes have been provided by both Transit New Zealand and Waitaki District Council ... with State Highway and Local Road Network two-way Average Daily Traffic listed along with Peak Hour Level of Service and vehicle turning counts.

3.4.2 Pedestrian and Cyclist Volumes

... All surveys commenced at 7am and finished at 7pm ...with a maximum 12 hour count of 22 at the railway crossing at Saleyards Road

3.5 School Bus Routes – A list is included – Weston & Enfield Primary missing?

3.6 Prevailing Traffic Speeds – A list of 85th percentile speeds is included

3.7 Journey Times – A list is included ranging from 24min 40sec to 26min 50sec

3.8 Road Construction

Limited information has been received from Waitaki District Council regarding the construction and strength of the road carriageways in the study area. The Council do not have comprehensive records of the strength or structure of the roads being considered for access to the cement plant, quarries or pits, collecting this information infrequently and only when a full reconstruction of the road takes place (rather than the more regular re-sealing).



The information available relates to Weston-Ngapara Road and Windsor Road, and is dated 1979. It therefore cannot be considered to necessarily reflect the current situation.

4. Road Safety

4.1 Overview

The Land Transport New Zealand Crash Analysis System (CAS) has been used to identify all reported accidents on the key routes within the study area. The search covered all reported accidents, both injury and non-injury, for the most recent full five year period between 2001 and 2005 inclusive, as well as all available reports for the partial 2006 record. ... This is a February 2007 document and it would be preferable to search the 2002 – 2006 database.

... Those accidents which were not related to the specific roading / traffic environment at the accident location were then specifically identified. These included: A list of 10 factors follows ... A brief analysis of these accidents was carried out, but no common locations or other factors were found in the records relating to these accidents. Since they are unlikely to be affected by any potential engineering remedial measures, these accidents have not been analysed further. ...

... In total, some 467 accidents were reported on the roading network which is being considered for use by traffic associated with the proposed operation. This relatively high number is not unexpected, given the length of roads under consideration.

4.2 Mid-Block Sections of Road

4.2.1 SH1 (Port of Timaru to Seven Mile Road) - Of the **219** reported accidents, the majority (59%) occurred on mid-block sections of this route. Over all locations, causal factors were dominated by rear-end collisions (24%), vehicles failing to give way (19%) and where a single vehicle lost control (32%). Some 30 (14%) of these accidents involved trucks....

4.2.2 SH1 (Seven Mile Road to Weston Road) - A total of **204** accidents were reported on State Highway 1 between (but exclusive of) its intersections with Seven Mile Road and Weston Road. Of these 16 (9%) accidents involved trucks, 11 of which were non-injury accidents and five of which were minor injury accidents.

4.2.3 SH1 (Weston Road to Whiterocks Road) - Of the **16** reported accidents, two (13%) occurred at intersections, both of which involved a vehicle failing to give way and/or excessive speed. A further six (38%) accidents involved vehicles losing control at bends. Trucks featured in three accidents, one of which was a loss of control due to speed, while the other two involved an truck with either an over dimension or poorly secured load striking a bridge. All three of these truck accidents occurred on SH1 at the Deborah Over bridge....

4.2.4 Whiterocks Road (Weston-Ngapara Road to SH1)- **One** reported accident has occurred at this location, involving no injuries. This accident involved a car southbound on Whiterocks Road being hit by a car that failed to give way to non-turning traffic when turning out of the adjacent district road. Visibility restricted by a crest/dip and hedge were listed as contributing factors.

4.2.5 Weston Road / West View Drive (SH1 to Main Street / Whiterocks Road) - Of the **three** reported accidents along this route, one resulted in a serious injury. This involved a car northbound on Weston Road, 200m south of Essex Street failing to notice a second car slowing and running into its rear....

The two non-injury accidents both involved single vehicle loss of control. No trucks were involved in these accidents.



4.2.6 Seven Mile Road (SH1 to Gibsons Road) - **Two** accidents were reported along this section of Seven Mile Road, both occurring at intersections. ...

4.2.7 Seven Mile Road (Seven Mile Road to State Highway 83) and

4.2.8 State Highway 83 (Gibsons Road to Horse Gully Road)... **No** accidents were reported

4.2.9 Horse Gully Road / Airedale Road (State Highway 83 to Main Street (west)) Of the **six** accidents on this section of road, four involved lost of control at bends. Speed was attributed as a contributing factor for three of these accidents. No accidents on this section of road involved trucks, nor are any accident clusters evident.

4.2.10 Weston-Ngapara Road (Kaines Road to Main Street) **Eight** accidents, including one fatal accident, were reported along this section of road. The fatal accident occurred at the intersection of Weston-Ngapara Road and Pig Island Road and involved a motorcycle eastbound on Weston-Ngapara Road hitting the rear of a truck turning right from the centre line. Contributing factors included the motorcyclist failing to notice indication of the truck in front and motorcyclist inexperience. None of the other five reported accidents involved trucks. Of these remaining accidents, five involved loss of control accidents.

4.2.11 Weston-Ngapara Road (Ngapara to Kaines Road) No accidents were reported...

4.3 Key Intersections

4.3.1 SH1 / Weston Road - A single accident was reported

4.3.2 SH1 / Whiterocks Road - Three accidents occurred at this intersection, although two of these listed alcohol as a contributing factor and were also single vehicle loss of control accidents. One of these resulted in a fatal injury accident. The remaining accident involved a car failing to give way at the minor road approach.

4.3.3 State Highway 1 / Seven Mile Road - One accident occurred at the State Highway 1 / Seven Mile Road intersection and involved a car southbound on State Highway 1 hitting a second car that had turned suddenly and had failed to check behind. This accident did not result in any injury.

4.3.4 Seven Mile Road / Gibsons Road and

4.3.5 Gibsons Road / State Highway 83 and

4.3.6 State Highway 83 / Horse Gully Road - No accidents were reported

4.3.7 West View Drive / Whiterocks Road - Two accidents were reported at this location. One of these involved a car failing to give way at the intersection and hitting a cyclist. The second accident also involved a failure to give way, but this time the vehicle at fault was a bus. ...

4.3.8 Airedale Road / Main Street (west) - A single non-injury accident was reported at this intersection. The accident involved a van failing to give-way at the intersection and hitting a southbound car.

4.4 Road Safety Summary

... accidents at intersections mainly occurring within the urban area and often featuring 'failure to give way' accidents, with single vehicle loss of control accidents occurring on the higher-speed sections of road.

Overall, there do not appear to be any significant underlying road safety issues that would be exacerbated by the presence of traffic associated with the proposed cement plant, quarries and pits on the roading network. This must assume the train was operative!



5. Preferred Routes for Operational Traffic

5.1 Overview

The anticipated vehicle movements due to the operation of the Holcim plant have been evaluated in respect of the likely effects upon the existing roading and highway network in order to determine whether there are any clear preferred routes (or alternatively, routes which should be avoided).

5.2 Ngapara and Windsor (Coal and Sand)

The location of the coal and sand pits in relation to the proposed plant mean that Weston-Ngapara Road is the only practical route choice. ... There is no road safety record on Weston-Ngapara Road which would suggest the trucks could not be accommodated safely.

5.3 Timaru (Gypsum and Oil)

... there is no clear advantage in journey time for the selection of either SH1 through Oamaru to Weston Road or Whiterocks Road, or the route using Seven Mile Road and Airedale Road. Similarly, there are no road safety concerns evident on any of the roads under consideration. ... it is recommended that during the morning and evening peak hours, trucks carrying gypsum do not travel through Oamaru, but use the Seven Mile Road / Airedale Road route instead.

5.4 Local Destinations (Local Cement Deliveries)

For traffic movements to locations south of the cement plant, using Whiterocks Road to travel to SH1 offers the most direct route. Up to 51 vehicles could use this route per day (equivalent to at most three movements per hour), and this volume of traffic would have no effect upon the peak hour Level of Service on the road.

5.5 Oamaru (Operational Requirements)

The other regular traffic associated with the operational cement plant, quarries and pits will be staff and service vehicles. As described above, there is a large amount of uncertainty regarding the routes which could be used by workers and other operational traffic, and to a large extent these will be determined by factors outside the control of Holcim network, the operational traffic associated with the plant, quarries and pits will be up to 160 vehicle movements. This would result in the Level of Service on Weston Road / West View Drive and Saleyards Road reducing to one level below that which occurs at present.

5.6 Traffic Effects

5.6.1 Overview

Based upon the above, the following are identified as the preferred routes:

- Ngapara (coal): Weston-Ngapara Road*
- Windsor (sand): Windsor Road / Weston-Ngapara Road*
- Timaru (oil): Either SH1 / Whiterocks Rd or Seven Mile Rd / Airedale Rd.*

The former should be avoided during the morning and evening peak periods...

- Timaru (gypsum): Either SH1 / Whiterocks Road or Seven Mile Road / Airedale Road. The former should be avoided during the morning and evening peak periods.*
- Local destinations (cement product): Whiterocks Road / SH1 to travel to the*



south. This route, or Airedale Road, could also be used for deliveries elsewhere

- Oamaru (operational traffic): Those vehicles within Holcim's control should be directed to use Whiterocks Road, and in practice the remainder are likely to use Weston Road / West View Drive or Saleyards Road, and Weston-Ngapara Road.

5.6.2 Effects on Levels of Service on Highways and Roads

The cumulative effects of the additional traffic upon the peak hour Levels of Service (LoS) of the roads is shown:

Operational Vehicles:	Existing PkHr LoS	Added PkHr LoS	%age Increase*
Weston Road (south)	333 (B)	+79 (C)	+24%
Weston Road (north) / West View Drive	333 (B)	+143 (C)	+43%
Saleyards Road West of Waiareka Lane	127 (A)	+70 (B)	+55%
Whiterocks Road South of Sussex Street	54 (A)	+10 (A)	+19%
Main Street West View Drive to Ascot Road	200 (B)	+153 (C)	+77%
Airedale Road at Weston town boundary	42 (A)	+6 (A)	+14%
Horse Gully Road South of State Highway 83	27 (A)	+6 (A)	+22%
East of Cormacks – Kia Ora Road	139 (B)	+160 (C)	+115%
Adjacent to cement plant site	57 (A)	+160 (B)	+281%
Slaughter Yard Road to Wellington St	77 (A)	+24 (B)	+31%
South of Pine Hill Road (Elderslie)	56 (A)	+24 (B)	+43%

() Level of Service (LoS) : (A) : (B) : (C)

* Less than 25% : 25 - 49% : 50 - 99% : 100 – 199% : 200% and greater

... that even when the cumulative impacts of the traffic ... the effects are minimal on the majority of roads with no change to the Level of Service provided.

The main effects are upon the routes which would be used by those travelling to work, that is, Weston Road / West View Drive, Saleyards Road, Main Street and Weston-Ngapara Road / Main Street (west).

The present Levels of Service on these roads would reduce by one level. Level of Service C is still within the zone of stable flow, but is noted in the Austroads Guide to Traffic Engineering Practice as the level at which the general level of comfort and convenience “declines noticeably”. This would occur during the morning and evening peak hours on the road network only, and as such, may be considered to be acceptable.

However, this result suggests that Holcim should endeavour to encourage employees and suppliers to use routes other than Weston Road / West View Drive, and/or to use sustainable travel where possible.

The Level of Service on Weston-Ngapara Road to the northwest of the cement plant also reduces by one level, from A to B. This is still within a zone of stable flow, and the volume of vehicles remains low.

5.6.3 Effects of Trains on State Highway Traffic

During consultation, Transit New Zealand has identified that the additional train movements passing through the existing level crossing at Severn Street in Oamaru will delay traffic using the state highway. ... and for the barriers to be closed for an average of one minute, creates estimated delays to the SH1 traffic of 11.7 and 9.0 minutes on Mondays through Fridays and 11.3 and 8.1 minutes on Saturdays.



Overall, the movement of the additional trains would result in a further 148 minutes delay to traffic on the SH1 per week. Given that the use of road to transport the cement product would lead to an additional 1,200 truck movements per week on SH1 (Section 2.2.6 above) it is considered that rail is the more appropriate mode of transport.

5.6.4 Effects on Intersections

The increase in traffic is somewhat greater at four intersections ...

*State Highway 1 / Weston Road
Weston Road / Saleyards Road
Main Street / Whiterocks Road / West View Drive
Main Street / Main Street (west)*

5.6.5 Sensitivity Test at Intersections

At the Weston Road / Saleyards Road intersection, Level of Service C would be provided, compared to Level of Service B at present. ...

Similarly, Level of Service B would be provided at the Main Street / Main Street (west) intersection, with queue lengths increasing by around nine vehicles and an increased delay per vehicle of around four seconds compared to that occurring at present. These are not considered to be significant.

5.6.6 Discussions with Transit New Zealand

... two additional intersections were identified where Transit considered some upgrading could be required. At the SH1 / Whiterocks Road, Transit noted that there was an "existing safety deficiency" ...

... At the SH83 / Gibsons Road intersection, Transit noted that there was the potential for the seal to be damaged and for vehicles to cross the centreline of Gibsons Road when turning, and that this could be overcome through seal extensions and widening.

... It is recommended that a detailed evaluation of these intersections is carried out once the likely traffic flows have been resolved further and that any necessary upgrading works are agreed with Transit, and carried out, prior to the plant opening.

5.6.7 Effects on Pedestrians and Cyclists

It is not considered that the movement of trucks associated with the proposed cement plant, quarries and pits would lead to any road safety issues arising on the majority of the roading network in respect of pedestrians and cyclists. ...

... Walking to Weston Primary School has also been specifically considered.

... the greatest increase in traffic flows (West View Drive, Main Street / Whiterocks Road and Main Street (west)) shows that there is already provision made for pedestrians walking alongside the carriageway, either by means of a footpath, a seal extension or a wide grassed verge. This means that pedestrians are not required to walk within traffic lanes.

5.6.8 Effects on School Bus Routes

... the buses transporting children to the schools in Oamaru are travelling in the opposite direction to those travelling to the plant, and they are therefore unlikely to experience any additional delay. ... but it may require buses to leave the depot a few minutes earlier than they do at present.



5.7 Summary and Conclusions

Based on the above analysis, it is considered that the traffic generation due to the operation of the cement plant, quarries and pits will have less than minor effects upon the adjacent roading and highway network.

6. Preferred Routes for Construction Traffic

6.1 Overview

The anticipated vehicle movements due to the construction of the cement plant, quarries, and coal and sand pits has been evaluated in respect of the likely effects upon the existing roading and highway network in order to determine whether there are any clear preferred routes (or alternatively, routes which should be avoided).

6.2 Coal and Sand Pits (Ngapara and Windsor)

The construction traffic has priority at the majority of intersections between the coal and sand pits, and the cement plant. As a result, other vehicles emerging from district roads onto Weston-Ngapara Road may experience a reduced frequency of suitable gaps in the traffic stream. However, the number of construction vehicles and the frequencies (one vehicle movement every 3.8 minutes in the peak hour and one vehicle movement per hour at other times) are small, and it is considered that the effects of this traffic will be less than minor.

A greater effect may arise at the Weston-Ngapara Road / Windsor Road intersection, where traffic on the latter must 'give-way'. Again however, the volume of vehicles involved is small and it is considered that the effects will be less than minor.

there is a large amount of uncertainty regarding the routes which could be used by construction personnel travelling to the sites, and to a large extent these will be determined by factors outside the control of Holcim.

6.3 Cement Plant

Generally, it is considered preferable for these journeys to be made using roads or highways which are higher in the roading hierarchy ...

... It is therefore recommended that during the morning and evening peak hours, trucks do not travel through Oamaru, but use the Seven Mile Road / Airedale Road route instead.

6.4 Limestone/Siltstone and Tuff Quarries

6.5 Traffic Effects

6.5.1 Overview

Based upon the above, the following are identified as the preferred routes:

- *Ngapara (coal): Weston-Ngapara Road*
- *Windsor (sand): Windsor Road / Weston-Ngapara Road*
- *Cement plant site: Heavy vehicles could use either State Highway 1 / Whiterocks Road or Seven Mile Road / Airedale Road. The former should be avoided during the morning and evening peak periods ...*
- *Limestone/siltstone and tuff quarries: Heavy vehicles could use either State Highway 1 / Whiterocks Road or Seven Mile Road / Airedale Road. The former should be avoided during the morning and evening peak periods*



6.5.2 Effects on Levels of Service on Highways and Roads

The cumulative effects of the additional traffic upon the peak hour Levels of Service of the roads is shown below ...

Construction Vehicles:	Existing PkHr LoS	Added PkHr LoS	%age Increase*
Weston Road (south)	333 (B)	+72 (C)	+22%
Weston Road (north) / West View Drive	333 (B)	+130 (C)	+39%
Saleyards Road West of Waiareka Lane	127 (A)	+58 (B)	+46%
Whiterocks Road South of Sussex Street	54 (A)	+14 (A)	+26%
Main Street West View Drive to Ascot Road	200 (B)	+137 (C)	+69%
Airedale Road at Weston town boundary	42 (A)	+7 (A)	+17%
Horse Gully Road South of State Highway 83	27 (A)	+7 (A)	+26%
East of Cormacks – Kia Ora Road	139 (B)	+137 (C)	+99%
Adjacent to cement plant site	57 (A)	+137 (B)	+240%
Slaughter Yard Road to Wellington St	77 (A)	+16 (A)	+21%
South of Pine Hill Road (Elderslie)	56 (A)	+16 (A)	+29%

() Level of Service (LoS) : (A) : (B) : (C)

* Less than 25% : 25 - 49% : 50 - 99% : 100 – 199% : 200% and greater

... the effects of the construction traffic are similar to those which will arise during operation of the plant, quarries and pits, with the cumulative effects of the traffic being minimal on the majority of roads.

The present Levels of Service on these roads would reduce by one level, although the result would still be within the zone of stable flow. The effects would occur during the morning and evening peak hours on the road network only, and as such, may be considered to be acceptable.

6.5.3 Effects on Intersections

The number of additional vehicle movements is less than is anticipated when the plant is operating at capacity, which as described in Section 5.6 above, can be accommodated on the roading network with less than minor effects.

6.5.4 Effects on Pedestrians, Cyclists and School Bus Routes

The number of additional vehicle movements during construction is less than is anticipated when the plant is operating at capacity. As described in Section 5.6 above, these traffic volumes are not anticipated to result in any adverse effects.

6.6 Summary and Conclusions

Based on the above analysis, the traffic generation due to the construction of the cement plant, quarries and pits will have less than minor effects upon the adjacent roading and highway network.

7. Access to Sites and Internal Layout

7.1 Access to Cement Plant

... Two site accesses ... 240m from the slight horizontal curve ... The access towards the southeast is located approximately 500m from the slight horizontal curve in Weston-Ngapara Road and this will be used by staff and visitors to the plant. ... Further analysis will be required when detailed designs for the accesses are produced, to ensure that suitable sight distances are provided ... the volume of vehicle movements anticipated are within the criteria for a Basic Right Turn design



TDG states ... *The frequency of turning vehicles is not considered to justify the provision of either an acceleration or a deceleration lane at either site access.*

At the southeast access, when the maximum number of vehicle movements which may use the access is considered, a Channelised Right Turn arrangement may be required,

Recommend WDC require a single, channelised entry / exit access point to the site.

8.2 Movement of Overweight and Over Dimension Loads

A detailed Technical Note has been produced

9.2 Regional Transport Policies

... It is considered that the proposal supports the RLTS in two important ways:

- The proposed plant is located adjacent to the source of limestone, siltstone and tuff. This means that the major raw material can be transported to the cement plant without introducing any traffic (and hence any effects) upon the roading network.*
- The proposed plant is located adjacent to a railway line which will be reinstated. Moving the majority of the cement product by rail rather than road supports more effective management of transport networks, recognises and exploits the opportunity for mode share change (road to rail), and minimises transport-related energy consumption.*

... retained on roads higher in the roading hierarchy ... a company bus ... centres of population ... Utilising rail rather than road ... the location of the plant site has been carefully chosen to enable receipt of limestone, siltstone and tuff, and transport of cement product, by sustainable modes of transport.

10. Summary and Conclusions

It is considered that the traffic associated with the proposed development can easily be accommodated on the adjacent roading network, with the existing levels of queues and delays being affected only at Weston Road / West View Drive, Saleyards Road, Main Street and Weston-Ngapara Road and associated intersections. On most of these roads, this is due to the effects of workers travelling to the cement plant at peak times, with effects on Weston-Ngapara Road being due to the very low number of vehicles currently present on the road.

Overall, there do not appear to be any underlying road safety issues that would be exacerbated by the presence of traffic associated with the proposed cement plant, quarries and pits on the roading network. However there are restricted sight distances at the Weston Ngapara Road / Coal Pit Road intersection, and it is recommended that appropriate remedial measures are implemented to increase the sight distances to an appropriate standard, following consultation with the District Council. Transit New Zealand has also raised concerns regarding the State Highway 1 / Whiterocks Road intersection and it is recommended that this intersection is evaluated further once the likely traffic flows passing through it have been determined in more detail.

Another two intersections that have very restricted sight distances are Airedale Road – Teaneraki Road and Horse Gully Road – Coal Pit Road.

... An analysis of the key intersections which would be affected by significant traffic increases has been carried out, and this shows that all would continue to operate satisfactorily. Even when all employee travel is condensed into a 30-minute time period, Level of Service A is maintained on the majority of approaches. ...

The roads likely to be used by traffic associated with the development are generally all high in the hierarchy ...



The location of the coal and sand pits in relation to the proposed plant mean that Weston-Ngapara Road is the most practical route choice. There are no capacity or road safety related reasons why this route could not be used. ...

... One non-compliance with the District Plan has been identified in relation to on-site car parking provision. This is not considered to lead to adverse effects given the likely parking demand at the cement plant and the scope to provide further parking if required.

However, very little information is available regarding the condition of structures and other roading infrastructure on the routes under consideration. It is therefore recommended that a more detailed investigation is carried out prior to any final decision being taken concerning the routes to be adopted.

Appendix A – Assessment of Proposed Cement Plant Site Access and

Appendix B – Preliminary Assessment of Routes for Large Loads are similar to the earlier versions.

11. CONCLUSIONS:

The February 2007 Holcim Transport Assessment by Traffic Design Group has, in my opinion, been carried out in a professional manner, identifying most of the current and predicted traffic and transportation demands of the local communities, travelling public and the proposed project.

The routes that are likely to be used by vehicles during the construction and operational phases of the proposed Holcim project have been identified and in most cases reflect the Waitaki District Council's roading hierarchy.

Generally, the additional road traffic can be accommodated on the existing roading network, particularly when contractor and staff starting / finishing times are staggered and / or workers buses are utilised.

Ingress and egress to the cement plant from Weston Ngapara Road should be restricted to one quality access point.

Also, it is fundamental that the bulk cement output shipped through local sea ports be transported by rail.

I concur with the overall thrust of the Traffic Design Group assessment including the summary and conclusions, and agree that the Holcim project can readily be accommodated on the adjacent roading network subject to the replacement of pedestrian facilities along with roading improvements for visibility, manoeuvring and safety as listed in the following recommendations with cost estimates.



12. RECOMMENDATIONS: (Graphics on Page 16)

The following recommendations are based on the review of Traffic Design Group's Transport Assessment; the consideration of traffic and transportation issues addressed in the submissions; and the professional knowledge of the Waitaki District Council Staff.

The recommendations define intersections and sites by route; indicating estimated cost (+/-30%) as at July 2007 pricing; and funding source (H=Holcim; S=Subsidy; W=WDC). The Subsidy percentage is also based on July 2007.

Required Improvements:			\$,000	H	S	W
B1	Weston Rd	Railway Bridge – east of Saleyards Rd	50	21.5	57	21.5
B2	Weston Rd	Saleyards Rd – left turn from and into	30	16.5	67	16.5
D2	Weston Ngapara Rd	Airedale Rd – NW footpath & crossing pt	40	75.0	-	25.0
D3	Weston Ngapara Rd	Airedale Rd – 2 crossing points	40	16.5	67	16.5
G	Weston Ngapara Rd	Coal Pit Rd – visibility / tee-up / widen	75	16.5	67	16.5
I	Weston Ngapara Rd	Windsor Rd – redesign intersection	50	16.5	67	16.5
K	Peaks Rd	from Windsor Rd – upgrade	60	100	-	-
L1	Windsor Rd	Peaks Rd – redesign intersection	20	16.5	67	16.5
L2	Windsor Rd	localised improvements	75	16.5	67	16.5
O	Horse Gully Rd	safety improvements to two-lane bridge	30	16.5	67	16.5
P	Horse Gully Rd	Coal Pit Rd – visibility	25	16.5	67	16.5
Q	Horse Gully Rd	passing opportunities	250	16.5	67	16.5
R	Airedale Rd	Teaneraki Rd – visibility	150	16.5	67	16.5
S	Airedale Rd	passing opportunities	250	16.5	67	16.5

Weston Walkway:			\$,000	H	S	W
B3	Weston / West View	Pedestrians – alternative to Rail Track	200	100	-	-
B4	Weston / West View	Pedestrians – 6 crossing points	120	33.0	67	-

Potential Improvements: (Identified future WDC projects)

C	West View Drive	White Rocks Rd int. – future upgrade
D1	Weston Ngapara Rd	Airedale Road int. – future upgrade
E	Weston Ngapara Rd	Cormacks Kia Ora Rd – future upgrade
F	Weston Ngapara Rd	Whitstone / Five Forks – future upgrade
H	Weston Ngapara Rd	Tussocky Rd – future upgrade
J	Weston Ngapara Rd	Bobbing Creek Rd – no action required
L3	Windsor Rd	realignment

Other Roads:

A1	SH1	all intersections – refer to Transit NZ
A2	SH83	all intersections – refer to Transit NZ
M	Seven Mile Rd	existing route satisfactory
N	Gibson Rd	existing route satisfactory



13. RECOMMENDED CONDITIONS:

The following traffic / transportation conditions are recommended:

- 13.1 It is fundamental to the overall operation of the Holcim NZ Weston plant, that the bulk cement output shipped through local sea ports be transported by rail between agreed times of any day with exceptions of up to 72 hours for rail emergencies.
- 13.2 During construction and operational maintenance, all oversize loads related to the Holcim NZ Weston plant and supply areas shall, where possible, be transported by rail. Otherwise, the oversize routes shall follow the State Highways then the nominated roads of the hierarchy as approved by WDC.
- 13.3 The required roading and pedestrian improvements shall be financed, designed and constructed to WDC standards and time-lines, ensuring all Holcim NZ Weston construction and operational traffic is adequately catered for within the roading network.
- 13.4 Holcim NZ regards itself to be a good corporate citizen. This will be encouraged by the WDC, particularly during potential conflict of Holcim commuter traffic and its impact on the local communities, such as pedestrians and passengers related to the various schools and their routes.
- 13.5 Ingress and egress to the cement plant from Weston Ngapara Road be restricted to one access point. Design to be submitted to WDC for approval prior to any physical works.
- 13.6 Access design to the coal mining area from Weston Ngapara Road to be submitted for approval by WDC prior to any physical works.
- 13.7 Access between the private road from the sandpit and Peaks Road as for 13.5 and 13.6 above.
- 13.8 Access to limestone and tuff quarries from Coal Pit Road as for 13.5 and 13.6 above.
- 13.9 Plans of the railway road crossings; vertical and horizontal alignments; construction details and safety facilities to be approved by WDC prior to any physical works.
- 13.10 Deed of agreement for future maintenance of the five road-rail crossings on the WDC roading network (sites to be listed).
- 13.11 Dust Suppression on Peaks Road adjacent to residential properties is to be addressed by Holcim and will remain their responsibility.

C David Gamble

28 July 2007