



# AIR NEW ZEALAND

Energy Markets Group  
Ministry of Business Innovation and Employment  
PO Box 1473  
Wellington

## **Submission on the Review of New Zealand's oil security**

Air New Zealand welcomes the opportunity presented by the release of this Report and the invitation to comment.

Please find attached our submission.

We would be very interested in the opportunity to participate in further discussion and consideration of the issues.

Rob McDonald  
Chief Financial Officer



# **Submission on : Review of New Zealand's Oil Security**

A discussion paper prepared by MBIE.

Air New Zealand welcomes the opportunity presented by the release of this Report and the invitation to comment. The security of aviation fuel supply is of particular concern to us. The 2011 Christchurch earthquake, the fire at Buncefield UK in 2005 and problems in Sydney in 2003 are notable events that the airline had to respond to. Always, we try to keep aerservices available. But there is also the cost of having to find creative but expensive ways of obtaining alternative supplies of fuel that normally would be available on airport.

Although we do not accept all aspects of the Report we have found it valuable as a vehicle to focus the interested parties on the very important issues associated with the availability of fuel products in New Zealand under various failure and emergency scenarios.

In this submission we will provide an Overview of the local fuel security issues from an aviation perspective before discussing some of the questions listed at the back of the Report.

## **Overview**

Auckland and Christchurch Airports are the key international air travel gateways to New Zealand. While Auckland handles more than 75% of international air traffic Christchurch is handling some longhaul air travel and airport infrastructure is being expanded at Christchurch.

We consider that improving underlying jet fuel security across New Zealand should focus on these two regional centres. Different approaches are required at Auckland and Christchurch because of the different supply chains that each airport is dependent upon.

### **Auckland jet fuel situation**

Jet fuel demand at Auckland Airport is currently about 1.1 billion litres a year- on average 3 million litres a day.

A material local disruption to jet fuel supplies to Auckland could occur from: problems at the refinery, with the refinery to Wiri pipeline, or with the Wiri to Auckland Airport pipeline, or at the storage depot at Auckland Airport. Supply disruptions have occurred at Auckland and they will occur in the future.

It is not only passenger traffic that would be affected by a disrupted fuel supply to Auckland. Auckland Airport is now reputed to be the second (by value) freight port in



the country and New Zealand exports and imports would be seriously affected by a major disruption affecting Auckland, as would tourism.

Storage capacity for jet fuel at Auckland (Wiri and the Airport) is modest by international standards. This has been recognised and additional tanks are being added to the Auckland Airport tank farm. Total storage at the two complexes will then represent a maximum of 17 days supply and operationally about 11 days supply. The industry is always balancing the costs of storage versus the benefits from improved fuel security.

### **Christchurch situation**

The Christchurch supply chain has developed in an ad hoc manner. Jet fuel is discharged at the sea port of Lyttleton where it is either trucked via the Tunnel to the airport or sent to the Woolston depot via a multiproduct pipeline. It is then trucked to the airport. Airport storage is now operated jointly by Z and BP. This change occurred in the last year. The infrastructure was sorely tested in the 2011 earthquake.

### **Other airports in New Zealand**

Modern jet and turbo prop aircraft have the capability to take additional fuel to other airports in New Zealand. For example a domestic jet flight to Wellington can operate without needing to pick fuel up in Wellington.

Jet fuel storage outside of Auckland and Christchurch are more than adequate to meet the needs of aircraft operations.

### **Acceptability of supply disruptions**

Analysis of aviation fuel supply events over the last 10 years shows that almost all the jet fuel supply problems in New Zealand have been due to internal factors not external supply factors.

In our view a global fuel supply shock will be generally understood by the travelling public and accepted.

They will not however uncritically accept a fuel supply shock that occurs solely within New Zealand. A local supply shock in New Zealand would not be accepted by the wider public. Improvements to fuel security should be focused on addressing the ability of local infrastructure to respond to supply shocks.

### **Impact of supply shocks on airlines**

We think the report minimises the downstream effects of a failure in jet fuel supply:

Package tourism depends on certainty. Agents overseas who are making bookings for tourists to New Zealand and other destinations (in many cases 12 months or more

ahead) need to be certain that what they are offering will be delivered. If a country's fuel security reputation suffers through fuel outages which significantly affect flights over a period of time, it will receive international publicity and it will cause some agents to recommend other destinations.

Airfreight exports tend to be perishable and cost sensitive by nature and we have no doubt that there would be economic costs for New Zealand for a significant period after an outage.

### **Response to Disruptions**

In the event of a major problem with any of the key pieces of infrastructure the airline industry would work with the oil industry to conserve the fuel stocks to attempt to enable normal airport activity to continue.

Airlines would initially begin with picking up more fuel at other domestic airports like Wellington and Christchurch and then at offshore locations primarily Australia. Because much of the consumption at Auckland is by long haul airlines this increment to supply is modest. If the situation was continuing to deteriorate fuel allocations would be introduced. As a consequence of this some longhaul airlines would have to stop for fuel in Australia and Fiji. Some services could be re routed to land at other airports in New Zealand, however the only feasible alternative to Auckland for long haul aircraft is Christchurch.

In the context of extra fuel stops and tankering some key points need to be taken into account:

- (a) From an airline perspective, more fuel increases aircraft weight and increases fuel burn and expense. Increased fuel uplift will also reduce payload.
- (b) The Government cannot assume that fuel can be tankered from another location indefinitely. Overall the region is short jet fuel and Nadi in particular is itself supply constrained with a poor resupply chain. Sydney is definitely not oversupplied.
- (c) Auckland is also a hub for many long haul departures. Tech stops and diversions for these flights carry high consequential penalties for airlines, including increased fuel consumption/cost, crew positioning and slot penalties, etc. This is not to mention the brand and customer related penalties.

Contingency measures are listed on page 23 to 31 of the Report. On the face of it these contingency measures appear to indicate that the aviation sector could cope with a material failure in one or more of the key infrastructure elements for quite some time but that is not the case. By way of example, the predominant aircraft types on the Trans Tasman service (which accounts for about 50% of the international traffic out of



Auckland) are Airbus A320 and Boeing 737 aircraft which cannot carry sufficient fuel for a return flight under normal operating conditions. In the event of a jet fuel outage in Auckland these services could not operate from Australia to Auckland and return without a significant reduction in passenger and /or cargo payload.

Relocating services to Wellington or Christchurch and moving passengers from Auckland to the new departure airport is theoretically possible (although operationally fraught particularly in terms of the availability of check-in, baggage handling, border control and other facilities). Jet fuel supplies in Christchurch and Wellington would already be under pressure from the increased uplifts used for domestic flights to Auckland. Also they depend on supply either from the refinery by coastal tanker or from direct imports of jet fuel from overseas through their seaports - which is not something that will occur overnight.

Jet fuel supplies are regionally intertwined and this is one of the reasons why Auckland and Nadi are included with the major Australian ports on the weekly reporting and monitoring of jet stocks and future supplies of jet fuel performed by the oil industry in Australia.

The above demonstrates that the industry does and can cope with a short term modest disruption. But Air New Zealand is concerned that a material disruption would result in a serious situation developing with implications for the aviation industry operating to and within New Zealand and to the New Zealand economy.

## Responses to the questions asked in the Report

The next section of our submission addresses issues raised in the questions listed in the Report. We have focussed primarily on those questions/ issues which are of particular concern. The absence of a reply to a question does not imply we agree with the data or arguments being made in the section that the question relates to.

The approach is to repeat the question, make comments and put forward a recommended course of action.

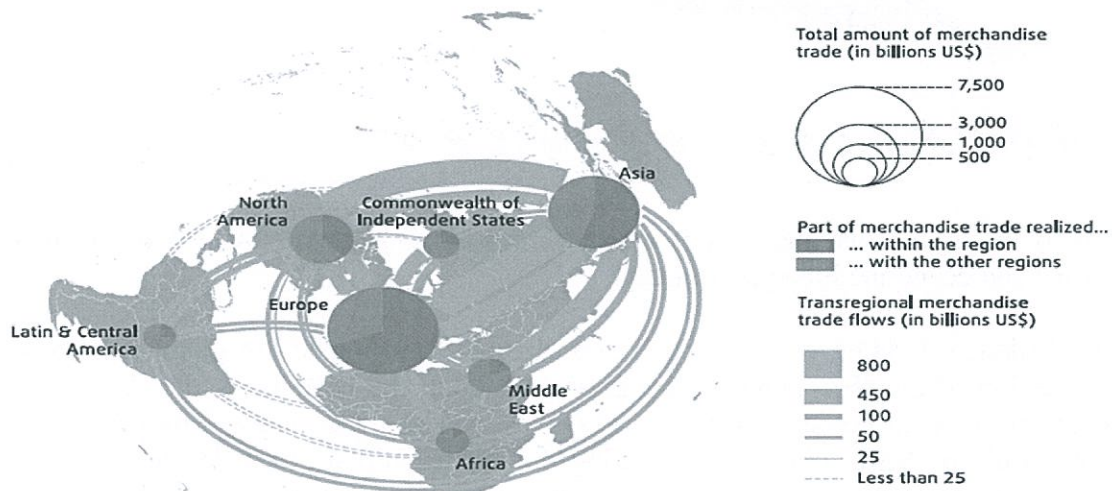
*Q4: Do you agree that New Zealand should maintain its membership of the IEA and continue to meet its obligations.*

### Comment

The IEA was setup in response to the 1973/74 oil crisis. Nearly 40 years later the world is substantially different from political and economic perspectives.

The Cold War has ceased to exist. Now China holds USD3trn of foreign exchange reserves - mainly US treasuries, and Russia over USD500bn. The world is much more connected in an economic way, as can be seen from the following graph

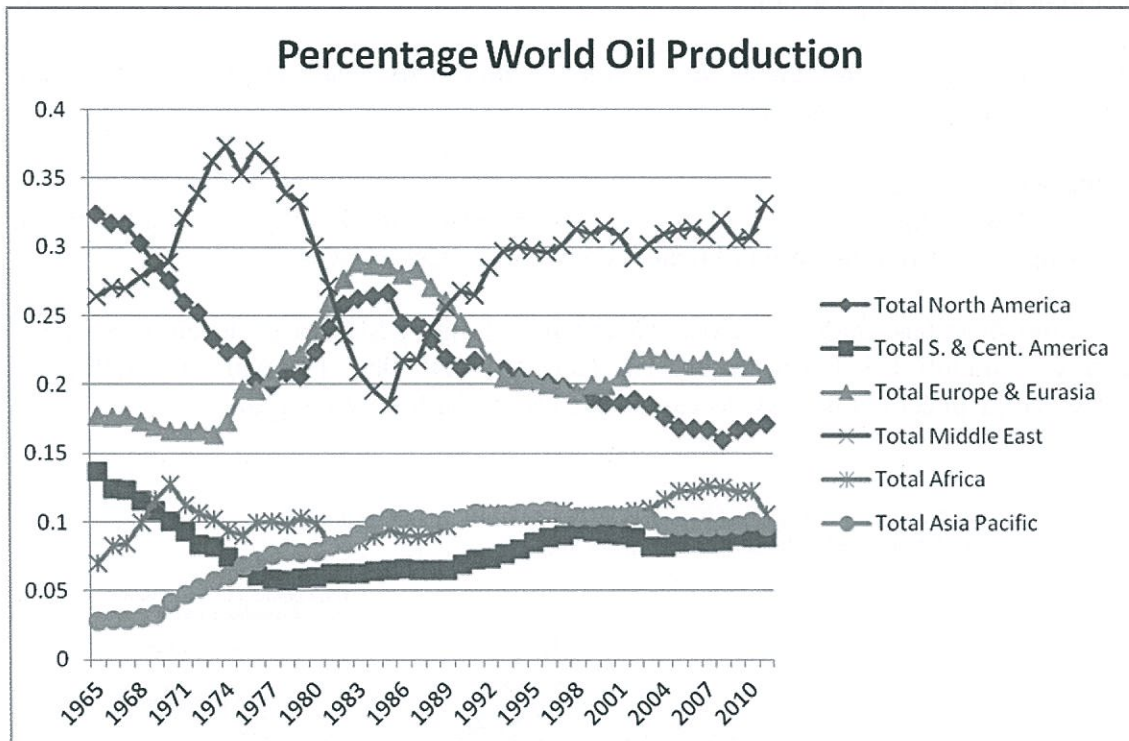
**Figure 2: Almost half of the global goods trade involves Europe**  
(merchandise trade in 2008, US\$ billion)



Source: World Bank staff, based on WTO (2009); see chapter 2.

Trade flows between countries are now substantial. We live in a much more interconnected world. An oil embargo today would affect adversely both crude oil suppliers and oil consuming nations.

The next graph shows that the world has a more diversified regional spread of oil production albeit that the countries of the Middle East remain the largest producing region.



It could be argued that the IEA is an anachronism, and out of touch with the new political and economic linkages of today.

New Zealand's holding of oil stocks has an insignificant impact on global oil stocks. Membership of the IEA imposes economic cost upon the economy - the \$10m per annum that is spent buying ticket contracts. We consider those funds, if they are to be spent, would be better directed at making the supply infrastructure in New Zealand more robust.

### Recommendation

That the Government seriously consider ceasing its membership of the IEA and consider using the funds appropriated for the purchase of ticket contracts to improve the supply infrastructure within New Zealand.



*Q5: Do you agree that New Zealand should continue to meet its IEA stockholding obligations through ticket contract rather than purchasing domestic stockholding*

**Comment**

It is very hard to understand the exclusion of crude oil cargoes enroute to New Zealand from the total volume of stocks New Zealand counts as meeting its IEA obligation. Oil producers cannot stop the tankers. They have left their loading point.

Whether the stock is floating in a tanker on the ocean or in a tank in Denmark, for example, appears irrelevant. Tickets give New Zealand only the right to buy at prevailing market price. This is exactly the same for a crude oil cargo enroute to New Zealand.

**Recommendation**

The issue of cargoes enroute to New Zealand not being counted in New Zealand's stock holding for IEA reporting purposes should be revisited.

*Q14: Are there other factors that can be addressed to enable industry to better respond to a major refinery outage.*

**Comments**

The Marsden Point refinery and its associated infrastructure is a critical node for the supply of all transport fuels to the Auckland region, the upper North Island particularly, as well as to the rest of New Zealand.

The infrastructure node has four key aspects

- The refinery
- The wharf and associated discharge/ loading pipelines
- The storage facilities
- The start of the RAP pipeline

All four core facilities interface into each other. The interdependence makes the Marsden Point complex vulnerable to a fire in say the refinery impacting the ability to import fuels over the wharf or to operate the storage facilities, or to send fuel down the RAP pipeline.

Refineries do catch fire. Chevron's San Francisco refinery recently caught fire in September 2012. Fires do happen in well run refineries.

Making sure the rest of the Marsden Point complex can operate as a standalone import, storage facility and pipeline control centre in the event of a fire at the refinery is a critical aspect to enhancing NZ's fuel supply security.

The Marsden Point complex is vulnerable to a tsunami. It would be prudent to have a better in depth understanding of the potential impact of one.

### **Recommendation**

There should be a review of the interdependency of the four core assets above. It should look at :

1. The ability to operate the import/export infrastructure, storage facilities and RAP pipeline independently from the refinery and the refinery's control and computer systems.
2. The level of fire protection between the refinery, import/export pipelines, storage facilities and RAP pipeline.
3. The vulnerability of the site to tsunamis

*Q17 Are there other factors that can be addressed to enable industry to better respond to a minor refinery outage.*

### **Comments**

#### **Additional transport fuel stocks at the refinery and Wiri**

In addition to our comments to Q14 there needs to be a reassessment of the volume of stocks held as finished products compared with the volume of crude oil. There is a trade off between the volume of crude storage and the volume of finished products.

Unfortunately the Report does not provide a comparison of New Zealand's number of days of forward cover of the major transport fuels storage compared with other developed economies, especially Australia.

The volume of refined products at Wiri needs to be reconsidered in terms of an acceptable level of days storage.

#### **Diversion of ships enroute already to NZ ports**

New Zealand has regular finished products imports to lower North Island and South Island terminals from off shore refineries.

It would be possible to divert tankers enroute to other NZ ports to Marsden Point to discharge. The oil companies would have to balance the demand needs for Auckland region compared with other regions.

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### **Recommendation**

The MBIE should publish a comparison of NZ's days of forward cover for the major transportation fuels on average and a comparison with Australia.



There should be regular quarterly reporting of the data on an ongoing basis.

Diversion of tankers already enroute to NZ ports can be actively considered.

*Q18: Is the description of the long term disruption to RAP/ Wiri accurate. If not what should be expected.*

#### **Comments**

A disruption at Wiri terminal will have significantly different impacts compared to a problem on the RAP pipeline.

#### **RAP pipeline**

The RAP pipeline is around 150km in length. Any damage is likely to be local and not be extensive, ie less than 250 metres. We know the refinery has pretested and prepared pipeline lengths, with different joints held in storage to cover a pipeline problem.

Any problem on the pipeline should take a week to ten days to fix. We think that a problem on the RAP pipeline can be reasonably managed.

#### **Wiri Terminal**

The terminal is the key infrastructure asset to Auckland's transport fuel supply. A fire at Wiri would have a major and severe impact on supply. It is the most at risk asset that has the potential to cause the biggest long term problem.

The impact on Air New Zealand and that of other airlines flying into Auckland International Airport would be very pronounced.

#### **Recommendation**

We think that the possibility of a fire at Wiri destroying the complex should be taken much more seriously than discussed in the Report.

*Q20 Are there other factors that can be addressed to increase the speed with which industry can respond to a long term disruption to RAP/Wiri*

#### **Comments**

Our experience of major supply disruptions: CHC earthquake in 2011, the Buncefield fire in 2005 in the UK and major problems in Sydney in 2003 is that they are never predictable, usually involve more than one issue and often come out of left field.

The lessons of these events are that a supply system needs to have a core level of flexibility and alternative possibilities embedded in it. This is not the case at Auckland.



Air New Zealand approached the oil companies in 2005 and asked them to consider establishing a West Auckland depot for ground transport fuels.

The suggestion was to:

- Establish a new industry storage depot for gasoline and diesel north of metropolitan Auckland adjacent to the major highway complexes being constructed in the West of Auckland;
- Distribute gasoline and diesel to metropolitan Auckland from this site;
- Turn the Wiri depot into a storage facility solely for jet;
- The existing pipeline from the new storage depot to Wiri going through metropolitan Auckland would solely be used for jet;

**Advantages:**

**Backup capability :**

The splitting of the storage to two sites would :

1. allow each site to act as a backup to the other in the case of a material fire at either site.
2. half the probability of a fire having a material impact on Auckland's fuel supply. This would reduce the economic costs of a disruption to the supply of transport fuels significantly.
3. result in increased volume in storage close to the main market, increasing fuel security. Presently the standing volume of stocks in Auckland would be on the lower end of what most main cities in the developed world operate on.

**Distribution of Gasoline and Diesel**

Major motorway links are being constructed to the West and North of Auckland which will facilitate the tanker distribution of these fuels to service station outlets in the Auckland region.

The Upper highway linking the West of Auckland to the North Shore and the completion of the South Western Ring Highway linking the North Western Motorway to the Southern Motorway by passing the city centre, will significantly improve roading access across Auckland.

Distributing ground fuels from the north of the city will save time and effectively do away with the current practice of sending fuel to the south of Auckland and then backhauling it into the city, to the North Shore and West Auckland.

**Depot effectively increases RAP Pipeline Capacity**

A West Auckland Depot for gasoline and diesel would shorten the distance those fuels are transported on the RAP, by about 40km.

This shortened distance would effectively increase the capacity on the pipeline by around 30 percent. It would mean increased volumes in the future could be delivered to

the Auckland market without having to increase the pipeline capacity from Marsden Point. This postpones the issue of capacity problems on the pipeline for at least 25 years and probably longer.

Because the pipeline through metropolitan Auckland would be solely used for jet from the West Auckland Depot to Wiri, there would be ample capacity for many decades to service the growth of air services at Auckland Airport. It would save the cost of an additional pipeline needing to be constructed through metropolitan Auckland, and enhance the international competitiveness of fuel at Auckland Airport. The need for a new pipeline could be delayed decades.

### **IEA Strategic Fuel Reserves**

In country finished product stocks maintained by New Zealand are relatively low. The West Auckland Depot would allow a modest increase in that volume.

We think there should be a rebalancing in the overall volume of stocks held in any case. There should be more finished product stocks and less crude oil stocks, in light of the fact that the volume of crude oil being shipped to New Zealand is not taken into account on the overall volume of stocks.

### **Overall benefits**

The benefits of the proposal are significant.

- A more robust storage infrastructure in the Auckland region with significant backup capability
- An effective increase in the volume of fuels that can be supplied to Auckland without the major capital cost of an extra pipeline
- Increased volume of transport fuel stocks close to the main market
- The need for a major pipeline through metropolitan Auckland is put off for decades or may not be needed at all

### **Recommendation**

We recommend that serious consideration be given to the establishment of a ground fuels storage depot in West Auckland.

*Q23 Are there other factors that can be addressed to increase the speed with which industry can respond to a short term disruption to RAP/Wiri*

### **Comments**

The proposals we make in response to Q20 would increase the capability to deal with a short term event.

*Q30 Do you agree that the probability of a tsunami that results in disruptions that are more severe than those outlined above is small.*



### **Comments**

Just because an event is one in 2,500 years doesn't mean it can't happen tomorrow.

The Marsden Point complex is a critical asset to fuel supply throughout New Zealand. There should be a more detailed assessment of the site's exposure to tsunamis.

There may be lessons to be drawn also from the recent Japanese experience of the impact of the Great Tohoku tsunami on the refineries on the Japanese east coast.

It should not be dismissed so lightly as in the Reports comments "*Such an event is therefore not considered any further.*"

### **Recommendation**

We recommend that a more detailed assessment be made of the vulnerability of the Marsden Point complex to tsunami activity.

*Q44 Do you agree that building the RAP – WAP bypass is a reasonable insurance premium to pay to avoid disruption of jet supply to Auckland Airport.*

### **Comments**

We think this proposal would be a waste of time. It fails to recognise that the supply to Auckland is via a single multiproduct pipeline, distributing gasoline, diesel and jet kero. The Auckland region needs all three fuels to enable economic activity to occur and at a reduced level in the event of a serious supply shock.

Travellers would not fly into Auckland if they could not move around. Passenger and cargo loads would be very low until a semblance of normal supply to enable people and cargo to be moved was available.

For the bypass to work, the pipeline would need to be cleansed of all fuels other than jet. The process to do that would involve a lot of effort without any real benefit, especially with the systems not working. There would be no storage for fuels other than jet fuel. For example if the RAP pipeline was full of gasoline, it would be impossible to handle at the airport as there would be no tanks to off load the gasoline at the airport. Once the system was restored and working there would be a delay before other fuels could enter the system because the pipeline is likely to be overly full of jet.

### **Recommendation**

We recommend that the bypass not be pursued.

*Q45 What work could be pre emptively done.*



**Comments**

Please see our comments to Q44. We would not want to see any work done as it does not provide any flexibility. We think our proposal in Q23 has significantly more to commend it.

*Q47 Do you agree that the construction of domestic stockholding is not an economic solution to improving domestic oil security?*

**Comments**

We disagree. We think there should be more finished product stocks and less crude stocks in the overall stockholding.

New Zealand's holding of finished product stocks on a forward days cover is low by international standards as we understand the situation.

As the country is unable to count crude oil enroute to New Zealand it would make more economic sense to have higher stock holdings of refined product and less crude oil in inventory.

**Recommendation**

Data for the number of days forward cover for finished products in New Zealand be compared with Australia and other 'isolated' developed economies should be released on a regular basis.

*Q48 What cost effective options are there for improving the resilience of the network.*

**Comments**

The review of potential contingencies for the supply of transportation fuels to the Auckland market needs to be looked at in a wider context of the supply of transport fuels in the next 50 years.

The Government and major stakeholders need to have a broad vision as what the fuel supply infrastructure to Auckland should likely be over the next 50 years. That would mean that incremental investments to enhance the storage, resilience and cost competitiveness of the supply of petroleum fuels to the Auckland region economy can take place in a structured and focussed way.

The need for such a broader vision can be seen in the existing suboptimal arrangements for Wiri and the Auckland Airport storage depots. The Wiri terminal could have been located much closer to Auckland Airport, saving pipelines and costs. The heightened risk of having gasoline storage adjacent to jet fuel supply could have been better dealt with.

The existing RAP and WAP pipelines face capacity constraints sooner rather than later.

In the past infrastructure investment has under built capacity. The major cost of pipelines is in the actual cost of laying them. A bigger volume pipe should have been laid back in the 1980's. The modest amount of spare capacity now reflects a lack of vision in the past.

We think the Government needs to promote discussion and facilitate a wider blueprint of how the infrastructure can be enhanced in a coordinated and structured way so that over time it delivers cost effective fuel to the Auckland region.

We consider the oil industry collectively will not act to develop a coherent medium term strategy and undertake new investments that have medium term benefits.

Air New Zealand buys fuel from all four oil companies operating at Auckland International. As an example of the industry unable to act collectively we asked that our uplift data from each of the suppliers be sent to us monthly in one file. The industry was unable to agree to do so.

In the 1990's the Resource Management Act required the oil companys' storage facilities in Christchurch Airport be upgraded. It was an opportunity to rationalise the assets at Christchurch Airport into a common storage facility similar to how Auckland Airport operates. It has taken a further 15 years to get almost to that point. Even now at Christchurch Airport there are storage facilities that have not operated for nearly 10 years which should be incorporated into the main storage facility to enhance security of supply. Air New Zealand has tried to encourage the oil companies operating at the airfield to reach a business arrangement to bring the facilities back into use, but without success.

The Government is in the process of spending substantial sums to improve the security of electricity supply across the country. Economic activity and general everyday living is highly dependent on access to petroleum fuels as well. The Government needs to take a more active strategic interest in promoting sensible economic outcomes for the supply infrastructure for petroleum fuels.

### **Two key medium term issues**

There are two key medium term strategic issues. The first is the immediate issue of the key operating vulnerability to the Wiri oil depot.

The second is the issue of the pipeline capacity from the refinery to Wiri terminal.

We think the establishment of a West Auckland ground fuels depot changes the infrastructure landscape for fuel supply to Auckland in a substantial and once in a generation way.



- It halves the risk of a fire at the key storage depot taking out all fuel storage
- It provides substitutable backup of one storage complex for the other
- It expands the capacity of the existing pipeline to supply more fuel to the Auckland region
- It solves the problem that Auckland city will face if there has to be an additional pipeline laid through metropolitan Auckland.

The Proposal is to:

- Establish a new industry storage depot for gasoline and diesel north of metropolitan Auckland adjacent to the major highway complexes being constructed in the West of Auckland;
- Distribute gasoline and diesel to metropolitan Auckland from this site;
- Turn the Wiri depot into a storage facility solely for jet;
- The existing pipeline from the new storage depot to Wiri would solely be used for jet;

#### **Overall benefits**

The benefits of the proposal are significant.

- A more robust storage infrastructure in the Auckland region with significant backup capability
- Increased transport fuel stocks close to the main market
- An effective material increase in the volume of fuels that can be supplied to Auckland region without major capital expenditure on pipelines
- The need for a major pipeline through metropolitan Auckland is put off for decades or may not be needed at all

#### **Recommendation**

We recommend that the West Auckland terminal be given serious and active consideration by major stakeholders and the Government



