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HARNESSING THE POTENTIAL OF DATA FOR CANTERBURY'S TOURISM AND TRANSPORT NETWORKS

Prepared for Environment Canterbury

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QUALITY STATEMENT

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Executive Summary

MWH was commissioned by Environment Canterbury (ECan) to identify gaps where collecting or improving the quality of or access to existing data could lead to a better evidence base on which decisions can be made about investment in Canterbury's transport network, as well as tourism infrastructure and other services to support the visitor experience.

This project has identified a wide range of data, systems and stakeholders in both the freight and tourism areas.

There are a number of options that would deliver immediate benefits at low cost, and some of these would partially close existing information gaps. In particular, a more centralised and consistent approach to providing access to data would benefit Canterbury transport infrastructure owners (note that reference to infrastructure owners in this report infers owners or managers of public infrastructure).

However, options to close gaps in information will take time to implement and will be costly.

This report focuses on:

- the types of data available
- where this data is now and who holds it
- the gaps in data
- options for how data could be managed in the future to improve access to information for Canterbury infrastructure owners (particularly transport infrastructure owners), and
- action plans to indicate how benefits might be realised in the short, medium and long-term when implementing options.

In the course of engaging with stakeholders it was found that freight and tourism private sector parties felt they had sufficient information in the management of their own businesses. It was also agreed that the information held privately by freight and tourism operators would be of value if it could be shared with infrastructure owners, and that this in turn would help deliver a more efficient freight supply chain and improved visitor experience in the region.

A number of gaps have been identified. They key gaps were:

- Freight: understanding movement of commodities by type within the region to individual road level
- Tourism: understanding visitor movement in enough detail to be able to start to interpret travel behaviours and routes by visitor type.

It is expected that implementing options identified in this report will result in an improved ability for infrastructure owners to understand:

- how their assets are being used,
- what their customers' needs are, and
- what these needs might be in the future.

It is recommended that ECan look at taking a staged approach to implementing options proposed by the project. In general these three stages can be summarised as follows:

1. Create a centralised point where currently available information that does not require significant data manipulation can be readily accessed by infrastructure owners, maintain it, and let infrastructure owners know where this is
2. Add datasets that would help close data gaps but require some additional work to make them more readily usable by infrastructure owners.
3. Create new data sets to close key data gaps and make this data readily accessible to infrastructure owners

Agreeing on an appropriate website and a process for updating and adding material will enable further information to be added in time as it is gathered. Consideration of the use of a third party to manage this site is recommended.

An important component of these first and subsequent steps would be publicising the location and contents of the database or website to facilitate its use by interested parties.

From our analysis of the current sources of **freight data** (e.g. that which is readily available), there is an immediate action programme which could be established quickly and with limited effort and resourcing. This programme would involve gathering information from a range of readily available sources of data and present it in a single location or through links available at a single location. This, together with focused publicity covering the information available, would provide an opportunity for early action.

This possible set of data could include:

Accessible on the Ministry of Transport (MOT) website:

- The National Freight Demand Study (NFDS)
- The Freight Information Gathering System (FIGS) database
- The Transport and Trade database
- New Zealand International Airfreight
- Transport indicators
- Beca reports using eRUC (electronic Road User Charges) data

Accessible on the Ministry of Primary Industries (MPI) database:

- Logging and wood product statistics.

Accessible on the Statistics New Zealand website:

- Agricultural production statistics
- Meat production statistics
- Regional GDP forecasts.

Accessible on the MBIE website:

- Mineral Statistics
- Territorial Local Authorities gross domestic product (GDP):

Accessible on the NZ Transport Agency (NZTA) website:

- State Highway annual traffic reports.

Similarly for **tourism data**, some quick and relatively inexpensive steps can be taken to add more information to a local website (this could be an existing website affiliated to ECan or one of the organisations listed below, or a new website). This is likely to require the co-operation of Christchurch and Canterbury Tourism (CCT), Ministry for Business Innovation and Employment (MBIE), Christchurch International Airport Limited (CIAL) and Canterbury Development Corporation (CDC) when it comes to expected air travel and accommodation capacity increases.

With immediate implementation of this step for freight and tourism data it is expected that local authorities in the region would start to gain value in the development of their next long term plans **early in 2017**. In addition to simply promoting and providing access to data, there is likely to be benefit in providing case studies or examples of how the data can be used to inform decision making to enable consistent use and also to give simple guidance to those looking to use the data. It is therefore also recommended that examples or guidance be prepared as part of the implementation of this first step to help realise these benefits.

A key step beyond the identification, gathering, collation or creation of data, is using the data in investment decision making. In many instances this may require additional modelling or more work on the data and how it is organised. This is best addressed as a next step specific to decision making authorities' needs.

Environment Canterbury

Harnessing the Potential of Data for Canterbury's Tourism and Transport Networks

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1.1 Introduction

Transport plays an integral role in regional economic development through enabling the efficient movement of people and freight. Access to quality data is important for understanding how Canterbury's transport network is performing, for identifying and taking account of future trends, and ultimately for sound planning and investment decisions.

Tourism is also of vital importance to Canterbury's economy and the region benefits immensely from the increasing number of visitors travelling through it each year.

The purpose of this project is to identify gaps, where collecting or improving the quality of or access to existing data could lead to a better evidence base on which decisions can be made about investment in Canterbury's transport network, as well as tourism infrastructure and other services to support the visitor experience. The core focus is on data, and better understanding what data may be held by the private and public sectors which would be of assistance to transport infrastructure owners and transport service providers.

1.2 Background

In August 2015, the Canterbury Mayoral Forum released the Canterbury Regional Economic Development Strategy. This is an action plan focusing on what Mayors can achieve through leadership and facilitation to ensure the long-term economic prosperity and social wellbeing of the Canterbury region.

Mayors agreed seven priority work programmes, one of which is integrated regional transport planning and infrastructure investment, and another of which is a regional visitor strategy.

The objective of the regional transport workstream is to achieve integrated transport planning across modes (air, rail, shipping and road transport) that:

- enables the efficient movement of people and freight into, out of, and within the Canterbury region
- improve social connectedness and wellbeing, supports regional visitor strategies and improves road safety.

A target by 2018, was to facilitate information sharing and connections between the NZ Transport Agency (NZTA), Christchurch Airport, KiwiRail, Lyttelton Port, PrimePort Timaru, inland ports, freight companies and the business/commercial community.

A multi-modal transport forum was convened in late 2015 to support work toward this target. On 2 December 2015, that forum agreed that Environment Canterbury would develop and report back on a proposal for data sharing, in consultation with members. A working group of representatives from the transport forum then met on 28 January 2016 to discuss an approach as well as the issues that are arising.

The focus of the regional visitor workstream is on growing tourism in the Canterbury region. The work on transport-related data provided an opportunity to also consider issues around data sharing that arise in the context of supporting the visitor experience in Canterbury.

1.3 Issues identified prior to project initiation

Prior to the engagement of MWH, the following issues were raised with ECan in relation to access to data and information sharing:

- Potential gaps in the data held by local authorities and central government about the movement of freight and visitors around the region, and possible limitations on accessing relevant data.

- A perceived lack of data and analysis of that data to identify problems with how the transport network is performing and support better businesses cases for known problems. This issue is not necessarily limited to data sharing with the private sector – it may also extend to data sharing within central and local government. Ideally, all parties should be working from a common, comprehensive information base that is easily accessible. Data may also be needed on a multi-regional or national basis (such as data relating to critical freight or visitor journeys).
- A need to better understand the movement of visitors around the region to inform investment and other decisions that will enhance the visitor experience and continue to attract visitors to the Canterbury region.

1.4 Project scope

The project scope covered:

- What data is currently held by local and central government on the movement of freight and visitors (including what data is already being shared by commercial companies)
- Gaps in data coverage as well as issues with the reliability and accessibility of data that is already held
- What data is held by the private sector that is not shared with local government, but which could contribute significantly to evaluating the performance of the current transport network and future planning and investment decisions, as well as better understanding the movement of freight and visitors
- Information/data about regional land transport and the movement of visitors used by councils when making planning and investment decisions about local infrastructure, as well as the NZTA.
- Recommendations for short-term data collection and sharing initiatives, including any challenges and risks
- Recommendations for a longer-term strategy to improve access to and the collection of data, including likely challenges and risks.

Data about the public transport network was out of scope.

1.5 Methodology

There are a wide range of datasets available for freight and tourism. These tend to be disparate and poorly integrated, leading to the potential for lost opportunities when making investment decisions for the region. Ultimately, to inform decisions, quality data is needed to help with understanding the pressure on the transport system, how the system is performing under this pressure, and the appropriate response.

The following methodology was applied:

- identify logical categories for data which reflect how this data would eventually be used to inform decisions
- work with transport stakeholders to establish what publicly and privately held data is available and how they currently use different datasets to inform their decision making
- comment on strengths and weaknesses of this data and the use of it, including gaps in coverage
- propose a way forward to establish an integrated view using this data and any recommendations for use of new datasets.

Clearly establishing and understanding the issues was key to the success of this project. Clearly identified problems provided the context for understanding what data is needed and the significance of gaps in coverage.

Problems were generally identified through:

- project team knowledge
- desktop review of relevant data
- Workshops with key freight stakeholders for urban freight and rural freight
- a workshop with key Canterbury regional tourism stakeholders
- a reference group established by ECan
- attendance at the Canterbury Transport Officers Group meeting
- further discussions with selected stakeholders.

After identifying the problems and the benefits of resolving them, data was categorised, researched and analysed. The report sets out the findings.

It is noted that the Ministry of Transport's Domain Plan and work invested in understanding the associated 'enduring questions' was reviewed as part of the project, and this was of particular relevance for the freight component of work. However, the project team chose to focus on the needs that were identified specifically for the Canterbury Region from the perspective of the freight and tourism sectors to support a more efficient freight supply chain and improving visitor experience regionally and locally. There may be some overlap between initiatives identified in the Domain Plan and this project – this has not been explored further by the project team.

1.6 Project governance and project team

The project was sponsored by ECan and a dedicated project manager was appointed.

ECan formed a reference group to provide feedback on the project as work progressed. Lyttelton Port, PrimePort, Christchurch and Canterbury Tourism, NZTA and ECan were represented on this group. Christchurch International Airport and the Ministry of Transport also provided input into the project. Stephen Bateman from SB Global Logistics provided advice on the project and support for the workshops.

The contribution of these stakeholders has been greatly appreciated.

An externally engaged project team reported to the ECan project manager, and this team comprised the following principal team members:

Organisation	Person	Area of Interest
MWH	Andrew Maughan	Whole project
ECPC Limited	Anthony Byett	Tourism
Richard Paling Consulting Ltd	Richard Paling	Freight
Murray King & Francis Small Consultancy Ltd	Murray King	Freight

Further support was provided to the team by:

- Chris Vallyon, Beca (freight data)
- Alastair Evans, Qrious (mobile data to support tourism insights)
- Dave Smith, Abley Consultants Limited (existing transport models in Canterbury).

1.7 Consultation

Stakeholders were involved in this project through:

- the reference group
- the workshops
- meetings and telephone discussions with the project team.

Stakeholders who provided input in respect to freight were: territorial authorities in Canterbury, Christchurch International Airport, KiwiRail, Fonterra, Hilton Haulage, Timaru Container Terminal, Lyttelton Port, Mainfreight, NZTA, Opzeeland, PBT, PrimePort, RTANZ, SB Global Logistics, and Synlait.

For tourism, the stakeholders were: Christchurch & Canterbury Tourism, Christchurch City Council, Christchurch International Airport, Christchurch Development Corporation, Department of Conservation, Kaikōura District Council, KiwiRail, Lincoln University, Mantra, Mt Hutt, NZTA, and THL.

The contribution of these stakeholders is also very much appreciated.

1.8 Structure of report

This report brings together both the freight and tourism components of this project. While the two are treated separately, there are some common themes around knowledge and information gaps, leading to some commonality of possible data management solutions. However, the two are considered separately for a number of reasons including different:

- stakeholders.
- drivers for freight and tourism activity
- effects on the transport network of each activity (freight is predominantly related to heavy vehicle usage; tourism to the experience of travellers).

There is a significant body of existing data, potential data sources, and organisations that can provide insights relating to access to or use of data. As a result the project focused work by taking a business case approach.

The structure therefore generally follows:

- problems: outlining problems identified by stakeholders and summarising the underlying data problems
- benefits: identifying likely benefits from solving these problems
- existing evidence: what data is available now, what is ideally required, what are the gaps and how might these be filled
- identifying possible options to solve these problems and close gaps
- recommended priorities and actions to realise desired benefits.

Section 2: Canterbury Freight Data

2.1 Overview

There is a need to have access to quality freight data in order to understand the detailed patterns of the movement of different types of freight across the range of transport modes in an integrated way. The principal issue is the usability, quality and comprehensiveness of the information that is available for this purpose. There is a large amount of information that must be derived from a wide range of sources. It is not always easy to see movements or their effects down to an individual transport link or supply chain link level, which makes investment decisions more difficult.

In considering freight data it is noted that there is a difference between urban freight and rural freight. This is discussed further in the report, however, rural freight is predominantly export and bulk commodity based, whereas the freight task in an urban environment predominantly involves manufactured and retail commodities (as well as rural hinterland movements to and from the ports). A significant amount of urban freight is generated within the urban area, as a consequence of carting goods between distribution centres and manufacturers or suppliers and residential and commercial customers, using a wide range of vehicle types and sizes.

In addition, future freight demand is very difficult to predict which makes planning infrastructure investment to meet future need equally difficult. Future freight demand on the transport network is driven by:

- how the supply chain services both the domestic market within New Zealand and the external global market, and then
- by the New Zealand market's ability and need to respond to these changes.

Understanding future freight demand and its impact on the transport network is therefore important to ensure that investment and management systems are put in place so that, as far as possible, the infrastructure available can meet the reasonable needs of users. However this is complex and challenging. This, therefore, highlights the need for good quality and relevant data to support these activities.

This project focuses on identifying what might be done to support the planning task by improving access to key freight data and managing the closure of some of the key data gaps. It is expected that in time this focus on improved access, availability and completeness of data will support an improvement in the way that investment is optimised across the freight supply chain and associated infrastructure, which in turn will improve the region's economic performance.

2.2 What is the problem

On review of existing data and in consultation with freight stakeholders, it is understood that the key problems are:-

1. Existing data on the patterns of freight movements within and impacting on the Canterbury region is widely dispersed and not held in or easily locatable from a single location. Because of this users may not be aware of some of the current information that is available.
2. The data available on freight movements is not comprehensive. In particular, it excludes comprehensive detailed origin destination data and information on the movement of commodities at a territorial or more disaggregated level. It also excludes trip generation (measure of what goes from a site) data, particularly relating to land use changes. If this data was available it could for example be used to assess the impacts on the transport network of the extension of irrigated areas; that is, you could estimate the number of trips generated by the new land use and also identify likely destinations for these trips and preferred routes and therefore estimate associated infrastructure impacts (as per Strategic Network Plan developed for Environment Southland).
3. Key potential sources of data may be perceived to be constrained either by bias in the approach used to collect the data or by confidentiality concerns which affect the granularity of the information available.

4. There may be costs associated with the acquisition of the freight data which may limit the extent to which it may be accessed.
5. Lack of comprehensive and reliable data on freight movements may result in the planning for the provision and management of infrastructure being sub-optimal with resources not being used in the most efficient manner.
6. Issues with the provision and management of transport infrastructure may lead to additional supply chain costs reducing the efficiency and competitiveness of Canterbury operators.

2.3 What are the benefits

The benefits of addressing the problems identified above are:-

- Data available from a single location is likely to reduce the costs and time required to access relevant data.
- Access to more data would improve the likelihood of fit-for-purpose investment decisions for the planning, investment and management of infrastructure.
- More comprehensive data could help generate greater insights into transport system improvements that might not otherwise be identified.
- Improved likelihood that investment decisions align with economic growth opportunities.
- Improved insights gained from the data could assist transport infrastructure providers to plan and operate more efficiently resulting in enhanced supply chains and reduced costs for the commodities transported. This in turn would help to support economic development in the region.
- The compilation of an authoritative source of information could in turn be recognised by a wider group of potential interested parties and create more opportunities for improvements to the efficiency of the freight supply chain.

2.4 What data ideally is required

Through the course of this project it became clear that the main gaps in the information on freight movements within the region have the largest affect on the infrastructure owners. Transport operators generally appeared to have sufficient information to meet their own requirements. There appeared to be some opportunity for operators to help close the information gaps identified by the infrastructure owners, and doing this was seen by most stakeholders as mutually beneficial. However the data likely to be provided may be only partial and would may need to be interpreted carefully within the context of the total freight picture.

It is considered that information on the patterns of demand for and movements of freight should be available, and in sufficient detail to allow:

- the effective monitoring and management of the present day transport infrastructure and services for all freight modes within the Canterbury region
- identification, planning and implementation of new or improved facilities or services to effectively support and facilitate the future movements of freight by all modes taking into account the changes in demand likely to emerge in the region

In practice this means that any freight database or other source of freight data should aim to provide:-

- information on the general patterns of freight movements in terms of volumes and commodities and the key drivers for these movements by mode (road, rail, sea, air)
- information to assess the implications of likely changes in the nature and patterns of demand arising from general economic and population changes and from specific land use changes such as the extension of irrigation and the development of inland ports and multimodal freight hubs

- where appropriate, information on the detailed patterns for freight movements on a spatially disaggregated basis, taking into account likely changes as identified above to help plan and prioritise local investments in transport infrastructure. These would form part of the business cases for investment or the development of new services or management practices.

2.5 Current data availability

2.5.1 Introduction

To start addressing the requirements identified in the previous section, data that is currently available has been assessed in three main areas:-

- Data relating to flows carried by mode: road, rail, ports and air, that is, by the transporter
- Data relating to commodity flows assessing movements by production and producer data
- General socio-economic data.

Examples of freight-related data are included in Appendix A.

Flows by mode, commodity and socio-economic data are discussed below, with more detail provided in Appendix B.

2.5.2 Flows by mode: road, rail, sea and air

2.5.2.1 Introduction

There is a range of data from different sources on freight movements by heavy vehicles, including commodities.

2.5.2.2 Road

There is a range of data from different sources (both private and public) on freight movements by heavy vehicles, including commodities.

Information on heavy vehicle movements at a detailed link level is collected by NZTA for the State Highway Network and by the road controlling authorities for the local road network. A substantial amount of NZTA's material is freely available on the internet and more detailed information can be obtained with the Agency permission. This information is presented in the form of an annual summary of the Average Annual Daily Traffic (AADT) and the share of Heavy Commercial Vehicles (HCVs) for all links counted. In addition, for 11 telemetry sites[1] within the region, where more detailed data is available, information is also made available on the patterns of traffic by month, day, and hour, allowing patterns of seasonality and variability through the week and through the day to be determined for all vehicles and specifically for heavy vehicles. The telemetry sites in the Canterbury region are located at:-

- Kaikoura
- Springfield
- St Andrews
- Lewis Pass
- Waipara
- Dunsandel
- Timaru
- Waimakariri Bridge
- Fairlie
- Lyttelton Tunnel
- Rakaia.

[1]Telemetry sites count traffic in detail continuously throughout the year and automatically transmit the results back to NZTA.

These are complemented by over 200 additional count sites on the State Highways in the region.

While NZTA data provides information at different levels of detail and fairly comprehensive spatial data for the roads covered, it only encompasses the State Highway network. It also does not by itself provide any information on the origin-destination patterns of the heavy vehicle traffic nor the commodities carried.

For information on local authority roads the CoreLogic dataset, owned by NZTA, combines asset information held by all road controlling authorities in a single dataset. It includes heavy vehicle volumes for both the local and State Highway network. The accuracy of this dataset is subject to the quality of the data provided by road controlling authorities as well as the process used by NZTA to attach this data to the CoreLogic centreline. The accuracy of the data attachment process or the underlying quality of the data is unclear.

This dataset covers the whole of Canterbury network. It has been used in the nationwide rollout of the Speed Management Framework commissioned by NZTA.

Very little information from this database is in the public domain and approval from NZTA is required to access this dataset. Christchurch City publish detailed traffic counts for a large number of the roads in their network although this information does not include any data on heavy vehicle operations. Again the data from the CoreLogic dataset does not include any information on commodities carried or on the origin-destination patterns of the vehicles.

In addition to the regular traffic counts undertaken by the NZTA and the local road Controlling authorities, it is likely that there are a number of ad hoc studies with a particular focus which could be added to or made available to a freight database, helping to build up an understanding of regional freight transport patterns.

As an illustration of this, private sector data compiled in the Beca Commercial GPS database operated on behalf of the NZTA and providing information to a range of public bodies has the ability to provide more detailed information on the patterns of heavy vehicle movements. The basic information is collected as part of the electronic road user charging system operated by eRoads. This is based on a GPS approach which identifies the position of vehicle and the type of road on which it is travelling (for which different levels of road user charge may be applicable) on a continuous basis. This allows the collection of data on journey travel times and journey patterns for each journey made. By combining this data for all trips which are included in the system it is possible to create statistics of travel times and travel time variability by route sections and also the beginnings and ends of the journeys.

Up until now this has been operated on an ad hoc basis responding to specific queries rather than providing information on a regular basis. Examples of where this provides information that may be useful within a Canterbury context are set out in the MOT publication Beca Freight Studies 2015. Included in this report are analyses of heavy vehicle trip patterns to and from Lyttelton and Timaru ports and sections of the State Highway network in Canterbury where travel speeds slower than the posted limits occur.

Analysis is based on data from the part of the eRUC system operated by eRoads, and therefore only cover part of the heavy vehicle task, in part because not all operators use a form of eRUC and in part because eRoads themselves only have part of the electronic market. It is, however, understood that the use of some form of electronic road user charging is increasing, in part because of the information management advantages that this provides and because the size of the database available for analysis has been increasing rapidly.

Other relevant ad hoc studies could include the development of transport models and studies that have been undertaken for Christchurch and Timaru which not only include information on current traffic flows, but also include projections as to the ways in which these are likely to develop in the future.

There are also a number of resource consents on or referenced by ECan and TLA websites which could provide data on the traffic requirements for new developments.

In summary, there is potentially a wealth of information about the volumes of traffic on the road although this is held in a number of different locations and is not always easy to access. These sources at best provide only very limited information from which origin-destination movements can be derived to help understand the patterns of demand, but the Beca analyses of the GPS data are starting to assist in this area. A major gap is that none of the information identifies commodities (though the eRUC data may yet do so).

2.5.2.3 Rail

Rail freight flows at a regional level are publicly available on the FIGS data base available on the Ministry of Transport's website. These are updated quarterly. This provides information for a limited number of commodities and commodity types including:-

- wood products
- freight forwarding/coal
- dairy
- containers.

Rail information is comprehensive and detailed, including origin-destination and commodity analysis, but can be limited by confidentiality, in particular in relation to the range of commodities revealed. Moreover, it has only a small share of the total market so it only contributes to the understanding of part of the picture.

2.5.2.4 Sea (international and domestic)

Data is available on the international trade flows through Lyttelton and Timaru Ports both from the reports prepared by the ports themselves, from the FIGS database particularly for containerised traffic, and from Statistics New Zealand data at different levels of detail. While Statistics New Zealand publishes a great deal of information on its website, more detailed information is available for purchase.

The detailed information includes finely-divided commodities, but does not reveal where they come from or go to inland of the port; understanding this is important when trying to plan for providing infrastructure to meet current and future demands. Understanding intraregional movement of freight traffic is therefore an important gap in the data. The Beca analyses referred to earlier does redress this a little by providing information on vehicle origins and destinations, but this does not identify which commodity is carried by these vehicles.

The FIGS database contains details of the numbers of TEUs (The twenty-foot equivalent unit [2] shipped on domestic services by the Canterbury ports. The numbers handled in recent years are set out in Appendix A (Figure A 3).

Petroleum products are also distributed by sea from Marsden Point to Lyttelton and Timaru. The patterns of these movements can be derived from the FIGS database.

Cement is now being imported into Timaru and distributed from there by sea. There is no public data on the distribution movements.

2.5.2.5 Air

Information on the volumes of international airfreight through Christchurch International Airport are available from the Transport and Trade database forming part of FIGS and also from Statistics New Zealand.

A more detailed analysis of the national position for 2014 is contained in the Ministry of Transport (MOT) study New Zealand International Air Freight March 2016.

[2] TEU is an inexact unit of cargo capacity often used to describe the capacity of container ships and container terminals)

2.5.2.6 Summary

In general there is a wide range of data available from different sources on the flows of road vehicles or freight using the rail network or ports. However this is held in a number of different locations and can be difficult to access (for commercial reasons) or to correlate with other sources of information (for example origin, destination and routes taken when transporting commodities within a region).

2.5.3 Flows by Commodity

2.5.3.1 Introduction

While information from vehicle traffic counts provides an indication of flows at specific locations across the region, understanding the flows of major commodities is a route to understanding the total flows of freight and their patterns around the region. In fact, it may be the easiest and cheapest way of doing so since significant amounts of data are readily available at the level of the whole region, and potentially at a sub-regional level. The National Freight Demand Study (NFDS) discussed below, was created largely by building up from detailed commodity flows.

Having a commodity basis for building up the regional picture also helps forecasting, and can be easily adapted for major changes in demand on the network. Forecasting of transport and traffic growth can be more accurate if it is built up from commodity forecasts, rather than generalised economy-wide forecasts simply extrapolating existing total traffic patterns in line with general indicators like gross domestic product (GDP) or population changes. Detailed industry sourced forecasts can be used to support the transport forecasts. When major structural changes take place, such as a new production plant or changes in land use from irrigation, the resultant transport changes can readily be incorporated into current or forecast data. For some particular commodities including retail goods, these general indicators are in practice the key underlying drivers of demand, and so can usefully be provided in a freight database.

To be useful for infrastructure planners the commodity flows and patterns need to be understood to a high degree of granularity – that is, to an individual road level within the Region and Districts.

2.5.3.2 Data from the National Freight Demand Study (NFDS)

Commodity data also helps understanding of where the traffic comes from and goes to, including how much is short distance traffic with both origin and destination within Canterbury. Table 1 shows information from the NFDS which is available from the MOT. There is therefore already considerable data and knowledge at a commodity level that is publicly available on the MOT's website. It is also possible to estimate the differential impact on local roads, State Highways, and rail, of different commodities.

Table 1: Commodity Analysis of Canterbury Traffic from the NFDS 2012

Commodity	Movements (million tonnes)				% total tonnes	% Which is Within	Urban Impact	Rural Impact
	Within Region	To Region	From Region	Total				
Liquid milk	3.62	0.01	0.19	3.82	9.3	94.8		Local roads, Rail, SH
Mfrd dairy	1.25	0.14	0.06	1.45	3.5	86.2	Rail, SH to port	Rail, SH
Logs	0.94	0.42	0.00	1.36	3.3	69.1	Rail, SH to port	Local roads, rail, SH
Timber, Forest prod	0.47	0.5	0.13	1.1	2.7	42.7	Rail, SH to port	Local roads, rail, SH
Livestock	1.12	0.35	0.29	1.76	4.3	63.6		Local roads, SH
Other agriculture	1.88	0.30	0.25	2.43	5.9	77.4	SH to port	Local roads, SH
Coal	0.05	1.54	0	1.59	3.9	0.03		Rail
Petroleum	0.83	0.61	0.10	1.54	3.7	53.9	Local roads, SH	SH
Aggregate	5.06	0.01	0.24	5.31	12.9	95.3	Local roads	Local roads
Lime/cement/ fertiliser	1.33	0.30	0.28	1.91	4.6	69.6	Local roads, SH	Local roads, SH
Concrete	1.47	0.00	0.00	1.47	3.6	100.0	Local roads	
Manufactures	1.60	0.97	1.67	4.24	10.3	37.7	Local roads	SH, rail
Retail	2.30	0.63	0.96	3.89	9.4	59.1	Local roads, SH	SH, rail
Waste	0.96	0.01	0.00	0.97	2.4	99.0	Local roads	SH
General freight	7.51	0.00	0.00	7.51	18.2	100.0	Local roads, SH	
Subtotal	30.39	5.79	4.17	40.35	97.8	75.3		
All other commodities	0.63	0.16	0.10	0.89	2.2	70.8		
Total	31.02	5.95	4.27	41.24	100.0	75.2		

"Within region" are those with both origin and destination in the Canterbury region
SH = State Highways. Coal cement other agriculture adjusted from NFDS figures
Movements "to" Canterbury are those from north, south and west of the region with destinations within the region; and "from" are vice versa

This table deals with traffic within the region, traffic coming to the region, and traffic going from it. There is also movement through the region, where both origin and destination are outside Canterbury. Some of this goes by sea and can be ignored as having no impact on the region's land transport. The remainder is small, about 0.6m tonnes, unimportant in terms of the overall volume, and with about half being transported by rail. This largely consists of manufactured and retail goods, livestock and meat products and small quantities of a range of other products.

As with other regions, a large proportion of the volume (75%) is internal, within region, traffic. Traffic to and from outside the region is mainly on State Highways and rail. This means that it can reliably be assumed where this traffic is going from and to for the purpose of understanding freight flows into and out of the region. Therefore a focus on internal traffic and understanding more about these flows is a higher priority for the Canterbury Region.

Table 1 shows that in 2012, 15 commodities accounted for 98% of the traffic. Of the internal traffic, the ten commodities with over 1 million tonnes transported internally accounted for 87% of all internal traffic and 66% of all traffic. Understanding a relatively small set of commodities will help explain a considerable proportion of Canterbury traffic. This is discussed further in Section 2.6.

2.5.3.3 Commodity production data

Data is also available on regional production of a number of key commodities from a range of websites operated by public and private agencies. For example:

- Limestone, aggregates, coal and other minerals from Ministry of Business Innovation and Employment
- Dairy products from Fonterra
- Forestry from Ministry for Primary Industries
- Livestock from Statistics New Zealand
- Milk from the Livestock Improvement Corporation
- Cattle movement from the National Animal Identification and Tracking system (NAITS database).

2.5.3.4 Summary

Analysis at the commodity level is a powerful tool in identifying traffic movements. There is substantial data already available at the regional level. Section 2.6 explores how to take this information down to a territorial local authority (TLA) level, which would contribute greatly to developing intraregional flows. Some data already exists at a TLA level, but with more gaps than at the higher regional level.

2.5.4 Socio-economic data

2.5.4.1 Introduction

As well as data on the individual commodity flows described above, to help understand the general background to and key macro-economic drivers of freight flows, it is helpful to have access to a range of socio-economic data. Freight flows of consumer goods in particular both in terms of total movements and their patterns will be dependent on the distribution of population and the movements of more basic commodities particularly associated with manufacturing and construction will be dependent on levels of economic activity, both at an overall level and at a sectoral level. Levels of employment by type and their changes also provide indicators of the changes in demand for freight.

The key drivers of the freight task at this general level therefore include:-

- population
- employment by industry
- local area GDP.

2.5.4.2 Population

Information on population trends and estimates (sourced from Statistics New Zealand) is already published on the ECan website.

2.5.4.3 Employment by industry

Employment by industry is available for the period from 2000 on the Statistics New Zealand website and is updated annually. Information on the Statistics New Zealand website provides data at a detailed industry level by territorial authority for every year from 2000. Information is also published at a more spatially disaggregated level by Census Area Unit although with more aggregated industry classifications.

2.5.4.4 Local area GDP

Information on regional GDP is available from the Statistics New Zealand website for the period from 2000-2015 and is updated annually. Information at a TLA level is available on the MBIE website covering the period from 2000 and is updated annually.

2.5.4.5 Summary

In general, a wide range of socio-economic data is readily available, including some already on an ECan website.

2.6 What are the gaps and how might these be filled

2.6.1 What are the gaps

The main perceived gaps that have been identified are in terms of data disaggregated to an intra-regional level. That is, the origin destination movement of freight (including commodities) within the region is not well understood particularly by product type. That is, there is a reasonable degree of understanding of heavy vehicle movement across the network in general, just not sufficient to easily understand what is being carried where (from and to) and why. This is important for local infrastructure owners and their planners because it helps understand what is driving current demand and what possible or likely future demand might be.
These can be broken down into three main categories.

- Where information is currently available but where this is not widely disseminated.
- Where the desired information is not directly available from existing sources but where it can be developed or estimated from existing sources by a manipulation of the existing data to get it into an appropriate form.
- Where data is not currently available in any form and new sources of data would need to be identified.

A key step beyond the identification, gathering, collation or creation of data, is using the data in investment decision making. In many instances this may require additional modelling or more work on the data and how it is organised. This is best addressed as a next step specific to decision making authorities' needs.

2.6.2 Data directly available from current sources

Section 2.5 outlines where much of the data currently available can be found.

It is apparent from discussions in this and other studies that data is available from a very large number of sources which potential users may not know about.

2.6.3 Commodity data not directly available but with the potential to be estimated from existing data sources

2.6.3.1 Introduction

The major data gap in the commodity data discussed in Section 5 is a finer analysis of origin and destination. Such a finer analysis would be given if the data was available on the commodity flows between (and within) territorial local authorities. At this level, local knowledge, along with traffic count data, would probably be sufficient to allocate flows, even to particular roads.

Canterbury has ten territorial authorities. Using a territorial authority approach it is possible to divide up the internal traffic between the ten areas, resulting in a fine breakdown of potential movements. The exception might be certain commodities within the urban area of Christchurch city, for which an even finer analysis may be required. For Christchurch City's large rural component, the commodity itself will help distinguish between rural and urban freight. Taking each of the ten major commodities over one million tonnes identified by the NFDS in 2012 (2012 is the date of the most recent compilation of interregional freight data in the National Freight Demand Study) plus three additional commodities in turn, potential gaps that might be filled from possible existing sources can be assessed.

2.6.3.2 Liquid milk

In terms of the production of liquid milk, data can be extracted from the Livestock Improvement Corporation (LIC) website on production at a territorial authority level, although the basis for this is in two separate tables which would need manipulating to produce the appropriate figures.

In terms of the movements of liquid milk, Fonterra runs its own tanker fleet; and Hilton Haulage runs the tankers for Synlait and Oceania Dairy. The latter two have one plant each, so the destination is fixed and only the origins have to be estimated. Fonterra has two plants3, so the destination would also be needed for their milk.

Both Fonterra and Hilton (and Synlait/Oceania) have detailed records of the movement of milk, which they may be prepared to share and which could be used to identify a territorial authority to territorial authority breakdown. The data itself could also reveal exact routes, though any information that reveals individual farmers' details is unlikely to be supplied. Westland Milk also collect milk in the Canterbury Region. In 2012 this was used to supply their plant at Hokitika, but a new processing plant is being developed at Rolleston.

2.6.3.3 Manufactured dairy products

The origins are fixed, but again there will be a need to distinguish between the two Fonterra plants. Fonterra periodically publish the capacity of these plants, which produce exclusively (or overwhelmingly) for export, so the data gap is which port the product travels to from each plant, and whether this is by road or rail (including any break of journey at a Rolleston Hub). Fonterra would be the primary source of this information, though rail data would also help. Statistics New Zealand and individual Ports have information about what goes across a Port which would measure the manufactured product that crosses the Port, however, this information does not detail where a product comes from or goes to inland (so no or minimal origin and destination data).

Synlait and Oceania use road only, but again the port is unknown. If the producers are unwilling to give this data, then an estimate of the port destination could be made with the aid of the comprehensive export statistics derived from Customs data and held by Statistics New Zealand. These are available for a small fee. FIGS publishes port data but not by commodity. The commodity data is likely to be in the data the Ministry of Transport gets from the same source as Statistics New Zealand, and the Ministry may be willing to further analyse it to derive and publish commodity information by port.

2.6.3.4 Livestock

Comprehensive data is kept by OSPRI, a government agency that runs the National Animal Identification and Tracking scheme (NAIT). For biosecurity reasons, the movement of all cattle and deer must be reported to NAIT, apart from a limited exception for short trips between farms in the same ownership. This results in a rich dataset that in principle can identify movements at the level of individual farms, saleyards, or processing works, and at all administrative levels from postcode upwards. In practice, disseminating that detail would breach privacy obligations that are enshrined in the NAIT legislation, and only higher levels of detail would be available.

For the total movements (not including the nature or function of the origin and destination) NAIT have regarded data at territorial authority level as not breaching the confidentiality. This in itself would be very useful information, especially as dairy cattle are quite transport intensive (see NFDS p 69), at least when dairy prices are good. Using this information and data on milk production at a TLA level over a number of years would, for example, enable detailed estimates to be made about the impact of irrigation schemes.

[3] The small Kaikoura plant closed in 2016

The livestock matrices in NFDS were largely derived from this information, aggregated to regional level. NAIT did however supply the information at TLA level, which is set out in Appendix A, Table A4. This table is indicative only; it is in head rather than tonnes, and the data for the final tables in NFDS was adjusted upwards to estimate the impact of this data being from the start-up phase of NAIT. It also only includes data from within the region. An additional 205,684 head left the region and 197,016 entered it. Data for the TLA origins and destinations for these is also available.

It is notable that nearly half all cattle were moved within a single TLA. The table also shows that in terms of total movement, Selwyn, Ashburton, and Timaru were the largest TLA's, perhaps reflecting the importance of dairying in those districts. With local knowledge, this data alone would be valuable as an indicator of transport patterns at a level within the TLAs.

NAIT has agreed with the Ministry of Transport to supply this data on an ongoing basis and similarly for deer, although the timing of this has not yet been finalised. It will become accessible on the public FIGS database on the Ministry's website.

Further data, albeit static, is available from Statistics on numbers of cattle in each TLA.

Much less data is available on sheep movements. For NFDS they were estimated on the basis of Statistic's TLA numbers, and other assumptions. There are many fewer movements per sheep in a year, and while their numbers are about five times those of cattle, they only weigh each about a ninth of a cow, so the combination of greater propensity to travel and higher weight overall means cattle are the dominant load on the transport system. For the whole country NFDS estimated sheep movements (by weight) were only 11% of cattle movements.

Canterbury has only 16% of New Zealand's sheep, and the same proportion of its cattle, which suggests the national pattern holds good for Canterbury and cattle movements will dominate. Gaps in sheep data may not be important enough to be filled, but could be available from transport operators, saleyard firms, and freezing works. They may, however, be reluctant to share this information.

Likely future changes in the meat industry may result in changing patterns of movement, especially for sheep.

2.6.3.5 Other agricultural produce

This commodity includes horticulture and grain, and imported palm kernel expeller (PKE). Horticultural crops in Canterbury are dominated by potatoes (288,000 tonnes pa, see NFDS p87). The best sources for the production and consumption patterns for this and other vegetables (135,000 tonnes) are the wholesale firms like MG Marketing and Turners and Growers.

Canterbury produced 751,000 tonnes of cereals in 2012 (NFDS p 95). Some of this moves north, eg barley from Ashburton to Marton, but a substantial portion moves off farm to stores and is distributed from these. Rail data will provide information on some of the North Island movements, but there remains a gap for the rest, including internal Canterbury flows. The owners of the stores (grain merchants) may be able to fill this gap. A similar position exists for seed and oil crops.

PKE was an important commodity in 2012 (an estimated 262,000 tonnes was used in Canterbury, NFDS p97), but environmental pressures may have caused its consumption to be reduced. The imports are available from Statistics New Zealand's port data, and the approach in NFDS was to allocate this by dairy cattle numbers, also available from Statistics New Zealand.

2.6.3.6 Aggregate

MBIE (Petroleum and Minerals) collects data on aggregate production at a regional level only. It is of variable quality as it relies on the voluntary return of a questionnaire, and the number of returns varies. The latest data, for 2015, is the result of an 84% response rate. The 2015 quantities for Canterbury show an increase from 5.297 m tonnes in 2012 to 7.537 m tonnes in 2015. While some of this 39% increase could be earthquake-related, it is also possible that the data gathering was more successful in 2015 than in 2012. Either way, this commodity is a significant contributor to local demand on roads, and some effort is needed to understand its distribution patterns.

There are thus gaps in the provision of data even at a regional level, and at a TLA level there is no published data. To build up a picture of the local distribution requires a deeper understanding of the production patterns. Because aggregate is a low-value commodity, it cannot be economically transported long distances. Canterbury is relatively well off for quality aggregate sources, so it can readily be assumed that local production is consumed locally.

The data gap thus resolves into understanding the location and output of individual quarries. A commercial PR firm, Freeman Media, has invested considerable effort into developing a map of all quarries in the country, and have kept it up to date. That should be a good source of a quarry inventory for the region. The South Island map costs $150. Similar information is available on the website Inside Resources, which is available on subscription. TLAs may indeed have their own knowledge of quarry location derived from a regulatory need, or from roading demands. The supply location gap should be easy to fill. Figure 1 is a sample from the Freeman map.

Figure 1: Part of Freeman Media's South Island Quarry Map

Output on the other hand is likely to prove more difficult. MBIE cannot divulge (because of commercial confidentiality) data at the level of individual quarries, nor probably at TLA level. The map referred to above does include some production figures, but not for all quarries. Other sources would include ECan's and TLAs' own records of resource consents, which might not only give production but also the estimated transport patterns. TLAs could also simply consult the quarry operators or transporters to estimate volumes and where they travel.

2.6.3.7 Lime/cement/fertiliser

Data on limestone for agriculture and industry (the latter not important in Canterbury) is available from MBIE and from Freeman Media maps, and potentially consents and operators, with the same gaps as discussed above. Limestone quarrying is however less widespread than aggregate and haulage distances may be longer. The amount of agricultural lime spread in the region is available, by TLA, in the Statistics Agricultural Production Census for 2012. It totalled 318,600 tonnes (including dolomite). This gives the destination information; the origin can reasonably be assumed to be the nearest limestone (or dolomite) quarry. This could be confirmed using transporter data if this is available. Note that this amount is significantly larger than the MBIE production figures for 2012, which may indicate some imports from North Otago, or possibly a deficiency in the MBIE figures.

Cement is not produced in Canterbury, and the movement of cement has altered since the closure of Holcim's Westport works. Now South Island cement is imported by Holcim into Timaru and distributed from there (including to Lyttelton, and other regions, by ship) and by Golden Bay also by ship from the North Island. For nearly all cement, the origin for Canterbury will be Lyttelton Port. Places closes to Timaru would however likely be served through that port. Distribution patterns from each firm are confidential, as is the amount they distribute. The firms could be asked for their total sales in the region; this could then be distributed amongst TLAs in the same pattern as concrete plants, which are discussed below.

Fertiliser is similarly confidential, and so estimates have to be made. The latest (2012) agricultural census shows that 395,900 tonnes of fertiliser was spread in Canterbury; this data is available by TLA. This gives the destination of the movements; the origin is either Lyttelton or Timaru port or the Ravensdown Hornby works. Almost half of the fertiliser spread was nitrogenous, which is all imported into the region through Lyttelton (2/3) and Timaru (1/3).4 A reasonable assumption is that local fertiliser stores are served from the nearest port. The store locations are identified on the Ballance and Ravensdown websites.

The remaining 203,000 tonnes is phosphatic fertiliser. Imports of this totalled 47,000 tonnes (again about 2/3 Lyttelton), suggesting the amount manufactured at Hornby is about 150,000 tonnes. Since nearly all the phosphatic fertiliser thus originates in Christchurch City, that can be taken as the main origin and the stores the main destination. Ravensdown could be asked to confirm the amount they produce at Hornby. Further differentiation between the stores could be possible by location and the type of fertiliser related to specific land use, which would need further research.

As an example the locations of the Ravensdown stores within the Canterbury region are set out below.

[4] A small amount is also sourced from the Kapuni plant in Taranaki

Figure 2: Ravensdown Stores in Canterbury

2.6.3.8 Concrete

Data on concrete production is available on a regional basis from Statistics. A TLA breakdown is not available, but wet concrete has a short shelf life and travels only very short distances. It is therefore unlikely to be moved across TLA boundaries, so an estimate can be made by allocating the regional total by the number of ready mixed concrete sites, for which there are a number of sources (including the Freeman Media maps - marked with a white silo in a blue circle). Further precision could be obtained by requesting the output of each site, or failing that the number of delivery trucks at each site. An alternative approach would be to use information on the number of establishments and number employed, derived from the Statistics New Zealand Business database, using data on employment similar to that set out in Appendix A.

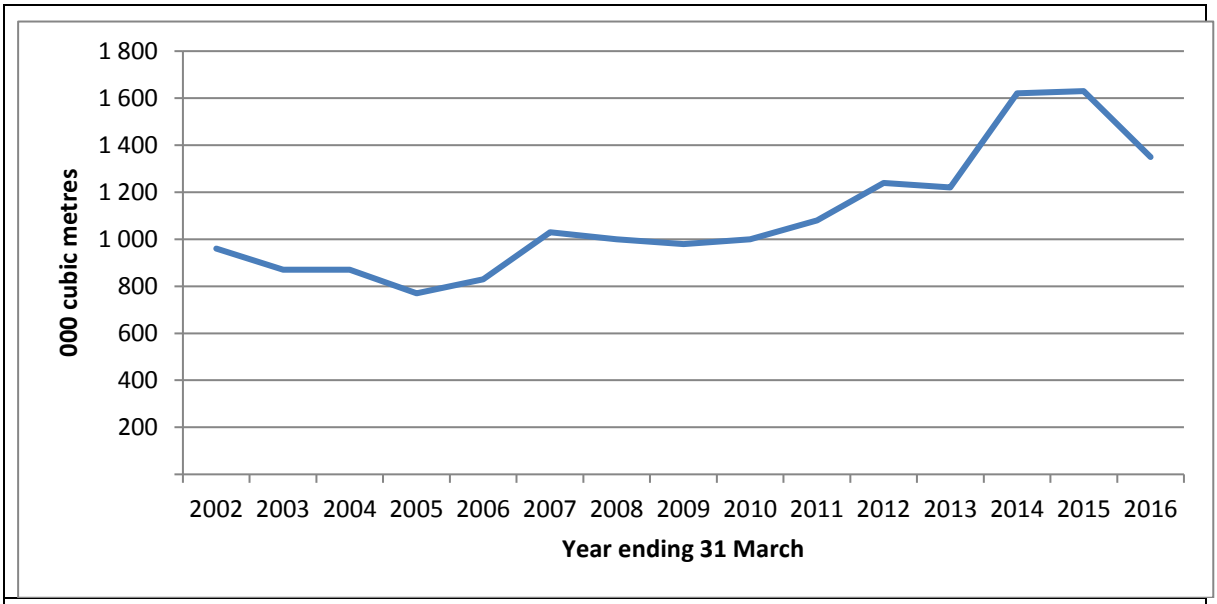
2.6.3.9 Retail/manufactured goods/general freight

Retail and manufactured goods and general freight were estimated to amount to about 15.5 million tonnes in 2012 or about 20 per cent of all freight in the region. The movement of retail and manufactured goods including general freight is derived from a number of sources, including data on employment in manufacturing, the value of output and retail expenditure by area and also information on the movements by rail and coastal shipping. The estimates of flows in the NFDS are therefore not easily disaggregated by area. While some estimates could be undertaken on the basis of the distribution of population or employment, there may be other sources of data which might be used to supplement this including typical trip generation (measure of what goes from a site) and attraction (measure of what comes into a site) rates (rates are a measure of the relationship between production and trips) for the key retail outlets and centres.

2.6.3.10 Logs

In 2012 the movement of logs both for export and for processing amounted to about 0.9 m tonnes or about 3 per cent of the total tonnage moved in the region. Information on production is available either from the MPI or Statistics New Zealand websites but there are slight differences in the numbers.

The production of logs in Canterbury over recent years is set out below.



Source MPI

Figure 3: Production of Logs in Canterbury

Although information on production is not available at a TLA level there is information on the age profile of forests which can be used to provide estimates of the distribution of production. However, because of the particular policies of different forest owners and their responses to the market environment, these estimates, at best, should be regarded as approximate only. Traffic count data on the main routes used for the logs and possible information from transport operators may provide additional information on the distribution of production areas.

The logs harvested are either exported or used for processing within New Zealand. Information on the volumes of export logs which are handled by both Lyttelton and Timaru are available from Statistics New Zealand. Estimates of the capacities of the main processing plants are available as part of the Wood Availability reports produced by MPI.

2.6.3.11 Petroleum, (830,000 tonnes within the region)

Data on the amount arriving in Canterbury from Marsden Point are available from FIGS on a quarterly basis and have been set out above in Figure A 3. To that has to be added the amount of imports, from Statistics port data. In 2012 there were 539,000 tonnes from Marsden and 392,000 tonnes from imports. For distribution within the region, a reasonable approach would be to allocate it to TLAs on the basis of the number of service stations in the TLA. The source can be either Lyttelton or Timaru, which adds a complication because only a limited number of companies use Timaru. However, the Timaru volume can be allocated to those companies' service stations, with the rest coming from Lyttelton.

2.6.3.12 Waste (960,000 tonnes)

Waste is both domestic waste and cleanfill. TLAs will have a clear idea on vehicle movements to collect waste, and the line haul to Kate Valley could also be quantified by reference to the operator Canterbury Waste Services (Waste Management). The local TLA (Hurunui DC) should also have resource consent information about the amounts dumped. This facility services TLAs from Hurunui to Ashburton. Dumps at Kaikoura and Timaru serve Councils north and south of these.

Clean fill was estimated in NFDS on a ratio to population basis, at 579,000 tonnes. It largely moves short distances so an assumption that it all moves within the TLA that generates it would be reasonable with the possible exception of some material sent to Kate Valley. Within the TLA, especially within Christchurch, the pattern will be related to building activity, and thus rather random and hard to quantify representing a gap.

A small amount of recycled material moves out of the region by ship, or road to Auckland.

2.6.3.13 Summary

Understanding commodity flows is a key factor in understanding freight flows overall. It can lead to appropriately targeted investment, and also offers a more accurate way of forecasting the flows based on understanding the relationships with key economic and socio-economic drivers rather simply factoring up existing volumes. The analysis above shows that there is already a substantial amount of data available for major commodities on a TLA basis, which could be used to develop intraregional flows. The analysis above makes suggestions on how to supplement the raw information with information from producers, distributors, and transporters. If these additional steps were taken, a relatively comprehensive analysis of the intraregional flows would be possible. The main area where significant work would need to be done is manufacturing/retail, which makes up about 20% of the total freight movement,

2.6.4 Data not currently available

2.6.4.1 Introduction

Following our review of the problem and the material which is available in some form on the movement of freight, the key elements for which data is currently not readily available in a centralised location are:

- The detailed patterns of road freight movements both in terms of vehicles and commodities within the Canterbury region, particularly for manufactured and retail goods.
- Rail freight flows at a sub-regional level.
- The impacts of major land-use changes within the region particularly those associated with the extension of irrigated areas.
- The impacts of logging.
- The potential for and impacts of the development of inland ports and intermodal terminals.
- The land-side movements associated with airfreight.

Each of these is discussed in turn.

2.6.4.2 Details of road freight movements.

While the data from the NZTA provides information at different levels of detail and fairly comprehensive spatial data for the roads covered, the NZTA's primary focus is the State Highway network and the data by itself does not provide any information on the origin-destination patterns of the heavy vehicle traffic nor the commodities carried. Analogous issues relate to the count data collected by the road controlling authorities which is based on similar approaches and may not provide a comparable level of comprehensive coverage of the network, especially for freight vehicles. Again this would not include any information on commodities carried or on the origin-destination patterns of the vehicles.

As indicated earlier, the eRUC database operated by Beca on behalf of NZTA has the ability to provide more detailed information on the patterns of heavy vehicle movements, although up until now this has operated on an ad hoc basis responding to specific queries rather than providing information on a regular basis.

These results are based on the portion of the eRUC market operated by eRoads, and therefore only cover part of the total heavy vehicle task. Not all operators use a form of eRUC and eRoads themselves only have a portion of the electronic market. It is however understood that the use of some form of electronic road user charging is increasing covering a large portion of the freight task on roads, and this is partly because of the information management advantages that this provides both for the operators and for others that may use this data. The size of the database has therefore been increasing rapidly.

Beca analyses the eRUC data and these analyses are provided to organisations who are charged by Beca for this service. The raw data is not provided or sold directly to others by eRoads because there is a need to protect the confidentiality of the material in the underlying data. It does appear however that these concerns are diminishing with the more widespread use of the data. The data is probably therefore becoming more available to the main infrastructure providers and operators although, as indicated, there would be a price for the analysis of this data. Despite this, this approach using data already available could potentially provide an economical and reliable way of providing data on freight movements compared to traffic counts and surveys. Given the rapid development of this technology, there may be considerable saving to be made by focusing on it and removing its shortcomings, rather than continuing with traditional traffic measuring techniques.

There are also other concerns that because the underlying data only covers part of the market, there may be a risk that any travel pattern estimates may also suffer from bias. While limited evidence from Auckland suggested that in the circumstances of the particular comparison undertaken this did not appear to be an issue, the scope of the project was limited. There is no information on a wider basis as to any possible biases that might result from the use of the data.

Given the concerns set against the potentially wide uses of the database and the limited cost of acquisition of large volumes of data it is recommended that steps be undertaken to assess whether in fact any results may be biased and to identify ways in which this bias might be addressed. This is probably a task for one of the national agencies currently involved with the eRUC database but ECan could advocate for the work to be undertaken.

In order to help understand commodity flows and patterns of movement in more detail, a further source of data which has been explored in this study is the use of information from road transport operators themselves. This would supplement the data available from production sources (discussed earlier) and enable closer identification of intraregional flows. To be useful, this data would have to be received from a number of operators and aggregated in some way. The form this would take and the processing needed would need to be determined after the data has been received or at least after its form is known in more detail.

Our discussions with road transport operators have suggested that in some instances they would be prepared to provide data on their operations, but the details of the data provided would depend on the form of their vehicle tracking and management information systems. It may therefore provide only limited information on the routes used.

Whatever form road transport operators choose to provide data, substantial amounts of processing will be required to provide overall totals for movement patterns. Options for improving access to data and closing data gaps are presented later in this report, and the exact scale of the processing that may be required can only be considered once specific gaps to be addressed have been identified.

2.6.4.3 Rail freight flows at a sub-regional level

At present rail data is only available on a regular basis at a regional level and for selected commodities and commodity groups only. However discussions with KiwiRail have indicated that they would be prepared to provide data on a station to station basis which, with some processing, would allow origin-destination patterns at a TLA level to be determined and would also allow the use of inland ports and intermodal terminals to be established. The extent to which this would be broken down by commodity would depend on the extent to which this would identify specific customers

2.6.4.4 Effects of longer term major land-use changes

Major changes in land use, such as those brought about by irrigation, have the potential to significantly increase the transport load on regional roads, depending on the crops grown or pastoral practices adopted after irrigation. The effects of major land-use changes can often be identified from the documentation and studies developed to support their resource consents. Collation of this would require a degree of processing and manipulation to identify and present the data in a common form which can be used by interested parties.

There is probably a case for attempting to draw out common findings particularly in the range of possible outputs which would arise from irrigation and the additional trips that would be generated as consequence of this. If possible, these could be compared with counts undertaken on the ground for schemes that have already been established to provide a more robust evidence base. This combined data could then be used as general building blocks for schemes in early stages of development and to review proposals for schemes where these already exist.

2.6.4.5 Detailed Impacts of logging

Unlike the longer term changes discussed immediately above, logging activities can give rise to substantial but short-term changes in transport demands on specific parts of the road network as particular forests are harvested. It may be important to manage these to protect the road infrastructure and to minimise the impacts on other road users, especially where for example routes are also used by tourist vehicles.

While published forecasts of logging are mainly set out in the "Wood Availability Forecasts" produced by MPI at a broad level, there is information on the age of forests at a TLA level. The exact time when forests are harvested depends on a range of factors such as the price of logs and the cost and availability of international transport. However information on the age structure of the forests could be used to make assessments of when forests might be felled and when the additional traffic would be experienced on the local road networks. Again, while the base information is available, it would need a degree of processing to produce forecasts for individual TLAs. This would therefore rely on the processing of existing publicly available data rather than the acquisition of any new data. It would be useful to review findings with representatives of the forestry industry in the region and also with transport operators since there are only a relatively small number of major businesses in this particular market.

2.6.4.6 The potential for and impacts of inland ports and intermodal terminals

The impacts of inland ports and distribution hubs can be assessed in relation to a number of potential sources of data. These include:

- Information on traffic flows developed as part of the consent process for the facility.
- Information from the facility operators especially for the port-related components about the use of the new facilities.
- Information from transport operators about their use of the facility.
- Traffic counts undertaken on the roads supporting any new facilities especially if these can be managed in a way which provides before and after data.

Each of these approaches has been discussed above. It would be desirable to develop some common building blocks for estimating the traffic impacts of these new facilities, bringing together information from all these sources to provide a robust evidence-based starting point for the assessment of any new facilities.

2.6.4.7 The potential landside impacts of air freight

Air freight in many instances consists of high value products that need to be transported urgently. Although the volumes are small the values are high. In 2015 the value of exports through Christchurch Airport exceeded those through Timaru and were about a third of those through Lyttelton. As such air freight movements have particular requirements in terms of fast and reliable access to the airport area. At present little is known about the patterns of this traffic and as much of this is transported in lighter vehicles it is difficult to distinguish this in typical traffic count data. It also has relatively low impact on overall traffic flows.

To collect this data might require ad hoc surveys of the companies and vehicles involved in the land side movement of air freight. It is possible that data could be extracted from the eRUC database or local traffic counts, but the extent to which this would be able to pick up or isolate the movements associated with air freight are unknown.

2.7 Options

2.7.1 Introduction

The analysis set out in the preceding sections has identified that:

- both existing information and new data could be derived from a variety of sources, and
- differing degrees of effort may be required to put this data into a form which allows the information to be easily accessed and understood by users.

2.7.2 Possible options for the assembly and management of existing data

Existing data is available in a number of different forms ranging from detailed statistical reports which are produced on a regular basis and which may contain information in the exact form required by potential users, to more irregular and ad hoc reports from which relevant information would need to be extracted and possibly reviewed and manipulated to be useful. The following table summarises some key sources:

MBIE website	• Mineral Statistics • TLA GDP
Ministry of Transport website	• The NFDS • The FIGS database • The Transport and Trade database • New Zealand International Airfreight • Transport indicators • BECA reports using eRUC data
MPI database	• Logging and wood product statistics
NZ Transport Agency (NZTA) website	• State Highway Annual Traffic Reports
Statistics New Zealand website	• Agricultural production statistics • Meat production statistics • Regional GDP forecasts

A range of options is available for the identification and assembly of data from the simplest, which would simply note the locations of the data and leave the users to extract whatever data they required, to a more comprehensive approach as developed for the FIGS database where all the information available is provided in a single spreadsheet with an accompanying report providing some general commentary on the results.

In practice the possible options for assembling the existing data would include:-

1. An assembly of the links to the sources of the data and any supporting papers but with no data held directly. With this approach any necessary manipulation of the data or extraction of Canterbury information would possibly have to be undertaken each time the data was used. There is the potential to generate a user guide of greater or lesser complexity to list the data included and to discuss and guide its use.

   This option would be cheap to set up and may only require limited effort to maintain, although this would depend on the nature and depth of any user guide. It could however require a significant effort on the part of its users to extract the information that they require and would not be particularly user friendly. To some extent this is the model developed by NZTA for some of their supporting statistics http://www.nzta.govt.nz/planning-and-investment/planning/transport-data/economic-and-demographic-statistical-data.

2. The creation of a number of separate sources of data hosted directly on a single website, but including links to external websites for more comprehensive data or for supporting papers. Any manipulation of external data sources to extract or highlight appropriate figures could be undertaken before material was placed on the website.

In general it is anticipated that the information on the website could be considered to be reliable (although possibly within defined limits) and so could be taken as reasonably authoritative. This is the model developed for the population statistics and forecasts website hosted by Environment Canterbury.

This would need a fair amount of development and management, and a decision would have to made as to the extent that suppliers of the data (particularly Statistics New Zealand and NZTA and possibly MOT) provided the data in a user defined format or the extent to which any data extraction or manipulation was undertaken by the operators of the data resource. Some effort would in any case probably be required in respect of data from agencies which may not have the resources to undertake the necessary manipulation and extraction to meet ECan requirements. There would also be a requirement to keep the material updated as appropriate which could involve updating the material at periodic intervals.

3. The creation of a database comprising a single spreadsheet with multiple worksheets as has been developed for the FIGS database. In part this is populated using a real time data flow providing information on the movement of containers and in part relies on periodic data supplied by agencies such as Statistics New Zealand, KiwiRail, Coastal Shipping and the NZTA (for HPMV movements). The database which as far as possible is updated quarterly is accompanied by a written report recoding the key changes experienced over the period.

   Because of the way in which the data is supplied and the limited topics covered the effort required by MOT to manage and update the database is fairly limited.

A major priority with all three approaches is ensuring that whatever approach is taken it is well publicised and potential users are aware of the contents. It is important they use and are supported to use the information for better planning and managing their infrastructure and transport networks and services.

2.7.3 Possible options for the assembly and management of new data

New data becoming available again could be treated in a similar fashion depending on the form in which it is developed and any issues of confidentiality.

2.7.3.1 New publicly accessible data

For data that becomes available from publicly accessible national sources, such as detailed data on livestock movements from NAIT or similar national data, it would be possible to provide a link to the published material if the results can be used without further manipulation. In the case of the example of the NAIT data it is however likely that some further adjustment of the published data may be required to include animal groups not forming part of the NAIT data such as sheep movements. In this case the adjusted data would probably have to be located on an ECan database, unless the adjustment was undertaken at a national level.

Alternative sources of data would include company websites which would need to be interrogated periodically to check if additional or updated information had become available. Applications for resource consents may also contain a large volume of relevant material and existing and new material should be reviewed regularly to determine whether additional material which should be included in or referenced by the website has become available.

2.7.3.2 Data from local freight stakeholders

Data from local freight stakeholders could be generated either by the infrastructure providers, particularly the ports, airport and road controlling authorities or by transport operators.

For the data that may be available from the infrastructure providers, this may cover the total movements or items of particular interest and so may be available on the particular organisations' websites where it could be accessed via a link. If, however, this information was not hosted on the originator's website or needed subsequent manipulation, the data would need to be published via the ECan website. A major potential source of information is the traffic counts undertaken by the local road controlling authorities which in general is not currently published. Discussions with the TLAs would be required to determine the form of any information they may be able and willing to provide and the best way of incorporating this in the database,

For the data that may be available from transport operators within the Canterbury region, it is likely that substantial processing would be required to convert this into total transport flows, even if the operators were willing for their individual data to be published. The adjusted figures would probably best be located on a locally focussed database. On the assumption that the adjustment is undertaken by or on behalf of ECan, the most suitable option for this would probably be the ECan freight database, which would provide a level of control over the form of the adjustment and the timeliness of its publication. If another agency was involved in the processing of the data, such as the local road controlling authority, it might be possible to host the information on their website, but to provide a single publicly available source for the freight data it would probably be desirable for this to be located on the ECan website.

To increase the reliability of this data a possible avenue might be a properly managed sample survey of transporters as a way of verifying the data from other sources, and in the case of Christchurch City, providing a much more comprehensive data set on urban freight movements. However experience has indicated that although some transport operators would be willing to cooperate, as has been evidenced so far in the study, obtaining the widespread involvement necessary for a statistically robust survey may be much more challenging.

2.7.3.3 Data from commercial sources

A major potential source of data on the patterns of freight flows or at least the flows of vehicles carrying freight is information extracted from GPS databases. At present information can be extracted from the eRoads database and a range of ad hoc studies have been undertaken for NZTA and MOT. Given the interest of NZTA and MOT in the use of the eRUC database, it may be worth discussing with these agencies the potential for the generation of statistics at a centralised level which might meet the localised needs of regional and territorial authorities. It is suggested that this should include investigating the patterns of movements between all territorial authorities on a regular basis. It is understood that there are moves to attempt to identify movements by commodity which would add further to the value provided by this database. As indicated earlier however, because this database only represents a sample of movements there is an important need to check that this does not introduce any significant bias into the results produced. This might usefully be undertaken on a national basis to validate the data for all users.

In order to protect the commercial confidentiality of the data, the data is processed by a third party company, Beca, and there is a cost for the production of reports. In addition while a range of data is potentially available, requests for data have to be submitted to Beca and there is no "dashboard" approach to the acquisition of data. To some extent this issue could be addressed by the preparation of comprehensive data by MOT or NZTA which could be accessed or interrogated as required.

2.7.3.4 Data from new ad hoc surveys

While the data described above will potentially provide valuable inputs, in some instances the most appropriate approach to address transport issues may be to generate new data (which could for example include bespoke analysis of the eRUC data) and study the issue directly. It would be helpful if the results of these exercises were made available through the freight database. The value of this might also be improved if, as far as possible, these were undertaken in a standard framework, or produced a range of standard outputs which would assist their use in other projects.

2.8 Possible action plan

2.8.1 Introduction

The priorities for future action and next steps are divided into three main parts:

- Step 1 would be an immediate action programme which could be undertaken very quickly, at relatively low cost and which would bring together data already existing in a suitable form.
- Stage 2 would consist of using data that would need to be proceed to bring it together in a suitable form.
- Stage 3, which is not defined in detail, would depend on progress with the first two stages and would focus on addressing identified gaps not already covered in the first two stages. These gaps would be addressed in priority order and may require individual business cases to understand their cost versus benefits.

2.8.2 Step 1

Step 1 is essentially assembling existing data either in or capable of being accessed from a single location but without any subsequent analysis.

From our analysis of the current sources of data and that which is easily accessible and for which little or no processing is required there is an immediate action programme which could be established quickly and with limited effort and resourcing. This would pull together information from a range of easily available sources of data either in (a) a single location or (b) accessible with links from a single location. This, together with focused publicity covering the information available, would provide an early result.

Both options would be available for subsequent development of the database, however it is likely that there would be a requirement to place data that needs processing on a website hosted by ECan (or other appropriate public body). Because of this it is probably desirable to quickly identify who would take ownership of this first step and to develop a website at an early stage which could then form the basis for subsequent development.

While the exact details of what might be included in the initial website can be refined through more consultation with key stakeholders, likely components identified through this project are set out below. These would be based on data as published, with no particular manipulation to focus on the Canterbury region and would take into account new data as it became available such as might be the case in the near future for livestock movements.

This possible set of data could include:

Accessible on the Ministry of Transport website

- The NFDS
- The FIGS database
- The Transport and Trade database
- New Zealand International Airfreight
- Transport indicators
- Beca reports using eRUC data

Accessible on the MPI database

- Logging and wood product statistics

Accessible on the Statistics New Zealand website

- Agricultural production statistics
- Meat production statistics
- Regional GDP forecasts

Accessible on the MBIE website

- Mineral Statistics
- TLA GDP

Accessible on the NZTA website

- State Highway Annual Traffic Reports

An important component of this and subsequent steps will be publicising the location and contents of the database to facilitate its use by interested parties.

It would also be helpful to seek the views of potential users and identify which parts of the database they subsequently found most useful, to help identify what still needed to be addressed.

Step 1 could be expected to be completed **within three months**.

2.8.3 Step 2

This step would extend the database to include data which, while currently available, needs processing to put it into a form which would be most helpful to potential users or alternatively to locate the data and explain how it might be most usefully manipulated. This would also include acquisition of data from Statistics New Zealand not published on their website and for which a fee might be payable.

A major part of this would consist of the analysis of the commodity flows discussed in Section 2.5 Current data availability. This would be supplemented by the other data drawn from publicly available sources such as resource consents and other studies particularly relating to the development of irrigated areas and the establishment of inland ports and intermodal terminals.

This step would also incorporate any new region-wide material made available as the result of discussions with transport and infrastructure operators. This may also provide an opportunity to incorporate traffic count data held by the local road controlling authorities which would form a valuable part of the knowledge base. It would also include either directly or through the provision of linkages, any additional national-level data which may become available, as may be the case for livestock movements, and possibly the comprehensive analysis of the eRUC data.

Much of the Step 2 material would be specific to the needs identified for the Canterbury region and as a result in its analysed form it would not be relevant for other regions, for which comparable data may not be available. As a result, this may best be hosted on an ECan website, which would need to be set up if not already in existence for the Step 1 material.

The analysis in Step 2 might take 3-6 months to complete.

There would also be the opportunity at this stage to use more recent and disaggregated data to create a sub-regional freight demand study for the Canterbury region or to update the NFDS. This should be something to be discussed with the Ministry of Transport as a way of providing intermediate information between the formal 5-yearly updating of the full NFDS.

Step 2 would therefore bring together and analyse the Step 1 data and other relevant data to provide as far as possible a toolbox which can be used to look at potential transport schemes and projects with transport implications. As an example (to the extent that it is possible from the data that may be available), this would provide estimates of the likely outputs for a typical irrigation scheme and the associated freight trip rates both for the outputs produced and the associated movements. Step 2 would also ideally include data on road traffic flows on the State Highway network and the principal elements of the local road network provided by the TLAs which would provide the background movements on which the flows associated with new irrigation or other projects would impact. To the extent that the patterns of traffic from these irrigation projects are already defined as part of earlier work, these would be included in the database and could therefore be considered alongside the existing traffic flows.

As an example, an irrigation scheme of 20,000 hectares could typically be split 50 per cent for dairying, 20 per cent for intensive cropping and 20 per cent for other livestock. The toolbox developed in Step 2 could provide data on the likely outputs and the ways in which these and the associated inputs (e.g. feed and fertiliser) would translate into freight vehicle flows on the road network.

We would also envisage that Step 2 would provide estimates of the flows by commodity disaggregated at an intra-regional level based on the material from the NFDS and other sources, which again could be compared with the heavy vehicle flows on the road network. To the extent to which forecasts are available from other sources this could also identify future flows.

2.8.4 Step 3

Step 3 would extend the database to include new material as required to fill the data gaps identified in the report. The scale and timing of this step would vary depending on the extent to which the material generated in Steps 1 and 2 were considered to fill the main data gaps, and as such it is envisaged specific projects may be commissioned to close gaps. This would be an ongoing phase of work and it is expected the types of projects or studies undertaken in this phase may require business cases.

Step 3 could include:-

- The application of the toolbox developed in Step 2 to look at the impact of specific proposed schemes on the transport network for which detailed analysis is not already available. These could include, for example, new proposals for irrigation or inland ports which, as far as possible, would be based on data developed in Step 2.
- The filling of any remaining data gaps after the analysis in Step 2, either to cover general issues or to provide inputs to specific projects
- Development of forecasts for transport and commodity flows at a disaggregated level.

Picking up the example quoted as part of the Step 2 analysis, the location of the proposed irrigation development would be identified and the patterns of freight flows associated with the new development allocated to the road network on a spatial basis. These flows could then be compared with the existing and possible future business as usual traffic flows to determine the impact of the new traffic on the road network and to allow the road controlling authorities to identify any steps that might be required to accommodate the additional traffic. An example of a similar approach elsewhere is the work undertaken in Southland looking at commodity flows based on land use and product destinations.

After each stage a survey should be undertaken of the potential users of the information to be made available to check how this information was meeting their requirements and to identify any remaining data gaps.

The boundary between Steps 2 and 3 will depend to some extent on the scale of work undertaken in Step 2 and the level of information which is available to support more disaggregated analysis. Thus it may be possible to make estimates for new developments or the production of general traffic and commodity forecasts as an extension of work in Step 2, rather than leaving this to the subsequent Step 3.

Section 3: Canterbury Tourism Data

3.1 Introduction

In broad terms, the issue at hand is the facilitation of strong tourism growth in Canterbury.

Research suggests this requires a combination of 'destination marketing' and 'destination management'.5

Marketing of tourism is about developing and promoting a product, but not necessarily having much control over the whole visitor experience. Destination marketing has long been practiced in New Zealand.6 Today this occurs through Tourism New Zealand, the Regional Tourism Organisations (RTOs), and through many private sector companies, such as Air New Zealand7, Tourism Holdings Limited and New Zealand Ski Limited.

Destination management is undertaken by many parties, both from the public and private sector. It is about taking the competitive advantage provided by the current attractiveness of the local region and ensuring sufficient infrastructure and services are available to support tourism activity and, in some instances, increase the number of attractions. This requires an understanding of tourists' needs, particularly around their journeys and experiences. Understanding journeys involves a large element of forecasting: Who will these tourists be? Where will they want to go? Where will they want to stay? In contrast, understanding their experiences requires monitoring, which may then lead to adaption of the plans of the many parties involved in the tourism supply chain. Ultimately understanding the profile of tourists and the nature of their needs will enable higher tourist satisfaction, which in turn creates the platform for a growing, profitable and sustainable tourism industry.

This project focuses on the data requirements to achieve this ideal. The practical goal of the project is to identify where the data gaps exist and suggest ways that would enable these gaps to be filled. A lot of data on tourism is currently available but there are also large gaps, particularly around (a) journeys taken and (b) the persona of the tourists. These areas are of particular focus below. The emphasis is also on seeking data to support the destination management task as marketing organisations will already have their set of key performance indicators, although the interdependency of management and marketing means that any extra data collated will be of use for marketing purposes as well.

3.2 What is the problem?

While some likely issues were identified at the outset of this work, and meetings with stakeholders prior to the workshop further informed where potential gaps were, the stakeholder workshop was a significant step in the information gathering process. It brought different viewpoints together in one room. The discussion at the workshop helped define the following problems and opportunities:

1. Information is needed to facilitate private sector investment in tourism accommodation and destination facilities within Canterbury. This may mean that investment is currently lower, or at least slower, than otherwise would be case.
2. A similar situation exists with public sector investment in visitor infrastructure: supporting data is required to build a business case.
3. Better information could also enable improved targeting of private sector and public sector marketing, and improved adaptation of plans in response to the monitoring of outcomes.
4. Not only is there a requirement for improved historical/current information in (1) to (3) above, an added desire is to increase credibility in forecasts for these measures.

[5] See Pike (2014), UNWTO (2011) for wider discussions of tourism.
[6] NZ was first to introduce a national tourism marketing body in 1902.
[7] Although AirNZ is 52% owned by government

The dynamic nature of the tourism market (including Canterbury), the current national strategic approach to tourism and management of risks associated with tourist activity need consideration to contextualise these problems.

3.2.1 The dynamic nature of the tourism market, including in Canterbury

A snapshot of the Canterbury tourism market is provided in Figure 4. It shows the total value of spending in Canterbury by tourists to have increased in recent years, both due to more domestic tourist spending and due to more spending by international tourists excluding those from Australia.

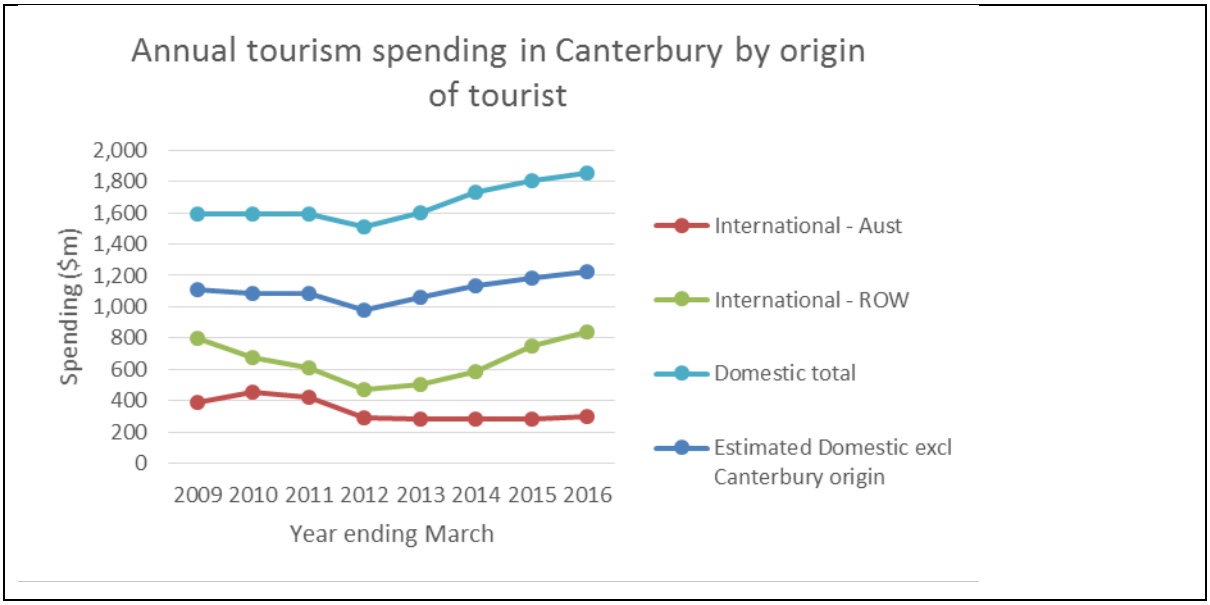


Figure 4: Annual tourism spending in Canterbury by origin of tourist

Figure 5 further shows the seasonal nature of the spending, particularly for international visitors.

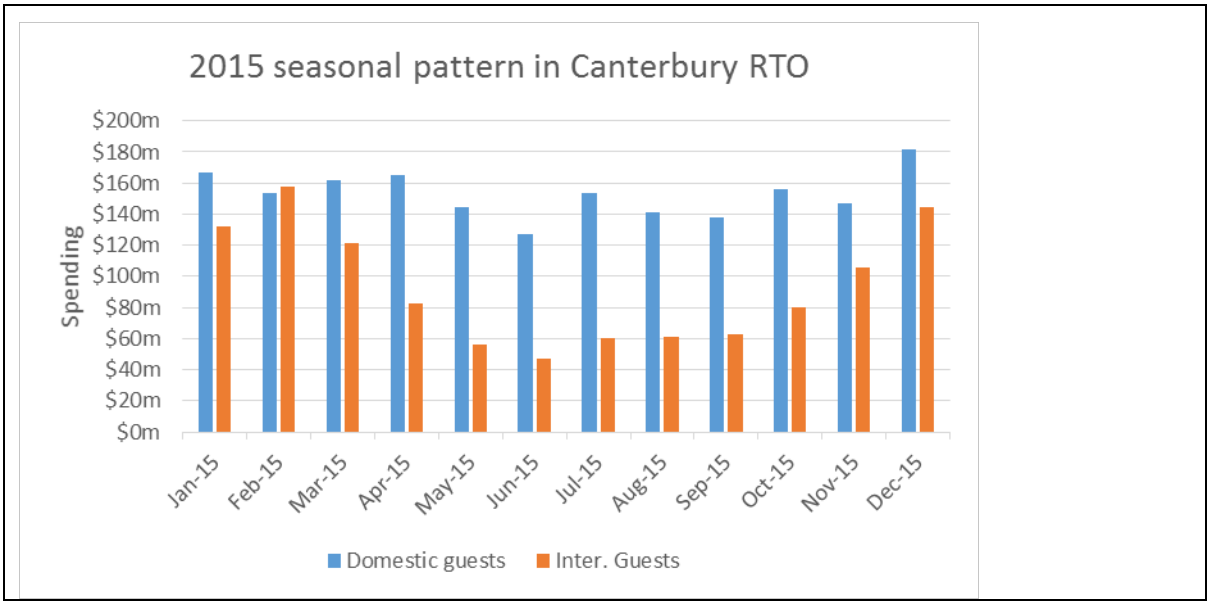


Figure 5: Seasonal pattern in Canterbury regional tourism organisations during 2015

Simply presenting this overview of the Canterbury market introduces the problems that exist with the measurement of tourism. These are that:

1. A definition for tourist is required. The international convention is that a tourist is “any person travelling to a place other than their usual environment for less than 12 months and whose main purpose is other than the exercise of an activity remunerated from within the place visited”. Statistics New Zealand define an international tourist as a person who arrives in NZ and is an overseas resident who intends to stay for less than 12 months. This includes people here primarily for business or education. A domestic tourist is defined as a NZ resident who travels more than 40 kilometres from their usual address, excluding where this travel is commuting for work.
2. A definition of ‘tourism’ spending is also required for the above charts which are derived from MBIE figures. The widely reported annual Tourism Satellite Account prepared by Statistics New Zealand uses international conventions to define the direct spending of tourism, which includes airfares, education fees, GST and the purchase of standard retail items. The regional figures reported by MBIE[8] and plotted above excludes GST and airfares, but includes education course fees, living costs and accommodation expenditure.
3. Figure 1 above presents four segments of the tourism market. In fact, there are a large variety of ways that the tourism market could be segmented, the importance of each method of segmentation depending on the issue that is being explored when the figures are compiled.
4. Likewise the extent of knowledge sought about where tourists are going will also vary depending on the decision that led to arranging for the collection of that information in the first place.
5. There is also the complexity of measuring the aspect of tourism that is of interest. Often complete data is not available and some estimation is required[9]. This, in turn, can give rise to revisions to reported data as better methods and new data emerge, or gaps in time series when can be filled as becomes available, or restrictions imposed by the confidential nature of some data are removed.
6. Having defined and measured the aspect of tourism that is of interest, there remain challenges with making sure the data is accessible and useable. For example, the data used in the graphs above required searching the MBIE data page on the internet, downloading two files, checking against an earlier and now unavailable downloaded file that included a regional origin breakdown of domestic spending, further tabulation, estimation of the missing data points and the graphing of the data series. This is further complicated when definitions vary between sources such as the Statistics New Zealand and MBIE example cited in an earlier example above.

A further challenge then comes with linking any tourism data with decisions.

7. A tourism outcome, whether it be a higher number of tourists or greater expenditure by tourists, is the result of interacting forces. Provision of infrastructure or more marketing need not each lead to more tourism. They are very likely to be influential but other changes will also matter. Internationally, exchange rates and international GDP growth rates are important factors. Locally, there may also be other constraints such as accommodation or transportation that require complementary investment. These are only some examples of influential and often interacting factors.
8. Furthermore, there is likely to be a lag between any investment, and some marketing decisions, before any response occurs.

[8] The regional spending figures are estimated jointly by Statistics NZ and Marketview, with background material available in http://www.mbie.govt.nz/info-services/sectors-industries/tourism/tourism-research-data/monthly-regional-tourism-estimates/previous-regional-tourism-series/regional-tourism-estimates/documents-image-library/20130829%20Regional%20Tourism%20Estimates-method-%20concets-%20results_v2.pdf

[9] The regional tourism spending data are estimated from (a) the annual TSA and (b) monthly electronic payments records collated by Marketview - neither fully measure monthly spending by all tourists in each region and month.

9. There is also another issue when it comes to measuring the tourism impact on jobs and incomes. In a low unemployment country such as New Zealand, the resources committed to servicing tourists would likely be otherwise employed without any extra tourism. Measuring the incremental benefit of any tourism expenditure requires estimating what would have otherwise have happened. This is particularly a problem when it comes to inferring the marginal value-add effects of tourism on the likes of jobs and incomes because of the existing low unemployment and the opportunity for people to work in other sectors.

These general issues with tourism data mean that there can be substantial costs with gathering more precise data and that acceptance of some imprecision and uncertainty is likely required in many situations. This need not prevent the improvement in the provision, management and communication of data, but it does point to a need to weigh up the costs and benefits of "more data".

3.2.2 The current strategic tourism approach

The overarching tourism aim is described in the Tourism 2025 report to be to increase New Zealand tourism revenue from $32 billion in 2015/16 to $41 billion by 2025, with the intention of "growing value faster than volume". 10

Two strategies aimed towards increasing value are (a) the reduction of seasonality and (b) the increase of regional dispersal.

Planning and monitoring such strategies requires data measured at periods of a month (or less) and possibly disaggregated below the unit of territorial local authority (TLA).

3.2.3 Risk management

The increasing presence of tourists in the regions typically brings economic benefits such as increased wage and profit opportunities. It also leads to higher levels of risks. With an increasing number of visitors there is a higher likelihood of incidents involving tourists; recent examples being contaminated drinking water (Havelock North), earthquake (Christchurch) and severe cold (Fiordland). These can include greater risks to local residents, for example due to crashes on the roads.

The significance for data measurement is that:

(a) tourists staying or passing through a district or city are relevant to a council's management of local risks;
(b) the consequence of any incident is possibly increasing due to rising tourist numbers and an implied rising reputation risk.

This puts repeated emphasis on potentially small areas and short time periods when it comes to data measurement.

3.3 What are the benefits

The previous section identified that, in general, opportunities and risks exist which require better information. There will, at times, be specific data required for a particular situation, but the data needs identified in the workshop largely pertained to finding ways to generally increase tourism, especially around non-peak periods and/or regional dispersed.. The likely ways to realise benefits with improved data (through higher-than-otherwise tourism revenue) are:

- Improved public sector investment decisions, leading to:
    - Fewer complaints or evidence of overuse due to under-provision of services
    - Potentially less operating expenditure (that may result from reliance on quick-fixes)
- Increased likelihood of private sector investment in regional economies, leading to:
    a. More non-residential building consents
    b. More business and property sales

[10] See Appendix G for more on "Tourism 2025"

c. More employment in tourism and tourism-related industries
d. More enquiries from investors to local economic development agencies

- More tourism spending in the region due to (a) fewer pinch points and (b) improved marketing (including advertising and product matched to customer), leading to:
    e. Higher guest nights
    f. Higher visitor counts
    g. Higher visitor spending.

This means the capture or transparent presentation of the above data will help measure the achievement of the overall benefits sought.

3.4 What data ideally is required

3.4.1 Introduction

Generally information is required about the number and spending of visitors, preferably broken down by the persona of the tourist, the time of the visit and the location of the visit. In other words, there is an increasing degree of granularity required for datasets.

Data specifically mentioned at the workshop as being of significance includes measures of:

- seasonality
- peak arrivals/flows
- locations visited
- market segment (e.g. backpacker vs conference vs family holiday)
- feedback from tourists.

3.5 What is available now and how can it be accessed

Figure 6 provides an overview of the measures available for the key statistics of (a) number of arrivals (b) nights stay (c) number of tourists at any point (d) the tourists' journey and (e) the value add of tourism. The source likely to provide the best measure is in bold. Statistics not used widely are shaded. A key is at the bottom of the table.

The core sources of tourism data listed are Statistics NZ and MBIE from the public sector and private sector companies Qrious (including their Voyager dashboard), Tourism Holdings Limited (THL) (including through subsidiary Geozone), Marketview and Beca (providing detail on use of electronic road user charges recording devices from the company eROAD).

A list and description of available data and links to where this data is found is provided in Appendix D.

Data	Actual?	Location			Period		Persona			Cost
		region	TLA	below	A/Q/M	Day	I/D	Origin	More	
NUMBER OF PEOPLE ARRIVING										
Voyager	**E**	**Full**	**Full**	**Poss**	**M**	**D**	**I/D**	**Y**	**Poss**	**$**
CAM	A	P	P	Poss	M		I/D			0
IVA	A	P			M	D	I	Y		0
MRTE	E	Full			M		I/D	Poss		0
VISITOR NIGHTS STAY										
Voyager	**E**	**Full**	**Soon**	**Poss**	**M**	**D**	**I/D**	**Y**	**Poss**	**$**
CAM	A	P	P	Poss	M		I/D			0
IVA	A	P			M	D	I	Y		0
MRTE	E	Full	Soon		M		I/D	Poss		0
NUMBER OF PEOPLE AT A PARTICULAR POINT										
Qrious	**E**			**Full**		**D**	**I/D**	**Y**	**Y**	**$$**
Major attractions	A			R		D	Poss	Poss	Poss	$$
SPENDING										
MRTE	**E**	**Full**			**M**		**I/D**	**Poss**		**0**
Voyager	E	Full			M		I/D	Y	Poss	$
Marketview	E	P	P	P	M	D	I/D	Y	Y	$$
JOURNEY										
THL	**A**	**P**	**P**	**P**	**M**	**D**	**I/D**	**Y**	**Poss**	**$$**
Qrious	E	P	P	P	M	D	I/D	Y	Poss	$$
Marketview	E	P	P	P	M		I/D	Y	Poss	$$
EROAD	A	P	P	P	M	D				$
VALUE ADD										
Employment	**A**	**Full**	**Full**		**A**					**0**
GDP	E	Poss	Poss		A					$$
CUSTOMER SATISFACTION & FEEDBACK										
VIP	**A**		**P**		**Q**		**I/D**	**Y**	**Y**	**$$**
CCT	A		P		A (Feb)		I/D			$$

Figure 6: Statistics available and potentially possible

Key: Actual (A) or Estimate (E), Full (Full) or Partial (P), Possible (Poss) or Restricted (R), Annual (A), Quarterly (Q) or Monthly (M), International tourist (I) and Domestic tourist (D), Yes (Y), Cost per annum of zero (0), $0-10,000 ($), over $10,000 ($$), Shading where data unlikely to be gathered at present.

The key points are that:

- Arrivals and guest nights at a regional basis are now available in the form of the Voyager dashboard through Qrious, broken down by international domestic and place of origin;
- Qrious are currently working on providing similar information at a TLA level;
- Qrious data is also a good source for information around events;
- Though not a complete measure of arrivals and guest nights, a source likely to show the trends is the Commercial Accommodation Monitor (CAM), which is available at a TLA level;
- Actual data on arrivals and/or visits is also available at points throughout the region such as at Christchurch airport (readily available), at the Lyttelton and Akaroa ports for cruise ships (readily available) and at other sites but held by private companies (e.g. people on the InterIslander, people at hot pools, people at skifields etc.);
- The Monthly Regional Tourism Estimates (MRTE) provides a good estimate of regional spending, broken down by international and domestic tourists;
- The card spending that forms a large proportion of the above spending estimates can be accessed from Marketview at a TLA level or lower – again not a complete measure of spending but likely to show trends;
- Detail of tourists' journeys has previously been inferred from the IVS but is now being measured by THL, primarily for international tourists, and can be inferred from Qrious and Marketview data for international and domestic tourists;
- Visitor feedback is gathered in Christchurch by Angus & Associates (with their Visitor Insights Programme (VIP)) and by Christchurch & Canterbury Tourism (CCT), both at a high cost, and is available to be shared. Individual companies also undertake customer feedback surveys but this information is not widely known;
- The value add of tourism is measured annually at a national level using the Tourism Satellite Accounts (TSA) and can be inferred (approximately) at a regional and TLA level by combining the TSA and MRTE datasets or can be proxied by employment data available annually from Statistics New Zealand.

3.6 What are the gaps and how might these be filled

3.6.1 What are the gaps

The extent to which any gap in data exists depends to a large extent on the decision that requires the data. Much data exists but (a) it may not be available in the time and location combination desired or (b) it simply may be difficult or expensive to access. The rapid introduction of new technology is shifting the data gap issue from (a) to (b).

The major gaps identified above are largely around:

1. forecasts for tourism visits and spending
2. seasonal patterns
3. the movements of tourists
4. the activities and events visited
5. the persona of the visitors
6. intra-regional tourism activity
7. customer satisfaction (or visitor experience, the term commonly used in the industry).

3.6.2 How might these be filled

While much data sits with Statistics New Zealand, there is an increasing amount of data being recorded by the private sector, as well as the public sector. The general options available to fill the data gaps above are:

- Manipulation of existing data (e.g. estimate regional tourism GDP from TSA and MRTE)
- Buy data from the private providers (e.g. Qrious)
- Gather data from local tourism operators (e.g. visitors to Hanmer Springs)
- Gather data from local government (e.g. water usage)
- Undertake bespoke data collection, including occasional surveys.

3.7 Options

In general terms there are five key options available with regards the filling of any existing data gaps, these being:

1. Do minimum and let "the market" gather and disseminate data.
2. Collate, manipulate and publicise existing data.
3. Share commercially sensitive data as required internally and/or develop a method to combine and de-sensitise the data to enable public distribution.
4. Gather new data.
5. Lobby central government to provide or gather more data.

Given the diversity of issues and data, it is likely that each approach would be used, with the situation largely dictating the most appropriate mix of options.

Should a common database be chosen as part of any solution, there is the accompanying decision as to who hosts the database, possibilities being:

- a regional database at ECan or CCT[11]. An example is the data presented by ATEED[12] in Auckland
- contract with a third party to collate and report the data (e.g. Lincoln University)
- with a central government agency like MBIE or Statistics New Zealand.

Besides the initial time and expense of establishing a central repository and website, the ongoing maintenance of the database requires commitment. The likely best fit is with an organisation that is already spending significant time working with tourism data, such as CCT or Lincoln University.

The following sections take a closer look at the key issues raised and suggest a likely solution. These suggestions are then brought together.

3.7.1 Forecasts

An ever-present challenge with any investment is to obtain credible forecasts.

Unfortunately trying to provide a wide set of forecasts for many local tourism variables is unlikely to be of much benefit, as any methodology employed is likely to produce forecasts with a wide margin of error, and producing such forecasts will be costly.

Instead, a simple but transparent approach is to leverage off existing tourism forecasts currently.

[11] Some information already exists at CCT, including links to IVA and CAM, at pages such as http://www.christchurchnz.com/media/facts-and-figures/ and http://www.christchurchnz.com/shore-to-rise/tourism-research-101/
[12] Available at http://www.aucklandnz.com/invest/tourism-key-data

There are three approaches, as below.

1. Use regional forecasts also provided by MBIE. These are expected to be available early 2017 but are not available at present.
2. Use CCT forecasts. Five year forecasts of Canterbury guest nights and airport arrivals are available in the 2016/17 Business Plan13, prepared in Jun-2016. See Appendix F for these forecasts.
3. Derive a simple regional forecast – and for a smaller area if necessary – from the MBIE national forecasts using the following method.

    i) Step 1. Take the appropriate MBIE national14 forecasts15 by country of origin. The MBIE national forecasts are available for (a) arrivals to New Zealand (b) visitor days in New Zealand and (c) spend in New Zealand. The arrivals and visitor day forecast growth rates are currently similar but the spending growth rate is forecast to be faster. The series chosen to proceed to the next step should best match the local measure to be forecast.

    ii) Step 2. Take Canterbury region market share of spending for each country of origin from MRTE.

    iii) Step 3. Make a judgement as to what is a reasonable market share assumption to expect for the region for each country of origin (e.g. it may be the latest year, or an average of recent years or an extrapolation of the trend over recent years).

    iv) Step 4. Multiply the chosen market share by the national forecast.

    v) Step 5. If forecasts below the regional level are required, use a similar proportioning of the above-derived Canterbury forecasts.

    vi) Step 6. Convert the forecast at the chosen area to a ratio of the current year total for the area. This series can now be applied to other tourism measures to derive a crude but transparent naïve forecast for the tourism measure of interest.

There is some advantage to presenting the forecasts from (2) and (3), complemented by (a) forecasts of local capacity from key local providers, (b) plans for promotion spending by Tourism New Zealand and CCT16 and (c) local knowledge of events, constraints and specific local plans. These three factors are likely to be key influences on any shift from trend growth. Any user of this information is then reasonably well informed of future prospects and can combine the information as they see fit.

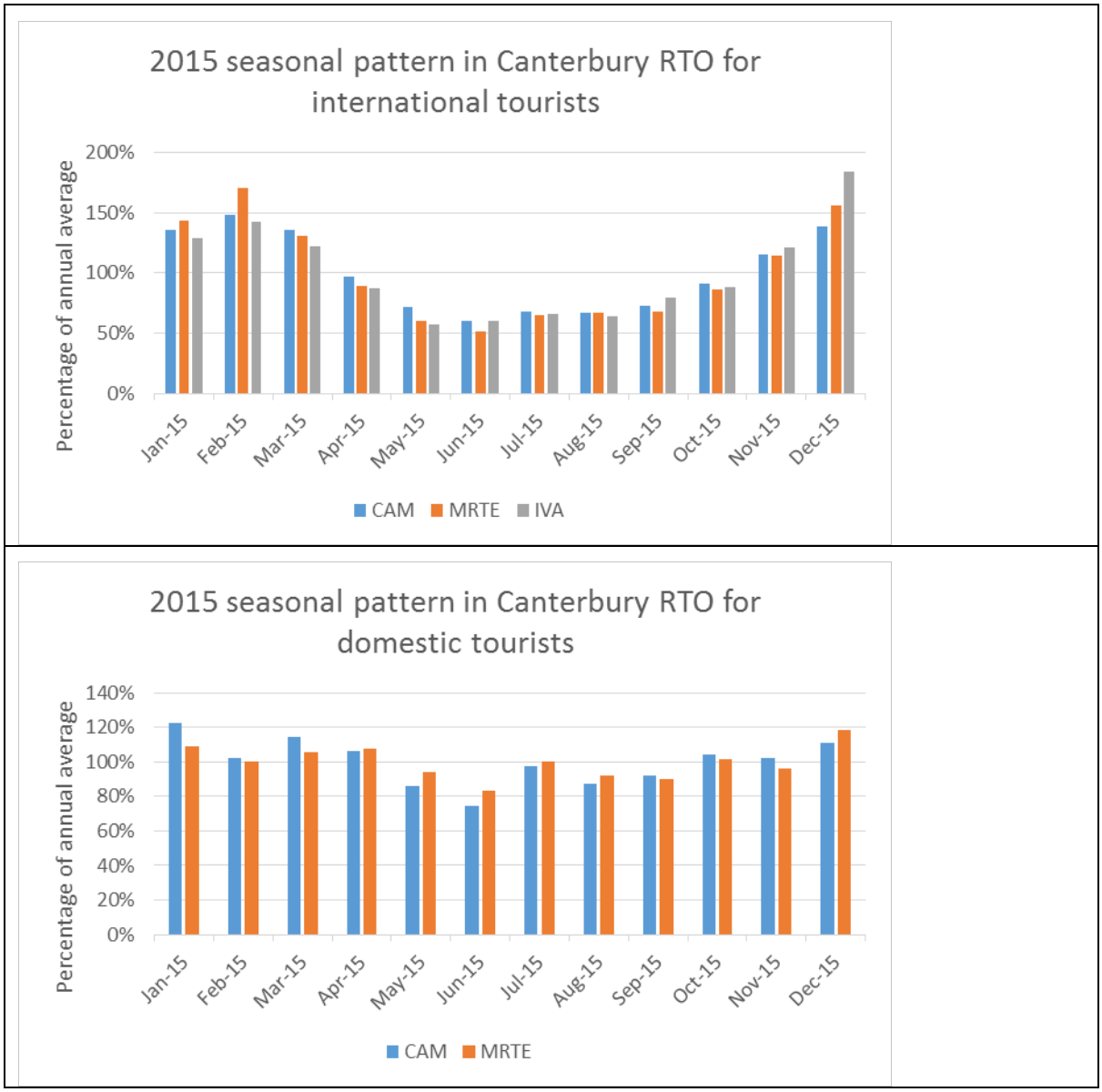
[13] Available at http://www.christchurchconventions.com/media/2444402/business-plan-2016-17-final.pdf
[14] It is also possible to go above this level to global tourism forecasts provided by World Travel and Tourism Council but these are unlikely to provide much extra information than contained in the NZ forecasts (http://www.wttc.org/research/economic-research/economic-impact-analysis/).
[15] Available at http://www.mbie.govt.nz/info-services/sectors-industries/tourism/tourism-research-data/international-tourism-forecasts
[16] See Appendix G for current TNZ and CCT strategic plans

3.7.2 Seasonality

Extending tourist numbers into non-peak periods is one strategy of national and regional interest.

This does not appear to be an area where extra work is required, other than publicising more widely the already available measures of seasonality in Canterbury.

Measures of the seasonal pattern exist at present in three readily available data series: the CAM; the IVA (for internationals only); and the MRTE. The results of the three series show a similar pattern for international tourism in the Canterbury RTO area during 2015, albeit not exactly the same. This is shown in the figure below, where each monthly measure is expressed as a percentage of the annual monthly average. The IVA measure is the international arrivals at Christchurch airport. It is also possible to present the monthly results for the IVA and MRTE for specific countries if further segmentation is required. (The seasonal pattern of domestic tourism is different to that of internationals, but is also similar across the two series available.



There will be differences in the monthly seasonal pattern each year as the weekdays in the months and holiday periods change each year.

It is possible to apply a seasonal adjustment algorithm such as the widely used X12 to convert the raw data into seasonal adjusted figures. It is not clear what the advantage of this would be to local users. However, it is an avenue that could be easily explored if desired. It is also an adjustment that would more efficiently be undertaken by Statistics New Zealand – hence a more likely pathway if seasonal adjustment was desired would be to lobby Statistics New Zealand and MBIE.

3.7.3 Journeys

A common theme at the workshop was the need for more information about journeys.

Until recently, this information would have been inferred, largely from trips reported in the IVS up to 2012. Queenstown-Lakes District Council is one organisation that has built up knowledge in this manner. The 2007 Tourism Flow Model17 is a national model of this nature.

Now details of journeys are being captured electronically from at least three private sector companies and data from these companies can now be accessed, albeit at a significant cost.

The three companies – Qrious, THL and Marketview – do not have complete information on all journeys, but they do hold sufficient market share to be able to make reasonable inferences about the patterns of journeys being undertaken by tourists. Spark (Qrious) and Marketview have significant data on domestic and international tourists. THL has a large dataset on international tourist journeys.

In an ideal situation, estimates of journeys from all three datasets would be derived and each series used to validate or pose questions about the other series. However, this would be a very expensive exercise. Nonetheless, a situation may arise where such an exercise is possible.

Otherwise a judgment call is required as to the most appropriate – in terms of representativeness and costliness – source. Cost is likely to be very dependent on the nature of the data extraction and the specific project.

At this stage, the following points are simply noted.

1. The two THL datasets provide a comprehensive and potentially more easily searched database on independent travellers. The CamperMate cell phone Apps18 are claimed to be used by around 60-70% of international independent travellers. The movements of cell phones19 are recorded approximately every 1km. This will require some programming if the locations are to be linked to specific roads but otherwise these data sets provide simple sequences of locations. Potentially the visitor can be segmented on the basis of their search activity through the CamperMate Application. THL have expressed a willingness to pilot with Canterbury to test the usefulness of this and the THL rental van laptop tracking. This would appear an attractive proposition for increasing understanding of international visitor journeys.
2. The domestic journeys can be tracked less precisely using either Marketview or Qrious datasets. Qrious can track Spark cell phone connections to cell phone towers and triangulate these connections to give a location of the phone. Marketview can track the use of a credit or debit card at different merchant locations. The nature of the data required will likely influence the choice of dataset. It is likely that journeys are probably more easily tracked through Marketview at present as they have built up records of merchant and card user locations in the existing projects with Statistics New Zealand. Note the query of Marketview data could be of the form (a) track the before and after spending locations of cards used by domestic visitors in Christchurch in a specific time period20 or (b) track the before and after spending locations of cards used by international visitors at a specific locations during a specific time period.

[17] See http://www.mbie.govt.nz/info-services/sectors-industries/tourism/tourism-research-data/other-research-and-reports/tourism-flows-model
[18] These apps are managed through THL subsidiary Geozone
[19] Requires GPS to be enabled, which is claimed to be approximately 92% of app users
[20] As per an earlier exercise by BOP

It is possible to validate or estimate the journeys at a less precise level from other partial data. For example, Kiwirail have data on the number of people and vehicles disembarking at Picton. Angus & Associates ask about places visited prior to Christchurch in their Visitor Insights Programme.

3.7.4 Events

One of the stresses created by more tourism is when capacity levels are reached at specific times and locations. This is likely due to a local event but can also simply occur due to time of year or weather reasons. Having a better understanding around these times would help planning for future events, including infrastructure provision and risk management.

Unless ticket sales data are available, the most comprehensive dataset currently available appears to be from Qrious. Qrious have developed tools to measure attendance at events and can provide background information on the attendees as well, including their likely place of residence. Qrious have indicated that a data extraction for an event is likely to cost in the order of $13,000 or more.

Other partial ways also exist to monitor the presence of a large number of people in the vicinity. In some locations, road counters enable traffic flows to be measured. There may also be data on water and/or wastewater volumes. Initially these type of data can help validate estimated visitor totals. In time, they could form proxies should a relationship be identified between visitor counts and the partial measure.

3.7.5 Persona of visitors

Data on the persona of tourists has been difficult to gather and is typically done by surveys. Such surveys are available from Angus & Associates21 and Roy Morgan22. Data on their customers is also gathered from private sector operators such as New Zealand Ski and Hanmer Springs.

There is also more data available today from internet records and card spending records. These data sets record the presence of a person and their previous behaviour can be used to infer the market segment to which they belong. However extracting this information can be costly.

The potential sources of information about tourists to Canterbury from internet behaviour include:

- searches undertaken by people searching for keywords such as “Akaroa”
- searches undertaken by people accessing the CCT website
- other activity of people with a Spark cellphone that travel through Canterbury
- other activity of people with the CamperMate application (or its variants) that travel through Canterbury.

Without a specific decision-data combination in mind, the cost of undertaking a data extraction from internet records is unclear. It is simply noted at this stage that these possibilities exist.

A staged approach to accumulating more information about the persona of visitors could be to:

- circulate some key insights from the Angus & Associates VIP surveys (to the extent that this is contractually possible);
- do likewise with information currently held by key local operators – this may require a third party to be contracted to collate and aggregate local data if confidentiality is an issue;
- explore the degree of market segmentation possible with THL data in a pilot study;
- buy internet-use data as required for specific projects, and widely distribute at the time.

[21] Available http://www.angusassociates.co.nz/what-we-do/visitor-insights-programme/

[22] Available http://www.roymorganonlinestore.com/Browse/New-Zealand/Travel-and-Tourism.aspx

3.7.6 Smaller areas

A key data gap was to access data for areas below that of an RTO or Region.

There are two parts to this issue: first the measurement of tourism activity below the regional level; and second gaining access to these measures.

One key data source available at this level is the CAM. This data is available in table form23 and linked on the CCT website.

The dissemination of CAM information could be improved in three ways:

- The data could be provided graphically as well - the most efficient solution would be if MBIE were to add these data to their tourism dashboard;
- Links to the data tables could be added more prominently on Canterbury websites;
- Customised searches for data below the TLA could be set up (at a low cost) and made available via a local website.

Generally, as the area of analysis becomes smaller the influence of any one entity tends to become greater. This can create problems around inferences. For example, inferring the presence or spending of international tourists in a small area from CAM results may not be possible due to (a) confidentiality precluding the publication of CAM and/or (b) a large accommodation provider changing their behaviour in a way that shifts market share between commercial accommodation and hosted accommodation.

This issue will be reduced in future as Qrious will soon be able to provide their Voyager product at a TLA level as well, albeit at a cost.

A complement (or replacement) to the CAM data can also be sourced from Marketview, also at a cost and subject to confidentiality. Card spending in smaller areas can be reported monthly and will provide a reasonable estimate of tourism spending trends but not the total quantum of that spending. Spending and number of visits are also highly correlated.

The fourth avenue for accessing more sub-regional data is to access some of the sources mentioned above in Events and Persona sections. One possibility with Qrious counts of people at a particular site is real time (or at least daily) estimation of tourists within or at points in Canterbury. If nothing else, reporting this information on a website would draw more attention to tourism and to the website.

3.7.7 Customer satisfaction

One of the strategies outlined in the Canterbury Regional Economic Development Strategy is to “Monitor visitor satisfaction and respond to issues”.

There are a number of surveys currently undertaken of tourists. These include an annual survey by CCT of Christchurch visitors, a quarterly survey of six regions including Christchurch by Angus & Associates, surveys by AA and DOC, plus a soon to be released Deloitte’s survey that was funded by the RTOs. Also local tourism operators are known to undertaken their own surveys.

These data sets were not researched during this project but it is noted that:

a) Customer satisfaction data does exist within the region;
b) There are opportunities with the new internet technology to increase and widen these surveys at relatively low cost;
c) Using the internet to survey people can also create the possibility of real time notification of issues.

[23] Available at http://www.mbie.govt.nz/info-services/sectors-industries/tourism/tourism-research-data/commercial-accommodation-monitor/cam-regional-pivot-tables

3.7.8 A combined solution

Addressing the data gaps discussed above is likely to require a mix of approaches.
First, it is recommended to bring together local tourism data, or at least links to these data, in one website. Such a site could potentially show24:

- Forecasts, expected capacity increases and promotional plans, updated annually (addresses 3.7.1).
- An overview of the persona of tourists to Canterbury, including revenue per night to expect, updated annually (3.7.5).
- The seasonal pattern for domestic and international tourism, updated annually (3.7.2);
- Employment and GDP in tourism at a TLA level, updated annually (3.7.6).
- The results of annual customer satisfaction surveys, updated annually (3.7.7).
- Link to MBIE regional data (addresses general awareness).
- TLA-level data, such as CAM and other information gathered, possibly updated monthly if data is to be provided rather than a link (3.7.6).
- Links to recent tourism research of relevance to Canterbury, including some projects mentioned below (3.7.5).

Second, work with THL to explore the journeys being undertaken through Canterbury by international tourists. If required, do likewise with Qrious for domestic journeys. Both datasets will also provide detail about market segments. This will address 3.7.3.

Third, work with Qrious to build up information about specific events. Besides increasing understanding of specific events, this will add to the information on tourism impacts on small communities and on the persona of visitors. This will address 3.7.6.

Fourth, work with major local operators to build up knowledge of number of visitors to specific locations and the persona of those visitors. This is likely to require working through a third party due to confidentiality reasons. This will address 3.7.4 and 3.7.5.

Fifth, continue to work closely with MBIE, ensuring that local data requirements are fully communicated and that awareness of publicly provided data remains high.

3.8 Priorities for future action and next steps

It is likely that a staged approach to building up local data is the optimal pathway, both due to the quickly evolving nature of the data available and due to the imprecise nature of data requirements. Three steps are outlined below.

3.8.1 Step 1

Some quick and relatively inexpensive steps can be taken to add more information to a local website. This is likely to require the co-operation of CCT and MBIE, as well as CIAL and CDC when it comes to expected air and accommodation capacity increases. Agreeing on an appropriate website and a process will enable further information to be added in time as it is gathered. Consideration of using a third party to manage this site is recommended. It is envisaged this step may take up to three months to implement, with stakeholder engagement being a key part of this phase.

3.8.2 Step 2

A second important step is the acquisition of data on the journey of tourists. An opportunity exists at present to work with THL to explore what data can be derived, including the persona of tourists, and then disseminate the information and assess its usefulness. Depending on the outcome of this initial stage, this data extraction could be expanded and/or sources such as Qrious or Marketview used to expand the journey data to domestic tourists.

[24] Some is available at CCT's website now

The phasing of gathering data around events is likely to be dictated by the nature and timing of events due. Analysis of Qrious data either before[25] or after these future events can provide persona data that will likely be of wider interest.

One way to progress the wider use of privately held tourism information, especially around the persona of the tourist, is to form a committee of interested large operators. The group are likely to benefit from simply sharing ideas and information at an informal level but some process is likely to emerge where data is more formally shared, and in turn may be able to be provided via the 'Canterbury tourism data' website discussed above. The group would also provide another avenue for feedback from tourists and tourism operators to local government. It is difficult to define a specific timeline around this step, however, it is expected some benefits could be seen within three to six months from this approach. Ideally, this should be done after the summer tourist season (that is, using the numbers for the summer tourist season).

3.8.3 Step 3

Lastly, it appears worthwhile to investigate the use of phone Applications to provide more tourist feedback. This can be explored either along with the suggested pilot project above with THL or independently with Geozone, as a starting point. It is expected that at least 12 months would be needed to start to realise benefits from deployment of bespoke phone Applications, although depending on their purpose some may generate early or immediate benefits.

[25] That is, analysis of similar events to anticipate what might happen in future events.

Section 4: High Level Review of Options

4.1 Overview

A range of options have been identified and assessed as to whether they close gaps, improve accessibility or availability of data, in particular, for infrastructure owners. This will have some likely flow on benefits to the private sector too, due to the potential to offer wider insight.

The options have been discussed earlier in the report, and a subjective assessment based on the project team's experience and knowledge is made within this section of the report.

The three simple questions were asked about the options:

1. Does this option address an existing gap?
2. Can this option be done in the short term at relatively low cost to government?
3. Will this option be easy to maintain?

Comments are provided to give an understanding of how ratings were arrived at.

The ratings are colour coded:

- RED: No
- AMBER: Partially
- GREEN: Yes

4.2 Freight

Data Source	Data gathering and access options	Does this address an existing gap?	Can this be done in short term at low cost?	Will this be easy to maintain?
Existing data	An assembly of the links to the sources of the data and any supporting papers but with no data held directly.	(1)		
	The creation of a number of separate sources of data hosted directly on a single website, but including links to external websites for more comprehensive data or for supporting papers.	(1)		
	The creation of a database comprising a single spreadsheet with multiple worksheets as has been developed for the FIGS database.	(1)		
New public data created to address data gaps	Link to data owner website.			
	ECan website presenting data compiled in one place.			
	ECan database.			
Data privately held by local freight stakeholders	Link to data owner website.	(2)	(3)	(4)
	Local authority (TLA) owned and managed database.	(2)		(4)
	ECan owned and managed database.	(2)		

Data Source	Data gathering and access options	Does this address an existing gap?	Can this be done in short term at low cost?	Will this be easy to maintain?
	ECan or RCA hosted website directing to links of data or database.	(2)	(3)	(4)
Data from commercial sources	Status Quo: procure from companies selling the data and insight reports (eg. eRUC).			
	NZTA or MOT provide a centralised national repository of statistics from commercial data.	(5)		
Data from new ad hoc surveys undertaken outside ECan for specific purposes	Link from ECan website.	(6)		(7)
	Combine with existing relevant database such as NFDS or FIGS.	(6)		
Data from new ad hoc surveys undertaken by ECan to fill specific gaps	Design and carry out surveys			(7)

Notes (1) Although this does not provide any new information per se, it does offer potential users a list of information which is currently available of which they may be unaware.
(2) It is likely that at best only very partial information will in general be available from this source.
(3) It is unlikely that information will be made available through data owners' websites.
(4) This data will almost certainly need a high level of manipulation to be useful.
(5) Because the data will have a national focus, the amount of data at a detailed local level may be limited.
(6) Could be AMBER if survey not undertaken to directly address a transport data gap.
(7) Some effort would be needed to keep any website updated with the results of these surveys as they are undertaken.

4.3 Tourism

Data Gathering and Access Options	Does this Address an Existing Gap?	Can this be done in Short Term at Low Cost?	Will this be Easy to Maintain?
Collate, manipulate and publicise existing data.	(1)	(6)	(10)
Share commercial sensitive data as required internally and/or develop a method to combine and de-sensitise the data to enable public distribution.	(2)	(7)	(10)
Gather new data.	(3)		(11)
Lobby central government to provide more data.	(4)	(8)	(12)
Do minimum and let "the market" gather and disseminate data	(5)	(9)	(13)

Notes: (1) Will only partially address gap – does not give journey.
(2) May be able to help with key gaps.
(3) Key source on journey.
(4) May help further TLA data provision.
(5) Eventually data needed will be paid for.
(6) Cost can range significantly depending on solution chosen.
(7) Cost depends on if third party needed.
(8) Can be time consuming.
(9) High costs to individual parties that may be reduced with coordinated approach.
(10) Does require ongoing commitment.
(11) Once initial data gathered, probably can scale back.
(12) Time consuming.
(13) Probably ongoing high costs for individual parties.

Section 5: Summary

5.1 Findings

The project has identified a wide range of data, systems and stakeholders in both the freight and tourism area. A more centralised and consistent approach to providing access to relevant data would benefit Canterbury transport infrastructure owners, and consequently freight and tourism outcomes.

There are a number of options that would deliver immediate benefits at low cost, and some of these would partially close existing information gaps. However, options to close gaps in information will typically take more time to implement and be more costly.

This report provides information about:

- the types of data available
- where this data is now and who holds it
- where gaps in data are
- options for how all of this data may be managed in the future to improve information availability for Canterbury infrastructure owners (particularly transport infrastructure owners)
- action plans on how benefits from implementing some of the options might be realised in the short, medium and long term.

In the course of engaging with stakeholders it was found that freight private sector parties felt they had sufficient information in the management of their own businesses. It was also agreed that the information held privately by freight and tourism operators would be of value if it could be shared with infrastructure owners, and that this in turn would help deliver a more efficient freight supply chain and improved visitor experience in the region.

It is expected that implementing options identified in this report will result in an improved ability for infrastructure owners to understand:

- how their assets are being used,
- what their customers' needs are, and
- what these needs might be in the future.

5.2 Recommendation

It is recommended that ECan look at taking a staged approach to implementing options proposed by this report. Step 1 of both the freight and tourism components could start immediately. The benefits to be realised from steps 2 and 3 for each data stream should be explored concurrently to prioritise investment.

With immediate implementation of step 1 for freight and tourism data it is expected that local authorities in the region would start to gain value in the development of their next long term plans early in 2017. In addition to simply promoting and providing access to data, there is likely to be benefit in providing case studies or examples of how the data can be used to inform decision making to enable consistent use and also to give simple guidance those looking to use the data. It is therefore also recommended that these examples or guidance be prepared as part of the implementation of this first step.

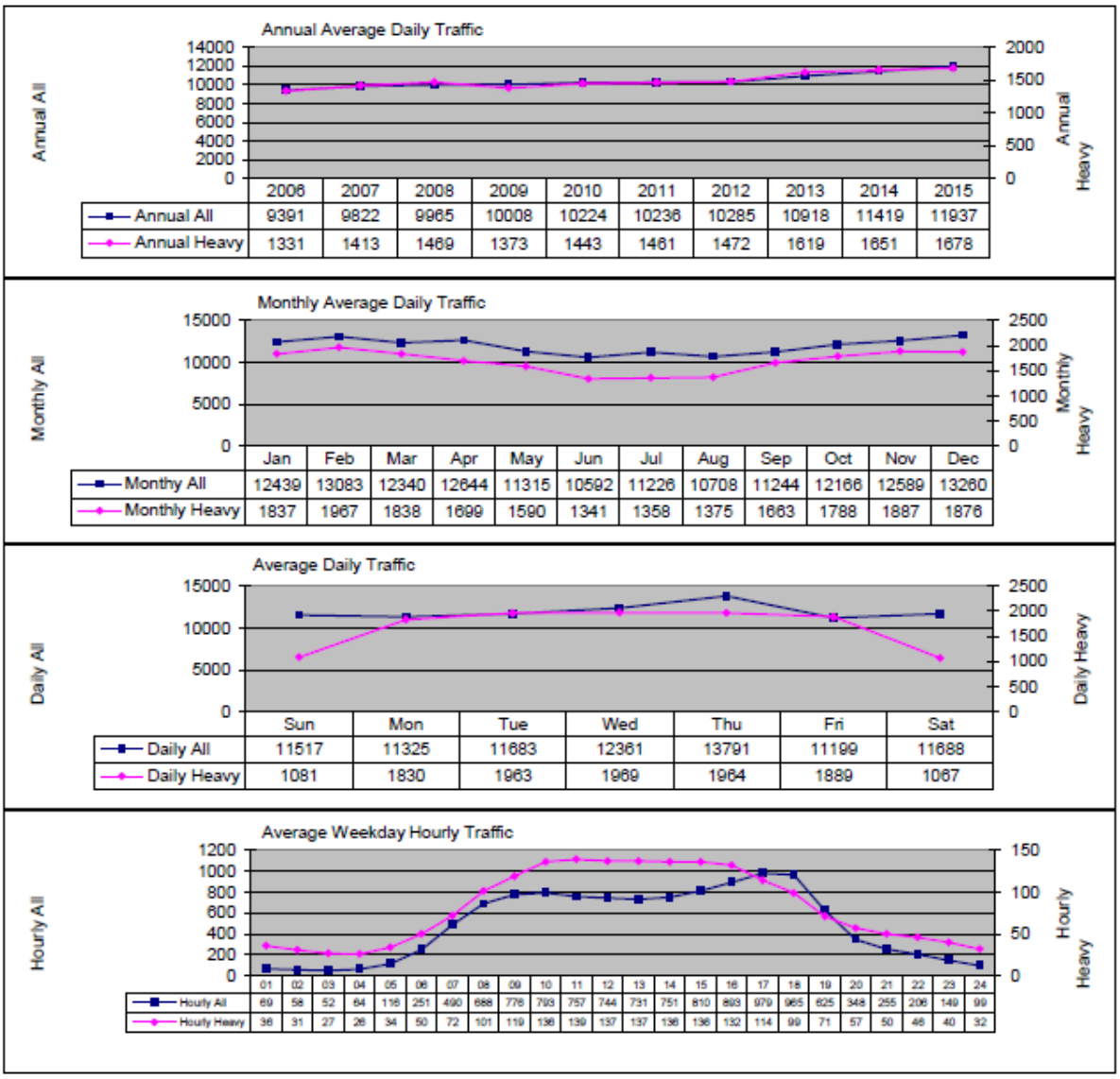
Appendices

Appendix A Examples of Freight Data

NZTA 2015
National Telemetry Site Traffic Profile

Site Ref ID:	01S00389					Region:	11 - Canterbury
Location:	SH1S	RS:	381	RP:	7.75	GPS	5725255 / 2441422
Description:	DUNSANDEL - Telemetry Site 68 (LTSA)					Telemetry Site No:	68
Direction:	Both			Lanes:	2	Accepted Days:	353
AADT:	11937					% Heavy:	17.22

Highest Date	Thu 02-APR		Value	17472
Highest Hour	Fri 03-APR	12:00	Value	1744
30th Highest Hour	Fri 30-JAN	18:00	Value	1454



	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Annual All	9391	9822	9965	10008	10224	10236	10285	10918	11419	11937
Annual Heavy	1331	1413	1469	1373	1443	1461	1472	1619	1651	1678

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Monthy All	12439	13083	12340	12644	11315	10592	11226	10708	11244	12166	12589	13260
Monthly Heavy	1837	1967	1838	1699	1590	1341	1358	1375	1663	1788	1887	1876

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Daily All	11517	11325	11683	12361	13791	11199	11688
Daily Heavy	1081	1830	1963	1969	1964	1889	1067

	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Hourly All	69	58	52	64	116	251	490	688	776	793	757	744	731	751	810	893	979	965	625	348	255	206	149	99
Hourly Heavy	36	31	27	26	34	50	72	101	119	136	139	137	137	138	136	132	114	99	71	57	50	46	40	32

Figure A 1: Details of Detailed NZTA Count Data generated at Telemetry Sites: Dunsandel 2015

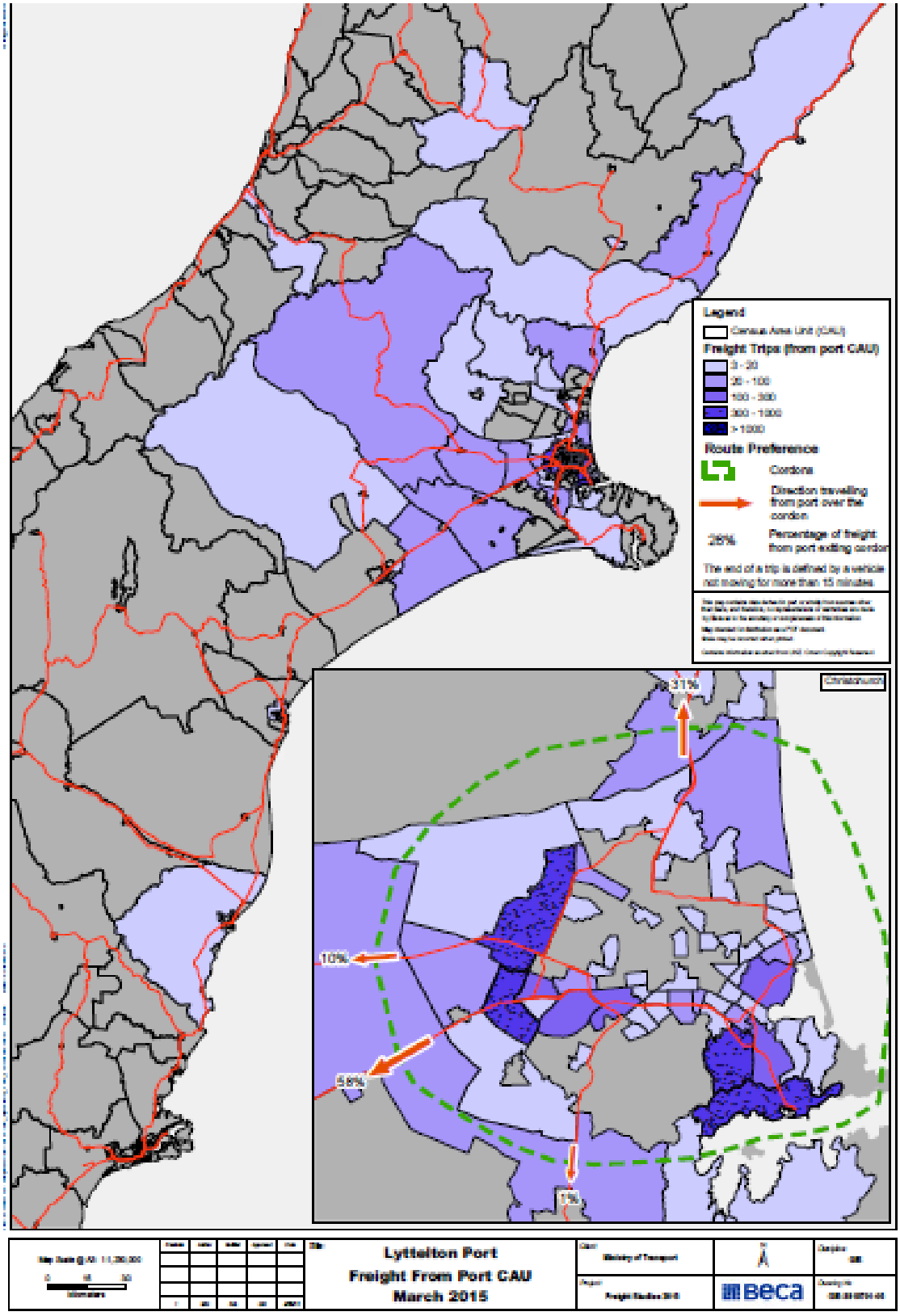


Figure A 2: Heavy vehicle movements from Lyttelton Port March 2015

Table A1: Rail Freight Data from the FIGS Database: Year Ending March 2016 – Total Net Tonnes

	Destination													
Origin	1 Northland	2 Auckland	3 Waikato	4 Bay of Plenty	5 Taranaki	7 Hawkes Bay	8 Manawatu /Wanganui	9 Wellington	A Nelson/Marlborough	B Canterbury	C West Coast	D Otago	E Southland	Total
1 Northland	83422	95634	20	30614	24	247	47	13	65	287	16	87	88	210564
2 Auckland	13024	306118	30510	1685132	24029	26465	241487	120794	23305	369331	387	33108	10851	2884541
3 Waikato	68	562778	322810	777104	1578	182	21074	11121	2433	27419	13	5679	6154	1738413
4 Bay of Plenty	32	440205	154372	2986248	63836	1610	25343	9720	102	14553	13	2966	609	3699609
5 Taranaki	6	74000	2640	360051	551	15461	397	35957	67	8425	0	16400	59	514014
7 Hawkes Bay	1895	12963	52	1920	15751	195083	9397	23383	2854	42516	0	8691	578	315083
8 Manawatu/Wangan	36	19694	2337	149603	230500	397635	37306	320582	699	26205	66	1393	261	1186317
9 Wellington	45	28570	1747	3965	25783	7624	109316	386440	1946	10710	176	3106	533	579961
A Nelson/Marlboroug	43	108753	396	2561	160	15611	5631	9182	853	82938	10	8975	9705	244818
B Canterbury	238	139405	18386	5444	3799	9916	47220	10798	26732	662864	134157	158512	94860	1312331
C West Coast	0	1379	669	37	21	27	48	534	50	1515384	4372	72332	49	1594902
D Otago	80	33213	20906	340	7774	148	2805	8167	1561	32269	69	402559	93561	603452
E Southland	111	15789	29265	655	3374	2993	1667	1299	861	199450	74	749142	68284	1072964
Total	99000	1838501	584110	6003674	377180	673002	501738	937990	61528	2992351	139353	1462950	285592	15956969

Table A2: Rail Freight Data from the FIGS Database; Year Ending March 2016 – Total Net Tonnes Canterbury Data Only

	Destination													
Origin	1 Northland	2 Auckland	3 Waikato	4 Bay of Plenty	5 Taranaki	7 Hawkes Bay	8 Manawatu /Wanganui	9 Wellington	A Nelson/ Marlborough	B Canterbury	C West Coast	D Otago	E Southland	Total
1 Northland										**287**				210564
2 Auckland										**369331**				2884541
3 Waikato										**27419**				1738413
4 Bay of Plenty										**14553**				3699609
5 Taranaki										**8425**				514014
7 Hawkes Bay										**42516**				315083
8 Manawatu/Wanganui										**26205**				1186317
9 Wellington										**10710**				579961
A Nelson/Marlborough										**82938**				244818
B Canterbu	**238**	**139405**	**18386**	**5444**	**3799**	**9916**	**47220**	**10798**	**26732**	**662864**	**134157**	**158512**	**94860**	**1312331**
C West Coast										**1515384**				1594902
D Otago										**32269**				603452
E Southland										**199450**				1072964
Total	99000	1838501	584110	6003674	377180	673002	501738	937990	61528	**2992351**	139353	1462950	285592	15956969
Note: totals incl all blanked out cells														

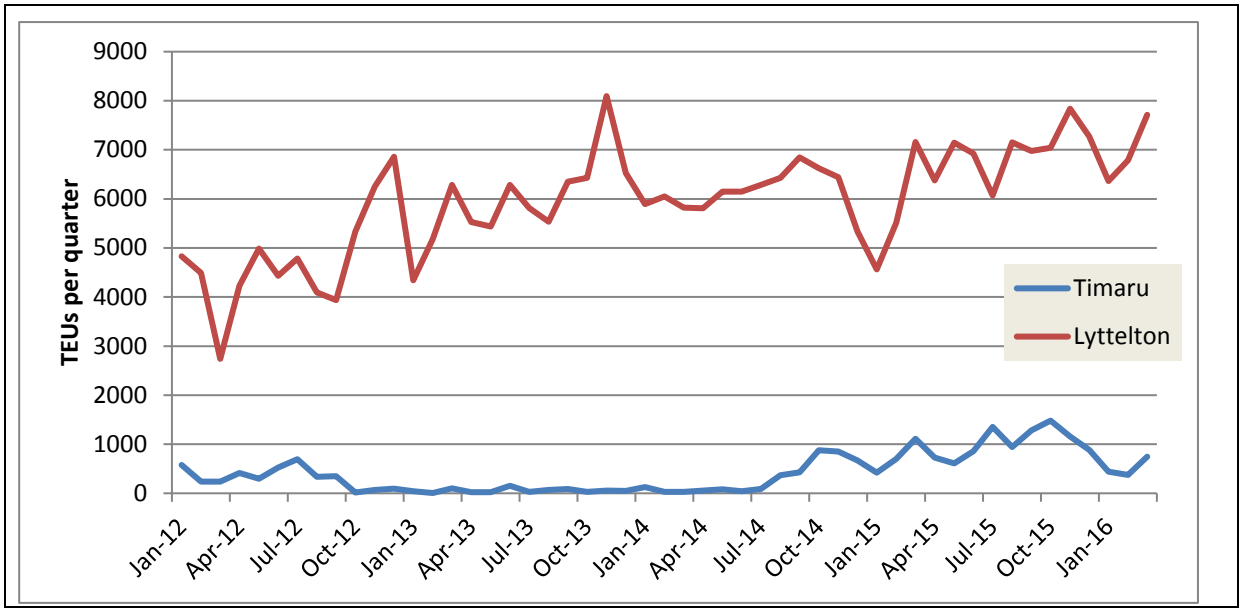


Figure A 3: Domestic Containers by Coastal Shipping through Lyttelton and Timaru 2012-2016 (TEUs)

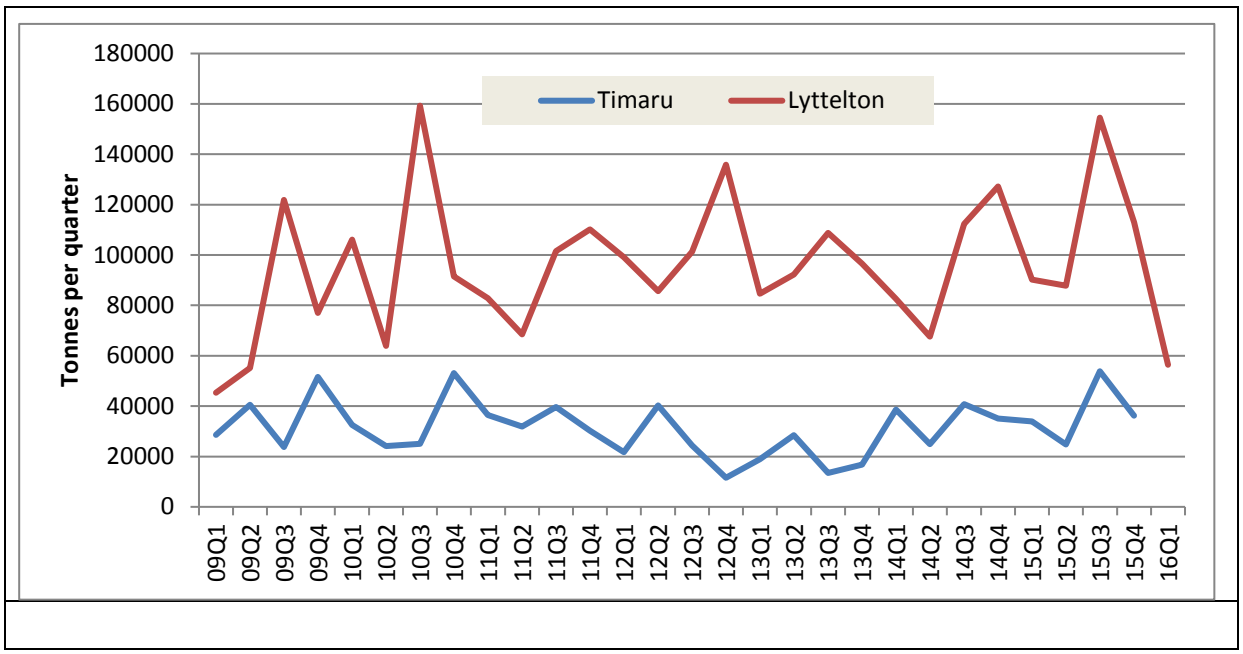


Figure A 4: Coastal Petroleum Product Shipments from Marsden Point to Canterbury Ports 2009 - 2016

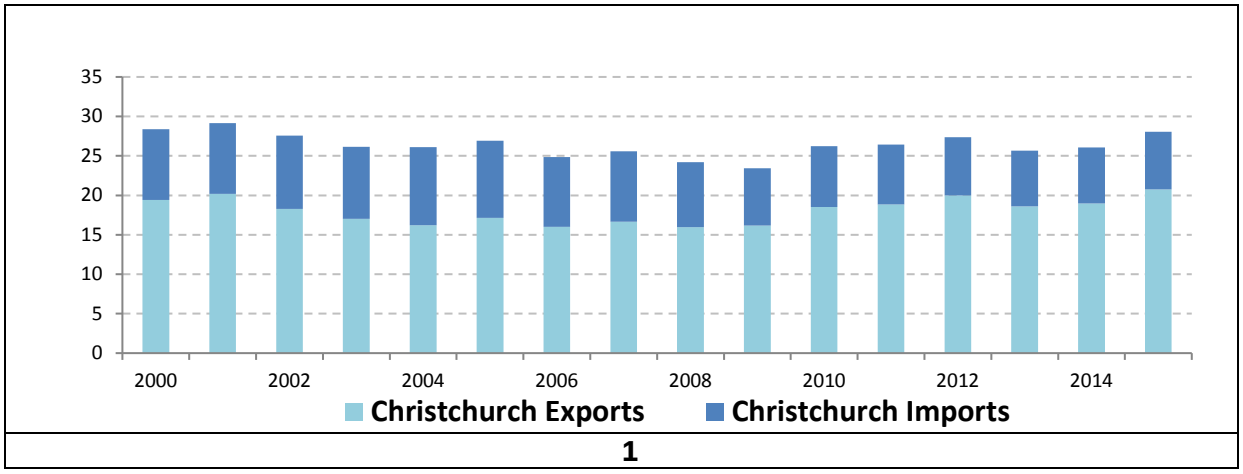


Figure A 5: International Airfreight movements through Christchurch International Airport

Table A3: Liquid Milk Production by TLA 2012

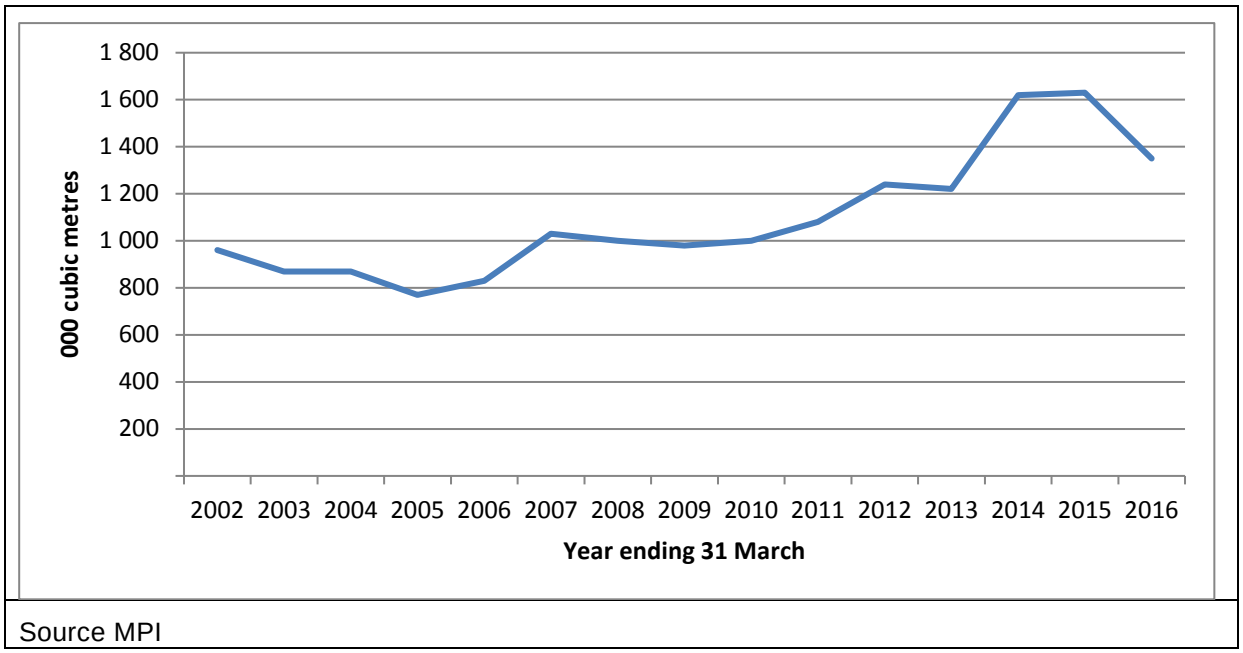
TLA	Milk Production (m tonnes)
Kaikoura	0.04
Hurunui	0.29
Waimakariri	0.24
Christchurch City	0.03
Banks Peninsula	0.01
Selwyn	0.64
Ashburton	1.33
Timaru	0.46
MacKenzie	0.05
Waimate	0.36
Total Canterbury Region	3.45
Total SI	7.45
Total NZ	19.13

Table A4: Head of Cattle Moved within Canterbury Region 2012-2013

To: / From:	Kaikoura	Hurunui	Waimakariri	Christ-church	Selwyn	Ashburton	Timaru	Waimate	MacKenzie	Total
KK	1471	3243	27	1007	257	448	141	53		6647
HU	1558	43270	5549	15627	7809	11563	2503	1189	21	89089
WI	5	5072	9636	14695	8081	7115	1845	138	309	46896
CH	85	2633	7133	11880	10296	5665	764	63	155	38674
SE	161	4381	11028	22628	69853	28024	4348	1282	1777	143482
AS	429	2157	3347	14798	20265	156865	28014	6260	2464	234599
TI	18	1046	4546	5585	6547	21325	56148	14420	9706	119341
WM	1	757	301	3862	3469	8958	17189	21485	2090	58112
MC	2	251	78	1621	2074	7029	13136	700	2500	27391
Total	3730	62810	41645	91703	128651	246992	124088	45590	19022	764231

The information in this table is based on preliminary results from NAIT for 2012-2013 as the system was being established.

Figure A 6: Part of Freeman Media's South Island Quarry Map



Source MPI

Figure A 7: Production of Logs in Canterbury

Appendix B Sources of Freight Data

Key to availability of data:

Have for 2012	
Easy to obtain	
Should be available in near future	
May be too sensitive. May also require substantial processing	
Data available but needs manipulation	
Data has to be paid for	($)

Commodity	Indirect Sources					Comments
Commodities in NFDS order	**Intraregional flows**	**Originating/ terminating flows**	**Through flows**	**Production/ consumption intraregional/ TLA level**	**Production/ consumption regional**	
Liquid Milk	Factory resource consent applications	Factory resource consent applications	Factory resource consent applications	Manufacturers' websites		Manufacturers might be sensitive at a regional level
				ECan water meter records		
				ECan water resource consents?		
Dairy (manufactured)	Factory resource consent applications	Factory resource consent applications	Factory resource consent applications	Manufacturers' websites		
	Port data (Stats NZ ($))	Port data (Stats NZ ($))				
Logs	Port data (Stats NZ ($))	Port data (Stats NZ ($))	Port data (Stats NZ ($))			
	Mill owners	Mill owners		Mill owners		
Timber and panels		Major producers				
Livestock						
Meat	Port data (Stats NZ ($))	Port data (Stats NZ ($))				Hard to get meat processors to release data
	NAIT (movement to works)	NAIT (movement to works)		NAIT (movement to works)		Likely to be too commercially sensitive for NAIT to release
Horticulture						
Other Agriculture					Port data (Stats NZ ($))	
Wool					Port data (Stats NZ ($))	
					Beef & Lamb	
Fish						
Coal				Dairy manufacturers' websites		
Petroleum	Population statistics applied to NFDS data				Port data (Stats NZ ($))	
Aggregate	Resource consent applications	Resource consent applications		Quarry sites - MBIE		Assume short distance

Commodity	Indirect Sources				Comments
	Quarry owners	Quarry owners	Quarry sites - Freeman Media map ($) *Inside Resources* (Freeman publication) ($)		
Limestone, cement, concrete & fertiliser	Limestone: Resource consent applications	Limestone: Resource consent applications	Quarry sites - MBIE		
	Quarry owners	Quarry owners	Quarry sites - Freeman Media map ($) *Inside Resources* (Freeman publication) ($)		
Steel & Aluminium					
Other manufactured goods, & nec					
Retail & Imported cars				Statistics NZ ($)	
Couriers & post					
Other minerals	Resource consent applications	Resource consent applications	Mine sites - MBIE Mine sites - Freeman Media map ($) *Inside Resources* (Freeman publication) ($)		Not much in Canterbury
Waste			TLA's Waste Management and Minimisation Plans		
Transport Mode					
Rail (by broad commodity groups)					
Rail (greater detail)					
Road	NZTA Draft SI Freight Plan	NZTA Draft SI Freight Plan	NZTA Draft SI Freight Plan		
	Christchurch Freight Model	Christchurch Freight Model	Christchurch Freight Model		
Coastal Shipping					
International Shipping					
International Aviation					
Domestic Aviation					

Commodity	Direct Sources						Comments
	Intraregional flows	**Originating/ terminating flows**	**Through flows** *May not be necessary:* *Small volumes*	**Production/ consumption intraregional/ TLA level**	**Production/ consumption Canterbury Region** NFDS data is available for all commodities at a regional level		
Liquid Milk	Fonterra, Synlait, Westland Milk, Oceania Dairy	Fonterra, Synlait, Westland Milk, Oceania Dairy	Fonterra, Synlait, Westland Milk, Oceania Dairy	Fonterra, Synlait, Westland Milk, Oceania Dairy			Manufacturers might be sensitive at a regional level
	Hilton Haulage	Hilton Haulage		LIC data	LIC data		
		KiwiRail	KiwiRail				
Dairy (manufactured)	Fonterra, Synlait, Westland Milk, Oceania Dairy	Fonterra, Synlait, Westland Milk, Oceania Dairy	Fonterra, (Synlait, Westland Milk?)	Fonterra, Synlait, Westland Milk, Oceania Dairy			
	KiwiRail	KiwiRail	KiwiRail				
Logs	Trucking operators	MPI		Wood availability forecasts	Wood availability forecasts		
		Statistics NZ		Statistics NZ	Statistics NZ		
				MPI	MPI		
Timber and panels		MPI					
		Statistics NZ					
Livestock	NAIT	NAIT	NAIT	Stats livestock data	Stats livestock data		
Meat	Meat processors	Meat processors	Meat processors	Meat processors			Hard to get meat processors to release data
	KiwiRail	KiwiRail	KiwiRail		Beef & Lamb		Likely to be too commercially sensitive for NAIT to release
Horticulture					Statistics NZ		
					Horticulture NZ		
					Pip Fruit NZ		
					Zespri		
Other Agriculture							
Wool				Statistics (livestock)			
				MPI landings data			
				Processors			
Coal	Bathurst	Bathurst			MBIE (P&M)		
		Solid Energy	Solid Energy				
		Birchfield Mining	Birchfield Mining				
		KiwiRail	KiwiRail				
	NFDS	NFDS	NFDS				
Petroleum	Distributors	Distributors	Distributors		NFDS		
		Coastal Oil Logistics Ltd: FIGS					
		Port data (Stats NZ ($))					
Aggregate	None	None	NFDS (no through traffic)		MBIE (P&M)		Assume short distance
Limestone, cement, concrete & fertiliser	Cement: Holcim, Golden Bay	Cement: Holcim, Golden Bay	Cement: Holcim, Golden Bay		Concrete - Statistics NZ		
	Fertiliser: Ballance; Ravensdown	Fertiliser: Ballance; Ravensdown	Fertiliser: Ballance; Ravensdown	Fertiliser -Statistics NZ	Limestone - P & M		
Steel & Aluminium		KiwiRail	KiwiRail		Steel. Aluminimum merchants		

Commodity	Direct Sources					Comments
					Scrap exports:Port data ($)	
Other manufactured goods, & nec	Transport firms	Transport firms	Transport firms			
Retail & Imported cars	Major retailers	Major retailers		Statistics NZ ($)		
				Major retailers		
Couriers & post	Transport firms	Transport firms	Transport firms			
Other minerals	Mine owners	Mine owners	Mine owners		MBIE P & M	Not much in Canterbury
	NFDS	NFDS	KiwiRail			
			NFDS			
Waste				Waste levy data (MfE)		
				TLAs?		
				Waste Companies		
Transport Mode						
Rail (by broad commodity groups)	KiwiRail	KiwiRail	KiwiRail			
	FIGS	FIGS	FIGS			
Rail (greater detail)	KiwiRail	KiwiRail	KiwiRail			
Road	NZTA	NZTA				
	TLAs	TLAs				
	eRUC ($)	eRUC ($)	eRUC ($)			
	Transport companies	Transport companies	Transport companies			
Coastal Shipping	Ports?	Ports?				
	Holcim	Holcim				
		Silver Fern Shipping				
		FIGS				
International Shipping		Ports?				
		FIGS				
		Statistics NZ ($)				
International Aviation		Statistics NZ ($)				
		MoT report (RP/MK)				
Domestic Aviation		Airports?				
		Air New Zealand?				

Appendix C Detailed Employment Figures

Source: Statistics New Zealand Business Demographics Database

Dataset: Employment by selected area and industry 2010 & 2015

Area	Hurunui District		Waimakariri District		Christchurch City		Canterbury Region	
Year	2010	2015	2010	2015	2010	2015	2010	2015
ANZSIC06								
Total Industry	3970	4520	10590	13650	184680	203360	253850	284110
A Agriculture, Forestry and Fishing	1580	1630	1040	1090	1620	1690	13660	15060
A01 Agriculture	1230	1260	810	850	1180	1280	10630	11700
A011 Nursery and Floriculture Production	..	6	50	65	280	300	660	570
A011100 Nursery Production (Under Cover)	..	0	9	12	130	160	160	180
A011200 Nursery Production (Outdoors)	..	..	15	..	75	50	350	210
A011300 Turf Growing	..	..	0	..	0	0	0	..
A011400 Floriculture Production (Under Cover)	0	0	..	..	65	90	100	130
A011500 Floriculture Production (Outdoors)	0	..	..	..	..	..	50	40
A012 Mushroom and Vegetable Growing	0	0	110	80	490	600	1050	1140
A012100 Mushroom Growing	..	..	..	0	..	..	250	480
A012200 Vegetable Growing (Under Cover)	0	..	65	65	140	70	240	180
A012300 Vegetable Growing (Outdoors)	0	0	50	15	110	85	560	480
A013 Fruit and Tree Nut Growing	220	230	35	18	85	40	600	640
A013100 Grape Growing	220	200	..	..	30	..	320	270
A013200 Kiwifruit Growing	0	0	..	0	0	0	0	..
A013300 Berry Fruit Growing	..	..	..	..	..	20	100	150
A013400 Apple and Pear Growing	..	..	20	..	..	..	55	70
A013500 Stone Fruit Growing	0	0	0	0	..	..	95	60
A013600 Citrus Fruit Growing	0	0	0	0	..	0	0	0
A013700 Olive Growing	0	0	..	..	0	..	..	9
A013900 Other Fruit and Tree Nut Growing	..	..	..	..	..	..	30	75
A014 Sheep, Beef Cattle and Grain Farming	520	520	140	140	210	210	3360	3310
A014100 Sheep Farming (Specialised)	260	220	25	25	40	50	1080	980
A014200 Beef Cattle Farming (Specialised)	45	55	45	65	18	35	400	610
A014300 Beef Cattle Feedlots (Specialised)	..	..	..	..	..	..	0	0
A014400 Sheep-Beef Cattle Farming	210	230	35	15	95	130	880	740
A014500 Grain-Sheep or Grain-Beef Cattle Farming	6	6	25	..	..	..	390	410
A014900 Other Grain Growing	..	..	9	25	60	..	610	580
A015900 Other Crop Growing n.e.c.	20	12	15	25	..	..	160	200
A016000 Dairy Cattle Farming	330	430	300	380	30	65	3860	5100
A017100 Poultry Farming (Meat)	0	..	55	40	12	6	120	130
A017200 Poultry Farming (Eggs)	..	..	..	30	..	0	75	60
A018000 Deer Farming	9	9	25	9	..	0	270	150
A019100 Horse Farming	..	0	6	3	40	35	110	80
A019200 Pig Farming	..	..	30	20	15	..	240	180
A019300 Beekeeping	..	..	..	25	..	6	75	120
A019900 Other Livestock Farming n.e.c.	..	0	0	..	9	..	50	40
A020100 Longline and Rack (Offshore) Aquaculture	..	..	..	..	..	..	..	..
A020200 Caged (Offshore) Aquaculture	..	..	..	..	0	..	..	..
A020300 Onshore Aquaculture	..	..	0	0	30	..	65	90
A030100 Forestry	..	9	..	3	6	35	50	65
A030200 Logging	30	45	85	60	25	35	160	190
A041100 Rock Lobster and Crab Potting	..	20	..	..	..	..	25	30
A041200 Prawn Fishing	..	..	..	..	0	..	0	..
A041300 Line Fishing	0	0	0	0	25	12	40	30
A041400 Fish Trawling, Seining and Netting	0	..	0	0	3	..	270	280

Dataset: Employment by selected area and industry 2010 & 2015

Area	Hurunui District		Waimakariri District		Christchurch City		Canterbury Region	
Year	2010	2015	2010	2015	2010	2015	2010	2015
A041900 Other Fishing	0	0	0	0	..	..	9	12
A042000 Hunting and Trapping	..	..	0	..	..	..	..	..
A051000 Forestry Support Services	..	..	30	20	45	30	120	110
A052200 Shearing Services	180	170	45	..	..	..	720	650
A052900 Other Agriculture and Fishing Support Services	110	110	70	120	300	260	1560	1860
B060 Coal Mining	..	..	..	..	..	..	200	130
B070 Oil and Gas Extraction	..	..	..	..	..	..	..	..
B080 Metal Ore Mining	..	..	..	..	..	30	25	30
B091100 Gravel and Sand Quarrying	..	..	..	..	80	120	110	170
B091900 Other Construction Material Mining	..	..	..	..	..	12	45	65
B099000 Other Non-Metallic Mineral Mining and Quarrying	..	..	..	..	0	..	..	..
C Manufacturing	250	320	1320	1610	24300	22920	34640	34860
D Electricity, Gas, Water and Waste Services	40	95	120	230	1040	1270	1670	2070
E Construction	160	330	1150	2500	10670	23710	15450	31710
F Wholesale Trade	100	130	430	400	11170	11520	13570	14310
G Retail Trade	210	240	1530	1830	20160	20700	27030	28700
H Accommodation and Food Services	500	560	880	900	13380	12800	18420	18450
I Transport, Postal and Warehousing	95	130	270	330	9040	9970	11760	12890
I461000 Road Freight Transport	60	100	120	200	1960	2560	3350	4220
I462100 Interurban and Rural Bus Transport	..	..	..	..	300	120	450	250
I462200 Urban Bus Transport (Including Tramway)	..	0	0	..	670	840	830	1020
I462300 Taxi and Other Road Transport	..	..	6	..	230	90	290	130
I471000 Rail Freight Transport	0	0	0	0	..	..	..	..
I472000 Rail Passenger Transport	..	..	..	..	..	..	..	..
I481000 Water Freight Transport	0	0	0	..	80	80	80	75
I482000 Water Passenger Transport	..	..	..	0	..	..	..	..
I490000 Air and Space Transport	..	..	..	..	1520	1800	1540	1830
I501000 Scenic and Sightseeing Transport	..	..	..	0	150	130	330	350
I502100 Pipeline Transport	..	..	..	..	..	..	..	..
I502900 Other Transport n.e.c.	0	..	6	15	45	140	55	180
I510100 Postal Services	9	6	40	30	670	750	910	900
I510200 Courier Pick-up and Delivery Services	..	..	..	..	390	460	470	540
I521100 Stevedoring Services	..	..	..	..	..	95	..	120
I521200 Port and Water Transport Terminal Operations	..	..	..	..	..	..	..	540
I521900 Other Water Transport Support Services	..	..	..	..	95	45	110	55
I529100 Customs Agency Services	0	0	0	..	40	25	45	25
I529200 Freight Forwarding Services	..	..	0	0	640	720	670	750
I529900 Other Transport Support Services n.e.c.	..	..	..	..	320	200	360	260
I530100 Grain Storage Services	..	..	..	..	0	0	..	..
I530900 Other Warehousing and Storage Services	..	0	..	9	520	520	700	700
J Information Media and Telecommunications	20	20	55	65	3850	2920	4530	3580
K Financial and Insurance Services	..	9	120	120	4490	4240	5280	4960
L Rental, Hiring and Real Estate Services	80	100	230	250	3120	3350	3990	4510
M Professional, Scientific and Technical Services	110	140	380	470	13070	17390	15970	20530
N Administrative and Support Services	35	25	210	340	9430	11990	10840	13970
O Public Administration and Safety	75	75	310	340	7910	8300	11730	12060
P Education and Training	280	300	1100	1350	15700	15120	21470	21470
Q Health Care and Social Assistance	200	200	770	990	24340	24660	29580	30590
R Arts and Recreation Services	110	130	210	260	3980	3610	4960	4950
S Other Services	100	95	450	560	7060	6930	8870	9020

Appendix D Tourism Data Sources

Core tourism data available from Statistics New Zealand

TSA	Tourism Satellite Accounts. Annual estimation of spending, employment and value-add pertaining to international and domestic tourism. Not available below national level but forms the core measure behind the MRTE. http://www.stats.govt.nz/browse_for_stats/industry_sectors/Tourism/tourism-satellite-account-info-releases.aspx
MRTE	Monthly Regional Tourism Estimates. Monthly estimation of spending, by product and by RTO or region, derived from card spending and calibrated to the TSA. Broken down by domestic and international. Released by MBIE. Not available below RTO/regional level. http://www.mbie.govt.nz/info-services/sectors-industries/tourism/tourism-research-data/monthly-regional-tourism-estimates Changes: estimation improvements recently have increased precision around the location and sector of spending and of domestic tourists and inferred total spend. Figures are not currently seasonally adjusted but MBIE may do so if sufficient demand is shown. Annual TLA figures are expected to be available soon. http://www.mbie.govt.nz/info-services/sectors-industries/tourism/tourism-research-data/monthly-regional-tourism-estimates/previous-regional-tourism-series/regional-tourism-indicators/documents-image-library/rti-review-final-recommendations.pdf
CAM	Commercial Accommodation Monitor. Monthly survey of arrivals and guest nights at commercial accommodation providers. Released at RTO and TLA level but data can be customised to preferred area unit, subject to confidentiality restrictions. http://www.stats.govt.nz/browse_for_stats/industry_sectors/accommodation.aspx
IVA	International Visitor Arrivals. Monthly count of international and domestic arrivals at New Zealand ports derived from Arrival cards and Custom records, broken down by country and state of residence (for 12 months), purpose of visit (Holiday, Visiting friends & relatives, Business, Education, Conferences & conventions), age and intended length of stay. http://www.stats.govt.nz/browse_for_stats/population/Migration/iva.aspx http://www.stats.govt.nz/browse_for_stats/population/Migration/provisional-international-travel-statistics.aspx Partial breakdown for Christchurch airport available through Infoshare. Other detail available as customised search. http://www.stats.govt.nz/infoshare/default.aspx Changes: survey methodology improvements from Aug-2016 have increased precision around country of residence and length of stay. http://datainfoplus.stats.govt.nz/Item/nz.govt.stats/f705ca38-ea6e-453f-b1d9-a95dc0fcaf59#/nz.govt.stats/ae0bef2b-f669-4867-aa16-7e890735349a#
IVS	International Visitor Survey. Survey of 8900 international visitors per annum at their point of departure and reported quarterly. Measures expenditure, places visited, activities/attractions, accommodation and transport. Changes: survey reduced in size and extended to Queenstown airport from 2013. http://www.mbie.govt.nz/info-services/sectors-industries/tourism/tourism-research-data/ivs/about-the-ivs/ivs-data-reliability
DTS	Domestic Travel Survey. Discontinued survey of 15,000 people per year on domestic trips, including accommodation, activities, spend, transport and places visited. Broken down by day-trips and overnight trips.

	Last released for year ending Dec 2012. The survey was costly and the inferences possible from the data were uncertain. Changes: a phone survey will provide updates soon. http://nzdotstat.stats.govt.nz/wbos/Index.aspx?DataSetCode=TABLECODE7573 http://www.mbie.govt.nz/info-services/sectors-industries/tourism/tourism-research-data/domestic-travel-survey/data-download

Other national datasets freely available

Dataset	Canterbury June year 2016 data
Annual Cruise ship arrivals and passenger numbers, actual and forecast. Cruise New Zealand http://cruisenewzealand.org.nz/data/#	Unique passengers= 137,900 (f)
Convention Activity Survey (CAS) MBIE Quarterly survey of more than 300 professional conferencing and meeting venues in New Zealand. Shows number of events and delegates by region. http://www.mbie.govt.nz/info-services/sectors-industries/tourism/tourism-research-data/other-research-and-reports/convention-research-programme/convention-activity-survey	Delegate days= 389,353
DOC track visitor counts. Detail unknown at this stage.	
Experience Monitor. Tourism New Zealand. Annual survey of international visitors. http://www.tourismnewzealand.com/markets-stats/research/infographics/visitor-experience/	
Regional Visitor Monitor. MBIE/TNZ. A customer feedback survey that ceased in 2011. http://www.mbie.govt.nz/info-services/sectors-industries/tourism/tourism-research-data/other-research-and-reports/regional-visitor-monitor	
Traffic counts at telemetry sites. NZTA Continuous count of vehicles at Continuous light vehicle count at SH1 Kaikoura, SH1 Dunsandel, SH1 Timaru, SH1 St Andrews, SH7 Lewis Pass, SH73 Springfield, SH74 Cranford St Christchurch and SH1 Waipara (WiM). Available daily in some sites but cannot break down below 'number of light vehicles', although does indicate seasonal and time of day patterns. https://www.nzta.govt.nz/traffic-and-travel-information/counting-the-traffic-on-the-state-highways/	

Other nationally datasets that are privately held

Dataset	Availability
Card spending. Marketview/Paymark. Source records of card payments through Paymark (card number known but no other personal details) are combined with a subset of personal details known for BNZ card holders to estimates of locational card spending by origin of card holder. http://www.marketview.co.nz/consultants/	Available for purchase on request from Marketview (several $000).

Dataset	Availability
Location of cell phones. Qrious/Spark. The Voyager dashboard provides monthly regional estimates of visitor arrivals, guest nights and average length of stay, broken down by Day trip vs Overnight Trips, and region/country of origin. Customised data is also available, including around visitors to an event. http://www.qrious.co.nz/	Regional data available by annual subscription (several $000). TLA data likely to also be available soon. Customised extractions can be purchased (e.g. data on event attendees for $13,000-plus).
Location of App users and/or rental van users. Geozone/THL. THL have two sources of locational and event data for tourists. The subsidiary Geozone records the location of users of the several forms of the CamperMate App. This is estimated to be used by 60-70% of international independent travellers. THL also has tablets in its fleet of rental camper vans that also enable tracking of locations, as well as incidents such as speeding or heavy braking. http://www.geozone.co.nz/welcome/index http://www.thlonline.com/AboutTHL/Pages/History.aspx	THL are researching the sale of these data at present. THL are willing to work with Canterbury organisations to pilot any data provision. Costs are expected to be recovered and will run into $000s and $10,000s, depending on exercise.
Resident Travel Survey. Roy Morgan. Website survey of 1000 people per month, asking about number of trips in the previous 4 weeks, plus length of any trips and purpose. Statistics New Zealand report concerns about the inferences possible from the dataset. http://www.stats.govt.nz/browse_for_stats/industry_sectors/Tourism/review-mbie-tourism-stats/dts-and-rts.aspx	Unavailable from MBIE. Potentially can be purchased from Roy Morgan.
Visitor Insights Programme (VIP) Angus & Associates. Survey of around 150 domestic and 150 international tourists per quarter in six regions (Auckland, Rotorua, Wellington, Christchurch, Lake Wanaka and Queenstown) i.e. 7200 surveys nationally p.a. Only those staying 1 or more nights. Subject to underrepresentation bias to those staying short-term and for business (i.e. less likely to be sampled). Extensive set of variables, including awareness, motivations, places visited, activities, events, transportation, other regions visited, satisfaction. By age, sex, country of origin and 8 market segments (Being there, Searching, Rewarding, Immersing, Making Do, Embracing Life, Creating, Aiming High). http://www.angusassociates.co.nz/what-we-do/visitor-insights-programme/	Available for purchase. Costing $10,000s per year.
Heavy vehicle journeys Beca/EROAD Beca hold the data from EROAD devices fitted to vehicles for RUC and non-RUC purposes. These are primarily heavy vehicles and includes an identifiable class for buses. The data includes GPS location every 200m and some event records such as heavy braking. The data is not a complete measure of bus journeys as many operators will not have an EROAD device. Also the data do not measure the number of passengers.	Can be purchased from Beca at standard charges. Subject to confidentiality constraints.

Dataset	Availability
No webpages were found on Beca or EROAD sites that reference this dataset.	

Potential destination statistics:

Location	Issues	Sources
Persons alighting ferry at Picton	Incomplete data unless collected from both operators. Unknown split between tourists and other travellers. However when combined with CIAL will give full record of people entering South Island daily.	KiwiRail, Bluebridge.
Visitors at major accommodation providers	Partial data only.	Directly from providers (eg. Mantra Group).
Visitors at key attractions	Potentially daily. Will be incomplete but will show seasonal trends and can be used to validate estimates for an area/region.	Directly from operators (eg. NewZealand Ski, Hanmer Springs, Whalewatch, ISites, International Antarctic Centre, Lake Tekapo Springs, TranzAlphine).
Visitors at key attractions by market segment	Possibly with breakdown by Inter/Dom and by market segment where visitors are surveyed.	As above.

Appendix E Accommodation Capacity

1. The Commercial Accommodation Monitor (CAM)

CAM for Combined Canterbury RTOs (Canterbury, Hurunui, Timaru and Mackenzie). As at June 2016.

Type	Number of establishments	Daily capacity (stay-units available)
Hotels	64	3,351
Motels/apartments	275	4,164
Backpackers	61	3,653
Holiday parks	57	6,759
Total Canterbury RTO	457	17,927

http://www.mbie.govt.nz/info-services/sectors-industries/tourism/tourism-research-data/commercial-accommodation-monitor/current-month-rto-reports

2. Hotels planned for Christchurch

New hotels likely to include:

- Distinction Hotels who will revamp the former Millennium hotel in the Square (previously 179 rooms).
- A new Crowne Plaza is being built in the old Forsyth Barr tower opposite the Convention Centre site (200 rooms).
- Another likely spot for new hotels is Armagh St east of Victoria Square, where developers including Philip Carter and Ben Gough have been landbanking.
- Others hotel groups, such as Quest and Sarin Group, have been holding off despite both showing interest in opening on Gloucester St. Sites with shelved hotel plans include the old Press and Warners sites.

http://www.stuff.co.nz/the-press/business/the-rebuild/81628140/Surge-of-new-hotels-expected-on-back-of-Christchurch-Convention-Centre-plan

and Colliers May 2016 Regional Hotel Market Analysis & Forecasting.

- "Record passenger growth at Christchurch Airport will see the airport company build a new Novotel hotel, 200-rooms and 4.5 stars, on campus by the main terminal, to open at the end of 2017"

http://www.christchurchairport.co.nz/en/about-us/media-centre/media-releases/2016/christchurch-airport-to-build-a-new-hotel-on-campus/)

3. Airbnb listings

New Zealand: >16,000 properties

Source: http://m.nzherald.co.nz/business/news/article.cfm?c_id=3&objectid=11702123

4. Holidayhouses.co.nz listings

New Zealand: 9718 properties (28,210 rooms)
CANT: 852 (2451 rooms)

Source: Table 5. MBIE (Aug 2016) Tourism Infrastructure. http://www.mbie.govt.nz/about/whats-happening/news/2016/tourism-infrastructure-report-released

5. Bookabach.co.nz (as at 31-Aug-2016)

New Zealand: 10,722 holiday rentals
North Island: 7,788
South Island: 2,933
Canterbury: 663

Source: https://www.bookabach.co.nz/baches-and-holiday-homes/search/locale/canterbury#

Appendix F Tourism Forecasts

1. MBIE New Zealand Forecasts

"MBIE prepares forecasts using best practice statistical models with a range of economic data as explanatory variables, and incorporate the industry knowledge advised by a technical moderation committee. The forecasts results are reviewed by the technical committee to moderate and ameliorate the forecast results. The forecast results cover New Zealand's eight key markets (Australia, China, UK, US, Japan, Germany, Canada, and Korea) and two fast growing markets (India and Indonesia), as well as the whole markets."

									GROWTH	
Year	2015	2016	2017	2018	2019	2020	2021	2022	Total	Annual[5]
Total spend ($m)[1]	9,698	10,539	11,734	12,507	13,395	14,273	15,162	16,048	65%	7.5%
Total visitors (000s)[2]	3,132	3,475	3,713	3,856	4,019	4,183	4,349	4,515	44%	5.4%
Total days (000s)[2]	61,144	68,694	73,587	76,525	79,867	83,346	86,764	90,257	48%	5.7%
Spend per day ($)[3]	189	194	199	203	207	210	214	217	14%	1.9%
Avg length of stay (days)[2]	20	20	20	20	20	20	20	20	2%	0.3%

1. International Visitor Survey, MBIE; 2. International Travel & Migration data, Statistics New Zealand; 3. Derived from International Visitor Survey; 5. Compound annual growth rate(2015-2022).

http://www.mbie.govt.nz/info-services/sectors-industries/tourism/tourism-research-data/international-tourism-forecasts

Also International forecasts from World Tourism Organisation at http://www2.unwto.org/content/data

2. CCT Canterbury Forecasts

	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	5yr growth
Guest Nights (000s) (CAM)								
International Guest Nights in Canterbury	1,821	2,050	2,255	2,412	2,557	2,685	2,819	770
		13.0%	10.0%	7.0%	6.0%	5.0%	5.0%	42.0%
Domestic Guest Nights in Canterbury	2,533	2,591	2,655	2,709	2,776	2,846	2,974	383
		2.2%	2.5%	2.0%	2.5%	2.5%	4.5%	15.0%
Total Nights in Canterbury	4,354	4,640	4,910	5,121	5,333	5,531	5,793	1,153
		6.6%	5.8%	4.3%	4.1%	3.7%	4.7%	25.0%
International Guest Nights in Christchurch	966	1,122	1,257	1,370	1,480	1,583	1,694	572
		16.0%	12.0%	9.0%	8.0%	7.0%	7.0%	51.0%
Domestic Guest Nights in Christchurch	1,312	1,322	1,355	1,389	1,431	1,474	1,547	225
		1.0%	2.5%	2.5%	3.0%	3.0%	5.0%	17.0%
Total Nights in Christchurch	2,278	2,444	2,612	2,759	2,910	3,057	3,241	797
		7.3%	6.9%	5.6%	5.5%	5.0%	6.0%	33.0%
International Visitor Arrivals(000s) (IVA) direct into Christchurch								
Australian Travellers	209	218	227	234	241	247	253	35
		4.4%	4.0%	3.0%	3.0%	2.5%	2.5%	17.0%
Long Haul Origin Travellers	202	220	235	252	267	283	297	77
		8.9%	7.0%	7.0%	6.0%	6.0%	5.0%	38.0%
Total	411	438	462	485	508	530	550	112
		6.6%	5.5%	5.0%	4.6%	4.3%	3.8%	27.0%

Source: CCT 2016/17 Business Plan

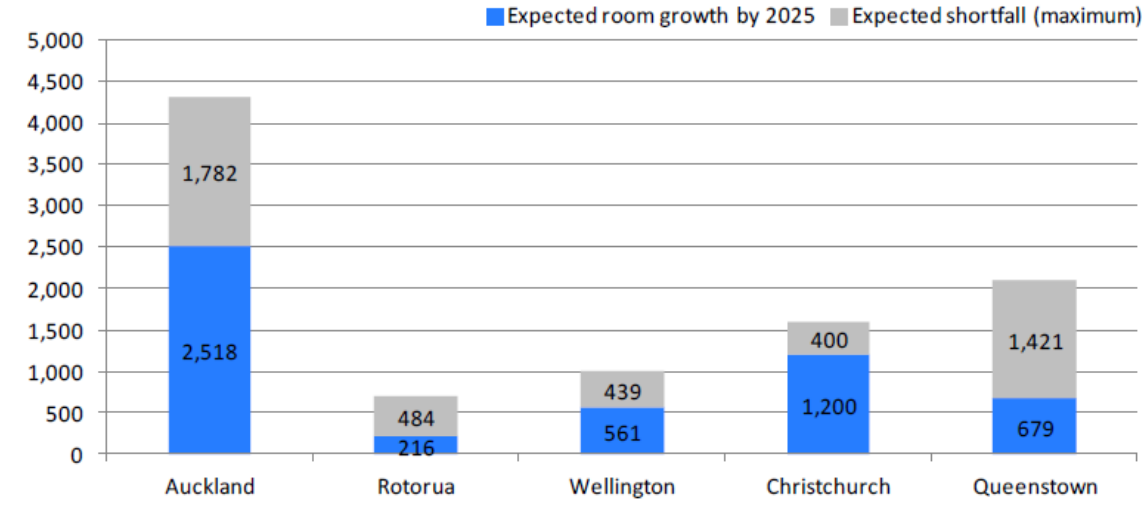
3. CIAL Christchurch Airport Forecasts

Updated forecasts not sought at this stage.

4. Fresh Info Christchurch Hotel Forecasts

"Hotel demand in Christchurch growth rate over next 10 years of 88% and an average annual growth rate of 6.5% per annum"

FIGURE 9 NEW HOTEL ROOMS REQUIRED BY 2025 IN THE FIVE FOCUS REGIONS
Source: Fresh Info Hotel Forecasting Model



Source: Colliers May 2016 Regional Hotel Market Analysis & Forecasting.

5. MBIE Regional Forecasts.

Planned. Not expected to be available until early 2017.

Appendix G Current Industry Strategies - Tourism

Strategy	Organisation
By 2025: $41b tourism (international and domestic) revenue (cf $32b Mar 2015/16) "Growing value faster than volume" Target for 1. Value 2. Productivity 3. Visitor Experience 4. Connectivity 5. backed by Insight Current emphasis: • reducing seasonality • increasing regional dispersal. New areas for emphasis: • capacity development and infrastructure • sustainability	Tourism Industry Aotearoa Tourism 2025. March 2014. Tourism 2025 - Two Years On. May 2016 http://tia.org.nz/advocacy/tia-projects/tourism-2025/
Numerous work-streams underway/planned around three challenges: 1. Attracting the right visitor mix • Improving visa settings/visitor facilitation (border agencies). • Strengthening international transport linkages (MOT). • Strengthening key international relationships eg, CNTA, TMM, Indonesian MOU (MBIE, MFAT). • Leading work on convention centre strategy and construction. • Augment TNZ's investment in the key growth markets of India and the USA (TNZ). • Maintain TNZ's focus on special interest, international business event and high-end premium travellers and growing shoulder season arrivals (TNZ). • Establish a dedicated Major Events prospecting function (MBIE). 2. Responding to visitor demand • Using the TGP to develop high-quality visitor experiences (MBIE). • Developing and disseminating China market research (MBIE). • Facilitating the smart use of ICT by the tourism sector (MBIE). • Developing a Landmarks brand (MCH, DOC). • Improving the operation of the China ADS scheme (TNZ, MBIE). • Lifting the success of Māori tourism (NZMT). • Continuing to implement the Tourism Data Domain Plan (eg tourism dashboard).	MBIE Tourism Strategy 2016 update http://www.mbie.govt.nz/info-services/sectors-industries/tourism/tourism-strategy http://www.mbie.govt.nz/info-services/sectors-industries/tourism/documents-image-library/folder-tourism-strategy/tourism-strategy-summary-2016.pdf

• Commission work to get a better picture of infrastructure demand and supply (MBIE). • Identify where opportunities for hotel investment lie and present these to potential investors in New Zealand and overseas (NZTE, TNZ, MBIE). • Pursue initiatives aimed at lifting the quality and effectiveness of tourism-related ICT and roading infrastructure (MBIE, MOT, the NZTA). • Increase the yield from visitors to public conservation land to enable better investment in the quality of their experience (DOC, MBIE). • Help the sector identify and address its labour and skills needs (MSD, MoE, TEC, MBIE). • Improve overseas driver safety (NZTA, MOT, TNZ). • Produce a 'New Zealand Tourism Insights' series of reports to support delivery of the tourism strategy (MBIE). • Undertake a review of the 2015/16 peak season. • Gain a better understanding of the long-term implications of projected visitor growth. • Review any sector-generated options for funding visitor-related infrastructure and amenities at a national and regional level. 3. Ensuring all regions benefit • Implementing the tourism-related aspects of the Regional Action Plans. • Enhance and extend the New Zealand Cycle Trail to continue encouraging visitor flows into the regions (MBIE, NZCT, the NZTA). • Establish a fund that helps communities and regions to realise their tourism potential by providing assistance to build facilities that enhance the visitor experience (MBIE). • Investigate taking a regional development approach to public conservation land (DOC, MBIE). • Review the use of regulatory levers to manage the impacts of freedom camping on the environment and local communities (DIA, TNZ, MBIE). • Prioritise TGP investment into initiatives outside main centres (MBIE). • Develop a framework to guide government's tourism-related investments in the regions.	
The Mayoral Forum's objectives for regional tourism are to: • grow tourism in the Canterbury region through advocating for the fast recovery of Christchurch as the primary gateway to the region and the wider South Island; and • support regional destinations in Canterbury to develop and promote their iconic visitor activities and landmarks. Action Plan:	Canterbury Mayoral Forum. Canterbury Visitor Strategy. A work programme of the Canterbury Regional Economic Development Strategy. April 2016.

Visitor infrastructure 1. Work with central government, Tourism New Zealand, Canterbury Development Corporation, Development Christchurch Ltd and Christchurch Airport to secure investment in tourism infrastructure. 2. Advocate with Kiwirail for: • maintenance and expansion of Scenic Journeys (TranzAlpine and Coastal Pacific) • railcar services (Christchurch-Dunedin) • access to main trunk line for excursion trains. 3. Work with Canterbury local authorities to encourage and promote provision of free wifi. 4. Investigate bulk purchase and installation of solar charging tables in selected Canterbury towns. Enhanced visitor experiences 5. Work with the Consul-General of the People's Republic of China to identify additional opportunities to enhance Chinese visitor experiences. 6. Work with Christchurch and Canterbury Tourism and economic development agencies to promote Chinese language and signage in museums, shops and cafés, particularly for Chinese New Year. 7. Encourage limousine services to consider expanding private driver services, including Chinese-speaking drivers. 8. Investigate opportunities to install signs (in English and Chinese) to welcome visitors to Canterbury towns – and encourage safe driving. 9. Investigate, develop and promote quality visitor experiences (paddock to plate) via farm visits, demonstrations of technology, farm stays, etc. across the region. 10. Encourage RTOs and DTOs to develop and market additional tourism products; e.g. a range of 'trails' (food and wine; wildlife; cycle trails, walking tracks, night sky). Support whole-of-region marketing. 11. Convene an annual forum of key stakeholders in the tourism/visitor sector. 12. Communicate that 'Christchurch is open for business.' 13. Encourage and support regional tourism marketing onshore and offshore (including marketing of international education); e.g. by attending and presenting at tourism conferences and meeting with trade delegations.	http://ecan.govt.nz/publications/General/CMF_Visitor-strategy_FINAL-2016-04.pdf
"Regain Christchurch's pre-earthquake share of the national visitor economy by 2025 to deliver $1billion of additional expenditure and 7,000 new jobs. This means growing domestic market share from 6.5% to 7% by 2025 and international market share from 8.4% to 12.1%." Actions: Get organised for success • Establish a joined up and sustainably funded entity to lead delivery of the actions and initiatives outlined in this strategy.	Christchurch City Council (2016). Christchurch visitor strategy – setting the direction. June 2016 (draft only). https://yourvoice.ccc.govt.nz/visitorstrategy/documents/37164/download

• Develop the Christchurch Story and ensure that it encapsulates Christchurch's culture, heritage, personality and competitive advantages. Enhance the visitor experience • Strongly advocate for rapid development of the Convention Centre, Avon River Precinct and Stadium, and scheduled delivery of other anchor projects. • Develop and test potential vision statements that will attract domestic and international visitors to Christchurch. • Work with private sector investors to plan and develop new visitor attractors that leverage the Christchurch Story. • Apply a visitor lens to all major rebuild projects to ensure that visitor needs are properly considered. • Build on provision of education and training to support growth in key inbound markets. • Continue to improve visitor satisfaction monitoring and develop more collaborative responses to issues. • Continue to improve delivery of high quality core services e.g. research, website, information, trade relationships, social media, strategic relationships with TNZ, New Zealand Major Events and Sport New Zealand. Target the right visitors at the right time • Work with the wider tourism industry to shift the proposition focus for international leisure visitors to South Island (via CHC). • Work with the export education sector to attract more students, enhance the student experience and increase friends and family visitation. • Partner with Tourism New Zealand to deliver international marketing campaigns that grow shoulder season demand. • Target international markets with which Christchurch Airport has, or is looking to establish, direct air services. • Work with Air New Zealand and other carriers to bring more international visitors to Christchurch through the domestic air network • Target the domestic market to grow shoulder and off-season demand. • Leverage the Canterbury region's winter sport attractions to grow off-season demand. • Continue to market Christchurch as a conference destination to grow shoulder and off-season demand. • Develop a business events strategy for Christchurch. • Develop a major events strategy for Christchurch. • Establish a ring-fenced fund to attract and leverage major events. • Develop an event evaluation framework to support informed and consistent decision making.	

• Partner with Sport New Zealand and Major Events New Zealand to attract major events. Strengthen gateway role • Continue to work with CIAL to grow international air capacity and connectivity. • Work with relevant stakeholders to maintain and grow Antarctica-related visitation. • Develop an Antarctic Industries Strategy to maximise the return to Christchurch from its gateway role. • Target gateway visitors to stay longer and spend more in Christchurch. • Work towards efficient and effective provision of cruise ship facilities. Connect with residents • Work with stakeholders, operators and residents to expand the local engagement programme. • Up-weight regional marketing initiatives to raise awareness of what Christchurch has to offer, increase demand during off-peak periods and leverage personal networks (social media and word-of-mouth).	
Under review.	Canterbury Development Corporation (2016). Review of Christchurch Economic Development Strategy.
Primary growth goals: • 2.3m Canterbury guest nights by 2018/19 (+29% in 5yrs). • 544,000 visitor arrivals to Christchurch (+32% in 5yrs). Strategic themes: 1. Recover the Australian Holiday Market. 2. Prepare our industry for the ongoing rise of Asian middle class travellers. 3. Improve online engagement with intending travellers. 4. Re-grow our international air connections. 5. Recover our share of the New Zealand conferencing market as infrastructure is restored. 6. Lead the implementation of Visitor Sector Recovery Plan. 7. Develop a new world class visitor centre in Christchurch. 8. Develop a stronger domestic tourism strategy that offsets the highly seasonal demand pattern of inbound tourism. 2016/17 Marketing Strategic Priorities: 1. Boost the economic outcomes and visitor satisfaction from the China holiday market. 2. Support the recovery of the holiday market through leveraging key TNZ and CIAL projects.	Christchurch and Canterbury Tourism (2014). CCT Five year plan – 2014. http://www.christchurchnz.com/media/814279/five_year_strategic_plan_2014.pdf Christchurch and Canterbury Tourism. Business Plan 2016/17. June 2016. http://www.christchurchconventions.com/media/2444402/business-plan-2016-17-final.pdf

3. Grow Canterbury's share of the domestic visitors through a strong domestic marketing strategy. 4. Improve online engagement with intending travellers. 5. Using Social Media as a more primary influencer	
Being refreshed. Includes "efforts to improve the visitor experience and increase the actual number of visitors is of strategic significance to the Canterbury economy". "An additional 1.3 million domestic and international visitor guest nights in Canterbury are forecast by 202017. Many of these will be self-drive visitors travelling in and around urban and rural parts of the region and into neighbouring regions. 15% of international visitors are known to self-drive during their visit to New Zealand."	Canterbury Regional Transport Committee (2015) Canterbury Land Transport Plan 2015. http://ecan.govt.nz/get-involved/working-groups/Pages/rt-committee.aspx Draft refresh of chapters 1-4. April 2016 http://ecan.govt.nz/publications/Council/rtc-agenda-290416.pdf
Real Growth 2025. "Re-build, Reclaim then Real Growth" Re-build (circa FY16-FY18) then Reclaim (FY19-FY25) then Real Growth. Includes "Focus on growing passenger numbers by working with the right partners and reclaiming Christchurch's position as both a primary destination and the main gateway to the South Island, CIAL will develop strategies and capabilities to stimulate passenger growth through expanded aeronautical services in the three key markets of: Domestic; Trans-Tasman; and Long Haul." "expects continued growth in passenger numbers in the next year, to be in a range of 6.6 - 6.7 million for FY17, with trans-Tasman airline capacity forecast to increase by around 15% and international long-haul capacity by around 20%."	Christchurch International Airport Ltd (2015), Destination 2025: A discussion paper. Statement of Intent. June 2016. http://www.christchurchairport.co.nz/media/753509/soi_to_30_june_2016__final__26_june_2015.pdf Media Release. September 2016. http://www.christchurchairport.co.nz/en/about-us/media-centre/media-releases/2016/christchurch-airport-sets-multiple-records-in-fy16/

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