AUCKLAND MANUKAU EASTERN TRANSPORT INITIATIVE

TRAVEL DEMAND MANAGEMENT FRAMEWORK

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Abstract:

Over the next 20 years, $1.5 billion of new transport infrastructure will be built in the Auckland Manukau Eastern Transport Initiative (AMETI) area. AMETI comprises six investigation, design and construction packages building new cycle and walkways; a rail station upgrade; a new urban busway; road capacity changes and safety improvements. To maximise the benefits of this new infrastructure, a Travel Demand Management (TDM) framework has been developed. This TDM framework will promote new sustainable travel options as they become available, raising awareness of accessibility to alternative modes and allowing Auckland to achieve efficient use of its new transport infrastructure.

The TDM Framework is influenced by the UK's Sustainable Travel Towns which deliver a holistic, community-focused set of TDM measures, considering and addressing the safety and accessibility of residents, students, and people visiting/commuting to, within and through an area. The AMETI TDM Framework has been tailored to the AMETI area and includes TDM measures to increase safety and accessibility to passenger transport, town centres, schools and to encourage greater passenger transport and active mode travel.

This paper will discuss the strategic context of the AMETI TDM Framework, its expected outcomes and will explain why holistic TDM packages are an essential part of new transport infrastructure projects.

INTRODUCTION

Over the next 20 years, the New Zealand government will invest $1.5 billion in new transport infrastructure in the Auckland Manukau Eastern Transport Initiative (AMETI) area to cater for forecasted growth, including new cycle and walkways; an upgraded rail station; an arterial busway and road capacity and safety improvements.

In July 2011, Opus was commissioned to develop a Travel Demand Management (TDM) Implementation Plan for the AMETI area, aligned with the AMETI construction and funding timeframes and identification of costs and implementation responsibilities. Essentially, the AMETI construction project will build the infrastructure and the TDM Implementation Plan will promote sustainable transport choices and catalyse positive travel behaviour change.

This area wide community-focused TDM Framework process alongside a transport infrastructure project is a first of its kind within New Zealand. The TDM Framework was influenced by successful implementation of area wide TDM programmes overseas, including the UK's Sustainable Travel Towns and Australian and American case studies, which deliver holistic, community-focused package of TDM measures.

Community-based TDM programmes are an important element of any transport infrastructure upgrade or development. The saying “build it and they will come” has been overtaken by the last decade’s advances in TDM that prove we get the most out of our transport assets when travel demand measures are also implemented.

This paper details the AMETI TDM Framework and Implementation Plan 2011 and describes the process undertaken to develop the Plan, including literature review findings, the development of mode share targets and the importance of developing area wide TDM programmes as part of transport infrastructure improvements. The AMETI TDM Framework’s expected outcomes and why holistic TDM packages are an essential part of new transport infrastructure projects is also explained.

This paper discusses the holistic AMETI TDM Framework and summarises the physical improvements implemented as part of AMETI, more detail on the physical pedestrian improvements is detailed in the conference paper Ross (2012).

AUCKLAND REGIONAL LAND TRANSPORT STRATEGY 2010-2040

The Regional Land Transport Strategy 2010-2040 (RLTS) defines TDM as:

> *“initiatives aimed at modifying travel behaviour in order to maximise the efficient use of transport systems…Such measures can avoid more costly expansion of the transport system by relieving the need to construct roads or provide more public transport”.*

While TDM is no longer at the forefront of transport planning policy and funding objectives it is still an important consideration of the RLTS, with implementing TDM and behaviour change programmes included as a strategic priority.

The RLTS includes the following behaviour change programmes:

- School, university, business and community travel plans;
- Reducing car use by understanding local needs;
- Investing in local improvements (e.g. through neighbourhood accessibility plans, cycle ways and footpaths); and
- Educating people about transport alternatives.

BENEFITS OF TRAVEL DEMAND MANAGEMENT

TDM emphasises the movement of people, rather than single occupancy vehicles, and gives priority to and promotes more efficient modes (i.e. walking, cycling, carpooling and passenger transport).

TDM is an important and effective catalyst to travel behaviour change, by promoting and offering the public increased travel choices. TDM covers tools and techniques ranging from land use planning to educating children on the benefits of walking to school. Examples of TDM measures include carpooling, flexible working, parking management, provision of cycling and walking facilities and land use policies that support intensive mixed use development.

TDM measures have a wide range of positive outcomes for staff, students and local communities and result in local and regional benefits. While reducing single occupancy vehicle mode share TDM can also deliver:

- Improved public health and safety;
- Increased use of public transport and carpooling;
- Greater use of physically active travel modes such as walking and cycling;
- Improved transport energy efficiency;
- Reduced peak period congestion; and
- Reduced greenhouse gas emissions.

These important safety, health and physical benefits are often overlooked in transport benefit cost assessments and therefore funding associated with TDM projects can be difficult to obtain.

IMPORTANCE OF TDM WITHIN TRANSPORTATION INFRASTRUCTURE PROJECTS

Traditionally road congestion problems have been addressed through road widening or new road construction and historically this new capacity has been quickly filled by induced demand and increased single occupancy vehicle mode share, further increasing traffic volumes on the road network, and resulting in another section of the road network requiring widening… and the cycle continues. However, land in New Zealand is a limited resource and it is not possible to build our way out of congestion.

Large roads built to cater for large volumes of single occupancy vehicles result in wide thoroughfares, which can be almost vacant during non-peak times, are inaccessible for pedestrians and cyclists, and segregate local communities.

Before new roads are built or existing roads widened it is vital that other measures are investigated first to optimise the existing road network, whether it be developing a TDM Framework, upgrades to pedestrian and cycling facilities or implementing a household marketing programme to increase and incentivise the local community's active mode and passenger transport travel options.

If new or widened roads are deemed vital to cater for future growth or safety then it is important that TDM measures within the wider area are investigated and implemented as an integral part of the project. This will ensure that we are efficiently using our new and existing transport infrastructure, that active mode and passenger transport infrastructure and facilities are considered throughout the project and that local communities are aware of their new travel options.

The results of the UK's Sustainable Travel Towns and the Australian, American and European community based travel programmes, as detailed in the following section, demonstrate the effectiveness of implementing community based TDM alongside transport infrastructure and service improvements.

LITERATURE REVIEW

As part of the development of the AMETI TDM Framework 2011 a literature review was undertaken to research best practice examples for area wide TDM including the "Sustainable Travel Towns" UK projects in Darlington, Peterborough and Worcester, and the SmartTrip and TravelSmart TDM marketing programmes in America and Australia.

In 2004, the Department for Transport selected Darlington, Peterborough and Worcester as Sustainable Travel Towns to measure and demonstrate the effectiveness of TDM initiatives in reducing car use. The Seattle Urban Mobility Plan (2008) details how the three Towns shared £10 million of funding between 2005 and 2008 to deliver walking, cycling, passenger transport, workplace and school travel planning and car-sharing programmes.

The Knowledge Sharing and Networking for Professionals & Academics Organisation notes that the UK Transport Minister Paul Clark said that the Sustainable Travel Towns "results are encouraging and show the real benefit of sustainable travel initiatives in reducing congestion, improving the local environment and encouraging healthier and safer lifestyles.

The TravelSmart programme is being implemented in Australia and is based on individualised marketing techniques to encourage people to reduce private vehicle travel in favour of more sustainable modes of walking, cycling, and public transport. Households receive a range of information and services, based on their interests to encourage them to try new methods of travel including local access guides, bus and train timetables and personal journey planners.

The TravelSmart Australia Programme inspired the Smart Trip programme in America which also incorporates individualised marketing. The programme delivers residents information on passenger transport, walking, cycling and carpooling and includes organised activities. The organised activities aim to encourage people out in their neighbourhoods or work places to discover how many trips they can easily, conveniently, and safely make without using a car.

The Portland Bureau of Transportation website details SmartTrips process and results which includes that the Bureau chooses an area with approximately 20,000 households each year to implement SmartTrips, at a cost of US$570,000. SmartTrips projects have resulted in a reduction of 9% to 14% in single occupancy vehicle trips (SOV) with a corresponding increase in walking, bicycling, and passenger transport mode shares.

The TDM programmes have been successfully implemented internationally receiving significant single occupancy vehicle reductions in the order of 7% to 14%, increases of walking and cycling of 8% to 75% and changes in passenger transport of -2% to 44%. Table 1 includes a summary of the case studies results as reported in Sustrans Research (2009), FCM Green Municipal Fund (2008), Portland State University (2008), Socialdata (2007), John, G. (2004) and Redlands Transport Plan (2003).

Table 1 : International Case Studies

Project	Result			
	Implementation Period before result survey	Reduction in SOV	Increase in Walking and Cycling	Increase in Passenger Transport
Sustainable Travel Town – Darlington, UK	5 years	9%	14%	-2%
Sustainable Travel Town – Peterborough, UK	5 years	9%	14%	35%
Sustainable Travel Town – Worcester, UK	5 years	7%	12%	20%
SmartTrip – Portland, OR, America	1 year	14%	-	44%
SmartTrip – Bellingham, WA, America	½ year	8%	13% cycling 35% walking	14%
TravelSmart – Brisbane North, Australia	½ year	13%	58% cycling 49% walking	22%
TravelSmart – Melville, Perth, Australia	4 years	13%	75% cycling 22% walking	11%
TravelSmart – Redlands, Brisbane, Australia	Information not available	11%	8% cycling 16% walking	33%

While the projects included in Table 1 show a decrease of up to 14% of single occupancy vehicles there were also case studies, such as in Adelaide (Australia) and Sacramento (America), which received no significant change as a result of the TDM measures. The lessons learnt from these case studies focused on improving the evaluation method rather than the TDM measures. However, the results still emphasised the importance of marketing and a co-ordinated approach to the implementation of the framework as a whole.

The research shows how vital individualised marketing measures are in the promotion of travel options within local communities and that within a short time frame significant vehicle reductions can be achieved. However, it was identified that a complete TDM Framework is more effective than independent measures or marketing programmes only. This is supported by Litman (1999) who states that TDM programs that address a broad range of trips are the most effective as TDM programs based only on persuasion tend to become less effective over time as participants' enthusiasm declines.

DEVELOPMENT OF AMETI TDM IMPLEMENTATION PLAN

Context - AMETI Construction Project

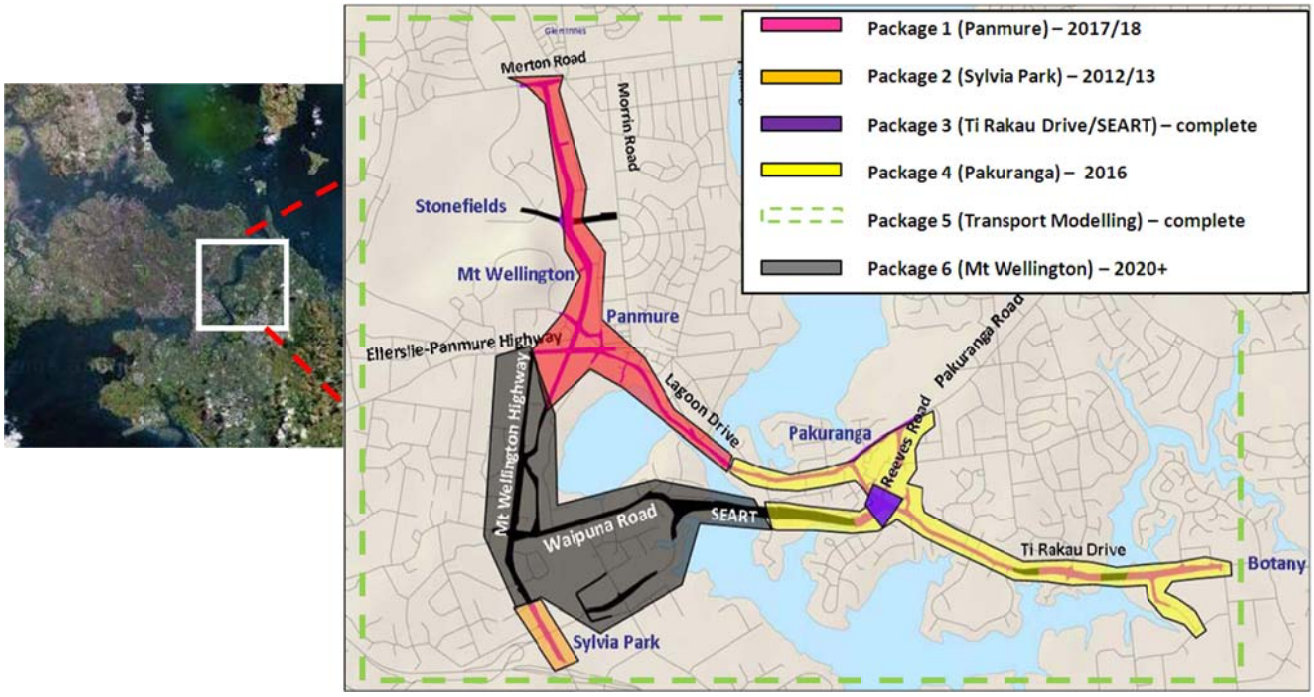
The population within the AMETI area is predicted within the Former Auckland Regional Council's APT model to increase from 28,900 in 2001 to 75,700 in 2041, and employment will increase from 29,950 in 2001 to 41,500 by 2041. Over the next 20 years, the New Zealand government will invest $1.5 billion in new transport infrastructure in the AMETI area to cater for this growth. This includes Auckland's first arterial busway, new cycle and walkways; upgraded rail station; and various road capacity and safety improvements (Collett et al 2011).

Figure 1 shows the location of AMETI within the Auckland Region.

The aims of the AMETI project are:

- To improve the efficiency of business and freight transport by road;
- To significantly increase the number of people travelling by bus and train;
- To enhance walking and cycling in the areas it serves; and
- To support the growth of industry and jobs and catalyse growth in business areas.

Figure 1: AMETI Location Map and Packages (Collett *et al* 2011)



AMETI is divided into six investigation, design and construction packages, as shown in Figure 1 and as follows:

- Package 1 – Panmure (scheduled for construction in 2012-2018)
  The development of AMETI Link Road, Panmure busway, Panmure roundabout redesign, upgrades to Panmure Station and the duplication of Panmure Bridge.
- Package 2 – Sylvia Park (scheduled for 2013 – 2014)
  The development of bus priority and bus station update serving Sylvia Park, including intersection upgrades and streetscape improvements.
- Package 3 – Pakuranga Interim Improvements (completed)
- Package 4 – Pakuranga (scheduled for construction in 2014 – 2023)
  The development of Rapid Transit Network (RTN) facilities along Te Rakau Drive, Quality Transit Network facilities between Pakuranga Town Centre and Lewis Road and intersection upgrades.
- Package 5 – Transportation Modelling (ongoing)
- Package 6 – Mount Wellington (scheduled for construction in 2025 – 2034)
  Intersection improvements along the South Eastern Arterial (SEART), widening of Mount Wellington Highway (Aranui Road to Triangle Road) and the duplication of Waipuna Bridge.

Travel Demand Management within AMETI

TDM has been considered throughout the development of AMETI and in 2006 Opus developed an AMETI TDM Sector Plan which concluded that AMETI should be treated as a special policy area for the implementation of TDM, and form the benchmark for area wide change in travel mode.

In 2008, UrbanTrans on behalf of ARTA developed the draft AMETI TDM Plan 2008-2016 which provided strategic priorities within AMETI.

In 2011, Opus was commissioned to undertake a review of the draft AMETI TDM Plan and develop an Implementation Plan aligned with the AMETI construction and funding programme. The review involved developing TDM initiatives, timelines, costs and implementation responsibilities for TDM programmes within the AMETI area.

AMETI TDM IMPLEMENTATION PLAN

The AMETI project will build the infrastructure and the TDM Implementation Plan will promote sustainable transport choices and catalyse positive travel behaviour changes by residents, students, workers, business owners and visitors in the area.

The AMETI TDM Framework was influenced by the Sustainable Travel Towns, SmartTrip and TravelSmart TDM programmes which involved holistic package of measures for a defined area and highlighted the importance of individualised marketing and communication programmes.

A key focus of the development of the AMETI TDM Framework was to ensure that the safety and accessibility of those commuting to, within and through the AMETI area were considered and addressed within a TDM programme. Along with improved safety and accessibility, individualised marketing of the new travel options as a result of AMETI construction, such as passenger transport and walking and cycling improvements, is an important outcome of the Implementation Plan.

Along with the literature review, the AMETI TDM Implementation Plan was developed with regular stakeholder workshops and the identification of goals and targets and resulted in a TDM Framework including eight TDM programmes. Once the programmes were endorsed they were tailored to the AMETI construction packages and timeframes. The resulting TDM Framework is described below.

TDM framework – goals and targets

The goals of the AMETI TDM Framework were developed with the project stakeholders and are to:

- Increase accessibility to Passenger Transport Networks within the AMETI area;
- Increase accessibility to, and surrounding, town centres, schools and work places within the AMETI area;
- Provide for a connected walking and cycling network within the AMETI area; and
- Promote the AMETI travel options and benefits.

In order to develop the AMETI TDM targets, the 2006 NZ Census mode split data for the AMETI area was used as a baseline for monitoring and evaluation. Low, medium and high targets were developed to determine a range of potential targets for the Framework.

Table 2 shows the mode shifts that could be applied to the Implementation Plan, compared to the 2006 census data for the AMETI area. It was recommended that the medium mode share target be included within the Implementation Plan as it is aligned with the Auckland Regional Land Transport Strategy 2010-2040 (RLTS) targets including an increase in passenger transport by 3%; and an increase of walking and cycling by 6% and is in line with international TDM mode shift results.

Table 2: AMETI TDM Targets – 2020

	Drove	Passenger in a Car, Truck, Van or Company Bus	Passenger Transport	Motor Cycle or Power Cycle	Walking / Cycling	Other
2006 Census Data	82%	6%	6%	0%	5%	1%
2020 Target - Low	78%	7%	7%	1%	6%	1%
2020 Target - Medium	69%	9%	9%	2%	10%	1%
2020 Target - High	63%	10%	11%	3%	12%	1%

In accordance with the baseline data, NZTA Statement of Intent 2011-2014 indicators and the RLTS targets, the AMETI TDM targets are to[1]:

- Increase in weekday passenger transport mode share for all trips (measured in trip legs) to 9% in 2020, from 6% in 2006;
- Increase in walking and cycling mode share in urban areas (measured in terms of trip legs) to 10% (2020), from 4% in 2006;
- Complete 80% of the AMETI cycle network by 2020 and 100% by 2040;
- Increase the perception of safety; and
- Increase the perception of accessibility.

There are a range of sources for baseline and monitoring data including baseline surveys undertaken as part of AMETI reporting, annual Auckland Transport regional passenger transport and cycle counts, TravelWise School and Workplace Travel Plans monitoring, New Zealand Census, Auckland Council Rimu Group Perceptions survey and the NZ Household survey.

TDM measures

The development of the TDM Framework's measures took into account the planned infrastructure developments, workplaces, town centres, schools and residents within the AMETI area. A focus of the development of the measures was safety, accessibility improvements, promotion, and ensuring all residents, students, and people visiting/commuting to, within and through an area were considered and their travel requirements were addressed.

Eight TDM programmes of measures were developed and are included within the AMETI TDM Framework to increase safety and accessibility to passenger transport, town centres and schools and to encourage greater passenger transport use and active mode travel within the area.

The programmes and goals are:

- Area-Wide Information & Communications;
  Goal: Use efficient information & communications media to provide a core level of service to all travellers within the AMETI area.
- Work-based travel programme;
  Goal: Engage employers and employees within employment clusters to deliver tailored transport programmes and workplace travel plans.
- School-based travel programme;
  Goal: Engage schools in area clusters to deliver tailored school travel plans.
- Household travel programme;
  Goal: Engage households in residential area clusters to deliver tailored transport marketing programmes.
- Town Centre programme;
  Goal: Develop comprehensive sustainable transport programmes within mixed-use town centres.
- Cycle and Walking programme;
  Goal: Design and construct a connected cycle and walking network within AMETI.
- Measurement and Evaluation; and
  Goal: Use measurement tools to evaluate effectiveness and refine approaches within the AMETI TDM implementation plan.
- Organisational.

[1] Note: These targets are likely to be altered to reflect mode change during peaks and to address walking and cycling targets independently

Goal: Develop coordinated implementation approach between Auckland Transport and key stakeholders.

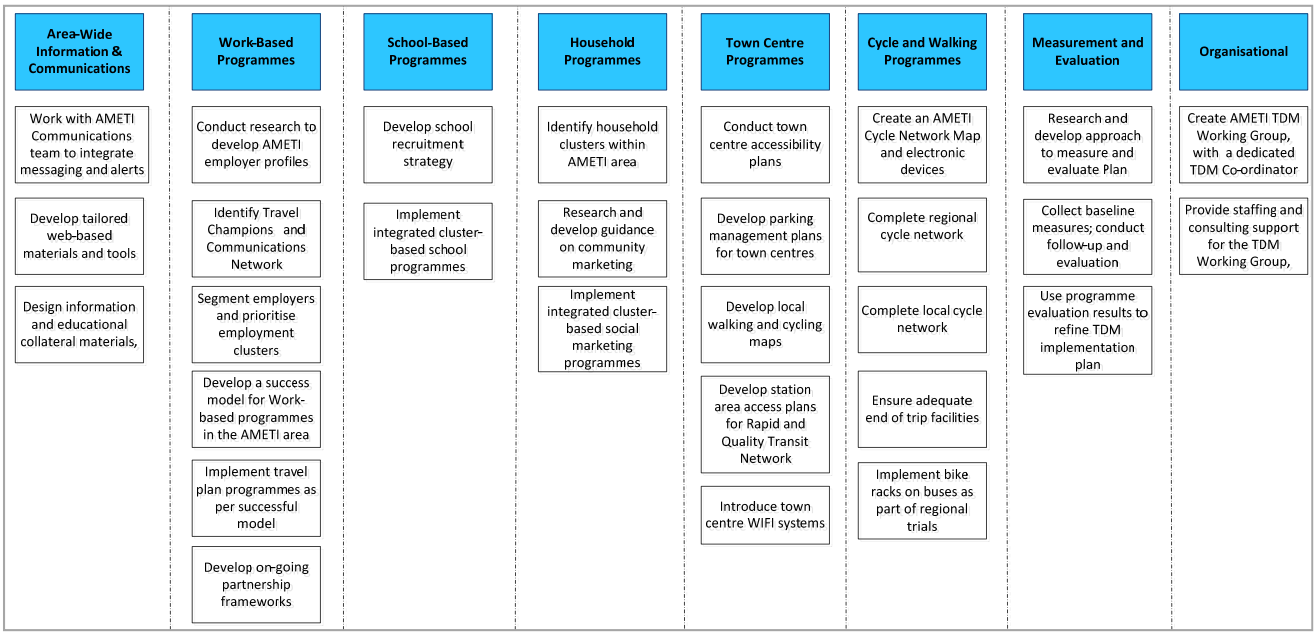
Each programme includes TDM measures/tasks, as shown in Figure 2 (programmes in bold with the measures below). For example, the household travel programme includes a task to implement household-based social marketing programmes around the AMETI infrastructure improvements, and providing tailored messages and materials for household clusters on travel options within the area. Each task is assigned to a task owner within the TDM implementation working group to ensure the measure is implemented.

The household and communications marketing programmes have the potential to be ground-breaking in New Zealand as they have not been implemented here before as part of a community based TDM Framework. They involve area wide household or community social marketing of travel options which could include the use of interactive apps, tailored travel information packs, and personnel travel planning.

The overall Framework will be co-ordinated, managed and monitored by a TDM Co-ordinator through regular meetings and discussions. The TDM Co-ordinator is vital to the effective and efficient implementation of the Plan. The co-ordinator will be the key connection between the AMETI construction and communications teams and the Auckland Transport work groups that are implementing the TDM programmes.

Walking and cycling infrastructure improvements are included as part of the AMETI infrastructure project[2]. Within the AMETI TDM Framework, increased walking and cycling accessibility is not just isolated to the Cycle and Walking Programme but is an element of all of the programmes. For example, within the Town Centre Programme walking and cycling accessibility investigations, infrastructure upgrades and area maps will be developed.

Figure 2: Programmes and Measures Summary Diagram



[2] Refer to Conference Paper: Ross, D., 2012 for more detailed information on the physical pedestrian improvements that are being implemented as part of the AMETI project

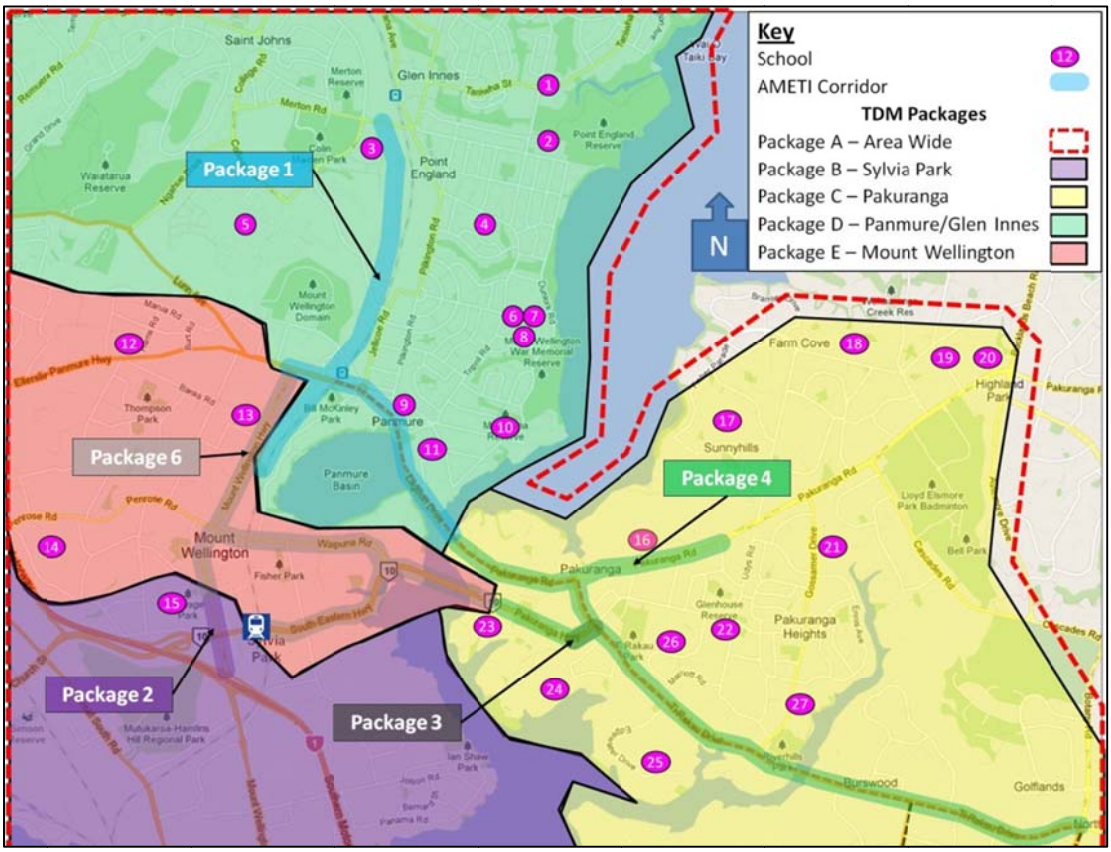
AMETI packages

Once the programmes were developed they were tailored to the AMETI construction packages. The TDM and construction packages are shown in Figure 3.

Four TDM packages were developed and aligned with AMETI construction packages along with schools, households, work places and infrastructure within the TDM package area. For example the Mount Wellington package is aligned to Package 6 – Mount Wellington and does not include a Town Centre Programmes as the area covered by Package 6 does have a town centre.

A combined area wide package was developed to cover the wider AMETI area and the programme is consistent with each of the packages, including the organisational, monitoring, and evaluation of the Framework.

Figure 3: AMETI TDM Packages[3]



AMETI TDM Package		AMETI Construction Package
A	Area Wide Package	
B	Sylvia Park	Sylvia Park Package
C	Pakuranga/ Botany	Pakuranga Package
D	Panmure / Glen Innes	Panmure Package
E	Mount Wellington	Mount Wellington Package

[3] AMETI Construction Packages 3 and 5 are complete so are not connected to TDM Packages

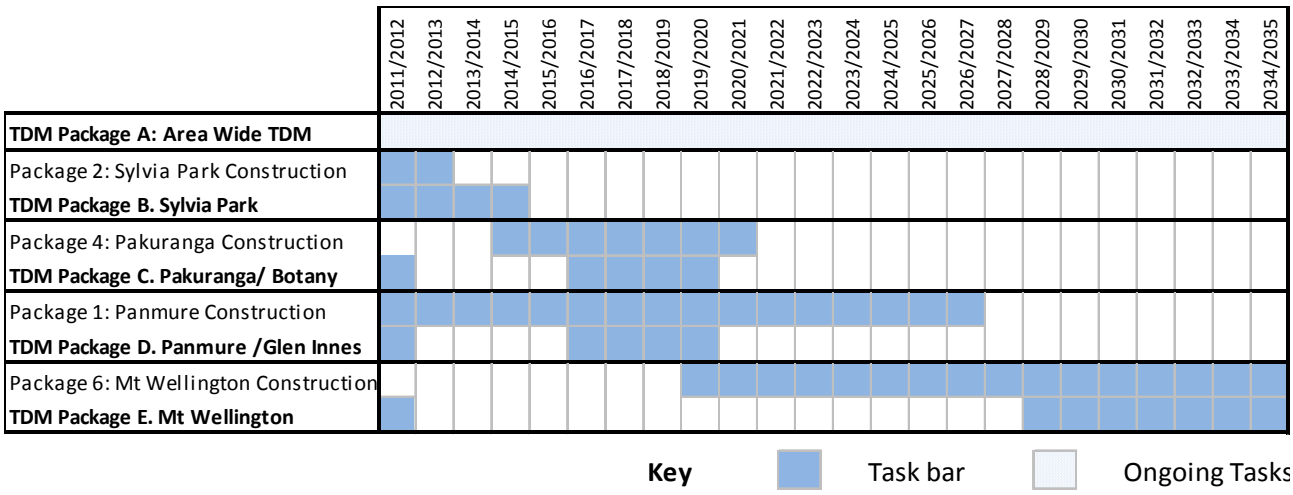
TDM programme

An important component of successfully implementing the AMETI TDM measures is timing, ensuring that the TDM measures are implemented in line with construction improvements, that funding applications are completed and that the TDM marketing measures are promoting the improvements to travel options as they are implemented. Therefore, the Framework was aligned with the AMETI construction programme, as shown in Figure 4.

As the Package 2 construction is planned for 2011/12 - 2012/13 the Sylvia Park TDM package is prioritised first for TDM funding applications and implementation followed by the Panmure and Pakuranga packages. The Mount Wellington TDM package is the final scheduled package as construction of Package 6 is not anticipated to be underway until after 2021.

Area wide communications, co-ordination and monitoring of the TDM improvements will be implemented throughout the entire project. The AMETI TDM Framework involves continuous actions over a long period of time so continuous review and revision will ensure the Framework reflects current and best practice TDM methods and technology.

Figure 4: AMETI Construction and AMETI TDM Packages – Summary Programme[4]



NEXT STEPS FOR TDM IMPLEMENTATION PLAN

The AMETI TDM Implementation Plan paves the way for funding, marketing, monitoring and implementing the TDM programmes within the Framework for the AMETI packages.

The next steps for the AMETI TDM Implementation Plan includes implementing the Sylvia Park TDM package and Area Wide TDM Package, which involves appointing a TDM Co-ordinator and documenting baseline data for the entire AMETI area monitoring.

FUTURE TDM VISION FOR AMETI

After the successful implementation of TDM within AMETI the area will be more accessible for pedestrians, cyclists and passenger transport users and the local community will be more aware of their travel options. This in turn will result in reduced single occupancy vehicle trips and an increase in active and passenger transport mode share. The local community and workers within the area will also be safer, happier and healthier because connectivity and walkability will be improved between local destinations, including businesses, shops and passenger transport.

[4] Developed based on the Draft AMETI 2011 construction programme

In 2018, AMETI construction within Sylvia Park and Pakuranga will be finished with construction underway for the Panmure Phase. The majority of the AMETI TDM will also be completed with work based, household, school safety and marketing programmes trialled and implemented in Sylvia Park and begun in Pakuranga / Botany and Panmure. Town centre accessibility plans would have been developed for all centres with recommended construction upgrades completed for Glen Innes and underway for Panmure and Pakuranga. Local area walking and cycling maps will also have been completed.

By 2025, the Reeves Road flyover in Pakuranga and the Panmure Quarry Link Road will be complete. The TDM Framework regular monitoring will have collected data and the Plan updated to reflect current best practice, technology and conditions. The TDM programmes will have been implemented in Pakuranga and Botany.

By 2035, Mount Wellington Highway and Waipuna Road upgrades will be completed and the TDM tasks within the Mount Wellington package will have been implemented, accessibility to major passenger transport stations and town centres will have been improved and promoted and an area wide AMETI cycle and walking map will have been produced.

CONCLUSIONS

Community based TDM programmes are an important element of any transport infrastructure upgrade or development. The results of the UK's Sustainable Travel Towns and the Australian and American community based travel programmes demonstrate the effectiveness of this approach.

During the research and development of the AMETI TDM Implementation Plan it was identified that a complete TDM Framework as a package of measures is more effective than just independent measures and that individualised marketing techniques are essential in the promotion of travel choices within local communities.

The AMETI TDM Implementation Plan includes a TDM Framework with an individualised marketing programme and community-focused set of TDM measures which promote and encourage the efficient use of the new AMETI passenger transport and walking and cycling infrastructure.

The Framework includes TDM measures to increase safety and accessibility to passenger transport, town centres, schools and to encourage greater passenger transport and active mode travel.

With the continuous implementation of the Framework and regular monitoring and revision the AMETI TDM Plan has the potential to significantly reduce single occupancy vehicle trips, increase active and passenger transport mode share and result in increased accessibility and the local community being safer, happier and healthier.

Implementing TDM measures alongside new transport infrastructure allows us to make the most of new and existing transport infrastructure and services, maximising the benefits these bring to the local community and those travelling through the area.

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