

PLANNING INNOVATION: UNIVERSITY OF CANTERBURY EARTHQUAKE RESPONSE

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ABSTRACT

The 22 February 2011 earthquake occurred on the second day of the university year. The immediate response involved closing down the campus and then undertaking a progressive re-start of campus activities over a number of weeks as temporary structures became available and buildings were checked and re-opened. During this period the main car parking areas at the University of Canterbury's Ilam campus were used to place temporary structures to accommodate teaching facilities.

Abley Transportation Consultants were commissioned to assist with developing the shuttle service route, timetable and operating hours to co-ordinate with lecture timetables and liaising with a service operator on contractual arrangements and day-to-day issues. The shuttle service was initially set up as a 'park and ride' type service to get students from a remote car parking area to the main campus. Subsequently, the service also assisted students travelling from Ilam to the Dovedale campus as lectures were temporarily relocated there. The shuttle service was reviewed each week and modifications were made based on revised teaching timetables and shuttle service patronage data. Parking patterns were modified around the university, in particular on-street parking, and was compared with similar data collected in 2008.

This paper will interest those involved in public transport design, travel demand management and the opportunities that 'change moments' provide.

Note: The figures shown within this report have been produced in colour.
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INTRODUCTION

The devastating 22 February 2011 earthquake occurred on the second day of the university year. The immediate response involved closing down the University of Canterbury (UC) campus and then undertaking a progressive re-start of campus activities over a number of weeks as temporary structures became available and buildings were checked and re-opened. The progressive re-start required a co-ordinated response to travel in the months following the earthquake.

On March 14, 2011, thirteen days following the earthquake, UC courses began progressively restarting each week, some off-campus and many in temporary lecture theatres erected in UC's main car parks. Student car parking on campus was severely reduced and none was available on the Clyde Precinct (Ilam Campus) during the first university term.

As a result of the earthquake and its after effects, student numbers decreased to 14,500 enrolments. This was a loss of approximately 1,400 students that decided not to enrol at UC or transferred to another university. This resulted in a 10% decline of students (University of Canterbury, 2011).

Context

The locations of UC's two main campuses are shown in **Figure 1**. The Ilam Campus is the main campus and the Dovedale Campus is the former Christchurch College of Education Campus that was amalgamated with UC in 2007. A pedestrian link connects the campuses through Ilam Fields.

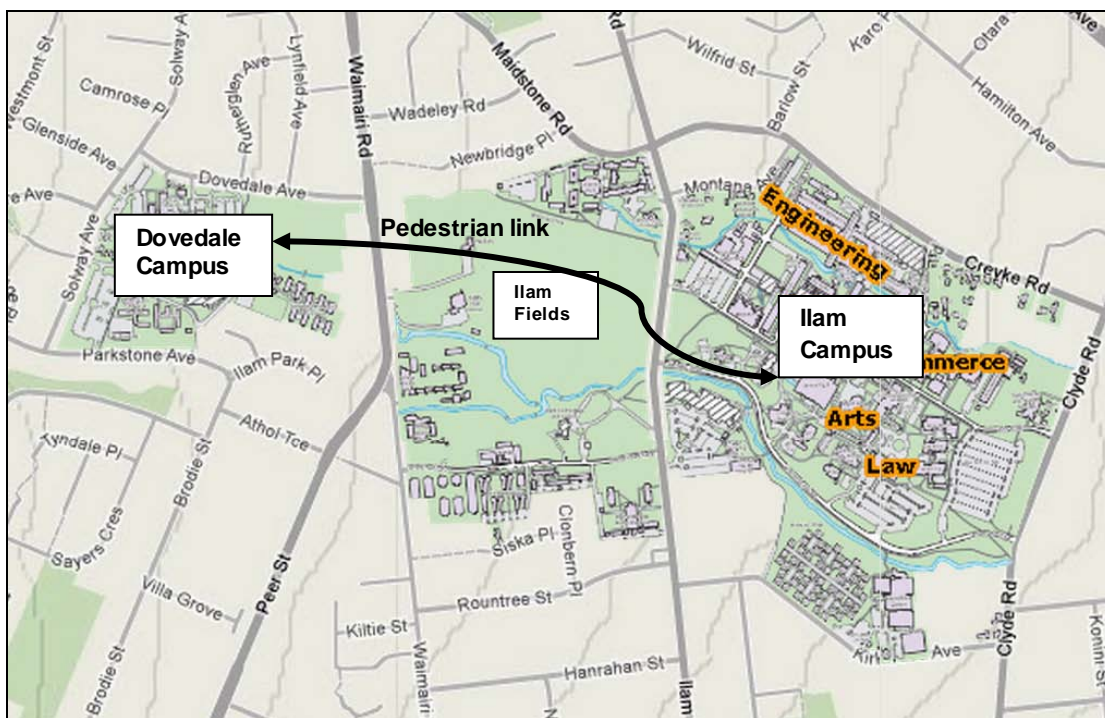


Figure 1: Map showing the University of Canterbury's Ilam and Dovedale campuses

TRANSPORT ISSUES

Following the February earthquake, UC had limited teaching and office space due to buildings suffering damage and either requiring repairs or demolition. For example, UC's 'Engineering Mushroom' building which is a well remembered building by past UC students, (shown in **Figure 2**) has since been demolished.



Figure 2: UC's 'Engineering Mushroom' Lecture Theatre

The University's remedy for the loss of essential teaching areas on campus was to erect temporary teaching marquees in the main car parks. For example, the Arts car park (shown in **Figure 3**) which usually provides 600 car parking spaces was replaced with marquees used to hold lectures.



Figure 3: Temporary teaching spaces located on UC's Arts car park

Together with the loss of car parking spaces was the problem of a reduction in regular bus services between UC and wider Christchurch (as a result of the central city bus exchange being closed, longer travel times and other logistical issues).

ACTIONS

The short timeframe between the initial project briefing ten days after the February Earthquake and three days before the University's restart, forced prompt and pragmatic decisions to be made regarding the main transportation issues. This required a rapid approach compared to most transportation planning projects that can take many weeks, months or even years. As such, rapid conceptual designs of proposals were made on the fly and necessitated weekend, evening and even all night working.

Initial consultation with key individuals yielded many ideas and the most apparent solution was to arrange a Park and Ride system to transfer students to lectures at the Ilam Campus. Initially, it was proposed that a temporary car park could be constructed on Ilam Fields, a large sports ground, that is located between the Ilam and Dovedale Campuses (Figure 1). However this option was soon discarded because it would not be able to be implemented in the short timeframes. A sketch of this concept is shown in **Figure 4**.

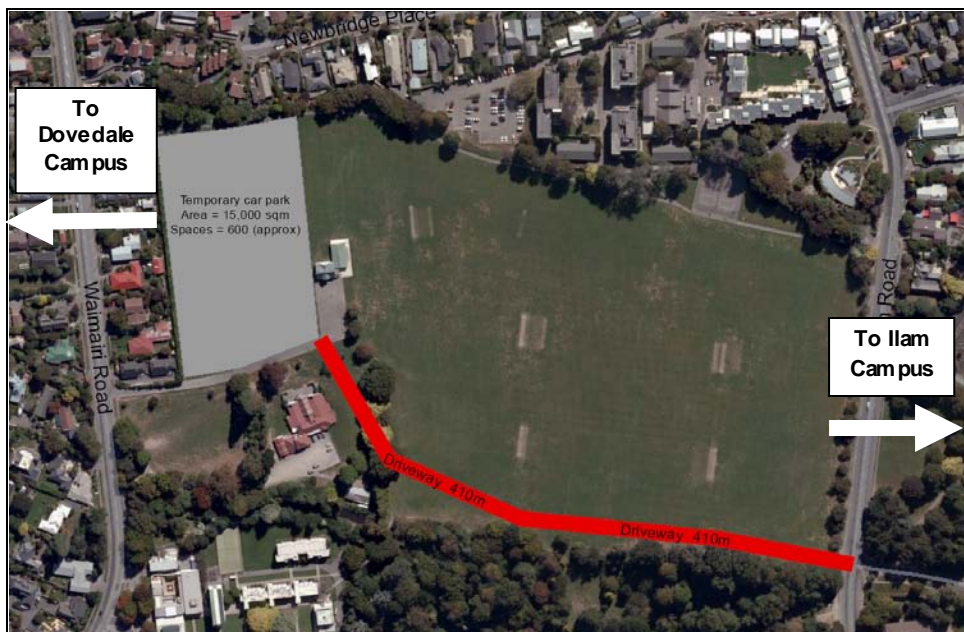


Figure 4: Concept design for new car park and driveway on Ilam Fields

The final agreed concept was a Park and Ride system between the Dovedale Campuses making use of the previously under-utilised Dovedale Campus car parking areas. This option could be implemented in a very short timeframe because no new infrastructure works were required.

The first step in the planning process of the shuttle service was analysing the most suitable pick up and drop off locations because this would dictate the potential shuttle route. The most appropriate terminus locations were determined as the Dovedale Campus car park and outside the Forestry Block on the Ilam campus. It also made sense to include two intermediate stops, one at the Ilam Village student accommodation and another at the University Hall student accommodation. Secondly, the actual route needed to be planned.

To ensure only minimal delays for students using the service a one-way loop system was proposed. This one-way system ensured that right turns did not need to be undertaken at any of the major intersections on the route. Finally, the timing of stops was calculated based on dummy runs of the route which were undertaken on the Sunday and on the day prior to the service becoming operational.

The restart programme for the University involved staggering the reintroduction of courses to the University. This staggered start meant the numbers of lectures held and the numbers of students on campus progressively increased over the following weeks and months.

During Week 1 approximately 150 lectures were held on the Ilam Campus. As mentioned, teaching was held in temporary marquees on the Arts and Law car parks and no lectures were held at the Dovedale precinct. Accordingly very limited parking was available for staff and students and the decision was taken by UC to refund parking permits for the first half semester.

On the first day of shuttle services, two shuttles operated with two more on standby if demand necessitated their use. An initial low uptake led to maintaining two shuttles on the route between Dovedale and Ilam on an hourly frequency. The main focus during the first week was simply transferring students from the Dovedale car park to the temporary marquees at Clyde and back after lectures. The planned shuttle service timetable was published on the UC website and copies were printed for handing out to students. The map including the timetable is shown in **Figure 5**.

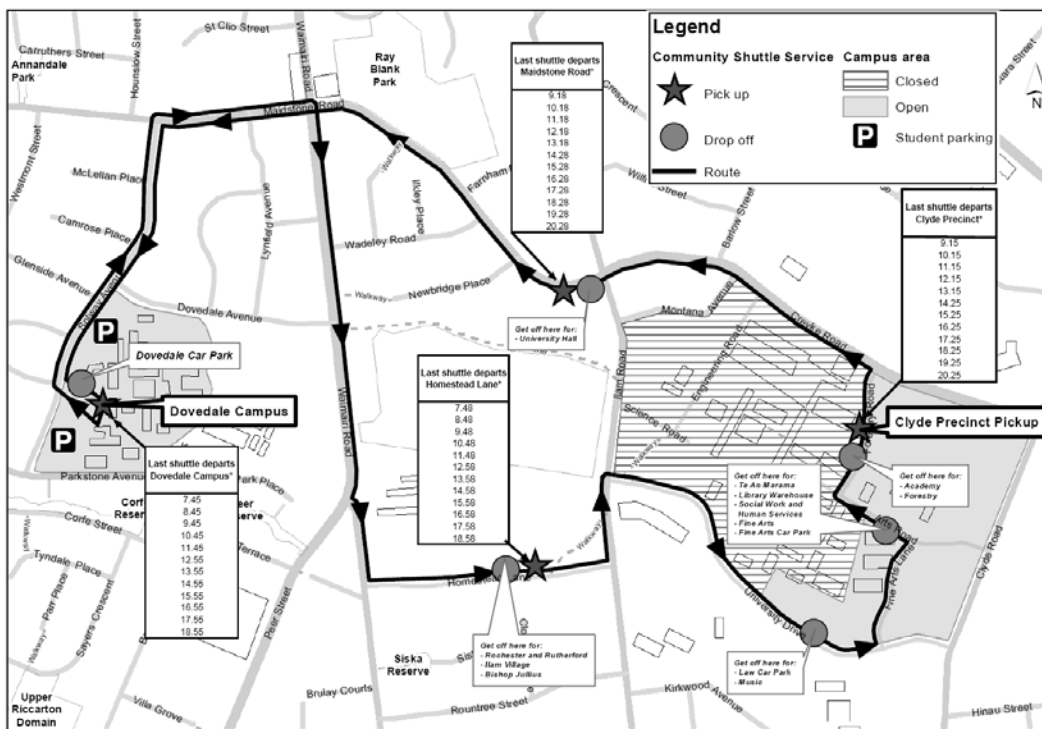


Figure 5: Map of shuttle service operating with hourly frequencies – Week 1

A photo of the shuttle service operating during the first week is shown in **Figure 6**.



Figure 6: Photo of shuttle service in action

In Week 2 lectures increased to 690 on campus although many courses were still off campus including those of the Engineering School (the largest school being taught off site). Dovedale Campus lecture spaces also opened. The shuttle service responded to the changed travel patterns and the two shuttles were retained, but scheduled at 15 minutes and 5 minutes prior to the start of lectures, to allow students to travel between campuses.

In Week 3 the Science car park (200 spaces) was made available for staff and the Students' Association car park was also opened (270 spaces). An on-street parking occupancy survey was also undertaken to better understand changes in car park demand. The results of the survey are shown in **Figure 7** and reveal occupancies were similar to 2008 levels except for Creyke Road that is located immediately outside the entrance to the University. This area experienced much higher parking demand with many cars parking informally on grass verges. In response, the grass verges were coned off to restrict informal parking.

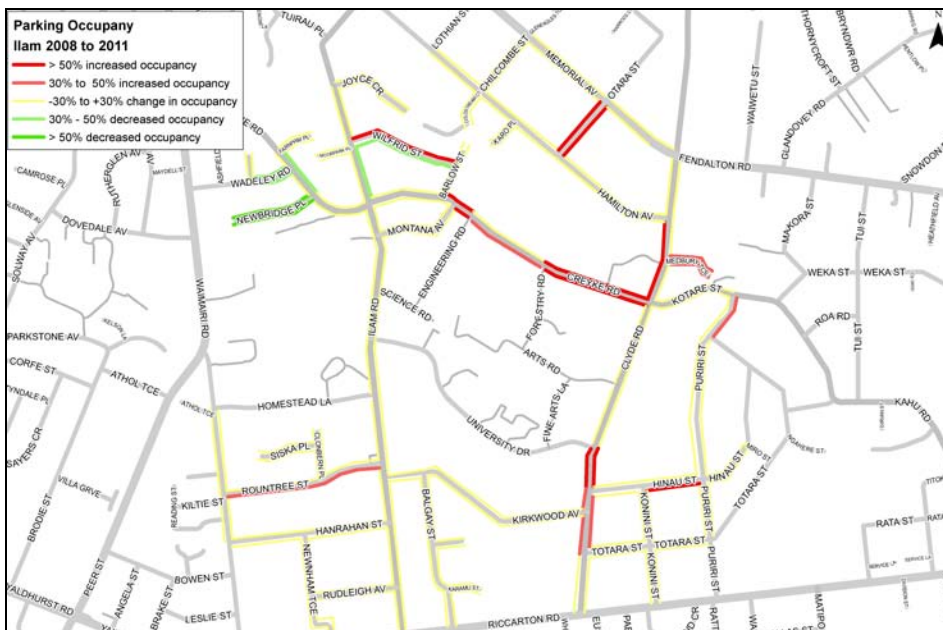


Figure 7: Ilam Campus Change in on-street parking occupancy 2008 to 2011 (post quake)

In week 4 many courses had moved back on campus including some engineering courses and approximately 1,500 lectures were operating for the week. The shuttle service frequency was again modified to operate at 10 minute intervals to provide a higher level of service for students. A third shuttle operating during main teaching hours (9am to 5pm) was added to achieve these 10 minute frequencies. An updated map of the shuttle service (after much iteration) is shown in **Figure 8**.

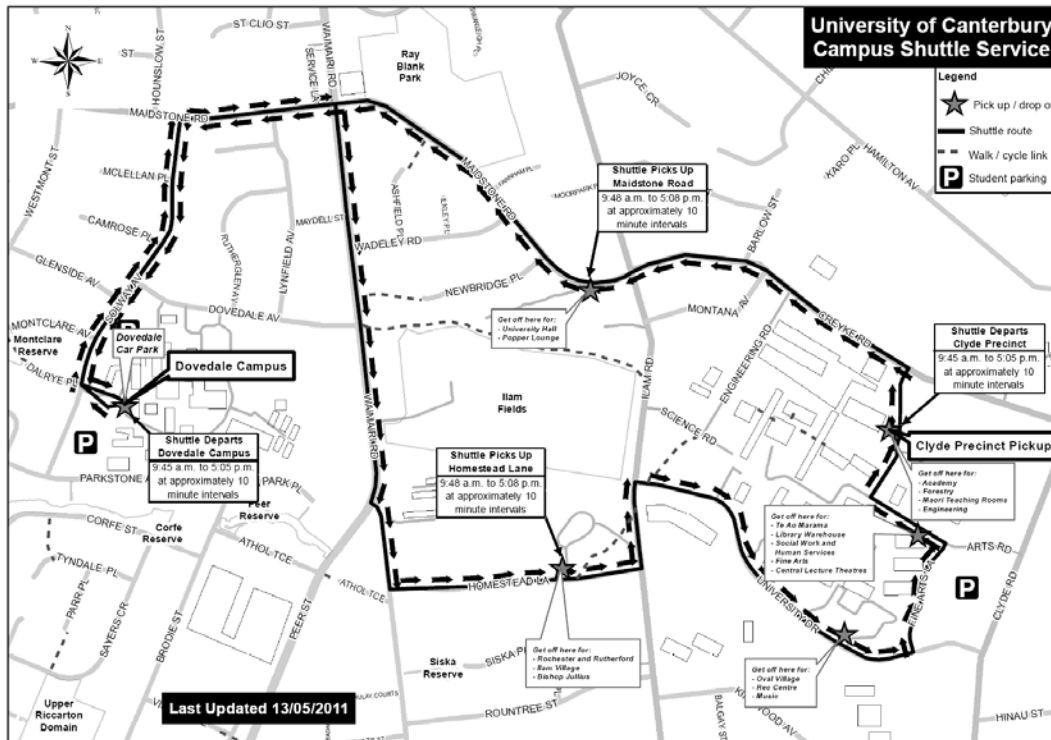


Figure 8: Map of shuttle service operating with 10 minute frequency – Week 5

RESULTS AND MONITORING

In order to monitor the performance of the shuttle service the contracted shuttle service operator (Canterbury Leisure Tours) recorded the number of passengers picked up at each location on the route. This data is shown in **Figure 9** and proved highly valuable for use in forecasting the demand for the shuttle service as the number and location of lectures increased, and students returned to campus.

It can be seen in **Figure 9**, there was an initial steep increase in patronage however in week 3 when a significant number of courses were held on campus there was only a slight increase in patronage. Increasing the frequency however, from two shuttles per hour to one shuttle every 10 minutes, appears to have significantly increased the demand for shuttle service and consequently patronage too increased.

The highest daily patronage of 457 passengers occurred in week 6. A survey of students found that almost half of shuttle users were 'ride only' i.e. travelling between Dovedale and Ilam Campuses and the other half were using the shuttle as a 'Park and Ride' service from Dovedale car park.

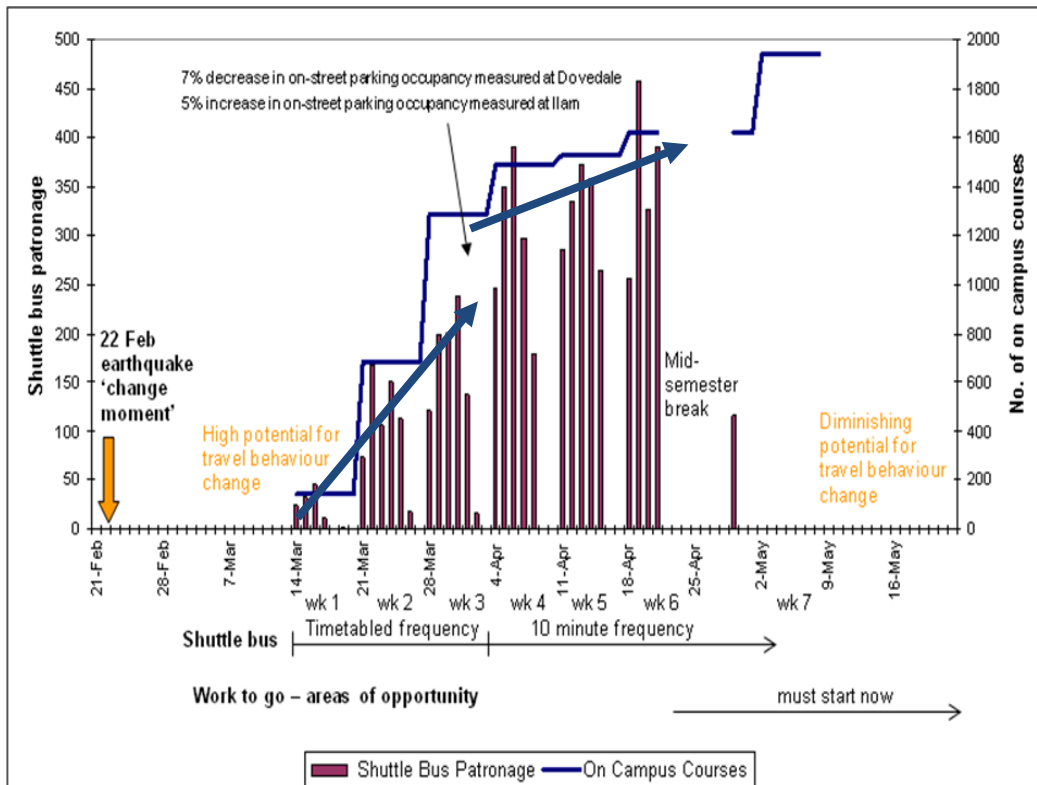


Figure 9: Summary of shuttle service patronage

CONCLUSIONS

The project involved developing a shuttle service route, timetable and operating hours to co-ordinate with lecture timetables and liaising with a service operator on contractual arrangements and day-to-day issues.

The shuttle service operated between Dovedale and Clyde Precincts from 14 March 2011 to 22 April 2011 to provide easy access for students between the available car parking and teaching areas. The shuttle service initially provided a park and ride service from the Dovedale Campus car parks to the Ilam Campus for students. Subsequently, as teaching spaces re-opened at the Dovedale Campus, more students started using the shuttle to travel between lectures at the two precincts.

Up-to-date travel options were communicated frequently on the UC website.

The on-street parking was monitored and the parking ‘chaos’ that was expected because of the lack of parking at the Ilam Campus was able to be averted. Consequently on-street parking demand was generally maintained at pre-earthquake levels except for a few locations where parking demand was significantly higher.

The February earthquake handed UC a huge opportunity to make a step change in its transport and parking issues. Initially, the immediate transport needs of staff and students needed to be addressed. The earthquake resulted in a ‘change moment’ where many staff and students changed their usual travel routines. This gave the university a chance to capitalise on the ‘change moment’ and work more quickly towards the aims the university had for transport and parking rather than falling back to the status quo. UC have since been considering the implementation of a fairer ‘pay on exit’ parking system to replace the existing permit system.

REFERENCES

UNIVERSITY OF CANTERBURY (2011). Vice Chancellor's message 31st March 2011 [Online]. www.canterbury.ac.nz. [Accessed: 31st March 2011]

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