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Resilient
ORGANISATIONS 
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Resourcing of the Canterbury rebuild: *Case studies of construction organisations*

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EXECUTIVE SUMMARY

The Canterbury earthquakes have generated economic demand and supply volatility, highlighting geographical and structural interdependencies. Post-earthquake reconstruction and new developments have seen skills training, relocation, recruitment and importation of skills becoming crucial for construction companies to meet demand and compete effectively.

This report presents 15 case studies from a range of organisations involved in the Canterbury rebuild, exploring the business dynamics and outcomes of their resourcing initiatives.

A key finding of this research is that, for many construction organisations, resourcing initiatives have become part of their organisational longer-term development strategies, rather than simply a response to ‘supply and demand’ pressures. Organisations are not relying on any single resourcing solution to drive their growth but use a combination of initiatives to create lasting business benefits, such as cost savings, improved brand and reputation, a stable and productive workforce, enhanced efficiency and staff morale, as well as improved skill levels.

Other key findings of this research include:

- Insufficient work experience of new employees is commonly cited by organisations as being a root cause of resourcing problems. Organisations have been facing a dilemma of intending to employ local Cantabrian workers but having difficulty in finding people with matching experience.
- Whilst training is the answer for some organisations, it is not for the others. In-house training and upskilling have been mainly used to fast track the career path of the existing workforce, with bigger firms more likely to use external training providers.
- Under enormous time and workload pressures, many companies have invested heavily in overseas recruitment of highly skilled and experienced professionals. Expansion of workforces across case study organisations has been significant, with a range of 10% to 60% of new employees sourced from overseas.
- Salary rises, reported in the range from 5% to 20%, varied from sector to sector and also from job to job. It is of some concern to the case study organisations that wages of Christchurch-based workforces will continue to rise in 2013 as a response to a more tightened market and a constrained pool of labour.
- A shortage of temporary accommodation is a pressing issue for many case study organisations. Accommodation concerns will need to be addressed

carefully, in a coordinated approach, as a shortage of accommodation has been considered as being a significant disincentive for potential staff to move to Christchurch. It is also a likely leverage point for competitor companies to poach staff.

- An emerging issue is the lack of office premises in Christchurch to accommodate an expanded workforce. This has become a real concern for companies because of the scale of work anticipated in 2013 and the need to prepare for the potential workloads from the ‘vertical’ rebuild in the Central Business District (CBD).
- There are also concerns that if economic conditions in Europe improve, this could trigger a reverse of resource flows, with international workers being drawn away from the Canterbury rebuild.

Most case study organisations started adapting their resourcing strategies immediately following the first Darfield earthquake in 2010. By the end of 2012, the case study organisations considered competition for limited resources amongst Project Management Offices (PMOs), between rebuilds and new builds, and between housing recovery and commercial rebuild, to be a major concern for 2013. Intensified resource competition is likely to add further uncertainties to the time and cost of the rebuild.

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1. INTRODUCTION

1.1 Background

The Canterbury earthquakes have generated economic demand and supply volatility, highlighting geographical and structural interdependencies. Post-earthquake reconstruction and the development of new subdivisions in Christchurch have seen skills training, relocation, recruitment and importation of skills becoming crucial for construction companies to meet demand and compete effectively. For many construction organisations, resourcing initiatives have become part of their organisational longer-term development strategies, rather than simply a response to 'supply and demand' pressures.

Previous work of Resilient Organisations has focussed on the identification of common resourcing issues and the construction industry's response to the Canterbury rebuild as a whole (see www.recres.org.nz and www.resorgs.org.nz). In this study we focus on the business dynamics influencing how individual organisations are responding to the resourcing issues that they face.

The Economic Recovery Programme for Great Christchurch¹ included commitments to the building and construction sector's productivity as well as addressing the economic and social effects arising from the rebuild process. It is therefore important to look at resourcing from an organisational perspective which explains both internal resourcing dynamics and the linkages between construction organisations and the wider recovery environment.

In-depth information in individual case studies, such as the reasons behind organisational resourcing initiatives and the perceived outcomes - their financial performance, capability and work quality, offer insight into how Government agencies and industry associations can engage the industry in collaborative initiatives to support the recovery.

1.2 Aims and scope of this work

The aims of this work were to:

- Provide examples across a range of businesses of resourcing initiatives where outcomes have an impact on critical recovery parameters such as quality, time and cost;
- Provide information and data on the detail of business cases highlighting the business benefits of a variety of resourcing initiatives across rebuild sectors;
- Provide material which might assist in the development of links between relevant authorities, such as the Canterbury Earthquake Recovery Authority

¹ Published by CERA in December 2012, can be accessed at www.cera.govt.nz

(CERA), Ministry of Business, Innovation & Employment (MBIE), and Christchurch City Council (CCC), and senior managers in construction organisations;

- Provide material which stakeholders, such as investors, Industry Training Organisations (ITOs), education providers and industry associations, can use to enhance efficiency, and;
- Show ‘good practice’ of resourcing within organisations where resourcing has become part of organisational longer-term development strategies, rather than simply a response to ‘supply and demand’.

A key deliverable of this research was a set of case studies to illustrate the types of resourcing issues that are likely to arise in a disaster situation and what can be done to resource the subsequent rebuild.

2. METHODOLOGY

2.1 Introduction

The research methodology was designed with the following objectives in mind:

- To explore the organisations’ response to emerging resource issues identified in the Resilient Organisations’ June 2012 report (see www.resorgs.org.nz/publications);
- To identify ‘hot spot’ areas where Government programmes and/or industry initiatives could be aligned with those of organisations to meet resource needs of the rebuild;
- To ensure the selected case studies provide useful and relevant material covering current resourcing issues across all industrial sectors, and;
- To ensure the case studies are written up and presented to trigger discussions between recovery agencies and businesses in the construction sector.

The main aim of collecting information for the case studies was to understand the key business drivers for different resourcing initiatives, namely, what led the organisation to use different resourcing alternatives? The emphasis was also placed on gathering some quantification around the conditions of business operations, such as the level of training in terms of the percentage of allocated time or budget, the proportion of workloads between the quake-related and business as usual, the percentage of wage increase and percentage of immigrant workers. The case studies include discussion on four emerging issues for the rebuild that have been identified by previous research², namely:

² Chang-Richards, Y., S. Wilkinson and E. Seville (2012). Resourcing of the Canterbury rebuild: Changes and emerging themes. June 2012. Auckland, The University of Auckland, BRANZ and Resilient Organisations, www.resorgs.org.nz/publications

- Temporary accommodation,
- Immigration,
- Needs of incoming workers, and
- Regional inflation.

2.2 Selection of case study organisations

Drawing on Miles and Huberman³'s well-known manual on qualitative data analysis, sampling of case studies was undertaken by using the following 'checklist'.

- Has the organisation been involved in the Canterbury earthquake-related work?
- Is the organisation willing to participate in the case study and willing to be named?
- Does the organisation have difficulty in getting resources?
- Are there resourcing initiatives and associated outcomes in response to the Canterbury rebuild?
- Does the organisation fall into the building and construction organisations category, including Project Management Offices (PMOs), engineering, construction, trades and building supplies?
- What is the size of the organisation – small, medium or large?

Fifteen case study organisations were selected to participate in the research (Table 1). Case study data was captured through in-depth interviews undertaken between October and December 2012. Interview questions are shown in Appendix 1.

Table 1: Case studies organisations and their characteristics

15 Case study organisations	Characteristics
• 6 Engineering consultancies	3 large-sized and 3 SMEs
• 5 Contractors/builders	2 large civil contractors, 1 subcontractor, 1 home builder, 1 large construction company
• 2 Building supplies companies	2 large concrete product manufacturers
• 2 Project Management Offices	Horizontal infrastructure rebuild & EQC's residential repairs

³ Miles, M. B., & Huberman, A. M. (1994). *Qualitative Data Analysis 2nd Edition*. London, UK: Sage.

3. LESSONS LEARNT AND CONSIDERATIONS FOR THE FUTURE

3.1 Overview of the case studies

In the process of compiling the case studies, the research team has observed a number of characteristics in many of the resourcing initiatives that have contributed to the company's rebuild work. This section crystallises the lessons learnt from case studies.

- Most case study organisations started adapting their resourcing strategies immediately following the first Darfield earthquake in 2010. Resourcing will be an on-going activity into 2013 as many companies are working to ensure that they have specialist staff available as construction work increases.
- Many construction organisations have changed their business operation model with regard to sourcing skilled people and have integrated resourcing into their longer-term business development. Some smaller companies expect to diversify business to incorporate a broader geographic spread in a wider range of complementary disciplines.
- Common to previous research experience, it was found that the building supplies industry is still not concerned about the availability of building materials and plant. Structural engineers and geotechnical engineers at intermediate and senior levels, junior or senior construction professionals (such as project managers, site engineers, supervisors and quantity surveyors) and specialised trades (such as drainlayers, plasters and painters), as well as truck drivers remain 'pinch point' resources for rebuild-related activities in Canterbury.
- Intentions to use migrants grew strongly with companies looking overseas to address skill shortages, in engineering, management and other technical job categories, and migrants primarily coming from the UK, Ireland and the US. Expansion of workforces across case study organisations has been significant, with a range of 10% to 60% new employees sourced from overseas.
- There is some variation in perceptions about the immigration service. Satisfaction was expressed by many organisations about visa application for those incoming workers. As many of these migrants are mature adults with family commitments, provision of temporary accommodation has been commonly included in the company's relocation package.
- Accommodation concerns will need to be addressed carefully in a coordinated approach as a shortage of accommodation has been considered as being a significant disincentive for potential staff to move to Christchurch. It is also a likely lever for competitor companies to poach staff.

- Many construction organisations intend to do their own training, which they have traditionally done through apprenticeships or trainee programmes. The majority of case study organisations paid particular attention to the quality of trainees and their ‘soft’ skills.
- Relevant training has been provided by companies using experienced staff and mentors. However, some organisations were unable to free up resources for mentoring new employees because potential mentors have been largely overloaded by the increased work schemes. Another concern reported by some organisations is that the productivity of those experienced workers has decreased as a result of them doing on-the-job training and mentoring.
- Size is a factor. Bigger firms are more likely to use external training providers, such as the Building and Construction Industry Training Organisation (BCITO), Industry Training Organisations (ITOs) and Christchurch Polytechnic Institute of Technology (CPIT), than smaller companies. In comparison, SMEs tend to be more ‘selective’ of people to whom they are going to offer employment. The case was made that people with both technical and management skills make a positive contribution to the value of the company over the longer term. Therefore, SMEs’ recruiting and training approach tends to be more personalised by top management.
- Salary rises, reported in the range from 5% to 20%, varied from sector to sector and also from job to job. Cost escalation in construction, however, was not found to be directly linked with changes to employees’ remuneration. It is of some concern to the case study organisations that wages of Christchurch-based workforces will continue to rise in 2013 as a response to a more tightened market and a constrained pool of labour.
- By the end of 2012, the case study organisations considered competition for limited resources amongst Project Management Offices (PMOs), between rebuilds and new builds, and between housing recovery and commercial rebuild, to be a major concern for 2013. Intensified resource competition is likely to add further uncertainties to the time and cost of the rebuild.
- Another issue coming out of the discussions was the lack of office premises in Christchurch to accommodate an expanded workforce. This has become a real concern for companies because of the scale of work anticipated in 2013 and the need to prepare for the potential workloads from the ‘vertical’ rebuild in the CBD.
- There are also concerns that if economic conditions in Europe improve, this could trigger a reverse of resource flows, with international workers being drawn away from the Canterbury rebuild.

3.2 Outcomes and business benefits

The construction sector has been playing a large role in driving Canterbury's economic growth. Apart from creating a large number of jobs for the rebuild, other businesses are seeing increased demand for their services, particularly the hospitality and real estate sectors. According to the former Department of Labour's forecasts⁴ in 2012, the Canterbury rebuild and other significant projects across New Zealand will drive the recovery in construction-related employment by about 6% in the 2013 March year.

Many of the resourcing initiatives were regarded by their organisations as an appropriate course of action as they were expected to bring value to the company. The outcomes of combined resourcing methods included a mix of both tangible and intangible benefits, summarised as follows:

- Cost saving – There have been some cases where construction organisations see the value in bringing in skilled people from overseas as a longer-term investment in their business development;
- Improved brand and reputation – “People assets” have been seen by many organisations as equally important as their track records when bidding for new projects;
- Meeting client demands and improved industrial relations – Many organisations attributed this benefit to their heightened resourcing standards for technical people requiring them to possess people skills;
- Specialist staff members with qualifications provide core functions for most construction organisations;
- A more stable and productive workforce – Companies pay tribute to an ownership type of model or an inclusive culture to build workforce productivity;
- Enhanced skills level – this has been largely achieved through utilising the experienced specialist staff for in-house training, and;
- Improved staff morale – There has been an increased focus on maintaining and increasing staff morale with a purpose of staff retention. In particular, worker engagement, ‘pastoral’ care, top management’s dedication to recruiting and personalised mentoring worked well.

⁴ DoL (2012). Short-term Employment Prospects: 2012-2014. Labour Market Information and Analysis. Labour & Immigration Research Centre. Wellington, Department of Labour. March 2012

3.3 What do the examples demonstrate?

Case studies demonstrate different aspects of good practice in resourcing for the Canterbury rebuild in the construction industry. A key part of the case studies was to understand what responses from the Government agencies and/or industry groups would enable construction organisations to address resourcing challenges they faced. Conclusions drawn are specific to these selected organisations but can be used to understand the complexities that arise.

- The skills which those case study organisations found difficult sourcing range from generic to more specific skills. Case study material is consistent with the evidence from the Canterbury Employers Survey⁵ which shows that construction had the highest proportion of workplaces reporting difficulties recruiting and retaining staff, as well as the highest proportion having difficulties finding the right skills⁶.
- The cyclical nature of resource demands makes it difficult to predict the level of training and education needed. Training new people into the construction industry requires the training and education providers to more actively engage with construction businesses to assess business skills needs.
- Widespread temporary accommodation shortages are a concern. In most cases, housing their incoming workers has been manageable but costly. Accommodation issues span a range of sectors including tourism, hospitality, temporary housing for quake-affected home owners and new housing development. The need for most single-stay accommodation has been met by Christchurch's hotel and motel facilities, and other boarding-type houses. The major problem of temporary accommodation has been the shortage of suitable and affordable accommodation for workers' families.
- Construction organisations reported problems meeting specific requirements rather than a general difficulty finding labour from within or outside Christchurch. A lack of resources with 'right' skills and experience has been a lingering problem in the New Zealand construction industry. In particular, engineering firms were less likely to find the specialist skills required locally and therefore more migrant recruitment was undertaken.
- The problem with transportation has already hit the crisis level as the construction on roads and consequent traffic jams have caused a reduction in work efficiency of building supplies companies. Having more access to the CBD once the commercial rebuild starts is essential to reduce transportation costs and increase productivity.

⁵ The Canterbury Employers Survey was run by the Labour Group of MBIE in October 2011.

⁶ MBIE (2012). A Changing Landscape: Recruitment Challenges Following the Canterbury Earthquakes, Evidence from the Canterbury Employers Survey Wellington, Labour and Immigration Research Centre, the Ministry of Business, Innovation and Employment (MBIE). July 2012

- Overall, the business outcomes of the various resourcing initiatives for the case study organisations were cited as being positive and compelling. Business decisions around resourcing and the subsequent effects on the labour market provide an understanding of actual needs within organisations, based on which the skills training and education initiatives could be more responsive to the rebuild needs.
- Resourcing for the Canterbury rebuild has not been considered by many organisations as a simple calculation of supply and demand; rather, they have invested heavily and smarter and more innovative methods were adopted. Organisations are facing varied problems. There is no single organisation or agency which can address existing or anticipated resourcing issues. Many of these resourcing problems are inherent in the structure of the construction sector and in the approach towards earthquake reconstruction.
- To solve the issues highlighted by the case studies requires a collaborative approach between construction organisations and the Government and other stakeholders. By reading the individual case study reports, construction companies and agencies will find practical solutions to resourcing problems.

3.4 Considerations for the future

The Canterbury region does not have a sufficient resource pool for companies to find skilled professionals in response to earthquake-related rebuild work. In response, the Canterbury Employment and Skills Board (CESB) has been developing a supporting labour market strategy that will include a series of projects to help drive the labour market's contribution to the recovery. Issues around labour supply and demand, including ways to retain and attract employees, will be addressed as part of the Economic Recovery Programme that CERA is leading.

The publication of these case studies offers an opportunity for further understanding about what worked well in an organisation and for whom. Case studies provide evidence-based material in relation to economic implications from the shortage of resources for on-going earthquake rebuild. There is an opportunity, mirroring the experience in some organisations, for better understanding resource availability.

Case studies are expected to trigger more collaborative works between the construction businesses and other key stakeholders for an improved recovery environment. Evidence included in the report informs a wide audience, in Canterbury and New Zealand, on issues such as a more flexible in-built immigration process, a business case for temporary accommodation, enhanced training and education courses for trades and engineers, improved construction innovation, and better managed communities' expectations of recovery timeframe and cost.

4. INDIVIDUAL CASE STUDY REPORTS

4.1 Firth Industries' resourcing response to the Canterbury rebuild

Company profile

Firth Industries is a division of Fletcher Concrete and Infrastructure Limited. Firth has a team of about 650 people working in more than 65 sites throughout New Zealand, delivering a complete range of concrete and masonry products, systems and solutions to customers throughout the country.

Case report

Following the Canterbury earthquakes, Firth's senior managers were aware that the demand in Christchurch for products, systems and solutions would be different to business as usual. Firth's Christchurch base thus developed a capacity forecasting model to predict likely market scale in Canterbury within 5 years. As at the end of 2012, the company has already doubled its pre-event capacity. With a new Christchurch plant planned to start operating in early 2013, Firth is aiming for a 40% increase of existing (end of 2012) capacity to cater for increased demand.

Firth's Christchurch plants have primarily been supplying concrete products to contractors working on residential driveways and floor slabs in new subdivision areas, as well as any new commercial work in the city. Truck drivers and technical specialists are their major pinch point resources. Firth has made substantial investments in sourcing specialist people from overseas. In 2011 and 2012, by using recruitment agencies and personal contacts, the company has successfully recruited a group of skilled people from the UK and Tonga to staff its newly planned plant.

Meanwhile, the company is facing challenges such as staff fatigue, particularly in 'core' roles, and a high turnover of truck drivers. In order to maintain the momentum of its growth, Firth has changed its driver hiring model. Rather than purchasing more trucks and hunting for more drivers, Firth used an 'owner-operator' model which hires drivers who own and operate a truck business and can bring their own trucks. The result has been cost effective. The model enables the company to free up capital to other investments such as resourcing for the new plant.

The 'owner-operator' model also takes the drivers' accommodation into account. Fletcher Building has undertaken a full review of the Christchurch rental market and secured a number of rental properties for housing new employees and their families. Firth's Christchurch base has benefited from that. The use of monitoring systems, such as GPS, enables the Christchurch plant managers to track truck movements and review drivers' performance. This acts as a real time tool for plant managers to identify things that are not done well during the delivery process and helps solve any problems quickly.

Being part of Fletcher ‘family’, Firth benefited from gaining support from other Fletcher businesses in terms of technical, capital and human resources. The company has been closely watching other potential emerging markets, particularly the housing market in Auckland. In order to secure resources for long-term business development, Firth’s Christchurch base is aiming for improving standards of its health and safety competence through the supply chain and creating a more family-friendly working environment.

4.2 Allied Concrete’s resourcing response to the Canterbury rebuild

Company profile

Allied Concrete started operating in 1976 in Invercargill and Gore. Over the last 36 years, it has built a network of ready mixed concrete production plants throughout New Zealand. With 50 concrete plants, 8 mobile plants and a fleet of ready-mix trucks, Allied Concrete has become one of the large concrete suppliers in the country.

Case report

In response to the Canterbury earthquakes, Allied Concrete’s South Island plants have doubled their supply capacity. Senior management and technical people are major pinch point resources for Allied Concrete. A lack of experienced truck drivers has also curtailed its growth. In 2011 and 2012, Allied Concrete’s Christchurch Plant imported a number of trucks with larger capacity. Vacancies for management and technical roles have been filled by professionals recruited locally but several have overseas work experience.

Currently, Allied Concrete’s Christchurch Plant workload is divided 60% earthquake-related and 40% business as usual which is in respect of residential construction. The Plant plans to increase its supply capacity in 2013 to meet the potential demands for foundation construction of houses and commercial rebuild in the Christchurch CBD. A major challenge is to secure longer-term employment contracts with truck drivers and also to increase work efficiency in this area of the business.

Allied Concrete has been in a process of recruiting experienced drivers from outside Christchurch and concurrently upskilling young drivers in-house. Reducing the number of truck movements is another way being utilised to improve efficiencies and being environmentally responsible. In its Christchurch Plant, Allied Concrete uses larger trucks to achieve this. A new plant near the CBD is also on its 2013 agenda to provide a quicker and more efficient delivery.

Allied Concrete relies on its upstream industries to supply input materials. Being pivotal to its supply chain, the Board of Directors meets with main supplier partners on a regular basis to discuss ways of increasing production capacity and for feedback on how emerging issues could impact on the performance of whole supply chain. The weak links that exist in the Allied Concrete supply chain are summarised below:

- Carbon tax in the longer term may affect the main carbon generating manufacturers, including the cement industry, and consequently Allied Concrete will also be affected;
- The quarrying industry is losing highly experienced people as many of them are close to retirement. If there are no succession plans in these quarry companies, Allied Concrete's potential growth is likely to be held up or adversely affected;
- Environmental conservation or building legislation changes might lead to changes of the market share among material industries of timber, steel, prefab and concrete in building construction, and;
- Although a range of pamphlets and instructive handbooks have been provided to the contractors detailing the use of their products, a number of problems continue to appear on sites. This affects the final quality of concrete used in construction.

As a national organisation, other Allied Concrete offices around New Zealand provided technical support and additional resources to the South Island Plant. 10% of its people in its Christchurch Plant are on a temporary short-term contract, flying in and out on a weekly or fortnightly basis. These temporary workers include quality controllers, batchers, truck drivers and external driver trainers. Allied Concrete's Christchurch base has accommodated these workers in a company-owned flat as well as in Christchurch hotels and motels.

In terms of changes to employee remuneration, Allied Concrete's Christchurch Plant has increased technical salaries by approximately 10% since the second half of 2012. The salary increase was indicative of the market rate level for technical staff at the time. Operational staff have only had a cost of living increase during 2012. There is cost escalation for some concrete products due to more onerous specifications being used in Christchurch. This cost change was mainly due to increased product standards, which are required for repairing critical infrastructure facilities in the city.

Allied Concrete has carried out most of its technical and operational training in-house. Training on such topics as sales management, marketing and leadership is contracted out to private service providers. In order to address resourcing issues, Allied Concrete's 'wish list' includes the need for the Building and Construction Industry Training Organisation (BCITO) to be more involved with on-site training of concrete placers on how to use their products more effectively. There is a need for a more relaxed approach within New Zealand Transport Agency (NZTA) to allow improved road access for construction vehicles in Christchurch.

4.3 Naylor Love's resourcing response to the Canterbury rebuild

Company profile

Naylor Love is a national commercial construction company with approximately 300 staff nationwide, spread over five regional divisions. It provides a comprehensive construction management service to clients in private and public sectors.

Case report

Since the earthquakes, Naylor Love's Canterbury Regional Office has been making continual efforts to build a work force with a robust skills base in response to growing workloads. As of end of 2012, the majority of company's workload (80%) was quake rebuild-related while the remaining 20% was business as usual. However, a lack of skilled people such as quantity surveyors, cost engineers, project managers and site managers had the potential to limit growth. The resourcing challenges which the company has been facing include the following:

- Experience – there is a substantial lack of workforce with appropriate experience and expertise in the New Zealand construction industry. The company found it difficult to source locals to meet the needs, and;
- Company structure – company business facilities also need to be upgraded in order to manage growth. Resourcing requires structural changes in the company's operational systems, such as the financial system, IT system and document control system, all of which need significant capital investment.

A wide range of resourcing solutions have been employed by Naylor Love's Canterbury Regional Office. To meet its requirements, there have been many learnings and changes, with some findings still under consideration. Flexibility is a key feature that has been built into the following solutions:

- The Canterbury Regional Office has recruited a large number of people from overseas, mainly from the UK, to fill its specialised positions;
- Increased in-house training to upskill the existing workforce;
- Inviting project management staff from other divisions of Naylor Love Group, such as Dunedin, Queenstown and Wellington branches, to come and work for the Canterbury Regional office;
- Forming alliances with local consulting and subcontracting firms to share resources in a more collaborative way;
- Resourcing for large construction projects in Christchurch, the Naylor Love Canterbury Regional Office has established a Joint Venture (JV) with one large Australian construction firm, and;
- Looking at opportunities of partnering with large Asian construction firms to identify if there is a possibility of off-site prefabrication or transferring resources to New Zealand.

The scale of resourcing since the earthquakes has been unprecedented for Naylor Love's Canterbury Regional Office as the senior management are dedicated to finding the 'right people' to do the 'right job'. The company has seen a number of business benefits as a result of investing in employment, including such as high efficiency gains and bringing a bigger diversity of skills into the business.

Provision of temporary accommodation for new employees coming from overseas is included in its employment package. The Canterbury Regional Office rented a number of apartments and motel rooms to accommodate its short-term workers generally for short-term periods while workers find accommodation in the local market. In addition, the company has an agreement with one large civil contracting firm to share a number of houses. The Canterbury Regional Office is looking for new methods and initiatives in which its workforce can be accommodated without displacing the quake-affected home owners. With this purpose, they plan to build a small workers camp on its own land in 2013.

The Canterbury Regional Office promotes capability building to encourage each employee to participate in a series of training programmes. A combination of in-house training and collaboration with Industry Training Organisations (ITOs) was used to train people in leadership, communication and technical skills. In comparison, in-house technical training was less preferred by Naylor Love's Canterbury Regional Office than using external training courses. It was found that less success was achieved with in-house training schemes as having experienced workers delivering training took them off the job and reduced their productivity.

By end of 2012, Naylor Love's Canterbury Regional Office had a wage bill increase of 6% compared to the mid-year level. It expected that cost escalation as a result of shortages of skilled people and accommodation will continue into 2013. The company recognised that to mitigate the impacts of accommodation shortages on the local economy, more industry consultation from the Government would be needed to translate housing initiatives into projects.

4.4 Fulton Hogan's resourcing response to the Canterbury rebuild

Company profile

Fulton Hogan is a national construction company specialising in building and maintaining transport and civil infrastructure. As a non-owner participant under the SCIRT alliance for rebuilding Christchurch's earthquake-damaged horizontal infrastructure, Fulton Hogan is responsible for the day-to-day delivery of works to rebuild roads and bridges, fresh water systems and reservoirs, wastewater systems and pump stations, storm water systems, and other infrastructure such as retaining walls, stopbanks, and footbridges.

Case report

Fulton Hogan's SCIRT office has primarily been involved in infrastructure rebuild work while the rest of the company's business activities take place in new subdivision areas in Canterbury. In general, the company's South Island business has approximately 30%-50%⁷ of its workload that is earthquake related.

In response to the rebuild demand, Fulton Hogan has been recruiting skilled workers extensively both nationwide and internationally. People with 'soft skills' such as the ability to adjust, being sensitive, showing care, being customer-focused, strong communication, ability to coach and having the potential to influence, have been on their top priority 'hunting list'.

In specialised professions, civil engineers and project managers with experience and expertise are major pinch points for Fulton Hogan's SCIRT office. Site Traffic Management Supervisors (STMS) are also in large demand. To address these shortages, the company's recruitment first comes from local people in Christchurch and extends to a nationwide and international base. As at the end of 2012, the Fulton Hogan's SCIRT delivery team has up to 15% workers from outside Christchurch. The company assists with accommodation on a case-by-case basis. Options are within individual agreements, and Fulton Hogan utilises a vast range of accommodation options around Christchurch such as home-stays and the Burnham army base. A dedicated HR person has been assisting staff to find their own temporary and/or permanent housing solutions.

Fulton Hogan's SCIRT delivery team applied a range of staff wellbeing and retention initiatives to align with its longer-term business development. Some of these initiatives include:

- Internally, to create growth and satisfy individual development, Fulton Hogan's SCIRT delivery team rotates staff among other operational offices in Christchurch or regional offices across New Zealand;
- A proactive succession and development plan has been set up within the Fulton Hogan's SCIRT delivery team with a view to 'fast tracking' some employees' career paths;
- Senior professionals and the management team have taken the first steps in establishing an inclusive culture. Some of them are heavily involved in hands-on training, coaching and mentoring to understand and solve problems and developing drivers for individual productivity, and provide one-on-one solutions, and;
- Staff retention initiatives also involve such things as purpose-designed training, remuneration recognition and offering company shares.

Particular attention was paid to staff up-skilling and training. 60% in-house training and 40% external training take place at every level of its SCIRT delivery team.

⁷ 30% estimate is related to the earthquake-damaged repairs and rebuild, 50% estimate includes the work that is created by rebuild requirements.

Training courses range from leadership and project management to technical skills and on-site operations. Comprehensive staff retention strategies lead to a significant reduction in costs of recruitment and training.

Following the earthquakes, Fulton Hogan's South Island business has been closely monitoring the market rate and is particularly cautious about regional inflationary effects caused by construction cost escalation. For an improved business operation in the rebuild, the company put forward a few suggestions for the Government and industry players to consider. These suggestions included the following:

- Transparency of Government spending on infrastructure rebuild and new build is needed so that construction businesses may position and resource themselves better;
- A 'common sense' approach is needed where a 'relaxation' of existing specifications occurs to save cost and time and to ensure the value of testing is technically sensible and practical across all levels of application. Essentially a common sense approach to quality is needed with a focus toward method based criteria, and;
- There is a need for technical support from the Government and the construction industry to standardise methodology for product testing.

4.5 Downer's resourcing response to the Canterbury rebuild

Company profile

Downer Limited (Downer) is a provider of engineering and infrastructure management services to customers operating in market sectors including minerals and metals, oil and gas, power, road and rail infrastructure, telecommunications and water. Downer is listed on the Australian Securities Exchange and employs over 21,000 people in Australia, New Zealand and the Asia-Pacific region.

Following the Canterbury earthquakes, Downer has been part of the Stronger Christchurch Infrastructure Rebuild Team (SCIRT) to repair roads, foot and road bridges, underground services (water, wastewater and storm water pipes), parks and water reservoirs that were damaged in Canterbury's earthquakes.

Case report

Site engineers, quantity surveyors, superintendents and project managers are major human resource pinch points for Downer's Southern business. Downer's Christchurch Office has been proactively recruiting to support its SCIRT delivery team and increased work streams for other clients. Some examples of Downer's resourcing initiatives are described below:

- Working in collaboration with the Ministry of Social Development (MSD) to train local unemployed people, Downer developed a trainee programme that is

funded through the MSD. The company offers valuable skill development, qualifications and mentoring through the programme and offers employment to selected candidates;

- Increasing the existing civil apprenticeship programme to help train Cantabrian school leavers and semi-skilled people;
- Increasing involvement with the Christchurch Polytechnic Institute of Technology (CPIT) courses to identify potential employees;
- Attending SCIRT's Opportunities Overseas Expos in places such as Dublin, London and Manchester, to recruit specialised skills of a senior level, and;
- Relocating skilled workers from other offices across New Zealand.

Management of Downer's South Island business recognised the need to be directly involved in the recruitment process for 'best fit' people. As David Spriggs, General Manager of Major Projects Southern for Downer reports that:

'For the critical roles such as site engineers and project managers, we need more senior and experienced people to ensure the quality of our service delivery. Face-to-face interview, although time consuming, helped both sides to make better employment decisions.'

Downer's Christchurch Office has used three company houses for housing overseas workers for the first two months following their arrival. One HR position was created to assist those newcomers to merge into the company, the community and the wider society of Christchurch. Some of this HR person's responsibilities include getting newcomers in touch with their own ethnic group(s), providing them with English language tutoring and looking after their catering services within the company house.

Additionally, Downer's Christchurch Office has an enhanced career path to help identified 'rising stars' reach higher positions faster. Resource-wise in 2013, the company plans to improve its internal skills level rather than simply recruiting. However, the company is realistic that another recruitment cycle in 2013 may be necessary. With the economy in some European countries already showing signs of improvement, Downer's Christchurch Office is devising a range of staff retention solutions and also hoping the Government and media will play a more active role in promoting the liveability and attractiveness of Christchurch with a view to attracting and securing overseas skilled people.

4.6 Isaac Construction's resourcing response to the Canterbury rebuild

Company profile

The Isaac Construction Co Ltd was established by Sir Neil and Lady Isaac in the 1950's, and remains at the forefront of developing and maintaining Canterbury and South Island roads and infrastructures. The company has over 190 specialist personnel who deliver a wide range of services, including: pavement construction, surfacing,

bitumen products, transport and quarrying, as well as professional contract management services.

The company combines contracting services with a strong commitment to conservation and the protection of endangered species. This conservation ethos has led to the development of Peacock Springs, a unique wildlife habitat covering 150 hectares of land on the outskirts of Christchurch. Peacock Springs is widely considered to be one of the best examples of quarry restoration in the world.

Case report

As one of Canterbury's leading contracting firms, Isaac Construction has been heavily involved with SCIRT delivery contractors such as MacDow, Downer, and City Care in regard to the rebuild work. By end of 2012, 50% of its workload was earthquake rebuild-related and the company plans to increase its involvement in the SCIRT projects in 2013.

Isaac has recognised a lack of skilled people such as excavator operators, drainlayers, junior roading engineers and middle-level project managers. Shortages of skilled people have limited its potential for growth. Accommodation for construction workers has not really been an issue for Isaac yet. Most new staff tended to find their own accommodation with relocation assistance provided by the company in some instances. Isaac has made considerable efforts to upskill their employees to the required skill level. In response to the increased workloads, Isaac has used a range of resourcing initiatives, including the following:

- Utilising SCIRT's training programmes for young people – 3 out of 5 trainees (the ratio of employment) who have completed these programmes are offered employment;
- Using recruitment agencies as well as 'word of mouth' to identify the sources of talent in the industry for specialist and highly skilled roles;
- Developing an 8-to-10 weeks trial programme for new candidates to mitigate the risks of hiring unsuitable people – the mechanism is that Isaac uses one recruitment agency to source new on-ground workers on a temporary basis. This recruitment agency, however, serves as a one-point-of-contact for all temporary workers who were sourced by all other recruitment agencies. By using this programme, Isaac is better able to decide which worker fits in with the company. A ratio of 50% of these temporary workers is likely to be offered a full time position once they have come through the trial;
- Being a supporter of numerous Industry Training Organisations (ITOs) and the New Zealand Qualifications Authority (NZQA), Isaac has been actively promoting the Modern Apprenticeship Programme, which attracts many young Cantabrians into the construction industry;
- Partnering with the Christchurch Polytechnic Institute of Technology (CPIT) in their 'TradeFIT – Trade Future In Training' programme;

- Using a single point-of-contact to collate the resourcing needs from Isaac’s team companies, subcontractors and tradespeople, and to communicate this information to senior management, and;
- Isaac has a “no poaching” ethic for staff within the Canterbury area. The company sees ‘poaching staff’ as an inappropriate way of securing their ‘nest’; it only leads to escalation of wages. However, the company employs staff from other contractors if they are genuinely seeking a change or progression in their role.

Isaac also holds regular skills workshops to develop expertise and advises its own employees on how to achieve leadership roles in the company. Mentoring and on-the-job training for new employees have also been used. Isaac has expanded from having 125 Full Time equivalents (FTEs) before the September Darfield earthquake in 2010 to its current capacity of 200 FTEs and 30 temporary staff. A small portion of Isaac’s temporary workers are from outside Christchurch, including from other countries. Whenever possible, Isaac Construction employs locally. However, it depends on the level of candidates put forward.

In November 2012, Isaac increased its wage level by around 5-6% based on the average review result across workforce. Depending on the specific role, wage increases ranged from 0% to 25% with the highest pay increase going to specialised drainage operators and senior construction foremen.

Isaac sees the Canterbury earthquake rebuild and new subdivision development as unique opportunities for its mid- to longer-term business development. Central to this development is an increased ability to attract and retain skilled workers. In terms of forward workforce planning, Isaac has suggested a few areas of improvement and potential collaboration with the Government, SCIRT and wider construction industry. These suggestions include such as:

- Clearer information from the Government on the infrastructure spending plan and the direction of future commitment is needed to allow future business planning;
- The industry association could help to formulate a standardised Key Performance Indicators (KPIs) benchmark system in the construction industry. This would assist members by collating and providing productivity based KPI’s.

Through the extremely busy period of rebuild, it is important that robust consultation throughout the supply chain is maintained to allow long term resource-based decision making.

4.7 Carl Taylor Homes' resourcing response to the Canterbury rebuild

Company profile

Carl Taylor Homes is a regional house builder, operating within Christchurch and the Canterbury region. The company builds about 30 homes annually. Trading since 1999, it provides services in construction of semi-commercial and residential buildings, architectural design and construction, project management and building maintenance.

Case report

Carl Taylor Homes was heavily involved in the EQC's housing repair programme immediately following the Darfield earthquake on 4th September, 2010. The company was among the first main contractors who completed EQC repair jobs in 2010 and 2011. Since 2012, the company has shifted its focus from working on EQC's repair programme to building new houses in residential subdivisions in response to the region's growing demand for new homes. At the same time, by drawing on extensive experience in EQC's housing repair programme, Carl Taylor Homes started a new sister company called 'Rebuild Me' with 90% of its work related to repairing earthquake-damaged homes.

The separation of its business as usual work from seismic house repairs has been successful. Re-branding its home repair business also frees up resources for other investments. The company promotes worker engagement to encourage each member of staff to feel they are valued members of the company, whose input and action is just as important as that of the management.

Qualified builders, painters and plasters were identified by the company as being pinch point resources. In 2012 Carl Taylor Homes had built 35 new homes. To maintain this level in the coming years, the company has invested heavily in resourcing staff and facilities. The company has grown from a small business with fewer than 20 employees in 2010 to a medium-sized company with 57 people at the end of 2012.

The company's vision is to maintain focus on attracting practical and quality staff and sustain itself as a medium-sized operation. Its specific resourcing solutions include the following:

- Working with existing industry players through well-established business relationships – the company uses the same set of qualified sub-contractors, builders and building suppliers whom they have used for several years;
- In-house training for those young people who have qualified from apprenticeship at Polytechnic Institutes;
- Job advertising on Trade Me;
- 'Reputation attracts skills' - 'spreading the word' by its own employees has been a powerful tool to attract other staff. The company recently successfully

settled in four trades workers from Afghanistan as its two Afghanistan tilers invited their friends to come and work for the company, and;

- Receiving additional resource support from a family construction business in Australia when the workloads are beyond its capacity.

Apart from attracting skilled workers through a relationship-based approach, staff retention has been also personalised. In common with other family businesses, Carl Taylor Homes has done most training in-house. The Managing Director himself has engaged the workforce in all productivity and safety matters. The ‘safety-and-quality first’ culture has played a vital part in motivating employees to enhance their work performance and contribute to building the company’s reputation.

Carl Taylor, Managing Director for Carl Taylor Homes, sums it up like this:

‘In New Zealand in 20 years’ time, there will be a growing market demand for housing alterations and construction of new homes due to a fast immigration trend. In Canterbury in particular, as a result of the effects of the rebuild, there will be an emerging market for home building for those construction workers who come from outside Christchurch for the rebuild. In order to continuously deliver good quality homes, we need to attract those who value our culture and want to be part of it. Therefore our resourcing approach has been very in-house and personal.’

4.8 Beca’s resourcing response to the Canterbury rebuild

Company profile

Beca is one of the large employee-owned engineering and related consultancy services companies in the Asia-Pacific region. As well as numerous engineering consultancy services, Beca offers architecture, planning, project and cost management, land information, valuations and software services. Beca supplies engineering and related consultancy services to many markets including industrial, buildings, government, water, transport and power.

Case report

By end of 2012, Beca’s Christchurch Office had its workload up to 70% quake-related, in relation with infrastructure engineering design (primarily SCIRT). Geotechnical engineers, structural engineers, civil engineers and cost managers are major pinch points for Beca. The demand for mechanical engineers and electrical engineers is also expected to increase as rebuild of the institutional and commercial sectors gets underway. Senior management with strong client relationship and project leadership skills are also needed.

Based on the projected workloads and in view of specific roles needed, Beca uses a range of resourcing initiatives in response to the market situation nationwide including work related to the Canterbury earthquakes. Resourcing the quake-related

operations started from within the Beca group companies across New Zealand, extending to offices in Australia and Asia-Pacific. Beca also uses existing relationships with partner design and construction firms to share a common resource pool and add resources to the pool.

The ‘whole Beca’ approach has been applied in support of the Canterbury rebuild. The strategic aspirations of Beca have been developed by the Strategic Leadership team in Christchurch. The aspirational plan includes strategies covering leadership, clients, strategic relationships, people, whole company, new services and corporate. ‘Christchurch North’ is an innovative example: Beca’s Auckland headquarters has changed Level 1 of Beca House to an office space, known as ‘Christchurch North’, for the exclusive use of the workforce involved in the earthquake-related works.

Apart from inviting its own staff to relocate to its Christchurch office or to ‘Christchurch North’ to be part of the rebuild effort, Beca has advertised extensively to attract engineering resources from overseas. Currently one third of its Christchurch team are from outside Christchurch. A comprehensive ‘pastoral care’ system is provided for those new employees who have recently relocated to Beca’s Christchurch office.

The company has a well-designed system of consultation and provides various opportunities for training. Approximately 5% of work time is used for staff on-the-job training and mentoring. Having offices in Australia and Asia, Beca shows each employee the career path and opportunities of international rotation from day one. In addition, there has been substantial investment in culture and process improvement focused on improving the working environment and employee needs assessment.

To address the shortages of temporary housing, Beca’s Christchurch Office has secured a number of apartments and townhouses on a longer lease to help accommodate its temporary staff. The company has also secured the services of a letting agency to help fast track staff and/or their families into private rental properties, and to assist in property purchase if required. Alliancing with some leading providers of insurance and banking, Beca’s Christchurch Office also is able to secure service agreements to suit the needs of their employees.

Increasing its involvement in the rebuild by winning large-scale projects is Beca’s goal. This is seen by its top management as being critical to attract and retain the best people for the company. Keith Paterson, Business Director of Beca’s Canterbury Rebuild Office sums up as follows:

‘In addition to servicing key clients with core engineering and management work, participating in large-scale projects will allow us to attract and retain talented people and expose them to a wide variety of opportunities for career development, which in turn helps build a dedicated and productive workforce’.

4.9 Holmes Consulting Group's resourcing response to the Canterbury rebuild

Company profile

Holmes Consulting Group (Holmes) is a structural engineering consultancy with five offices in New Zealand, an affiliated office in San Francisco and a practice that is global in scope. Its focus is on providing engineering solutions that are cost-effective, pragmatic and thoughtful.

Case report

Structural engineers with seismic design experience are major pinch points for Holmes. As time goes on, the demand for draftsmen is also expected to increase. In recruiting, people skills are valued by Holmes as equally important as technical skills. This has also been manifested in the company's culture and performance programme.

Holmes' Christchurch office has primarily been dealing with earthquake-related work, with a focus on the seismic assessment of buildings. Holmes used a range of resourcing initiatives in response to the Canterbury earthquakes. In the first year following the September 4, 2010 earthquake, the company formed a partnership with an Australian engineering company that provided up to five structural engineers for between 4 and 6 weeks.

Having an office in San Francisco, Holmes New Zealand benefited from receiving four engineers from there as well as three other earthquake engineers from top engineering firms in San Francisco seconded to Christchurch temporarily. They also advertised broadly in California, the US, through sources such as Structural Engineers Association of California (SEAOC), engineering websites and in schools. Potential candidates were interviewed in its San Francisco office and then telephone-interviewed by the Christchurch office through Skype.

However, getting those engineers with seismic design expertise across the Pacific has been costly and time consuming. The major pinch for the company is the immigration requirement for US residents to receive police clearance to obtain a Talent Visa, which can take up to 4 months. Engineers issued with a visa for less than 2 years are not eligible for the New Zealand public health service and have limited access to private medical insurance.

Holmes has continued to successfully recruit summer and graduate engineers from tertiary education providers across New Zealand, adapting their strategies slightly to respond to the effects of the earthquakes. All the other Holmes' offices in New Zealand provided additional resources to the Christchurch Office immediately after the earthquakes, with people regularly flying in and out on weekly or fortnightly basis. Four people within the business volunteered to permanently relocate to Christchurch to assist with the Christchurch rebuild.

Holmes' Christchurch Office has accommodated the additional technical support in Christchurch hotels and motels and has also leased two properties for those on longer secondments. As well as providing technical support, the CEO, HR and other directors have also commuted to Christchurch regularly to provide emotional support. The value of this morale support has resulted in the Christchurch people feeling included and being well looked after.

In terms of addressing its resourcing challenges, a few suggestions were proposed by the company for relevant stakeholders to consider. There is a need for tertiary education providers in the engineering discipline to get companies more involved with university courses to close the skills gap and ease graduates' path to employment. There is a need for a more flexibility within Immigration to ensure short-term highly-skilled people can be brought in faster and supported with the New Zealand public health system.

4.10 AECOM's resourcing response to the Canterbury rebuild

Company profile

AECOM is a global provider of professional, technical and management support services to a broad range of markets, including transportation, facilities, environmental, energy, water and government. With approximately 45,000 employees around the world, AECOM provides a blend of global reach, local knowledge, innovation and technical excellence in delivering solutions that create, enhance and sustain the world's built, natural and social environments.

Case report

Across the general disciplines, AECOM recognised the short-term pinch point resources were structural engineers and geotechnical engineers. The company anticipated that in 2013 electrical engineers, mechanical engineers and architects will also be amongst those most needed. AECOM also anticipated that, once the vertical rebuild in the Christchurch CBD gets underway, the scale and quantity of workloads will have an impact on the New Zealand construction market as a whole and will strain the local resource pool in the Canterbury region.

In terms of specialised skill around structural engineering, there is a lack of depth of experience in New Zealand. Many New Zealand structural engineers do not have experience of large projects such as long span structures or base isolation. When looking at AECOM's own resource pool in New Zealand, its experience in major projects is specialised and it seeks to supplement this with experience from its off-shore offices. Bringing in expertise from other locations in this regard is likely to benefit both organisations and the market.

With respect to architecture and building services, AECOM has sufficient resources in New Zealand to undertake some large projects, but will also look at how particular

specialisms can be provided from within the broader organisation. Such skills might include façade engineering, base isolation, micro-tunnelling, or urban master-planning.

One of AECOM's resourcing solutions is to draw on personnel from Australia and the United States. AECOM's Christchurch Office has grown from 30 employees pre-earthquake, to 78, of which 80%-85% are sourced through international recruitment or relocation. Its most recent overseas recruitment was targeted to structural engineers with seismic experience. The company has two people on secondment from the US and one permanent transfer from California. In addition, Australian-based staff have been deployed on a rotating short-term basis. One recent hire came to AECOM Christchurch from the Middle East, and is currently studying papers in relation to the New Zealand seismic code at Canterbury University.

Before the Darfield earthquake of September 4, 2010, AECOM successfully organised a post-disaster recovery seminar (held in June 2010) with a view to passing on the experience and lessons learned through its involvement in past recoveries from events such as Hurricane Katrina, the Northridge Earthquake and the World Trade Centre collapse. In order to build its capacity in quake operations in New Zealand, AECOM had not only sourced people with technical skills but also relocated expertise with disaster recovery and reconstruction experience. For instance, the company brought in one person from its US office who has a secondment contract with the US Federal Emergency Management Agency (FEMA) in response to disaster events.

In terms of collaboration, AECOM takes a relatively cautious approach to partnering with local companies in Christchurch. It has partnered with some local firms. However, culture, mutual support and achieving an equitable partnership for both parties are its main criteria for selecting a market partner.

Before the earthquakes, AECOM's primary service in Christchurch was associated with infrastructure, power and energy, and roading work. Following the 2011 February 22 earthquake, the company has been involved in the development of the Central City Plan, the work being undertaken by SCIRT, and with other major clients. The company has widened its market focus to include a broader range of the building industry in Canterbury, including residential and commercial building assessment, and preliminary work for Christchurch City Council (CCC) such as cost estimation.

Resourcing skilled workers for its response to the Canterbury earthquakes has been significant. AECOM's Christchurch Office now (at the end of 2012) has 18 structural engineers (zero pre-earthquake), 7 geotechnical engineers (1 pre-earthquake), 3 architects (zero pre-earthquake), 17 Quantity Surveyors (5 pre-earthquake) and 7 Project Management staff (3 pre-earthquake). These are supported by fly-in and fly-out staff from other offices around New Zealand.

AECOM has put a lot of effort into both building a robust client base and supporting interactions with local communities. Training is a major focus. Most training and up-skilling programmes have been carried out in-house, including on-the-job training and

seismic presentations. A social element has also been embedded in its technical training programme. For instance, how to deal with the public, particularly those stressed home owners during the structural inspections, is an area highlighted in their induction package for new engineers.

Accommodating temporary engineering staff who come to Christchurch on a weekly basis has been manageable. Motels and a rental property of three bedrooms are AECOM's current solutions. However, rents and room rates have increased. The company will seek new accommodation solutions and new office space if there is a perceived need to increase the scale of its workforce in Christchurch. One suggestion was put forward by the company that more State houses and affordable lower-cost houses be built in Christchurch so that the market rebuild forces would not displace tenants from the rental market.

4.11 SKM's resourcing response to the Canterbury rebuild

Company profile

Sinclair Knight Merz (SKM) is a projects firm, with global capability in strategic consulting, engineering and project delivery. It operates across Asia Pacific, the Americas, Europe, the Middle East and Africa, having more than 7,500 people in 40 offices.

SKM provides an extensive range of services to private and public clients including: renewable energy development, natural resource management, environmental planning, spatial information services, water and wastewater engineering, geotechnical engineering, structural and civil engineering, sustainable building design, transport planning and design, as well as developing and implementing clean energy strategies and projects.

Case report

Like many other engineering consultancies in New Zealand, SKM has adapted its approach to resourcing in response to the demands from the Canterbury earthquakes and subsequent rebuild. Structural engineers, geotechnical engineers and project managers of all levels are in high demand within SKM.

SKM's three offices in New Zealand work collaboratively, sharing work and providing technical support around the region. Since the Canterbury earthquakes, SKM has leveraged this network and work systems to actively seek opportunities for the wider SKM team to support clients in Christchurch.

SKM prides itself in coordinating resources internationally to ensure best for project teams, and good support for clients. Teams from the UK, Australia and Chile have regularly supported the increasingly heavy workload in Christchurch. A range of solutions are used to service projects, including short, medium and long-term relocation of national and international staff to the Christchurch office. To support the

work in Canterbury, SKM has leased two apartments adjacent to the office to accommodate people, in addition to the use of hotels and billeting, as required.

The following are points to note regarding the work sharing internationally.

- There is a steep learning curve for some engineers unfamiliar with the New Zealand Building Code and standards. SKM has invested in a development program for internal transfers, virtual team members and graduates to bring them up to speed with local codes and standards;
- Diversity and Intercultural Awareness are a high priority within the company, ensuring that all new and transferring team members are integrated into the local team and have a happy and productive work environment, and;
- An understanding of seismic engineering principles is a sought-after skill and is specific to certain areas of the world. SKM is leveraging the skills of its Chilean team and are developing a team in that region dedicated to supporting the Christchurch rebuild. Those team members were seconded to New Zealand for six months to integrate into the local team and learn the principles and better understand the New Zealand environment before returning Chile to continue work as a “Virtual Team”.

SKM’s Wellington and Auckland offices have provided many temporary engineering resources to the Christchurch office. This is managed on the basis of a fly-in and -out for a week every month, living in the serviced apartments rented by the company. In addition to this regular influx of people, the permanent staff numbers have increased dramatically and finding office space to accommodate people is now becoming a real problem.

Reflecting on the progress over the last two years, SKM plans to focus on leveraging the relationships and procedures that have been developed, providing a sustainable resource to the Christchurch rebuild. To this end, ensuring a well-balanced, happy and capable team remains a high priority. Kimberley Wylie, Team Leader - Structures, SKM Christchurch Office sums up like this:

‘It is important to step back and reflect in this dynamic environment we are currently working in. We need to be prudent, ensuring that we are providing a best project solution, including how we resource projects. While we are requiring significant numbers of people on the ground to undertake Detailed Seismic Assessments, moving into the design and rebuild phase, the needs will change. SKM actively reviews the demands of the market and our clients on a regular basis in an effort to meet these resourcing needs in a sustainable, manageable way. This includes calling on the wider business for support, as well as strategic recruitment.’

4.12 BGT Structures' resourcing response to the Canterbury rebuild

Company profile

BGT Structures is a consulting structural and civil engineering practice based in Auckland and Christchurch. Established in 1970, BGT has extensive experience in building design and construction.

Case report

BGT Structures set up its Christchurch office following the February 22nd earthquake in 2011. Like many other engineering businesses in Christchurch, BGT faced difficulties due to a lack of structural engineers with seismic design experience. However, unlike some large companies whose recruitment is done by HR or recruiting agencies, BGT used personal contacts to develop a stable and skilled workforce.

BGT mainly target universities and countries with seismicity for talent. The Director of BGT's Christchurch office has dedicated a lot of time to recruitment in order to build the company's capability and 'people assets'. The company benefits from the enhanced capability and quality work as a result of its people strategy.

BGT's Christchurch office had received considerable resource support from its Auckland office. Senior engineers from Auckland office regularly fly in and out to supplement its workforce. By Christmas 2012, BGT had reached a workload balance of engineering design works between new builds and post-quake rebuilds. The company pays tribute to the commitment of senior management to worker engagement, and their efforts to get the best performance out of employees.

A management approach has been used to offer its workforce incentives. For instance, apart from providing logistics support, BGT provides temporary workers with benefits, such as a mobile phone, vehicle, credit card and daily allowance. Business Manager Alex Murahidy says:

'I see my job in part as breaking down the 'us and them' barriers between managers and workers, and also between 'locals and out-of-towns'. I need to be approachable and thoughtful, so they feel valued and looked after.'

BGT's Christchurch office also attracts young postgraduates with a Masters Degree or Ph.D. believing that by appropriate empowering and mentoring, the potential of this young talent can be best utilized. BGT's vision is to differentiate from other companies by establishing an 'embracing and ownership' culture. The company sees the rebuild opportunity in Christchurch as key to further develop New Zealand's structural engineering discipline. A more collaborative relationship between the education providers and the business is being sought with an aim to bring their practical learnings from the Canterbury earthquakes back to classes.

4.13 Structex's resourcing response to the Canterbury rebuild

Company profile

Structex is a Christchurch based engineering consultancy, providing engineering design and solutions to various private and public clients. From its start, the company has introduced a unique ecological business model to allow it to maintain its small business philosophy while expanding its capacity to service the rapidly growing Christchurch post-earthquake market.

Case report

Immediately following the September 4 earthquake in 2010, Structex has been involved in engineering works such as deconstruction solutions for safe demolition, structural inspections, assessment and design. In 2011, Structex increased its human resource capacity by 60% via its innovative alliance model. However, intermediate structural engineers with 3 to 5 years-experience remain a pinch point for Structex.

The company believes that a trustworthy employment brand is fundamental to its longer-term business development. Structex has thus increased its exposure at various industry events and on varied occasions. These efforts have included the following:

- Initiating summer programmes for undergraduate engineering students at tertiary universities in the hope of offering employment after students complete their internships or at the very least providing graduates with valuable office design experience;
- Attending the Engineering Career Fair organised by the University of Canterbury in May 2012 where they successfully secured three graduate engineers;
- Creating a dedicated 'Business and Culture' to manage recruitment, staff retention, internal communication and staff welfare. By doing so, more of the holistic needs of employees can be better looked after;
- Directors attended the Overseas Job Expo in Europe to recruit engineering specialists and formed relationships with one UK company to share engineering resources;
- Engineers from different offices meet regularly to share key findings and work experience. This has been proved an effective way of upskilling;
- The company draws on a big pool of in-house experienced engineers (25% engineers have more than 20 years' experience) to mentor and train existing and newly employed staff, and;
- Staff input into the positioning of the company is applied as a means of enhancing staff engagement.

In recruiting, particular attention has been paid to the candidates' personal attributes, such as the ability to engage with clients, team work and communication. Structex regards these softer skills as equally important as technical expertise, and as a

potential vehicle to build the company's value. More selective and targeted resourcing has, in turn, further developed the company's employment brand.

In terms of remunerations, Structex undertakes reviews with staff every 6 months with packages increasing on average between 5% and 8% since the second half of 2012.

During 2012, Structex has primarily been involved in four activity types: 1) rebuild in Christchurch (30%); 2) business opportunities in Christchurch and the South Island due to the effects of rebuild (50%); 3) strengthening works nationwide (10%-20%) and 4) engineering assessment for residential and commercial buildings nationwide (5%-10%). Looking forward into 2013, the company sees opportunities in the commercial rebuild sector increasing as a component of its workload to 60% or 70%.

It has to be noted that as a SME, Structex has thrived during the economic recession that has stricken New Zealand's construction industry. Prior to the earthquakes, Structex managed to sustain its business operation by having three different business units supporting each other in varying capacities.

Building on previous learnings, Structex is now seeking alliance opportunities with like-minded businesses to diversify its business group to incorporate a broader geographic spread in a wider range of complementary disciplines. Geoff Banks, foundation and director of Structex sums this up as follows.

‘The rebuild opportunity made us have a fresh look at how we can operate our business in a sustainable way.’

4.14 SCIRT's resourcing response to the Canterbury rebuild

Organisation profile

SCIRT (The Stronger Christchurch Infrastructure Rebuild Team) is responsible for rebuilding horizontal infrastructure in Christchurch following the earthquakes of 2010 and 2011. The lead contractual agreement within SCIRT is an alliance between owner participants (Canterbury Earthquake Recovery Authority, Christchurch City Council, and New Zealand Transport Agency) and non-owner participants (City Care, Downer, Fletcher, Fulton Hogan and McConnell Dowell).

SCIRT's support office is an integrated services group of about 290 team members, seconded into SCIRT from over 20 different organisations. This team coordinates the assessment of the assets, conducts concept and detailed design (about 180 resources are designers), produce Target Outturn Costs (TOCs) for those designs, coordinate delivery activity across SCIRT and with other rebuild entities. This support team also provides framework functional support in Communications, Safety-Quality-Environment, HR and Commercial management. Delivery of SCIRT construction

work is undertaken by the five non-owner participants and supported by contractors and suppliers. These are termed “Delivery Teams” within the SCIRT structure.

Case report

A dedicated Resource Coordinator was appointed within the SCIRT support office to forecast whole of programme resource needs and then identify gaps and risk areas to the SCIRT programmes’ progress. The aim is to encourage all Delivery Teams and their subcontractors to be proactive in resource planning, to provide feedback to the Resource Coordinator on any expected resource shortages and to suggest initiatives to improve the situation. Where each Delivery Team takes a business perspective on resourcing, the SCIRT Resource Coordinator takes a wider and more whole-of-Programme “helicopter” view.

The following are examples of the activities undertaken by SCIRT’s Resource Coordinator:

- Forecasting demand for various categories of skilled workers based on SCIRT projections, and providing inputs to the Canterbury Earthquake Recovery Authority (CERA) to inform its labour market demand model;
- Forecasting demand for various categories of materials, e.g. aggregates and pipework, and again providing inputs to inform CERA’s demand model for materials;
- Working closely with SCIRT’s Human Resources Manager and Training Manager on strategies to meet the demand for staff through recruitment and training;
- Meeting with the Delivery Teams regularly to discuss the changing needs of the business and for feedback on potential resourcing bottlenecks and possible solutions;
- Initiating a capability survey with the assistance of the New Zealand Contractors Federation to measure existing construction capacity in the Canterbury region;
- Meeting regularly with other participants in the rebuild such as CERA, the Earthquake Commission (EQC), Fletcher Earthquake Response (EQR) and the Project Management Organisations (PMOs) acting on behalf of the main insurance companies in order to coordinate resource planning;
- Working with the HR Department to form effective collaborations with many agencies such as the Ministry of Social Development (MSD), Building and Construction Industry Training Organisation (BCITO), the Canterbury Employment and Skills Board (CESB) and Careers NZ to support Delivery Teams’ training and education programmes, and;
- Working with the New Zealand Immigration Service and advising on its updates on the Canterbury Skill Shortage List (CSSL) and other issues that may help streamline visa applications of overseas workers who have the skills that SCIRT needs.

All SCIRT Delivery Teams and their subcontractors are required to take an employer's responsibility for recruiting and developing the competence of their own workers. To address skill shortages in the operational space, SCIRT's support office has developed an innovative training framework which partners with Infracore, local training providers (such as CPIT, TPP) and the construction industry. The framework allows for introductory off-job training which is followed by on-the-job training provided by SCIRT Workplace Tutors. This training is targeted at attracting new entrants into the industry from the pools of local unemployed, youth and those wishing to change jobs. The Workplace Tutors also provide on-the-job training to current industry employees.

SCIRT's guiding philosophy around resourcing is: local Cantabrians first; then South Island, then New Zealand, then (if needed) overseas. One of its key objectives is to upskill the workforce during the life of the programme, currently scheduled to be completed by 2016. The SCIRT training framework strategy described above was a strategy for crew operational roles as these skills can be taught within the SCIRT programme timeframes.

However, professional roles (e.g. engineers) cannot be sourced through this strategy. The Design Consultancies and Delivery Teams have recruited within the guiding philosophy. This has allowed for many New Zealand graduates and civil engineers to take up opportunities across SCIRT. Where local resources have been exhausted, recruitment extends nationally. Because of the size of the SCIRT programme, there has been a need to recruit professionals and highly skilled roles overseas. The SCIRT support office acted as a conduit to allow this to happen collaboratively on one occasion in 2012.

For instance, three businesses (one Delivery organisation and two Design organisations) went under a joint "Rebuilding Christchurch's Infrastructure" banner to the UK and Ireland with the Working In Expos to recruit professionals. SCIRT is also attracting candidates from overseas who see this as a unique opportunity to get involved to help Christchurch and accelerate their technical and operational experience and learning.

At the end of 2012, SCIRT had more than 1000 site-based workers and approximately 290 people working in its support office. One third of the SCIRT workforce in the field is from outside Christchurch, some from other parts of the South Island, and some from the North Island. The SCIRT support office is an eclectic mix of nationalities. SCIRT is also encouraging women into the industry. Diversity of workforce demographics is an outcome of the SCIRT resourcing plan and is actively supported. With an aim to leave a more skilled workforce whose average age has dropped and which is more diverse in its make-up, SCIRT is cultivating a solid skills set in a planned way that is intentionally ensuring a sustainable industry in Christchurch after the rebuild.

Some resourcing difficulties that SCIRT has grappled with were initial shortages of locally-based qualified and experienced drainlayers and Site Traffic Management Supervisors (STMS). The shortage of STMS was dealt with through a combination of additional training for local workers, recruitment from elsewhere in New Zealand and optimising the operational plan by sharing STMS resources across projects. Despite additional training and a nationwide recruitment campaign by some of SCIRT's contractors, there persists a shortage of certified drainlayers. The Labour Group of the Ministry of Business, Innovation & Employment (MBIE) has recognised this by accepting a SCIRT submission and adding 'drainlayers' to the Canterbury Skill Shortages list. This has the effect of facilitating work visas for drainlayers from other countries.

SCIRT has rarely had to go beyond the shores of New Zealand to obtain the necessary plant, labour and materials. However, occasionally, expressions of interest have been sought internationally for specialist works, e.g. relating to the inspection and in-situ rehabilitation of damaged sewers. As for these types of jobs, existing domestic resource is stretched due to the sheer scale of the earthquake damage and the urgency with which the repairs must be completed.

A recent survey of 20 local civil engineering contractors confirmed that SCIRT is competing directly for construction resources with the many new subdivisions that are being developed in and around Christchurch to replenish the city's housing stock. Therefore, whatever resourcing strategy SCIRT implements, it considers other competing demands for resources in the city. These competing demands are becoming more significant as the commercial and residential rebuilding programmes accelerate.

Another related issue raised by SCIRT is housing the growing workforce. With much of the city's housing stock, hotels and motels damaged, SCIRT's out-of-town workers would find it difficult to find suitable accommodation. The accommodation market has been slow to respond to the rising demand for bespoke workers' accommodation and SCIRT's Delivery Teams have pursued a number of small to medium scale accommodation solutions, e.g. refurbishing disused facilities. Ensuring access to adequate accommodation remains a key focus of SCIRT's Resource Coordinator and its Delivery Teams.

To mitigate the resource risk for future SCIRT rebuild work, a systematic Resource Plan is well underway. According to this Plan, SCIRT will keep its focus on the following areas over the next couple of years.

- Reinforcing working relationships with subcontractors, trades and material suppliers;
- Increasing market consultation to improve workforce planning, and;
- Linking with other vertical rebuild PMOs to plan for the influx of additional workers and the provision of accommodation for individual workers and those with families.

4.15 Fletcher EQR's resourcing response to the Canterbury rebuild

Organisation profile

After the 4 September 2010 earthquake, EQC appointed Fletcher Construction to run a Project Management Office for home repairs. This is referred to as the Canterbury Home Repair Programme (CHRP). Fletcher EQR is a business unit set up for this purpose. It has a central office and 20 Hubs from which their project management teams organise the repair work.

Contract Supervisors based at the Hubs are the primary contacts for affected homeowners and the contractors appointed to undertake the work. In addition, the hubs accommodate Community Liaison Officers who provide direct assistance to homeowners, along with a range of other project management staff.

The repair work is carried out by accredited contractors, who are predominantly Canterbury-based. Accreditation is based on trade qualifications, with other factors including experience and overall capability. Typically builders and painters are the main trades that are accredited with other trades operating conventionally as subcontractors. The current home repair work is undertaken in three categories: full-scope repairs, urgent repairs and heating repairs.

Case report

As an early mover, Fletcher EQR has been in a more advanced position in securing resources for CHRP. Contractors have been first sourced from the Canterbury region, utilising those with recognised industry accreditation from Master Builders, Certified Builders, or Licensed Building Practitioners. As of end of June 2012, Fletcher EQR had inducted 18,000 tradesmen into the CHRP programme with approximately 4200 full time employee equivalents (FTEs) working on repairs at any one time. The size of EQR's main office has grown from less than 100 people at end of 2010 to nearly 700 by end of 2012.

For housing repairs, tradesmen such as plasterers and painters have constantly been pinch points for EQR. Since June 2012, Fletcher EQR has lost a number of supervisors and quantity surveyors. Some of them chose to go back to the building industry while some left for opportunities offered by other businesses.

Fletcher EQR has been working with the Canterbury Earthquake Recovery Authority (CERA) and other insurers' Project Management Offices (PMOs) to supply the Canterbury Skill Shortage List (CSSL) to New Zealand Immigration. Half of its engineering technical team have been brought in from overseas. However, there are skill shortages in certain areas as was acknowledged by the update in late 2012 of CSSL.

As of December 2012, at the expected level of activity, Fletcher EQR predicted that its growth in 2013 is likely to be constrained by the shortage of skills and temporary accommodation. There is real concern that the various PMOs carrying out the overall

repair programme for Canterbury will be competing for scarce resources, both labour and accommodation, not just for their workers but also for temporary accommodation for residents being rehoused while their homes are rebuilt or repaired.

Fletcher EQR has been closely monitoring the rates in the market. Regular consultation has occurred with accredited contractors and industry experts to get feedback on labour rates. However, as other vertical rebuilding picks up in 2013, Fletcher EQR may face a risk of losing its tradespeople if other PMOs offer higher rates of pay.

Staff and contractor retention and temporary accommodation will be Fletcher EQR's main areas of focus for 2013. In 2012, EQR's main office forecast the demand for temporary housing and the consequences from this. It also carried out a thorough analysis of varied scenarios of housing options and outcomes. As the demand for houses in Christchurch – both temporary and permanent - continues to grow, Fletcher EQR will work closely along with its key contractors and a wider range of housing providers to ensure that temporary accommodation issue is manageable and potential economic impacts will be minimised.

“Building more resilient organisations, able to survive and thrive in a world of uncertainty, through research and practice”

We live in an increasingly complex world dealing with a broad spectrum of crises arising from both natural and man-made causes. Resilient organisations are those that are able to survive and thrive in this world of uncertainty.

Who we are:

The Resilient Organisations Research Group (ResOrgs) is a multi-disciplinary team of over 20 researchers and practitioners that is New Zealand based and with global reach. A collaboration between top New Zealand research Universities, including the University of Canterbury and the University of Auckland, ResOrgs is funded through the Natural Hazards Research Platform and supported by a diverse group of industry partners and advisors. The research group represents a synthesis of engineering disciplines and business leadership committed to making New Zealand organisations more resilient in the face of major hazards in the natural, built and economic environments. Resilient organisations are able to rebound from disaster and find opportunity in times of distress. They are better employers, contribute to community resilience and foster a culture of self-reliance and effective collaboration.

What we do:

The ResOrgs programme of public good research is aimed at effective capability building through research activities with significant impacts on policy and practice. We have been researching the resilience of organisations since 2004.

Activities and outputs of the group include informing and focusing debate in areas such as Civil Defence Emergency Management, post-disaster recovery, and the resilience of critical infrastructure sectors, in addition to core activities in relation to organisation resilience capability building and benchmarking. We have produced practical frameworks and guides and helped organisations to develop and implement practical resilience strategies suitable to their environment. These research outputs are already influencing government policy and industry practice and we are involved in a wide range of international projects.

Why we do it:

In an increasingly volatile and uncertain world, one of the greatest assets an organisation can have is the agility to survive unexpected crisis and to find opportunity to thrive in the face of potentially terminal events. We believe such resilience makes the most of the human capital that characterises the modern organisation and offers one of the greatest prospects for differentiating the successful organisation on the world stage. This resilience is typified by 20/20 situation awareness, effective vulnerability management, agile adaptive capacity and world class organisational culture and leadership. More resilient organisations lead to more resilient communities and provide the honed human capital to address some of our most intractable societal challenges.

To find out more visit our website: www.ResOrgs.org.nz

APPENDIX: TEMPLATE OF CASE STUDY INFORMATION

Resourcing the Canterbury rebuild project

(www.recres.org.nz, www.resorgs.org.nz)

(For building supplies organisations)

Purpose of case studies: To understand the typical resourcing issues over time during the rebuild and what good techniques have been used to overcome these resourcing hurdles?

List of questions for case study organisations:

1. What resources (materials & skills) are needed across your supply chain?
2. How much of your production is BAU (business as usual) and earthquake-related?
3. How do you deal with shortages of resources? (Human resourcing solutions: borrowing, poaching, recruiting, relocating, partnering, alliancing, joint venture (JV), in-house training and upskilling; materials: increasing production capacity, setting up new plants, partnering) The reason for the solutions used?
4. What are the outcomes of your resourcing initiatives? – Are you satisfied? Additional costs incurred?
5. What are the weak links in the material supply chains?
6. Any economic impacts as a result of the shortage of a particular type of resource on the supply chain?
7. How many people in your organisation are from outside Christchurch? How do you train & accommodate them?
8. What is your current level of training? Are you doing it in house or outsource to/collaborate with ITOs?
9. Cost escalation – What is percentage of wage inflation since June 2012? Any changes to your employee remunerations?
10. What are other emerging resourcing issues that ring the bell? Or catch your attention?
11. What information needs are there to allow businesses to plan for the future?
12. What areas of collaboration or government/industry initiatives would be supported by business that would enhance efficiency in the construction sector?

Disclaimer: The project is funded by BRANZ, Resilient Organisations and the University of Auckland. The questions of case studies are approved by the University of Auckland Human Participants Ethics Committee (UAHPEC) on 18 September 2011 with reference number 7520.

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Resourcing the Canterbury rebuild project

(www.recrs.org.nz, www.resorgs.org.nz)

(For construction and engineering organisations)

Purpose of case studies: To understand the typical resourcing issues over time during the rebuild and what good techniques have been used to overcome these resourcing hurdles?

List of questions for case study organisations:

1. What skills are most needed across your workforce?
2. How much of your work is BAU (business as usual) and earthquake-related?
3. How do you deal with shortages of resources? (Resourcing solutions: borrowing, recruiting, relocating, partnering, alliancing, joint venture (JV), in-house training and upskilling, others, etc.) The reason for the solutions used?
4. What are the outcomes of your resourcing initiatives? – Are you satisfied? Additional costs for recruitment?
5. Have your employees who you recruited from overseas got any problem with immigration?
6. How many people in your organisation are from outside Christchurch? How do you accommodate them?
7. What is your current level of training? Are you doing it in house or outsource to/collaborate with ITOs?
8. Cost escalation – What is percentage of wage inflation since June 2012? Any changes to your employee remunerations?
9. What are other emerging resourcing issues that ring the bell? Or catch your attention?
10. What information needs are there to allow businesses to plan for the future?
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