

POST-DISASTER RECOVERY: A STUDY OF A SPECIAL-PURPOSE BUSINESS ALLIANCE STRUCTURE.

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ABSTRACT

This paper is a study of a special-purpose, disaster-recovery organisation called SCIRT set up in the aftermath of a major disaster in Christchurch, New Zealand. Data were collected through face-to-face interviews from 18 senior executives and 49 staff in focus groups. Using grounded theory methodology, the study identifies four design and management features that helped SCIRT adapt to a volatile, uncertain post-disaster environment. These were: (a) leadership, (b) collaborative culture, (c) learning, and (d) human resource – fit for purpose. These are discussed in detail. The paper contributes to the literatures on disaster recovery, organisational resilience and peak performance.

Key words: disaster-recovery, alliance, organisational learning, managing peak performance.

INTRODUCTION

The creation, design and management of special-purpose organisations to facilitate recovery from major disasters have received scant attention in both the literature on organisation design and the literature on disaster management. This is not surprising since major disasters are relatively rare and post-disaster environments are not always researcher-friendly. Getting access to people and data is difficult in such contexts.

The study of such special-purpose, disaster recovery organisations is important for a variety of reasons. First, such a study can shed light on specific organisational features that are required for recovery from disasters. Second, it can identify new organisational forms that may also be effective in non-disaster situations. Third, post-disaster environments are typically characterised by uncertainty and volatility. Such a study can identify design and management principles that facilitate adaptation in volatile, uncertain, complex and ambiguous environments. In doing so, it can contribute to our understanding of organisational resilience, which is broadly defined as rapid adaptation in an adverse situation.

The present paper is a study of a special-purpose, disaster recovery organisation called SCIRT, set up in the aftermath of a major disaster in Christchurch, New Zealand. It was set up to rebuild the severely damaged horizontal infrastructure, constituting water, waste and storm water pipes, as well as the roading network, which includes bridges and walls (<http://www.oag.govt.nz/2013/scirt/part2.htm>). This study employed a grounded theory methodology for data collection and analysis since the phenomenon being studied was not well understood. It contributes to the literature on organisational recovery and resilience by discussing the unique organisational attributes of SCIRT. The rest of the paper is organised as follows. First, we provide a background to the study. This is followed by a section on research

methodology. Subsequently, we present and discuss our findings. The paper concludes by suggesting a framework for effective disaster recovery organisations.

BACKGROUND

On September 4, 2010, a 7.1 magnitude earthquake hit the Canterbury region of New Zealand. The epicentre was 20km west of the city of Christchurch where significant damage occurred to infrastructure and buildings. To repair the city's horizontal infrastructure, the Christchurch City Council (CCC) put out tenders for the rebuild work and five companies were awarded the contracts. The CCC and the maintenance contractors created the Infrastructure Rebuild Management Office (IRMO) to manage the process. The contractors were New Zealand companies such as City Care, Downer, Fletchers, Fulton Hogan and McConnell Dowell.

However the aftershocks continued unabated, and on February 22, 2011 a 6.1 magnitude earthquake occurred beneath the city in which 185 people were killed, over 100,000 properties were severely damaged. The infrastructure damage increased nearly ten-fold. To deal with the overwhelming increase in repair work, stakeholders in the original IRMO realised there was a need to do something different as no single organisation had the resources to deal with the unprecedented level of damage created by the earthquake.

On May 4, 2011, the commercial foundations of a new organisation were laid with a signed interim agreement from eight alliance partners which included the clients - CCC, New Zealand Transport Authority (NZTA) and the Christchurch Earthquake Rebuild Authority (CERA) - and the five delivery teams from the original IRMO which had systems, resources and existing relationships. The new organisation was called Stronger Christchurch Infrastructure Rebuild Team (SCIRT).

A board was created which had the guideline for creating: (1) a fully integrated management system; (2) a programmes management philosophy and (3) programme and process workflows. A general manager was appointed and started on May 9, and specialist in alliance coaching – Alchimie – was contracted.

On Sept 1, 2011, the five-year project-based alliance called SCIRT formally began with an end date of December 2016. Leased land from NZTA was initially set up with prefabs; and then a designed for purpose building was completed and operational by mid-October with 250 people working in the facility.

RESEARCH METHODOLOGY

On-going seismic activity after February, 2011, made the post-disaster environment in Christchurch quite uncertain and volatile. Since we were studying a phenomenon that was unchartered, contingent and dynamic, an emergent, inductive and open-ended methodology was considered appropriate. Grounded theory method was chosen because it is inductive, comparative, interactive and systematic

(Charmaz, 2008, 2014). More importantly, as an emergent inquiry, it was well-suited for the phenomenon we were studying. There are different methodological strategies for generating grounded theory (Bryant & Charmaz, 2007; Charmaz, 2008; Glaser, 1992, 1998; Strauss & Corbin, 1998). They do, however, share common features such as minimising preconceived ideas, collecting and analysing data simultaneously, being open to varied explanations, and focusing on data analysis to construct middle-range theories (Charmaz, 2008). All of them involve coding data, writing theoretical memos during data collection, constant comparisons, theoretical sampling and theoretical saturation. The present study is based on the approach of Charmaz (1990, 2002, 2014) for data collection and analysis. To summarise, we adopted case study methodology (Stake, 2000; Yin, 2003) and employed ‘grounded’ techniques of theoretical sampling, inductive coding, memoing and constant comparison (Charmaz, 2008; Goulding, 2005; Urquhart, 2013).

Data for this report was collected through: (a) Individual interviews, (b) Group discussions, and (c) Review of documents such as Engagement Surveys, Exit Interview Summaries, and other Management Reports, and (d) Survey results. A total of 18 senior executives, including a board member were interviewed. Data was also collected through five focus group discussions comprising of 41 individuals. All the interviews, including focus group discussions, were recorded and transcribed. Transcribed data was coded using NVivo by multiple researchers independently. The codes and themes were discussed to ensure consistency and validity. The study was approved by the Human Ethics committee of the university. Both the codes and the reflective memos were used to identify specific themes that are discussed below.

FINDINGS

We first present the structure, strategy and decision making process in SCIRT. As a collaborative alliance between competing organisations, SCIRT faced significant challenges. We discuss these tensions. Finally, we present and discuss the four themes that characterise SCIRT.

1. SCIRT Organisational Structure

There was a strong intentionality in the development of a SCIRT structure with an overarching theme of ‘a noble purpose’ for the people of Christchurch purveying its inception. The structure agreed on consists of four main components, Governance, Integrated Services Team, Delivery Teams, and Functional Groups.

Figure 1 about here

Governance consists of a SCIRT Board which has eight members: the chief executives from the five contractors and general managers from the three client organisations. The board mandate is to give

direct governance to SCIRT, whilst a government appointed board – Horizontal Infrastructure Governance Group (HIGG) has an overview of all rebuild programmes in Christchurch including non-SCIRT work. Reporting to HIGG is a Horizontal Infrastructure Management Team General Manager who works to align the clients and SCIRT.

The **Integrated Services Team** (IST) operate out of the ‘designed for purpose’ SCIRT building. IST does not employ staff but comprises of seconded staff from all the alliance partners and additional design contractors, who are charged with facilitating the rebuild work among the alliance contractors and sub-contractors. It is headed by a general manager who reports to the Board. The general manager has a management team including: a human resources manager who, among the many other roles, oversees the Peak Performance Framework (SCIRT, 2014); communications stakeholder manager who has specialist alliance communication knowledge and skills; value manager overseeing that project deliveries offer best value; and two delivery managers who interface between IST head office and the delivery teams who are responsible for the physical execution of rebuild work. There are also asset assessors and designers divided into four teams.

Delivery Teams were provided from each of the five alliance contractor partners. These teams operate dual home organisation and SCIRT systems. Normally fierce competitors they work together. Each team has about 300 personnel including subcontractors and is headed by a project manager.

Functional Groups are leadership groups that draw on staff vertically and horizontally throughout SCIRT to ensure the functionality throughout the organisations different elements, e.g. Safety Leadership Group. These groups bring people from different roles face-to-face to solve organisational problems.

2. SCIRT Strategy and Decision Making

These elements and systems are all enacted with a high level of intentionality which has created a unique and high pace organisation with an overriding noble purpose: Creating resilient infrastructure that gives people security and confidence in the future of Christchurch (SCIRT, 2014); and the commercial objectives of economy, effectiveness and efficiency. The organisation adopted a three-pronged strategy: **collaborate, influence and lead**. This was devised by the management team early on in the formation of SCIRT, during a half day workshop.

To facilitate the effective operation of SCIRT management have been very deliberate in employing process driven decision making systems at all levels. Because of the scale of the SCIRT mandate it uses robust systems such as JD Edwards Financial capturing tool, scheduling tool GIS, design tool 12D, Project Centre; and now have international recognition for the use of GIS and 12D.

3. Tensions within The Model

Right from the start, SCIRT has faced significant challenges because: (a) the extent of damage to infrastructure assets was unknown; (b) there was on-going seismic activity; (c) the extent of funding for

the rebuild was uncertain; and (d) there were multiple client organisations. The evolving nature of relationships between the client organisations and their relationship with the central government also added to the uncertainty of the rebuild process. It was expected that SCIRT would be resilient in the face of these on-going challenges.

The alliance model has delivered many positives. The unique concept of collaboration and competition has been lauded as innovative. It has been recognised internationally as an effective model for post-disaster rebuild. With its deliberate design and robust systems, it is successful in breaking down barriers to collaboration between on-site teams from different alliance partners.

Never-the-less, the sheer nature of an alliance model, the uniqueness of the SCIRT alliance, and the nature of the disaster event means tensions do exist. In considering the tension from top-down it was evident that external to SCIRT tension existed between central and local government regarding the rebuild funding and process. The central government also formed a board – Horizontal Infrastructure Governance Group (HIGG) to oversee all infrastructure work in Christchurch and there are sentiments within SCIRT that personalities within the HIGG dislike alliance structures and mistrusted the SCIRT model. Real or perceived this has created tensions. The diversity of the clients within the SCIRT model also creates tensions with inter-client conflicts regarding different agendas and opposing perspectives regarding design and funding, and mutable agendas when client organisations have leadership changes. In considering a bottom-up perspective it was evident that there are also tensions between delivery teams and IST management team leadership. There were examples of low commitment to the SCIRT vision and strategy within some delivery teams, and the tensions regarding delivery team leaders meeting IST and their team's differing expectations regarding project delivery methods and operational standards.

Cross-organisation tensions also occur when functional leadership groups are perceived as overstepping their authority in the link between the board, the management team and delivery teams, This may be indicative of the incongruence of the GM's 'just do it' philosophy and the requirement to follow systems and process. Hence there are distinct differences in how the functional groups work.

All staff are seconded into their roles from alliance members and associate organisations and come from varying organisational cultures. Therefore some staff have felt under tremendous pressure having no previous knowledge that could prepare them for the Christchurch disaster situation. Workload pressures are considered to be very high because of the fast pace at SCIRT. Time targets for projects are very tight and in a continuous production line structure of new projects coming on stream. It has also been claimed that the key result areas and ensuing incentives can focus people on performance scores and not the spirit of intent (noble purpose) where, for example, teams can deliberately manipulate surveys to improve performance measurement scores. Hence there was some reference to delivery teams only putting resources into things that are measured because it is in their interest to do so.

Despite these tensions and challenges, SCIRT has been quite effective in delivering results. By April, 2014, SCIRT had repaired or rebuilt 233 kilometres of waste water pipe (35%), 41 pump stations (48%),

14 kilometres of storm water pipe (52%), 4 storm water pump stations (33%), 44 kilometres of fresh water pipe (64%), 21 fresh water pump stations and reservoirs (33%), 314,419 square kilometres of road (26%), 91 bridges (60%), and 23 retaining walls (9%). 1215 pressure waste water tanks were installed. In terms of overall progress, SCIRT had completed 74% of design, 37% of construction, and 42% of central city work. This represents 43% of the whole SCIRT programme.

SCIRT has won many awards from industry and professional associations. It has been very favourably rated by external bodies for its achievements in a short time frame. The organisation won:

- NEW Zealand Engineering Excellence awards in 2013
- Champion Canterbury Business Award in 2013
- The Brunel Medal in 2013
- New Zealand Planning Institute Best Practice Award in 2012
- Gold medal from the 12D International innovation, and
- ESRI awards in 2012

From the perspective of outcomes and external validation, there is little doubt that SCIRT has been quite effective. We identified four specific themes that have contributed to effective performance in SCIRT. These were: leadership, collaborative culture, learning organisation, and human resource - fit for purpose. These are discussed below

4. Leadership within SCIRT

In dealing with the tensions that are inherent to such a model as SCIRT, major emphasis has been placed on strong leadership. Underpinning this leadership at SCIRT is the noble purpose and a strong intentionality in enacting this cause.

“I think one of the strongest leadership things I’ve seen is an unrelenting focus on the noble purpose. and I think that’s at the core of leadership is having people really clearly knowing what they’re there for.” (P3)

Furthermore, this intentionality promotes a leadership culture of trust, inclusivity, professionalism, a SCIRT identity, and an alignment of the noble cause, as in:

“Everyone who is involved in doing SCIRT work is part of SCIRT. So, it’s a very inclusive and that’s quite intentional because we’re all trying to achieve the same thing about our noble purpose which is about creating resilience. A resilient infrastructure that gives people security and confidence in the future of Christchurch and that’s our noble and engaging purpose.” (P2)

There was also an intentional move away from the ‘telling’ approach to leadership which was evident in the start-up phases of SCIRT when everyone and everything was new to a much more ‘facilitative’ approach to leadership as the organisation has matured. The approach that is lauded the most is one of leaders who do not direct, but who explore what a person needs to do, but then they hold them accountable for doing it.

“Because we are further into the project and because people kind of know what they are meant to be doing, the type of leadership style that is working more effectively is where leaders are exploring what is getting in the way, what is stopping them from delivering what we have been asked to deliver and then facilitating a way around that.” (P9)

Leadership is evident at all levels of SCIRT but it begins with the Board which is cohesive and has experience and high standing in the engineering and construction community. The SCIRT GM leads by example, is confident, approachable, friendly, and has a positive mind-set as in *“real focus on a can do positive mentality in trying to get things done and that needed to happen”* (P6). The GM works with the board and leadership team within IST and he also maintains the relationships with the clients and HIGG; buffering the organisation from any politicking, *“[GM] is finding it very challenging at the moment dealing with the governance structures that are around and in place”* (P8).

Irrespective of the strong top leadership there is also an inclusive style which purveys the functionality of SCIRT and encourages innovative ideas.

“It encourages the people to be not so much consensus but to listen and involve people, give people an opportunity to provide input before decisions get made. To encourage everybody to stand up and take a lead on whatever, that’s the style we try to encourage” (P6).

One of the coaches, when referring to the delivery teams, called it a ‘teamy’ approach to leadership. Yet the challenge has been that styles can differ between delivery teams, as in *“from what I have observed there are five very different organisations with very different cultures, with very different leaders with very different personalities”* (P9).

Therefore leadership is also driven by robust systems and processes within SCIRT. For example the delivery teams are measured on the number of wellbeing initiatives and outcomes as part of their key result areas. A residents room was intentionally created as a large space where everyone gets together for meetings or recreation.

“It’s an area where tea, coffee making facilities, you can sit down and have a talk with somebody, eat lunch, read the paper, that sort of thing. it’s just providing somewhere for people to get their basic needs met” (P3).

A second example is the cross-functional leadership groups that ensure sharing and engagement occurs throughout the organisation. This has been imperative for the leadership of the IST and Delivery Teams interface, where the tensions of expectation for the project versus reality of the jobsite exists.

“We’re getting to the point where some very strong minded and experienced construction managers are now having some free flowing discussions that wouldn’t have been had before they started with SCIRT and we’re getting the fruit of that” (P8).

5. A Collaborative Culture

The senior leadership within SCIRT have also place a great emphasis on building a cohesive culture of high performance and collaboration. *Creating an environment or a culture where 100 different organisations are working towards the same vision”* (P2). They have been very intentional in working towards a ubiquitous culture, as in: *“Well, delivery team is a part of SCIRT, and we say the subcontractors are a part of SCIRT. When they are working on SCIRT jobs they are SCIRT”* (P7). Centring this culture is, as identified previously, the noble purpose. This is embedded in what SCIRT stands for and they look to staff buy-in, throughout the alliance. To reinforce this mission there is a

constant retelling of the stories of SCIRTs rationale, values and systems to ensure there is a solid SCIRT identity.

“One is the fact the noble purpose as we call it. Anyone I’ve spoken to and asked the question why did you want to join SCIRT, if it isn’t the first response, it is certainly the second response, because they want to help fix Christchurch essentially. So, with that common objective that sets us up for a pretty good culture.” (P8)

Secondly there is a culture of collaboration through trust, where people are open to sharing with others and delivering on their obligations.

“You trust people until they demonstrate to you that they can’t be trusted. And you know that doesn’t mean just failing you once. You still keep trusting people to deliver and still keep working with them. And there’s been very few people that have had to be tapped on the shoulder, not amongst the management team, but amongst the broader environment here to say, look, you really need to go back to your home base and think about yourself. But there’s been a few” (P7).

This trust culture is embedded in developing relationships that are very supportive and solution oriented. Furthermore, a binding factor of the relationship aspect of this culture can be attributed to existing working relationships within and between alliance partners. Informal channels run between functional team leaders into their home organisation and therefore collaboration and sharing is expected across of functional elements of the organisation.

“So you can go chat to any other designer from other teams and they are always willing to help you, which is really cool. You learn a lot just because you are looking outside your own organisation and their skill sets.” (P4)

This collaborative culture is built on a logic of sharing, especially for the delivery teams usually accustomed to competition. Sharing improves outcomes (noble purpose) but is also inextricably linked to pain/gain measures. That is, the difference between actual and cost estimation – positive or negative – goes into a collective pool of pain and gain; which is shared 50% among the clients and 50% among all the delivery teams.

6. Learning Organisation

A constant theme within SCIRT is the desire to do things better. Whether it was the design teams, delivery teams, or strong performance within the pain/gain system many of the improvements have mitigated and in some cases eliminated tensions.

“I think a lot of emphasis is put on understanding modes of behaviour and behaviours and mindsets put into that team in terms of their peak performance and so people are better tooled or better skilled and able to dealing with conflict resolution.” (P6)

Furthermore the intention within the SCIRT learning ethos is to pass on a ‘learning legacy’ for the alliance, the construction industry as a whole, and deliver an effective post-disaster infrastructure repair model, as in “[we] believe that SCIRT is boxable and transportable. The model can be used in other environments” (P7). To this end SCIRT implemented learning mechanisms and developed programmes to capture the learning that facilitates a ‘learning legacy’ which can be disseminated to various stakeholders.

Learning mechanisms: From the outset infrastructure project *coaches* were employed to work within IST and delivery teams. These coaches have a specific remit of building capability, competence and resilience within the leadership space. For example, it was identified that engineers would benefit from ‘soft skills’ training. Hence coaches work on the human competency to complement their technical competency. On a monthly basis these coaches would come together and discuss priorities and outcomes with the CEO and discuss specific needs for specific groups.

The emphasis placed on *specific training* is intentionality driven to support SCIRT’s core values of service, performance and collaboration, “*The HR team have put various programmes in place to try and help people adjust their style, if you like, to what we want. People aren’t perfect*” (P8). Staff could then take that learning back to their specific roles; “*we’ve had structured workshops about attitudinal things, relationship things, real basic stuff, that’s helped us all*” (P7). Furthermore, SCIRT encourages the *role-modelling*, of value driven behaviours, as in:

“I think what SCIRT does for anybody regardless of the amount of training they have is it demonstrates what is possible if you go about this sort of thing in the right way, the culture you can establish, the performance you can consequently achieve.” (P8)

SCIRT has *systemised* the sharing of standard details such as technical knowledge with alliance member and new seconded staff, without the need for specific training courses. In some cases there is no training for the unique underground disaster conditions that face SCIRT designers and delivery team. Hence within the culture of collaboration there is an ethos of *learning by doing*, as in learning better techniques as projects progress. Subsequently staff get better at what they are doing and embrace a *best practice* ethos.

“It’s not knowing what you don’t know and until someone exposes the possibilities to you, you just think you’re doing a great job and maybe they are, but geez, we can do so much better.” (P1)

Capturing learning: To deliver alliance-wide and future national and international industry benefits from this learning, SCIRT has committed to a *learning legacy* in implementing a programme to capture all its learning. This programme includes the SCIRT Innovation Register which is a system of collecting, evaluating and sharing learnings and ideas. SCIRT has identified that significant innovation is occurring in in the early stages of conceptualisation of projects when there is ‘early contractor involvement’ and during the construction process:

“We are definitely learning things. Because we have an innovation register every month and we have innovation meetings and bits and pieces, we are always looking at bringing things forward for constructability and also to assist in design. So we are definitely learning things.” (P5)

The register consists of three components: bright ideas, on-site-innovations, and also innovations in systems and operations, “*the third element is stuff that we were doing that makes our systems and our operations work well that we often don’t even capture*” (P7). This register is linked to the SCIRT KRA system, in which every accepted innovation will gain points. The points system is an intentional approach to re-enforce the SCIRT mantra of leaving a legacy. The scoring system has also created competition between the delivery teams.

“The other element is around the delivery teams doing things better, and we’ve turned that into a competition. They have to score points and this is part of the formal processes of SCIRT - are part of a key performance indicator. So it means that people are measured by how many they create.” (P7)

Although as the process has matured there is a view that the points system is simply a mechanism and the real focus is now on the sharing within SCIRT and disseminating of ideas to a broader audience. The evidence would suggest that the learning legacy is contributing to the upskilling of the industry and home organisations. For example, a learning legacy that has accrued is higher safety standards have been developed within SCIRT to manage the increasing capacity and risk implications across the delivery teams. The new standards have subsequently been taken up by alliance partner organisations.

“The obvious example of that is when we came up with the SCIRT safety standards we effectively took the highest standard from any one of the NOPs [normal operating procedures] and made that the SCIRT standard. So, for almost every NOP that meant they had to do something they hadn’t been doing before for SCIRT work. What we’ve subsequently seen is the parent organisations taking those on board as well.” (P8)

It is also felt that the alliance model in itself may benefit New Zealand companies gaining international contracts, *“I believe that a lot of this stuff can be used to draw a number of SMEs or medium-sized contractors or whatever together to create scale” (P1)*. The learning is expected to accrue benefits for the alliance partners, moving forward, but also for project and disaster management as a whole. One participant referred to it as a unique social experiment which will benefit New Zealand beyond the Christchurch horizontal infrastructure repair.

Dissemination: Diffusion of learning legacy occurs through multiple direct and indirect means. This includes presentations by senior staff on SCIRT in forums outside the organisation. Indirectly, secondments return to parent organisations with new learnings. A Value Register is also disseminated, *“Our monthly report is being sent all around New Zealand and Australia, and within Fulton Hogan for instance, and people are reading it and coming back to the author, to the distributor and saying that’s a good idea, can we learn a bit more about that” (P7)*.

Furthermore, external Stakeholders have also been keen to disseminate the SCIRT learning, as in:

“The waters people in the City Council are saying come on give us this stuff. We want to take it to the annual conference. And there is the Ministry of Business Innovation and so on saying come on we want to see this disseminated to New Zealand. And Treasury have got a national infrastructure unit. They’re saying come on, there’s a tool there, they’ve got a particular two or three that they’ve spied, we want to get them out to the whole of New Zealand.” (P7)

7. Human Resource: Fit for Purpose

The construction industry is unique in that its people move from project to project. Hence there is a constant rotation and movement of staff within and between organisations; and subsequently a lack of familiarity within ongoing relationships or organisational visions. To ensure staff buy-in, the company places great emphasis on *staff engagement* and *involvement*. They have a designed-for-purpose building which encourages positive interaction, transparency and cohesiveness – through large open spaces, glass walls and communal areas. A regular engagement activity at SCIRT is the 10am full staff meetings, *“I mean the 10 o’clock session is an important feature of it for most of us. It’s sharing of*

stuff” (P5). Staff are encouraged to engage and support each other, subsequently developing a greater understanding of each other and a greater respect for each other that melds them as a team.

“When you’ve got the traditional model where people are sitting in their silos, then they get suspicious and wary of each other because they don’t understand what each other are doing. They have an opportunity here to see and understand what each other are doing and they get on better as a result of that. I mean they’ll always be designers and contractors. They’re not going to change. What’s changing is the understanding they have of each other.” (P8)

There are also ample opportunities for broader involvement than simply doing their job, such as opportunities to engage in charity work, *“There is always heaps of stuff on here about different charities, people doing things with different charities”* (P4), and recreational activities, *“There is always a lot of sports and other fitness things going on, fitness challenges and bike, runs, things like that, which is cool”* (P4). However some staff do feel the pressure of expectation within SCIRT and this is dealt with through a number of initiatives.

Wellbeing initiatives are an important part of the SCIRT strategy of maintaining an effective and focused workforce. Initiatives include free health checks and fitness activities, employee assistance programmes, and coaching programmes: *“People are learning how to manage themselves better and what they need to do to get to a better place physically and mentally”* (P8). Emphasis is also placed on life-balance. For example, the IST team are not encouraged to work on weekends.

“We have a policy of not working weekends, really. The management team you very rarely find them in here. I mean I’ve been in here four or five times in three years.” (P7)

SCIRT also have mechanisms to manage staff through serious issues but will refer them back to their home organisation if needed as in *“each of the home organisations has their own mechanisms for serious issues”* (P8).

The nature of SCIRT, as an organisation of seconded staff, is that it is not strong on **family initiatives**. The prevailing view is that home organisation’s cater for such initiative. Notwithstanding, SCIRT does facilitate some family engagement through Christmas barbeques, *“they have a Christmas barbeque, which is really cool and my kids loved it. Get presents and free ice cream”* (P4). Furthermore SCIRT provides networking opportunities for out-of-town staff and families.

“There has been some good initiatives around get-togethers and networking and so on so they can feel more comfortable and have more contacts outside of work. So, those sort of initiatives I think have been a big help. We’re very cognisant of the fact that there are subsets within our workforce that need extra support and we try to provide it to them” (P8).

Personal growth is encouraged within the whole team within SCIRT. As a unique business environment with seconded staff there is ample opportunity for staff to stretch their competences and capabilities.

“We’ve had young guys that came in as junior engineers, became Team Leaders and then got promoted to go and manage a whole business unit in a centre. Three years, that’s great” (P1).

Workshops have also been run to help the personal development of seconded staff,

“We have designed and delivered a series of workshops for people who are seconded onto the SCIRT programme to help them to think through where are they actually taking their career, where are they taking themselves

personally overall and how are the tools, resources, knowledge, experiences that they are gaining at SCIRT contributing to helping them to get where they want to go” (P9).

There is arguable a great deal of personal development that occurs at SCIRT, and this personal growth can then be taken back with them to their home organisations,

“I would have thought that a lot of people leaving here will feel in a much better personal space in terms of their own development and their experience from coming in here, or when they leave here from when they came in. I hope that that’s maintained when they get back to their home organisations.” (P6)

The coaching teams have also been instrumental in facilitating the person growth and transition back to their organisations. As one coach stated:

“So we are looking at how we conclude the SCIRT journey by ensuring that people are considering what have they gained, what have they grown, what experiences have they had that they would not have had elsewhere in another organisation, what have they learned about themselves, what have they learned about what it takes to be a really great organisation, what would they leave behind, what haven’t they enjoyed and then what are they going to actually do with that to help grow their career exponentially?” (P9)

DISCUSSION

Significant research has been undertaken on alternative approaches to disaster management (Baker, 2009), especially on how large firms deal with organisational crises and natural disasters (McEntire, Fuller, Johnston, & Weber, 2002; Pearson & Clair, 1998). The resilience of such organisations has been a topic of recent research. Biggs, Hall, and Stoeckl (2014) assert resilience is an important framework for understanding society’s ability to cope with crisis. Resilience has been defined in a variety of ways (Biggs et al., 2014; Norris, Stevens, Pfefferbaum, Wyche, & Pfefferbaum, 2008; Zhou, Wang, Wan, & Jia, 2010). Biggs et al. (2014) refer to a business’s ability to maintain and adapt in the face of disturbance while maintaining its identity (p. 646); while Norris et al. (2008) refer to a set of adaptive capabilities, and Vogus and Sutcliffe (2007, October 7-10) to the maintenance of positive adjustment under challenging conditions. Of interest to this study is that these definitions and current research refer to existing pre-crisis organisations going through the post-crisis phase. No research has been undertaken regarding the resilience of an alliance-based organisation specifically established to deal with a city’s horizontal infrastructure reconstruction.

Historically the construction industry has been adversarial and clients and contractors have displayed differences in values, goals and orientations in major construction projects.(Brensen & Marshall, 2000). However Brensen and Marshall (2000) go on to say that now “considerable attention has been directed towards forms of client–contractor relationship that move away from traditional ‘arms-length’ contracting and towards relationships based more upon cooperation and trust” (p. 819). A useful definition offered by Sheth and Parvatiyar (1992) is “A business alliance is an ongoing, formal, business relationship between two or more independent organizations to achieve common goals” (p. 72), while (Street & Cameron, 2007) adds a further dimension of “mutually compatible goals that would be difficult for each to accomplish alone” (p. 241).

Present research has considered alliances from the more pragmatic emphasis on systems with appropriate tools and techniques to 'engineer' collaboration, the more informal and developmental aspects of alliances (Brensen & Marshall, 2000); and the importance of common identity (Ramaseshan & Loo, 1998), trust (Sheth & Parvatiyar, 1992) and strategic fit (Medcof, 1997). Research has also focused on arguments for alliance structures: such as reducing environmental uncertainty and scarcity of resources (Ramaseshan & Loo, 1998), enabling the undertaking of high-cost projects (Rao & Reddy, 1995) and sharing risk (Eisenhardt & Schoonhoven, 1996). Research has also referred to the benefits to be accrued including reductions in time and cost, improved quality, development of management skills, addressing skill asymmetries, and acquisition of technical knowledge; and less tangible benefits such as greater innovation and improved user satisfaction. (Brensen & Marshall, 2000; Ebers & Jarillo, 1997-98; Medcof, 1997; Rao & Reddy, 1995). It is argued that these factors lead to a build-up of trust, reciprocity and mutual dependence (Rao & Reddy, 1995).

Brensen and Marshall (2000) do, however, contend that the body of empirical research is rather weak and heavily reliant of anecdotal data. Researchers further argue that there is a lack of attention paid to the different forms that alliances can take which reflect the diverse circumstances that precede their formation (Brensen & Marshall, 2000), that different forms of alliance governance are associated with distinct purposes and outcomes (Ebers & Jarillo, 1997-98; p. 13) and alliances are complex coordinations across and within firms (Rao & Reddy, 1995).

The idea of an alliance is neither innovative nor new in the construction industry. In fact, the Australian Federal Government has detailed guidelines for alliance contracting in infrastructure and transportation. One of the key respondents in SCIRT characterised an alliance in the construction industry as a "performance-incentivised contractual arrangement." While most contracts rely on monetary incentives, what makes SCIRT unique is the deliberate adoption of non-monetary incentives to ensure contract fulfilment. In simple terms, SCIRT can be described as a performance-incentivized contractual arrangement animated by a spirit of co-operation to achieve a noble purpose. There are five distinct aspects that help provide the non-monetary incentives. It is the combination of five aspects that makes this alliance structure particularly distinctive:

- Alignment of all stakeholders to a shared purpose which is - Creating resilient infrastructure that gives people security and confidence in the future of Christchurch;
- Collaboration that is driven by a set of six values: zero harm, community welfare, openness to learning, collective orientation, generosity & trust, and development of people;
- Action that is based on six exemplar behaviours: striving for excellence, active listening, open & honest conversations, courage to speak up, working together and leading by example;
- Collective sharing of both profit (gain) and loss (pain) resulting from project completion across all alliance partners;

- Proactive human resource practices to ensure staff engagement & wellbeing, appropriate leadership styles, teamwork, collaboration, ongoing learning, improvement & innovation, and transfer of learning to parent organisations;

CONCLUSION

This study investigated factors that contribute to resilience within an organisational alliance undertaking the repair of a cities horizontal infrastructure following a natural disaster. SCIRT is an alliance of clients and constructors charged with the responsibility of ‘creating a resilient infrastructure that gives people security and confidence in the future of Christchurch,’ often referred to as its noble purpose. It was deliberately created to undertake a five year reconstruction project that was too large and complex for any single organisation. All aspects of SCIRT were fashioned with the intentionality of creating a high performance organisation which would continue to deliver good outcomes for alliance members, seconded and contract staff, the New Zealand Government and the people of Christchurch during its five year lifespan.

Figure 2 about here

Our findings concluded that four attributes contribute to the success of SCIRT (figure 2), *leadership*, *collaborative culture*, *learning organisation*, *human resource – fit for purpose*. Within SCIRT’s governance and management structure they have been very deliberate in developing, embedding and operationalising these attributes. Firstly, *leadership* mandated by the noble purpose, is highly participative and inclusive, permeates throughout the organisation, and is supported by robust systems and processes. Secondly, there is a *collaborative culture* with the mantra of the noble purpose, sharing and trust. This culture is ubiquitous and underpins the values, rationale and systems for collaboration within SCIRT’s high performance ethos. Thirdly, SCIRT is a *learning organisation* with strong learning mechanisms, means of capturing that learning, and means of dissemination as part of a learning legacy. Finally *human resource - fit for purpose* infers that SCIRT is a unique business model, with a finite lifespan, engaging seconded staff, and with the specific noble purpose. To fit this purpose the organisation has concentrated on staff engagement and involvement, wellbeing initiatives and emphasis on personal growth as key to staff buy-in, and subsequent high performance and overall resilience.

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Figure 1: SCIRT Alliance structure diagram

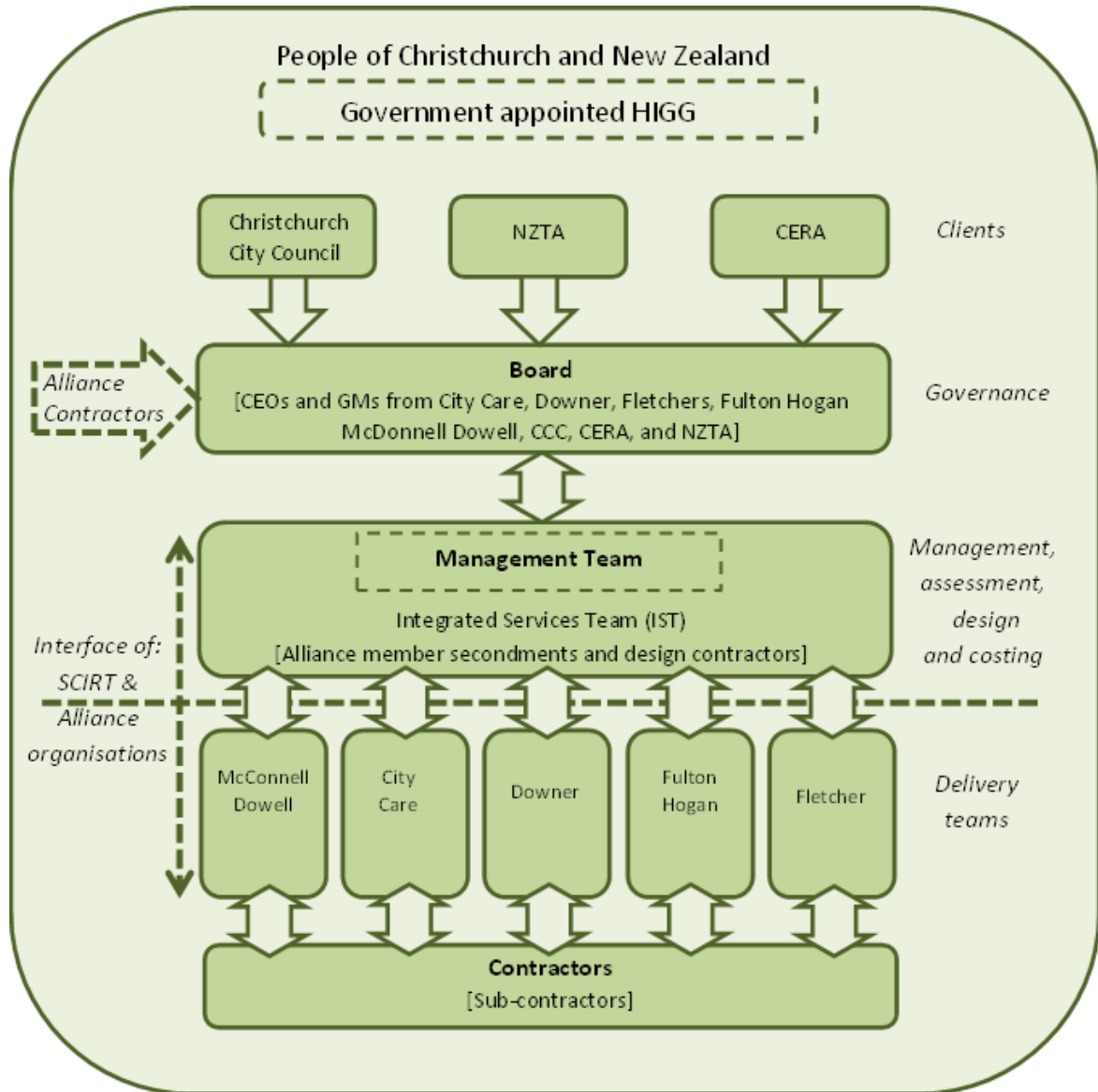


Figure 2: SCIRT Model of Resilience

