Bouncing Forward

with Catchment Groups.

Kellogg Rural Leadership Programme

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I wish to thank the Kellogg Programme Investing Partners
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Executive Summary

As the chairman of the newly formed Pohangina Catchment Care Group I wanted to investigate the roles that catchment groups can and do play in our rural communities. The basis of this report is:

How can catchment groups create positive change and build resilient rural communities.

I investigated why catchment groups are formed, how they are formed and what they are producing. By gaining an understanding of the literature around resilience, social sense making, the social licence to farm and the legislative requirements on farmers. I aimed to seek any correlation between the above topics and catchment groups.

There is currently considerable pressure on rural communities both from legislation to social pressures, and the considerable amount of change and disruption currently being presented to farmers. I wanted to see if catchment groups are an option for building a better future for farmers and help to alleviate the pressure and manage the changes.

I interviewed six people involved with catchment groups as well as read up on the topic. The basis of the interviews was to find a correlation with the literature and catchment groups. Using thematic analysis, I scrutinised my results to get an understanding of the key themes from my interviews. This made it possible to align those themes with the literature and seek out any correlations.

What I found through my research was that social sense making has a strong correlation with catchment groups that have a positive mindset and vision and the building of social capital. Catchment groups are also building self confidence in their group members as they have a constructive environment to learn in.

Something that came through strongly in the interviews was that catchment leaders play a key role as resilient individuals to create motion in these groups and help to get them up and running. It was noted that there is a strong reliance on catchment leaders and there is a risk that too much pressure on them could cause the system to fail. Any government intervention or assistance needs to support catchment leaders and not impede on their ability to lead constructive change.

My recommendations are that catchment leaders are supported through administrative support and high-level training in strategic vision and resilience thinking. That the principles of adaptive enquiry are taught to existing and future catchment groups. Also, that catchment groups don't do this journey alone but that they include the wider public to get them onboard with the concept of catchment groups.

Resilient individuals build groups, groups build positive social capital, positive social capital builds resilient communities

Acknowledgements

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1   Introduction

While thinking about what to do this research on, my initial thoughts were to investigate the barriers to change for farmers. As I thought more about this topic, I flipped my thought process to try and gain an insight into the more adaptive people within our industry who actively work with change and who maintain a positive and proactive outlook for both their business and their life. This then led to the topic of resilience which seems to be the underlying basis of sustainable businesses which are often run by resilient individuals.

At the time of writing this report I am the Chair of the Pohangina Catchment Care Group (PCCG) as well as a committee member of the Manawatu River Catchment Collective. The PCCG has been going for almost 18 months. During this time, we have gone from testing at seven sites within the Pohangina River catchment to 11 sites, all of which are funded by valley locals. We have run two events. One was for anyone to attend, and it was an information evening including outside speakers and a practical demonstration of investigating the macroinvertebrate community of a site in the river. At this event we showed the first 6 months of testing data and stated the strategy for our group going forward. We are in the progress of refining this but very early on we decided that as a group we were there to focus on our water quality, biodiversity, and pest control within the valley. The flyer for this event is in the appendices (item 1). Our water testing is shared monthly in reports that I put together. This way the information is readily available to those who are in the committee, own land that we test on or are directly linked to the PCCG in another form. An example of these reports for one testing site is in the appendices (item 2).

I am very passionate about the roles that catchment groups can play in our rural communities. Especially during these trying times of increased prescriptive legislation, increasing societal expectations and of course covid 19. As the chair I want to ensure that the PCCG is managed to its best potential and that our valley can grow and learn from the work that we are doing.

The idea of a sustainable and resilient community is a brilliant ideal as it involves lifting others up, ensuring a mutual benefit. I wanted to see if this is a realistic expectation as well as if there is any evidence of it already occurring and how can we aid in this progressing.

My question is:

How can catchment groups create positive change and build resilient rural communities.

The title bouncing forward is in reference to the common term used when someone is describing resilience which is to bounce without breaking or to role with the punches. Bouncing forward aims to incorporate that mantra with a progressive approach. To take the punches and maintain the bouncing while all the time moving forward as each challenge is overcome and understood.

2   What is Resilience? (Literature review)

Resilience is a concept that is ever growing in popularity for researchers and academics across a wide range of disciplines. Not only does the concept of resilience have individual advantages to any specific topic but it also creates a bridge between ecological, social, financial, economic, and humanitarian issues. (Folke, 2016) (Neil Adger, 2000) (Bene, Headey, Haddad, & Von Grebmer, 2016).

Folke (2016) defines resilience as *"Resilience is having the capacity to persist in the face of change, to continue to develop with ever changing environments"*. Walker (2004) describes resilience as *"the capacity of a system to absorb disturbance and reorganise while undergoing change so as to still retain essentially the same function"*.

2.1   Levels of adjustments to change

The literature does delve deeper into resilience and especially into the types of adjustments made by resilient people for how they evolve through adversity. These types of adjustments are usually represented in three groups. Buffer Capacity (Shadbolt, Olubode-Awosola, & Rutsito, 2016) and Absorptive coping capacity (Bene, Headey, Haddad, & Von Grebmer, 2016), Adaptive capacity (Bene, Headey, Haddad, & Von Grebmer, 2016) (Shadbolt, Olubode-Awosola, & Rutsito, 2016), and Transformability or transformative capacity (Bene, Headey, Haddad, & Von Grebmer, 2016) (Shadbolt, Olubode-Awosola, & Rutsito, 2016).

These capacities are linked to the amount of change, disturbance, or adversity in relationship to the strategies and responses to cope with the aforementioned. The following graph (figure 1), this was described as an *"illustration of the continuum of change, buffer capacity, adaptive capacity, and transformability"* (Shadbolt, Olubode-Awosola, & Rutsito, 2016).
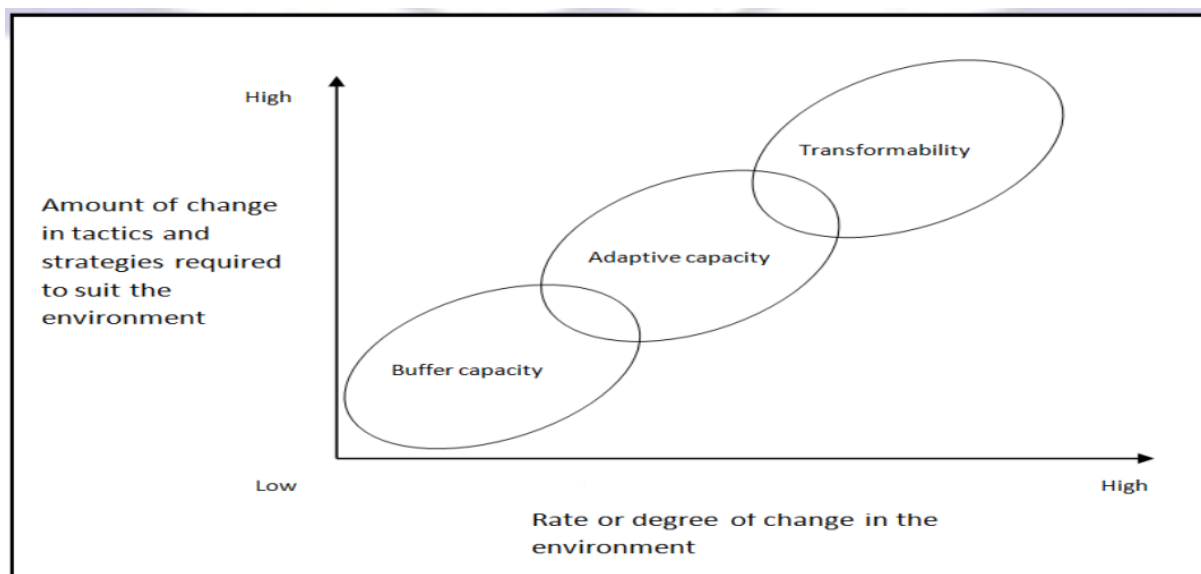

Figure 1: Source (Shadbolt, Olubode-Awosola, & Rutsito, 2016)

Bene (2016) had a slightly different view where all levels of capacity start at the axis of the graph. This would mean that transformational change is an option from the offset. While Walker (2004) investigated the aspects of the buffer capacity which in essence is the stability of the current system. The ability to bounce without breaking. It is the adaptive capacity that looks into the capacity to change and evolve while still performing the same outcome (Duranovich, Shadbolt, Dooley, & Gray, 2015) like bouncing forward.

2.2 Adaptive Capacity

By using the principle of resilience being a capacity over an outcome it emphasises that resilience is about adaptation and adjustability as opposed to a fixed practice (Bene, Headey, Haddad, & Von Grebmer, 2016) (Folke, Resilience (republished), 2016). Stability is sometimes used as a comparison for resilience however this has closer similarities to just the buffer capacity component of resilience. While adaptive capacity better aligns with the capacity of adjustability and adaptability. Transformational change has the same alignment but on a more serious level as transformational change reflects a complete overhaul of the current system. (Folke, Resilience (republished), 2016)

While buffer capacity is to bounce without breaking and to continue with the current system and absorb change and surprises (Shadbolt, Olubode-Awosola, & Rutsito, 2016). Adaptive capacity is the ability to identify opportunities, often from surprises and challenges, and mould a system to best utilise them. Adaptive capacity is also described as persistence or adaptation contained by the current systems boundaries (Folke, Resilience (republished), 2016) (Duranovich, Shadbolt, Dooley, & Gray, 2015).

2.2.1 Intrapersonal characteristics

Duranovich et el (2015) identified nine attributes that are relevant to the resilient individual. These are self-efficacy, locus of control, willingness to accept uncertainty, willingness to change, open mindedness, individual sense making, social sense making and strategic thinking focus, and strategic planning focus. This analysis identified five key attributes of high resilience farmers. These were:

- Self-efficacy – *''the belief in one's capabilities to organise and execute the course of action required to produce given levels of attainment''* Bandura (2000) as referenced in (Duranovich, Shadbolt, Dooley, & Gray, 2015)
- Willingness to change – a farmer's willingness to face the reality of uncertainty and ambiguity
- Locus of control – specifically an internal locus of control is people who believe they have control over external events and that their behaviour is the main factor responsible for their situation
- Social sense making – *''the ongoing effort of making connections in order to create order and understand a situation''*
- Strategic thinking – a formal and analytical means of forming strategy

(Duranovich, Shadbolt, Dooley, & Gray, 2015)

The analysis done by Duranovich et el identified what these characteristics identify in terms of the behaviour displayed and how they managed risk within their businesses. These high resilience farmers were more proactive. They had a planned strategy forward while maintaining flexibility. Information gathering was given more importance than low resilience farmers. They gave higher importance to debt management as well as being more open to implementing technological innovations.

In their conclusion the principal of social sense making is identified as one of the essential soft skills necessary to build resilience. There is already evidence of social sense making in the agricultural industry in the form of discission groups.

2.2.2   Social capital

Social capital is in a simple form, both the relationships between individuals and how tight that bond is. Social capital is important when thinking about catchment groups because it covers three levels. These are defined by Heather Collins in her PHD on Dairy farmer responses to water quality interventions as Bonding, Bridging, and Linking. While bonding is between similar people, bridging is between different people and linking is between people and what's called a power gradient. The power gradient is the going up, along, and down the chain of command of the relevant topic. An example would be catchment groups discussing water quality legislative planning with the Ministry for the environment. This is a grass roots group discussing high level central government policy. (Collins, 2017)

From a group perspective the balance between bonding and bridging and the rates at which each component is represented will impact on the functionality of the group to drive change. If bonding is high and bridging low, then there will be a willingness to continue with the known and the familiar. Where a ratio of bridging is higher, more openness to outside information and individuals is present complimenting a resilient and adaptive approach. (Compton and Beeton (2012) as cited in (Collins, 2017).

Sobels et el. (2001) found that shared farmers discussions and learning achieved both bonding and bridging social capital and increased farmer knowledge while also improving emotional support to those individuals. As cited in (Collins, 2017).

The Collins, (2017) literature review identified that social capital was essential in informing and influencing farmers responses to interventions. Furthermore, social sense making contributed to changing farmer behaviours and creating new social norms. The power of communal knowledge transfer is also broken down to where the information comes from and the levels of trust between the informer and the learner. It was recognised that the basis around the groups formation led to differing results relative to the base principals. For example, if a group was based on trust, then more positive open outcomes would be seen. If the group was based on mistrust and scepticism, then the opposite would occur.

2.2.3   The connection between the resilient individual and social capital.

The foundations found through social capital link with the resilience literature in one key aspect. Social sense making is the strongest link between the two however there is a good overlap when social capital is to be beneficial. Someone who displays the other key attributed identified by (Duranovich, Shadbolt, Dooley, & Gray, 2015) and described in

section 2.2.1, of Self efficacy, willingness to change, locus of control and strategic thinking will be more inclined to bring a positive and productive approach to social gatherings.

Someone who displays these attributes in a positive manner will be more likely to achieve the full range of social capital principles of bonding, bridging, and linking. The literature shows that a resilient individual through social sense making can initiate and mould changing social norms and farmer behaviour at a grander scale as well as in the group they are most present in. A resilient person will have a proactive, positive, and pragmatic outlook that will not only be displayed on an interpersonal and intrapersonal level, but it will become a component of the group they are a part of.

This will make them and those around them more adaptable to the changes and challenges that they face on a day-to-day level. In this case running an agricultural business as well as the ever-growing pressures from society and government.

3   The social licence to operate

The social licence to operate is a concept that originated from the mining sector. It is the societal perceptions of how, in the original case, an industry was acting in relation to its ethical and moral responsibilities towards both humans and the environment. There is no strict definition of the social licence to operate however the broad understanding encompasses the following. (Sustainable Business Council, 2013)

- Confidence and trust in a business's behaviour towards legitimacy, transparency, and accountability between both parties.
- It is not influenced by compliance or regulatory factors but more an ability to maintain sustainability into the future
- While it isn't a contractual obligation the implications of breaching the agreement are sometimes greater than what any legal implications would be.
- It is not specific to any certain location or area. A business dealing in one country can impact its social licence to operate in another.

Nowadays the concept of the social licence to operate covers nearly all industries. It is something that is hard to obtain and a very fickle thing to maintain as social perceptions are changing so rapidly in today information dense world.

For agriculture in New Zealand the social licence to operate, now dubbed the social licence to farm is heavily based around environmental stewardship and sustainability. The 2013 Business and Consumer Behaviour Survey, conducted for the Sustainable Business Council, found that the top three issues that participants ranked as needing to be addressed to live up to our overseas marketing were. (Sustainable Business Council, 2013)

1. Water quality of lakes and rivers
2. Farm nutrient run-off and
3. Commercial/Industrial discharge

It's no surprise that when related to our overseas marketing strategy agriculture features heavily as we are such a large exporter. But this does then put agriculture in the spotlight as our second largest industry after tourists (pre covid). The social perception of farming it now an important factor surrounding the industry.

3.1   The social licence to farm

The social licence to farm is now known to most farmers across the country where 10 years ago the term would have been farcical to many. It is argued that the agricultural industry was slow to react to the increasing scepticism of its practises and norms. This could have been a factor for the level of legislative pressures that is currently being implemented. Robert Boutiliers book ''A stakeholder's approach to issues in management'' (2016) provides a useful illustration of the lifecycle of how a social licence to operate evolves.

The following image represents how the ability of management to alleviate an issue erodes over time as the legislation is implemented. To delve deeper into this image the different

phases can be given examples in agriculture. Phase 1 can be compared to the growing public concern with water quality. This is represented in the upward trend in the life cycle of issue line. Phase 2 represents the lobbying and working group phase of new legislation. Phase three represents a sharp decline in management discretion and the peak of the issues life cycle. An example of this is the health and safety act 2015 which made directors and other officers personally liable for health and safety failings. Phase 4 is just the natural carry-on effects from phase 3. The issues life cycle comes to an end as legislation has been implemented to alleviate the issue.
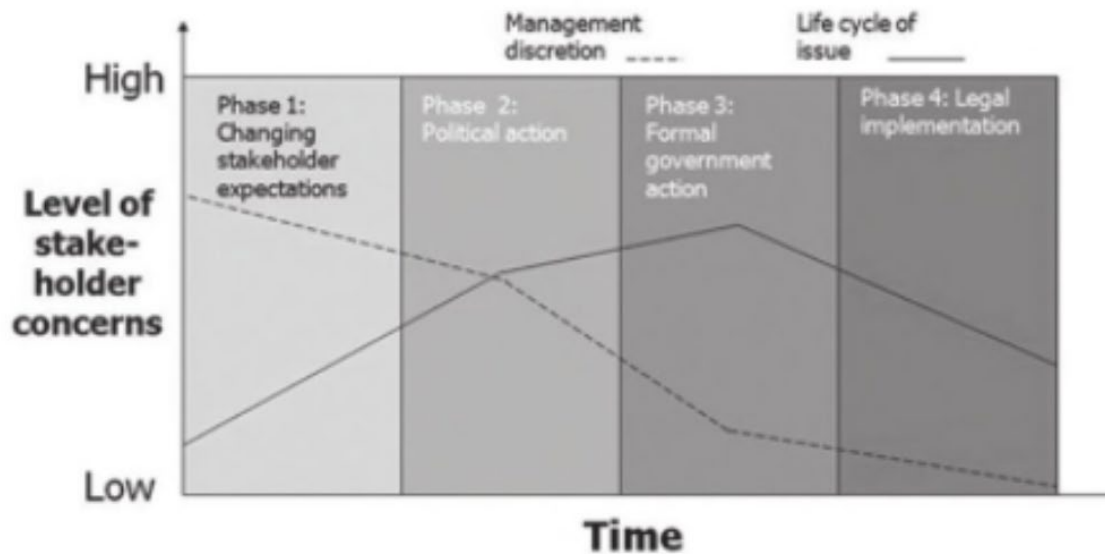

Figure 2: Boutiliers Issue life cycle model

This model can be used to represent the evolution of the social licence to farm construct. There are some arguments that industry engagement with society early on could have alleviated the growth of the issue however, there is also an argument that the issue itself outdid the ability for management to act (Clark-Hall, 2018). The pressures felt by the industry can be identified by the sharp drop in management/industry discretion between phases two and three. The work being done now is to maintain our industry and continue (buffer capacity), to seek opportunities and adapt to the new normal (adaptive capacity) and in some cases completely transform into a new sector (transformational capacity).

This pressure being felt by farmers is ever present in the recent ''Shift happens'' report released by BNZ in 2021. Their data shows that the rise of the conscious consumer is the third highest mega force influencing agribusinesses in 2021 and the fourth highest mega force to influence agribusinesses in 2030. Also 57% of farmers stated that they consider the perceptions of local and international consumers when showcasing their farming practises and future plans. Furthermore 57% of farmers believe that their level of collaboration with others within the sector is an essential action for change. (BNZ, 2021)

These social pressures are also becoming more relevant for our trade relations with the recent free trade agreement between NZ and the UK listing over 260 environmentally beneficial products prioritised for tariff elimination. (BNZ, 2021)

Penny Clark-Hall's Kellogg report ''Social '' Licence to Operate'' (2018) describes the different aspects of a social licence to operate and the relevance of this to the New Zealand Agricultural sector. Her recommendations for the industry include taking accountability for its actions, create targeted engagement strategies from the ground up, and setting strategies to address stakeholder concerns and meet their values. These are all to grow our social licence.

4   Legislative pressure

The legislative requirements of farmers are wide ranging in what is covered as well as carrying differing levels of responsibilities and consequences. The figure below shows the 41 acts that are administered by MPI. Only a proportion of these acts directly affect pastoral agriculture however they are covering the whole primary industries.

Legislation administered by MPI

- Agricultural and Pastoral Societies Act 1908
- Agricultural Compounds and Veterinary Medicines Act 1997
- Airports (Cost Recovery of Processing of International Travellers) Act 2014
- Animal Control Products Limited Act 1991
- Animal Products Act 1999
- Animal Welfare Act 1999
- Biosecurity Act 1993
- Commodity Levies Act 1990
- Dairy Industry Restructuring Act 2001
- Driftnet Prohibition Act 1991
- Forestry Encouragement Act 1962
- Fisheries Act 1983
- Fisheries Act 1996
- Food Act 2014
- Forestry Act 1949
- Forestry Rights Registration Act 1983
- Forests (West Coast Accord) Act 2000
- Hop Industry Restructuring Act 2003
- Irrigation Schemes Act 1990
- Kaikōura (Te Tai o Marokura) Marine Management Act 2014
- Kiwifruit Industry Restructuring Act 1999

- Māori Commercial Aquaculture Claims Settlement Act 2004
- Maori Fisheries Act 2004
- Marine Farming Act 1971
- Ministries of Agriculture and Forestry (Restructuring) Act 1995
- Ministries of Agriculture and Forestry (Restructuring) Act 1997
- Ministries of Agriculture and Forestry (Restructuring) Act 1998
- Meat Board Act 2004
- National Animal Identification and Tracing Act 2012
- NZ Horticulture Export Authority Act 1987
- Plants Act 1970
- Pork Industry Board Act 1997
- Primary Products Marketing Act 1953
- Public Works Act 1981 (Part XIX)
- Royal NZ Institute of Horticulture Act 1953
- Taratahi Agricultural Training Centre (Wairarapa) Act 1969
- Treaty of Waitangi (Fisheries Claims) Settlement Act 1992
- Veterinarians Act 2005
- Walking Access Act 2008
- Wine Act 2003
- Wool Industry Restructuring Act 2003

Figure 3: Legislation administered by MPI.

Looking specifically to the agricultural sector there is further legislation. These acts are as follows

- Resource Management Act 1991
  - This dictates regional policy statements, regional plans and district plans.
  - This also dictates resource consents
- Historical Places Act
- Building Act

- Forestry and Rural Fires Act 1977
- Animals
    - Animal law reform Act1989
    - Impounding Act 1955
    - Dog Control Act 1996

- Land
    - Land Act 1948
    - Crown pastoral Act 1998
    - Fencing Act 1978
- Commercial
    - Commerce Act 1986
    - Fair Trading Act 1986
    - Consumer Guarantees Act 1993
- Property
    - Property Law Act 2007
    - Personal Property Securities Act 1999
- Overseas Investment Act 2005
- Arbitration Act 1996
- Employment
    - Employment relations Act
    - Wages Protection Act
    - Human Rights Act
    - Holidays Act
    - Residential Tenancies Act
    - Minimum Wage Act
    - Equal pay Act
    - Parental leave and Employment Protection Act
    - Health and Safety at Work Act
    - Privacy Act

On top of this there is the new tranche of legislation focussing on the environment.

- National Environmental Standards for Freshwater 2020
    - Managing intensive winter grazing
    - Farm Environmental Plans
    - Emissions Calculations
- The current draft National Policy Statement for Indigenous Biodiversity
- Climate Change Response (Zero Carbon) Amendment Act 2019
- Environmental Reporting Act 2015
- Resource Management Amendment Act 2020
- Waste minimisation Act 2008
- Environmental Protection authority Act 2011

Prior to the above acts coming into place there were minimal acts in the environmental space. The main ones were namely the Soil Conservation and Rivers Control Act 1941, the Environment Act 1986, and the RMA 1991. The RMA is unique because it delegated the responsibilities to local governments. While this did create another level of bureaucracy it meant that recourses were managed at a local level.

The new tranche of acts that I mentioned above are of a prescriptive centralised mentality and they are the ones causing the most frustration and angst amount the rural communities on New Zealand. I want to strongly say that this is not due to a willingness to pollute and or abuse the environment by rural communities. The initial angst was generated through rural bodies, primary industry leaders, and spokespeople not being involved in the formation of these acts. In some cases, even MPI were not invited to the table. This caused frustration because of the overarching control and required changes to current farming practices that these acts implemented. As well as the costs imposed on landowners with no assistance from central government. Another factor was the speed at which these acts came to be. In the recent ''Shift Happens'' report released by BNZ 73% of those surveyed considered that in the last two years the government regulations were ''too much, too fast''.

The burdensome and fiscally demanding requirements are a large contributor to overarching feeling of distain and helplessness in rural communities across the country. Another factor is the unintended consequences that have arisen out of central government's actions. In parts of the country large swarths of land is being sold and blanket planted in Pinus Radiata solely to produce carbon credits to offset emissions elsewhere. This is happening due to the price of carbon rising and allowing pine trees to be included in carbon farming.

The other factor at play with a lifting carbon price is the economic comparison between carbon farming and livestock farming. Some modelling is showing that there is economic benefit from converting steep hill country from pasture to carbon farming (Satchell, 2021). This was modelled using carbon prices significantly lower than the price at the writing of this report. As the carbon price lifts there is more pressure on hill country farmers to understand how carbon modelling is done and to investigate land use changes to their properties. However, this would classify as a transformational change as mentioned in section 2.1 of this report.

In broad terms there are substantial challenges to New Zealand's rural communities' identity, sustainability, and mental stability. The combined pressures of a social licence to operate (as stated in section 3.10) and the legislative pressures from central government are eroding the essence of rural New Zealand.

This is compounded by an excessively underfunded mental health support industry resulting in growing suicides in rural areas as well as the potential to lose future leaders from the industry. New Zealand farmers are world renowned for their ability to innovate and adapt to challenges and become stronger for it. Prescriptive legislation has the potential to stifle innovation and erode the kiwi can do, no 8-wire mentality.

The new age of rural leaders is standing up with a solution to these compounding issues. They come in the form of catchment care groups and other collective action. This project aims to explore the role that catchment groups play in addressing the challenges that rural communities face.

When considering section two, we are looking at what at the different types of resilience in relation to acceptance of change and how resilient individuals deal with the change they are exposed to. We also looked into the importance of social capital and how that is built and the importance of social sense making. In section three we looked into the social licence to operate and the social licence to farm. This looked at how the public perception has such a strong impact on farmers and how as an issue can grows the ability for industry to act on it can diminish. Section four showed the vast array of legislative requirements on farmers as well as an example of the unintended consequences of poorly developed legislation.

So, what does this all mean. It represents the pressure on farmers, not only at a compliance level but also at a moral level. Lifting compliance requirements is a restraint on time where a concept like social licence puts pressure on a social construct and the moral fibres or rural communities in New Zealand. The concept of resilience displays the characteristics required to be able to manage change and navigate difficult times. I believe we are in challenging times and I believe resilience is essential in forging a path forward.

5   Methodology

This research used thematic analysis (Braun & Clarke, 2006) to gain an understanding of the qualitative data set obtained through the interviews. Six interviews were conducted were a mixture of people who are connected to catchment groups in their regions/professions. With an understanding of the key components of resilience, social capital, the social licence to operate and legislation taken from the literature, the questions (found in the appendices) were formulated to how the realities compared with the literature. That is why catchment groups are formed, how catchment groups are run, what are their key drivers, and what they are achieving.

The interviewees were a mixture of two farmers, two consultants, and two government employees. They had a range of viewpoints from the operational management of specific catchment groups to an overarching make up of whole regional catchment syndicates.

The interviews were all conducted on either phone, via Zoom or via Microsoft teams, they averaged around 35 minutes per interview.

The open-ended questions were based on three key areas. Why was the group formed? How was the group formed? And what has the group produced? This formed the base from which conversations extended.

From these questions the answers were analysed, and trends were identified and coded to rank the responses in order of most mentioned to least commonly mentioned. Additional to the interviews I was read in the subject from farming media to the likes of Beef and Lamb and NZ Landcare trusts online material about catchment groups as well as AgReserch's our LAND AND WATER FORUM.

This information was then compared with the resilience literature to identify any correlating ideas and where there was a lack of correlation creating opportunities for new thinking.

By looking at all the responses in a coded form then any biases that individuals held will be diluted by being a part of the greater data set. Any strong viewpoints or comments were identified and taken into consideration. I explained my roles within local catchment groups. After the introduction I focussed on the questions and endeavoured to only talk of my own personal opinions and experiences after the interview formalities were completed. While doing this report some findings and observations with discussed with certain individuals. These people are listed in the appendices.

6   Results

The following images are a graphical representation of my results. When there has been an item of discussion that was mentioned often it is put in bold. When almost every interviewee mentioned an item, it is in bold and underlined.

Figure 4 shows: Why form a Catchment Group?

The key outcome of this was the feeling of pressure coupled with change and disruption. This was a combination of the amount of pressure from legislation along with the technicalities of how the legislation is written. The feeling of pressure from the social licence to farm was also strongly felt. However, it was good to see a positive in the form of ''comfort in working together''. While the feelings of pressure, disruption and change were evident the willingness to share the weight was noted. This is good to have a positive reason for setting a group up.

Figure 5 shows: How a catchment Group was formed?

The main point from these results were the reliance on having a catchment leader. This comment was present in every interview and there was overlap in how a catchment leader was defined. Especially how a group cannot form without a catchment leader.

Figure 6 shows: What has the Catchment Group Produced?

The main point noted from these results were that data is being collected. This is a key information source for the individual groups and a way of tracking their journey but also their progress in their desired field. However, I think that the main points to note are that of self-confidence and a direction/vision/ journey.

Figure 7 shows: Key learnings from the interviews.

The main learning from the interviews were the importance of positivity both for group functionality as well as the groups' ability to be a conduit for change. Additional to this is the huge risk of burnout in catchment leaders as they take on the running of a group in addition to their own lives and other commitments.

Change is required

"We need to future proof our businesses" — **Change/Disruption**

Innovation and adjustment is needed

Wellington won't change anything

Feed back loops

Bottom up — If we don't do it no one will do it for us

There is a lack of services to rural communities

Why Form a Catchment Group?

A non judgmental forum

Shared weight/pressure

Showcasing ourselves and our indusrty — **Comfort in working together**

Connection

Socially connected boundaries

Not fir for purpose

Prescriptive

From legislation

Fear

The shear amount of it

Pressure

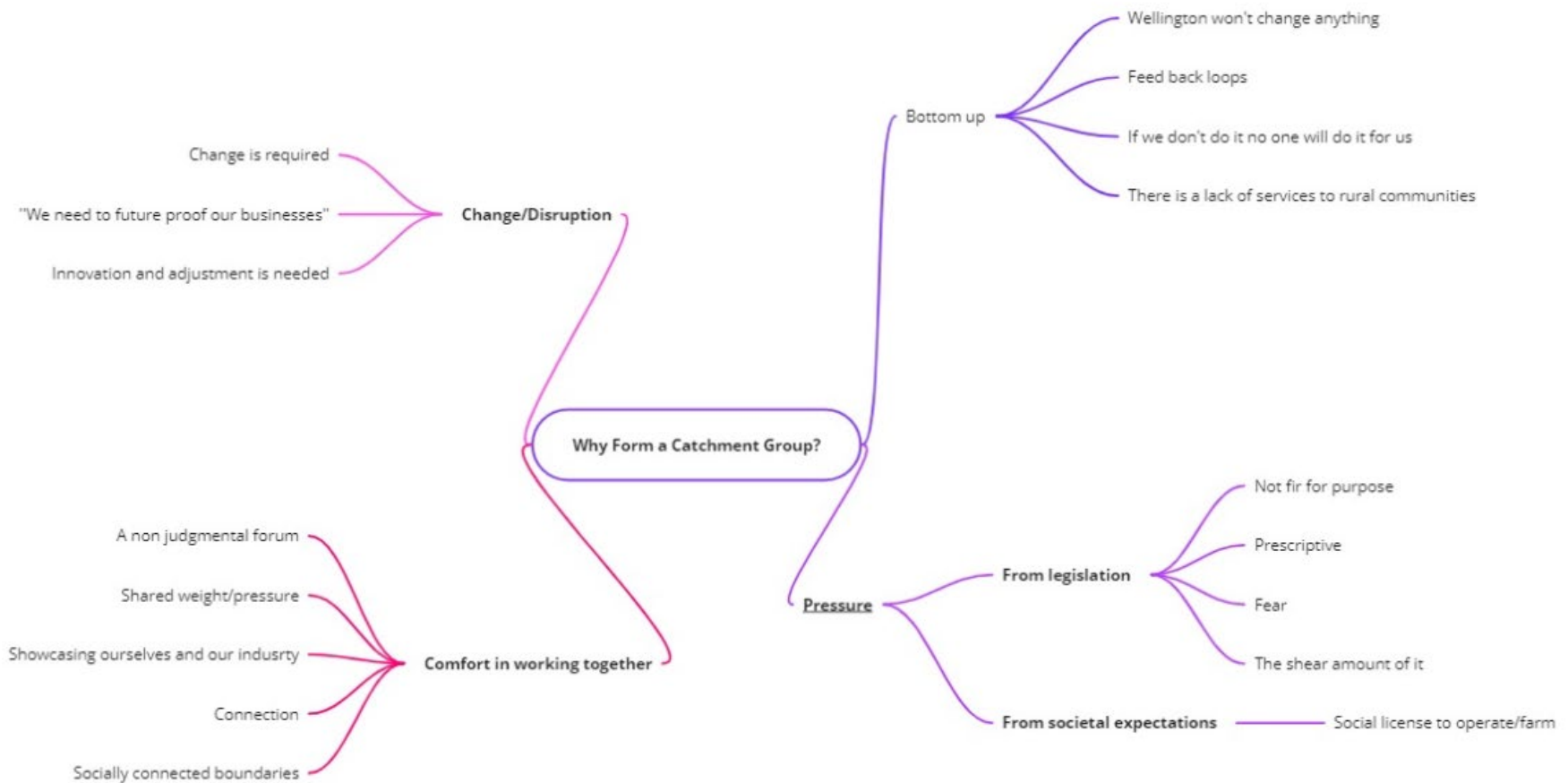**From societal expectations** — Social license to operate/farm

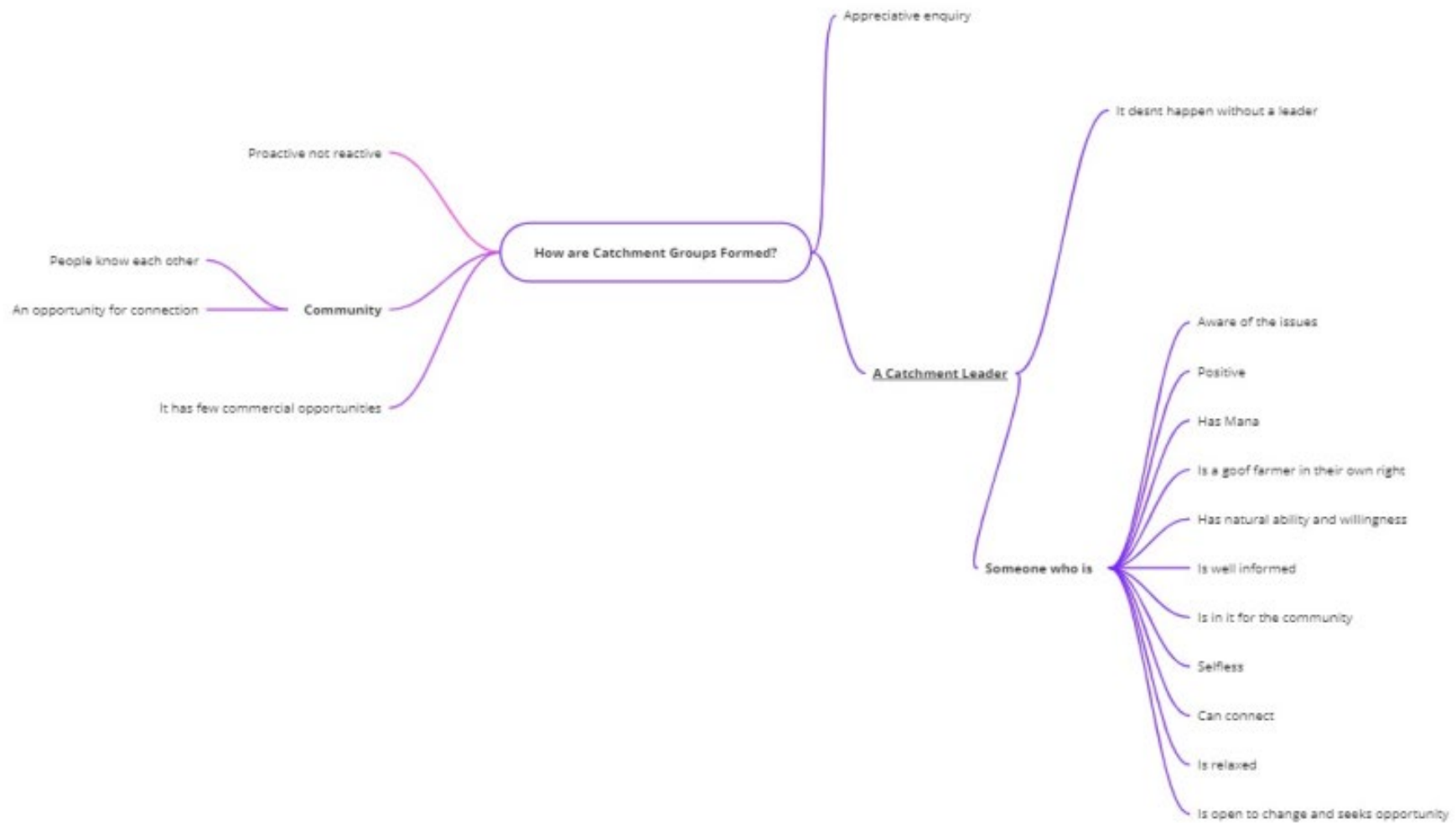*Figure 4: Why a catchment group was formed answers.*

Figure 5: How a catchment group was formed answers.
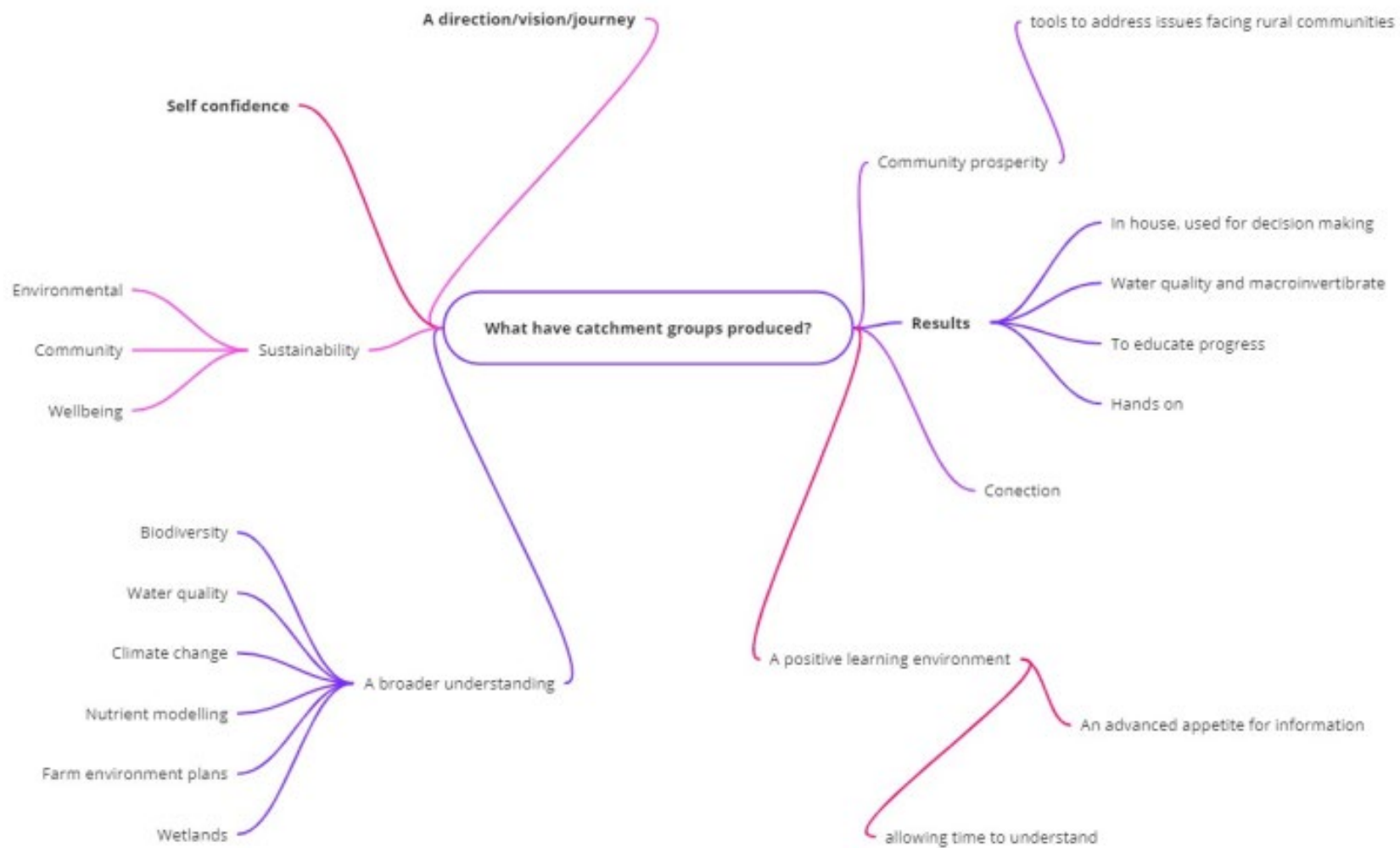
Figure 6: What a catchment group has produced answers.

Figure 7: Key learnings from interviews.

7   Findings and Discussion

When analysing the results of my interviews it was evident that I one needed to identify what a catchment care group was as well as why and how these groups were formed before looking into their constructive properties to society.

7.1   What is a catchment group?

The Wairarapa Alliance website (www.waip2k.og.nz, 2022) defines a catchment group as a ''group that is led by landowners and farmers taking action to achieve a long-term vision for the catchment, based on a healthy environment and a thriving community.
The catchment is an identified geographical area that has a point of common interest such as a river, a stretch of road, a community hall,
or a school.
Each community catchment group decides how it operates and what actions it takes and is led by local community members''. This is a rare description of a catchment group as it was difficult to find an exact description of what these groups are.

In the interviews it was apparent that here are key words and describers, but no two groups are alike. This however seems to be a strength of the catchment group ideology not a weakness because these groups are strongly connected by their catchment. This is a ''*self-defined*'' area that usually is based around a water catchment for a river, tributary, or lake. The ability to self-define adds to the concept of community and maintains the connectivity and individuality of each group specifically.

Based on this research I would define a catchment group as ''an autonomous group of people who are collectively engaged for the betterment of their self-defined area''. The betterment is defined by the group and is not specifically only for water quality even though that has been the largest compounding factor that has led to these groups forming. The self-defined area is important as that is what ensures that the bonding component of social capital is maximised. It is also important to recognise the importance of being collectively engaged in that definition. Autonomous clarifies that they are the ones in charge. Collectively implies a joined vision within the group and engaged shows they are active in their vision.

7.2   Why are catchment groups formed?

The question surrounding the initial reason for forming a group showed three solid themes. These were pressure, change and community. The pressure to do something came in many forms. However, they were all intrinsically linked to the societal expectations that group members felt was put upon them and the legislative pressure being implemented from local or central government. As stated previously in this report these topics and can bear quite a weight on the recipient.

As mentioned above in sections 3.1 and 3.2 the societal expectations and the legislative pressures cannot be ignored. These were the main trigger points for catchment groups to form and for communities to come together to source information, share the weight of the pressure and play an active role in their future.

Following on from pressure came change. This came in two forms. The speed at which change was being implemented and experienced added to the pressure previously mentioned however there was another side to change that was evident. This was the collective understanding that change was inevitable and the need to get ahead of this and do something. *'' if we don't do it, no one will do it for us''* was a quote from an interviewee as they discussed the need to future proof their business and catchment. The bottom-up mentality was spoken of often. There was a strong belief that this is where the changes and requirements need to be coming from the grass roots up and not in a prescriptive manor from Wellington. This embodies the concept of a bottom-up legislation cycle which was mentioned in the interviews. This is where the voice for change is coming from the grass roots and catchment groups. And not being prescribed to. This concept is especially relevant when looking at figure 2 in section 3.1.

This leads into the community aspect of the results. There was a strong feeling that these groups are formed to create a forum for group members to learn and collectively navigate the pressure and the change as a community. This concept is further discussed in the how are groups formed section below.

Once a why has been decided then the next step is to form a catchment group.

7.3   How are catchment groups formed?

The strongest theme to come out of my interviews is that these groups are not possible without leaders. Whether a catchment leader or a community leader, the spark will not cause a flame without someone to pick up the role and get things in motion. In some cases, an especially enthusiastic leader has also caused a group to start on their own influence.

The results shows that a catchment leader needs to be:

- well informed/aware of the issues
- have Mana
- Seeking change and opportunity
- Selfless
- Natural ability and willingness
- Be a good farmer
- Can connect
- Be steady
- Positive
- Relaxed

These can be compared with the five key characteristics of a resilient individual from Duranovich's research:

- self-efficacy
- locus of control
- willingness to change

- social sense making
- strategic thinking

There are some obvious correlations between what characteristics a leader needs to display and what a resilient individual displays. These characteristics also display a catchment leader although my research identifies another aspect that isn't directly stated in the resilience literature. That is positivity. As stated in the social capital aspect of the literature the leader's predisposition for a positive or a negative outlook was usually taken up by the group. For catchment groups to succeed a positive outlook was often referred to in the interviews as being essential. Catchment groups need a growth mindset what this led to was recognition of appreciative enquiry.

Appreciative enquiry, as defined by the Positive Psychology.com is *''a way to engage groups of people in self-determined change. It focuses on what's working, rather than what's not working, and leads to people co-designing their future''.* This concept is the epitome of positive constructive growth at a social level. It interlinks a lot of the key resilient interpersonal characteristics into the group dynamic. The appreciative enquiry process of Define, Discover, Dream, Design and Deploy is a comfortable match with resilience. It displays strategic vision, open-mindedness, social sense making, and acceptance of change while putting the group participants at the forefront of the project and letting them take the lead.

Taking the lead was an often-mentioned topic especially around the willingness for a ground up approach to legislation. The dream of catchment groups being such a positive and constructive concept that catchment leaders were invited to Wellington to discuss future legislative changes was a strongly held wish among all the interviewees. It is viewed as a way of grass roots New Zealand taking control of their future and getting the front foot forward.

The flip side of this was groups that had a negative onus, one interviewee described them as having a *"circling the wagon mentality"*. This was built around avoiding change as opposed to working with it. While not as frequent it does restrict greater community participation on discussing the issue. It was recognised that a deficit based narrative struggles to find a purpose, and a purpose is very important in the future of these groups.

While a large onus of the formation, function and future of these groups comes from the catchment leaders, the benefit of a group dynamic is that the workload can be shared. In groups with multiple leaders' people can work to their strengths and make up those essential traits as a group. However, it is unfortunately a rare occurrence to have multiple leaders available. This isn't a make or break though as these groups and the constructive mentality of them will be a breeding groups for future leaders to share their voice. This needs to be capitalised on so that these people aren't lost.

7.4 Are catchment groups creating positive change and building sustainable, resilient rural communities?

There needs to be a recognition of the fact that rural communities are very good at coming together to face adversity. During times of price depressions, legislative challenges, and the new social pressures that farmers and rural communities are facing the ability to unify is impressive. However, it can be argued that this phenomenon may have eroded through time and the rural suicide rates could be an indicator of this. When hardship occurs and oppression is evident people are challenged and it's their own self that is being challenged. When this is linked with isolation, it becomes a breeding ground for irreverence of one's identity and worth. Therefore, the simple act of socialising and social sense making is so important. It can break the chain of events that drags people down into depression, self-loathing, and eventually suicide.

The key principles that catchment groups are contributing to society that my results have identified are as follows.

- Connection
- A direction
- Environmental, social and community sustainability
- A positive learning environment
- Data, data, data
- A broader outlook of the future
- Self confidence
- An advanced appetite for information
- And a broader understanding

These outputs that have been identified and can be favourably compared with the literature's definition of Adaptive Capacity described as ''*the ability to identify opportunities, often from surprises and challenges, and mould a system to best utilise them''.* To achieve adaptive capacity, you need to understand and be able to back yourself to act on opportunities identified. Understanding, an appetite for information, a direction and self-confidence all feed into this. Adjustability and adaptability are key principles of adaptive capacity so not only the ability to remodel but also to fit into the changed environment that you are confronted with.

The next component of the data was around social sense making and the building of social capital. Social capital as stated previously is *'' both the relationships between individuals and how tight that bond is''* also remembering back to the principles of bonding, bridging, and linking. Catchment groups are creating that *connection* and *community prosperity.* While the bonding in done as a local community level within the group especially and with other in the catchment the functionality of catchment groups and their ability to bring in new perspectives and expertise directly builds the bridging component of social sense making. This is all building social capital as it is creating a space for positive constructive relationship building that breeds cooperation.

Considering my first paragraph of this chapter which recognises the issues surrounding rural mental health and the pressures and changes being felt by our rural communities. Their groups are providing a pathway out of that situation. There is evidence that through utilising the key assets of our leaders presently available within our rural communities we can build a group that will build resilience through its members and through the groups functionality a positive future vision will be exercised, and bridging will occur to those outside of the group and the catchment. While every industry will have those who do not want to change it is no different for agriculture. However, while legislation can force such people to comply a more effective method would be for them to feel left out of their own industry for not complying and therefore make the decision to change.

Further on from this is the ability for linking to occur up the power gradient. There is already evidence in the agricultural news media of this. With politicians, industry leaders and industry bodies watching catchment groups closely as they can see the potential for a ground up movement for the betterment of our society, environment, and mental wellbeing's.

Yes, catchment groups can and are building positive, sustainable, and resilient communities.

8   Conclusion

The key learning from this research is the reliance on the catchment leaders for this whole system to function. Without someone taking it upon themselves to get the ball rolling and take a leadership role it is bordering on impossible to get a group off the ground. These people may not display the correct characteristics from the start. Some groups have started off circling the wagon to use that analogy again. However, through information gathering, and bridging relationships they have morphed into a more positive construct and aligned to a growth mindset. Therefore, it is essential to have systems in place that align resilience thinking within the current and future catchment leaders. With a good basis of leaders already present and displaying a resilient mindset a sound precedent has been made. The data shows that any government intervention must be built around the catchment leaders continuing to function as they are. Administrational aid would be essential but as soon as government intervention relinquishes catchments leaders' ability to act for their catchment or the task becomes unnecessarily onerous then the system will collapse. There will always be a component of bureaucracy that becomes present as things move up the power gradient, but this must be managed in a way that feedback loops are functional and pragmatic. These groups must maintain a high level of farmer leadership.

The literature of social sense making shows that the group leaders or the group tone has a strong impetus on the future of the group. Furthermore, it expresses the importance of maintaining a positive growth mentality to ensure that the group can develop and maintain a strategic vision and direction. Therefore, it is essential that a clear vision is set in place early in the groups formation and this vision must be constructive. This links back to appreciative enquiry and the founding principles of this concept being Define, Discover, Dream, Design and Deploy. These foundations create the potential for a huge amount of progressive change within our industry and our communities. By looking after our leaders and having a clear path forward these groups can mobilise. From unified purpose comes unified action.

Penny Clark-Halls recommendations from her report ''social licence to operate'' (2018) include the industry taking accountability for its actions, create targeted engagement strategies from the ground up, and setting strategies to address stakeholder concerns and meet their values. Catchment groups can assist in these three recommendations, meaning that they can aid in eroding any social licence pressures placed on farmers.

The potential of these groups has only been briefly mentioned. With a supportive network around these groups there is no telling what can be achieved. It does need to be recognised the work that Beef & Lamb, NZ Landcare Trust, AgResearch through the ''OUR LAND AND WATER'' forum, and some regional councils around the country are doing. These groups are offering some fantastic information and support for existing groups. Already there is catchments that have seen impressive improvements in their water quality. Seeing social capital build. As well as seeing issues specific to their catchments being addressed.

Within these groups a pathway for new leaders can be born where support and structure can show growth within and from our rural communities.

9   Recommendations - Bouncing Forward

When considering the next step forward for catchment groups there are three main topics. These are:

- catchment leaders,
- positivity, and
- transparency

Across these topics there are four key recommendations.

Catchment leaders need to remain the driving force of these groups. However, they need supporting. This can be done through:

1. providing administrative support to catchment leaders.
2. facilitating higher level training in strategy and resilience thinking to current and future catchment leaders.

Positivity is an absolute necessity when striving to achieve constructive growth. This can be managed through:

3. teaching the principles of appreciative enquiry to current and future catchment groups.

Transparency is essential in the link between farmers in catchment groups and the public. With data being recorded groups are building a picture for their own benefit and use. It is essential to publicise this progress to build public awareness of the great work being done as well as include them in the journey.

4. Bring everyone on the journey, get them onboard.

Resilient individuals build groups, groups build positive social capital, positive social capital builds resilient communities

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11 Appendices

Item 1: PCCG our river event flyer

Item 2: PCCG results report for one site. For this item the stream name has been removed and replaced with tributary for anonymity.

Site *: Tributary

*Figure 8: Site * testing site*

Date	Time	Temp	Conductivity	Ammonia		Nitrite		Nitrate		DRP	Turbidity	E-Coli
19/08/2020	10:30	7.4	170		0.007	<	0.005	<	0.005	0.005	0.45	20
16/09/2020	11:15				0.009	<	0.005		0.043	0.007	1.27	135
21/10/2020	8:35		120		0.01	<	0.005		0.009	0.008	0.91	183
18/11/2020	8:15	13.5	156		0.015	<	0.005		0.098	0.016	1.22	554
16/12/2020	11:50	17.4	140		0.014	<	0.005		0.03	0.0014	1.11	1046
20/01/2021	8:55	14.8		<	0.005	<	0.005	<	0.005	0.011	0.73	269
17/02/2021												
17/03/2021	12:22				0.011	<	0.005	<	0.005	0.019	1.3	187
21/04/2021	9:25	12.7	180		0.01	<	0.005	<	0.005	0.009	0.54	86
19/05/2021	11:00	11	130	<	0.005	<	0.005		0.047	0.011	1.92	85
16/06/2021	11:28		130		0.006	<	0.005		0.026	0.014	6.21	2600
21/07/2021	7:40	7.5	130		0.012		0.055		0.202	0.011	3.02	31

*Figure 9: Site * raw data*

	Water Quality Analysis -										
PARAMETER → ↓DATE	CONTEXT	NITRATE (NO3)	NOF Band	SOLUBLE INORGANIC NITROGEN	One Plan	DISSOLVED REACTIVE PHOSPHOROUS	One Plan	TURBIDITY	Band	E. Coli	One Plan
Wed 19 Aug 2020		0.005	A	0.017	Yes	0.005	Yes	0.45	A	20	Yes
Wed 16 Sep 2020	No rain, Low flow, Cold/Sunny	0.043	A	0.057	Yes	0.007	Yes	1.27	A	135	Yes
Wed 21 Oct 2020	No rain, Low flow, Warm/Sunny	0.009	A	0.024	Yes	0.008	Yes	0.91	A	183	Yes
Wed 18 Nov 2020		0.098	A	0.118	No	0.016	No	1.22	A	554	No
Wed 16 Dec 2020		0.030	A	0.049	Yes	0.001	Yes	1.11	A	1046	No
Wed 20 Jan 2021		0.005	A	0.015	Yes	0.011	No	0.73	A	269	No
	No test taken	0.000	A	0.000	Yes	0.000	Yes	0.00	A	0	Yes
Wed 17 Mar 2021		0.005	A	0.021	Yes	0.019	No	1.30	A	187	Yes
Wed 21 Apr 2021		0.005	A	0.020	Yes	0.009	Yes	0.54	A	86	Yes
Wed 19 May 2021		0.047	A	0.057	Yes	0.011	No	1.92	A	85	Yes
Wed 16 June 2021		0.026	A	0.037	Yes	0.014	No	6.21	C	2600	No
Wed 21 July 2021		0.202	A	0.269	No	0.011	No	3.02	B	31	Yes

KEY	Excellent or A	Good or B	Impacted or C	Poor or D

*Figure 10: Site * analysed data*

Item 3: Open ended interview questions.

Interview questions

Why form a group?

- What were the reasons for forming/joining a catchment group?
- What was your trigger point for being a part of a catchment group?
- How did you go about selecting the boundary of the group?

How was the group formed?

- What brought people together to form the group?
- Did the formation coincide with a mutual issue that group members were dealing with? What was it?
- What were the key characteristics of those who formed the group? How did they come to be the formers?
- How do you share data and connect with those who are not in the group but are in the catchment?

What has the group produced?

- What were you thinking and doing before being in the group?
- What are you thinking and doing now that you have been a part of the group?
- What examples of problem solving have you seen within your group?
- How has the group helped individual members negotiate their way through the current legislative challenges?

Is there anything that you think I've missed?