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Trust Tairāwhiti Economic Recovery Plan

Economic baseline and Cyclone Gabrielle loss estimates
For Trust Tairāwhiti

June 2023

Executive summary

1. The Trust Tairāwhiti Economic Recovery Plan explored six focus sectors with stakeholder groups to identify the nature and scale of losses from Gabrielle

The Trust Tairāwhiti Economic Recovery Plan (TTERP) focused on six sectors within a Gisborne District Council (GDC)-led programme. Initially eight business sectors were identified by GDC. Following its commencement as economic lead, Trust Tairāwhiti (TT) re-focused on a subset of six sectors (Māori business, SME, Tourism/hospitality/accommodation, horticulture, agriculture and forestry). These are referred to as focus sectors. Manufacturing adjacent to primary value chains was integrated with the focus sector (agriculture, forestry and horticulture). Whenua Māori was removed due to a lack of data, clarity of definition and stakeholders. Future work might consider closing this gap.

This report covers three of four workstreams within the TTERP that ran from mid March to early May 2023. The three workstreams were: (1) Identify and engage working groups, (2) Develop a robust baseline across focus sectors and (3) Develop a quantified estimate of the economic losses from Gabrielle. Different approaches to assessing the baseline and economic loss were used for different focus sectors. Horticulture and agriculture recovery teams formed and undertook analysis with support from TT. Forestry was led by the Eastland Wood Council (EWC). SME and accommodation/tourism/hospitality analyses were led by TT. Early post-Gabrielle surveys led or supported by TT also informed the analyses and plan. Nine root causes of loss were identified and estimates made for each focus sector. The loss types were (1) Immediate cleanup, (2) Crop/stock loss from event, (3) Cost super-inflation, (4) Volume impacts from upstream / downstream value chain constraints, (5) Infrastructure loss within the business, (6) Perennial crop productivity capacity loss, (7) Annual crop replant loss, (8) Land use loss or heightened risk, (9) Funding.

The remainder of this report outlines the region and regional losses before expanding on each of the six focus sectors by providing economic baseline and loss estimates.

2. These focus sectors represent 86% of businesses and 74% of land use in Tairāwhiti and experienced total direct losses of $415-475m (FY23-FY7) across nine root causes

Tairāwhiti's economy is dominated by the primary sector. Agriculture, horticulture and forestry industries in Tairāwhiti accounted for ~20%% of direct GDP ($504m) in 2022 and employs over 6,000 people. The six focus sectors represent 38% of GDP, 44% of employees, 86% of business and 74% of land-use and therefore most of the businesses and land use. Cyclone Gabrielle was the largest by a factor of two (of peak cumulative river flow rates) of a series of extreme weather events since June 2018.

Gabrielle broke or damaged power, communications (fibre and cellular), roads and water infrastructure. Power was cut to the region due to a substation failure to the south of Tairāwhiti. Chorus fibre was cut in four places and was not restored until mid-February. An estimated 22 mobile cellular sites failed due to a mix of a lack of adequate backup power and / or fibre backhaul. The cyclone broke the main water supply in 10 places, plunging the Gisborne's 39,000 people into a month-long water supply crisis. Extreme water restrictions were imposed to preserve the limited supply available. Industrial water users were in many cases forced to reduce use or pay for water to be trucked to site. Restrictions remain in place in May 2023 and it is recognised the potable water system remains fragile. Lastly multiple road blockages occurred and restrictions were imposed due to road and bridge washouts, debris, flooding and road or adjacent-land bank stability. Access remains an issue in May 2023. Total losses to the six focus sectors was estimated at $415-475m out to FY26 across the nine different types of economic loss.

3. Horticulture losses were at largest ($200-220m), followed by agriculture ($140-160m) forestry ($50-60m) while SME and tourism/accomodatio/hospitality were $20-30m and $3-5m respectively. Māori business losses were estimated at $20-25m

Māori business experienced a wide range of disruption during Gabrielle, particularly in forestry and construction businesses with estimated losses of $20-25m. Around a third of staff lost work due to Gabrielle and larger businesses had larger losses per employee.

SME account for 50-60% of businesses and almost half the business employees in the region. A survey of 486 SME businesses illustrates a broad range of issues post-Gabrielle and losses are estimated at $20-30m, of which 80% sits in four sub-sectors (Construction, Retail Trade, Transport, Postal and Warehousing and Other services).

Tourism, Accom and Hospitality account for ~$49m GDP, ~1,000 employees and 189 businesses. Almost 40% of businesses responded to the TT survey, 10% of staff were off and losses estimated at ~$3-5m.

Horticulture contributes ~$106m to GDP, employs ~2,000 people on over 11,000 hectares of prime land and can be considered the 'fruit and vegetable bowl' for much of New Zealand. Growers suffered broad consequences including crop, infrastructure and supply chain damage. Surveyed growers representing 6,811 Ha (~60% of horticulture land) had 3,296 Ha of crop land impacted by Gabrielle, i.e. ~ half of their land, with total losses to horticulture for FY23-27+ of $200-220m.

Agriculture contributes $186m to GDP and employs over 3,000 people on more than 400,000 hectares. A survey of 329 farms highlights wide-ranging damage to infrastructure, supply chain and water supplies with losses to agriculture for FY23-27+ estimated at $140-160m.

Forestry contributes $215m to GDP and employs over 1,100 people on almost 200,000 hectares of land. Approximately 400-500 forestry staff across over 50 forestry crews lost up to a month of income and total losses to forestry for FY23-27+ are estimated at $50-60m.

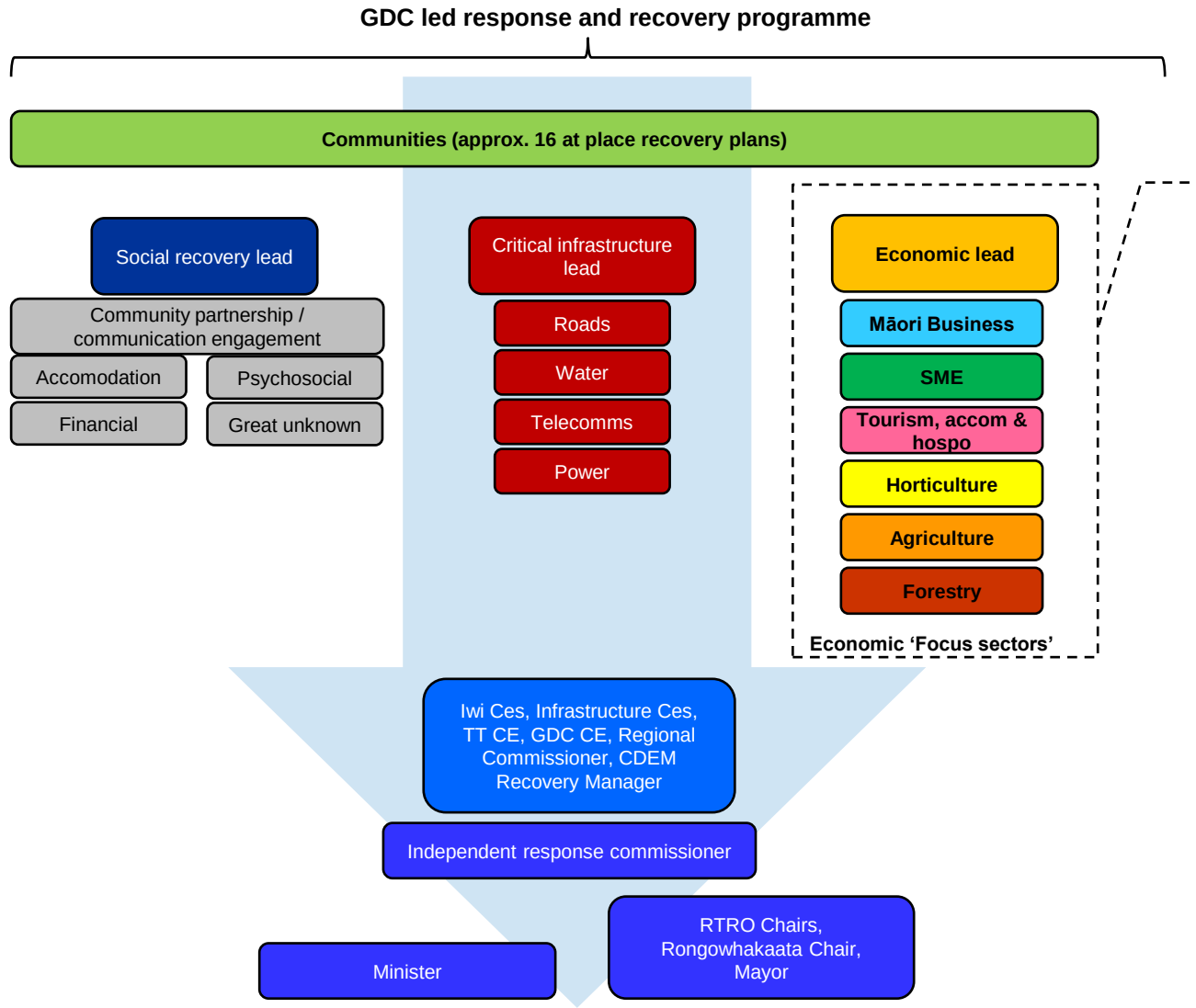
Section 1: Economic recovery plan scope and approach

1. The Trust Tairāwhiti Economic Recovery Plan explored six focus sectors with stakeholder groups to identify the nature and scale of losses from Gabrielle

2. These focus sectors represent 86% of businesses and 74% of land use in Tairāwhiti and experienced total direct losses of $415-475m (FY23-FY7) across nine root causes

3. Horticulture losses were at largest ($200-220m), followed by agriculture ($140-160m) forestry ($50-60m) while SME and tourism/accomodatio/hospitality were $20-30m and $3-5m respectively. Māori business losses were estimated at $20-25m

The Trust Tairāwhiti Economic Recovery Plan focused on six sectors within a GDC-led programme



Gisborne District Council's (GDC) played a role as cyclone Gabrielle Response and Recovery lead for Tairāwhiti. In the early days of the cyclone Gabrielle recovery GDC drafted a model, reproduced here, for engagement with stakeholders based on the principle of a community-led recovery. This model has largely remained valid though 'Critical Infrastructure' is now being managed as 'Built' and 'Natural' 'environments' by GDC.

Trust Tairāwhiti (TT) embraced this draft model and played the role of economic lead under GDC's role as Response and Recovery lead.

Initially eight business sectors were identified by GDC. Subsequent to its commencement as economic lead, TT re-focused on a subset of six sectors (Māori business, SME, Tourism/hospitality/accommodation, horticulture, agriculture and forestry. These are referred to as focus sectors.

Manufacturing was removed as a sector and included in primary sectors (agriculture, forestry and horticulture) where appropriate. While this left some larger manufacturing businesses out of focus sectors this was considered a pragmatic trade-off balancing effort, data availability and timeline.

Whenua Māori was removed due to a lack of data, clarity of definition and stakeholders. Including this in future work has been considered however no decisions have been made.

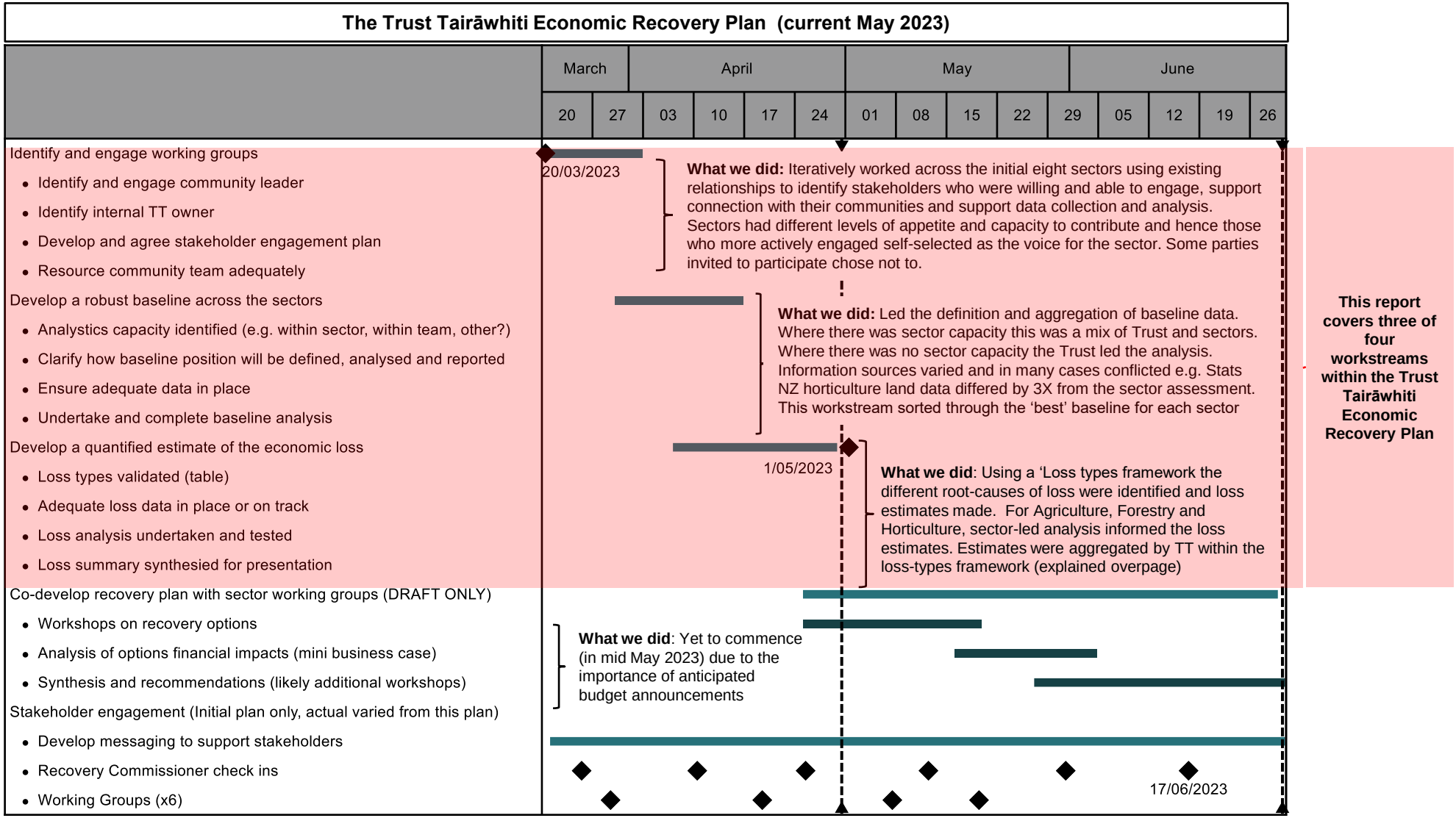
TT contributed to the GDC response and recovery work by co-developing a high level plan with the sectors and leading the business sector engagement.

Through March-May 2023, TT fed into weekly reviews with the other workstream leads (Social, Built, Natural and Recovery), provided weekly written updates to GDC and contributed to a report to Ministers passed to Minister Allen by Commissioner Te Rau Kupenga in late May 2023.

The document provides a standalone summary of the economic analysis work that was fed into this report. It is the first part of the TT Economic Recovery Plan.

Source: Adapted from GDC

This report covers three of four workstreams (mid March to early May) in the Economic Recovery Plan



The root causes of losses were identified and estimates of these losses made for each focus sector

In early workshops and working sessions with sector leads a number of different 'loss-types' were identified.

Loss-types were iteratively developed to provide a common framework for all sectors while also providing specificity on the causes of loss and possibly (yet to be tested) common responses e.g. silt and debris was a common cause and common clean-up for many businesses.

Once loss-types were identified, they were qualitatively assessed as having higher or lower economic impact to businesses in those sectors.

This qualitative assessment (represented here as harvey balls) informed the economic analysis by ensuring the perceived hardest hit areas received the most analytical attention. Some loss-types were not assessed due to time constraints or data limitations.

Estimated economic loss from Gabrielle

Losses have been estimated against the areas considered the most important for each sector. As such total losses are likely g

Relative economic impact [0 no impact; 4 severe impact]

This assessment is qualitative and seeks to inform where further analysis is best warranted to better quantitatively understand the economic consequences of Gabrielle [and adjacent weather events]

	Loss type	Generic loss description	Impact on financials	Agriculture	Horticulture	Forestry	Tourism, hospo.,	SME	Maori business
Typically FY23, 24	Access to cash	Inability to pay for or receive monies needed for a business e.g. electronic payments not accepted in cafes	Revenue	○	○	○	◕	◕	◕
	Immediate cleanup	Removal of silt, water, slash, replacement of damaged stock and materials	Operating and capital costs	◔	◑	◕	○	○	○
	Crop/stock loss from event	Losses immediately from the weather event or immediately thereafter e.g. inability to access, rot from water. May include quality downgrade e.g. moving from export to domestic quality	Immediate revenue (price and volume)	◔	◕	●	○	○	○
	Cost super-inflation	Higher costs incurred in order to overcome constraints and keep operating e.g. paying for trucked in water in vegetable processing	Operating costs	◕		◑	○	○	○
	Volume impacts from upstream / downstream value chain constraints	Inability to provide a product or service due to other value chain issues e.g. freight companies lose revenue as no logs available to move; manufacturers lacking water to operate; abbatoir closed due to lack of animals. Includes loss of connection (roads, flights)	Revenue (volume), operating costs	○	◑	○	◕	◕	◕
Typically FY25, 26	Infrastructure loss within the business	Fencing, trellis, physical resilience (e.g. damage to banks) and extends to private roads and culverts that are damaged or destroyed	Operating costs, capital costs, revenue where this restrict BAU operations	◕	◔	○	○	○	○
	Perennial crop productivity capacity loss	Trees, vines, land, water changes mean future crops [more generic term] are at risk or damaged	Medium term revenue		●	○	○	○	○
	Annual crop replant loss	Annual crops cannot be planted in time due to constraints e.g. land, infrastructure, labour, finance	Medium term revenue	●	○	◑	○	○	○
Typically FY27+	Productive land use loss or heightened risk	Land may be oeprable now but have heightened real or perceived risk about its ongoing use.	Medium to long term revenue	○	○	○	○	○	○
	Funding	Inability or difficulty to retain or gain banking finance of acceptable terms.	Balance sheet and business resilience	○	○	○	○	○	○

Source: Temple analysis, sector workshops and discussions

Different approaches to assessing the baseline and economic loss were used for different sectors

Following initial (March 2023) engagement it was determined that the six focus segments have different data availability and stakeholder needs and representation.

Rather than a one-size-fits-all approach a tailored approached was developed between TT and the identified stakeholders to:

1. Assess the baseline and economic losses and
2. Engage stakeholders and undertake analysis

A number of surveys were developed and deployed immediately (within weeks) after Gabrielle. The insights from these surveys shaped the engagement model and provided initial data insights.

	Approach to assessing the baseline and economic costs	Stakeholders and Lead on analysis	Survey summary (refer Appendices for full details)
Māori Business	Desk-based assessment of the size (GDP, employees) of this sector and estimates of the losses from surveys. Use of self-reported Māori business. Analysis by TT and Temple.	• Trust staff – no sector engagement beyond survey	• Cyclone Gabrielle Business Needs response, 19/02/2023 to 13/03/2023, 212 responses • MBIE Grant assessment, dates unknown, 878 applicants for funding and hence responses
SME	Desk-based assessment of the size (GDP, employees) of this sector and estimates of the losses from surveys. Analysis by TT and Temple.	• Trust staff – no sector engagement beyond survey	• As above
Tourism, accom & hospo	Desk-based assessment of the size (GDP, employees) of this sector and estimates of the losses from surveys. Analysis by TT and Temple.	• Trust staff – no sector engagement beyond survey	• As above plus… • Hospitality and Tourism (two surveys for rooms available and tourism) [number of responses unknown at time of writing]
Horticulture	Horticulture recovery team formed. Undertook analysis and estimated the nature and scale of losses with support from TT.	• Bill Thorpe (lead) • Trevor Lupton • Elliot Callender • Additional input from Kate Longman at Horticulture New Zealand	• Horticulture Viticulture Cropping and Agribusiness Response and Recovery Survey , 19 February for ~3 weeks, 79 responses • Horticulture survey, 06/03/2023 to 24/03/2023, 68 responses
Agriculture	Agriculture recovery team formed. Undertook analysis and estimated the nature and scale of losses with support from TT.	• Sandra Faulkner (lead) • Charles Rau (BDO) • Peter Andrew (AgFirst)	• Rural Communities sheep, cattle deer agri survey, 23/02/2023 to 13/03/2023,149 responses
Forestry	Eastland Wood Council (EWC) undertook analysis and estimated the nature and scale of losses with support from TT.	• Neil Woods (Chair)	• EWC surveyed their stakeholders as part of their analysis. This data was provided to TT. • Some forestry information was available in the MBIE Grants assessment

Early post-Gabrielle surveys led or supported by Trust Tairāwhiti also informed the analyses and plan

	Date the survey opened / closed?	Who designed the questions?	Who outside TT was involved?	How did survey respondents find out about it?	How many people this was sent to?	General comments / other important points
Cyclone Gabrielle Business Needs response	19/02/2023 to 13/03/2023	This was actioned by Kim Allen and Phil McLeod at the TT – questions where supported by MBIE	Shannon Williams MBIE	Comms from TT. TT also gave out hard copies in the business hub (downstairs at Trust with a star link and Govt agencies when the region had no power etc) . TT also had devices available to complete at the business hub Mail out	Unknown	212 responses
Horticulture Viticulture Cropping and Agribusiness Response and Recovery	Approx 19/02 for 3 weeks	Matt Cains at TT	Bill Thorp, Trever Lupton, Elliot Callender	TT ran 3 information meetings at Riversun. Comms from TT. TT also had hard copies we given out in the business hub and meeting at Riversun Mail out to people who attended the meetings at Riversun Online comms TT and external	Unknown	79 Responses
Horticulture	06/03/2023 to 24/03/2023	Holly Hatzilamprou at TT	Bill Thorp, Trever Lupton, Elliot Callender	Mail out and comms	Unknown	68 responses
Rural Communities sheep, cattle deer agri	23/02/2023 to 13/03/2023	Matt Cains at TT	Sandra Faulkner	Mail out, comms both TT and external	Unknown	149 responses
Hospitality and Tourism (1)	Accommodation – rooms available	Holly at TT		Mail out and TT comms	Unknown	
Hospitality and Tourism (2)	Tourism business	Holly at TT		Mail out and TT comms	Unknown	
MBIE Grant assessment	N/A – was an online application	Joe Williams at TT	Approved by MBIE and consultation from assessment panel			878 applied for Business grant funding

Section 2: Tairāwhiti baseline and summary economic losses

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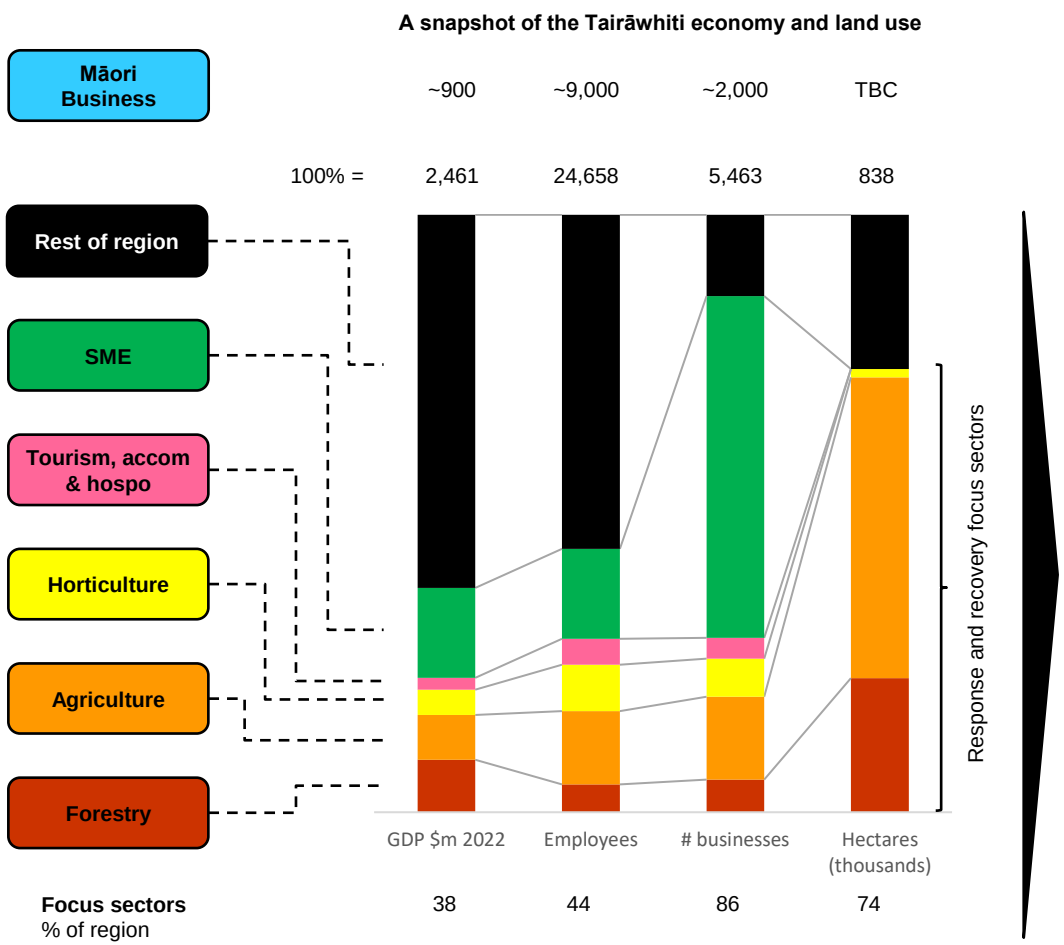
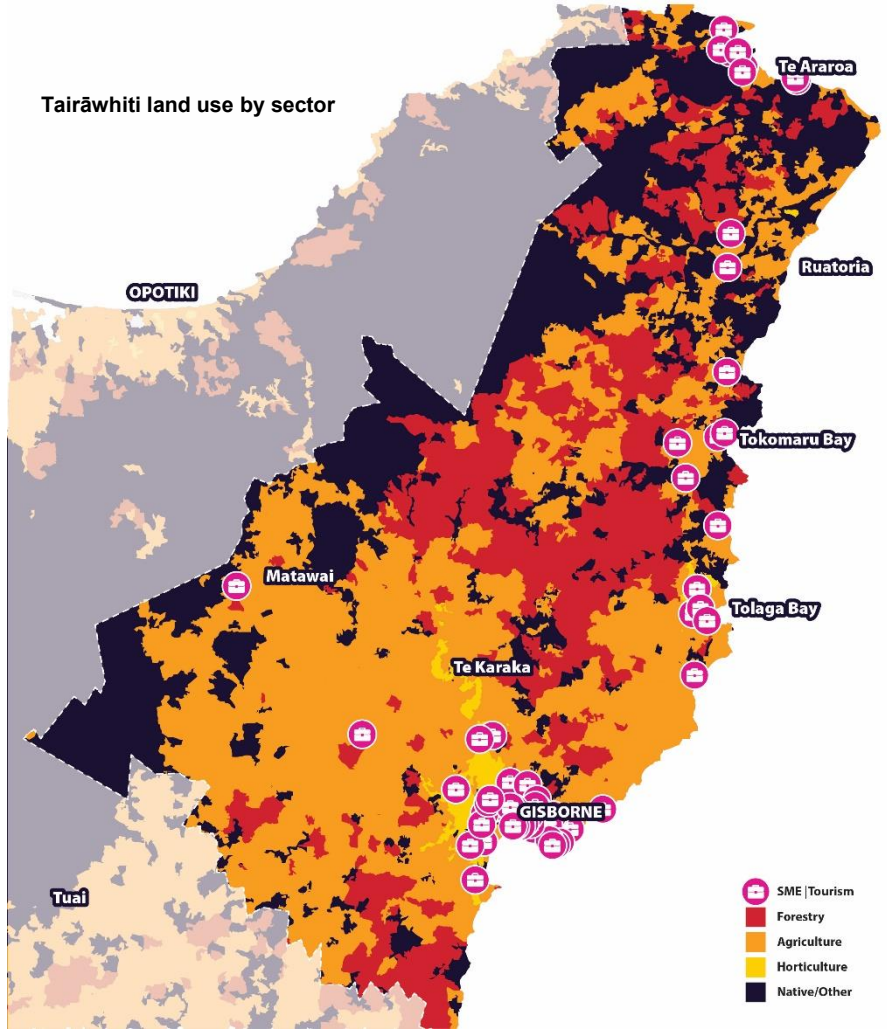
The five focus segments represent 38% of GDP, 44% of employees, 86% of business and 74% of land-use

The Trust Tairāwhiti Economic Recovery Plan (TTERP) has focused efforts on five response and recovery sectors of the economy (forestry, agriculture, horticulture, tourism/accommodation/hospitality and small-to-medium sized enterprises (SME)). These sectors were identified in early, post-Gabrielle, discussions with stakeholder groups as having experienced significant loss and representing a large proportion of the business economy and land use. In total these sectors represent ~42% of the GDP ($1.0Bn), around half the number of employees and businesses (~12,000 and 3,000 respectively) and 74% of the land in the region (622,000 hectares). Māori business was explored however poor data quality precluded their quantitative inclusion in each segment. Very preliminary estimates of the size of the Māori business economy were made and are included below however further work is required to both define these businesses and quantitatively estimate key metrics.

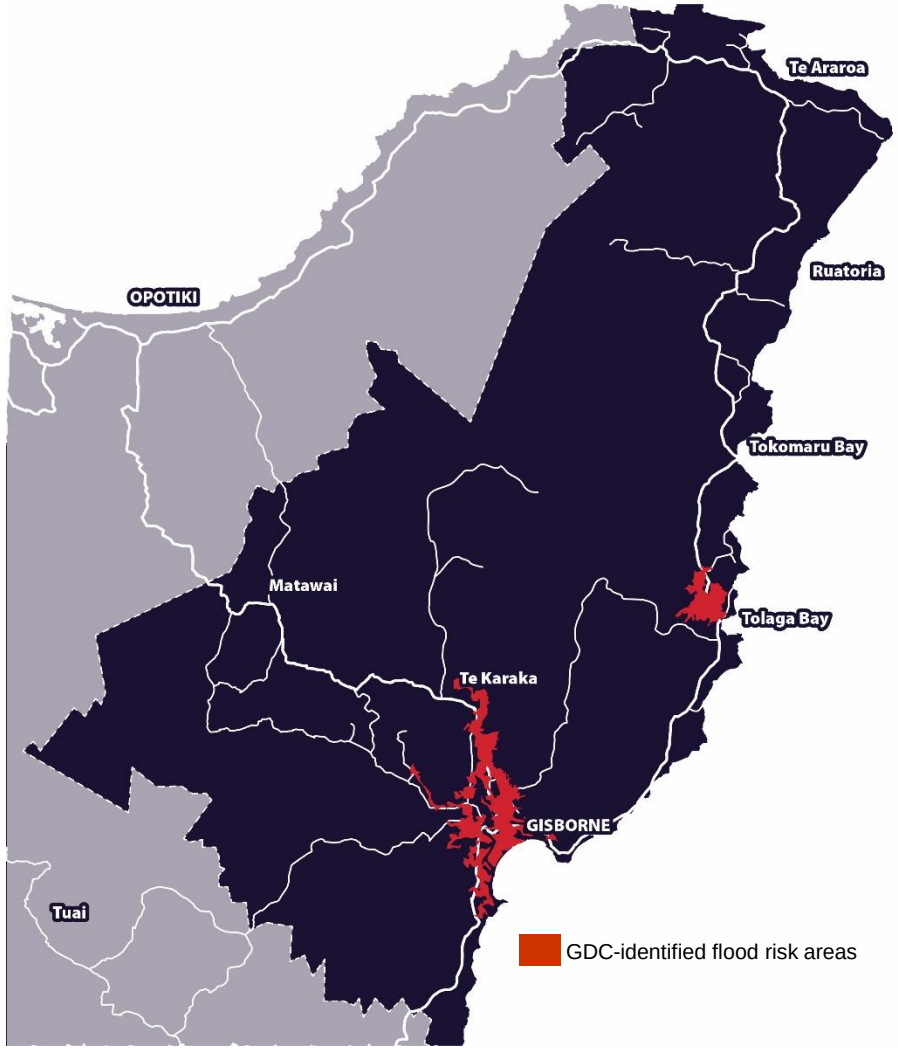


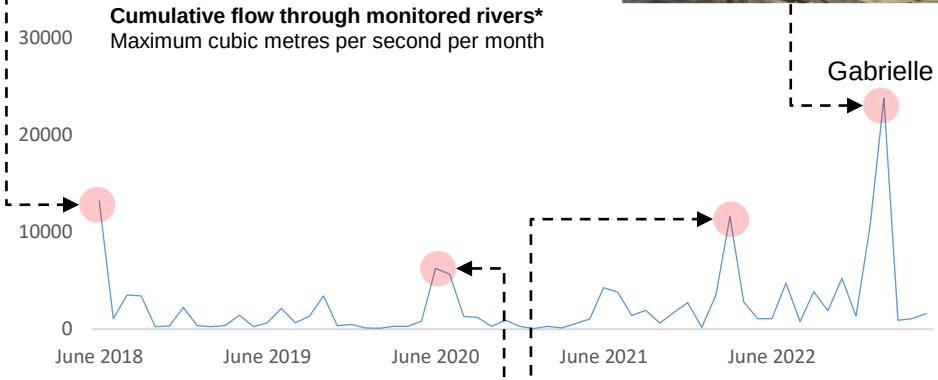


Source: Statistics New Zealand, Horticulture working group, agriculture working group, GDC map data, Temple analysis. The Māori business economy is estimated by scaling requests for business grants; nb regional totals for Employees and GDP include contributions include non-business e.g. employees of schools and hospitals.

Cyclone Gabrielle was the largest and most recent of an ongoing series of extreme events

Flood risk areas had been identified prior to Gabrielle. Cyclone Gabrielle was the most recent of a series of extreme weather events to hit the region. Water flows (cubic metres per second) across twenty monitored rivers show that Gabrielle had more than double the cumulative peak flow rate of the preceding events. The previous weather events were themselves sufficiently extreme as to have generated their own national media / news stories.





Source: TT; GDC; media: Stuff, One News, Stuff, Stuff; * rivers are Hikuwai, Karakatuwhero, Mangaheia, Mangatu, Maraetaha, Motu, Oweka River, Poroporo, Taruheru, Te Arai, Waiapu, Waihora, Waihuka, Waikohu, Waimata River, Waingaromia, Waipaoa, Whakaahu Str, Wharekahika, Wharekopae nb where more than one flow rate per river was recorded only the first was used for cumulative flow.

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Gabrielle broke or damaged power, communications (fibre and cellular), roads and water infrastructure

Gabrielle flooding was more extensive than indicated in the GDC risk mapping and caused widespread failure of public and private infrastructure*. Power was cut to the region due to a substation failure to the south of Tairāwhiti. Chorus fibre was cut in four places and was not restored until mid February. An estimated 22 mobile cellular sites failed due to a lack of adequate backup power and / or fibre backhaul. The cyclone broke the pipe in 10 places, plunging the Gisborne's 39,000 people into a month-long water supply crisis. Extreme water restrictions were imposed to preserve the limited supply available. Industrial water users were in many cases forced to reduce use or pay for water to be trucked to site. Restrictions remain in place in May 2023 and it is recognised the potable water system remains fragile. Lastly multiple road blockages occurred and restrictions imposed due to road and bridge washouts, debris, flooding, road or adjacent bank stability. Access remains an issue in May 2023.

Source: Waka Kotahi, NZ Herald and NZ Herald, interviews; * see preceding slide for risk map

Total losses estimated at $415-475m our to FY26 across ten different types of economic loss

Losses were characterised by across ten different 'loss types' which were common in many cases. For each loss type sector representatives estimated the losses their sector would bear e.g. the number of km of fencing lost and the cost of reinstatement, the cost of lost trees or forgone earnings from logging. Loss estimates spanned 5+ financial years e.g. immediate clean-up of silt in FY23/24 versus perennial crop loss that might flow into future years. Losses in FY23 and 24 were estimated at $170-225m, losses for FY25 and 26 were ~$225-250m. Longer term losses across land use and funding were recognised but due to data inadequacy and time constraints were not estimated. The total estimates of $415-475m should therefore be considered a minimum estimate of the total business economic losses to Tairāwhiti. Note these losses exclude costs of public infrastructure replacement and repair and also the second-order ('multiplier') economic losses e.g. less money spent in the region due to less income.

	Loss type	Typical impact on business financials	Loss description	
Typically FY23 & 24 $170-225m	Access to cash	Revenue	Inability to pay for or receive monies needed for a business e.g. electronic payments not accepted in cafes e.g. The failure of cash and ATM systems was cited in surveys as an issue however has not been quantified here.	**Not estimated**
	Immediate cleanup	Operating and capital costs	Removal of silt, water, slash, replacement of damaged stock and materials. Forestry and Ag referenced slash issues while silt seems a bigger problem for horticulture.	**20-25**
	Crop/stock loss from event	Immediate revenue (price and volume)	Losses immediately from the weather event or immediately thereafter e.g. rot from water. May include quality downgrade e.g. moving from export to domestic quality. Forestry, perennial and seasonal crop losses caused by flooding, silt damage, slash or slips. Still high uncertainty around the scale of loss across price and volume.	**80-90**
	Cost super-inflation	Operating costs	Higher costs incurred in order to overcome constraints and keep operating e.g. paying for trucked in water and for vegetable processing. Higher costs were seen particularly in freight which was tightly constrained. In some cases this was price gouging and in others simply higher input costs e.g. longer distances, using a helicopter to access sites instead of a bike.	**40-50**
	Volume impacts from upstream / downstream value chain constraints	Revenue (volume), operating costs	Inability to provide a product or service due to other value chain issues e.g. freight companies lose revenue as no logs available to move; manufacturers lacking water to operate; abattoir closed due to lack of animals, processor losses e.g. packhouse or mills who simply did not have enough stock. Logging crews unable to get to work or get trucks out of the forest to port. Includes loss of connection (roads, flights).	**50-60**
Typically FY25 & 26 $225-250m	Infrastructure loss within the business	Operating costs, capital costs, revenue where this restrict BAU operations	Fencing, trellis, physical resilience (e.g. damage to banks) and extends to private roads and culverts that are damaged or destroyed. This was primarily fencing loss and some on-farm roads and culverts.	**25-30**
	Perennial crop productivity capacity loss	Medium term revenue	Trees, vines, lands, water changes mean future crops [more generic term] are at risk or damaged. Yield losses to orchards and processors as perennial yield returns to 100% across hectares impacted for apples, grapes, citrus and kiwifruit. Losses extend to 2030 in some case but captured in this time.	**120-130**
	Annual crop replant loss	Medium term revenue	Annual crops cannot be planted in time due to constraints e.g. land, infrastructure, labour, finance. Primarily loss of productive grass / grazing land in agriculture. Productivity loss of income driven by the land slip area 9.5% (FY24), 4.8% (FY25) and 2.5% (FY26)	**80-90**
FY27+ Not estimated	Land use loss or heightened risk	Medium to long term revenue	Land may be operable now but have heightened real or perceived risk about its are ongoing use. These losses have not been quantitatively estimated but are considered real and materials in some cases.	**Not estimated**
	Funding	Balance sheet and business resilience	Inability or difficulty to retain or gain banking finance of acceptable terms. No response from banks to questions around balance sheet and loan book robustness. This is considered to be a risk that warrants further exploration.	**Not estimated**
				415-475

Source: Temple analysis, Horticulture Recovery Group, Agriculture Recovery Group, Eastland Wood Council, TT surveys. Refer Appendices for further details

Section 3: Summary of economic losses by sector

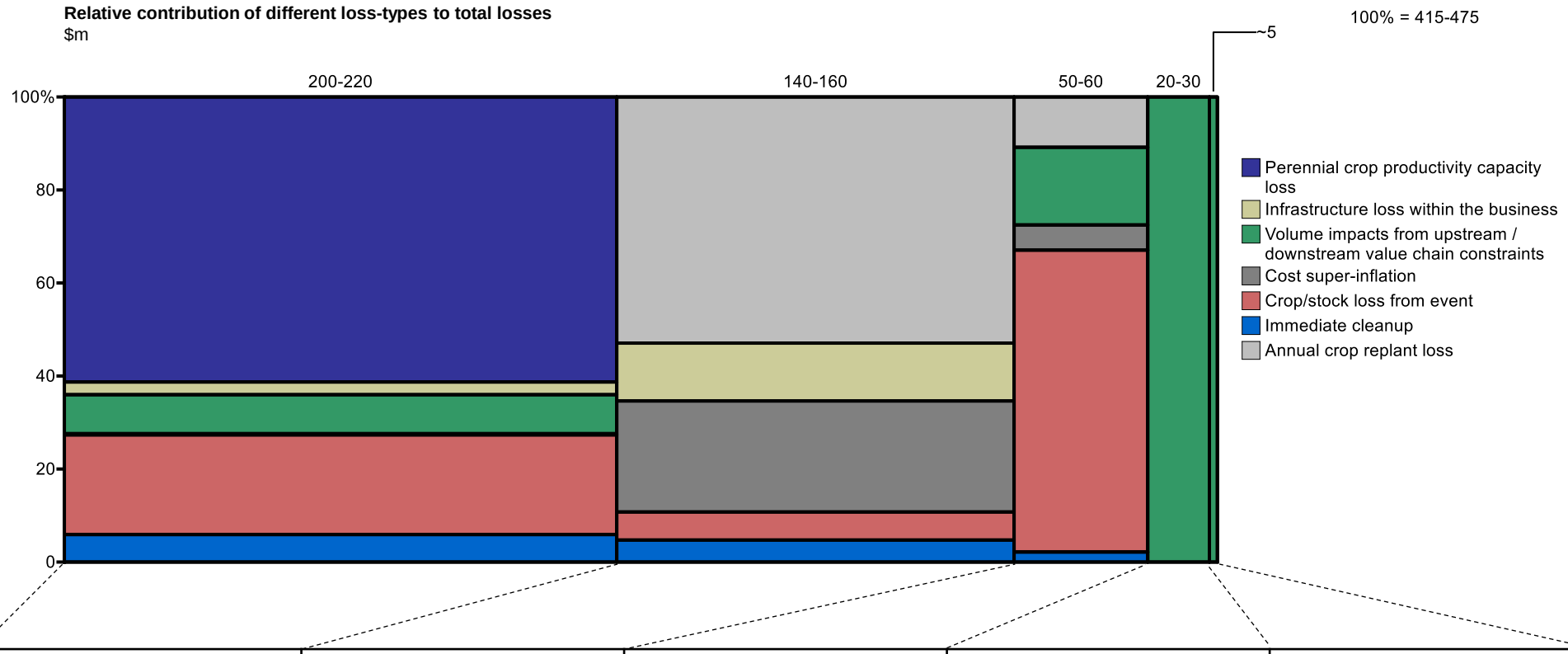
1. The Trust Tairāwhiti Economic Recovery Plan explored six focus sectors with stakeholder groups to identify the nature and scale of losses from Gabrielle

2. These focus sectors represent 86% of businesses and 74% of land use in Tairāwhiti and experienced total direct losses of $415-475m (FY23-FY7) across nine root causes

3. Horticulture losses were at largest ($200-220m), followed by agriculture ($140-160m) forestry ($50-60m) while SME and tourism/accomodatio/hospitality were $20-30m and $3-5m respectively. Māori business losses were estimated at $20-25m

Horticulture and Agriculture account for ~80% of the losses, with forestry representing ~12% of the total

Horticulture was estimated to have suffered the largest losses ($200-220m) followed closely by agriculture ($140-160m). In both cases the larges losses, accounting for around half of their totals were caused by the loss of future crops due to downgraded land productivity. Forestry losses were estimated at $50-60m of which over half was also crop loss, followed closely by crews unable to access logging sites or the port for several weeks. SME and tourism, hospitality and accommodation business suffered a wide range of losses estimate at $20-30m and $5m respectively.



Horticulture*	Agriculture	Forestry	SME	Tourism, Accom and Hospitality
Over half of the losses were attributed to loss of Perennial crop productivity over the next fives years (assumed recovery durations. The next largest loss of crop loss from the event itself (e.g. silt, damage to crop, flood damage after, access)	The largest loss was annual crop replant loss due to a loss a productive land resulting from slips and assumed to recover over four years. Following this was cost increases across multiple categories including access and fertiliser.	The largest losses were driven by tree-loss. Both permanent (e.g. slips back to bare rock) and temporary losses (tree loss) were identified. Volume impacts were losses to crews and haulage firms unable to operate due to access (public and private roads) for 4-8 weeks	SME losses varied widely due to the diverse natures of the businesses. Most commonly cited issues were road access, connectivity, water damage and supply and transport issues.	This broad range of businesses suffered a broad range of damage with the two primary concerns being customer access and supply chain issues i.e. getting product in for supply.

* Horticulture losses exclude large vertically integrated horticulture companies who chose to deal directly with government rather than contribute to the regional analysis. As such actual regional losses can be expected to be higher.

Māori business experienced a wide range of disruption during Gabrielle

Māori business span the range of businesses seen in Tairāwhiti. The nature of damages and losses experienced was similarly broad. Roading and transport issues, customer access and supply chain issues were the most consistently shared issues captured by the MBIE Grant Assessment survey.

Māori Business

SME

Tourism, accom & hospo

Horticulture

Agriculture

Forestry

Top themes

Supply chain issues

Roading and transport issues

Customer access

Free text synthesis of themes*

1. Urgent need to reopen community facilities after indefinite closure due to pandemic.
2. Covering various costs associated with running a small business as a sole trader.
3. Recovering revenue loss and missed opportunities due to cyclone and resulting road closures.
4. Covering fixed costs of business, including insurance payments, tax obligations, and expenses related to the cyclone.
5. Plans to expand business to include earthworks and services related to property, landscape, and construction.
6. Covering various business costs, including wages, road user charges, fuel, and tyres.
7. Replacing cash flow used during the cyclone period to keep the business operational, cover lost business, and replace damaged stocks.
8. Covering costs for loss of earnings, PAYE, special chartered flights, fishing expenses, power, phone internet, gas, water, rates, mortgage, finance, and insurances.
9. Covering costs for labour, fuel, and replacement of trees to remove silt and surface blockages causing continual flooding.
10. Purchasing water tanks to comply with GDC requirements for using non-city water supply to operate the pool during and after the cyclone.

Source: MBIE Grant Assessment survey ; TT analysis; *Synthesis of free-text commentary from 296 TT survey respondents self-identified as a Māori business; analysis done with Zoho Analytics

Māori business was hit hardest in forestry and construction though impacts are widespread

Unlike other sectors where ANZSIC (industry classification) data is readily available, no clear definitions or supporting data for Māori business were identified during the engagement period*. Statistics New Zealand offered customer research on Māori authorities (Māori authorities are defined as businesses that receive, manage, and/or administer assets held in common ownership by iwi and Māori.) However Statistics New Zealand acknowledge this is only part of Māori business and estimate that as a rough guide 45% of NZ Māori businesses are Māori authorities. The custom data request was however not able to be completed during the assessment time window. As such the baseline assessment on Māori business presented here is a synthesis of the businesses surveyed as part of the MBIE Grant Scheme who responded 'Yes' to the question, 'Are you a Māori business?'. This is assumed to be a good first approximation of impacted businesses however likely understates total Māori business.

Māori Business

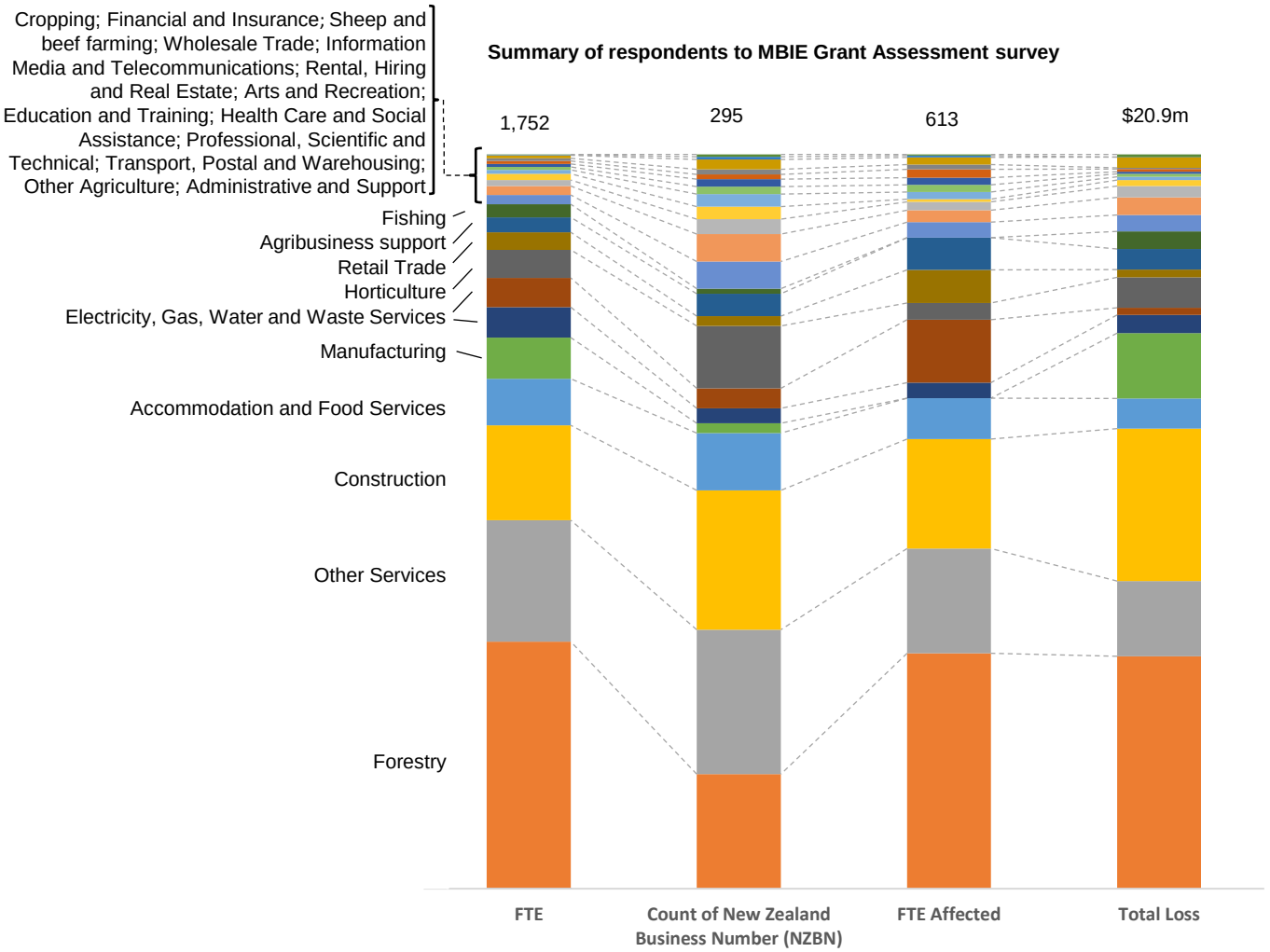
SME

Tourism, accom & hospo

Horticulture

Agriculture

Forestry



Source: TT Sector survey, Trust analysis; * Australian and New Zealand Standard Industrial Classification (ANZSIC)

Around a third of staff lost work due to Gabrielle and larger businesses had larger losses per employee

Businesses were asked, “What is the expected total loss of income your business will incur within the time period of 14 February 2023 to 31 March 2023?” in the MBIE Grant Assessment survey. Respondents experienced a wide range losses from thousands to millions of dollars. As a rough guide larger businesses experienced both larger total losses and also larger losses per employee. For example the businesses in the highest one third of losses had total average losses of $174,200 and income loss of $16,188 per employee while the smallest third estimated losses at $7,272 per business and $2,933 per employee. Estimates of losses are self-stated point estimates and discussions with some respondents suggests they may represent little more than educated guesses. Moreover larger businesses are more likely to have in-house capability in assessing economic loss. As such these results should be considered indicative only.

Māori Business

SME

Tourism, accom & hospo

Horticulture

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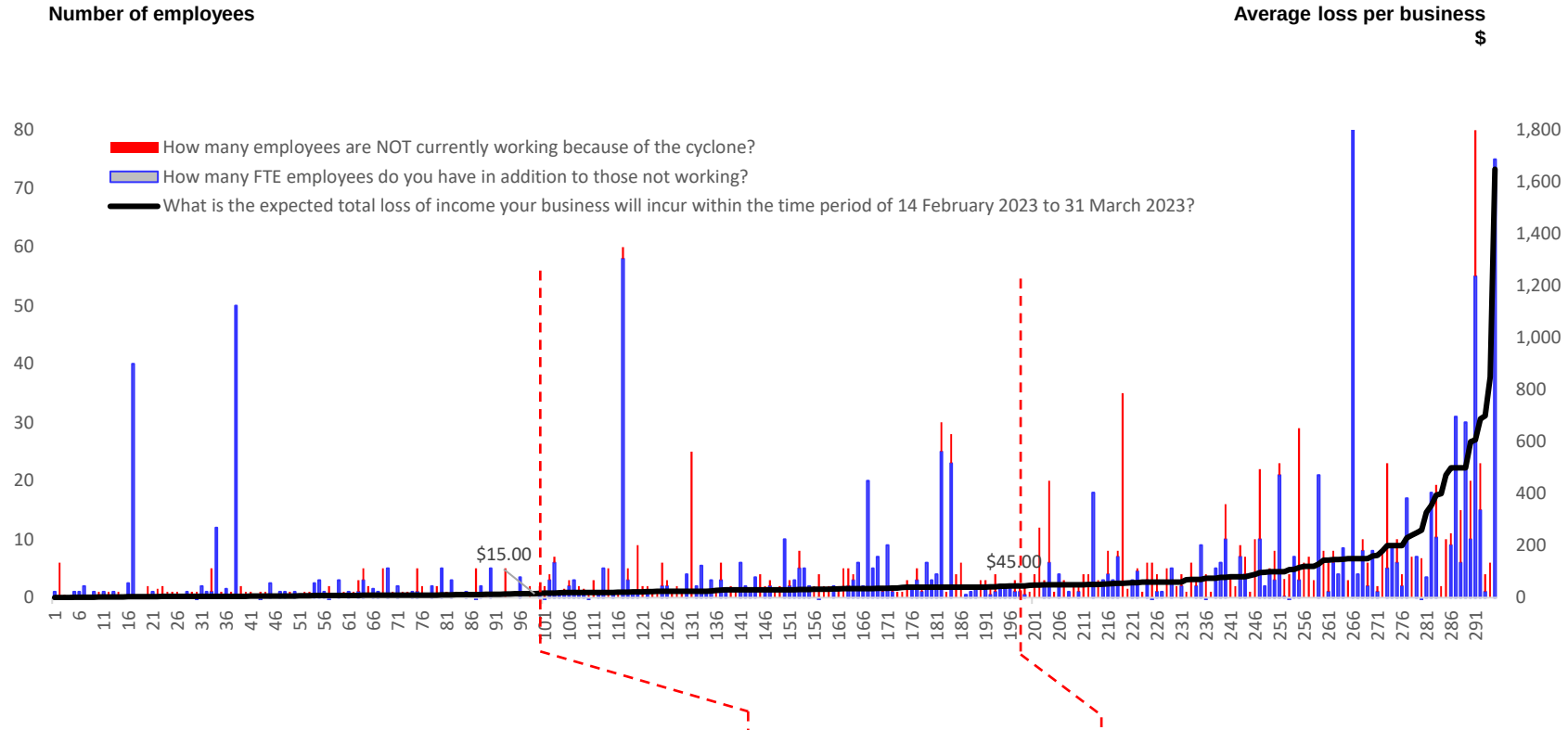
Forestry



	Smaller losses (lower third by losses)	Mid-sized businesses	Larger losses (high third by losses)
Total losses ($)	712,696	2,958,792	17,245,771
Average loss ($)	7,272	30,192	174,200
Total staff	243	439	1,070
Total staff unemployed	77 (32% of staff))	150 (34% of staff))	386 (36% of staff)
Average loss per employee	2,933	6,740	16,118

Source: TT survey of 295 businesses identifying as Māori within a broader survey; nb FTE and employees were used synonymously in the survey

SME account for 50-60% of businesses and almost half the business employees in the region

To estimate the number of employees and businesses, SME were defined by removing two classes of business from a business dataset representing all businesses and employees in Tairāwhiti. Firstly businesses having more than 19 employees were removed. Secondly businesses having ANZSIC codes that had been identified as being associated with the other four focus sectors were removed i.e. all agriculture, horticulture, forestry, tourism, accommodation and hospitality businesses. The remaining businesses. Regional GDP includes non-business contribution e.g. hospitals and schools. As such GDP for SME was estimating by allocating an average regional GDP per employee to the total employee number. SME accounts for $371m of 2,461m (15%) of GDP, 3,714 employees and 3,126 Geographic Units*. A comparison with TT EDA known businesses suggests geographic units may include legal entities that are not necessarily operating businesses. Further analysis is recommended.

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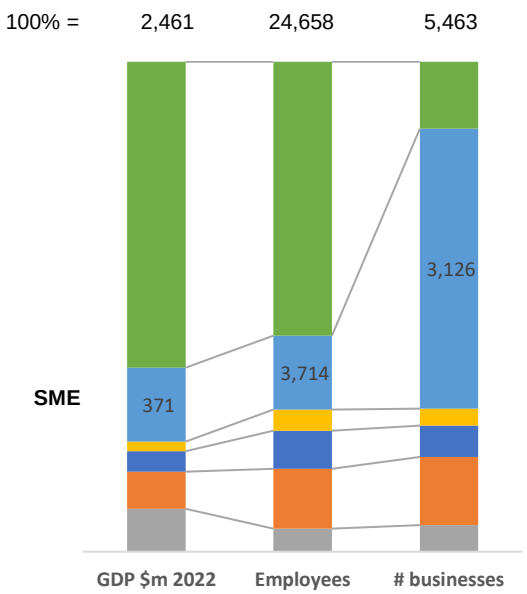
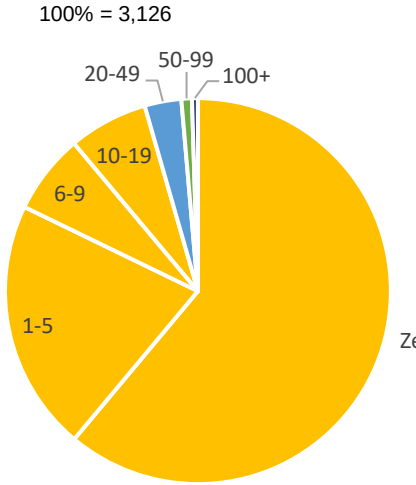
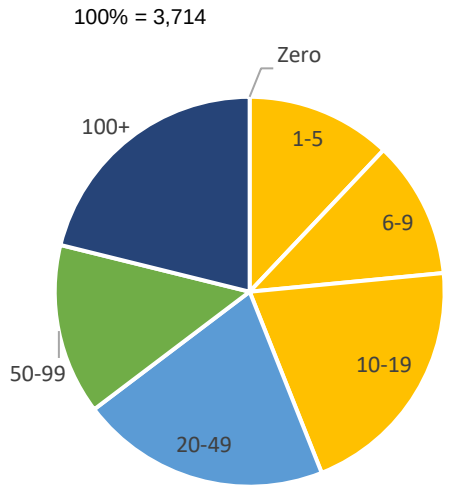
A snapshot of the SME Tairāwhiti economy



Businesses by size**
% of all Geographic Units



Employees by size**
% of all Geographic Units

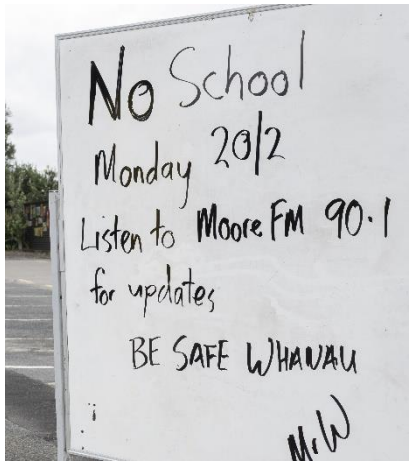


Source: * Geographic units are defined by Statistics New Zealand as, '*Geographic units or business location: a separate operating unit engaged in New Zealand in one, or predominantly one, kind of economic activity from a single physical location or base.*'; ** StatsNZ aggregates data if confidentiality issues have been identified. As such SME split is based on all businesses rather than a subset excluding other sectors.

A survey of 486 SME businesses illustrates a broad range of issues post-Gabrielle

TT ran a word cloud analysis on free text provided by 486 SME businesses who responded to the MBIE Grant Assessment survey. Road access to get products to and from customers and staff to and from work were identified as being the number one issue. When the terms 'Supply issues' and 'Transport Issues' are considered together with 'Road Access' the loss of roading infrastructure becomes the clear number one cited issue in this qualitative analysis. Close behind were connectively issues that had multiple impacts including the loss of electronic payments and cash-machine access immediately post cyclone, loss of voice connectivity and internet and data. Water supply and the associated restrictions also made operations difficult for many weeks post-cyclone. Water damage did feature in commentary albeit being mentioned less often than the other principle issues.

- Māori Business
- **SME**
- Tourism, accom & hospo
- Horticulture
- Agriculture
- Forestry



Power Staff availability

Connectivity Water damage

Road access

Water supply Supply Issues

Transport Issues

Source: TT Sector survey, Trust analysis, photos supplied by Gisborne District Council, Eastland Ports

SME losses are estimated at $20-30m of which 80% sits in four sub-sectors

486 SME businesses representing 2,416 employees responded to the MBIE Grant Assessment survey. Of these businesses 615 had, at the time of the survey, employees not currently working because of the cyclone. Businesses were asked, “What is the expected total loss of income your business will incur within the time period of 14 February 2023 to 31 March 2023?”. Total self-stated losses were $21.2m with an average loss per business of around $50,000 albeit with a very wide spread from nothing to $1m. The top four SME sub-sectors (Construction, Retail Trade, Transport, Postal and Warehousing and Other services) accounted for 80% of the losses incurred by businesses who responded (~$17m). Total losses were estimated to lie between $20-30m given the relatively small number of respondents versus the total number of SME businesses in the region (486 respondents vs 3,126 geographic units).

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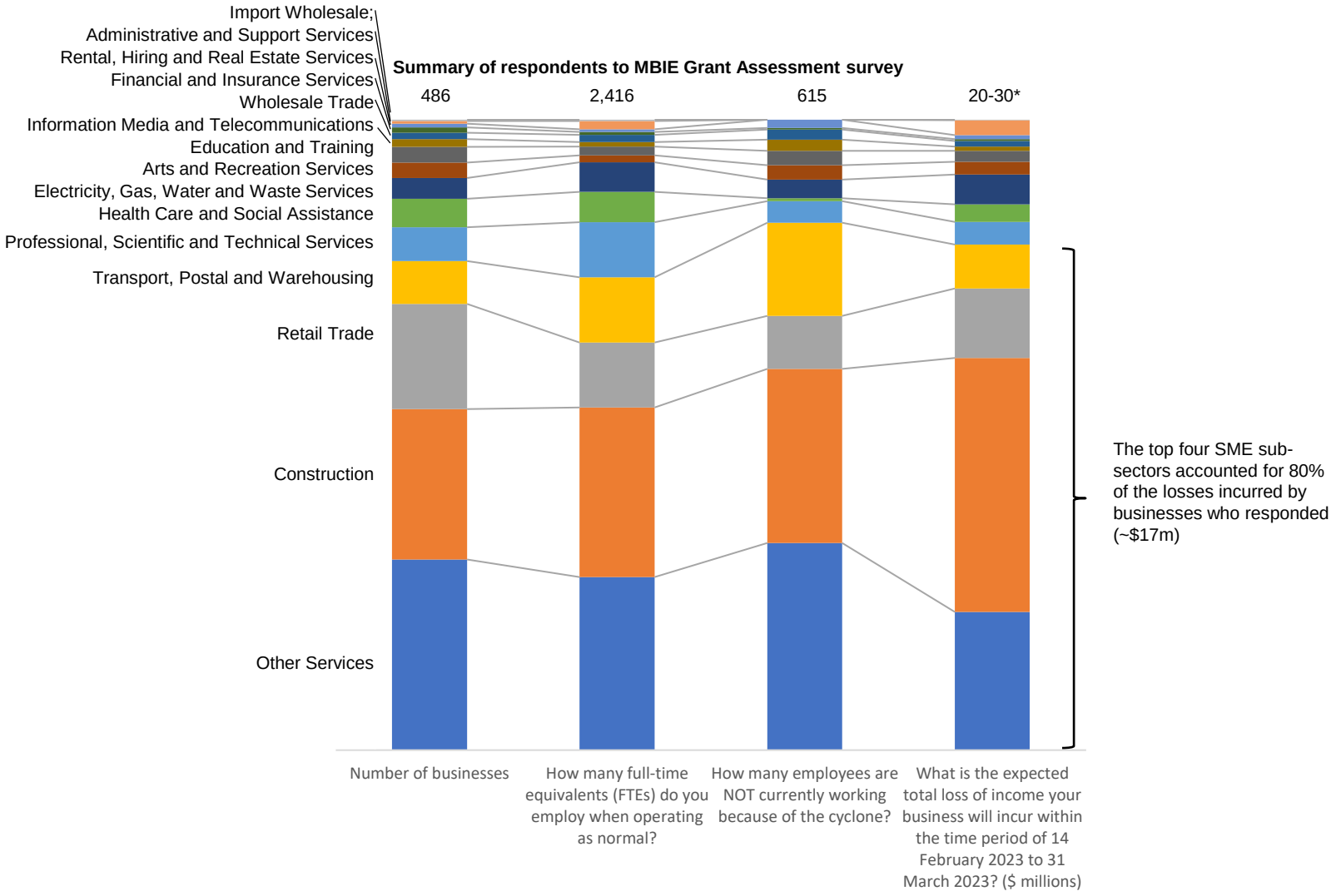

The top four SME sub-sectors accounted for 80% of the losses incurred by businesses who responded (~$17m)

Tourism, Accom and Hospitality account for ~$49m GDP, ~1,000 employees and 189 businesses

Tourism, Accommodation and hospitality are three closely related sectors. Total GDP is estimated at $49m (2022) or around 0.5% of regional GDP. These sectors directly employee almost 1,100 people and while heavily concentrated in and around Gisborne do include business all the way to the Northern boundary of Tairāwhiti. The largest three subsectors are cafes and restaurants (~$17m GDP), accommodation ($6.8m) and Other transport ($4.6m GDP). The sectors are heavily dependent on the flow of people into the region by road and air.

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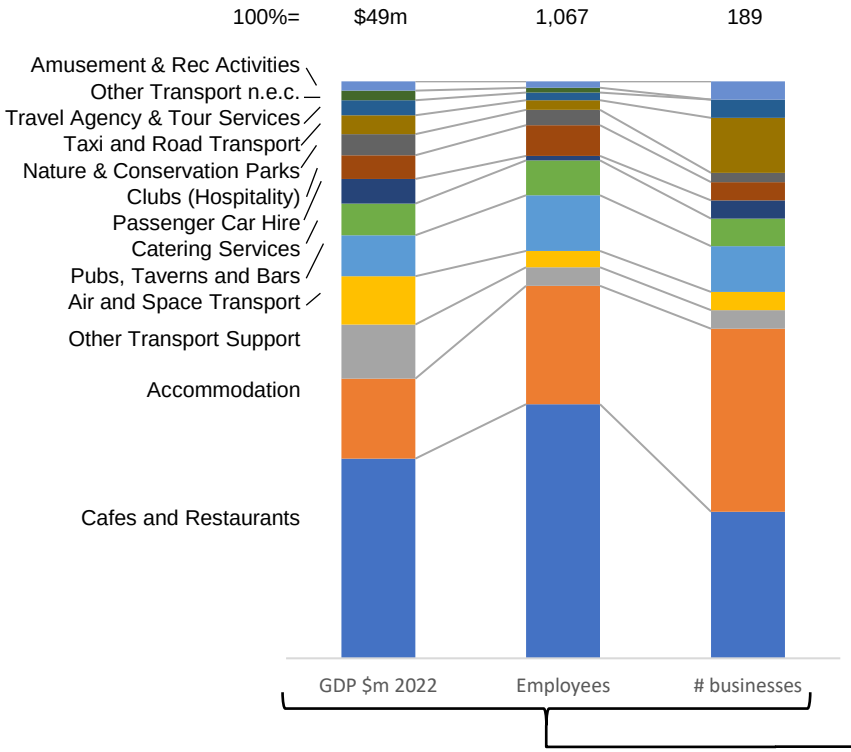
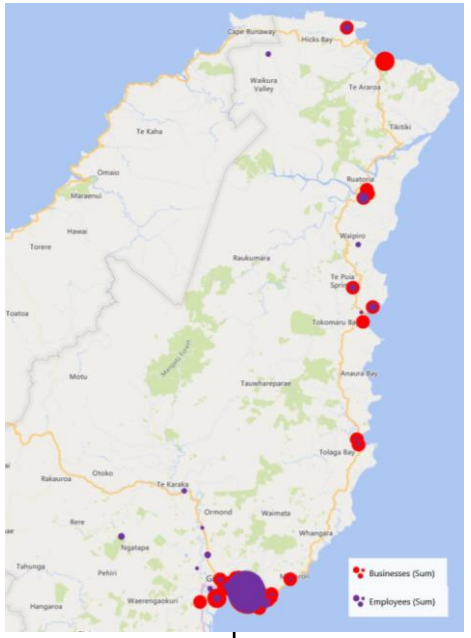
Tourism Tairāwhiti



Business and employee concentration by location



Source: xx

Almost 40% of businesses responded to the survey, 10% of staff were off and losses estimated at ~$3-5m

Tourism, Accommodation and hospitality was largely shut down immediately after Gabrielle. The airport was closed and all access roads to the region were impassable. Due to communications infrastructure failure, electronic payment systems (e.g. EFTPOS) were not available nor were automated teller machines (ATM). In addition to difficulties getting into the region, getting people and supplies to and from the place of work was in many cases impossible due to flooding, impassable roads or residential flooding for staff. Where they could access the place of work flooding and water damage was prevalent and access to potable water was limited. Almost 40% of the number of businesses identified in the regional baseline responded to a TT survey. Around 10% of staff were not working at the time of the survey and losses were estimated at $3m by the time the survey closed (the initial needs survey ran 19/02/2023 to 13/03/2023).Customer access and supply chain issues were the top themes identified.

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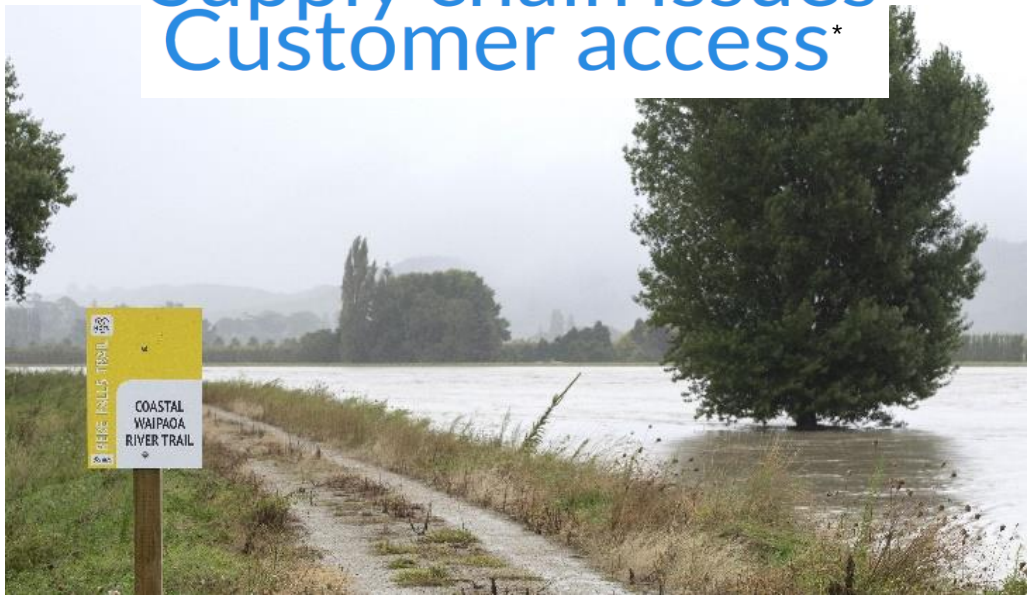
Supply chain issues
Customer access*



How many full-time equivalents (FTEs) do you employ when operating as normal?	**383 of 1,067 in the region (~36%)**
How many employees are NOT currently working because of the cyclone?	**106 of 1,067**
What is the expected total loss of income your business will incur within the time period of 14 February 2023 to 31 March 2023?	**~$3m vs ~$49m GDP**

Source: TT analysis, wordcloud based on top 205 of re-occurring phrases in business survey using Zoho analytics

Horticulture contributes ~$106m to GDP, employs ~2,000 people on over 11,000 hectares of prime land

Horticulture represents $106m (2022) GDP or around 4% of regional GDP. Almost 400 businesses employ around 2,000 people across growing and processing and manufacturing. Total estimated land is almost 12,000 hectares largely in and around Gisborne with further pockets up the coast, notably around Tolaga Bay. Kiwifruit is the largest contributor to GDP (~$31m) though has one of the smallest footprints (~700 of ~11,000 Ha). Kiwifruit, citrus, vegetables, grapes, apple and pear account for ~$60m of ~$65m of crops and almost all land. Vegetables are the largest users of land accounting for almost 8,000 of the ~12,000 hectares grown though their contribution to GDP is much lower. Manufacturing (including processing) accounts for ~$41m of GDP. Most horticulture sits in LUC class 1 to 3 (see Appendices for further details)

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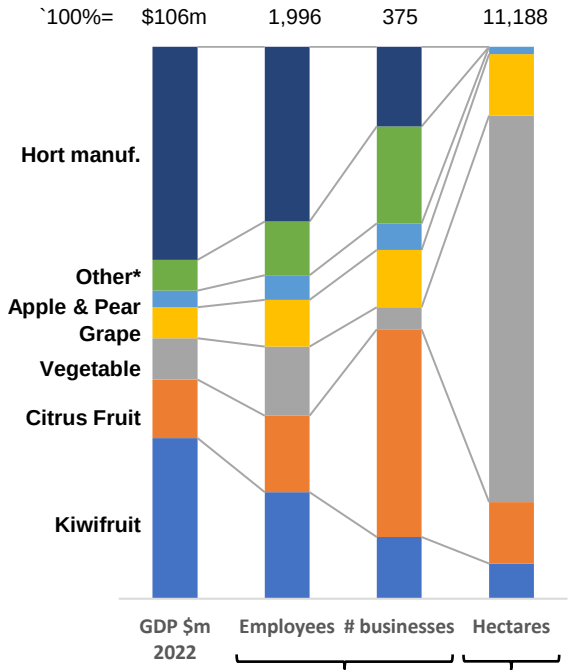
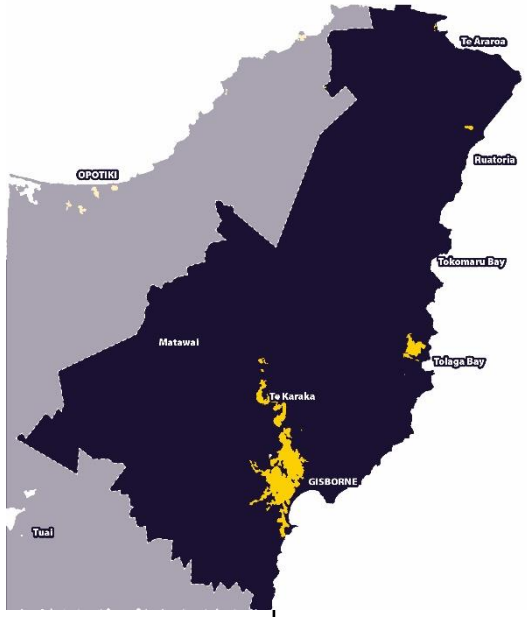
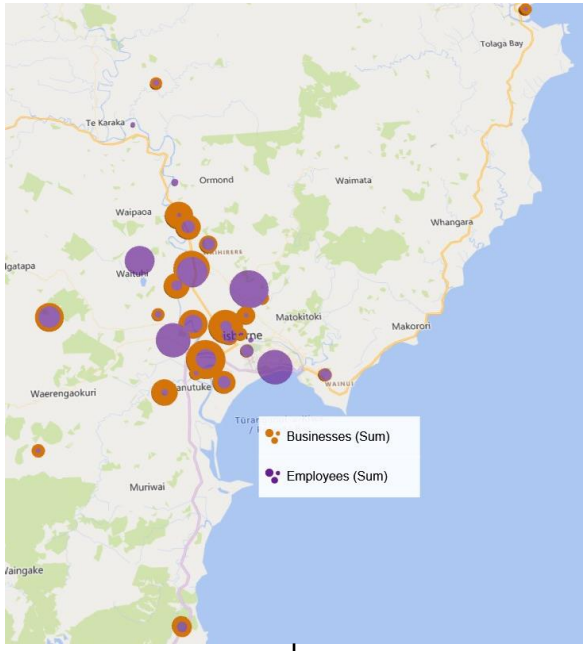
Horticulture Tairāwhiti



Land use for horticulture



Business and employee concentration by location



Source: Statistics New Zealand, Horticulture Recovery Group; Temple analysis; * Land use has not been broken out for “Other” which include indoor and outdoor nursery (~50% of ‘Other’)

Tairāwhiti horticulture is the fruit bowl of the country

Tairāwhiti accounts for a significant proportion of the fresh fruit and vegetables enjoyed by New Zealanders. In short shelf-life products 90% of bagged lettuce, 50% of broccoli and 45% of salads shows the importance to New Zealand of keeping supply and supply lines up across these staples. Similarly high proportions of watermelons, mandarins, oranges, lemons and sweetcorn are sourced from Tairāwhiti.

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Source: Horticulture New Zealand

Growers suffered broad consequences including crop, infrastructure and supply chain damage

Gabrielle hit Tairāwhiti growers just prior to harvesting for many crops. Ripe or near-ripe fruit was damaged or destroyed. In some cases fruit was contaminated by floodwaters or silt 'spatter' containing a range of contaminants that meant they could not be safely harvested. Some growers shared that they had ripe fruit that was ready for harvesting but was inaccessible due to infrastructure issues (e.g. roading, tracks or bridges that were damaged) or where harvesting equipment was similarly unable to access crops. Even where crops were able to be harvested getting them to processors (e.g. salads for bagging) or to market was impossible or expensive due to closed roads (e.g. out of Tairāwhiti where most products are destined), longer routes to market and higher handling or double-handling costs. In some cases fruit was sellable but at a deep discount due to damage or delays in getting it to market. Fixed infrastructure (e.g. trellis) was damaged or laden with debris driving significant recovery costs.

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Photo supplied by GDC

Photo supplied by TT

Source: TT Sector survey, Trust analysis, photos supplied by GDC and TT

Growers representing 6,811 Ha had 3,296 Ha of crop land impacted by Gabrielle i.e. ~ one half of their land

Damage was seen across all crop-types and loss estimates were made following feedback from 68 growers. By land area Maize and seed maize was the most-impacted crop with total estimated losses of ~19,000 and 3,000 tonnes respectively. The next largest impacted area was process sweetcorn which saw over 500 hectares, corresponding to almost 9,000 tonnes of product.

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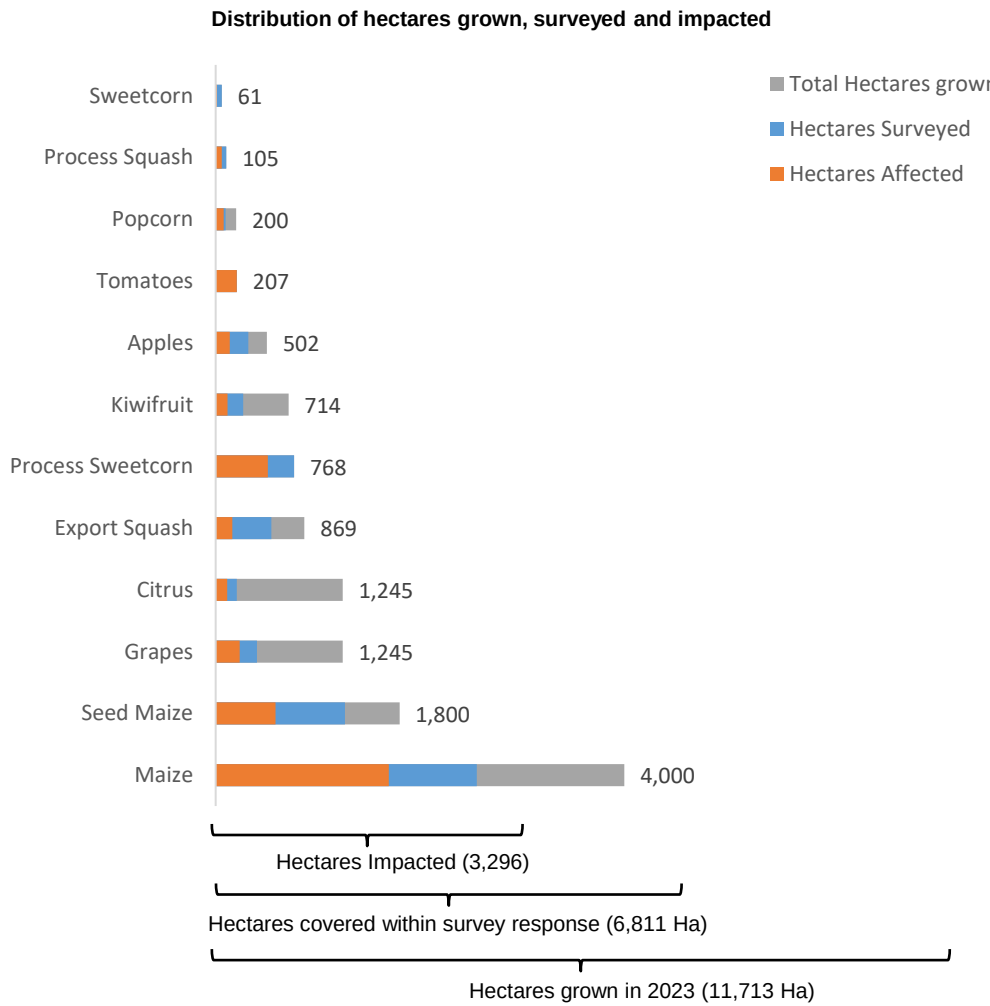

Volume lost	Units
198	Trays
1,376	TCE
558	Mt
13,000	Mt
171,715	TCE
566,740	Trays
8,681	Mt
1,764	Mt
1,850,800	kg
2,726	Mt
2,789	Mt
19,014	Mt

Synthesis of findings from 68 growers who responded to the Horticulture survey

Source: Horticulture Recovery Group

Total resultant losses to horticulture for FY23-27+ are estimated at $200-220m

Direct economic losses against the identified loss types were estimated to be $191m across FY23 to FY27+. This estimate excludes larger horticulture market participants who chose to deal directly with government rather than contribute to a regional response**. The largest loss was perennial crop productivity loss accounting for $117m largely in FY25 and FY26. Perennial crops impacted are primarily apples, grapes, citrus and kiwifruit. These future yield losses are attributable to a mix of direct tree and vine loss or damage or damage to supporting infrastructure that in turn drivers productivity loss. The second largest loss was ~$41m to FY23 crops for reasons outline previously. Higher costs is estimated at $16m and some costs, estimated at $5m, are attributable to loss or damage of infrastructure like fending and trellis. The immediate cost of cleanup, largely silt and woody debris was estimated at $11m. 10% was added for market participants who did not respond to the survey and early actual costs.

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	Loss type	Generic loss description	Horticulture assumptions	Impact on financials	Horticulture losses ($m)
Typically FY23, 24	Access to cash	Inability to pay for or receive monies needed for a business e.g. electronic payments not accepted in cafes	None assumed	Revenue	-
	Immediate cleanup	Removal of silt, water, slash, replacement of damaged stock and materials	$40k per hectare to cleanup average across horticulture; 1300 cleaing up estimate. 200 hecatres at $40k / Hz (permanent) and 1,100 at $2-5k a hecatre. 1/3 of hecatres are silt damage, 1/3 is structural damage only and 1/3 is crop loss only of of 3,900 Ha in total (Source: Discussion with Bill and Elliot)	Operating and capital costs	11
	Crop/stock loss from event	Losses immediately from the weather event or immediately thereafter e.g. inability to access, rot from water. May include quality downgrade e.g. moving from export to domestic quality	Estimates based on survey data from 68 growers who identified volume loss in FY23/24	Immediate revenue (price and volume)	41
	Cost super-inflation	Higher costs incurred in order to overcome constraints and keep operating e.g. paying for trucked in water in vegetable processing	Additional costs of going to somewhere else drives higher costs. 3X additional freight costs for weeks; 1.5X for 2 months. $80 per tonne is normal rate.	Operating costs	1
	Volume impacts from upstream / downstream value chain constraints	Inability to provide a product or service due to other value chain issues e.g. freight companies lose revenue as no logs available to move; manufacturers lacking water to operate; abbatoir closed due to lack of animals. Includes loss of connection (roads, flights)	Estimated losses to processors and freight companies between orchard-gate and edge of region due to roading failures and processor constraints e.g. water.	Revenue (volume), operating costs	16
Typically FY25, 26	Infrastructure loss within the business	Fencing, trellis, physical resilience (e.g. damage to banks) and extends to private roads and culverts that are damaged or destroyed	Assume 1300 hectares impacted per notes above; 200 hectares of permanent hectares infrastructure damaged; 100 hectares requires $50k of infrastructure spend; 20% of 1,100 hectares needs refencing. $25 per m, 10Ha block, assume 100 x 100m therefore $1k per HA damaged	Operating costs, capital costs, revenue where this restrict BAU operations	5
	Perennial crop productivity capacity loss	Trees, vines, land, water changes mean future crops [more generic term] are at risk or damaged	Yield losses to orchards and processors as perennial yield returns to 100% across hectares impacted for apples, grapes, citrus and kiwifruit. Losses extend to 2030 in some case but captured in this time period. See Appendix for working	Medium term revenue	117
	Annual crop replant loss	Annual crops cannot be planted in time due to constraints e.g. land, infrastructure, labour, finance	Assumed within perrenial crop estimates	Medium term revenue	-
Typically FY27+	Productive land use loss or heightened risk	Land may be operable now but have heightened real or perceived risk about its ongoing use.	Assumed negligible	Medium to long term revenue	-
	Funding	Inability or difficulty to retain or gain banking finance of acceptable terms.	Assumed negligible	Balance sheet and business resilience	-
	Total	**Total estimated losses**			191

Source: Horticulture Recovery Group, Temple analysis, TT survey data; *FY27+ recognises some crops will not be back to 100% yield by 2027, ** notably Leaderbrand and Cedenco.

Agriculture contributes $186m to GDP and employs over 3,000 people on more than 400,000 hectares

Agriculture represents $186m of GDP (~7% of the region). Almost 800 businesses employ over 3,000 staff across on-farm, supporting services and downstream processors. Total estimated land is 422,209 spread uniformly across Tairāwhiti. This is over half of the total Tairāwhiti land area (see Appendices for further details). Sheep and beef farming combined contributes almost half of the regional GDP ($91.4m). Sheep only and beef only add a further $9m to GDP. Collectively sheep and beef use almost 350,000 hectares (81% of agricultural land area). Other services in support of these core farming activities contributes a further $49.4m. Businesses are spread across the region as one would expect given the regional coverage of the farms however there is a higher concentration by business number and headcount in and around Gisborne. Most agriculture sits in LUC Class 5 to 7 (see Appendices for further details).

Māori Business

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Tourism, accom & hospo

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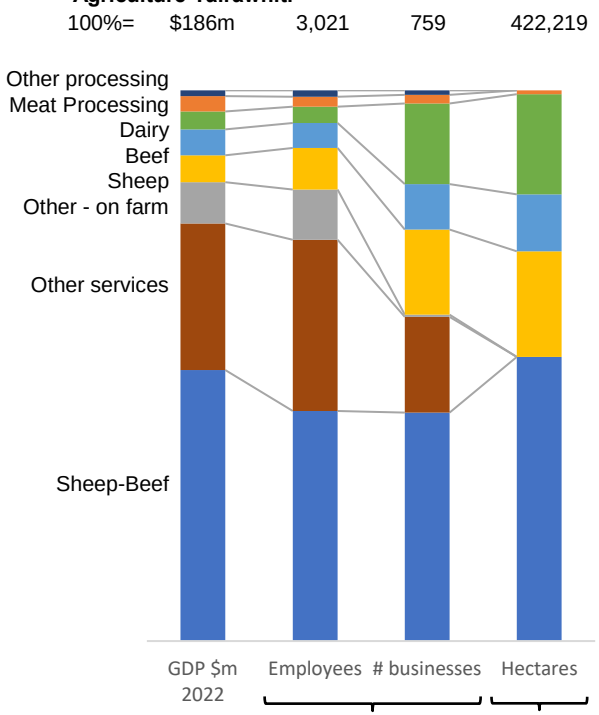
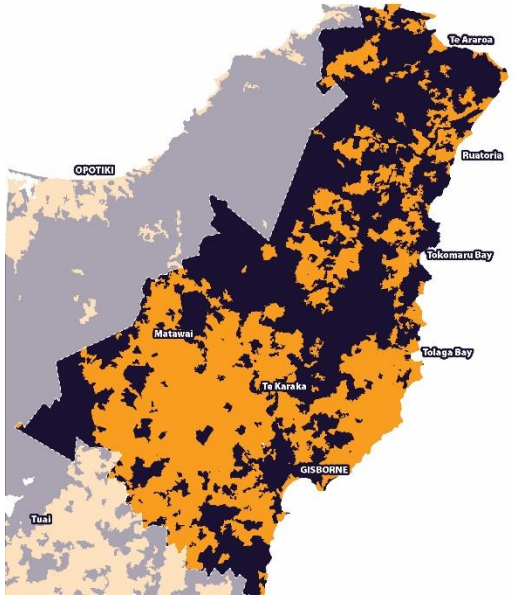
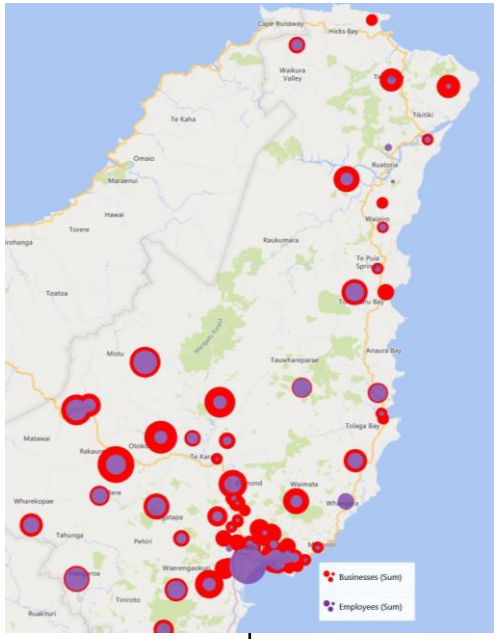
Agriculture Tairāwhiti



Land use by use type



Business and employee concentration by location



Source: Statistics New Zealand, Temple analysis

Agriculture is the largest employer by sector and key to economic, social and environmental recovery

Local ownership of farms ensures most of the GDP flows back through the local economy supporting many small to medium sized businesses outside the agricultural sector. Tairāwhiti has some of the steepest land in the country with most agriculture sitting in land use class 5-7. Agriculture is the most effective employer per hectare on this land class.

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Employment	Social	Environmental
25% of FTE's in top ten industries work in Livestock Farming and Agricultural support services **Two of the top ten fastest growing** industries for FTE's are Livestock Farming and meat product manufacturing **Employs more people per hectare** in Land Use Class 6-8 compared to other main land uses Statistics NZ, BERL PGF Report 2022, BDO Report 2021	Comparatively **large rural population** which is geographically isolated Urban population has **strong connection to the land** Tairāwhiti **Grows Future Farmers** Growing Future Farmers	Significant increase in **biodiversity initiatives** 41% of land area in Tairāwhiti used for Pastoral production 83% of Tairāwhiti's regions Land Use Class 6-8 is in pasture NZ has the most productive hill country in the world and **the lowest carbon footprint** per kg of product Beef and Lamb, Motu Catchment Group, GDC, BDO Report 2021

Source: Agriculture Recovery Group

A survey of 329 farms highlights wide-ranging damage to infrastructure, supply chain and water supplies

Cyclone Gabrielle has caused extensive damage to multiple farms, including residential buildings, farm buildings and equipment, infrastructure (tracks, driveways, culverts and bridges), fencing, pasture, and water supply (pumps and tanks damages, supplies cut off). There have been losses of stock, crops, and grazing land. The cyclone has also made fertiliser spreading difficult and floods have caused stress on animals, affecting weight gain and income. Road access has been lost with some farmers facing the inability to transport livestock or receive necessary supplies. Power outages and communication disruptions have made operating the farm difficult. The floods have caused stress on animals, affecting weight gain and income. Lastly there is widespread silt and slash damage.

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Forestry

House and shed

Supply issues

Water damage

Water supply

Silt and slash

Cattle yards

Tracks

Fencing

Slips

Connectivity

Road access

Power

Source: TT Sector survey, Trust analysis, Photos supplied by TT, Gisborne District Council

Total losses to agriculture for FY23-27+ are estimated at $140-160m

Direct economic losses against the identified loss types were estimated to be $137m across FY23 to FY27+. The largest loss was annual crop replant loss accounting for $73m largely in FY25 and FY26. This is estimated to causes yield loss of 9.5%, 4.8% and 2.5% in years FY24, 25 and 26 respectively with some longer tail to 100%. The second largest loss was ~$31m to FY23 in cost super inflation estimated at around $100,000 per average farm. Infrastructure loss, primarily fencing, across 329 farms was estimated at $52,000 per average farm and hence adds a further $17m in FY24 and 25 (reflected below in total in FY25). The immediate cost of cleanup, largely silt and woody debris was estimated at $7m and loss of on-farm forest was estimated at four hectares in total at $6,000 per hectare contributing a further $8m in losses. A further ~10% is added to allow for market participants who did not respond to the survey to provide the estimated range of $140-160m.

Māori Business

SME

Tourism, accom & hospo

Horticulture

Agriculture

Forestry

	Loss type	Generic loss description	Agriculture assumptions	Impact on financials	Agriculture
Typically FY23, 24	Access to cash	Inability to pay for or receive monies needed for a business e.g. electronic payments not accepted in cafes		Revenue	-
	Immediate cleanup	Removal of silt, water, slash, replacement of damaged stock and materials	Slash clearing for ~50 farms at $130k per farm average	Operating and capital costs	7
	Crop/stock loss from event	Losses immediately from the weather event or immediately thereafter e.g. inability to access, rot from water. May include quality downgrade e.g. moving from export to domestic quality	Loss of ~4 hecatares of forest at estimated $6,000 per Ha estimated from aerial photos across an estimated 329 farms	Immediate revenue (price and volume)	8
	Cost super-inflation	Higher costs incurred in order to overcome constraints and keep operating e.g. paying for trucked in water in vegetable processing	Estimated cost increases by cost category across multiple years for 329 farms with an average of ~$100,000 per farm	Operating costs	33
	Volume impacts from upstream / downstream value chain constraints	Inability to provide a product or service due to other value chain issues e.g. freight companies lose revenue as no logs available to move; manufacturers lacking water to operate; abbatoir closed due to lack of animals. Includes loss of connection (roads, flights)		Revenue (volume), operating costs	-
Typically FY25, 26	Infrastructure loss within the business	Fencing, trellis, physical resilience (e.g. damage to banks) and extends to private roads and culverts that are damaged or destroyed	Primarily femcing loss estimated at an average of $52,000 per farm for 329 farms	Operating costs, capital costs, revenue where this restrict BAU operations	17
	Perennial crop productivity capacity loss	Trees, vines, land, water changes mean future crops are at risk or damaged		Medium term revenue	-
	Annual crop replant loss	Annual crops cannot be planted in time due to constraints e.g. land, infrastructure, labour, finance	Productivity loss of income driven by the land slip area of 9.5% (FY24), 4.8% (FY25) and 2.5% (FY26). Expert panel estimate.	Medium term revenue	73
Typically FY27+	Productive land use loss or heightened risk	Land may be operable now but have heightened real or perceived risk about its ongoing use.		Medium to long term revenue	-
	Funding	Inability or difficulty to retain or gain banking finance of acceptable terms.		Balance sheet and business resilience	-
	Total	**Total estimated losses**			137

Forestry contributes $215m to GDP and employs over 1,100 people on almost 200,000 hectares of land

Forestry is the largest of the primary sector contributors to GDP representing $215m of GDP (~9% of the region). Almost 300 businesses employ over 1,100 staff across Logging, Forestry, forestry support and processing and manufacturing. Logging contributes over half of the regional GDP ($142m) followed by Forestry at $38m. Processing and manufacturing is relatively small as a contributor to GDP (~$13m). Total estimated land is 188,051 spread uniformly across Tairāwhiti. This is slightly less than one quarter of the total Tairāwhiti land area (see Appendices for further details). Most forestry sits in LUC Class 5 to 7 (see Appendices for further details). Around 800 employees are employed across logging and forestry. Businesses are spread across the region as one would expect given the regional coverage of the farms however there is a higher concentration by business number and headcount in and around Gisborne.

Māori Business

SME

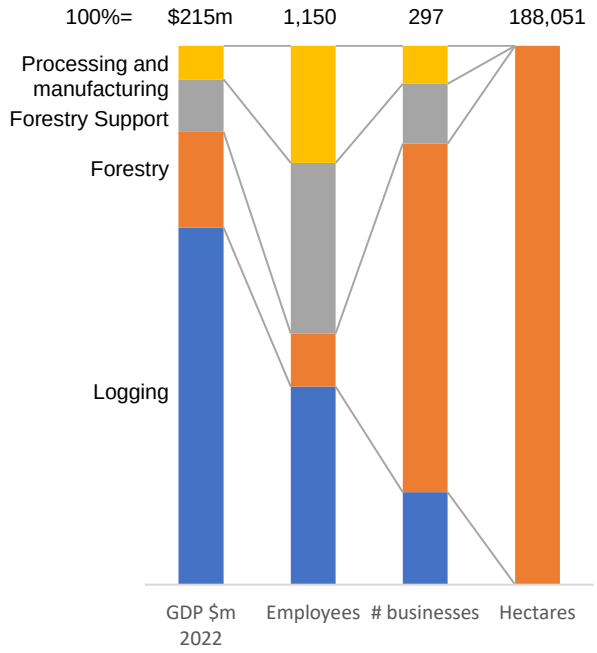
Tourism, accom & hospo

Horticulture

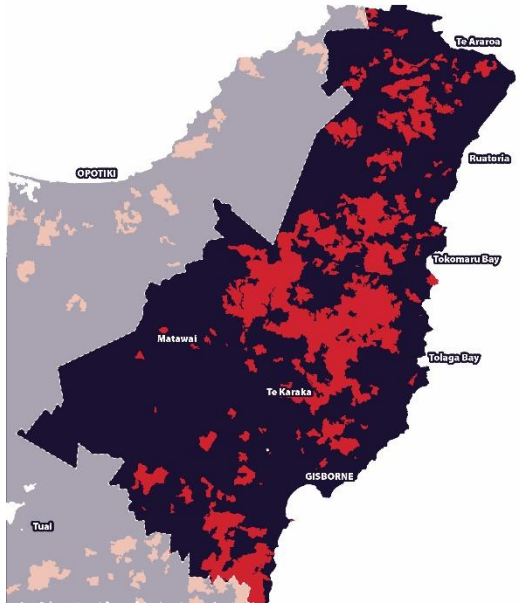
Agriculture

Forestry

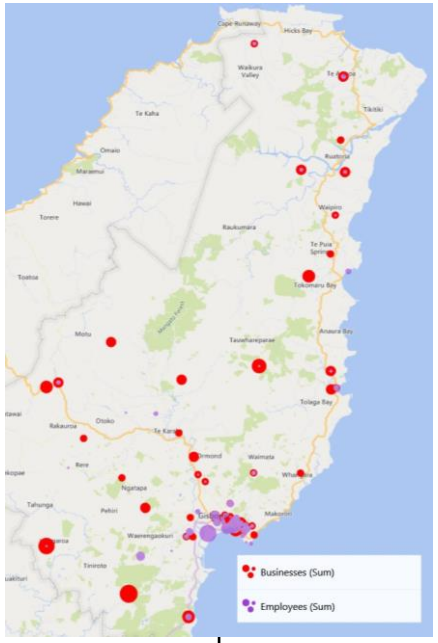
Forestry Tairāwhiti



Land use



Business and employee concentration by location



Source: Statistics New Zealand, Temple analysis

400-500 forestry staff across over 50 forestry crews lost up to a month of income

Immediately following Gabrielle, the Eastland Wood Council undertook surveys of logging and transport companies to understand the extent of losses. These surveys identified 52 crews across Tairāwhiti with a total workforce of 4-500 staff operating at the time Gabrielle struck. These crews lost up to 23 days of work with an average work loss of 13 work days per crew. Crews are typically small operations without significant cash reserves and the loss of up to a month of work took a significant toll on individuals within crews. In addition business owners often carry high debt to fund equipment. In many cases access to site was possible but time consuming and expensive and hence ‘days lost' only provides one element of the economic losses experienced by those working in the forestry.

Māori Business

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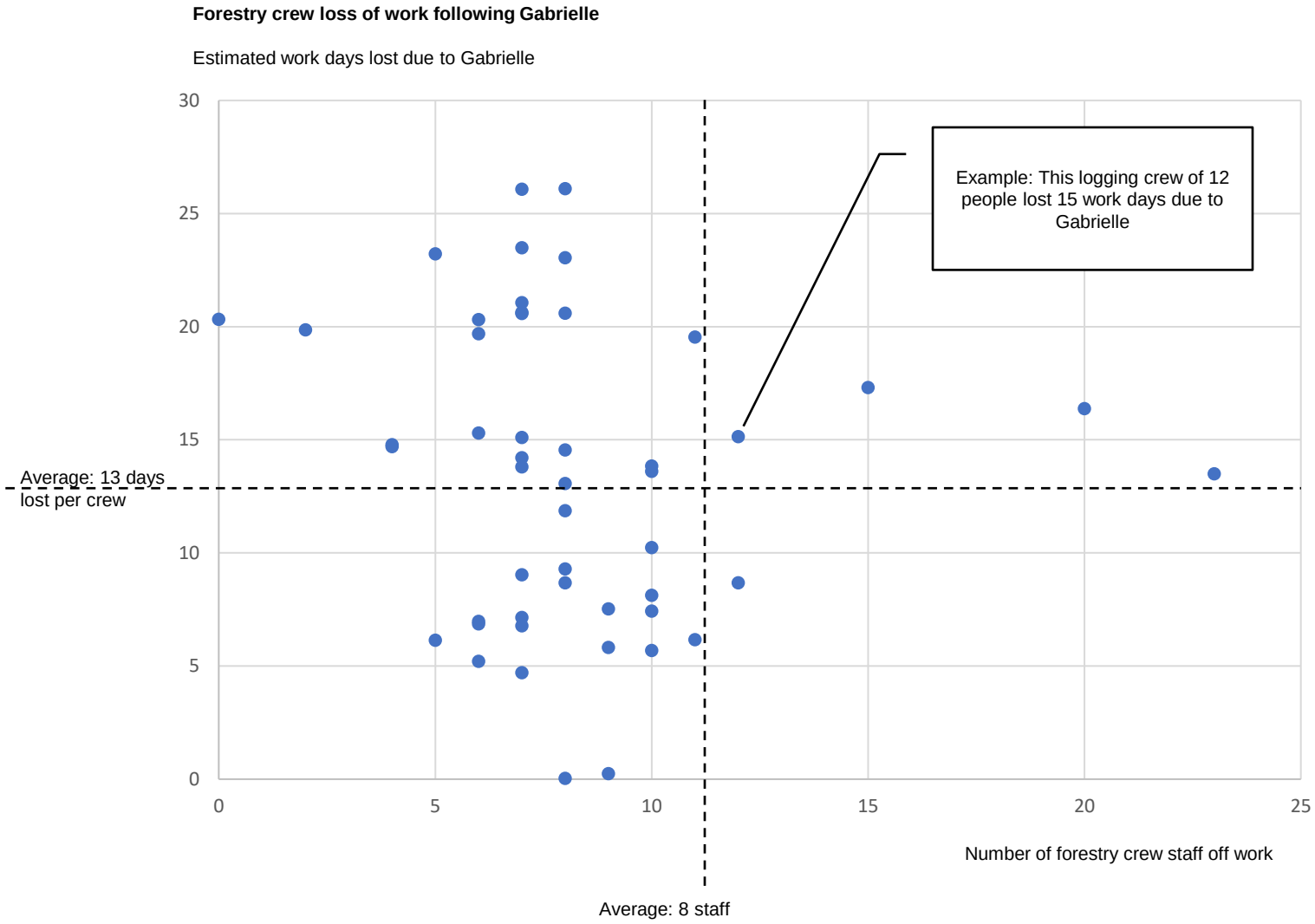
Agriculture

Forestry



Source: Eastland Wood Council, Temple analysis; Nb a small (+/- 0.5) random vertical offset was added to permit visualisation of superimposed crews

Total losses to forestry for FY23-27+ are estimated at $50-60m

Total estimated direct losses are around $50m. The largest source of loss is the loss of trees which have an estimated Net Present Value (NPV) loss of $30m largely across two of the six identified forestry owners. Losses to crews are estimated at around $8m in FY23 and FY24 due to their inability to access sites and / or transport logs to market. Clean-up costs were conservatively estimated at $5m however this did not account for the cleanup of public lands, e.g. beaches and rivers, impacted by forestry slash. Higher shipping demurrage costs contributed $3m in losses and replanting costs are estimated at $5m. . A further ~10% is added to allow for estimates of market participants who were not did not participate in the analysis, typically because they are not members of the Eastland Wood Council.

Māori Business

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Tourism, accom & hospo

Horticulture

Agriculture

Forestry

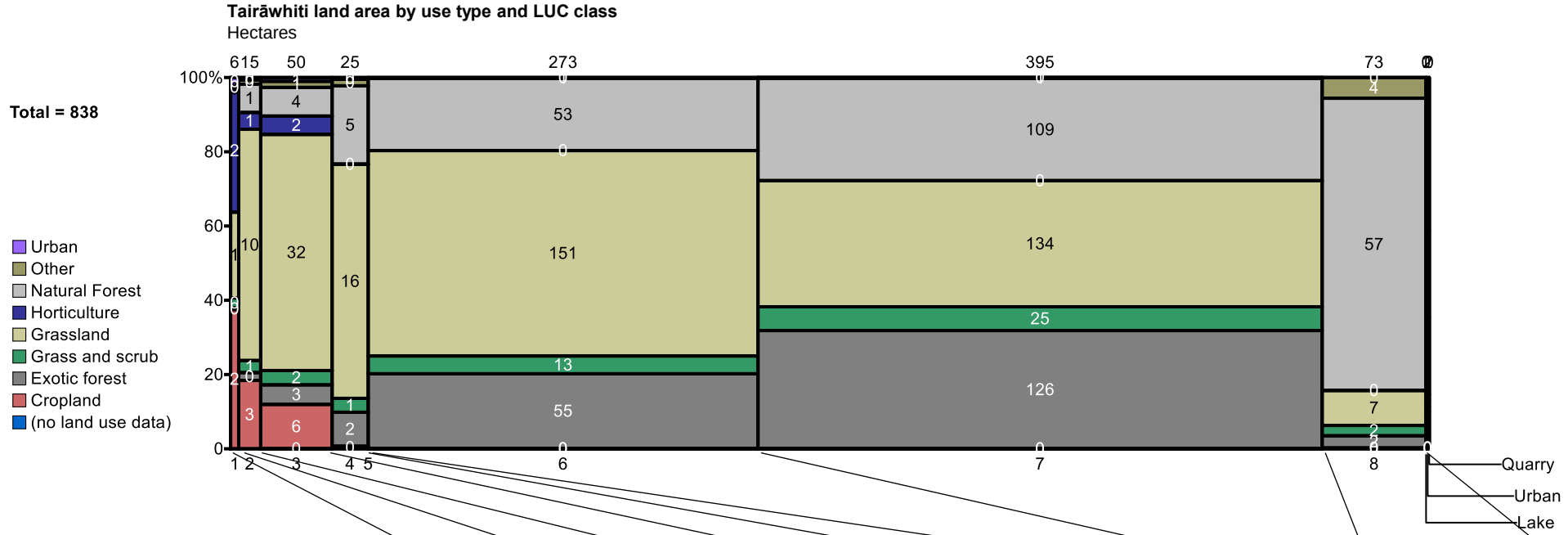
	Loss type	Generic loss description	Forestry assumptions	Impact on financials	Forestry
Typically FY23, 24	Access to cash	Inability to pay for or receive monies needed for a business e.g. electronic payments not accepted in cafes		Revenue	
	Immediate cleanup	Removal of silt, water, slash, replacement of damaged stock and materials	Some cleanup e.g. culvert cleaning, clearing roads, Estimate $1m from Forestry Working Group. Note clearage of waterways is not included in this estimate and is expected to be significantly higher e.g. town	Operating and capital costs	5
	Crop/stock loss from event	Losses immediately from the weather event or immediately thereafter e.g. inability to access, rot from water. May include quality downgrade e.g. moving from export to domestic quality	$10-15m NPV of future trees lost (primarily from two forest owners), represents most of the loss. There is permanent loss in some areas, slips have occurred in productive plantation areas back to bedrock	Immediate revenue (price and volume)	30
	Cost super-inflation	Higher costs incurred in order to overcome constraints and keep operating e.g. paying for trucked in water in vegetable processing	Regional estimate: 500k tonnes of demmarrage costs on the water $3m - 3 mths = 500k tonnes x $5 a tonne. Likely higher transport costs to Napier. However assumed negligible.	Operating costs	3
	Volume impacts from upstream / downstream value chain constraints	Inability to provide a product or service due to other value chain issues e.g. freight companies lose revenue as no logs available to move; manufacturers lacking water to operate; abbatoir closed due to lack of animals. Includes loss of connection (roads, flights)	Losses to crews unable to work most of February (losses of $21 per tonne, $4-6m total) and freight unable to move due to road closures for much of February and some of March ($11 per tonne, ~$2m total)	Revenue (volume), operating costs	8
Typically FY25, 26	Infrastructure loss within the business	Fencing, trellis, physical resilience (e.g. damage to banks) and extends to private roads and culverts that are damaged or destroyed	There will be significant costs cleaning slip materials off forestry roads and reinstating drainge. No estimate provided for this yet.	Operating costs, capital costs, revenue where this restrict BAU operations	
	Perennial crop productivity capacity loss	Trees, vines, land, water changes mean future crops are at risk or damaged		Medium term revenue	
	Annual crop replant loss	Annual crops cannot be planted in time due to constraints e.g. land, infrastructure, labour, finance	Neil estimate 1000 hecatres at $5k a hectare to replant for the region.	Medium term revenue	5
Typically FY27+	Productive land use loss or heightened risk	Land may be operable now but have heightened real or perceived risk about its ongoing use.	Marginal	Medium to long term revenue	
	Funding	Inability or difficulty to retain or gain banking finance of acceptable terms.	Some forest owners are financing their crews	Balance sheet and business resilience	
	Total	**Total estimated losses**			50

Source: Eastland Wood Council; Temple analysis

Appendices

- Assessment of land use by LUC Class
- Summary analysis from the Horticulture Recovery Group
- Summary analysis from the Agriculture Recovery Group

A quantitative assessment show the relative land use of forestry, horticulture and agriculture



LUC Class	1	2	3	4	5	6	7	8
Arable cropping suitability	High	Low			Unsuitable			
Pastoral grazing suitability	High	Low						Unsuitable
Production forestry suitability	High	Low						Unsuitable
General suitability	Multiple use land				Pastoral or forestry land			Conservation land
Specific reference in Unitary Plan	Elite land	Prime land		Moderate to low versatility				
Value for Primary production	High	High to moderate			Moderate to low			Low
>>> Decreasing versatility of use >>>								
>>> Increasing limitations to use >>>								

Source: Report on the impacts of Permanent carbon farming in Te Tairāwhiti region- JULY 2021, BDO

Horticulture: Summary analyses (Crop loss)

Tairawhiti, Nuhaka and Wairoa Horticultural Sector Loss to Cyclone Gabrielle							
Crop	Total Ha grown	Hectares Surveyed	Hectares Affected	Volume lost	% crop loss for Survey Respondents	Loss at Farm Gate	value ex production site Gis
Kiwifruit	714 ha	270 ha	118 ha	566,740 trays	21%	$5,667,400	see cell note
Apples	502 ha	320 ha	139 ha	171,715 TCE's	25%	$5,151,450	$2,498,580
Citrus	1,245 ha	209 ha	115 ha	1,850,800 Mt	40%	$1,850,800	$2,498,580
Grapes	1,245 ha	404 ha	236 ha	2,726 Mt	44%	$4,680,542	$7,654,608
Maize crops	6,000 ha	3,922 ha	2,361 ha	22,361 Mt	55%	$14,288,124	$34,025,171
Squash	974 ha	650 ha	227 ha	3,140 Mt	40%	$4,598,784	see cell note
Sweetcorn	829 ha	829 ha	523 ha	8,879 Mt	58%	$2,232,746	see cell note
Tomatoes	207 ha	207 ha	207 ha	13,000 Mt	72%	$2,470,000	see cell note
Totals	**11,715 ha**	**6,811 ha**	**3,926 ha**			**$40,939,846**	**$46,676,939**

Source: Horticulture Recovery Group

Horticulture: Summary analyses (Perennial crop productivity loss)

Cyclone Gabrielle : Impact on Annual Crop Gross Margin between Business as Usual and Redevelopment for Gisborne Permanent Horticulture

	Severely Impacted Hectares	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	Cumulative
Kiwifruit	62	0	-8,787,260	-7,114,748	-7,554,266	-5,629,414	-3,994,784	-2,024,548	-921,754	0	0	-36,026,774
Apples	82	0	-10,707,329	-7,527,451	-7,122,263	-6,149,089	-4,948,283	-3,749,773	-2,924,908	-1,671,376	-835,688	-45,636,162
Grapes	10	0	-453,540	-130,895	6,890	0	0	0	0	0	0	-577,545
Citrus	10	0	-431,728	-220,058	-201,070	-183,313	-156,456	-134,989	-82,523	-71,752	-62,216	-1,544,105
Total	164	**0**	**-20,379,858**	**-14,993,152**	**-14,870,709**	**-11,961,816**	**-9,099,523**	**-5,909,310**	**-3,929,186**	**-1,743,129**	**-897,904**	**-83,784,585**

2022/23 2022/23 Losses have been excluded as theses reported as part of the $42MHort Sector Loss

Cyclone Gabrielle : Impact on Harvest and Post-Harvest between Business as Usual and Redevelopment for Gisborne Permanent Horticulture

	Severely Impacted Hectares	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	Cumulative
Kiwifruit	31	-1,305,000	-1,305,000	-1,305,000	-921,000	-650,000	-319,000	-145,000	0	0	0	-5,950,000
Apples	82	-5,059,000	-5,059,000	-4,497,000	-3,654,000	-2,810,000	-1,967,000	-1,405,000	-562,000	0	0	-25,013,000
Grapes	10	-299,000	-299,000	-209,000	0	0	0	0	0	0	0	-807,000
Citrus	10	-212,000	-212,000	-212,000	-204,000	-185,000	-158,000	-135,000	-87,000	-71,000	-58,000	-1,534,000
Total	133	**-6,875,000**	**-6,875,000**	**-6,223,000**	**-4,779,000**	**-3,645,000**	**-2,444,000**	**-1,685,000**	**-649,000**	**-71,000**	**-58,000**	**-33,304,000**

-117,088,585

Source: Horticulture Recovery Group

Agriculture: Ag First assessment of losses (1 of 2)

1.0 Executive Summary

The economic impact of Cyclone Gabrielle and the surrounding weather events on Tairawhiti's agricultural sector is estimated to be $137 million and the impacts felt for at least the next 4 years.

The main impact was from the damage are slips on hill country and sedimentation and slash deposits on flood plains which have taken out fences, tracks, water systems and other critical farm infrastructure.

The district was surveyed to get an indication of the scale and severity of damage across Tairawhiti and its impact on the future. The largest on-farm impact is going to be a loss of income, estimated to be $72 million, and increased expenditure, estimated to be $50 million.

Farm forestry, which has often been planted for soil conservation, is projected to have suffered losses of $8.3M.

The expenditure and production loss from slash removal is going to significantly impact many farmers. It is estimated the losses from slash to be $6.5M.

The timeline to regain access within the district is a concern for farmers and is going to drive the overall scale of financial and psychological hardship for our agricultural community in Tairawhiti.

2.0 Work Brief

The work brief was provided both verbally and by email by Paul Winton representing Trust Tairawhiti and was:

To calculate the estimated economic loss from Gabrielle (and adjacent events) for the Ag Sector in Tairawhiti.

3.0 Tairawhiti Agriculture Sector

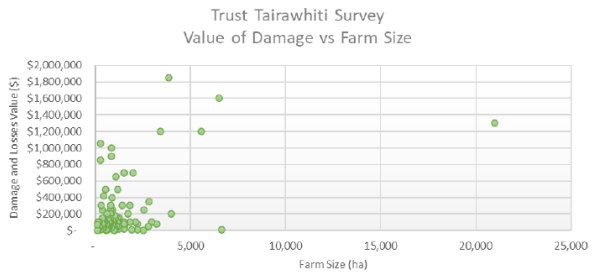
3.1 Tairawhiti Farming Area

According to BDO's Report on the Impacts of Permanent Carbon Farming in Te Tairawhiti Region – July 2021[1] there are 350,442 hectares is in pasture. The district's average farm has an additional 17% ineffective area[2], taking the total farming area in Tairawhiti to 422,219 hectares.

3.2 Trust Tairawhiti Survey

AgFirst were provided with the Cyclone Gabrielle damage survey data by Trust Tairawhiti. The data had outliers taken out; with duplicates removed, farms under 100 hectares emitted, and figures likely to be inaccurate such as entries where damage value and damage description did not align. There were 107 farms that provided valid returns with an average damage cost of $221k.

The below graph shows the highly variable value of damage across farms in Tairawhiti and weak relationship between farm size and damage value. There were examples with relatively high levels of damage on smaller properties.



[3] Trust Tairawhiti Survey

3.3 The Average Farm in Tairawhiti

Using AgFirst's Accounts Analysis database in combination with the calculated total farming area in Tairawhiti in Section 3.1, it was estimated that there are 329 sheep and beef farms in the Tairawhiti region.

The AgFirst Accounts Analysis database has had over 100 Tairawhiti farm businesses analysed each year and has run in this district for over 25 years. This was used as the base from which the impact of damage was assessed.

The 2021-2022 financial year (FY22) is the most recent year to be analysed, with the key physical and financial attributes of the district's average farm shown below.

Year	2021-2022	Forecast 2022-2023
Total Area (ha)	1,284	
Effective Area (ha)	1,039	
Percentage Effective (%)	83 %	
Total Stock Units (su)	9,478	
Stocking Rate (su/eff ha)	9.1	
Gross Income ($/eff ha)	$1,220	$1,140
Expenditure ($/eff ha)	$734	$785
EBITR ($/eff ha)	$486	$355
Tairawhiti Total Area (ha)	422,219	
Number of farms	329	

The current 2022-2023 year has seen a high inflation, estimated at 7.2%, largely driven by high fertiliser prices, increasing the cost of farming. Due to the weather events the remainder of the period will see substitution of budgeted expenditure in areas such as fertiliser with unplanned items like fencing repairs and sowing pasture.

The current 2022-2023 year has also seen lower stock prices, especially in areas such as ewes and lambs, compared to 2021-2022.

Both above considerations have been extrapolated across the FY22 to calculate forecast figures for the 2022-2023 financial year. This tighter EBITR per effective hectare has implications as discussed in the debt scenario later in this report.

3.4 Assessment of the Pasture Loss Area

To assess pasture loss across Tairawhiti farms, LINZ Basemaps satellite imagery layers "Cyclone Gabrielle Gisborne 0.2m Aerial Photos (20 February 2023 – 8 March 2023)" and "Cyclone North Island 0.5m Aerial Photos (21 February 2023 – 8 March 2023)" were divided into districts and within each the relative area was measured and percentage of lost pasture visually estimated. Gisborne District Council's Tairawhiti Maps website was used to assist with measurements.

Farmer groups and key local figures who support Tairawhiti's agricultural sector were consulted to ground truth results. Where available, damage estimates were also compared against and calibrated to Ravensdown's software outputs.

The programme measures the red highlighted areas (pasture loss) by identifying significant colour changes between post-cyclone satellite imagery and November 2022 satellite imagery.

4.0 Agricultural Sub-Sectors

3.5 Māori Farming

This assessment is inclusive of the damage that has occurred on Māori properties across the Tairawhiti region.

3.6 Farm Forestry

Farm forestry is integral piece of many farming businesses in Tairawhiti, and the economic loss is included in the agriculture sector. It has been advised that farm forests make up 20% of the regions' forests. These are small blocks of forestry that have often been planted for conservation reasons. In line with the commercial forests there has been a degree of damage that has occurred in the farm forests because of Cyclone Gabriel.

This damage has been triggered by landslips that has caused both tree crop loss and lower slope and catchment infrastructure damage. The infrastructure damage is slash and mobilised soil damaging fencing and farm access such as tracks and culverts.

Based on a sample of farms in the AgFirst Analysis it is our assessment that the average farm in the district has 42 ha of pine forest. In the model the forest area is part of the is mentioned as part of the 17% ineffective.

Ag First assessment of losses (2 of 2)

We have worked on the basis that the 10% landslip loss is also extrapolated out for the forestry loss to be 4.2 ha.

There is a range of loss and we have used a forest value we have lost would be $6,000 per hectare. Over 329 farms at 4.2 ha $6,000 calculates to a $8.3 m.

3.7 Maize

A significant area of the district's maize crop is located on Tairawhiti's sheep and beef farms. It is our understanding that this area of potentially 900 hectares of damaged maize has been included in the horticultural cyclone impact assessment. This has an estimated loss in income of $5.5M of which AgFirst believe at least 50 percent is on sheep and cattle farmers.

There are some Cedenco sweetcorn crops that are grown on sheep and cattle properties on both the Waipaoa and on the Uawa floodplains. AgFirst worked on the basis that the Cedenco crop loss was included in the horticultural cyclone impact assessment.

3.8 Agriculture Support Business

This report does not consider the physical and financial damage to the businesses that support our farming industry such as fertiliser spreading contractors, shearers, stock agents and so on. Some of these support businesses have been critically impacted.

It is AgFirst's understanding that this information is being considered by other parties in cyclone impact assessment.

3.9 District Access (Bridges and Roads)

There is significant uncertainty as to when and if our internal district roads will be repaired. There is also uncertainty as to when we will have reliable road links to the North, West and South. Farmers are anticipating a higher cost and a longer time to get around the district for the next 3 - 5 years.

3.10 Slash Removal

Slash deposited on the sheep and beef farms with alluvial flats has been a problem in the Waipaoa, Uawa, Waimata, Waiapu, Panikau rivers and their supporting tributaries.

Removal of the logs normally requires a mix of excavators, trucks, and disposal method such as burning or chipping. In some circumstances forest companies are working to remove the logs. It is AgFirst's estimate that there would be 50 farmers in the district that would have $100,000 of costs and impact that is not covered by the forest companies. This is a total cost of $5.0 million in 2023.

It is likely that effected paddocks will have ongoing issues due to compaction.

It is also certain that slash will be remobilised in rain and river events over the coming years if the upstream issues are not effectively addressed.

In 2024 and 2025, the 50 farms are estimated to have an additional $15,000 per annum.

There are no longer term impacts beyond that time relating to slash deposited within these weather events.

4.0 Farm Modelling

4.1 Income

In the 2024 year, the income was reduced by 9.5%, then 4.8% in 2025, and 2.9% in 2026. This is proportionate to the estimated loss of pasture over time and therefore reductions in stock holding capacities.

Additional stock transport costs are usually seen as a reduced animal sale price as the buyer of store stock generally pays transport. For the purposes of this report, additional stock transport has been calculated as an increase in expenses rather than a reduction in income.

4.2 Expenditure

There is a significant amount of additional expenditure, especially around fencing, tracking, culverts, and critical infrastructure.

4.3 Debt Serving

There is a significant range of bank borrowing within the Tairawhiti region. Some farmers have zero borrowing but others significant loans.

The high land prices have meant that recent growth has come at a cost. This position has now been compounded by the recent increases in OCR and interest rates. Unfortunately, this includes many of the district's top operators.

There are concerns that land prices may drop, which will place pressure on many farmers' equity.

Typically, banks will lend to a level where interest is 15 percent of Gross Fam Income. For top operators this is slightly higher.

Some of our Tairawhiti farmers are now on $30 per stock unit or $300 per hectare on interest.

Cashflow issues were highlighted as a major concern in the Trust Tairawhiti survey. Income from stock sales has been delayed due to closed roads, bridges out and closed works. In the meantime, there has been increased business costs from the recovery.

4.4 Insurance

Insurance credit is estimated to be $4.9 million. It is estimated that 50% of Tairawhiti's 329 farmers will make insurance claims. And of those that apply, the average claimant would receive $30k.

4.5 Stress and Mental Health

Generally, our Tairawhiti farmers have been resilient group. The cyclone came on the back of a period where the farmer perception was that they were undervalued. The pace of policy changes and volume of consultation processes has weighed heavily on the industry and mental state of individuals, through a period where finances were relatively positive. It is the people that are the core of Tairawhiti's agriculture industry and must be the focus on future support packages.

ANZSIC06 codes by sector

Horticulture	
A011100	Nursery Production (Under Cover)
A011200	Nursery Production (Outdoors)
A011300	Turf Growing
A011400	Floriculture Production (Under Cover)
A011500	Floriculture Production (Outdoors)
A012100	Mushroom Growing
A012200	Vegetable Growing (Under Cover)
A012300	Vegetable Growing (Outdoors)
A013100	Grape Growing
A013200	Kiwifruit Growing
A013300	Berry Fruit Growing
A013400	Apple and Pear Growing
A013500	Stone Fruit Growing
A013600	Citrus Fruit Growing
A013700	Olive Growing
A013900	Other Fruit and Tree Nut Growing
C114000	Fruit and Vegetable Processing
C115000	Oil and Fat Manufacturing
C116100	Grain Mill Product Manufacturing
C116200	Cereal, Pasta and Baking Mix Manufacturing
C117100	Bread Manufacturing (Factory-based)
C117200	Cake and Pastry Manufacturing (Factory-based)
C117300	Biscuit Manufacturing (Factory-based)
C117400	Bakery Product Manufacturing (Non-factory-based)
C118100	Sugar Manufacturing
C118200	Confectionery Manufacturing
C119100	Potato Crisps and Corn Chips Manufacturing
C119200	Prepared Animal and Bird Feed Manufacturing
C119900	Other Food Products Manufacturing n.e.c.
C121100	Soft Drink, Cordial and Syrup Manufacturing
C121200	Beer Manufacturing
C121300	Spirit Manufacturing
C121400	Wine and Other Alcoholic Beverage Manufacturing

Agriculture	
A014100	Sheep Farming (Specialised)
A014200	Beef Cattle Farming (Specialised)
A014300	Beef Cattle Feedlots (Specialised)
A014400	Sheep-Beef Cattle Farming
A014500	Grain-Sheep and Grain-Beef Cattle Farming
A014600	Rice Growing
A014900	Other Grain Growing
A015100	Sugar Cane Growing
A015200	Cotton Growing
A015900	Other Crop Growing n.e.c.
A016000	Dairy Cattle Farming
A017100	Poultry Farming (Meat)
A017200	Poultry Farming (Eggs)
A018000	Deer Farming
A019100	Horse Farming
A019200	Pig Farming
A019300	Beekeeping
A019900	Other Livestock Farming n.e.c.
A052200	Shearing Services
A052900	Other Agriculture and Fishing Support Services
C111100	Meat Processing
C113200	Ice Cream Manufacturing
C113300	Cheese and Other Dairy Product Manufacturing

Forestry	
A030100	Forestry
A030200	Logging
A051000	Forestry Support Services
C141100	Log Sawmilling
C141200	Wood Chipping
C141300	Timber Resawing and Dressing
C149100	Prefabricated Wooden Building Manufacturing
C149200	Wooden Structural Fittings and Components Manufacturing
C149300	Veneer and Plywood Manufacturing
C149400	Reconstituted Wood Product Manufacturing
C149900	Other Wood Product Manufacturing n.e.c.

Tourism, accommodation and hospitality	
H451100	Cafes and Restaurants
H440000	Accommodation
I529900	Other Transport Support Services n.e.c
I490000	Air and Space Transport
H452000	Pubs, Taverns and Bars
H451300	Catering Services
L661100	Passenger Car Rental and Hiring
H453000	Clubs (Hospitality)
R892200	Nature Reserves and Conservation Parks Operation
I462300	Taxi and Other Road Transport
N722000	Travel Agency and Tour Arrangement Services
I502900	Other Transport n.e.c.
R913900	Amusement and Other Recreation Activities n.e.c.

TEMPLE

CAPITAL INVESTMENT SPECIALISTS

This investment document was prepared by Temple Capital Investment Specialists.

Temple provides specialist solutions-based advice that allows complex capital investment decisions to be made with confidence. We provide this advice to a range of leading Australasian clients including private equity funds, debt funds and major corporates who are considering investments in the range of $US10 million to $US100 million. We define the opportunities present in each investment and explore alternatives that can maximise returns and minimise risk.

What makes us unique?

Temple works differently from the traditional sources of investment advice. Our independence is very important because it means our fees aren't influenced by the final investment decision, so you can be assured our solutions are objective. As a smaller company our services are significantly more cost effective than top tier consulting firms. And because we have extensive experience in both risk and opportunity assessment we provide a more customised appraisal than firms that apply formula driven solutions.

Let's talk

For an in-depth assessment of your next investment decision or for further information on our services, please call Dr. Paul Winton on +64 21 766581 or email paul.winton@templeinvestment.com.