Brewing a Better NZ

Our Mission:

Source **100%** *of our energy from* **renewable sources**

Balance *of the* **consumed volume of water** *that we use*

Create **ZERO%** *waste to landfill in production*

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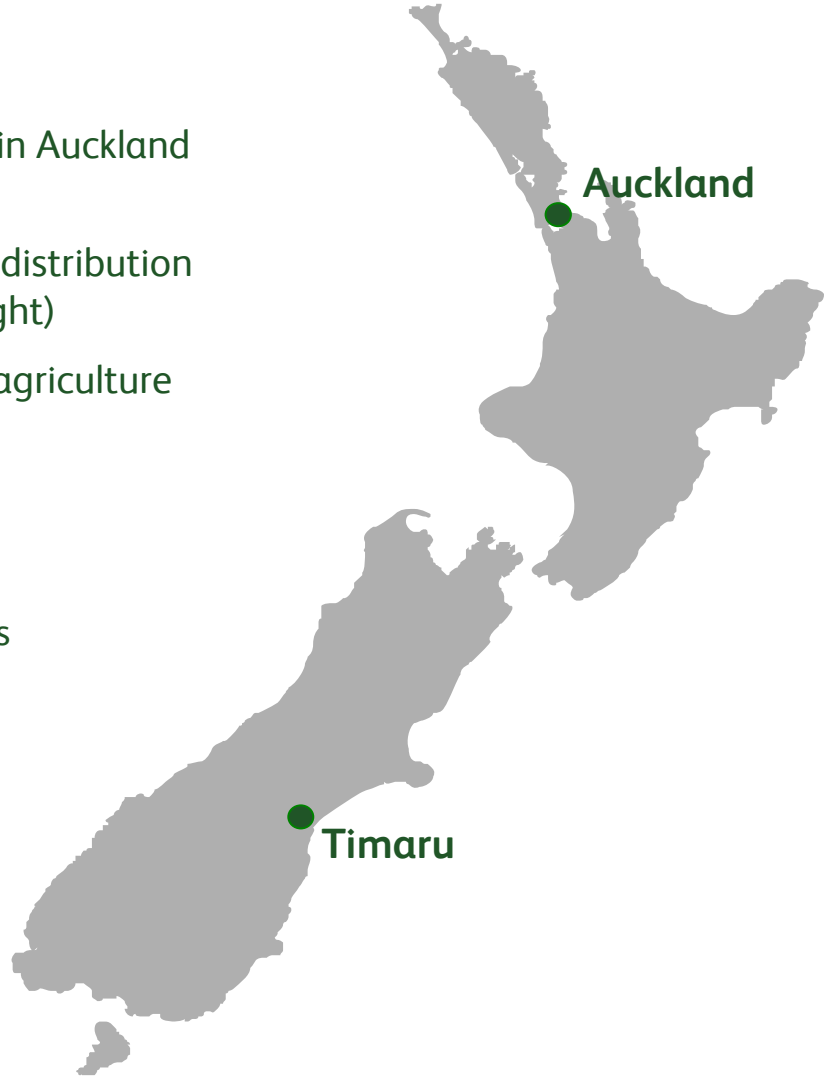
DB's Climate Change Physical Risk Assessment 2020 – Phase 1

Overview

Scope:

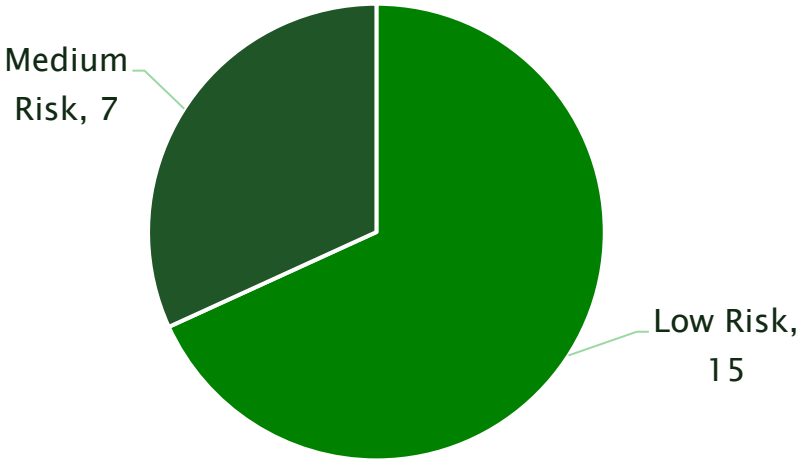
- DB's largest breweries in Auckland and Timaru
- New Zealand national distribution (road, rail and sea freight)
- New Zealand sourced agriculture supplies



Climate Projections Used:

- 2040 climate projections
- Based on a high carbon emission, "do nothing" RCP8.5 scenario

Identified Risks



Medium Risks:

- Municipal water supply for Auckland and Timaru
- Flooding and coastal inundation damage at Timaru
- Lower hop yield in NZ supply
- Governance (at time of assessment)

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1
Understand DB
Review internal docs
DB interviews
Supplier interviews
2
Literature Review + Risk Assessment
Risk events
NZ case studies
Climate projections
3
Workshop
Document controls
Agree consequences
Prioritise risks
4
Summary Report
Methodology
Results
Recommendations

INFORMATION GATHERING

- **Reviewed Documents:**
  - Emergency response plans
  - Business continuity plan
  - Enterprise risk matrix
  - Literature was reviewed from NIWA, the MfE, as well as council plans and maps.

- **Interviews:**
  - National Distribution and Warehousing Manager
  - Procurement Manager
  - Brewery Managers
  - Process and Control Improvement Manager
  - Key agricultural suppliers
  - Logistic supplier

2040 CLIMATE PROJECTION CHANGES BY REGION

Table 1. Relative change of climate variables between 2020 and 2040 in regions most relevant to DB's supply, operations and distribution. Based on NIWA's RCP8.5 Six model Ensemble Average.

Variable	Unit	Auckland	Hawke's Bay	Tasman	Canterbury
Frost Days	Days	●	▲	▲	⇟
Surface Radiation	W/m^2	●	●	●	∨
Mean Annual Temperature	C	∧	∧	∧	∧
Relative Humidity	%	●	●	●	●
Wet days (>1mm)	Days	∨	∧	●	▲
Extreme Wet days (>25mm)	Days	⇟	⇟	▼	●
Mean Annual Precipitation	mm	∨	∧	∨	∧
Hot Days (>25C)	Days	▲	⇞	∨	▲

Note: No change ±1% (●), 2-5% change (∨ ∧), 6-20% change (▼ ▲) and >20% change (⇟ ⇞)

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CLIMATE RISK ASSESSMENT FOCUS

- **Brewery Operations (Auckland & Timaru):**
  - Acute climate related events closing the breweries for a period of time that would have a material effect on DB's production.
  - Effects of long term, increased temperatures on employee well-being and overall energy demand.

- **National Distribution:**
  - Effect of climate events on the continuity of national distribution by road, rail and sea freight. Evidence was drawn from recent events such as bridge washouts and bridge closures due to high winds.

- **Supply of Agricultural Goods:**
  - Chronic and acute climate events affecting the supply of agricultural goods to a degree that would have a material effect on DB's production.

INTERNAL WORKSHOP

LIKELIHOOD IN 2040

- Estimated for 2040 under an RCP8.5 scenario
- Combines current risk likelihood, existing controls & climate projections

Scored in advance by Beca

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IMPACT

- Scale of impact based on DB risk matrix
- Includes consideration of existing mitigation actions

Scored in workshop collaboratively

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RESIDUAL RISK 2040

- Risk for DB in 2040 if only maintaining existing mitigation actions

Priorities an outcome of workshop

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LIKELIHOOD

Considering the current exposure to the risk as well as the projected change in climate out to 2040, what is the likelihood of the event occurring if no further risk mitigation actions are put in place?

	Likelihood	Recurrent events	Single events
5	Almost certain	Could occur several times per year	More likely than not – Probability greater than 50%.
4	Likely	May arise about once per year	As likely as not – 50/50 chance.
3	Possible	May arise once in ten years	Less likely than not but still appreciable – Probability less than 50% but still quite high.
2	Unlikely	May arise once in ten years to 20 years	Unlikely but not negligible – Probability low but noticeably greater than zero
1	Nearly impossible	Unlikely during the next 20 years	Negligible – Probability very small, close to zero

RISK MATRIX

Adapted to determine priority risks

Also looked at the impact on reputation, financial and business continuity

Risk Likelihood	Risk Impact				
	Insignificant	Minor	Moderate	Significant	Major
Nearly Impossible	Low	Low	Low	Medium	Medium
Unlikely	Low	Low	Medium	Medium	Medium
Possible	Low	Low	Medium	Medium	High
Likely	Low	Medium	Medium	High	High
Almost Certain	Low	Medium	High	High	Extreme

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RCP8.5 Scenario

Physical Risk	Impact on DB Breweries		Current and Future Controls
Drought affecting municipal water supply for Waitematā and Timaru	Significantly reduced municipal water availability in the **Auckland region** results in insufficient water available for planned production, thereby negatively affecting production volumes.	Significantly reduced municipal water availability in **Timaru** results in insufficient water available for planned production, thereby negatively affecting production volumes.	Continue to improve **water use efficiency** in the breweries. **Balance** our water used in production. Identify and implement **water circularity projects**. Investigate and install **back-up on-site water supply**.
Flooding and coastal inundation damage at Timaru	Significant **flood event** causes the closure of the Timaru brewery for a short period of time.	**Coastal inundation** causes significant damage to the Timaru brewery for a short period of time.	Plan to undertake a detailed, site specific assessment of the **flooding and inundation risk to people and property**.
Agricultural supply chain disrupted by major weather	Lower hop yield in the South Island reduces the availability of hops, which has a **negative impact on production volume**.		**Collaborate** with suppliers to develop joint action plan for continuity of supply.
Governance	Strategy and governance of DB does not adequately consider physical climate-related risks.		This has been addressed by incorporating the above risks into DB's risk register.

*RCP8.5 high emissions scenario is the business as usual scenario, which is the worst case scenario if the world does not make efforts to cut its greenhouse gas emssions. RCP8.5 specifically refers to the concentration of carbon that delivers global warming at an average of 8.5 watts per square meter across the planet, causing a temperature increase of 4.3°C by 2100 compared to pre-industrial temperatures.

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