## 5.1 APPROVAL OF UNBUDGETED FUNDS FOR DROUGHT RESILIENCE WORK IN 2020/2021 FINANCIAL YEAR

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### PURPOSE OF THE REPORT

The purpose of this report is to seek approval of additional capital funds to support urgent drought resilience work to be completed in 2020/2021 financial year.

### EXECUTIVE SUMMARY

- Despite the recent flooding events the MetService seasonal forecast for winter is predicting August and September to have below average rainfall. The forecast very clearly signals an extended and significant drier spell for Northland which is quantified as up to 30% rainfall deficient in August and September.
- The Northland region experienced a significant drought in the first half of 2020 and this event impacted on the Far North District Council's ability to maintain reticulated water supply in some of its communities.
- The experience highlighted a programme of work required to improve the resilience of water supply in the Far North. The programme covers urgent work recommended to be completed this financial year, as well as future work which will be incorporated into the Long Term Plan project prioritisation processes.
- The report provides a brief options analysis for a number of resilience opportunities recommended to proceed in addition to the 2020/2021 Annual Plan. The total funding sought for these resilience opportunities is $2,119,000.

### RECOMMENDATION

**That Council, subject to adequate funding from other sources being approved, approve**

**a) unbudgeted capital funding of $1,184,000 for a new water supply bore in the deep aquifer at Monument Hill in Kaikohe.**

**b) unbudgeted capital funding of $15,000 for pH treatment at the Opononi/Omapere water treatment plant.**

**c) unbudgeted capital funding of $70,000 for amending the Kawakawa water take consent to remove the residual flow requirements.**

**d) unbudgeted capital funding of $100,000 for a new self-cleaning screen at the intake for the Paihia water treatment plant.**

**e) unbudgeted capital funding of $150,000 for the design, consenting and construction of a permanent weir at the Awanui River intake for the Kaitaia water treatment plant.**

**f) unbudgeted capital funding of $500,000 for the design, installations and commission of new clarifiers at the Kerikeri water treatment plant.**

**g) unbudgeted capital funding of $100,000 for the purchase of leak detection equipment to be use across the district on all water supplies.**

### 1) BACKGROUND

An information report at the June 2020 Council meeting entitled "Learning from the 2020 Drought and Improving the Resilience of our Drinking Water Supplies" provides the background for this report.

## 2) DISCUSSION AND OPTIONS

An information report at the June 2020 Council meeting entitled "Learning from the 2020 Drought and Improving the Resilience of our Drinking Water Supplies" outlined a programme of work aimed at improving the overall resilience of our water supplies through drought. A number of the projects are planned for later years due to their complexity or significant funding requirements. There are a small number of projects which are urgent and straight forward to deliver which we are requesting that council to fund, in addition to the 2020/2021 Annual Plan. These issues and opportunities are discussed below:

| Issue 1 | Options | Implications |
|---|---|---|
| The residual flows in the primary surface water source for **Kaikohe** are a fraction of the town's demand and there is a high risk of the town running out of water in a drought. | Do nothing.<br>Maintain the current sources and see an increase in risk of supply. | The Monument Hill aquifer has been relied on too heavily in recent years. The annual peak water level in the aquifer has been decreasing due to low rainfall and an unsustainable water take.<br>Water take from the existing Monument Hill aquifer will need to be reduced until water levels return to sustainable levels or we risk breaching the consent conditions. |
| | New bore into the deep aquifer at Monument Hill. | A new bore into the deeper fractured basalt layer of the Monument Hill aquifer will increase the water availability year-round but most importantly, during summer.<br>This is a relatively low-cost option because of the source's proximity to existing infrastructure: the Water Treatment Plant (WTP) and power. The water quality has been tested recently and is of excellent quality.<br>The expected sustainable yield of the bore is 800m$^3$/day; roughly 30% of Kaikohe's daily demand. |
| | New surface water source with a much larger design minimum flow. | Desktop studies indicate that significant pipelines transferring water from rivers to the east or west, or spring water from the south are required to enable this option. Surface water is generally of poorer quality compared to aquifers.<br>Options of a similar cost to a new bore need to be within ~3km of Taraire Hills WTP or the existing Wairoro Stream intake. There are no large rivers in this radius. |

A new bore into the deep aquifer at Monument Hill is the recommended way forward. Emergency drought funding was used to locate an old test bore on Monument hill and test the water quality. Unbudgeted funding is required to progress this option into a long-term source before the next critical dry period.

Budget is required to fund the following aspect of the project:

- Professional fees
  - Bore design
  - Reticulation design
  - Electrical design
  - Assessment of Environmental Effects
  - Resource consent application

- Bore construction and sustainable yield testing
- Pump and headworks
- Pipe reticulation
- Electrical reticulation
- Power source upgrades
- Water treatment plant changes
- Legal support and easements
- Internal project management

Apart from the power source upgrade the above work is well scoped and understood. A power assessment has been undertaken and data collected is sitting with Top Energy. An upgrade to the power is necessary to run additional pumps in this area but the extent of this update is unclear.

The estimated to cost to construct and consent a new bore in the deep aquifer at Monument Hill is $1,184,000 including a small contingency.

| Issue 2 | Options | Implications |
|---|---|---|
| **Opononi's** new bore at Smoothy Road has higher pH than anticipated and may not be able to meet the Drinking Water Standards | Do nothing.<br><br>Continue to blend the water from Smoothy Road bore with supplementary sources available – Waiotemarama Stream and Waiarohia dam to manage pH. | This option minimises the practical use of the Smoothy Road Bore. We cannot use our allocated daily volume from the bore if we need to blend the water with another source. |
| | Install pH adjustment/treatment at the Opononi Water Treatment Plant | Install inline monitoring and adjustment equipment which automatically treats the water based on incoming pH with a product such as soda ash. This is common practice at some of our other WTP but the Waiotemarama and Waiarohia sources didn't require it so the WTP is not currently fitted with this equipment. |
| Installation of pH treatment at the Opononi/Omapere water treatment plant is recommended to provide increased water resilience. The pH treatment will allow Council to fully utilise the consented water allocation from the bores when necessary.<br><br>The estimated cost of the pH treatment is $15,000. | | |

| Issue 3 | Options | Implications |
|---|---|---|
| The resource consent to take water from the bores in **Kawakawa** requires a minimum residual flow rate in the Tirohanga Stream to be maintained.<br><br>During drought all practical steps are taken to avoid breaching the consent. However, water treatment plant operators have not seen evidence of the connection between Kawakawa's Tirohanga Stream and the bore source. | Do nothing.<br><br>Continue to operate under the existing conditions of consent. | Water restrictions on customers will continue to be imposed regularly.<br><br>FNDC is likely to breach the consent in future drought conditions and we will apply to NRC to have temporary approval to take water below consented limits. |
| | Apply to have the consent conditions changed.<br><br>Investigate the connection between the bores and the surface water in Tirohanga Stream. | Create or interrogate a hydrogeological model to test the connection. May involve some testing on site.<br><br>If the connection is weak then we can argue to have the residual flow limits removed from the consent and Kawakawa is unlikely to need regular water restriction due to water shortage.<br><br>Possibility that the testing and |

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| | | modelling confirms the connection and that the cost cannot be capitalised. |
| In order to improve water resilience in Kawakawa we recommend that the consent condition requiring residual flow in the Tirohanga Stream be reviewed including a hydrogeological study into the connection between the bores and the stream.<br><br>Estimate cost of the hydrogeological study, assessment of environmental effects and consent amendment application is $70,000. | | |

| Issue 4 | Options | Implications |
|---|---|---|
| Dry and warm weather increases the presence of algae at the **Paihia** WTP intake on the Waitangi River.<br><br>Since Paihia's consent for the water take on the Waitangi River has no residual flow limits there is typically sufficient water in the source to meet demand. However, infrastructure is not always capable of keeping up with demand. One "pinch point" is when algae builds up on the screen and we cannot extract water fast enough. Currently the screen is cleaned manually which requires a lot of risk mitigation given its proximity to a waterfall. | Do nothing. | Carry this risk for a few more years until the new Paihia WTP is built. |
| | Install a screen with an automated cleaning system. | Timely cleaning of the screen can take place safely and increase water flow to the WTP.<br><br>The intake is always at risk in flooding. Recently flooding damaged in the intake and the extent of the damage in unknown at the time of writing this report. This option will increase the value of the intake, |
| Installing an automated screen at Paihia WTP is a quick win to reduce the operational risks during drought. The estimated cost of installing this equipment is $100,000. | | |

| Issue 5 | Options | Implications |
|---|---|---|
| The shallow, soft-bottom nature of the Awanui River in **Kaitaia** makes it difficult to abstract water from the river in low flows. | Do nothing. | Maintain the supply with the risk of drawing air into the reticulation during drought. Air in the raw water reticulation needs to be addressed quickly. The intake will be temporarily shut down. Sustained air entrainment can lead to pipe failure.<br><br>The current intake does not include a screen required by the consent. |
| | Install a permanent weir structure in the stream bed. | The weir will need to be designed taking into account the Regional Plan requirements for structures in a stream bed including the design to support fish life, withstand flood and meet the requirements of our existing water take consent. |
| As part of the emergency drought response FNDC installed a temporary weir on the Awanui River using natural boulders found in the nearby riverbed. This work was washed out in the subsequent flooding as expected. A permanent structure which incorporates the required screen will provide improved environmental | | |

outcomes year-round and increased resilience in drought.

The estimated cost of a designing, consenting (if necessary) and constructing the weir is $150,000.

| Issue 6 | Options | Implications |
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| The condition of the clarifier at the **Kerikeri** Water Treatment Plant is very poor and at risk of failure.<br><br>Repair was scheduled and budgeted but the state of the tank was deemed beyond repair.<br><br>The funds required to replace the clarifier are greater than the funds required to repair it. | Do nothing. | Carry this increasing risk of failure until a new WTP is built in 5-10 years. |
| | Repair the clarifier. | Repair of the clarifier was scheduled. At the time of repair the asset was deem "too far gone" to repair and in need of replacement. This is not a feasible option. |
| | Renew the clarifier | Building a new clarifier on a small site in an operational setting is challenging.<br><br>Reliable clarification is essential to meeting drinking water standards and this option reduces our risks to providing Kerikeri with drinking water.<br><br>Significant asset purchase when we plan to replace the Kerikeri WTP in the next 10 years – we may not get the full value of these assets in useful life. |
| Installing a new clarifier alongside the existing WTP is the recommended option. There are modular steel tank clarifiers available and suitable for this environment. These modular tanks would allow for the new clarifiers to be commissioned alongside the operating plant and minimise "down time" for the treatment process. Although FNDC may not get the full useful life from these tanks they may be able to be reused given their modular nature.<br><br>Existing budget for the clarifiers' repair is $150,000. Staff estimate an additional $500,000 is required for the detailed design, installation and commissioning of these modular clarifier tanks. | | |

| Issue 7 | Options | Implications |
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| Leakage **across all schemes** has room for improvement. | Do nothing.<br><br>Continue to find leaks reactively through RFS and high night flows. | Reputation of Council as kaitiaki of this precious resource is compromised. |
| | Contract leak detection companies to survey our reticulation areas. | Wait times for contractors has been up to two or three weeks in the past. Once the contractor is available then they are only available for that window and the scope of work is restricted. |
| | Purchase leak detection equipment and deploy this equipment within Far North Waters. | Proactive leak detection can take place ad hoc.<br><br>Reactive leak detection can be resolved quickly with the equipment deployed as and when needed. |
| Purchasing equipment to undertake leak detection in-house is recommended. This option will look to reduce leakage overall and provide increased responsiveness to acute leak events. This equipment, combined with a robust programme of pipe renewals, will see leakage rates decrease overtime.<br><br>The estimated cost of the equipment is not well understood but expected to be well below $100,000. | | |

**Reason for the recommendation**

The projects outlined above have been prioritised by their ability to reduce risk or increase resilience and are capable of being delivered alongside the 2020/2021 Annual Plan.

Further water resilience work will be updated or included in the 2021-2031 Long Term Plan 3 Waters Capital Programme.

### 3) FINANCIAL IMPLICATIONS AND BUDGETARY PROVISION

This report is requesting unbudgeted capital funding to support the following projects to be delivered in 2020/2021:

| Project | | Cost | Capital rate impact per SUIP |
|---|---|---|---|
| 1. | Kaikohe: new bore in the deep aquifer at Monument Hill. | $1,184,000 | $30.34 |
| 2. | Opononi/Omapere: pH treatment at the WTP. | $15,000 | $4.50 |
| 3. | Kawakawa: amend the residual flow consent condition | $70,000 | $4.03 |
| 4. | Paihia: upgrade the intake screen to self-cleaning | $100,000 | $3.60 |
| 5. | Kaitaia: install a permanent weir on the Awanui riverbed. | $150,000 | $3.22 |
| 6. | Kerikeri: install new clarifiers at WTP | $500,000 | $11.13 |
| 7. | All schemes: leak detection equipment | $100,000 | |
| | Total | $2,119,000 | |

Once work is complete the assets will be capitalised, and rates will be struck in the following financial year to recover the value of the asset over its lifespan. Water rates are calculated scheme by scheme therefore the impacts could be expected to be as indicated in the table above. If it was found that the Kawakawa consent work could not be capitalised then it would result in a $0.03 increase in the operational rate of water.

The leak detection equipment would be apportioned across all schemes as no one scheme benefits solely from the purchase of equipment.

### ATTACHMENTS

**Nil**

**Compliance schedule:**

Full consideration has been given to the provisions of the Local Government Act 2002 S77 in relation to decision making, in particular:

1. A Local authority must, in the course of the decision-making process,
   a) Seek to identify all reasonably practicable options for the achievement of the objective of a decision; and
   b) Assess the options in terms of their advantages and disadvantages; and
   c) If any of the options identified under paragraph (a) involves a significant decision in relation to land or a body of water, take into account the relationship of Māori and their culture and traditions with their ancestral land, water sites, waahi tapu, valued flora and fauna and other taonga.
2. This section is subject to Section 79 - Compliance with procedures in relation to decisions.

| **Compliance requirement** | **Staff assessment** |
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| State the level of significance (high or low) of the issue or proposal as determined by the Council's Significance and Engagement Policy | The recommended work does not meet the threshold of any criteria in the Significance and Engagement Policy. Although the aim will be to improve the level of service provided through drought, we do not consider the proposal to be "major and long-term". These are relatively small tweaks which will lead to improved levels of service; particularly in drought conditions. |
| State the relevant Council policies (external or internal), legislation, and/or community outcomes (as stated in the LTP) that relate to this decision. | The recommendation will contribute to the community outcome "Connected and engaged communities prepared for the unexpected" by improving drought resilience in our drinking water supplies.<br>The recommendation will contribute to the community outcome "Communities that are healthy, safe, connected and sustainable" by ensuring that safe drinking water is available at all times. |
| State whether this issue or proposal has a District wide relevance and, if not, the ways in which the appropriate Community Board's views have been sought. | The recommendation is for a programme of work which will impact on communities differently. The Community Board's views have not been sought. |
| State the possible implications for Māori and how Māori have been provided with an opportunity to contribute to decision making if this decision is significant and relates to land and/or any body of water. | Water is the lifeforce of Māori and the recommendation includes seeking a new source of water for Kaikohe. Waikotihe Trust are kaitiaki of the aquifer and springs around Monument Hill in Kaikohe. Their views have been sought on the proposal. It has been agreed that when further information on the potential impact this water take will have on local springs, we will consult further with the Waikotihe Trust. The requirement to consult is also included in the Resource Consent Application process. |
| Identify persons likely to be affected by or have an interest in the matter, and how you have given consideration to their views or preferences (for example – youth, the aged and those | The right to clean drinking water is universal. In time of significant drought some persons are affected more greatly. It is more difficult to maintain a small business when Council restricts the use of water. The inconvenience or extra effort required to save water are |

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| with disabilities. | felt more by elderly and disabled persons. The importance of abundant clean water is critical to those on dialysis at home. A more resilient water supply will reduce the barriers faced by persons identified above. |
| State the financial implications and where budgetary provisions have been made to support this decision. | Financial implications are discussed in section 3 of the report and budgetary provisions are requested in the recommendation. |
| Chief Financial Officer review. | The Chief Financial Officer has reviewed this report |