Feedback Submission Re: Proposed Dunoon Dam within the Future Water Project 2060

To: General Manager, Rous County Council
PO Box 230, Lismore NSW 2480

From: Natalie Wilkin [redacted]

Address: [redacted]

Firstly, the community appreciates the submission extension. We also acknowledge the complexity of the work Rous does to provide water for our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

- **Lost opportunity to invest in system-wide water efficiency**. This is the cheapest & fastest way to ensure supply-demand balance. By focussing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption.[1]
- **The 21st century is about a suite of smart water options.** This dam would be a lost opportunity to make our system fit for the 21st century by swallowing all resources in one big expensive 'white dinosaur' project.
- **The dam would encourage continued inefficient and wasteful water management by local governments.** They would have no incentive to do things differently.
- **Destruction of important Indigenous cultural heritage,** including burial sites.[2]
- **Destruction of The Channon Gorge and its endangered ecological community of lowland rainforest**, threatened flora and fauna species.[3] Rous's plan to offset the loss of rainforest on sandstone with regeneration of degraded land in the buffer zone is problematic as the type of vegetation offered as recompense is not equivalent.(Nan Nicholson, botanist) Councils are required under State planning regulations to: "Focus development to areas of least biodiversity sensitivity in the region and implement the 'avoid, minimise, offset' hierarchy to biodiversity, including areas of high environmental value."[4] Rous is required to ***avoid*** this destruction because there are economically viable and more effective solutions.
- **Industrial/construction zone** for The Channon/Dunoon community; noise, machinery, trucks, visual impact. Ongoing sound impact from pump house etc.
- **Higher prices for consumers due to a 4x increase in the cost of water.** Rous general manager, in response to a question from councillor Vanessa Ekins, said he expected a fourfold increase in the cost of supplying water if the dam is built.
- **The small population increase** predicted for the four Rous-supplied councils of 12,720[5] between 2020-2060 **does not justify** such a large and destructive dam. The dam risks diverting expenditure away from more sustainable, flexible and effective solutions.[5]

I SUPPORT these alternatives:

We need a suite of smart water options and proven alternatives, not a huge new dam. The tide is turning on renewable and sustainable power. It is time for the tide to turn on how we meet our water needs too.

- **An investment in system-wide water efficiency and strong demand management.** Analysed, costed and deployed, creating jobs. *(We understand Rous has not costed this in creating their future water plan)* Existing research over the past decade consistently finds that the best 'bang-for-buck' investment in water supply comes from demand management and identifying savings within the existing supply.[6] [7]

- **Water re-use in various ways, including Purified Recycled Potable water.** A wealth of global research and experience exists regarding potable reuse of water.[8] Eg: The city of Windhoek in Namibia has been using purified recycled water for 30 years using advanced technology.[9]
- **Water harvesting** (urban runoff; rain tanks):
  Water tanks on all new (and existing) developments.The Australian government advises that: "Depending on tank size and climate, mains water use can be reduced by up to 100%. This in turn can help: reduce the need for new dams or desalination plants; protect remaining environmental flows in rivers; reduce infrastructure operating costs."[10] Rainwater harvesting also decreases stormwater runoff, thereby helping to reduce local flooding and scouring of creeks.[11]
- **Contingency planning** would enable Rous to be ready to rapidly implement supply measures if it becomes necessary in times of drought.
- **Groundwater, where this is environmentally safe.** The Australian government provides a lot of information on the ecological impacts and groundwater usage.[12]

With scalable supply alternatives in place, the existing supply from Rocky Ck Dam will be made resilient to anticipated times of drought and projected population growth, without the environmental destruction, social costs, and the over-capitalisation risk of an outsized and unnecessary dam.

References and Notes

(1) Metropolitan Water Plan 2006, NSW Government. Exec Summary section of the doc https://www.dropbox.com/s/pu9898oq6kocrph/NSW%20Govt%202006%20MWP%20summary.pdf?dl=0

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(4) NSW Department of Planning, Industry and Environment 2019, 'Delivering the plan', Sydney, viewed 03 August 2020 < https://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans/North-Coast/Delivering-the-plan > , Direction 2: Enhance biodiversity coastal and aquatic habitats and water catchments.

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Kind regards, Signature: [redacted] Date: 8/9/20

Feedback Submission Re: Proposed Dunoon Dam within the Future Water Project 2060

To: General Manager, Rous County Council
PO Box 230, Lismore NSW 2480

From: Renee Jeffery

Address: [redacted]

Firstly, the community appreciates the submission extension. We also acknowledge the complexity of the work Rous does to provide water for our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

- **Lost opportunity to invest in system-wide water efficiency**. This is the cheapest & fastest way to ensure supply-demand balance. By focussing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption.[1]
- **The 21st century is about a suite of smart water options.** This dam would be a lost opportunity to make our system fit for the 21st century by swallowing all resources in one big expensive 'white dinosaur' project.
- **The dam would encourage continued inefficient and wasteful water management by local governments.** They would have no incentive to do things differently.
- **Destruction of important Indigenous cultural heritage,** including burial sites.[2]
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- **Higher prices for consumers due to a 4x increase in the cost of water.** Rous general manager, in response to a question from councillor Vanessa Ekins, said he expected a fourfold increase in the cost of supplying water if the dam is built.
- **The small population increase** predicted for the four Rous-supplied councils of 12,720[5] between 2020-2060 **does not justify** such a large and destructive dam. The dam risks diverting expenditure away from more sustainable, flexible and effective solutions.[5]

I SUPPORT these alternatives:

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- **An investment in system-wide water efficiency and strong demand management.** Analysed, costed and deployed, creating jobs. *(We understand Rous has not costed this in creating their future water plan)* Existing research over the past decade consistently finds that the best 'bang-for-buck' investment in water supply comes from demand management and identifying savings within the existing supply.[6] [7]

- **Water re-use in various ways, including Purified Recycled Potable water.** A wealth of global research and experience exists regarding potable reuse of water.[6] Eg: The city of Windhoek in Namibia has been using purified recycled water for 30 years using advanced technology.[9]
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Kind regards, Signature: [redacted] Date: 08/09/2020.

Feedback Submission Re: Proposed Dunoon Dam within the Future Water Project 2060

To: General Manager, Rous County Council
PO Box 230, Lismore NSW 2480

From: Alyssia Fraser

Address: [redacted]

Firstly, the community appreciates the submission extension. We also acknowledge the complexity of the work Rous does to provide water for our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

- **Lost opportunity to invest in system-wide water efficiency.** This is the cheapest & fastest way to ensure supply-demand balance. By focussing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption.[1]
- **The 21st century is about a suite of smart water options.** This dam would be a lost opportunity to make our system fit for the 21st century by swallowing all resources in one big expensive 'white dinosaur' project.
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- **The small population increase** predicted for the four Rous-supplied councils of 12,720[5] between 2020-2060 **does not justify** such a large and destructive dam. The dam risks diverting expenditure away from more sustainable, flexible and effective solutions.[5]

I SUPPORT these alternatives:

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Kind regards, Signature: [redacted] Date: 08/09/2020

Feedback Submission Re: Proposed Dunoon Dam within the Future Water Project 2060

To: General Manager, Rous County Council
PO Box 230, Lismore NSW 2480

From: Otis Nameell

Address: [redacted]

Firstly, the community appreciates the submission extension. We also acknowledge the complexity of the work Rous does to provide water for our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

- **Lost opportunity to invest in system-wide water efficiency.** This is the cheapest & fastest way to ensure supply-demand balance. By focussing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption.[1]
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Kind regards, Signature: [redacted] Date: 07.9.20

Feedback Submission Re: Proposed Dunoon Dam within the Future Water Project 2060

To: General Manager, Rous County Council
PO Box 230, Lismore NSW 2480

From: Anna Stuart

Address: [redacted]

Firstly, the community appreciates the submission extension. We also acknowledge the complexity of the work Rous does to provide water for our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

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Kind regards, Signature: [redacted] Date: 7.9.20

Feedback Submission Re: Proposed Dunoon Dam within the Future Water Project 2060

To: General Manager, Rous County Council
PO Box 230, Lismore NSW 2480

From: GARY WHITE

Address: [redacted]

Firstly, the community appreciates the submission extension. We also acknowledge the complexity of the work Rous does to provide water for our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

- **Lost opportunity to invest in system-wide water efficiency.** This is the cheapest & fastest way to ensure supply-demand balance. By focussing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption.[1]
- **The 21st century is about a suite of smart water options.** This dam would be a lost opportunity to make our system fit for the 21st century by swallowing all resources in one big expensive 'white dinosaur' project.
- **The dam would encourage continued inefficient and wasteful water management by local governments.** They would have no incentive to do things differently.
- **Destruction of important Indigenous cultural heritage,** including burial sites.[2]
- **Destruction of The Channon Gorge and its endangered ecological community of lowland rainforest**, threatened flora and fauna species.[3] Rous's plan to offset the loss of rainforest on sandstone with regeneration of degraded land in the buffer zone is problematic as the type of vegetation offered as recompense is not equivalent.(Nan Nicholson, botanist) Councils are required under State planning regulations to: "Focus development to areas of least biodiversity sensitivity in the region and implement the 'avoid, minimise, offset' hierarchy to biodiversity, including areas of high environmental value."[4] Rous is required to ***avoid*** this destruction because there are economically viable and more effective solutions.
- **Industrial/construction zone** for The Channon/Dunoon community; noise, machinery, trucks, visual impact. Ongoing sound impact from pump house etc.
- **Higher prices for consumers due to a 4x increase in the cost of water.** Rous general manager, in response to a question from councillor Vanessa Ekins, said he expected a fourfold increase in the cost of supplying water if the dam is built.
- **The small population increase** predicted for the four Rous-supplied councils of 12,720[5] between 2020-2060 **does not justify** such a large and destructive dam. The dam risks diverting expenditure away from more sustainable, flexible and effective solutions.[5]

I SUPPORT these alternatives:

We need a suite of smart water options and proven alternatives, not a huge new dam. The tide is turning on renewable and sustainable power. It is time for the tide to turn on how we meet our water needs too.

- **An investment in system-wide water efficiency and strong demand management.** Analysed, costed and deployed, creating jobs. *(We understand Rous has not costed this in creating their future water plan)* Existing research over the past decade consistently finds that the best 'bang-for-buck' investment in water supply comes from demand management and identifying savings within the existing supply.[6][7]

- **Water re-use in various ways, including Purified Recycled Potable water.** A wealth of global research and experience exists regarding potable reuse of water.[8] Eg: The city of Windhoek in Namibia has been using purified recycled water for 30 years using advanced technology.[9]
- **Water harvesting** (urban runoff; rain tanks):
  Water tanks on all new (and existing) developments.The Australian government advises that: "Depending on tank size and climate, mains water use can be reduced by up to 100%. This in turn can help: reduce the need for new dams or desalination plants; protect remaining environmental flows in rivers; reduce infrastructure operating costs."[10] Rainwater harvesting also decreases stormwater runoff, thereby helping to reduce local flooding and scouring of creeks.[11]
- **Contingency planning** would enable Rous to be ready to rapidly implement supply measures if it becomes necessary in times of drought.
- **Groundwater, where this is environmentally safe.** The Australian government provides a lot of information on the ecological impacts and groundwater usage.[12]

With scalable supply alternatives in place, the existing supply from Rocky Ck Dam will be made resilient to anticipated times of drought and projected population growth, without the environmental destruction, social costs, and the over-capitalisation risk of an outsized and unnecessary dam.

References and Notes

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Kind regards, Signatu[redacted] Date: 1/9/20

Feedback Submission Re: Proposed Dunoon Dam within the Future Water Project 2060

To: General Manager, Rous County Council
PO Box 230, Lismore NSW 2480

From: Martin Puddey

Address: [redacted]

Firstly, the community appreciates the submission extension. We also acknowledge the complexity of the work Rous does to provide water for our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

- **Lost opportunity to invest in system-wide water efficiency.** This is the cheapest & fastest way to ensure supply-demand balance. By focussing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption.[1]
- **The 21st century is about a suite of smart water options.** This dam would be a lost opportunity to make our system fit for the 21st century by swallowing all resources in one big expensive 'white dinosaur' project.
- **The dam would encourage continued inefficient and wasteful water management by local governments.** They would have no incentive to do things differently.
- **Destruction of important Indigenous cultural heritage, including burial sites.**[2]
- **Destruction of The Channon Gorge and its endangered ecological community of lowland rainforest, threatened flora and fauna species.**[3] Rous's plan to offset the loss of rainforest on sandstone with regeneration of degraded land in the buffer zone is problematic as the type of vegetation offered as recompense is not equivalent.(Nan Nicholson, botanist) Councils are required under State planning regulations to: "Focus development to areas of least biodiversity sensitivity in the region and implement the 'avoid, minimise, offset' hierarchy to biodiversity, including areas of high environmental value."[4] Rous is required to *avoid* this destruction because there are economically viable and more effective solutions.
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- **The small population increase** predicted for the four Rous-supplied councils of 12,720[5] between 2020-2060 **does not justify** such a large and destructive dam. The dam risks diverting expenditure away from more sustainable, flexible and effective solutions.[5]

I SUPPORT these alternatives:

We need a suite of smart water options and proven alternatives, not a huge new dam. The tide is turning on renewable and sustainable power. It is time for the tide to turn on how we meet our water needs too.

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- **Contingency planning** would enable Rous to be ready to rapidly implement supply measures if it becomes necessary in times of drought.
- **Groundwater, where this is environmentally safe.** The Australian government provides a lot of information on the ecological impacts and groundwater usage.[12]

With scalable supply alternatives in place, the existing supply from Rocky Ck Dam will be made resilient to anticipated times of drought and projected population growth, without the environmental destruction, social costs, and the over-capitalisation risk of an oversized and unnecessary dam.

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Kind regards, Signature: [redacted] Date: 7/9/20

Feedback Submission Re: Proposed Dunoon Dam within the Future Water Project 2060

To: General Manager, Rous County Council
PO Box 230, Lismore NSW 2480

From: BRUCE EDWARD WATSON

Address: [redacted]

Firstly, the community appreciates the submission extension. We also acknowledge the complexity of the work Rous does to provide water for our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

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Kind regards, Signature: [redacted] Date: 07.09.20

Feedback Submission Re: Proposed Dunoon Dam within the Future Water Project 2060

To: General Manager, Rous County Council
PO Box 230, Lismore NSW 2480

From: Romayne Hapimana

Address: [redacted]

Firstly, the community appreciates the submission extension. We also acknowledge the complexity of the work Rous does to provide water for our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

- **Lost opportunity to invest in system-wide water efficiency**. This is the cheapest & fastest way to ensure supply-demand balance. By focussing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption.[1]
- **The 21st century is about a suite of smart water options.** This dam would be a lost opportunity to make our system fit for the 21st century by swallowing all resources in one big expensive 'white dinosaur' project.
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Kind regards, Signature: [redacted] Date: 7/9/20

Feedback Submission Re: Proposed Dunoon Dam within the Future Water Project 2060

To: General Manager, Rous County Council
PO Box 230, Lismore NSW 2480

From: Drea Quinlan

Address: [redacted]

Firstly, the community appreciates the submission extension. We also acknowledge the complexity of the work Rous does to provide water for our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

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Kind regards, Signature: [redacted] Date: 8/9/20

Feedback Submission Re: Proposed Dunoon Dam within the Future Water Project 2060

To: General Manager, Rous County Council
PO Box 230, Lismore NSW 2480

From: Susan Goar

Address: [redacted]

Firstly, the community appreciates the submission extension. We also acknowledge the complexity of the work Rous does to provide water for our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

- **Lost opportunity to invest in system-wide water efficiency**. This is the cheapest & fastest way to ensure supply-demand balance. By focussing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption.[1]
- **The 21st century is about a suite of smart water options.** This dam would be a lost opportunity to make our system fit for the 21st century by swallowing all resources in one big expensive 'white dinosaur' project.
- **The dam would encourage continued inefficient and wasteful water management by local governments.** They would have no incentive to do things differently.
- **Destruction of important Indigenous cultural heritage,** including burial sites.[2]
- **Destruction of The Channon Gorge and its endangered ecological community of lowland rainforest,** threatened flora and fauna species.[3] Rous's plan to offset the loss of rainforest on sandstone with regeneration of degraded land in the buffer zone is problematic as the type of vegetation offered as recompense is not equivalent.(Nan Nicholson, botanist) Councils are required under State planning regulations to: "Focus development to areas of least biodiversity sensitivity in the region and implement the 'avoid, minimise, offset' hierarchy to biodiversity, including areas of high environmental value."[4] Rous is required to ***avoid*** this destruction because there are economically viable and more effective solutions.
- **Industrial/construction zone** for The Channon/Dunoon community; noise, machinery, trucks, visual impact. Ongoing sound impact from pump house etc.
- **Higher prices for consumers due to a 4x increase in the cost of water.** Rous general manager, in response to a question from councillor Vanessa Ekins, said he expected a fourfold increase in the cost of supplying water if the dam is built.
- **The small population increase** predicted for the four Rous-supplied councils of 12,720[5] between 2020-2060 **does not justify** such a large and destructive dam. The dam risks diverting expenditure away from more sustainable, flexible and effective solutions.[5]

I SUPPORT these alternatives:

We need a suite of smart water options and proven alternatives, not a huge new dam. The tide is turning on renewable and sustainable power. It is time for the tide to turn on how we meet our water needs too.

- **An investment in system-wide water efficiency and strong demand management.** Analysed, costed and deployed, creating jobs. *(We understand Rous has not costed this in creating their future water plan)* Existing research over the past decade consistently finds that the best 'bang-for-buck' investment in water supply comes from demand management and identifying savings within the existing supply.[6] [7]

- **Water re-use in various ways, including Purified Recycled Potable water.** A wealth of global research and experience exists regarding potable reuse of water.[6] Eg: The city of Windhoek in Namibia has been using purified recycled water for 30 years using advanced technology.[9]
- **Water harvesting** (urban runoff; rain tanks):
  Water tanks on all new (and existing) developments.The Australian government advises that: "Depending on tank size and climate, mains water use can be reduced by up to 100%. This in turn can help: reduce the need for new dams or desalination plants; protect remaining environmental flows in rivers; reduce infrastructure operating costs."[10] Rainwater harvesting also decreases stormwater runoff, thereby helping to reduce local flooding and scouring of creeks.[11]
- **Contingency planning** would enable Rous to be ready to rapidly implement supply measures if it becomes necessary in times of drought.
- **Groundwater, where this is environmentally safe.** The Australian government provides a lot of information on the ecological impacts and groundwater usage.[12]

With scalable supply alternatives in place, the existing supply from Rocky Ck Dam will be made resilient to anticipated times of drought and projected population growth, without the environmental destruction, social costs, and the over-capitalisation risk of an outsized and unnecessary dam.

References and Notes

(1) Metropolitan Water Plan 2006, NSW Government. Exec Summary section of the doc https://www.dropbox.com/s/pu9898oq6kocrph/NSW%20Govt%202006%20MWP%20summary.pdf?dl=0

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Kind regards, Signature: [redacted] Date: 6/9/20

Feedback Submission Re: Proposed Dunoon Dam within the Future Water Project 2060

To: General Manager, Rous County Council
PO Box 230, Lismore NSW 2480

From: Jai Crawdson

Address: [redacted]

Firstly, the community appreciates the submission extension. We also acknowledge the complexity of the work Rous does to provide water for our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

- **Lost opportunity to invest in system-wide water efficiency**. This is the cheapest & fastest way to ensure supply-demand balance. By focussing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption.[1]
- **The 21st century is about a suite of smart water options.** This dam would be a lost opportunity to make our system fit for the 21st century by swallowing all resources in one big expensive 'white dinosaur' project.
- **The dam would encourage continued inefficient and wasteful water management by local governments.** They would have no incentive to do things differently.
- **Destruction of important Indigenous cultural heritage,** including burial sites.[2]
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- **The small population increase** predicted for the four Rous-supplied councils of 12,720[5] between 2020-2060 **does not justify** such a large and destructive dam. The dam risks diverting expenditure away from more sustainable, flexible and effective solutions.[5]

I SUPPORT these alternatives:

We need a suite of smart water options and proven alternatives, not a huge new dam. The tide is turning on renewable and sustainable power. It is time for the tide to turn on how we meet our water needs too.

- **An investment in system-wide water efficiency and strong demand management.** Analysed, costed and deployed, creating jobs. *(We understand Rous has not costed this in creating their future water plan)* Existing research over the past decade consistently finds that the best 'bang-for-buck' investment in water supply comes from demand management and identifying savings within the existing supply.[6] [7]

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- **Groundwater, where this is environmentally safe.** The Australian government provides a lot of information on the ecological impacts and groundwater usage.[12]

With scalable supply alternatives in place, the existing supply from Rocky Ck Dam will be made resilient to anticipated times of drought and projected population growth, without the environmental destruction, social costs, and the over-capitalisation risk of an outsized and unnecessary dam.

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Kind regards, Signature: [redacted] Date: 6.9.20

Feedback Submission Re: Proposed Dunoon Dam within the Future Water Project 2060

To: General Manager, Rous County Council
PO Box 230, Lismore NSW 2480

From: [redacted]

Address: [redacted]

Firstly, the community appreciates the submission extension. We also acknowledge the complexity of the work Rous does to provide water for our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

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With scalable supply alternatives in place, the existing supply from Rocky Ck Dam will be made resilient to anticipated times of drought and projected population growth, without the environmental destruction, social costs, and the over-capitalisation risk of an outsized and unnecessary dam.

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Kind regards, Signature: [redacted] Date: 8/9

Feedback Submission Re: Proposed Dunoon Dam within the Future Water Project 2060

To: General Manager, Rous County Council
PO Box 230, Lismore NSW 2480

From: M. Cole

Address: [redacted]

Firstly, the community appreciates the submission extension. We also acknowledge the complexity of the work Rous does to provide water for our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

- **Lost opportunity to invest in system-wide water efficiency**. This is the cheapest & fastest way to ensure supply-demand balance. By focussing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption.[1]
- **The 21st century is about a suite of smart water options.** This dam would be a lost opportunity to make our system fit for the 21st century by swallowing all resources in one big expensive 'white dinosaur' project.
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I SUPPORT these alternatives:

We need a suite of smart water options and proven alternatives, not a huge new dam. The tide is turning on renewable and sustainable power. It is time for the tide to turn on how we meet our water needs too.

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- **Contingency planning** would enable Rous to be ready to rapidly implement supply measures if it becomes necessary in times of drought.
- **Groundwater, where this is environmentally safe.** The Australian government provides a lot of information on the ecological impacts and groundwater usage.[12]

Subject to community consultation and vote

With scalable supply alternatives in place, the existing supply from Rocky Ck Dam will be made resilient to anticipated times of drought and projected population growth, without the environmental destruction, social costs, and the over-capitalisation risk of an outsized and unnecessary dam.

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Kind regards, Signature: [redacted] Date: 07/09/2020

Feedback Submission Re: Proposed Dunoon Dam within the Future Water Project 2060

To: General Manager, Rous County Council
PO Box 230, Lismore NSW 2480

From: GARY JOLLEY

Address: [redacted]

Firstly, the community appreciates the submission extension. We also acknowledge the complexity of the work Rous does to provide water for our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

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  Water tanks on all new (and existing) developments.The Australian government advises that: "Depending on tank size and climate, mains water use can be reduced by up to 100%. This in turn can help: reduce the need for new dams or desalination plants; protect remaining environmental flows in rivers; reduce infrastructure operating costs."[10] Rainwater harvesting also decreases stormwater runoff, thereby helping to reduce local flooding and scouring of creeks.[11]
- **Contingency planning** would enable Rous to be ready to rapidly implement supply measures if it becomes necessary in times of drought.
- **Groundwater, where this is environmentally safe.** The Australian government provides a lot of information on the ecological impacts and groundwater usage.[12]

With scalable supply alternatives in place, the existing supply from Rocky Ck Dam will be made resilient to anticipated times of drought and projected population growth, without the environmental destruction, social costs, and the over-capitalisation risk of an outsized and unnecessary dam.

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Kind regards, Signature: [redacted] Date: 4/9/20.

Feedback Submission Re: Proposed Dunoon Dam within the Future Water Project 2060

To: General Manager, Rous County Council
PO Box 230, Lismore NSW 2480

From: Alana Cole

Address: [redacted]

Firstly, the community appreciates the submission extension. We also acknowledge the complexity of the work Rous does to provide water for our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

- **Lost opportunity to invest in system-wide water efficiency**. This is the cheapest & fastest way to ensure supply-demand balance. By focussing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption.[1]
- **The 21st century is about a suite of smart water options.** This dam would be a lost opportunity to make our system fit for the 21st century by swallowing all resources in one big expensive 'white dinosaur' project.
- **The dam would encourage continued inefficient and wasteful water management by local governments.** They would have no incentive to do things differently.
- **Destruction of important Indigenous cultural heritage,** including burial sites.[2]
- **Destruction of The Channon Gorge and its endangered ecological community of lowland rainforest**, threatened flora and fauna species.[3] Rous's plan to offset the loss of rainforest on sandstone with regeneration of degraded land in the buffer zone is problematic as the type of vegetation offered as recompense is not equivalent.(Nan Nicholson, botanist) Councils are required under State planning regulations to: "Focus development to areas of least biodiversity sensitivity in the region and implement the 'avoid, minimise, offset' hierarchy to biodiversity, including areas of high environmental value."[4] Rous is required to ***avoid*** this destruction because there are economically viable and more effective solutions.
- **Industrial/construction zone** for The Channon/Dunoon community; noise, machinery, trucks, visual impact. Ongoing sound impact from pump house etc.
- **Higher prices for consumers due to a 4x increase in the cost of water.** Rous general manager, in response to a question from councillor Vanessa Ekins, said he expected a fourfold increase in the cost of supplying water if the dam is built.
- **The small population increase** predicted for the four Rous-supplied councils of 12,720[5] between 2020-2060 **does not justify** such a large and destructive dam. The dam risks diverting expenditure away from more sustainable, flexible and effective solutions.[5]

I SUPPORT these alternatives:

We need a suite of smart water options and proven alternatives, not a huge new dam. The tide is turning on renewable and sustainable power. It is time for the tide to turn on how we meet our water needs too.

- **An investment in system-wide water efficiency and strong demand management.** Analysed, costed and deployed, creating jobs. *(We understand Rous has not costed this in creating their future water plan)* Existing research over the past decade consistently finds that the best 'bang-for-buck' investment in water supply comes from demand management and identifying savings within the existing supply.[6] [7]

- **Water re-use in various ways, including Purified Recycled Potable water.** A wealth of global research and experience exists regarding potable reuse of water.[8] Eg: The city of Windhoek in Namibia has been using purified recycled water for 30 years using advanced technology.[9]
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- **Contingency planning** would enable Rous to be ready to rapidly implement supply measures if it becomes necessary in times of drought.
- **Groundwater, where this is environmentally safe.** The Australian government provides a lot of information on the ecological impacts and groundwater usage.[12]

With scalable supply alternatives in place, the existing supply from Rocky Ck Dam will be made resilient to anticipated times of drought and projected population growth, without the environmental destruction, social costs, and the over-capitalisation risk of an outsized and unnecessary dam.

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Kind regards, Signature: [redacted] Date: 7/9/2020

Feedback Submission Re: Proposed Dunoon Dam within the Future Water Project 2060

To: General Manager, Rous County Council
PO Box 230, Lismore NSW 2480

From: DOUG WHITLEN

Address: [redacted]

Firstly, the community appreciates the submission extension. We also acknowledge the complexity of the work Rous does to provide water for our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

- **Lost opportunity to invest in system-wide water efficiency.** This is the cheapest & fastest way to ensure supply-demand balance. By focussing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption.(1)
- **The 21st century is about a suite of smart water options.** This dam would be a lost opportunity to make our system fit for the 21st century by swallowing all resources in one big expensive 'white dinosaur' project.
- **The dam would encourage continued inefficient and wasteful water management by local governments.** They would have no incentive to do things differently.
- **Destruction of important Indigenous cultural heritage,** including burial sites.(2)
- **Destruction of The Channon Gorge and its endangered ecological community of lowland rainforest,** threatened flora and fauna species.(3) Rous's plan to offset the loss of rainforest on sandstone with regeneration of degraded land in the buffer zone is problematic as the type of vegetation offered as recompense is not equivalent.(Nan Nicholson, botanist) Councils are required under State planning regulations to: "Focus development to areas of least biodiversity sensitivity in the region and implement the 'avoid, minimise, offset' hierarchy to biodiversity, including areas of high environmental value."(4) Rous is required to ***avoid*** this destruction because there are economically viable and more effective solutions.
- **Industrial/construction zone** for The Channon/Dunoon community; noise, machinery, trucks, visual impact. Ongoing sound impact from pump house etc.
- **Higher prices for consumers due to a 4x increase in the cost of water.** Rous general manager, in response to a question from councillor Vanessa Ekins, said he expected a fourfold increase in the cost of supplying water if the dam is built.
- **The small population increase** predicted for the four Rous-supplied councils of 12,720(5) between 2020-2060 **does not justify** such a large and destructive dam. The dam risks diverting expenditure away from more sustainable, flexible and effective solutions.(5)

I SUPPORT these alternatives:

We need a suite of smart water options and proven alternatives, not a huge new dam. The tide is turning on renewable and sustainable power. It is time for the tide to turn on how we meet our water needs too.

- **An investment in system-wide water efficiency and strong demand management.** Analysed, costed and deployed, creating jobs. ***(We understand Rous has not costed this in creating their future water plan)*** Existing research over the past decade consistently finds that the best 'bang-for-buck' investment in water supply comes from demand management and identifying savings within the existing supply.(6) (7)

- **Water re-use in various ways, including Purified Recycled Potable water.** A wealth of global research and experience exists regarding potable reuse of water.[8] Eg: The city of Windhoek in Namibia has been using purified recycled water for 30 years using advanced technology.[9]
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- **Contingency planning** would enable Rous to be ready to rapidly implement supply measures if it becomes necessary in times of drought.
- **Groundwater, where this is environmentally safe.** The Australian government provides a lot of information on the ecological impacts and groundwater usage.[12]

With scalable supply alternatives in place, the existing supply from Rocky Ck Dam will be made resilient to anticipated times of drought and projected population growth, without the environmental destruction, social costs, and the over-capitalisation risk of an outsized and unnecessary dam.

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Kind regards, Signature: [redacted] Date: 5/9/2020

Feedback Submission Re: Proposed Dunoon Dam within the Future Water Project 2060

To: General Manager, Rous County Council
PO Box 230, Lismore NSW 2480

From: Fiona Geighton

Address: [redacted]

Firstly, the community appreciates the submission extension. We also acknowledge the complexity of the work Rous does to provide water for our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

- **Lost opportunity to invest in system-wide water efficiency**. This is the cheapest & fastest way to ensure supply-demand balance. By focussing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption.[1]
- **The 21st century is about a suite of smart water options.** This dam would be a lost opportunity to make our system fit for the 21st century by swallowing all resources in one big expensive 'white dinosaur' project.
- **The dam would encourage continued inefficient and wasteful water management by local governments.** They would have no incentive to do things differently.
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- **The small population increase** predicted for the four Rous-supplied councils of 12,720[5] between 2020-2060 **does not justify** such a large and destructive dam. The dam risks diverting expenditure away from more sustainable, flexible and effective solutions.[5]

I SUPPORT these alternatives:

We need a suite of smart water options and proven alternatives, not a huge new dam. The tide is turning on renewable and sustainable power. It is time for the tide to turn on how we meet our water needs too.

- **An investment in system-wide water efficiency and strong demand management.** Analysed, costed and deployed, creating jobs. *(We understand Rous has not costed this in creating their future water plan)* Existing research over the past decade consistently finds that the best 'bang-for-buck' investment in water supply comes from demand management and identifying savings within the existing supply.[6] [7]

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With scalable supply alternatives in place, the existing supply from Rocky Ck Dam will be made resilient to anticipated times of drought and projected population growth, without the environmental destruction, social costs, and the over-capitalisation risk of an outsized and unnecessary dam.

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Kind regards, Signature: [redacted] Date: 7/9/2020

Feedback Submission Re: Proposed Dunoon Dam within the Future Water Project 2060

To: General Manager, Rous County Council
PO Box 230, Lismore NSW 2480

From: Fiona Creighton

Address: [redacted]

Firstly, the community appreciates the submission extension. We also acknowledge the complexity of the work Rous does to provide water for our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

- **Lost opportunity to invest in system-wide water efficiency**. This is the cheapest & fastest way to ensure supply-demand balance. By focussing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption.[1]
- **The 21st century is about a suite of smart water options.** This dam would be a lost opportunity to make our system fit for the 21st century by swallowing all resources in one big expensive 'white dinosaur' project.
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- **Destruction of important Indigenous cultural heritage,** including burial sites.[2]
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I SUPPORT these alternatives:

We need a suite of smart water options and proven alternatives, not a huge new dam. The tide is turning on renewable and sustainable power. It is time for the tide to turn on how we meet our water needs too.

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Kind regards, Signature: [redacted] Date: 7/9/2020

Feedback Submission Re: Proposed Dunoon Dam within the Future Water Project 2060

To: General Manager, Rous County Council
PO Box 230, Lismore NSW 2480

From: Megan Thomas

Address: [redacted]

Firstly, the community appreciates the submission extension. We also acknowledge the complexity of the work Rous does to provide water for our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

- **Lost opportunity to invest in system-wide water efficiency.** This is the cheapest & fastest way to ensure supply-demand balance. By focussing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption.[1]
- **The 21st century is about a suite of smart water options.** This dam would be a lost opportunity to make our system fit for the 21st century by swallowing all resources in one big expensive 'white dinosaur' project.
- **The dam would encourage continued inefficient and wasteful water management by local governments.** They would have no incentive to do things differently.
- **Destruction of important Indigenous cultural heritage,** including burial sites.[2]
- **Destruction of The Channon Gorge and its endangered ecological community of lowland rainforest,** threatened flora and fauna species.[3] Rous's plan to offset the loss of rainforest on sandstone with regeneration of degraded land in the buffer zone is problematic as the type of vegetation offered as recompense is not equivalent.(Nan Nicholson, botanist) Councils are required under State planning regulations to: "Focus development to areas of least biodiversity sensitivity in the region and implement the 'avoid, minimise, offset' hierarchy to biodiversity, including areas of high environmental value."[4] Rous is required to ***avoid*** this destruction because there are economically viable and more effective solutions.
- **Industrial/construction zone** for The Channon/Dunoon community; noise, machinery, trucks, visual impact. Ongoing sound impact from pump house etc.
- **Higher prices for consumers due to a 4x increase in the cost of water.** Rous general manager, in response to a question from councillor Vanessa Ekins, said he expected a fourfold increase in the cost of supplying water if the dam is built.
- **The small population increase** predicted for the four Rous-supplied councils of 12,720[5] between 2020-2060 **does not justify** such a large and destructive dam. The dam risks diverting expenditure away from more sustainable, flexible and effective solutions.[5]

I SUPPORT these alternatives:

We need a suite of smart water options and proven alternatives, not a huge new dam. The tide is turning on renewable and sustainable power. It is time for the tide to turn on how we meet our water needs too.

- **An investment in system-wide water efficiency and strong demand management.** Analysed, costed and deployed, creating jobs. ***(We understand Rous has not costed this in creating their future water plan)*** Existing research over the past decade consistently finds that the best 'bang-for-buck' investment in water supply comes from demand management and identifying savings within the existing supply.[5][7]

- **Water re-use in various ways, including Purified Recycled Potable water.** A wealth of global research and experience exists regarding potable reuse of water.[8] Eg: The city of Windhoek in Namibia has been using purified recycled water for 30 years using advanced technology.[9]
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  Water tanks on all new (and existing) developments.The Australian government advises that: "Depending on tank size and climate, mains water use can be reduced by up to 100%. This in turn can help: reduce the need for new dams or desalination plants; protect remaining environmental flows in rivers; reduce infrastructure operating costs."[10] Rainwater harvesting also decreases stormwater runoff, thereby helping to reduce local flooding and scouring of creeks.[11]
- **Contingency planning** would enable Rous to be ready to rapidly implement supply measures if it becomes necessary in times of drought.
- **Groundwater, where this is environmentally safe.** The Australian government provides a lot of information on the ecological impacts and groundwater usage.[12]

With scalable supply alternatives in place, the existing supply from Rocky Ck Dam will be made resilient to anticipated times of drought and projected population growth, without the environmental destruction, social costs, and the over-capitalisation risk of an outsized and unnecessary dam.

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Kind regards, Signature: [redacted] Date: 6/9/2020

Feedback Submission Re: Proposed Dunoon Dam within the Future Water Project 2060

To: General Manager, Rous County Council
PO Box 230, Lismore NSW 2480

From: Michelle Hartnett

Address: [redacted]

Firstly, the community appreciates the submission extension. We also acknowledge the complexity of the work Rous does to provide water for our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

- **Lost opportunity to invest in system-wide water efficiency.** This is the cheapest & fastest way to ensure supply-demand balance. By focussing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption.[1]
- **The 21st century is about a suite of smart water options.** This dam would be a lost opportunity to make our system fit for the 21st century by swallowing all resources in one big expensive 'white dinosaur' project.
- **The dam would encourage continued inefficient and wasteful water management by local governments.** They would have no incentive to do things differently.
- **Destruction of important Indigenous cultural heritage,** including burial sites.[2]
- **Destruction of The Channon Gorge and its endangered ecological community of lowland rainforest**, threatened flora and fauna species.[3] Rous's plan to offset the loss of rainforest on sandstone with regeneration of degraded land in the buffer zone is problematic as the type of vegetation offered as recompense is not equivalent.(Nan Nicholson, botanist) Councils are required under State planning regulations to: "Focus development to areas of least biodiversity sensitivity in the region and implement the 'avoid, minimise, offset' hierarchy to biodiversity, including areas of high environmental value."[4] Rous is required to ***avoid*** this destruction because there are economically viable and more effective solutions.
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- **The small population increase** predicted for the four Rous-supplied councils of 12,720[5] between 2020-2060 **does not justify** such a large and destructive dam. The dam risks diverting expenditure away from more sustainable, flexible and effective solutions.[5]

I SUPPORT these alternatives:

We need a suite of smart water options and proven alternatives, not a huge new dam. The tide is turning on renewable and sustainable power. It is time for the tide to turn on how we meet our water needs too.

- **An investment in system-wide water efficiency and strong demand management.** Analysed, costed and deployed, creating jobs. *(We understand Rous has not costed this in creating their future water plan)* Existing research over the past decade consistently finds that the best 'bang-for-buck' investment in water supply comes from demand management and identifying savings within the existing supply.[6] [7]

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Kind regards, Signature: [redacted] Date: 7/9/20

Feedback Submission Re: Proposed Dunoon Dam within the Future Water Project 2060

To: General Manager, Rous County Council
PO Box 230, Lismore NSW 2480

From: KATHLEEN HOLLY

Address [redacted]

Firstly, the community appreciates the submission extension. We also acknowledge the complexity of the work Rous does to provide water for our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

- **Lost opportunity to invest in system-wide water efficiency.** This is the cheapest & fastest way to ensure supply-demand balance. By focussing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption.[1]
- **The 21st century is about a suite of smart water options.** This dam would be a lost opportunity to make our system fit for the 21st century by swallowing all resources in one big expensive 'white dinosaur' project.
- **The dam would encourage continued inefficient and wasteful water management by local governments.** They would have no incentive to do things differently.
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- **The small population increase** predicted for the four Rous-supplied councils of 12,720[5] between 2020-2060 **does not justify** such a large and destructive dam. The dam risks diverting expenditure away from more sustainable, flexible and effective solutions.[5]

I SUPPORT these alternatives:

We need a suite of smart water options and proven alternatives, not a huge new dam. The tide is turning on renewable and sustainable power. It is time for the tide to turn on how we meet our water needs too.

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Kind regards, Signature: [redacted] Date: 8/8/20

Feedback Submission Re: Proposed Dunoon Dam within the Future Water Project 2060

To: General Manager, Rous County Council
PO Box 230, Lismore NSW 2480

From: Fane White

Address: [redacted]

Firstly, the community appreciates the submission extension. We also acknowledge the complexity of the work Rous does to provide water for our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

- **Lost opportunity to invest in system-wide water efficiency**. This is the cheapest & fastest way to ensure supply-demand balance. By focussing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption.[1]
- **The 21st century is about a suite of smart water options.** This dam would be a lost opportunity to make our system fit for the 21st century by swallowing all resources in one big expensive 'white dinosaur' project.
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I SUPPORT these alternatives:

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Kind regards, Signature: [redacted] Date: 5-9-2020

Feedback Submission Re: Proposed Dunoon Dam within the Future Water Project 2060

To: General Manager, Rous County Council
PO Box 230, Lismore NSW 2480

From: Gabrielle Wood

Address: [redacted]

Firstly, the community appreciates the submission extension. We also acknowledge the complexity of the work Rous does to provide water for our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

- **Lost opportunity to invest in system-wide water efficiency.** This is the cheapest & fastest way to ensure supply-demand balance. By focussing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption.[1]
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Kind regards, Signature: [redacted] Date: 7·9·20

Feedback Submission Re: Proposed Dunoon Dam within the Future Water Project 2060

To: General Manager, Rous County Council
PO Box 230, Lismore NSW 2480

From: Brenna Dubant

Address: [redacted]

Firstly, the community appreciates the submission extension. We also acknowledge the complexity of the work Rous does to provide water for our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

- **Lost opportunity to invest in system-wide water efficiency**. This is the cheapest & fastest way to ensure supply-demand balance. By focussing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption.[1]
- **The 21st century is about a suite of smart water options.** This dam would be a lost opportunity to make our system fit for the 21st century by swallowing all resources in one big expensive 'white dinosaur' project.
- **The dam would encourage continued inefficient and wasteful water management by local governments.** They would have no incentive to do things differently.
- **Destruction of important Indigenous cultural heritage,** including burial sites.[2]
- **Destruction of The Channon Gorge and its endangered ecological community of lowland rainforest,** threatened flora and fauna species.[3] Rous's plan to offset the loss of rainforest on sandstone with regeneration of degraded land in the buffer zone is problematic as the type of vegetation offered as recompense is not equivalent.(Nan Nicholson, botanist) Councils are required under State planning regulations to: "Focus development to areas of least biodiversity sensitivity in the region and implement the 'avoid, minimise, offset' hierarchy to biodiversity, including areas of high environmental value."[4] Rous is required to ***avoid*** this destruction because there are economically viable and more effective solutions.
- **Industrial/construction zone** for The Channon/Dunoon community; noise, machinery, trucks, visual impact. Ongoing sound impact from pump house etc.
- **Higher prices for consumers due to a 4x increase in the cost of water.** Rous general manager, in response to a question from councillor Vanessa Ekins, said he expected a fourfold increase in the cost of supplying water if the dam is built.
- **The small population increase** predicted for the four Rous-supplied councils of 12,720[5] between 2020-2060 **does not justify** such a large and destructive dam. The dam risks diverting expenditure away from more sustainable, flexible and effective solutions.[5]

I SUPPORT these alternatives:

We need a suite of smart water options and proven alternatives, not a huge new dam. The tide is turning on renewable and sustainable power. It is time for the tide to turn on how we meet our water needs too.

- **An investment in system-wide water efficiency and strong demand management.** Analysed, costed and deployed, creating jobs. *(We understand Rous has not costed this in creating their future water plan)* Existing research over the past decade consistently finds that the best 'bang-for-buck' investment in water supply comes from demand management and identifying savings within the existing supply.[6] [7]

- **Water re-use in various ways, including Purified Recycled Potable water.** A wealth of global research and experience exists regarding potable reuse of water.[8] Eg: The city of Windhoek in Namibia has been using purified recycled water for 30 years using advanced technology.[9]
- **Water harvesting** (urban runoff; rain tanks):
  Water tanks on all new (and existing) developments.The Australian government advises that: "Depending on tank size and climate, mains water use can be reduced by up to 100%. This in turn can help: reduce the need for new dams or desalination plants; protect remaining environmental flows in rivers; reduce infrastructure operating costs."[10] Rainwater harvesting also decreases stormwater runoff, thereby helping to reduce local flooding and scouring of creeks.[11]
- **Contingency planning** would enable Rous to be ready to rapidly implement supply measures if it becomes necessary in times of drought.
- **Groundwater, where this is environmentally safe.** The Australian government provides a lot of information on the ecological impacts and groundwater usage.[12]

With scalable supply alternatives in place, the existing supply from Rocky Ck Dam will be made resilient to anticipated times of drought and projected population growth, without the environmental destruction, social costs, and the over-capitalisation risk of an outsized and unnecessary dam.

References and Notes

(1) Metropolitan Water Plan 2006, NSW Government. Exec Summary section of the doc https://www.dropbox.com/s/pu9898oq6kocrph/NSW%20Govt%202006%20MWP%20summary.pdf?dl=0

(2) Ainsworth Heritage, Cultural Heritage Impact Assessment, 2011

(3) SMEC Australia, Terrestrial Ecology Impact Assessment, 2011

(4) NSW Department of Planning, Industry and Environment 2019, 'Delivering the plan', Sydney, viewed 03 August 2020 < https://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans/North-Coast/Delivering-the-plan > , Direction 2: Enhance biodiversity coastal and aquatic habitats and water catchments.

(5) NSW Department of Planning, Industry and Environment 2019, *'NSW population projections '*, Sydney, viewed 03 August 2020, <https://www.planning.nsw.gov.au/Research-and-Demography/Population-projections/Projections> Scroll down to "Local Government Factsheets".

(6) The Rous Regional Water Efficiency Program 1997, *Final report of the Rous Regional Demand Management Strategy : preferred options*, Rous County Council, Lismore.

(7) Watson R., Turner A and Fane S 2018, *Water Efficiency and Demand Management Opportunities for Hunter Water*, Institute for Sustainable Futures, Sydney.

(8) Kahn,Stuart and Branch, Amos 2019, *Potable water reuse: What can Australia learn from global experience?*, Water Research Australia Limited, Adelaide.

(9) Windhoek Goreangab Operating Company (Pty) Ltd 2020,*Our history | Wingoc*, Veolia Environment, Windhoek, viewed 3 August 2020, <https://www.wingoc.com.na/>

(10) $220 million dollars - the estimated cost of the new dam - could provide more than 73,000 rainwater tanks (22,700L) at $3,000 each including installation. That is 1.66GL storage with no evaporation and much increased community resilience for future climate risks. This more than covers the 0.9GL extra water needed by the 12,720 new people predicted to come to our area based on 194L/person/day average water use (Rous).

(11) Australian Government Department of Industry 2013, Science, Energy and Resources, *Rainwater | Your home*, Canberra, viewed 3 August 2020, <https://www.yourhome.gov.au/water/rainwater>

(12) Department of Agriculture, Water and the Environment 2018, *What are the ecological impacts of groundwater drawdown? | Department of Agriculture, Water and the Environment*, Canberra, viewed 6 August 2020, <https://www.environment.gov.au/water/publications/what-are-the-ecological-impacts-of-groundwater-drawdown>

Kind regards, Signature: [redacted] Date: 8/7

To: General Manager
Rous County Council
PO Box 230
Lismore NSW 2480

From: Alex Stephens

Address: [redacted]

Date: 9/9/20

Re: the proposed Channon/Dunoon Dam within the Future Water Project 2060.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

- **Destruction of important Indigenous Cultural Heritage,** including burial sites (Cultural Heritage Impact Assessment, 2011). Ongoing disregard for First Nations sacred sites and culture.
- **Destruction of The Channon Gorge and its Endangered Ecological Community of Lowland Rainforest** (including the regionally rare warm temperate rainforest on sandstone), and its threatened species of flora and fauna. (Terrestrial Ecology Impact Assessment, 2011).
  Rous is planning to offset the loss of rainforest on sandstone with regeneration of degraded land in the buffer zone. Offsetting is a worthless exercise because the type of vegetation offered as recompense is never equivalent. This is worse than most. (Nan Nicholson, botanist)
- **Industrial/construction zone** for years for The Channon/Dunoon community; noise pollution; large trucks/machinery on our roads; visual impact. Ongoing sound impact from pump house etc.
- **Water prices will increase by 4x** current cost (or higher if dam budget blows out) (Rous)
- **Promotes accelerated population growth** in the Northern Rivers. I'm concerned the Dam is being framed as 'water security' to the local population, yet to further afield it is being framed as a development plan for acceleration of growth. I'm concerned the model that predicted the population did not take into account the actual dam's effect on growth.
  This framing is concerning to me: "Everyone needs to understand this Regional development plan which is "focused on ***unlocking the potential*** of one of Australia's most beautiful places. The North Coast will become the best region in Australia to live, work and play". From planning document:
  https://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans/North-Coast/Delivering-the-plan [1]
- **Continued focus on old strategies** to solve water security & economic needs.

- **The entire modelling and the strategy recommendations were made pre-COVID19**, and are no longer economically or demographically valid. COVID has also shown us we need to be able to pivot quickly and flexibly - something this massive 'single solution' won't do.
- **The tiny population increase** for the four Rous supplied councils of only 12,720[2] people between 2020-2060 **does not justify** such a large and destructive dam. It risks being **an expensive white elephant**, diverting money away from more needed and effective solutions.
- **It is likely to create division and conflict** within our communities after suffering flood, drought and an extreme fire season. What we need are resilience and community building solutions.

I SUPPORT these alternatives:

I believe we need to take action on a suite of smart water options and proven alternatives.

The tide is turning on renewable and sustainable power. It is time for the tide to turn on how we meet our water needs too. This is 21st century thinking.

- **Strong Demand Management**

  Existing research over the past decade consistently finds that the best 'bang-for-buck' investment in water supply comes from demand management and identifying savings within the existing supply.[3] [4]

- **Purified Recycled Water**

  A wealth of global research and experience already exists regarding potable reuse of water as set out in the Australian report, *Potable Water Reuse: What can Australia learn from global experience?*

  https://www.waterra.com.au/publications/document-search/?download=1806 [5]

  Example: The city of Windhoek has been using Purified Recycled Water for 30yrs using advanced technology.

  https://www.wingoc.com.na/our-history [6]

- **Water tanks on all new (and existing) developments**[7] *This builds community resilience - much needed as the example of the extreme bushfire season has shown up.*

  The Australian government advises that:

  Depending on tank size and climate, mains water use can be reduced by up to 100%. This in turn can help:

  * reduce the need for new dams or desalination plants

  * protect remaining environmental flows in rivers

  * reduce infrastructure operating costs.

  Rainwater harvesting also decreases stormwater runoff, thereby helping to reduce local flooding and scouring of creeks.[8] https://www.yourhome.gov.au/water/rainwater

- **Groundwater, where this is environmentally safe**

The Australian government provides a lot of information on ecological impacts and groundwater usage.[9]

https://www.environment.gov.au/water/publications/what-are-the-ecological-impacts-of-groundwater-drawdown

With scalable alternatives in place for supply, the existing Rocky Ck Dam supply component will be made resilient to anticipated times of drought and projected population growth, without the environmental destruction, social costs, and the over-capitalisation risk of an outsized dam.

References and Notes

1. NSW Department of Planning, Industry and Environment 2019, '*Delivering the plan*', Sydney, viewed 03 August 2020, <https://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans/North-Coast/Delivering-the-plan>
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Kind Regards, [redacted]

2044.9/19 128001

RECEIVED 11 SEP 2020

Feedback Submission Re: Proposed Dunoon Dam within the Future Water Project 2060

To: General Manager, Rous County Council
PO Box 230, Lismore NSW 2480

From: Frances De Glas

Address: [redacted]

Firstly, the community appreciates the submission extension. We also acknowledge the complexity of the work Rous does to provide water for our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

- **Lost opportunity to invest in system-wide water efficiency**. This is the cheapest & fastest way to ensure supply-demand balance. By focussing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption.(1)
- **The 21st century is about a suite of smart water options.** This dam would be a lost opportunity to make our system fit for the 21st century by swallowing all resources in one big expensive 'white dinosaur' project.
- **The dam would encourage continued inefficient and wasteful water management by local governments.** They would have no incentive to do things differently.
- **Destruction of important Indigenous cultural heritage,** including burial sites.(2)
- **Destruction of The Channon Gorge and its endangered ecological community of lowland rainforest**, threatened flora and fauna species.(3) Rous's plan to offset the loss of rainforest on sandstone with regeneration of degraded land in the buffer zone is problematic as the type of vegetation offered as recompense is not equivalent.(Nan Nicholson, botanist) Councils are required under State planning regulations to: "Focus development to areas of least biodiversity sensitivity in the region and implement the 'avoid, minimise, offset' hierarchy to biodiversity, including areas of high environmental value."(4) Rous is required to ***avoid*** this destruction because there are economically viable and more effective solutions.
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- **Higher prices for consumers due to a 4x increase in the cost of water.** Rous general manager, in response to a question from councillor Vanessa Ekins, said he expected a fourfold increase in the cost of supplying water if the dam is built.
- **The small population increase** predicted for the four Rous-supplied councils of 12,720(5) between 2020-2060 **does not justify** such a large and destructive dam. The dam risks diverting expenditure away from more sustainable, flexible and effective solutions.(5)

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  Water tanks on all new (and existing) developments.The Australian government advises that: "Depending on tank size and climate, mains water use can be reduced by up to 100%. This in turn can help: reduce the need for new dams or desalination plants; protect remaining environmental flows in rivers; reduce infrastructure operating costs."[10] Rainwater harvesting also decreases stormwater runoff, thereby helping to reduce local flooding and scouring of creeks.[11]
- **Contingency planning** would enable Rous to be ready to rapidly implement supply measures if it becomes necessary in times of drought.
- **Groundwater, where this is environmentally safe.** The Australian government provides a lot of information on the ecological impacts and groundwater usage.[12]

With scalable supply alternatives in place, the existing supply from Rocky Ck Dam will be made resilient to anticipated times of drought and projected population growth, without the environmental destruction, social costs, and the over-capitalisation risk of an outsized and unnecessary dam.

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(4) NSW Department of Planning, Industry and Environment 2019, 'Delivering the plan', Sydney, viewed 03 August 2020 < https://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans/North-Coast/Delivering-the-plan > , Direction 2: Enhance biodiversity coastal and aquatic habitats and water catchments.

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Kind regards, Signature: [redacted] Date: 7.9.20

2044.9/19

128002

RECEIVED 11 SEP 2020

[redacted]

8 September 2020

To: The Chairman
Rous County Council
LISMORE

Dear Sir

Re Construction of Dunoon Dam

I agree that Council should construct the dam as proposed. In my opinion, it should have been constructed years ago.

The Northern Rivers is one of the fastest growing population areas and all of the bandaid solutions proposed are a waste of money. The scare-mongering by minority groups of a 400% increase in water charges and their notion that frogs and other wild life cannot move higher up the bank as the water rises is ridiculous. I am of the opinion that Council should temper their decisions by listening not only to these outspoken minority groups but also to the silent majority. The attitude that their way of life and views are the only solution to the exclusion of all others is unacceptable.

The North Coast will continue to increase in population and demands on water will increase both domestically and agriculturally. Also, no one has a crystal ball about the effect of climate change.

Please do the right thing and construct the dam ASAP.

Yours sincerely

[redacted]

Paul & Laurel Thurn

Institute for Sustainable Futures

Rous Water supply augmentation proposal - brief review

As part of its Future Water Strategy 2060, Rous Water has recommended proceeding with augmentation of its water supply through the construction of a new dam near Dunoon, comprising a 50 GL storage and associated works, at an estimated present value cost of more than $150m (Hydrosphere Consulting 2020, Rous County Council 2020).

The stated need for the dam is based on a conclusion that the demand for water in the Rous region will exceed the yield of the Rous water supply system by 2024, and that, in the absence of this dam, the gap between supply (secure yield) and demand will reach 6,500 ML/a by 2060, which is roughly 50% of the current supply capacity. The planning documents conclude that there are no viable alternatives to this option.

My view is that the need for this dam has not been demonstrated by the available data and analysis.

Amongst other concerns, committing to the construction of the Dunoon Dam option would represent a significant financial risk, and further, would waste an opportunity to demonstrate leadership in sustainable water management and to provide timely support for economic development and employment in the region.

In summary, the following items need to be considered, investigated and implemented before such a major investment is committed.

1. **Water efficiency**

There is scope for major improvements in the **efficiency of water use in the region**, to cap and reduce total demand below the supply capacity. This option has not been adequately analysed, quantified or costed, and has not been included in the demand forecast.

In the 1990s, Rous Water and some of its constituent councils pioneered the investigation, and in some cases implementation, of water efficiency programs and pricing reform (White 1997). The local water utilities (LWUs) in the region were some of the first to follow Hunter Water's move to volume-based pricing. Water use per household in the region is not high, in part due to climate, demographics and the impact of these water pricing reforms and efficiency programs. However, the investment in water efficiency over the years, while higher than in some other regional utilities, has been relatively low. This investment is more consistent with a foundational education and communication program rather than a planned and costed investment strategy that recognises that improving the water efficiency of customers and the supply and reticulation system represents the largest, cheapest and quickest way to improve the supply-demand balance that water utilities have at their disposal. In the past, when the marginal cost of water was relatively low, this strategy may have been understandable, however it is not appropriate when faced with the potential for a $200m investment, when the marginal cost of water will significantly increase (Fane and White 2006).

The potential for improving the efficiency of water-using appliances, fixtures, processes, practices and pipes is by now well documented and demonstrated, including in Sydney (NSW Government 2006) and South East Queensland (Liu et al. 2017, pp. 22-29) where hundreds of millions of dollars have been spent to improve water efficiency, saving many thousands of megalitres per year.

There is insufficient analysis presented in the planning documents that quantifies this potential, for example, by asking and answering the following types of questions.

- How many cooling towers are there in the Rous water region that do not have TDS (total dissolved solids) sensors controlling their bleed-off? How much would it cost to remedy that?
- How many toilet cisterns are there in the region which are not current best practice (4.5/3 litre dual flush or equivalent)? What is the cost to replace them, and over what period, and how much water would that save?
- How many top loading washing machines remain in use in the Rous region? What is the cost to change them out over the next 5 years?
- How many shower heads in the region are not 4-star?
- In the Rous water region are there industrial or manufacturing processes remaining including washdown, hosedown processes that have not been optimised? How many large users have had free water audits and financial support for efficiency improvements? What savings would accrue to businesses to pay for the improvement, and how much water would be saved?
- What level of automation and soil moisture control exists for irrigation of playing fields, sports grounds and passive recreational areas in the Rous water region?
- What processes are in place to ensure that long pipe runs for rural water consumers are inspected and surveilled including through the use of smart meters with automatic notifications of exceptional use? How much would this, and other efficiency measures, reduce the high per household consumption of these consumers?
- Have the constituent councils and Rous Water undertaken the maximum possible and cost effective implementation of leakage reduction and pressure management, and burst and break response for all of their reticulation system? It would appear that this investment has not matched that of some other utilities. In the case of Sydney Water, for example the investment has been significantly higher on a per connection basis.

An overarching question would be, what level of investment in improving water efficiency in the region would be required, over what time period, to cap demand below the level of the secure yield, and is the present value cost of these investments lower than $150m?

It is also worth noting that implementing a large-scale water efficiency program would not only be a highly cost-effective measure, with the potential to save the region tens of millions of dollars, it would have major co-benefits, including the following:

- Reducing regional energy use, through reduced treatment and pumping costs, as well as reduced hot water use, leading to reduced greenhouse gas emissions (see e.g. Turner et al. 2007, p. 61).
- Reducing business costs, including lower water, energy, trade waste and materials input costs for local businesses, through improving water and energy management as a result of audits and investment in water efficiency measures, which are correlated with improved business outcomes.
- Creating employment and upskilling, especially in local trades and small and medium enterprises, through sales and service provision for water efficient equipment and services and engineering, trade and landscaping expertise. The relative employment benefits from investment in improving efficiency and customer-focussed initiatives is well documented in the energy sector (see e.g. Briggs et al. 2020).

In summary, a complete and proper investigation of the potential for water efficiency, and investment in a significant program of improving water efficiency represents a ‘no-regrets’ option for the region. An indicative program has been proposed in a companion paper. Such a path is highly likely to enable significant deferral of the need for the commitment to Dunoon Dam, when combined with a diverse portfolio of demand and supply options, including contingency options.

2. Planning approach

The planning process has not employed best practice water infrastructure planning in the form of **real options analysis** assessing a **diverse portfolio of demand and supply options** including contingency options in case of severe drought. Selection of a single large option with high capital cost, in the face of significant uncertainty in demand and secure yield, means that constructing the Dunoon Dam would lead to a significant risk of a stranded asset, and a potential price-demand spiral (see e.g. Martin 2017). Further, the planning process has incorrectly applied the concept of marginal cost in comparing options.

The planning documents have excluded a number of supply options on the basis that they have a higher marginal cost, or that they provide insufficient annual yield to meet the supply demand gap until 2060. The marginal cost of Dunoon Dam, and other supply options, is calculated assuming that the entire yield is used from the commencement of operation, significantly overstating the denominator in the marginal cost calculation. If only a small fraction of the additional yield of the combined Rocky Creek Dam (RCD) and Dunoon Dam (DD) system is required or utilised in the first 20-30 years, then it is this water volume that should be used as the denominator in the marginal cost calculation. Alternatively, a range of water efficiency and supply options should be considered as a portfolio, taking into account different scenarios for the secure yield of the existing system, and how that changes with the addition or removal of smaller supply options.

The principle of real options planning is that you don't need to build some supply options in order to have the benefits of being able to bring them on line in sufficient time to meet external contingencies such as drought. So the option to build an asset represents a contingency option. In fact, the implementation of water restrictions themselves represents a contingency option in the context of drought. Water restrictions have long been used in the water industry and they have strong community acceptance and support, and they are assumed to be part of the secure yield of most water supply systems.

The first major application of real options planning for water infrastructure in the water industry was in Sydney in 2006. The review of the Metropolitan Water Plan (White et al. 2006) recommended that a trigger level be set for the construction of Sydney's desalination plant at 30% dam level, based on the low statistical likelihood of reaching that level, representing a risk-weighted saving of $1bn.

Real options planning is not unlike an insurance policy where there is a relatively low premium and a high excess, in which the costs of readiness are low relative to the costs of mobilising quickly in response to a low likelihood outcome. Other examples of readiness strategies have included: (1) rapid mobilisation of groundwater sources, also adopted as part of the Sydney real options strategy, for an additional 15 GL/a; (2) the rapid construction of transfer pipelines (e.g. on the Gold Coast); (3) the rapid development of waste water recycling plant capacity and associated pipelines, with the option for indirect potable reuse application (e.g. the Western Corridor Recycled Water Scheme in South East Queensland). (4) the accelerated "emergency" rollout of water efficiency and leakage reduction measures, as proposed and implemented in Sydney and South East Queensland during the Millennium Drought (Turner et al. 2016).

The long timescales and the uncertainty in the supply-demand balance (MWH 2014) indicate that a more financially prudent approach for the future water strategy would involve the application of real options planning, with a portfolio of options. For example, candidates for real options for supply include groundwater sources, regional transfers and interconnections, and rapid deployment of wastewater recycling (non-potable or indirect potable). Many of these options have been discounted on the grounds that they do not provide a sufficiently large increment of yield, or on marginal cost grounds, but this fails to consider the uncertainty in the supply-demand gap and the long timescales and uses an incorrect approach to calculating marginal cost. This would also ensure consistency with the national urban water planning principles (Australian Government 2019), particularly principles 4 and 5.

3. Yield forecasts

Putting aside the demand forecast, the supply-demand gap that is the basis of the stated need for Dunoon Dam is driven largely by **two factors in the yield estimate**: (1) the reduction in secure yield that results from a change in the level of service, from a 5:10:20 restrictions regime to a 5:10:10 regime (2) the reduction in secure yield based on estimates from climate change modelling, with a reduction in yield of about 30% by 2060.

The planning documents provide differing estimates for the impact of the change in level of service, ranging from 800 ML/a (MWH 2014, p. 19) to more than 1,100 ML/a (MWH 2014, p. 57). The impact of climate change is further assumed to reduce the secure yield from 2020 levels by 2,300 ML/a by 2030 and by 4,700 ML/a by 2060. These two adjustments, or derating of the assumed yield of the water supply system, are alone almost sufficient to make the difference in demand and supply that drives the stated need for the dam, given the demand forecast that is used. It is therefore worth applying some scrutiny to these assumptions and acknowledging their level of uncertainty.

Firstly, the level of service changes reflect guidelines for LWUs from the NSW Government Office of Water, in part in response to demand hardening, or the impact that reductions in outdoor water use have had in reducing the potential for savings during restrictions. Nonetheless, the frequency, duration and depth of restrictions, and indeed the optimisation of them to improve effectiveness while reducing negative impact, have not been sufficiently explored in the Northern Rivers region, or indeed in many other jurisdictions (Chong et al. 2009). In the face of a $200m investment, it would be prudent for a monopoly service provider to assess the community's willingness to pay, and to assess whether water consumers were willing to trade off the change in level of service and the 800 to 1,200 ML/a reduction in yield for the value of deferring such a large investment. Such an exercise would most effectively use best practice techniques of deliberative democracy, for which the Northern Rivers region can boast several previous examples.

Secondly, there is significant uncertainty associated with the climate change projections, as described in the planning reports by MWH (2014, p. 21):

> *There is significant uncertainty associated with both the demand and supply forecasts. The demand forecast is strongly driven by serviced area growth rates and customer water usage behaviour. The supply forecast is highly influenced by future climate conditions. The supply-demand balance adopted in this study provides a starting point for strategic assessment, using available information and practices. It also recognises that the forecasts are uncertain and include the need for ongoing monitoring and regular review of foundation assumptions, as well as the promotion of adaptive management.*

This suggests that a more prudent approach is needed, in which the climate change scenarios are used as scenarios for sensitivity testing rather than locked in as hard line forecasts. Such an approach is consistent with the idea of a portfolio approach, considering all available, and fully-costed demand and supply options, including contingency options, in an adaptive real options approach.

References

Australian Government (2019) 'National Urban Water Planning Principles', Department of Agriculture, Water and the Environment, https://www.agriculture.gov.au/water/urban/policy-reform-urban-water/planning-principles

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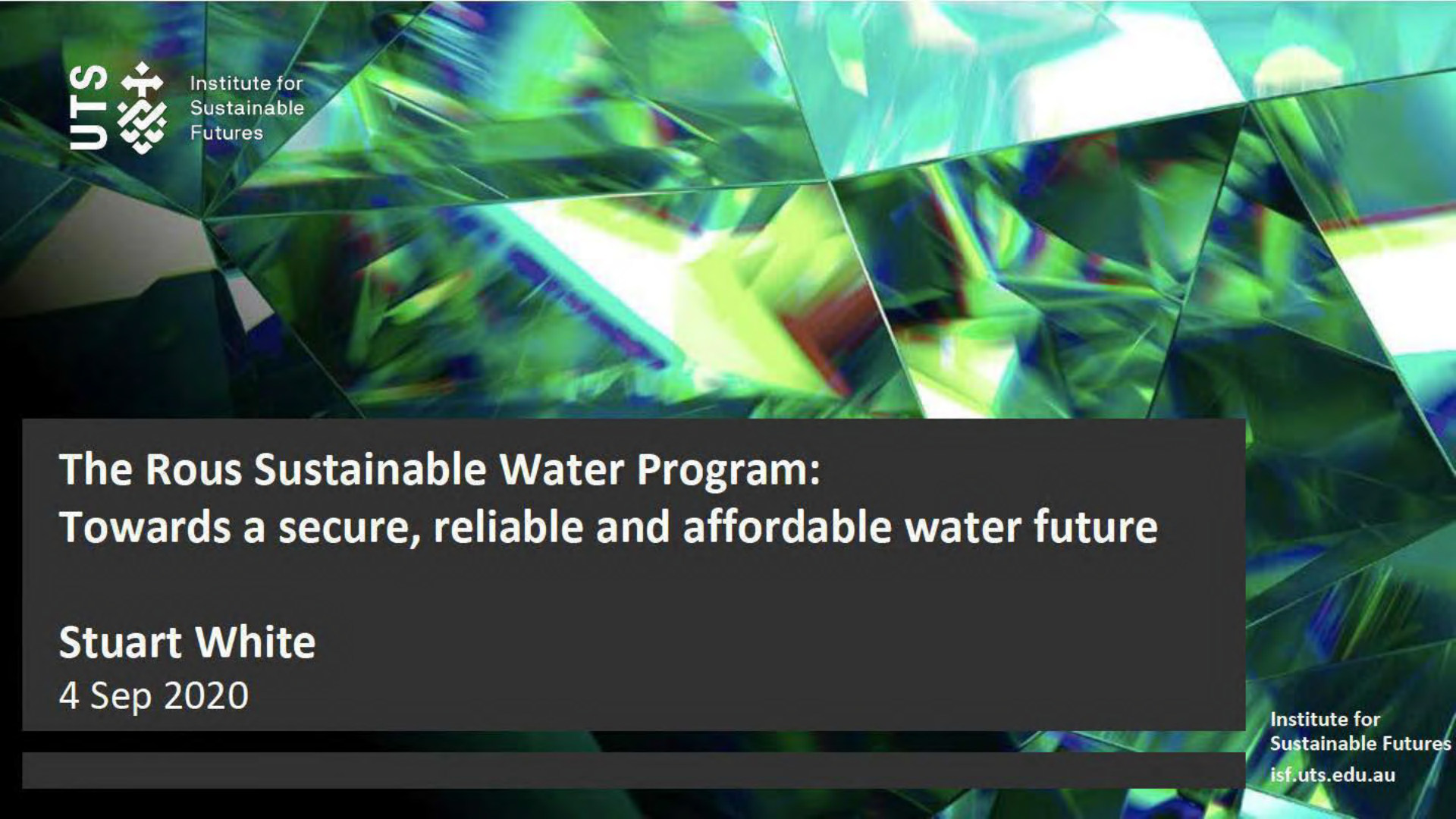
This document is a brief initial review of the proposal for the construction of a 50 GL dam near Dunoon by Rous Water. It is based on the experience of the author from 1990 to the present, including investigations of urban water supply and demand options in the Rous Water region, and in all states and territories in mainland Australia, as well as in California, USA; Sao Paulo, Brazil; Alexandria, Egypt; Ilo Ilo and Zamboanga, The Philippines; Salalah, Oman.

See a selection of the urban water research undertaken by the Institute for Sustainable Futures here.

Stuart White
Institute for Sustainable Futures, University of Technology Sydney

4 Sep 2020



Institute for Sustainable Futures

The Rous Sustainable Water Program: Towards a secure, reliable and affordable water future

Stuart White

4 Sep 2020

Institute for Sustainable Futures
isf.uts.edu.au

SUMMARY

- The Rous region, and Rous County Council, provided inspiration for some of Australia's largest investments in sustainable water management, most notably for Sydney Water Corporation, to meet stretch operating licence targets, and in South East Queensland, to reduce demand during the Millennium Drought.
- While there has been some investment in improving water efficiency in the Rous region, there is significant potential for reliable and cost-effective improvements in water management and use. These improvements would enable the region to become internationally recognised for its commitment to sustainable water management.
- Increasing the investment in water efficiency from ~$500k per annum to an average initial investment in existing housing stock and businesses of ~$5m per annum for 3-5 years, declining to a steady state of ~$2m per annum, is likely to defer the need for the dam beyond the planning horizon, stimulate the local economy and provide employment, and significantly reduce water and energy bills and greenhouse gas emissions. It would avoid the financial risk associated with the cost and scale of the Dunoon Dam.
- There is no single solution. Improving water management requires an understanding of where and how water is used, and investing directly in improving it across the region.
- An indicative Rous Sustainable Water Program with a present value cost of approximately $36m, and a unit cost of an estimated $0.90/kl could defer the need for further augmentation from 2024 to 2044. In addition, changing the Level of Service from 5:10:10 to 5:10:15 would defer the need to 2053.
- The indicative program described here is based on experience with many other water efficiency programs designed and implemented, and evaluated in Australia and internationally. Savings from water efficiency programs have been extensively monitored and evaluated.
- The investment at this time in a 50 Gl storage (Dunoon Dam) at over $150m capital cost, is financially risky, and the case has not been made. See this paper for further details.
- There is a plausible risk that, if the Dunoon Dam was actually required by 2024, *and no other action was taken*, that it would not be able to provide sufficient water in time based on the secure yield - demand projections. This indicates that implementing a significant water efficiency program, as suggested here, would be a prudent course of action even if dam construction was contemplated.
- If paleoclimate data is used to guide water supply planning, the duration of possible droughts are so long that even the 50 Gl Dunoon Dam storage will be insufficient, and planning would need to be directed towards rainfall-independent solutions, including contingency potable reuse and desalination.

BACKGROUND

- Local residents in the region supplied by Rous County Council and its constituent councils have approached Stuart White at the Institute for Sustainable Futures at UTS to seek advice on options for water supply and demand in the region, in response to a proposal for construction of the Dunoon Dam, a 50 Gl storage.
- The Institute for Sustainable Futures (ISF), including its Director, Stuart White, has considerable experience in urban water supply demand planning, including in the Rous region. The ISF water team continues to work for a range of utilities and government agencies on water efficiency and demand management.
- Stuart White has prepared a response to the various planning documents produced as part of the Future Water Strategy for Rous County Council, which questions the need for the dam, based on (1) the potential for improved water efficiency (2) that the planning approach does not consider the potential for the use of 'real options' approaches and (3) the assumptions regarding the yield forecasts, which do not adequately test for customer preferences in derating the yield of the current supply system, and the uncertainty of the climate change scenarios.
- The approach described here, an indicative 'Rous Sustainable Water Program' is based on a number of principles and assumptions, which are provided in this spreadsheet. These assumptions have been made using the knowledge of the Australian water industry and the region, and would need to be verified through appropriate end-use surveys and thorough modelling. The fact that such information is not available indicates that the case for augmentation is not made. In other words the water 'conservation potential' in the region has not been adequately quantified. While the assumptions used here are estimates, even a 50% reduction in the water savings assumptions would mean that the Dunoon Dam can be deferred by two decades or more. A properly designed program would be adaptive and ramped up and down as needed.
- The indicative program has been considered and constructed based on the experience of the author, and at this stage only includes options that improve the efficiency of water use -- i.e. demand side options. There are other options e.g non-potable reuse, stormwater and rainwater capture and reuse, inter-catchment transfers, additional groundwater sources and other supply options that would complement and supplement these options. These options are quite site specific and would require more detailed analysis. Similarly, contingency options for improving drought security have not been included. The indicative program also does not consider next-generation water efficiency as described in this paper.

PRINCIPLES AND ASSUMPTIONS

- The secure yield should exceed the annual average demand over the planning period.
- A permanent reduction in demand from sources is equivalent to a permanent increase in the yield of the supply system. The options to increase supply, or decrease demand, should be compared on the same basis, that is: what is their relative unit cost.
- The unit cost, or marginal cost of an option for water supply or water saving, should be calculated based on the additional capital and operating cost of that option and the additional yield it provides *that would actually be used, not the total amount of water that it could supply*. If this correct method of calculation is used, the marginal cost of water from the Dunoon Dam is likely to be more than $7.50/kl, compared to the modelled water efficiency program which provides sufficient water until 2044 or 2053 at a unit cost of about $0.80/kl. This indicates the financial risk associated with the large capital expenditure. Building a large asset generates an increase in price, which reduces demand and can result in a stranded asset, and the 'utility death spiral'.
- Water efficiency options can be described using two important principles: (1) *pennies add up to pounds*, in other words small changes in the efficiency of water using equipment and appliances, multiplied by many households and businesses can make a material difference in water demand (2) *you get what you pay for*, in other words, if you invest a small amount in education, communication you may get 2-5% change in the behaviour or purchasing decisions of water customers, and if you provide rebates you may get a 10-20% change. If you directly invest in retrofitting fixtures and appliances you can get a much greater, more than 50% change, but it will cost more to achieve those savings.
- The average household water demand in the Rous region is not high relative to other cities or towns on the eastern seaboard. However, it is not useful to compare one town to another on kl/household/a or litres per person per day. The real test, and the useful question, is: How efficient is the town or region relative to how efficient it could be? Hence the term 'conservation potential' which measures the difference between the demand for water using current fixtures, appliances and processes and practices, relative to best practice fixtures, appliances and processes and practices.
- Utilities have traditionally focussed on water supply, and seen their business as a 'low cost commodity supply'. Increasingly utilities are seeing their business more as service provision, in which the needs of the customer are paramount. Customers do not need water, they need the services that water provides (e.g. sanitation, clean clothes, nice landscapes, manufactured products) and so the future of utilities is to supply these services reliably, affordably, efficiently and with the lowest social and environmental impact.

THE ROUS SUSTAINABLE WATER PROGRAM

A SUSTAINABLE WATER FUTURE FOR THE ROUS REGION: FOUNDATION INITIATIVES

1. **Regional cooperation.** Establish a Rous region-wide commitment from all constituent councils and local water utilities (LWUs) to a regional, sustainable, commonly branded water program, with each LWU providing staff support. All planning, design and funding to be centralised, as it would have been for the Dunoon Dam.
2. **Community engagement.** Undertake a deliberative democratic engagement process with residents in the region (randomly selected, with adequate information and deliberation, and linked to decision-making) to determine the acceptable level of service (reliability standards e.g. 5:10:10 - 5:10:20) for the water supply system, including willingness to pay, canvassing various options. See this paper for background and references.
3. **Water pricing reform.** Review and reform water pricing over the next 4 years to ensure that it supports economic efficiency and water efficiency, including an investigation of drought or scarcity pricing, and ensure that hardship provisions are adequate and enhanced.
4. **Regulatory reform.** Review and reform development consent conditions and the potential for improvements in the interests of improved water efficiency. This could include: enhanced BASIX conditions, compliance and longevity; investigation of water efficiency disclosure or incentivised retrofit at point of sale; design of developer contributions and consent conditions extending BASIX including into non-residential requirements.
5. **Modernise water metering.** Investigate the centrally coordinated staged replacement of the existing water meter fleet, starting with Rous retail customers, with digital automatic meter reading (AMR) meters over the next 5 years to support improved water efficiency measures and automatic customer feedback regarding exceptions and leakage. Use the opportunity to install submetering in all shared-meter multi-customer residential and non-residential connections where practicable using remote metering.
6. **Measure end-use demand.** Undertake a thorough end-use survey to obtain a more accurate picture of where and how water is used, and to quantify the conservation potential.
7. **Enhanced marketing and communication program**. Implement a major ongoing region-wide, commonly branded marketing and communication campaign, linked to retrofit, advisory, assessment and audit services. The goal of this campaign and services is to maximise take-up of options, and to ensure a water services approach is provided to households and businesses, with linkages to energy and other resource efficiency programs e.g. Sustainability Advantage.
8. **Program management.** There will need to be staff engaged centrally and allocated to the task of managing the contracts for the work undertaken as part of the various initiatives on behalf of Rous County COuncil and the constituent councils. Most work will involve management of service providers and contractors. This will included training, quality assurance and compliance monitoring.

A SUSTAINABLE WATER FUTURE FOR THE ROUS REGION: RESIDENTIAL WATER EFFICIENCY INITIATIVES

1. **Residential indoor retrofit program**. Direct investment in replacement and installation (household assessment and retrofits) by qualified plumbers of 4-star showerheads, taps and toilets to best-practice efficiency across the entire existing residential housing stock. Program to run over the next 4 years intended to cover 5,000 households per year.
2. **Targeted outdoor water use program**. Provide assessments and advisory services for irrigation use, based on data analytics of high water users (initially top 20% of outdoor water use) including irrigation and landscape advice, discounted equipment, plants and services, lawn buybacks and follow-up support.
3. **Washing machine program.** Provide delivered replacement 5-star front loading washing machines with a significant discount on condition of returning a top loading machine.

The estimated savings from these programs are based on the experience from a number of large scale programs implemented in other cities, and monitored and evaluated extensively.

A SUSTAINABLE WATER FUTURE FOR THE ROUS REGION: NON-RESIDENTIAL WATER EFFICIENCY INITIATIVES

The design of these programs is critically dependent on an understanding of the profile of demand in the non-residential sector and the customer types. The indicative program below is based on a general understanding of the non-residential sector in a number of jurisdictions informed by the previous Rous Demand Management Program.

1. Major users' program. This program would involve free water audits for major water users (the top 100 water using customers) and support for installation and replacement of water using equipment at no cost or heavily discounted cost. The financing would be as a grant, or as a revolving loan fund.
2. Medium users' program. This would be for the next 1,000 water-using businesses, similar to the major users' program, but would be designed in a streamlined way to offer specific programs and support for improving the operation of, or replacement of: urinals, toilets, cooling tower controls, washdown system improvements and irrigation controllers and improvements. This would apply to e.g smaller schools, depots, smaller shopping centres, hairdressers, restaurants.
3. Small users' program. This would be for the remaining ~7,000 customers, including many Rous retail customers, who have mainly domestic end-uses, such as toilets and taps, eg small retail customers. These would be managed in much the same way as residential customers, with assessments and retrofits by approved plumbing contractors.

A SUSTAINABLE WATER FUTURE FOR THE ROUS REGION: LEAKAGE AND PRESSURE MANAGEMENT

1. The Sydney Water Corporation leakage and pressure management program is one of the best practice programs in Australia, and includes a number of components including active leakage detection and repair, in which the 21,000 km of pipelines are inspected each 12 months, as well as implementing pressure management, and rapid response to leaks and bursts.
2. In the Rous region, there has been a council-by-council approach to leakage management, and some councils have established district metering zones, while others have progressed less.
3. In this case the costs per connection and the savings per connection have been prorated to estimate the costs and savings associated with a fully fledged, regional approach.
4. It is worth noting that an evaluation undertaken by the Institute for Sustainable Futures at UTS of pressure management on the Gold Coast, showed that not only did pressure management significantly reduce burst frequency and leakage, but also reduced water use in houses and businesses, ie beyond the meter, due to reduced flow rates and internal leakage.

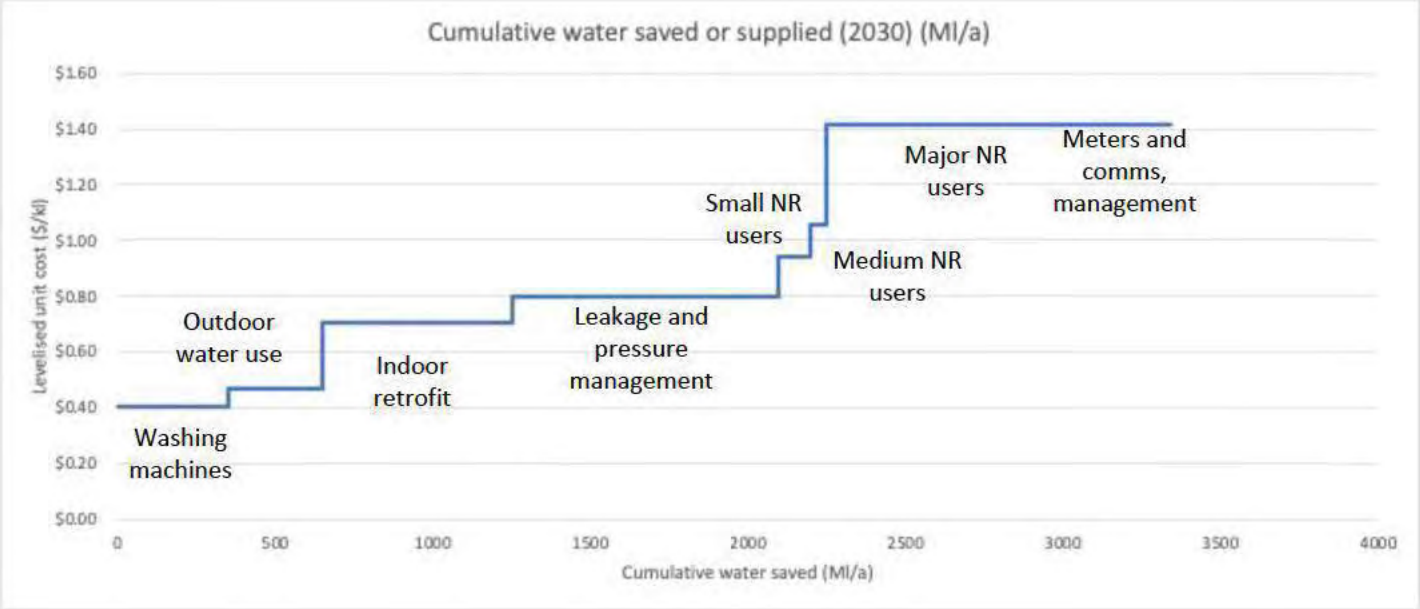
COSTS AND BENEFITS

This table shows the estimated costs, water savings and unit cost for a number of the options modelled as part of an indicative program. The actual program would be designed based on more detailed analysis and with the benefit of more end-use data. This program covers all sectors and end uses, but does not include the potential for non-potable reuse, rainwater or stormwater capture and reuse, contingency or 'real options' consideration of supply options, such as inter-catchment transfers, indirect or direct potable reuse or further groundwater use.

As shown in the next slides, these options deliver sufficient savings to defer the need for the dam to beyond 2040.

The Dunoon Dam would cost more than four times the cost of this program, and in 2030 would usefully supply about 60% of the volume of water. The unit cost of the water usefully supplied by the Dunoon Dam would be about 9 times the unit cost of the water saved by the water efficiency program.

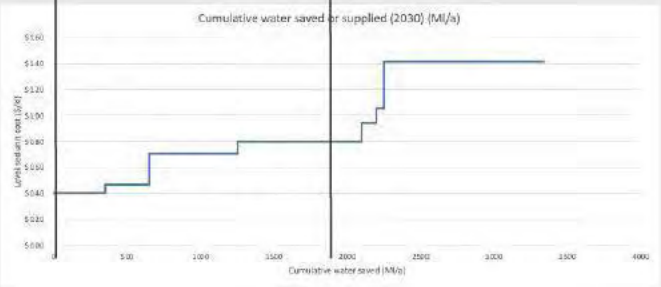
Option	Cost (present value) ($m)	Water saved or supplied (2030) (Ml/a)	Levelised cost ($/kl)
Foundation initiatives	14.4	974	$1.41
Indoor retrofit	5.1	600	$0.71
Outdoor water use program	1.7	300	$0.47
Washing machine program	1.6	350	$0.40
Major users program (top 100)	2.0	120	$1.41
Medium users program (middle 1000)	0.6	50	$1.06
Small users program (all the rest)	1.2	104	$0.94
Leakage and pressure management	9.1	846	$0.80
Total RSWP	35.8	3,344	$0.90
Dunoon Dam	154.3	1,842	$7.75



SUPPLY CURVE - WATER EFFICIENCY OPTIONS

This graph shows the cumulative contribution to reducing the supply demand gap (as at 2030) on the horizontal or x-axis, and the levelised unit cost of the options on the vertical or y-axis. This is a typical 'supply curve', in this case of conserved water, based on the 'total resource cost' of each option. The levelised cost is calculated by dividing the present value of the stream of capital and operating costs from 2021-2060, by the present value of the volume of water saved (or usefully supplied in the case of Dunoon Dam) over the same period and using the same discount rate. In this case the discount rate is 7% based on NSW Treasury guidelines.

Dunoon Dam comparison (unit cost and volume of water supplied in 2030)



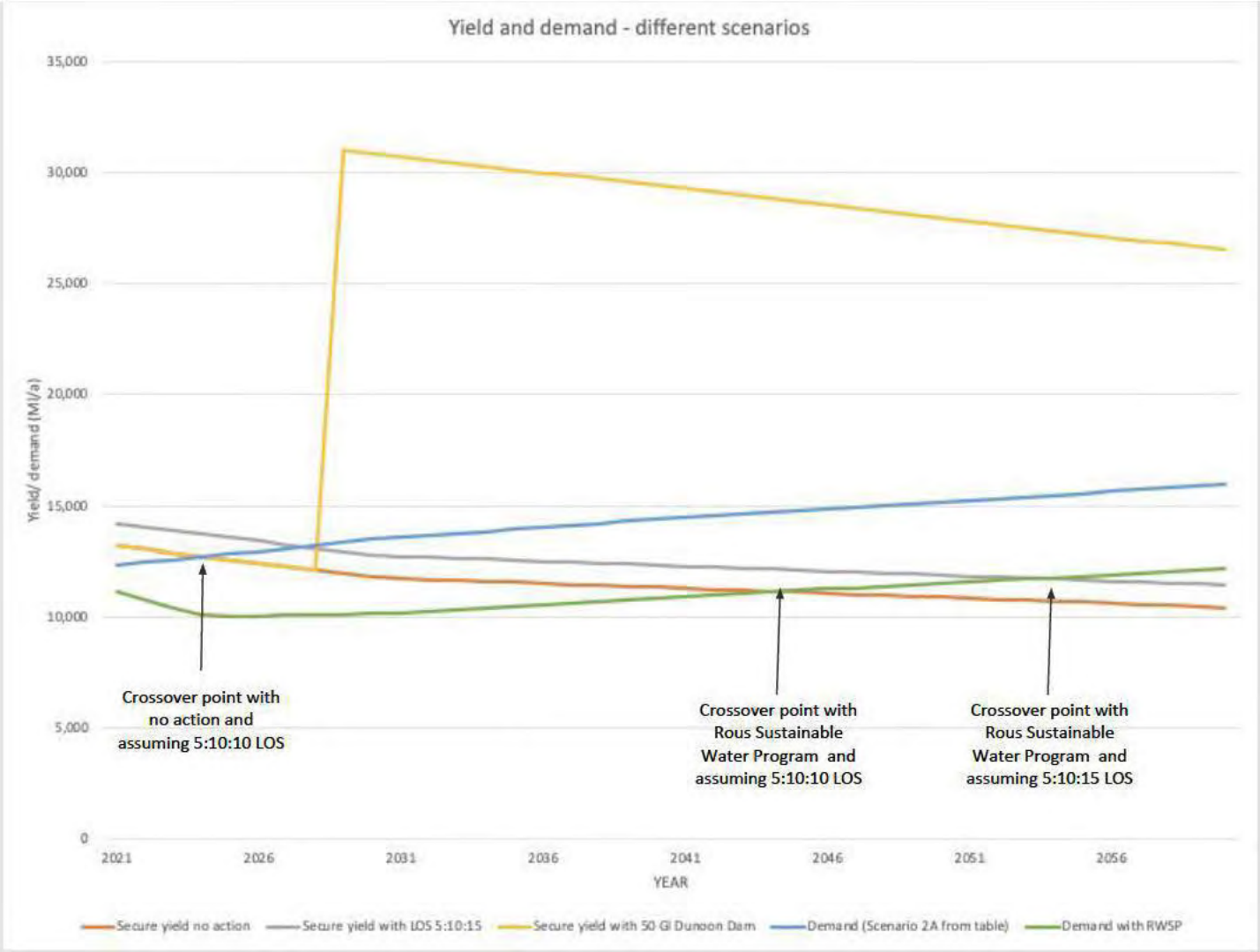
COMPARING WATER EFFICIENCY WITH DUNOON DAM

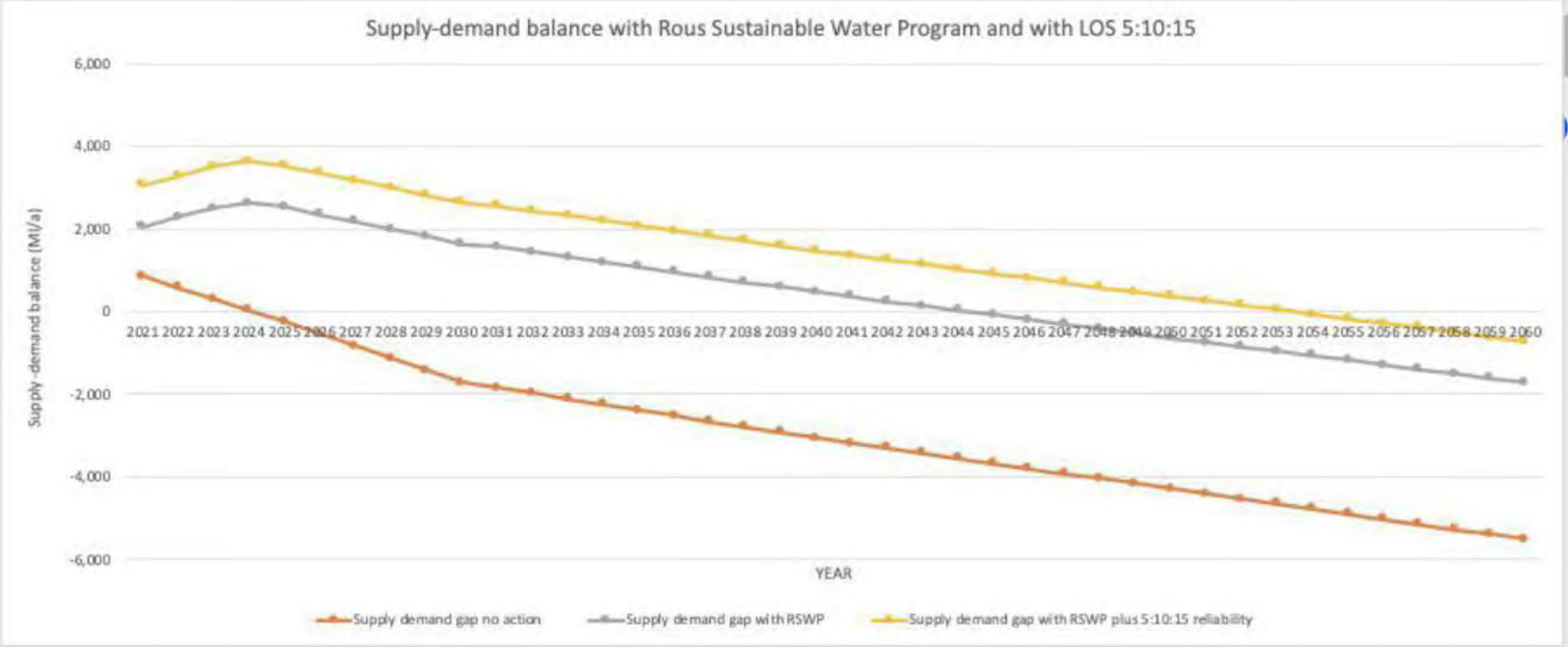
This graph shows the comparison between the unit cost of water usefully supplied by Dunoon Dam (in 2030) compared to the options that form the components of the water efficiency program.

This shows that the unit cost of the water usefully supplied by Dunoon Dam is ~9 times more expensive than the water efficiency program and usefully supplies only 60% of the equivalent demand reduction in 2030 that the water efficiency program would provide.

SECURE YIELD AND PROJECTED DEMAND

1. As indicated in this paper, there are significant uncertainties in the forecasts of secure yield and also the forecast demand. In both cases the planning approach has been cautious, that is, assuming a ~30% reduction in secure yield due to the climate change scenarios, and assuming a level of service, or reliability standard consistent with a 5:10:10 rule. Similarly the demand projections have assumed dry year demand. In this analysis, the yield and demand forecasts have been assumed as stated, using Scenario 2A for the demand forecast, with a minor exception of an apparent error in the brochure for the demand in 2060 of ~400 Ml/a, and an error in Table 2A which overstates the demand by 112 Ml/a across all years from 2025 (the sum of the demand by sector and LWU does not equal the total in the table).
2. The graph on the following slide shows the various projections, including the base case forecast demand (corrected 2A, blue line) and the assumed secure yield (orange line). Note that the supply-demand gap or deficit starts in 2025 and the supply deficit is the gap between the blue and the orange lines.
3. The yellow line shows the secure yield with the Dunoon Dam, as per the brochure, assuming it is able to supply water by 2029. Note that the marginal cost of water from Dunoon Dam is NOT the cost divided by the gap between the yellow and orange lines, but the cost divided by the gap between the blue and the orange lines, that is, the volume of water usefully supplied by the dam.
4. The grey line shows the estimated impact of changing the reliability or level of service from the 5:10:10 rule to 5:10:15 ie increasing the yield through allowing restrictions to occur more often and deeper. This would depend on a robust process of community engagement.
5. The impact of the indicative water efficiency program is shown as the green line, and so the point at which the supply-demand balance goes into deficit is pushed out to 2044, or with the change in level of service, out to 2053. This indicates that there is plenty of headroom, that is, even if the assumptions regarding potential efficiency gains were halved, the point of supply-demand deficit could still be pushed out a decade.


Yield and demand - different scenarios
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
Yield/ demand (Ml/a)
2021
2026
2031
2036
2041
2046
2051
2056
YEAR
Crossover point with no action and assuming 5:10:10 LOS
Crossover point with Rous Sustainable Water Program and assuming 5:10:10 LOS
Crossover point with Rous Sustainable Water Program and assuming 5:10:15 LOS
Secure yield no action
Secure yield with LOS 5:10:15
Secure yield with 50 Gl Dunoon Dam
Demand (Scenario 2A from table)
Demand with RWSP



SUPPLY-DEMAND GAP

This graph shows the gap or difference between demand and secure yield for three scenarios. (1) the orange line is the base case 'no action', showing the supply-demand goes into deficit in 2024 (2) the grey line is with the impact of the indicative water efficiency program, showing the crossover is ~2044, and (3) the yellow line which shows the scenario with the water efficiency program plus changing the reliability or level of service to a 5:10:15 rule, which defers the point of deficit to ~2053.

REFERENCES (1)

This list includes the references in this paper, which is a companion document which provides a brief review of the case for the Dunoon Dam. Further references can be found here.

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[redacted]

From: Terri Nicholson [redacted]
Sent: Wednesday, 9 September 2020 9:25 PM
To: Records
Cc: [redacted]
Subject: [By Jett 7yo] RE: The proposed Dunoon Dam within the Future Water Project 2060

Jett Nicholson-Moss (7yo boy) [redacted] 9th September 2020
Rous County Council,
Lismore NSW 2480
<council@rous.nsw.gov.au>
Dear Rous Councillors and General Manager
Re: The proposed Dunoon Dam within the Future Water Project 2060

Please accept the attached submission by Jett Nicholson-Moss (7yo boy) who has written/drawn a message to you to OBJECT to the proposed dam.

Message says: Hi my name is Jett. 'Damn you dam". I'm seven years old. Don't build the dam please. I care about the birds. Don't flood their nests. From Jett.

Drawing: No Dam - Save the birds.

[redacted]

From: Terri Nicholson [redacted]
Sent: Wednesday, 9 September 2020 10:34 PM
To: Records
Cc: [redacted]
Subject: [By Terri Nicholson) RE: The proposed Dunoon Dam within the Future Water Project 2060

Terri Nicholson
[redacted]
Gender: Female
Age: 44
9th September 2020
Rous County Council,
Lismore NSW 2480
<council@rous.nsw.gov.au>
Dear Rous Councillors and General Manager
Re: The proposed Dunoon Dam within the Future Water Project 2060

Hi, my name is Terri Nicholson, and I have been born and bred [redacted] where I continue to live with my husband and our four kids.

I appreciate how complex the task of water supply is for our community, and we are thankful that the submission period was extended to allow more time for feedback. Even with the extension, the majority of people I have come across had not even heard about the dam, even with Rous's promo. This concerns me, as I do not think there was sufficient time allowed for proper community consultation, especially give COVID restrictions to group meetings/consultation.

I'd like to state clearly that I OBJECT STRONGLY TO THE PROPOSED DAM.

Among the many reasons I do not support this dam proposal, which I'll summarise below, there are personal concerns also.

Social Impact:
Some of my immediate family members would be directly impacted.
My husband grew up [redacted], and where my mother-in-law still lives. Her house is 350m from the proposed wall, and the unknown future of her home and land is definitely causing high stress on top of her heart condition.

The other family members are my parents, Nan and Hugh Nicholson, who live [redacted] 13 storey high dam wall. Independent hydrologists have said that they wouldn't live under a dam like that as it would be too dangerous in potential massive flood events. In cyclone Debbie, the flood water already came to within a meter of their house, so the thought of a massive flood/rain event spilling 8m over the dam wall which is what Rous has allowed for, their entire property would be completely covered.

My children visit their grandparents and explore up and down Rocky Creek where there has been substantial rainforest regeneration projects taking place. This will be impacted by years of construction and destruction.

Other concerns:
I'm going to keep this short as I'm sure you have received many submissions covering concerns regarding loss of ecological, cultural heritage and farm land. I also believe that the destruction of those is unacceptable.

Alternatives I support:

Professor White's "Rous Sustainability Water Program" proposal.
I hope by now all councillors and staff have a copy of Professor Stuart White's documents regarding a system-wide water efficiency program 'Rous Sustainability Water Program'. This expert information is a shift in paradigm which involves valuing water on it's whole journey.
We need to focus on Supply-Demand Balance, not just about increasing supply.
By functionally decreasing usage (demand) through system-wide efficiency measures, we essentially increase the supply available.

By focussing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption. (Metropolitan Water Plan 2006, NSW Government)

He details exactly how to achieve optimal water efficiency in Rous areas, and why the proposed dam is unnecessary and financially risky and unwise.

Please read these as a matter of urgency: www.bit.ly/Prof-Stuart-White-Rous-slides, www.bit.ly/Prof-Stuart-White-Rous-Water-augmentation-proposal

What is the rush to push the dam decision through?

I'd like to see a PAUSE in the push towards a dam as the one big option and an engagement with experienced experts such as Prof. White.

Thorough costing and assessment of a suite of smart options should be laid out before community or councillors can really decide. At the moment they don't have all the information - it's not an informed decision.

This region can be a leader in water reform and innovation. We would love to support you with that.

We can do better than wreck a whole landscape and community for a financially risky and irresponsible dam, which essentially encourages councils to continue to waste water.

Please STOP the proposed dam and any further movement towards that option.

We will continue to raise awareness and help people come to the common-sense conclusion, based on expert information, that the dam should simply not proceed.

Regards,

Terri Nicholson

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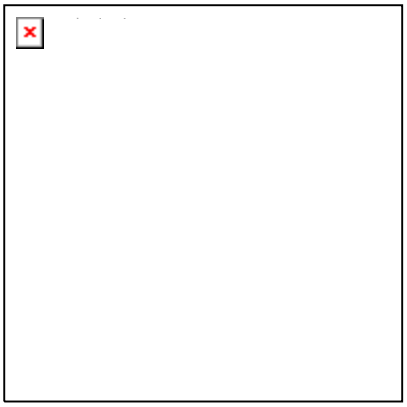

Terri Nicholson

[redacted]

[redacted]

[redacted]

From: howie [redacted]
Sent: Wednesday, 9 September 2020 10:54 PM
To: Records
Subject: Channon dam proposal (future water 2060)

I am writing to strongly oppose the proposed dam, the enormously expensive dam, at Channon-Dunoon area in the Northern Rivers for a number of reasons, firstly because of the destruction of the Whian Whian and Channon Gorges and their unique rainforest and already vulnerable or threatened fauna species

The Whian Whian gorge is the second largest remnant of the mostly already obliterated Gondwana subtropical rainforest and it is critical to maintain the corridor links between the Whian Whian, and Channon and Dunoon and for example specific Koala habitat The gorge is also much loved for its legendary waterfalls which would be destroyed by flooding

Also given the area has significant Aboriginal cultural significance, to what degree have the concerns of indigenous community been seriously fully heard and considered?

In this day and age of looking for efficiency in water use by encouraging water tanks, prudent use and recycling of water, why go for a massively expensive project that will trash the environment, drive up water costs and in the essence not encourage people to be waterwise right at their homes

Here is a quote that highlights this:

● Water harvesting via urban runoff & rainwater tanks: Water tanks on all new (and existing) developments. Remove the rubbish law that prevents urban use of rainwater in the Ballina Shire. (11) This builds much needed community resilience, as the recent extreme bushfire season has shown. The cost of a 22,000L rainwater tank is a mere $2,500. If this were spread over each new 2 person household area (est 12,000 pop by 2060) the cost would be a mere $15 million and combined with automatic-mains top-up, can provide 100% reduction in mains water use! The Australian government advises that: "Depending on tank size and climate, mains water use can be reduced by up to 100%. This in turn can help: reduce the need for new dams or desalination plants; protect remaining environmental flows in rivers; reduce infrastructure operating costs." Rainwater harvesting also decreases stormwater runoff, thereby helping to reduce local flooding and scouring of creeks.

https://www.yourhome.gov.au/water/rainwater

We need Councils and water management authorities to optimise water usage with innovative affordable across-community policies instead of wasting water with outmoded big scale projects that are environmentally destructive, expensive and ultimately inefficient

yours sincerely

Howie Cooke

[redacted]

1)

[redacted]

From: hannah prinn [redacted]
Sent: Wednesday, 9 September 2020 10:59 PM
To: Records
Subject: Dam proposal for the Channon.

Having heard about this over the last couple of weeks I have read an article in the echo and seen some video footage of the proposed site for the dam I have concerns about the idea. I think perhaps more time and resources should be put in investing in ways for people to become more water smart.

Lots of people grow food and have gardens. I think a move towards reusing our water on a local and industrial scale rather than destroying more ecology and sacred land to indigenous people is something to consider...

I have just started to study bush regeneration and am gaining a great passion for it. To hear of how rare, diverse and necessary it is as a seed bank, habitat, spot of beauty, it seems a significant and important ecological system that shouldn't be destroyed.

It will be a real shame and disappointment. If it goes ahead. In my opinion.

[redacted]

From: Sally Cusack [redacted]
Sent: Wednesday, 9 September 2020 9:26 PM
To: Records
Subject: Proposed Dam at Dunoon

Dear Councillors

Please withdraw the plans for this project. While more water needs to be assured for this region, this dam is not the answer. There are so many more effective, modern solutions for dealing with this issue. We are so much more informed and creative in this region than to stoop to such unnecessary destruction of the environment.

Thank you

Sally Cusack
[redacted]

[redacted]

From: Jen Harkness [redacted]
Sent: Wednesday, 9 September 2020 9:21 PM
To: Records
Subject: Proposed dam

Dear Sir, Madam,

I am writing to express my concern regarding the proposed dam between The Channon and Dunoon as described in your 2060 water plan.
The dam would cause the loss of rare sandstone rainforest, endangered species and koalas.
I find this unacceptable since smarter water use would make the dam unnecessary. Much more can be done to collect and store water and to reduce water use in the domestic, agricultural, commercial and industrial sectors.
A comprehensive audit needs to be done in the whole area Rous Water is responsible for compiling all water use, all opportunities to reduce water loss and water waste and all opportunities for water saving measures and improvements in water efficiency, and lastly all possibilities for localised rainwater capture and storage. If this were done, it could be conclusively determined whether a new dam is really necessary or not.
In the light of the current state of deforestation, bushfires and climate change, inundating natural ecosystems is in my opinion never an option.

Respectfully yours,

Jennifer Harkness

[redacted]

From: jasmine scheidler [redacted]
Sent: Wednesday, 9 September 2020 9:36 PM
To: Records
Subject: proposed Dunoon Dam within the Future Water Project 2060 objection
Attachments: Submission JS.docx

9 september 2020
Rous County Councillors

Jasmine Scheidler, Gwanji Monks, Malina Monks, Dennis Monks, Raphael Monks, Ethan Monks.
Kookaburra Community [redacted]

Re: The proposed Dunoon Dam within the Future Water Project 2060

Firstly, I would like to thank you for supporting the extension of the submission date. Also, thank you for managing the amazing dam we already have (Rocky Creek Dam) so well. It is a beautiful site, and the cabinet timber plantation is fantastic.

We are long time Locals, representing 3 generations in the area and 3 generations in Terania Creek.

While climate change and water shortage is understandably an important resource for the future, we do not believe the Dam proposal is the way to safe guard water.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

● **The 21st century is about a suite of smart water options.** This dam would be a lost opportunity to make our system fit for the 21st century. It would swallow all resources in one big expensive 'white dinosaur' project.

● **Alternative solutions have not been assessed comprehensively.** Alternative solutions include de-salination, water tanks, water recycling, etc. This suite of options needs to be fully assessed before deciding to build this dam.

● **The dam would encourage continued inefficient and often wasteful water management by local governments.** They would have no incentive to do things differently.

● **Destruction of important Indigenous cultural heritage,** including burial sites (Cultural Heritage Impact Assessment, 2011)[(2)]. Ongoing disregard for First Nations' heritage. A previous proposal to build this dam was rejected on these grounds.

● **Destruction of The Channon Gorge and its endangered ecological community of lowland rainforest** (including regionally rare warm temperate rainforest on sandstone), and its threatened flora and fauna species. (Terrestrial

Ecology Impact Assessment, 2011)[3].
Rous is planning to offset the loss of rainforest on sandstone with regeneration of degraded land in the buffer zone. Offsetting is problematic because the type of vegetation offered as recompense is never equivalent. This example is worse than most. (Nan Nicholson, botanist)

Councils are required under State planning regulations to: "Focus development to areas of least biodiversity sensitivity in the region and implement the 'avoid, minimise, offset' hierarchy to biodiversity, including areas of high environmental value." NSW Department of Planning, Industry and Environment 2019, 'Delivering the plan', Sydney, viewed 03 August 2020 < https://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans/North-Coast/Delivering-the-plan >, Direction 2: Enhance biodiversity coastal and aquatic habitats and water catchments. [4]

Rous is required to ***avoid*** this destruction because there are economically viable and more effective solutions.

● **Industrial/construction zone** for The Channon/Dunoon community; noise, machinery, trucks, visual impact. Ongoing sound impact from pump house etc. River pollution will be caused by sediment released throughout the building process.

● **Higher prices for consumers due to a 4x increase in the cost of water.** Rous general manager, in response to a question from councillor Vanessa Ekins, said he expected a fourfold increase in the cost of supplying water if the dam is built.

● **The small population increase** predicted for the four Rous-supplied councils of 12,720[5] between 2020-2060 **does not justify** such a large and destructive dam. The dam risks being **an expensive white dinosaur**, diverting expenditure away from more sustainable, flexible, and effective solutions. NSW Department of Planning, Industry and Environment 2019, *'NSW population projections '*, Sydney, viewed 03 August 2020, <https://www.planning.nsw.gov.au/Research-and-Demography/Population-projections/Projections> scroll down to "Local Government Factsheets".[5]

● **Catastrophic flooding downstream in worst floods, particularly for the first 3 kilometres below. (Environmental Flows Assessment 2011)[6]**

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I SUPPORT these alternatives:

I believe we need to examine all the smart water options and proven alternatives available, and act.

The tide is turning on renewable and sustainable power. It is time for the tide to turn on how we meet our water needs too. This is 21st century thinking.

● **An investment in system-wide water efficiency and strong demand management.** Analysed, costed and deployed, creating jobs. (I understand Rous has *not* costed this in creating their future water plan) Existing research over the past decade consistently finds that the best 'bang-for-buck' investment in water supply comes from demand management and identifying savings within the existing supply.[7] [8]

● **Water re-use in various ways,** including Purified Recycled Potable water. A wealth of global research and experience already exists regarding potable reuse of water as set out in Water Research Australia's report, Potable Water Reuse: What can Australia learn from global experience?
https://www.waterra.com.au/publications/document-search/?download=1806[9] Example: The city of Windhoek in Namibia in Southern Africa has been using purified recycled water for 30 years using advanced technology.
https://www.wingoc.com.na/our-history[10]

● **Water harvesting** (urban runoff; rain tanks): Water tanks on all new (and existing) developments.[11] *This builds community resilience - much needed, as the recent extreme bushfire season has shown.*

The Australian government advises that: "Depending on tank size and climate, mains water use can be reduced by up to 100%. This in turn can help: reduce the need for new dams or desalination plants; protect remaining environmental flows in rivers; reduce infrastructure operating costs."

Rainwater harvesting also decreases stormwater runoff, thereby helping to reduce local flooding and scouring of creeks.[12] https://www.yourhome.gov.au/water/rainwater

Rainwater harvesting also decreases stormwater runoff, thereby helping to reduce local flooding and scouring of creeks.[12] https://www.yourhome.gov.au/water/rainwater

How about also looking into water harvesting from the air? A system that does this can be viewed at "The Farm", Byron Bay. See https://www.theland.com.au/story/5678758/fresh-water-from-fresh-air/

● **Groundwater, where this is environmentally safe** The Australian government provides a lot of information on the ecological impacts and groundwater usage.[13] https://www.environment.gov.au/water/publications/what-are-the-ecological-impacts-of-groundwater-drawdown

With scalable supply alternatives in place, the existing supply from Rocky Ck Dam will be made resilient to anticipated times of drought and projected population growth, without the environmental destruction, social costs, and the over-capitalisation risk of an outsized and unnecessary dam.

Thanks so much for your consideration,

Kind regards,

Jasmine Scheidler

Gwanji Monks

Malina Monks

Dennis Monks

Raphael Monks

Ethan Monks

References and Notes

(1) Metropolitan Water Plan 2006, NSW Government. Exec Summary section of the doc

https://www.dropbox.com/s/pu9898oq6kocrph/NSW%20Govt%202006%20MWP%20summary.pdf?dl=0 (2) Ainsworth Heritage, Cultural Heritage Impact Assessment, 2011 (3) SMEC Australia, Terrestrial Ecology Impact Assessment, 2011 (4) NSW Department of Planning, Industry and Environment 2019, 'Delivering the plan', Sydney, viewed 03

August 2020 < https://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans/North-Coast/Delivering-the-plan > , Direction 2: Enhance biodiversity coastal and aquatic habitats and water catchments. (5) NSW Department of Planning, Industry and Environment 2019, *'NSW population projections'*, Sydney,

viewed 03 August 2020, <https://www.planning.nsw.gov.au/Research-and-Demography/Population-projections/Projections> Scroll down to "Local Government Factsheets". (6) Environmental Flows Assessment Proposed Dunoon Dam, 30 Aug 2012, Eco Logical Australia. (7) The Rous Regional Water Efficiency Program 1997, *Final report of the Rous Regional Demand*

Management Strategy: preferred options, Rous County Council, Lismore. (8) Watson R., Turner A and Fane S 2018, *Water Efficiency and Demand Management Opportunities for*

Hunter Water, Institute for Sustainable Futures, Sydney. (9) Kahn, Stuart and Branch, Amos 2019, *Potable water reuse: What can Australia learn from global experience?,* Water Research Australia Limited, Adelaide. (10) Windhoek Goreangab Operating Company (Pty) Ltd 2020*, Our history | Wingoc,* Veolia Environment,

Windhoek, viewed 3 August 2020, <https://www.wingoc.com.na/> (11)$220 million dollars - the estimated cost of the new dam - could provide more than 73,000 rainwater

tanks (22,700L) at $3,000 each including installation. That is 1.66GL storage with no evaporation and much increased community resilience for future climate risks. This more than covers the 0.9GL extra water needed by the 12,720 new people predicted to come to our area based on 194L/person/day average water use (Rous). (12) Australian Government Department of Industry 2013, Science, Energy and Resources, *Rainwater | Your*

home, Canberra, viewed 3 August 2020, <https://www.yourhome.gov.au/water/rainwater> (13)Department of Agriculture, Water and the Environment 2018, *What are the ecological impacts of*

groundwater drawdown? | Department of Agriculture, Water and the Environment, Canberra, viewed 6 August 2020, <https://www.environment.gov.au/water/publications/what-are-the-ecological-impacts-of-groundwater-drawdown>

[redacted]

From: Meg Barron [redacted]
Sent: Wednesday, 9 September 2020 10:32 PM
To: Records
Cc: [redacted]
Subject: Re: : The proposed Dunoon Dam within the Future Water Project 2060

Meg Barron
[redacted]

7th September 2020
Rous County Council,
Lismore NSW 2480
<council@rous.nsw.gov.au>

Dear Rous Councillors and General Manager
Re: The proposed Dunoon Dam within the Future Water Project 2060

Firstly, thankyou for supporting the extension of the submission date. The community appreciates it. We also acknowledge the complexity of what Rous does to provide water to our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:
Lost opportunity to invest in system-wide water efficiency - this is the cheapest & fastest way to ensure supply-demand balance. By focussing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption. (Metropolitan Water Plan 2006, NSW Government) (1)
The 21st century is about a suite of smart water options. This dam would be a lost opportunity to make our system fit for the 21st century. It would swallow all resources in one big expensive 'white dinosaur' project.
The dam would encourage continued inefficient and often wasteful water management by local governments. They would have no incentive to do things differently.
Destruction of important Indigenous cultural heritage, including burial sites (Cultural Heritage Impact Assessment, 2011)(2). Ongoing disregard for First Nations' heritage.
Destruction of The Channon Gorge and its endangered ecological community of lowland rainforest (including regionally rare warm temperate rainforest on sandstone), and its threatened flora and fauna species. (Terrestrial Ecology Impact Assessment, 2011)(3).

Rous is planning to offset the loss of rainforest on sandstone with regeneration of degraded land in the buffer zone. Offsetting is problematic because the type of vegetation offered as recompense is never equivalent. This example is worse than most. (Nan Nicholson, botanist)
Councils are required under State planning regulations to: "Focus development to areas of least biodiversity sensitivity in the region and implement the 'avoid, minimise, offset' hierarchy to biodiversity, including areas of high environmental value." NSW Department of Planning, Industry and Environment 2019, 'Delivering the plan', Sydney, viewed 03 August 2020 < https://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans/North-Coast/Delivering-the-plan >, Direction 2: Enhance biodiversity coastal and aquatic habitats and water catchments. (4)
Rous is required to avoid this destruction because there are economically viable and more effective solutions.

Industrial/construction zone for The Channon/Dunoon community; noise, machinery, trucks, visual impact. Ongoing sound impact from pump house etc.
Higher prices for consumers due to a 4x increase in the cost of water. Rous general manager, in response to a question from councillor Vanessa Ekins, said he expected a fourfold increase in the cost of supplying water if the dam is built.
The small population increase predicted for the four Rous-supplied councils of 12,720(5) between 2020-2060 does not justify such a large and destructive dam. The dam risks being an expensive white dinosaur, diverting expenditure away from more sustainable, flexible and effective solutions. NSW Department of Planning, Industry and Environment 2019, 'NSW population projections ', Sydney, viewed 03 August 2020, <https://www.planning.nsw.gov.au/Research-and-Demography/Population-projections/Projections> scroll down to "Local Government Factsheets".(5)
Catastrophic flooding downstream in worst floods, particularly for the first 3 kilometres below. (Environmental Flows Assessment 2011)(6)
Potential for a big dam to drive unneeded population growth, as the government attempts to gain value from an otherwise unnecessary, and stranded, asset.

I SUPPORT these alternatives:
I believe we need to take action on a suite of smart water options and proven alternatives.
The tide is turning on renewable and sustainable power. It is time for the tide to turn on how we meet our water needs too. This is 21st century thinking.
An investment in system-wide water efficiency and strong demand management. Analysed, costed and deployed, creating jobs. (We understand Rous has not costed this in creating their future water plan)
Existing research over the past decade consistently finds that the best 'bang-for-buck' investment in water supply comes from demand management and identifying savings within the existing supply.(7) (8)
Professor Stuart White from UTS has provided a detailed and costed proposal "The Rous Sustainable Water Program" which shows exactly how and why system-wide optimisation of water use is possible and economical. In comparison, the proposed dam is simply financially, environmentally and socially irresponsible.(9) (Stuart White, 2020 www.bit.ly/Prof-Stuart-White-Rous-slides)
Water re-use in various ways, including Purified Recycled Potable water.
A wealth of global research and experience already exists regarding potable reuse of water as set out in Water Research Australia's report, Potable Water Reuse: What can Australia learn from global experience? https://www.waterra.com.au/publications/document-search/?download=1806(9)
Example: The city of Windhoek in Namibia in Southern Africa has been using purified recycled water for 30 years using advanced technology. https://www.wingoc.com.na/our-history(10)
Water harvesting (urban runoff; rain tanks):
Water tanks on all new (and existing) developments.(11) This builds community resilience - much needed, as the recent extreme bushfire season has shown.
The Australian government advises that: "Depending on tank size and climate, mains water use can be reduced by up to 100%. This in turn can help: reduce the need for new dams or desalination plants; protect remaining environmental flows in rivers; reduce infrastructure operating costs."
Rainwater harvesting also decreases stormwater runoff, thereby helping to reduce local flooding and scouring of creeks.(12) https://www.yourhome.gov.au/water/rainwater
Contingency planning would enable Rous to be ready to rapidly implement supply measures if it becomes necessary in times of drought.
Groundwater, where this is environmentally safe
The Australian government provides a lot of information on the ecological impacts and groundwater usage.(13) https://www.environment.gov.au/water/publications/what-are-the-ecological-impacts-of-groundwater-drawdown
With scalable supply alternatives in place, the existing supply from Rocky Ck Dam will be made resilient to anticipated times of drought and projected population growth, without the environmental destruction, social costs, and the over-capitalisation risk of an outsized and unnecessary dam.
References and Notes
Metropolitan Water Plan 2006, NSW Government. Exec Summary section of the doc
https://www.dropbox.com/s/pu9898oq6kocrph/NSW%20Govt%202006%20MWP%20summary.pdf?dl=0
Ainsworth Heritage, Cultural Heritage Impact Assessment, 2011
SMEC Australia, Terrestrial Ecology Impact Assessment, 2011

NSW Department of Planning, Industry and Environment 2019, 'Delivering the plan', Sydney, viewed 03 August 2020 < https://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans/North-Coast/Delivering-the-plan > ,
Direction 2: Enhance biodiversity coastal and aquatic habitats and water catchments.
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Environmental Flows Assessment Proposed Dunoon Dam, 30 Aug 2012, Eco Logical Australia.
The Rous Regional Water Efficiency Program 1997, Final report of the Rous Regional Demand Management Strategy : preferred options, Rous County Council, Lismore.
Watson R., Turner A and Fane S 2018, Water Efficiency and Demand Management Opportunities for Hunter Water, Institute for Sustainable Futures, Sydney.
Stuart White, 2020 www.bit.ly/Prof-Stuart-White-Rous-slides)
Kahn,Stuart and Branch, Amos 2019, Potable water reuse: What can Australia learn from global experience?, Water Research Australia Limited, Adelaide.
Windhoek Goreangab Operating Company (Pty) Ltd 2020,Our history | Wingoc, Veolia Environment, Windhoek, viewed 3 August 2020, <https://www.wingoc.com.na/>
$220 million dollars - the estimated cost of the new dam - could provide more than 73,000 rainwater tanks (22,700L) at $3,000 each including installation. That is 1.66GL storage with no evaporation and much increased community resilience for future climate risks. This more than covers the 0.9GL extra water needed by the 12,720 new people predicted to come to our area based on 194L/person/day average water use (Rous).
Australian Government Department of Industry 2013, Science, Energy and Resources, Rainwater | Your home, Canberra, viewed 3 August 2020, <https://www.yourhome.gov.au/water/rainwater>
Department of Agriculture, Water and the Environment 2018, What are the ecological impacts of groundwater drawdown? | Department of Agriculture, Water and the Environment, Canberra, viewed 6 August 2020, <https://www.environment.gov.au/water/publications/what-are-the-ecological-impacts-of-groundwater-drawdown>

[redacted]

From: Isabel Lucas [redacted]
Sent: Wednesday, 9 September 2020 10:09 PM
To: Records
Cc: [redacted]
Subject: RE: The proposed Dunoon Dam within the Future Water Project 2060

Dear Rous Councillors and General Manager,
Re: The proposed Dunoon Dam within the Future Water Project 2060

Firstly, thankyou for supporting the extension of the submission date. I also acknowledge the complexity of what Rous does to provide water to our region.

I do not support the proposed The Channon-Dunoon Dam for these reasons:

- **Higher prices for consumers due to a 4x increase** in the cost of water. In response to a question from councillor Vanessa Ekins, Mr Rudd said he expected a fourfold increase in the cost of supplying water if the dam is built. [Phil Rudd, Rous general manager]
- The **small population increase** predicted for the four Rous-supplied councils of 12,720 (5) between 2020-2060 **does not justify such a large and destructive dam**. The dam risks being an **expensive white dinosaur**, diverting expenditure away from more sustainable, flexible and effective solutions. NSW Department of Planning, Industry and Environment 2019, 'NSW population projections ', Sydney, viewed 03 August 2020, <https://www.planning.nsw.gov.au/Research-and-Demography/Population-projections/Projections> scroll down to "Local Government Factsheets".(5)
- **Lost opportunity to invest in system-wide water efficiency** - this is the **cheapest** & **fastest** way to ensure we all have enough water. By focusing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption for 25 years. (Metropolitan Water Plan 2006, NSW Government) (1)
- The **21st century is about a suite of smart water options**. This dam would be a lost opportunity to make our system fit for the 21st century. It would swallow all resources in one big expensive and risky 'white dinosaur' project.
- The **dam would encourage continued inefficient and often wasteful water management** by local governments. They would have no incentive to do things better.
- **Destruction of beautiful Whian Whian Gorge**, the second largest remnant of the 99% cleared Gondwanna Sub-Tropical Rainforest. At more than 60ha this represents over 10% of this precious habitat and is 40% the size of the World Heritage recognised Big Scrub Flora Reserve to which it connects geographically, 7 kms downstream from the Rocky Creek Dam.
- **Destruction of beautiful The Channon Gorge** and its endangered ecological community of lowland rainforest (including regionally rare warm temperate rainforest on sandstone), and its threatened flora and fauna species. [Terrestrial Ecology Impact Assessment, 2011]

Rous is planning to offset the loss of rainforest on sandstone with regeneration of degraded land in the buffer zone."'Offsetting' with similar plantings is problematic because the type of vegetation offered as recompense is never equivalent. This example is worse than most." [Nan Nicholson, botanist]
Councils are required under State planning regulations to:
1. "Focus development to areas of least biodiversity sensitivity in the region and implement the 'avoid, minimise, offset' hierarchy to biodiversity, including areas of high environmental value."
[NSW Department of Planning, Industry and Environment 2019, 'Delivering the plan', Sydney, viewed 03August2020 https://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans/North-Coast/Delivering-the-plan],
2. Enhance biodiversity coastal and aquatic habitats and water catchments. (4)Rous is required to avoid this destruction because there are economically viable and more effective solutions.

● **Catastrophic flooding downstream** in worst floods, particularly for the first 3 kilometres below. (Environmental Flows Assessment 2011)(6)
● **Flooding of half of the popular Whian Whian Falls recreational area**. This involves Aboriginal women's ceremonial pools, and in high rainfall periods would make the main Falls unusable.
● **Accelerate extinction of a multitude of vulnerable species**. Extinction level pressures on 3 vulnerable fish species due to destruction of 6kms and genetic islanding of over 18 kms of migratory native fish habitat. Extinction pressure on 19 threatened plant species, and 24 threatened fauna species. [As recorded within the 2011 Rous Ecological Surveys].
● **Koala habitat and important "corridors"** connecting Whian Whian, Dunoon and The Channon populations.
● **Geotechnical considerations**: basalt soil landslides and sandstone leakage with potential dam failure & massive cost blowouts.
[Interview with Michael Mackenzie, Rous Engineer on 20.08.20]
●**Destruction of important Indigenous cultural heritage**, including burial sites (Cultural Heritage Impact Assessment, 2011) (2) . Ongoing disregard for First Nations' heritage.

I SUPPORT these alternatives:
I believe we need to take action on a suite of smart water options and proven alternatives. The tide is turning on renewable and sustainable resource use. It is time for the tide to turn on how we meet our water needs too. This is 21st century thinking.
● An **investment in system-wide water efficiency and strong demand management**. Analysed, costed and deployed, creating jobs. (We understand Rous has not costed this in creating their future water plan). Existing research over the past decade consistently finds that the best value for money investment in water supply comes from demand management and identifying savings within the existing supply. (7) (8)
● **Water reuse** in various ways, including Purified Recycled Potable water. A wealth of global research and experience already exists regarding potable reuse of water as set out in Water Research Australia's report, Potable Water Reuse: What can Australia learn from global experience? https://www.waterra.com.au/publications/document-search/?download=1806 (9) Example: The city of Windhoek in Namibia in Southern Africa has been using purified recycled water for 30 years using advanced technology. https://www.wingoc.com.na/our-history (10)
● **Water harvesting via urban runoff & rainwater tanks**: Water tanks on all new (and existing) developments. Remove the rubbish law that prevents urban use of rainwater in the Ballina Shire. (11) This builds much needed community resilience, as the recent extreme bushfire season has shown. The cost of a 22,000L rainwater tank is only $2,500. If this were spread over each new 2 person household (est 13,000 pop by 2060) the cost would be a mere $16 million, and combined with automatic-mains top-up, can provide 100% reduction in mains water use! The Australian government advises that: "Depending on tank size and climate, mains water use can be reduced by up to 100%. This in turn can help: reduce the need for new dams or desalination plants; protect remaining environmental flows in rivers; reduce infrastructure operating costs." Rainwater harvesting also decreases stormwater runoff, thereby helping to reduce local flooding and scouring of creeks.
(12) https://www.yourhome.gov.au/water/rainwater
● **Deep underground water storage with surface runoff integration**.
[https://www.abc.net.au/news/2020-03-04/water-banking-aquifers-australia-facing-future-drought/12009702]
[Dillon, P, Stuyfzand, P, Grischek, T et al 2019, 'Sixty years of global progress in managed aquifer recharge', Hydrogeology Journal, vol. 27, no. 1, pp. 1-30.]
[Ross, A 2017, 'Speeding the transition towards integrated groundwater and surface water management in Australia', Journal of Hydrology, vol. Article in press.]
● **Contingency planning** would enable Rous to be ready to rapidly implement supply measures if it becomes necessary in times of drought. Multiple sources of water rather than putting all our "eggs in one basket" (ie: million$), allows us to route around any points of failure in the water system.
● **Groundwater**, where this is environmentally safe The Australian government provides a lot of information on the ecological impacts and groundwater usage. (13) The Regional Investment Corporation (RIC) which administers the National Water Infrastructure Loan Facility allow up to 49% lending towards: groundwater and managed aquifer recharge supply schemes and water treatment, including desalination, storage and reuse.
[https://www.environment.gov.au/water/publications/what-are-the-ecological-impacts-of-groundwater-drawdown]

With scalable supply alternatives in place, the **existing supply** from Rocky Ck Dam will be made **resilient** to anticipated times of drought and projected population growth, **without** the environmental destruction, social costs, and the over-capitalisation risk of an outsized and unnecessary dam.

Thank you for taking the time to read this.

Sincerely,
Isabel Lucas

[redacted]

[redacted]

From: [redacted]
Sent: Wednesday, 9 September 2020 9:55 PM
To: Records
Cc: [redacted]
Subject: Re proposed Dunoon dam with future water project 2060

CYBER SECURITY WARNING – This message is from an external sender – be cautious, particularly with hyperlinks and/or attachments.

Tim Childs
[redacted]

9th September 2020
Rous County Council, Lismore NSW 2480 <council@rous.nsw.gov.au>

Dear Rous Councillors and General Manager
Re: The proposed Dunoon Dam within the Future Water Project 2060

I have been a resident in the northern rivers for nearly 20 years and over that time have come to value and appreciate the unique and incredible land we share here. Once existing flora and fauna is gone...it's gone.. there is no going back, surely with everything we have learnt about The impact we are having on biodiversity, the impact Of the way we treat the land and animals we share this planet With, we must make decisions as custodians to secure a future that is about sustainability, compassion and kindness, Where value of cultural heritage and endangered species must over ride continued growth and consumption.

Thankyou for supporting the extension of the submission date. We also acknowledge the complexity of what Rous does to provide water to our region.
I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:
• Lost opportunity to invest in system-wide water efficiency - this is the cheapest & fastest way to ensure supply-demand balance. By focussing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption. (Metropolitan Water Plan 2006, NSW
(1)
• The 21st century is about a suite of smart water options. This dam would be a lost opportunity to make our system fit for the 21st century. It would swallow all resources in one big expensive 'white dinosaur' project.
• The dam would encourage continued inefficient and often wasteful water management by local governments. They would have no incentive to do things differently.
Government)
• Destruction of important Indigenous cultural heritage, including burial sites (Cultural (2) Heritage Impact Assessment, 2011) . Ongoing disregard for First Nations' heritage.
• Destruction of The Channon Gorge and its endangered ecological community of lowland rainforest (including regionally rare warm temperate rainforest on sandstone), and its (3) threatened flora and fauna species. (Terrestrial Ecology Impact Assessment, 2011) .
Rous is planning to offset the loss of rainforest on sandstone with regeneration of degraded land in the buffer zone. Offsetting is problematic because the type of vegetation offered as recompense is never equivalent. This example is worse than most. (Nan Nicholson, botanist) Councils are required under State planning regulations to: "Focus development to areas of least biodiversity sensitivity in the region and implement the 'avoid, minimise, offset' hierarchy to biodiversity, including areas of high environmental value." NSW Department of Planning, Industry and

Environment 2019, 'Delivering the plan', Sydney, viewed 03 August 2020 < https://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans/North-Coast/Delivering-t
he-plan >, Direction 2: Enhance biodiversity coastal and aquatic habitats and water
(4) catchments.
Rous is required to avoid this destruction because there are economically viable and more effective solutions.

● Industrial/construction zone for The Channon/Dunoon community; noise, machinery, trucks, visual impact. Ongoing sound impact from pump house etc.
● Higher prices for consumers due to a 4x increase in the cost of water. Rous general manager, in response to a question from councillor Vanessa Ekins, said he expected a fourfold increase in the cost of supplying water if the dam is built.
(5)
● The small population increase predicted for the four Rous-supplied councils of 12,720 between 2020-2060 does not justify such a large and destructive dam. The dam risks being an expensive white dinosaur, diverting expenditure away from more sustainable, flexible and effective solutions. NSW Department of Planning, Industry and Environment 2019, 'NSW population projections ', Sydney, viewed 03 August 2020, < https://www.planning.nsw.gov.au/Research-and-Demography/Population-projections/Projecti
(5) ons> scroll down to "Local Government Factsheets". ● Catastrophic flooding downstream in worst floods, particularly for the first 3 kilometres (6) below. (Environmental Flows Assessment 2011) ● Potential for a big dam to drive unneeded population growth, as the government attempts to gain value from an otherwise unnecessary, and stranded, asset.
I SUPPORT these alternatives:
I believe we need to take action on a suite of smart water options and proven alternatives.
The tide is turning on renewable and sustainable power. It is time for the tide to turn on how we meet our water needs too. This is 21st century thinking.
● An investment in system-wide water efficiency and strong demand management.
Analysed, costed and deployed, creating jobs. (We understand Rous has not costed this in creating their future water plan) Existing research over the past decade consistently finds that the best 'bang-for-buck' investment in water supply comes from demand management and identifying savings within
(7) (8)
Professor Stuart White from UTS has provided a detailed and costed proposal "The Rous Sustainable Water Program" which shows exactly how and why system-wide optimisation of water use is possible and economical. In comparison, the proposed dam is simply financially,
(9)
environmentally and socially irresponsible. (Stuart White, 2020 www.bit.ly/Prof-Stuart-White-Rous-slides)
● Water re-use in various ways, including Purified Recycled Potable water.
A wealth of global research and experience already exists regarding potable reuse of water as set out in Water Research Australia's report, Potable Water Reuse: What can Australia learn from global experience?
the existing supply.

https://www.waterra.com.au/publications/document-search/?download=1806
Example: The city of Windhoek in Namibia in Southern Africa has been using purified recycled
(10)
● Water harvesting (urban runoff; rain tanks):
Water tanks on all new (and existing) developments. This builds community resilience - much needed, as the recent extreme bushfire season has shown.
The Australian government advises that: "Depending on tank size and climate, mains water use can be reduced by up to 100%. This in turn can help: reduce the need for new dams or desalination plants; protect remaining environmental flows in rivers; reduce infrastructure operating costs."
Rainwater harvesting also decreases stormwater runoff, thereby helping to reduce local (12) flooding and scouring of creeks. https://www.yourhome.gov.au/water/rainwater
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(13)
With scalable supply alternatives in place, the existing supply from Rocky Ck Dam will be made resilient to anticipated times of drought and projected population growth, without the environmental destruction, social costs, and the over-capitalisation risk of an outsized and unnecessary dam.
water for 30 years using advanced technology. https://www.wingoc.com.na/our-history
groundwater usage. https://www.environment.gov.au/water/publications/what-are-the-ecological-impacts-of-ground water-drawdown (11)
(9)

References and Notes

(1) Metropolitan Water Plan 2006, NSW Government. Exec Summary section of the doc https://www.dropbox.com/s/pu9898oq6kocrph/NSW%20Govt%202006%20MWP%20summary.pdf?dl=0
(2) Ainsworth Heritage, Cultural Heritage Impact Assessment, 2011
(3) SMEC Australia, Terrestrial Ecology Impact Assessment, 2011
(4) NSW Department of Planning, Industry and Environment 2019, 'Delivering the plan', Sydney, viewed 03 August 2020 < https://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans/North-Coast/Delivering-the-plan > , Direction 2: Enhance biodiversity coastal and aquatic habitats and water catchments.
(5) NSW Department of Planning, Industry and Environment 2019, 'NSW population projections ', Sydney, viewed 03 August 2020, <https://www.planning.nsw.gov.au/Research-and-Demography/Population-projections/Projections> Scroll down to "Local Government Factsheets".
(6) Environmental Flows Assessment Proposed Dunoon Dam, 30 Aug 2012, Eco Logical Australia.
(7) The Rous Regional Water Efficiency Program 1997, Final report of the Rous Regional Demand Management Strategy : preferred options, Rous County Council, Lismore.
(8) Watson R., Turner A and Fane S 2018, Water Efficiency and Demand Management Opportunities for Hunter Water, Institute for Sustainable Futures, Sydney.
(9) Stuart White, 2020 www.bit.ly/Prof-Stuart-White-Rous-slides)
(10)Kahn,Stuart and Branch, Amos 2019, Potable water reuse: What can Australia learn from global experience?, Water Research Australia Limited, Adelaide. (11)WindhoekGoreangabOperatingCompany(Pty)Ltd2020 ,Ourhistory|Wingoc,V eoliaEnvironment, Windhoek, viewed 3 August 2020, <https://www.wingoc.com.na/>
(12)$220 million dollars - the estimated cost of the new dam - could provide more than 73,000 rainwater tanks (22,700L) at $3,000 each including installation. That is 1.66GL storage with no evaporation and much increased community resilience for future climate risks. This more than covers the 0.9GL extra water needed by the 12,720 new people predicted to come to our area based on 194L/person/day average water use (Rous).
(13)Australian Government Department of Industry 2013, Science, Energy and Resources, Rainwater | Your home, Canberra, viewed 3 August 2020, <https://www.yourhome.gov.au/water/rainwater>
(14)Department of Agriculture, Water and the Environment 2018, What are the ecological impacts of groundwater drawdown? | Department of Agriculture, Water and the Environment, Canberra, viewed 6 August 2020, < https://www.environment.gov.au/water/publications/what-are-the-ecological-impacts-of-groundwater-dr awdown >

Sent from my iPad

[redacted]

From: Peter Maher [redacted]
Sent: Wednesday, 9 September 2020 9:04 PM
To: [redacted]
Subject: Re: Proposed Dunoon Dam

NEW INFORMATION

Further to my email objecting to the proposed Dunoon Dam

I live at [redacted]

I have learned today that the proposed reservoir level will be at RL 82.5
According to the topographical map. my house is located at RL 60 approx and is about 900m West of the location of the proposed dam wall.
We are on porous sandstone.
In very wet times before the drought, we had many small springs on our property.
My concern is that the creation of the reservoir could lead to many larger springs on our property which are likely to cause severe damage to the very thin coating of sandy soil.
In the event of that occurring, I would seek compensation.

Have any geological studies been done to indicate whether new aquifers could result from the building of the proposed dam?

Please reply
Peter Maher

On Sat, Sep 5, 2020 at 6:17 PM Peter Maher <pjpmaher@gmail.com> wrote:

> Dear Councillor
>
> I am Peter Maher
> I live at [redacted]
> I have lived here for about 30 years, paying land rates and water rates to Lismore City Council.
>
> I am writing to **OBJECT TO THE PROPOSED DUNOON DAM**.
>
> My main focus is that the proposed Dunoon Dam is unnecessary.
>
> NSW Dept of Planning website has given me population figures for the four shires (Ballina, Byron Bay, Lismore and Richmond Valley) which I have aggregated.
>
> Population in 2016 was 144250
> in 2041 projected to be 151700, an increase of 7950 or 5.5%. increase in 25 years.
> A further 5.5% increase over 25 yrs suggests a population of 160043 in 2066

(since these are pre-covid19 figures we should actually expect lower population growth due to the slump in immigration)

Rous County Council's website tells me that Rocky Ck Dam holds 14000ML and Emigrant Ck Dam holds 820ML.

That is 103000L per person in 2016.
If a 50000ML dam is added, THAT GIVES US 405000L per person in 2066.

We clearly do not need that much water.

I also have objections to:
* the loss of biodiversity and habitat,

* the loss of farmland in the reservoir,

* the loss of environmental flows,

* the loss of flows for the farmers downstream on Rocky Creek and Terania Creek along Keerong Rd,

* the increased risk of flooding for my neighbours on The Channon Road downstream of Robertsons Bridge,as well as residents of The Channon village, and the family who lives immediately downstream of the proposed dam wall,
and

* the loss of amenity to residents of The Channon Road , Dunoon Road, Fraser Road and Munro Road during construction,

Furthermore
Ecological has done an *Environmental Flows Assessment (2012)* and an *Aquatic Ecology Assessment (2012).*
Neither of these documents makes any reference to environmental effects of the proposed pipeline and construction access.

Nor has there been an assessment of the effects of the proposed dam on indigenous heritage.

Nor has there been an assessment of the benefits of water saving measures, including, but not limited to, fixing pipeline leaks.

If after all the submissions have been considered, you decide to proceed with the dam anyway, why not build it at the upstream end of The Channon Gorge?
We would get a smaller reservoir and much less environmental destruction.

Regards
Peter Maher

[redacted]

From: Prue Ritchie [redacted]
Sent: Wednesday, 9 September 2020 9:06 PM
To: Records
Cc: [redacted]
Subject: RE: The proposed Dunoon Dam within the Future Water Project 2060

Prue A. Ritchie
[redacted]

9th September, 2020
Rous County Council,
Lismore NSW 2480
council@rous.nsw.gov.au

Dear Rous Councillors and General Manager

Re: The proposed Dunoon Dam within the Future Water Project 2060

I am writing to oppose the construction of the proposed Dunoon Dam. A 50 gigalitre dam extending 6km upstream of the dam wall, that destroys First Nations' heritage, and social and ecological assets within its footprint (and beyond) is an old world response (and not a solution) to a new world problem. The impacts of which cannot be off-set by tree planting. There are alternative options including but not limited to: water efficiency, water harvesting, and water re-use that are economically viable and warrant continued investigation rather than dismissal, as Rous County Council prioritises and promotes the Dunoon Dam as it's top choice for water security into the future.

Rocky Creek has seen child births and christenings. It has seen children tyre-riding down its waters for kms to be picked up by parents at the end of the day – enriched by nature, physically spent. It has seen the gatherings of loved ones in forested shade on 45°C Summer days. It has seen silent, dawn platypus-spotting as the mist and birdcall rises. And it has seen the ashes of loved ones loosed to its care - for we believed it would always be here for us.

We will fight to save our connection to place, we will fight to save Rocky Creek, because the provision of water and water security need not be reliant on yet another dam. We acknowledge the complexity of

providing water and water security to the region and respectfully request that alternatives to the Dunoon Dam continue to be investigated.

The reasons I DO NOT support the proposed Dunoon Dam include the following:

- **Lost opportunity to invest in system-wide water efficiency** - the most rapid and economical way to ensure a balance of supply and demand. Sydney has demonstrated that a focus on system efficiency can allow for population growth (citing an additional 950,000 people) without a rise in water consumption. (Metropolitan Water Plan, 2006, NSW Government) [1]
- **There are several water efficiency options** that would be preferable to The Dunoon Dam and support a system-wide approach to water efficiency. Analysis carried out by Rouse of these options and cost investment has, to date, been inadequate. (Professor Stewart White, 2020, UTS, Sydney).
- **Poor water management by local government would be perpetuated** by the dam rather than analysis, intervention, and investment being directed into 21st century solutions for water security in the region.
- **Destruction of a 6-7 hectares of a listed, critically endangered ecological community** of flaura (Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)) – Lowland Rainforest of Subtropical Australia. Even rarer for this region as it includes warm temperate rainforest on sandstone.
- **Destruction The Channon Gorge and ~55 hectares of Big Scrub Rainforest remnant.** Only 1% of The Big Scrub remains and this 55 hectares of Big Scrub is of huge ecological importance and value. It has avoided centuries of post-colonial destruction to now be threatened by Rous County Council for an unnecessary dam.

- **Disregard and destruction of First Nations' cultural heritage** on Widjabal/Wi-abal country of The Bundjalung Nation**,** including significant burial sites and artifacts (Cultural Heritage Impact Assessment, 2011)*(2)*.

- **Destruction and fragmentation of existing habitat and wildlife corridors** of high importance for the movement of fauna, as key habitat and for biodiversity of flora and fauna (including conservation species) (McNally et.al., 2000; Jensen and Robertson, 2001; Landmark Ecological Services, 2012).

- **The proposed dam is the antithesis of "the six guiding principles under the Part 3A assessment process (DEC and DPI 2005).** These principles are, to: Maintain or improve biodiversity values; Conserve biological diversity and promote ecologically sustainable development; Protect areas of high conservation value; Prevent the extinction of threatened species; Protect the long-term viability of local populations of a species, population or ecological community; and Protect aspects of the environment that are matters of national environmental significance" (SMEC, 2011).

- **Offsets cannot mitigate the permanent ecological damage** and changes in the ecosystem, lack of recovery, trans-boundary effects and cumulative effects this dam project will cause.

- **Rous is required to *avoid* this destruction because there are economically viable and more effective solutions that do not have the following:**
    - **Industrial/construction zone** for The Channon/Dunoon community; noise, machinery, trucks, visual impact. Ongoing sound impact from pump house etc.
    - **Higher prices for consumers due to a 4x increase in the cost of water.** Rous general manager, in response to a question from councillor Vanessa Ekins, said he expected a fourfold increase in the cost of supplying water if the dam is built.
    - **The small population increase** predicted for the four Rous-supplied councils of 12,720(5) between 2020-2060 does not justify such a large and destructive dam. The dam risks being an expensive white dinosaur, diverting expenditure away from more sustainable, flexible and effective solutions. NSW Department of Planning, Industry and Environment 2019, *'NSW population projections* ', Sydney, viewed 03 August 2020, <https://www.planning.nsw.gov.au/Research-and-Demography/Population-projections/Projections> scroll down to "Local Government Factsheets".(5)
    - **Catastrophic flooding downstream in worst floods,** particularly for the first 3 kilometres below. (Environmental Flows Assessment 2011)(6)
    - **Potential for a big dam to drive unneeded population growth,** as the government attempts to gain value from an otherwise unnecessary, and stranded, asset.

Councils are required under State planning regulations to: "Focus development to areas of least biodiversity sensitivity in the region and implement the 'avoid, minimise, offset' hierarchy to biodiversity, including areas of high environmental value." NSW Department of Planning, Industry and Environment 2019, 'Delivering the plan', Sydney, viewed 03 August 2020 < https://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans/North-Coast/Delivering-the-plan >, Direction 2: Enhance biodiversity coastal and aquatic habitats and water catchments. (4)

I SUPPORT these alternatives:

To take action on a suite of smart water options and proven alternatives.

The tide is turning on renewable and sustainable power. It is time for the tide to turn on how we meet our water needs too. This is 21st century thinking.

- **An investment in system-wide water efficiency and strong demand management.** Analysed, costed and deployed, creating jobs. (We understand Rous has *not* costed this in creating their future water plan)

  Existing research over the past decade consistently finds that the best 'bang-for-buck' investment in water supply comes from demand management and identifying savings within the existing supply.*(7) (8)*

  Professor Stuart White from UTS has provided a detailed and costed proposal "The Rous Sustainable Water Program" which shows exactly how and why system-wide optimisation of water use is possible and economical. In comparison, the proposed dam is simply financially, environmentally and socially irresponsible.*(9)* (Stuart White, 2020 www.bit.ly/Prof-Stuart-White-Rous-slides)

- **Water re-use in various ways,** including Purified Recycled Potable water.
  A wealth of global research and experience already exists regarding potable reuse of water as set out in Water Research Australia's report, Potable Water Reuse: What can Australia learn from global experience? https://www.waterra.com.au/publications/document-search/?download=1806*(9)*
  Example: The city of Windhoek in Namibia in Southern Africa has been using purified recycled water for 30 years using advanced technology. https://www.wingoc.com.na/our-history*(10)*
- **Water harvesting** (urban runoff; rain tanks):
  Water tanks on all new (and existing) developments.*(11) This builds community resilience - much needed, as the recent extreme bushfire season has shown.*

The Australian government advises that: "Depending on tank size and climate, mains water use can be reduced by up to 100%. This in turn can help: reduce the need for new dams or desalination plants; protect remaining environmental flows in rivers; reduce infrastructure operating costs."
Rainwater harvesting also decreases stormwater runoff, thereby helping to reduce local flooding and scouring of creeks.*(12)* https://www.yourhome.gov.au/water/rainwater

- **Contingency planning** would enable Rous to be ready to rapidly implement supply measures if it becomes necessary in times of drought.
- **Groundwater, where this is environmentally safe**
  The Australian government provides a lot of information on the ecological impacts and groundwater usage.*(13)*
  https://www.environment.gov.au/water/publications/what-are-the-ecological-impacts-of-groundwater-drawdown

With scalable supply alternatives in place, the existing supply from Rocky Ck Dam will be made resilient to anticipated times of drought and projected population growth, without the environmental destruction, social costs, and the over-capitalisation risk of an oversized and unnecessary dam.

References and Notes

1. Metropolitan Water Plan 2006, NSW Government. Exec Summary section of the doc https://www.dropbox.com/s/pu9898oq6kocrph/NSW%20Govt%202006%20MWP%20summary.pdf?dl=0
2. Ainsworth Heritage, Cultural Heritage Impact Assessment, 2011
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6. Environmental Flows Assessment Proposed Dunoon Dam, 30 Aug 2012, Eco Logical Australia.

7. The Rous Regional Water Efficiency Program 1997, *Final report of the Rous Regional Demand Management Strategy : preferred options*, Rous County Council, Lismore.
8. Watson R., Turner A and Fane S 2018, *Water Efficiency and Demand Management Opportunities for Hunter Water*, Institute for Sustainable Futures, Sydney.
9. Stuart White, 2020 www.bit.ly/Prof-Stuart-White-Rous-slides)
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11. Windhoek Goreangab Operating Company (Pty) Ltd 2020,*Our history | Wingoc,* Veolia Environment, Windhoek, viewed 3 August 2020, <https://www.wingoc.com.na/>
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14. Department of Agriculture, Water and the Environment 2018, *What are the ecological impacts of groundwater drawdown? | Department of Agriculture, Water and the Environment,* Canberra, viewed 6 August 2020, <https://www.environment.gov.au/water/publications/what-are-the-ecological-impacts-of-groundwater-drawdown>

[redacted]

From: Fiona Strelan [redacted]
Sent: Wednesday, 9 September 2020 9:25 PM
To: Records
Cc: [redacted]
Subject: RE: The proposed Dunoon Dam within the Future Water Project 2060

Fiona Strelan
[redacted]

9th September 2020
Rous County Council,
Lismore NSW 2480
council@rous.nsw.gov.au

Dear Rous Councillors and General Manager
Re: The proposed Dunoon Dam within the Future Water Project 2060

I have lived in and around the [redacted] for a number of years in [redacted] The Channon and now Dorroughby. I love this beautiful area, it is ecologically unique and special; the prospect of the proposed dam and potential destruction of rainforest and Indigenous cultural heritage saddens me, as I feel it is not the way forward in terms of efficient water management. Please take the right action to ensure future water security in our community using sustainable methods that promote resilience and longevity of resources, with minimal disruptive impact to the ecological environment, rather than this proposed dam which would perpetuates short-sighted, outdated and inefficient methods of water management.

Thank-you for supporting the extension of the submission date. We also acknowledge the complexity of what Rous does to provide water to our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:
- Lost opportunity to invest in system-wide water efficiency - this is the cheapest & fastest way to ensure supply-demand balance. By focussing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption. (Metropolitan Water Plan 2006, NSW Government) (1)
- The 21st century is about a suite of smart water options. This dam would be a lost opportunity to make our system fit for the 21st century. It would swallow all resources in one big expensive 'white dinosaur' project.
- The dam would encourage continued inefficient and often wasteful water management by local governments. They would have no incentive to do things differently.
- Destruction of important Indigenous cultural heritage, including burial sites (Cultural Heritage Impact Assessment, 2011) (2). Ongoing disregard for First Nations' heritage.
- Destruction of The Channon Gorge and its endangered ecological community of lowland rainforest (including regionally rare warm temperate rainforest on sandstone), and its threatened flora and fauna species. (Terrestrial Ecology Impact Assessment, 2011) (3).
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Rous is required to avoid this destruction because there are economically viable and more effective solutions.
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● Higher prices for consumers due to a 4x increase in the cost of water. Rous general manager, in response to a question from councillor Vanessa Ekins, said he expected a fourfold increase in the cost of supplying water if the dam is built.
● The small population increase predicted for the four Rous-supplied councils of 12,720 (5) between 2020-2060 does not justify such a large and destructive dam. The dam risks being an expensive white dinosaur , diverting expenditure away from more sustainable, flexible and effective solutions. NSW Department of Planning, Industry and Environment 2019, **'NSW population projections** ', Sydney, viewed 03 August 2020, < https://www.planning.nsw.gov.au/Research-and-Demography/Population-projections/Projections > scroll down to "Local Government Factsheets". (5)
● Catastrophic flooding downstream in worst floods, particularly for the first 3 kilometres below. (Environmental Flows Assessment 2011) (6)
● Potential for a big dam to drive unneeded population growth, as the government attempts to gain value from an otherwise unnecessary, and stranded, asset.

I SUPPORT these alternatives:
I believe we need to take action on a suite of smart water options and proven alternatives. The tide is turning on renewable and sustainable power. It is time for the tide to turn on how we meet our water needs too. This is 21st century thinking.
● An investment in system-wide water efficiency and strong demand management. Analysed, costed and deployed, creating jobs. (We understand Rous has **not** costed this in creating their future water plan)
Existing research over the past decade consistently finds that the best 'bang-for-buck' investment in water supply comes from demand management and identifying savings within the existing supply. (7) (8)
Professor Stuart White from UTS has provided a detailed and costed proposal "The Rous Sustainable Water Program" which shows exactly how and why system-wide optimisation of water use is possible and economical. In comparison, the proposed dam is simply financially, environmentally and socially irresponsible. (9) (Stuart White, 2020 www.bit.ly/Prof-Stuart-White-Rous-slides)
● Water re-use in various ways, including Purified Recycled Potable water.
A wealth of global research and experience already exists regarding potable reuse of water as set out in Water Research Australia's report, Potable Water Reuse: What can Australia learn from global experience?
https://www.waterra.com.au/publications/document-search/?download=1806 (9)
Example: The city of Windhoek in Namibia in Southern Africa has been using purified recycled water for 30 years using advanced technology. https://www.wingoc.com.na/our-history (10)
● Water harvesting (urban runoff; rain tanks):
Water tanks on all new (and existing) developments. (11) **This builds community resilience - much needed, as the recent extreme bushfire season has shown.**
The Australian government advises that: "Depending on tank size and climate, mains water use can be reduced by up to 100%. This in turn can help: reduce the need for new dams or desalination plants; protect remaining environmental flows in rivers; reduce infrastructure operating costs."
Rainwater harvesting also decreases stormwater runoff, thereby helping to reduce local flooding and scouring of creeks. (12) https://www.yourhome.gov.au/water/rainwater
● Contingency planning would enable Rous to be ready to rapidly implement supply measures if it becomes necessary in times of drought.
● Groundwater, where this is environmentally safe
The Australian government provides a lot of information on the ecological impacts and groundwater usage. (13)
https://www.environment.gov.au/water/publications/what-are-the-ecological-impacts-of-groundwater-drawdown
With scalable supply alternatives in place, the existing supply from Rocky Ck Dam will be made resilient to anticipated times of drought and projected population growth, without the environmental destruction, social costs, and the over-capitalisation risk of an outsized and unnecessary dam.

References and Notes
(1) Metropolitan Water Plan 2006, NSW Government. Exec Summary section of the doc https://www.dropbox.com/s/pu9898oq6kocrph/NSW%20Govt%202006%20MWP%20summary.pdf?dl=0
(2) Ainsworth Heritage, Cultural Heritage Impact Assessment, 2011
(3) SMEC Australia, Terrestrial Ecology Impact Assessment, 2011
(4) NSW Department of Planning, Industry and Environment 2019, 'Delivering the plan', Sydney, viewed 03 August 2020 < https://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans/North-Coast/Delivering-the-plan > , Direction 2: Enhance biodiversity coastal and aquatic habitats and water catchments.
(5) NSW Department of Planning, Industry and Environment 2019, **'NSW population projections** ', Sydney, viewed 03 August 2020, < https://www.planning.nsw.gov.au/Research-and-Demography/Population-projections/Projections > Scroll down to "Local Government Factsheets".
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(8) Watson R., Turner A and Fane S 2018, **Water Efficiency and Demand Management Opportunities for Hunter Water** , Institute for Sustainable Futures, Sydney.
(9) Stuart White, 2020 www.bit.ly/Prof-Stuart-White-Rous-slides)
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(11)Windhoek Goreangab Operating Company (Pty) Ltd 2020 **,Our history | Wingoc,** Veolia Environment, Windhoek, viewed 3 August 2020, < https://www.wingoc.com.na/ >
(12)$220 million dollars - the estimated cost of the new dam - could provide more than 73,000 rainwater tanks (22,700L) at $3,000 each including installation. That is 1.66GL storage with no evaporation and much increased community resilience for future climate risks. This more than covers the 0.9GL extra water needed by the 12,720 new people predicted to come to our area based on 194L/person/day average water use (Rous).
(13)Australian Government Department of Industry 2013, Science, Energy and Resources, **Rainwater | Your home** , Canberra, viewed 3 August 2020, < https://www.yourhome.gov.au/water/rainwater >
(14)Department of Agriculture, Water and the Environment 2018, **What are the ecological impacts of groundwater drawdown? | Department of Agriculture, Water and the Environment,** Canberra, viewed 6 August 2020,
< https://www.environment.gov.au/water/publications/what-are-the-ecological-impacts-of-groundwater-drawdown

Yours sincerely,

Fiona Strelan

[redacted]

From: julie dillon [redacted]
Sent: Wednesday, 9 September 2020 9:32 PM
To: Records
Cc: [redacted]
Subject: Re: The proposed Dunoon Dam within the Future Water Project 2060

Ms Julie Dillon
[redacted]

9th September 2020
Rous County Council,
Lismore NSW 2480
<council@rous.nsw.gov.au>

Dear Rous Councillors and General Manager
Re: The proposed Dunoon Dam within the Future Water Project 2060

Firstly, thank you for supporting the extension of the submission date. The community appreciates it. We also acknowledge the complexity of what Rous does to provide water to our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

Lost opportunity to invest in system-wide water efficiency - this is the cheapest & fastest way to ensure supply-demand balance. By focussing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption. (Metropolitan Water Plan 2006, NSW Government) (1)

The 21st century is about a suite of smart water options. This dam would be a lost opportunity to make our system fit for the 21st century. It would swallow all resources in one big expensive 'white dinosaur' project.

The dam would encourage continued inefficient and often wasteful water management by local governments. They would have no incentive to do things differently.

Destruction of important Indigenous cultural heritage, including burial sites (Cultural Heritage Impact Assessment, 2011)(2). Ongoing disregard for First Nations' heritage.

Destruction of The Channon Gorge and its endangered ecological community of lowland rainforest (including regionally rare warm temperate rainforest on sandstone), and its threatened flora and fauna species. (Terrestrial Ecology Impact Assessment, 2011)(3).

Rous is planning to offset the loss of rainforest on sandstone with regeneration of degraded land in the buffer zone. Offsetting is problematic because the type of vegetation offered as recompense is never equivalent. This example is worse than most. (Nan Nicholson, botanist)

Councils are required under State planning regulations to: "Focus development to areas of least biodiversity sensitivity in the region and implement the 'avoid, minimise, offset' hierarchy to biodiversity, including areas of high environmental value." NSW Department of Planning, Industry and Environment 2019, 'Delivering the plan', Sydney, viewed 03 August 2020 (4)
Rous is required to avoid this destruction because there are economically viable and more effective solutions.

Industrial/construction zone for The Channon/Dunoon community; noise, machinery, trucks, visual impact. Ongoing sound impact from pump house etc.

Higher prices for consumers due to a 4x increase in the cost of water. Rous general manager, in response to a question from councillor Vanessa Ekins, said he expected a fourfold increase in the cost of supplying water if the dam is built.

The small population increase predicted for the four Rous-supplied councils of 12,720(5) between 2020-2060 does not justify such a large and destructive dam. The dam risks being an expensive white dinosaur, diverting expenditure away from more sustainable, flexible and effective solutions. NSW Department of Planning, Industry and Environment 2019, 'NSW population projections ', Sydney, viewed 03 August

2020, <https://www.planning.nsw.gov.au/Research-and-Demography/Population-projections/Projections> scroll down to "Local Government Factsheets".(5)

Catastrophic flooding downstream in worst floods, particularly for the first 3 kilometres below. (Environmental Flows Assessment 2011)(6)

Potential for a big dam to drive unneeded population growth, as the government attempts to gain value from an otherwise unnecessary, and stranded, asset.

I SUPPORT these alternatives:

I believe we need to take action on a suite of smart water options and proven alternatives.

The tide is turning on renewable and sustainable power. It is time for the tide to turn on how we meet our water needs too. This is 21st century thinking.

An investment in system-wide water efficiency and strong demand management. Analysed, costed and deployed, creating jobs. (We understand Rous has not costed this in creating their future water plan)

Existing research over the past decade consistently finds that the best 'bang-for-buck' investment in water supply comes from demand management and identifying savings within the existing supply.(7) (8)

Professor Stuart White from UTS has provided a detailed and costed proposal "The Rous Sustainable Water Program" which shows exactly how and why system-wide optimisation of water use is possible and economical. In comparison, the proposed dam is simply financially, environmentally and socially irresponsible.(9) (Stuart White, 2020 www.bit.ly/Prof-Stuart-White-Rous-slides)

Water re-use in various ways, including Purified Recycled Potable water.
A wealth of global research and experience already exists regarding potable reuse of water as set out in Water Research Australia's report, Potable Water Reuse: What can Australia learn from global experience?
https://www.waterra.com.au/publications/document-search/?download=1806(9)
Example: The city of Windhoek in Namibia in Southern Africa has been using purified recycled water for 30 years using advanced technology.
https://www.wingoc.com.na/our-history(10)

Water harvesting (urban runoff; rain tanks):

Water tanks on all new (and existing) developments.(11) This builds community resilience - much needed, as the recent extreme bushfire season has shown.

The Australian government advises that: “Depending on tank size and climate, mains water use can be reduced by up to 100%. This in turn can help: reduce the need for new dams or desalination plants; protect remaining environmental flows in rivers; reduce infrastructure operating costs.”

Rainwater harvesting also decreases stormwater runoff, thereby helping to reduce local flooding and scouring of creeks.(12)
https://www.yourhome.gov.au/water/rainwater

Contingency planning would enable Rous to be ready to rapidly implement supply measures if it becomes necessary in times of drought.

Groundwater, where this is environmentally safe
The Australian government provides a lot of information on the ecological impacts and groundwater usage.(13)
https://www.environment.gov.au/water/publications/what-are-the-ecological-impacts-of-groundwater-drawdown

With scalable supply alternatives in place, the existing supply from Rocky Ck Dam will be made resilient to anticipated times of drought and projected population growth, without the environmental destruction, social costs, and the over-capitalisation risk of an outsized and unnecessary dam.

References and Notes
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Stuart White, 2020 www.bit.ly/Prof-Stuart-White-Rous-slides)
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$220 million dollars - the estimated cost of the new dam - could provide more than 73,000 rainwater tanks (22,700L) at $3,000 each including installation. That is 1.66GL storage with no evaporation and much increased community resilience for future climate risks. This more than covers the 0.9GL extra water needed by the 12,720 new people predicted to come to our area based on 194L/person/day average water use (Rous).
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This is my submission. Please consider these very viable alternatives to the proposed dam.
Yours faithfully
Julie Dillon

[redacted]

From: Arty Party Face Painting [redacted]
Sent: Wednesday, 9 September 2020 9:54 PM
To: Records
Cc: [redacted]
Subject: RE: The proposed Dunoon Dam within the Future Water Project 2060

Michelle Colpus
[redacted]

9th September 2020
Rous County Council,
Lismore NSW 2480
council@rous.nsw.gov.au

Dear Rous Councillors and General Manager

Re: The proposed Dunoon Dam within the Future Water Project 2060.

Thank-you for allowing me to provide my opinion on the proposed dam.

I DO NOT support the proposed The Channon-Dunoon Dam for several reasons, namely:

The dam would result in lost opportunity to invest in system-wide water efficiency - this is the cheapest & fastest way to ensure supply-demand balance. By focussing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption. (Metropolitan Water Plan 2006, NSW Government) (1)
The 21st century is about a suite of smart water options. This dam would be a lost opportunity to make our system fit for the 21st century. It would swallow all resources in one big expensive 'white dinosaur' project.
The dam would encourage continued inefficient and often wasteful water management by local governments. They would have no incentive to do things differently.

The site of the dam would result in loss of important Indigenous cultural heritage, including burial sites (Cultural Heritage Impact Assessment, 2011)(2). Ongoing disregard for First Nations' heritage.

Flooding the proposed area would result in the destruction of The Channon Gorge and its endangered ecological community of lowland rainforest (including regionally rare warm temperate rainforest on sandstone), and its threatened flora and fauna species. (Terrestrial Ecology Impact Assessment, 2011)(3).

Rous is planning to offset the loss of rainforest on sandstone with regeneration of degraded land in the buffer zone. Offsetting is problematic because the type of vegetation offered as recompense is never equivalent. This example is worse than most. (Nan Nicholson, botanist).
Councils are required under State planning regulations to: "Focus development to areas of least biodiversity sensitivity in the region and implement the 'avoid, minimise, offset' hierarchy to biodiversity, including areas of high environmental value." NSW Department of Planning, Industry and Environment 2019, 'Delivering the plan', Sydney, viewed 03 August 2020 < https://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans/North-

Coast/Delivering-the-plan >, Direction 2: Enhance biodiversity coastal and aquatic habitats and water catchments. (4)
Rous is required to avoid this destruction because there are economically viable and more effective solutions.

Industrial/construction zone for The Channon/Dunoon community; noise, machinery, trucks, visual impact. Ongoing sound impact from pump house etc.

Higher prices for consumers due to a 4x increase in the cost of water. Rous general manager, in response to a question from councillor Vanessa Ekins, said he expected a fourfold increase in the cost of supplying water if the dam is built.

The small population increase predicted for the four Rous-supplied councils of 12,720(5) between 2020-2060 does not justify such a large and destructive dam. The dam risks being an expensive white dinosaur, diverting expenditure away from more sustainable, flexible and effective solutions. NSW Department of Planning, Industry and Environment 2019, 'NSW population projections ', Sydney, viewed 03 August 2020, <https://www.planning.nsw.gov.au/Research-and-Demography/Population-projections/Projections> scroll down to "Local Government Factsheets".(5)

Catastrophic flooding downstream in worst floods, particularly for the first 3 kilometres below. (Environmental Flows Assessment 2011)(6)

Potential for a big dam to drive unneeded population growth, as the government attempts to gain value from an otherwise unnecessary, and stranded, asset.

I do however SUPPORT these alternatives:
I believe we need to take action on a suite of smart water options and proven alternatives.
The tide is turning on renewable and sustainable power. It is time for the tide to turn on how we meet our water needs too. This is 21st century thinking.
An investment in system-wide water efficiency and strong demand management. Analysed, costed and deployed, creating jobs. (We understand Rous has not costed this in creating their future water plan).
Existing research over the past decade consistently finds that the best 'bang-for-buck' investment in water supply comes from demand management and identifying savings within the existing supply.(7) (8)

Professor Stuart White from UTS has provided a detailed and costed proposal "The Rous Sustainable Water Program" which shows exactly how and why system-wide optimisation of water use is possible and economical. In comparison, the proposed dam is simply financially, environmentally and socially irresponsible.(9) (Stuart White, 2020 www.bit.ly/Prof-Stuart-White-Rous-slides).

Water re-use in various ways, including Purified Recycled Potable water.
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With scalable supply alternatives in place, the existing supply from Rocky Creek Dam will be made resilient to anticipated times of drought and projected population growth, without the environmental destruction, social costs, and the over-capitalisation risk of an outsized and unnecessary dam.

Thank-you for your time and consideration,

Michelle Colpus.

References and Notes:
1. Metropolitan Water Plan 2006, NSW Government. Exec Summary section of the doc
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14. Department of Agriculture, Water and the Environment 2018, What are the ecological impacts of groundwater drawdown? | Department of Agriculture, Water and the Environment, Canberra, viewed 6 August 2020, <https://www.environment.gov.au/water/publications/what-are-the-ecological-impacts-of-groundwater-drawdown>

[redacted]

From: Sue Nakkan [redacted]
Sent: Wednesday, 9 September 2020 10:30 PM
To: Records
Cc: [redacted]
Subject: RE: The proposed Dunoon Dam within the Future Water Project 2060

From: Sue Nakkan
Sent: Wednesday, 9 September 2020 1:15 AM
To: council@rous.nsw.gov.au <council@rous.nsw.gov.au>
Subject: Re: Dunoon Dam

Dear Rous Councillors and General Manager,

I DO NOT WANT A DUNOON DAM. This is not a 21st Century solution for water security.

What we need is a system wide water audit, as Sydney Water did. Identify the leaks, etc. and fix them. Which creates jobs and will save water.

We need more water tanks for private use, which would save enormous amounts of water.

We should not be destroying rainforest, at this time of the earth's problems, from now on we should not cause any more destruction. This is Ecocide. The animals in our forests have declined by 70%, (since the recent bushfires) and now Rous Water thinks its ok to take away more habitat!!!

There are significant Aboriginal heritage sites that the proposed dam will flood. How is this ok??????
It's another slap in the face for our Indigenous people, AGAIN.

We need to utilise the re-use of water where ever possible. Purple pipes in all new housing subdivisions. Are there purple pipes at the North Lismore subdivision???

Allow more water-less toilets, as in composting toilets. Let's stop flushing our clean rainwater.

Education on how to be water-wise for people on town water. People with water tanks know the value of water and are not wasteful.

More productive farmland going under water. What planet do you all live on? Does not make sense at this time of the earth.

Bad idea, choose a suite of better, cleverer ideas for managing water for future generations.

Lets be progressive, NO NEW DUNOON DAM.

Sue Nakkan
[redacted]

[redacted]

From: Jules Petroff [redacted]
Sent: Wednesday, 9 September 2020 11:03 PM
To: Records
Cc: [redacted]
Subject: RE: The proposed Dunoon Dam within the Future Water Project 2060
Attachments: signature.asc

Mrs Robyn & Dr Julius Petroff
[redacted]
Gender: Female & Male

5th September 2020

Rous County Council,
Lismore NSW 2480
<council@rous.nsw.gov.au>

Dear Rous Councillors and General Manager

Re: The proposed Dunoon Dam within the Future Water Project 2060

Firstly, thank you for supporting the extension of the submission date. I am aware of the work that Rous does in providing water to our region, and the complexity this must entail from the point of view of the technical, meteorological, legal and social dynamics.

About Us

Over the past 46 years my family have enjoyed managing an ecologically sustainable property that actually lies within the proposed dam site. The property consists mainly of cattle, agroforestry, macadamias and pecans. We also have been passionate about our resident private Subtropical Rainforest, Wet Sclerophyll Forest, 3 kms of Rocky creek frontage and thousands of native birds and animals. Words therefore cannot describe our deep appreciation for this land and our sadness at its potential loss.

We understood that this dam was untenable back in 2013 based on its failure on the 4 EIS reports - Aquatic, Terrestrial, Indigenous and Geological. (It only passed the other options on a raw cost basis.)

We celebrated, and realigned our priorities, investments and dreams.

So imagine our surprise that it has now been raised from the dead! And imagine to our greater surprise that following this recent brief 8 week consultation period, a community of local farmers, nature enthusiasts, scientists, ecologists, hydro & sewage engineers, indigenous brothers and politicians, have rallied forth to lend their strong opposition to the proposed Dunoon Dam.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

Desecrating Indigenous culture:
The Channon/Dunoon has an extensive and rich cultural landscape belonging to the Widjabal-Wiyabal People of the Bundjalung nation. The unique geology of "Basalt Meets Sandstone" at this site lent itself to a meeting place for tool building, rich fertile land and sanctuary. The waterholes, trees and rocks of the Rocky Creek landscape tell one of an intact and well documented Australian dream-time story in the epic battle of goanna (Ngumarhl) and snake (Ngoonjbear) which formed the Northern Rivers waterways and headlands. Local Preschools and Councilors alike now pay their respects to the Bundjalung People and Ancestors' safe custodianship of our lands and waterways over tens-of-thousands of years.

The Rous Reconciliation Action Plan (RAP) 2017 is to be commended in their past efforts:
"Bundjalung people have lived in the region for many thousands of years in a sustainable relationship with the natural environment. The water catchment areas managed by Rous County Council are a part of the natural landscape that forms the identity, culture, spirituality and resource base for the Widjabal/Wiyabal people of the Bundjalung nation. Despite the significant changes of the past 200 years, the Widjabal/Wiyabal people still maintain a responsibility and deep relationship with the land and water. Rous County Council acknowledges this relationship and deeply values their traditional laws, knowledge and lessons about places and sustainability. Rous County Council conducts all business activities in accordance with its values of Integrity, Commitment, Trust, Social Responsibility, and Accountability."
[https://rous.nsw.gov.au/cp_themes/default/page.asp?p=DOC-NWB-13-07-78]

Despite these well stated intentions, should the dam proceed, important **Indigenous archaeological sites, burial grounds, creation waterholes and artefacts would be destroyed.** [Cultural Heritage Impact Assessment, 2011]

Also terribly important is the significance these objects hold in connecting them to country, their songlines, and the role these Indigenous people play as educators and custodians. I am aware through personal discussions with Widjabal-Wiyabal people that **they strongly reject this dam** on the basis of the destruction of their Heritage and their spiritual connection to this land (which was never conceded). Additionally, they have raised with me, serious concerns as to an (ongoing) **failure in engagement** with any of their members throughout the process of this project since its inception in 1989.

I therefore can only support their position on strongly rejecting this dam.

Destruction of the beautiful Whian Whian Gorge:
The Whian Whian gorge and downstream riparian vegetation represent a section of rainforest that is the **second largest remnant of the Gondwanna Sub-Tropical Rainforest.** At more than **60Ha* this represents 40%** of the area of the largest remnant, The Big Scrub Flora Reserve, a rainforest which is World Heritage recognised.

*I mention 60Ha rather than 57Ha stated in the 2011 Terrestrial Ecology Report, as the scientists' time-limited surveys omitted a few large chunks of high value subtropical rainforest that lie along parts of Rocky Creek that runs through our property. Also of note, the maps prepared by Hydrosphere to the Councillors describing land use, omitted over 75% of the Rainforest areas altogether! (Figure 7, as per END interview with Keith Williams).

Of very great importance, these two largest remnants are able to **form a functional habitat** as these two remnants **connect geographically** through a rich riparian environment, 8 kms downstream from

the Rocky Creek Dam. By way of very brief summary, the basin of the proposed dam contains the last 10% (and second largest remnant) of the 1% remaining Gondwanna Sub-Tropical Rainforest.

As a side-note, much of the 175ha described as "Camphor Laurel" in the 2011 Terrestrial Ecology Report is actually an excellent canopy, rich in natural rainforest regeneration and re-plantings. The canopy contains a substantial percentage of emergent native trees, healthy native under-story, and contains rich seed banks of rainforest species. On our land with minimal labour and effort, we are only several years away from turning 30ha of our Camphor Laurel "Nurseries" back into rainforest. Also currently, in conjunction with Whian Whian Landcare, and a generous project of $55,000 co-funded by NSW Fisheries, we are in the process of doing exactly this along a 1.5 km section of our Rocky Creek property, over the next 3 years.

Destruction of the beautiful The Channon Gorge:

The Channon Gorge is a unique and beautiful ecosystem with 6.5 Ha lowland rainforest. This includes a state significant rare warm-temperate Rainforest on sandstone that meets the standards of an **Endangered Ecological Community.** [Terrestrial Ecology Impact Assessment, 2011]

Any consideration towards "offsetting the loss of rainforest on sandstone with regeneration of other lands in the buffer zone is problematic because the type of vegetation offered as recompense is never equivalent. This example is worse than most." ~Nan Nicholson, botanist.

Flooding of over half of the popular Whian Whian Falls recreational area:

This involves the 450m reach below the main Falls which would be permanently flooded at Maximal Fill Height to 82m AHD. This is one of **the most beautiful and accessible** swimming and recreational areas, and would flood the **sacred Aboriginal women's ceremonial pools.** In high rainfall events, which are increasingly predicted with Climate Change, a dam would also backfill and inundate the Falls (90m AHD) completely (to 92m AHD). [This was confirmed by a hydrologist who also read the 2020 Rous Water Summary Report.]

Accelerate extinction of at least 46 of vulnerable species:

The dam introduces an extinction level pressure on 3 vulnerable fish species due to destruction of 6kms and genetic islanding of over 18 kms of migratory native fish habitat. These are Purple Spotted Gudgeon, Eastern Freshwater Cod and Oxleyan Pygmy Perch. These species have all been observed by myself and local naturalists on rare occasions over the past 25 years.

The dam will permanently remove a significant amount of habitat available for these species within the inundation area. I also assert that the so-called "natural barrier of Whian Whian Falls" also presents **no limitation to passage** of Australian Bass, Eastern Freshwater Cod or Eels when the right-hand Falls section is flowing in late Summer. These species have been line caught or sighted in the 8km creek section above the Falls for decades. Therefore any conclusions that the proposed dam "will not isolate or decrease the availability or quality of habitat to significantly impact the species so that the species is likely to decline", is patently **incorrect**. The justifications for omitting a fish ladder and environmental flows are therefore seriously **flawed**.

Also on this last point, given that about 60% of Australian native fish species **rely on the surge flows to migrate, breed and feed,** a dam (particularly one without a fish ladder) will result in serious impact on the remaining 13 native fish and several macropods (Crayfish/ Shrimp) populations.

We have always been proud of the absence of Carp and other introduced species in Rocky Creek, however it is well recognised that dams' low oxygen, lack of riffle and algae blooms, favour exotic species. We therefore fear that a dam will result in **wiping out most of the 13 native fish species** in the entire Rocky Creek ecosystem.

There is also extinction pressures on 19 "Threatened Conservation Status" plant species*. These are species that we have targeted for regeneration on our land and include the Red Boppel Nut (Hicksbeachia pinnatifolia). According to UNESCO: "The outstanding geological features displayed around shield volcanic craters and the high number of rare and threatened rainforest species are **of international significance for science and conservation.**"
[*As recorded within the 2011 Rous Ecological Surveys].

The loss of habitat the dam poses also means that 24 "Threatened Conservation Status" fauna species are also at risk for extinction. [As recorded within the 2011 Rous Ecological Surveys]. This includes **Koalas, Rose-Crowned Fruit Dove, Emerald Dove, Osprey, Yellow-tail Black Cockatoos, Grey Flying Fox, White-crowned Snake, Three-toed Snake-tooth Skink, Pale-headed Snake, and Stephens' Banded Snake.**

The Gondwanna Rainforests also provides the principal habitat for many threatened species of plants and animals. As the rainforest is a life support system for many birds, and birds and bats fertilize and propagate rainforest plant seeds, **the loss of 10% of Gondwanna rainforests is highly significant.** That means that even so-called "common" birds for our area, such as White Headed and Top-knot pigeons, are seriously endangered through the loss of rainforest. The UNESCO World Heritage Centre therefore considers **nearly all** of our rainforest fauna and most of its birds as **"Threatened Conservation Status"** species, due to that designation being applied by their metrics to our Rainforests.
[https://whc.unesco.org/en/list/368/]

Koala habitat:
Koala habitat and important "corridors" connecting Whian Whian, Dunoon and The Channon permanent resident populations of Koalas. These would be cut off by the dam.

Geotechnical considerations:
The basalt soils on the northern aspect are prone to severe landslides and silt run off from the macadamia farms. Sedimentation will soon reduce the lifespan of the dam to decades.
[Interview with Mark Stanton-Cook, Soil Scientist on 22.7.20]

The fractured sandstones of the Channon Gorge are prone to leakages through to The Channon with potential dam failure and/or massive cost blowouts. This will result in scouring the wall footprint and western ridge back to bedrock, massive steel cabling being fixed into the bedrock; and extensive use of fillers to plumb the cracks and fissures.
[Interview with Michael Mackenzie, Rous Engineer on 20.08.20]

Higher prices for consumers:
Water prices are to skyrocket due to a 4x increase* in the cost of water according to Phil Rudd, Rous general manager. In response to a question from councillor Vanessa Ekins, Mr Rudd said he expected a fourfold increase in the cost of supplying water if the dam is built. *According to Professor Stuart White the cost is actually 900% more due to an incorrect accounting method applied.

The small population increase:
The small population increase predicted for the four Rous-supplied councils of 12,720 (5) between 2020-2060 does not justify such a large and destructive dam. The dam risks being an expensive white dinosaur, diverting expenditure away from more sustainable, flexible and effective solutions. NSW Department of Planning, Industry and Environment 2019, 'NSW population projections ', Sydney, viewed 03 August 2020, <https://www.planning.nsw.gov.au/Research-and-Demography/Population-projections/Projections> scroll down to "Local Government Factsheets".(5)

Consumption growth will not save Australia, growth will bury us:

Australians currently enjoy 6 to 7 times the consumption of an average person on Earth. At the current rate the world population is raising its standard of living to that which Australian's enjoy, in 25 years we would require another 4 planets Earths! Obviously while such metrics are fantasy, what they clearly flag is that there is an immense pressure on Australia's and the world's ecosystems. [http://data.footprintnetwork.org/#/countryTrends?cn=10&type=earth]

To have a sustainable future for our Earth or "Planet A" involves understanding that we are immediately facing many "tipping points" or failures in the Earth's ecosystems. When large areas of sensitive habitats are destroyed, extinctions of flora and fauna species accelerate, and along with climate change these ecosystems begin to fail in unexpected ways, and our planet becomes our own death trap. In order to maintain a diverse, resilient and well-functioning biosphere we need to remove the pressures on our local ecosystems, and not expand the population on the largest desert island in the world. And not build an unnecessary dam for short term profits for a few.

A resilient suite of smart water options:

The 21st century is about a suite of smart water options. This dam would be a lost opportunity to make our system fit for the 21st century. It would swallow all resources in one big expensive 'white dinosaur' project. This dam would therefore encourage continued inefficient and often wasteful water management by local governments. They would have no incentive to do things differently.

I therefore SUPPORT these alternatives:

I believe we need to take action on a suite of smart water options and proven alternatives. The tide is turning on renewable and sustainable resource use. It is time for the tide to turn on how we meet our water needs too. This is 21st century thinking.

● **An investment in system-wide water efficiency and strong demand management:** Analysed, costed and deployed, creating jobs. (We understand Rous has not costed this in creating their future water plan). Existing research over the past decade consistently finds that the best 'bang-for-buck' investment in water supply comes from demand management and identifying savings within the existing supply. This is the cheapest & fastest way to ensure supply-demand balance. By focusing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption. (Metropolitan Water Plan 2006, NSW Government) (1) (7) (8)

● **Water reuse in various ways, including Purified Recycled Potable water:**

A wealth of global research and experience already exists regarding potable reuse of water as set out in Water Research Australia's report, Potable Water Reuse: What can Australia learn from global experience?
https://www.waterra.com.au/publications/document-search/?download=1806 (9) Example: The city of Windhoek in Namibia in Southern Africa has been using purified recycled water for 30 years using advanced technology. https://www.wingoc.com.na/our-history (10)

● **Water harvesting via urban runoff & rainwater tanks:** Water tanks on all new (and existing) developments. Remove the rubbish law that prevents urban use of rainwater in the Ballina Shire. (11) This builds much needed community resilience, as the recent extreme bushfire season has shown. The cost of a 22,000L rainwater tank is a mere $2,500. If this were spread over each new 2 person household area (est 12,000 pop by 2060) the cost would be a mere $15 million and combined with automatic-mains top-up, can provide **100% reduction** in mains water use!

The Australian government advises that: *"Depending on tank size and climate, mains water use can be reduced by up to 100%.* This in turn can help reduce the need for new dams or desalination plants; protect remaining environmental flows in rivers; and reduce infrastructure operating

costs." Rainwater harvesting also decreases stormwater runoff, thereby helping to reduce local flooding and scouring of creeks.
(12) https://www.yourhome.gov.au/water/rainwater

With joint CSIRO-NSW Govt **Climate Change modeling indicating 5-20% higher rainfall** in our region over the next 60 years, rainwater tanks seem the **obvious choice**. Furthermore, increased rainfall runs counter to the ***Hydrosphere's unreferenced arguments of lower rainfall,*** and brings to question their motives and possibly vested interests in dam development.
https://climatechange.environment.nsw.gov.au/Climate-projections-for-NSW/Climate-projections-for-your-region/North-Coast-Climate-Change-Downloads

● **Deep underground water storage with surface runoff integration.**
[https://www.abc.net.au/news/2020-03-04/water-banking-aquifers-australia-facing-future-drought/12009702]
[Dillon, P, Stuyfzand, P, Grischek, T et al 2019, 'Sixty years of global progress in managed aquifer recharge', Hydrogeology Journal, vol. 27, no. 1, pp. 1-30.]
[Ross, A 2017, 'Speeding the transition towards integrated groundwater and surface water management in Australia', Journal of Hydrology, vol. Article in press.]

● **Contingency planning:**
This would enable Rous to be ready to rapidly implement supply measures if it becomes necessary in times of drought. Multiple sources of water rather than putting all our "eggs in one basket" (ie: hundreds of million$), allows our region to route around any points of failure in the water system.

● **Groundwater:**
Where this is environmentally safe The Australian government provides a lot of information on the ecological impacts and groundwater usage. (13) The Regional Investment Corporation (RIC) which administers the National Water Infrastructure Loan Facility allow up to 49% lending towards: groundwater and managed aquifer recharge supply schemes and water treatment, including desalination, storage and reuse. [https://www.environment.gov.au/water/publications/what-are-the-ecological-impacts-of-groundwater-drawdown]
With scalable supply alternatives in place, the existing supply from Rocky Ck Dam will be made resilient to anticipated times of drought and projected population growth, without the environmental destruction, social costs, and the over-capitalisation risk of an outsized and unnecessary dam.

For a ***picture journey*** through part of this incredible landscape please see David Lowe's amazing photography:
https://www.flickr.com/photos/davidlowe1970/albums/72157715831462108?fbclid=IwAR3nK782KFszAMwn_74HKC02f-BsGKbYCZmwyWg0GYrSAGmaU0UHZCaqKgo

Kind regards

Mrs Robyn & Dr Julius Petroff
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References and Notes:

(1) Metropolitan Water Plan 2006, NSW Government. Exec Summary section of the doc. https://www.dropbox.com/s/pu9898oq6kocrph/NSW%20Govt%202006%20MWP%20summary.pdf?dl=0
(2) Ainsworth Heritage, Cultural Heritage Impact Assessment, 2011
(3) SMEC Australia, Terrestrial Ecology Impact Assessment, 2011
(4) NSW Department of Planning, Industry and Environment 2019, 'Delivering the plan', Sydney, viewed 03 August 2020 https://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans/North-Coast/Delivering-the-plan, Direction 2: Enhance biodiversity coastal and aquatic habitats and water catchments.
(5) NSW Department of Planning, Industry and Environment 2019, 'NSW population projections ', Sydney, viewed 03 August 2020, https://www.planning.nsw.gov.au/Research-and-Demography/Population-projections/Projections
Scroll down to "Local Government Factsheets".
(6) Environmental Flows Assessment Proposed Dunoon Dam, 30 Aug 2012, EcoLogical Australia.
(7) The Rous Regional Water Efficiency Program 1997, Final report of the Rous Regional Demand Management Strategy : preferred options, Rous County Council,Lismore.
(8) Watson R., Turner A and Fane S 2018, Water Efficiency and Demand Management Opportunities for Hunter Water, Institute for Sustainable Futures,Sydney.
(9) Kahn,Stuart and Branch, Amos 2019, Potable water reuse: What can Australia learn from global experience?, Water Research Australia Limited, Adelaide.
(10)Windhoek Goreangab Operating Company (Pty) Ltd 2020,Our history | Wingoc,Veolia Environment, Windhoek, viewed 3 August 2020, <https://www.wingoc.com.na/>
(11)$220 million dollars - the estimated cost of the new dam - could provide more than 73,000 rainwater tanks (22,700L) at $3,000 each including installation. That is 1.66GL storage with no evaporation and much increased community resilience for future climate risks. This more than covers the 0.9GL extra water needed by the 12,720 new people predicted to come to our areabased on 194L/person/day average water use (Rous).
(12)Australian Government Department of Industry 2013, Science, Energy and Resources, Rainwater | Your home, Canberra, viewed 3 August 2020, <https://www.yourhome.gov.au/water/rainwater>
(13)Department of Agriculture, Water and the Environment 2018, What are the ecological impacts of groundwater drawdown? | Department of Agriculture, Water and the Environment, Canberra, viewed 6 August 2020, <https://www.environment.gov.au/water/publications/what-are-the-ecological-impacts-of-groundwater-drawdown>

[redacted]

From: Maureen McInnes [redacted]
Sent: Wednesday, 9 September 2020 11:23 PM
To: Records
Cc: [redacted]
Subject: RE: The proposed Dunoon Dam within the Future Water Project 2060

Dear Rous Councillors and General Manager
Firstly, thankyou for supporting the extension of the submission date. I also acknowledge the complexity of what Rous does in providing water to our region.

My husband & I bought our property [redacted] 36 years ago. We had a dream to build a home where our children could grow
up with the freedom of being in the country, with space to explore & to learn about our beautiful environment first hand.

I think our four children have explored every inch of our 132 acres over that time & discovered platypus, echidna, potteroos, koalas, glow worms; have fished from Rocky Creek; camped beside the beautiful waterholes where we have also cooled off on many hot summer days. We have remnants of rainforest, amazing eucalypt trees - the home of many birds & wildlife.

We have a deep appreciation of this land, & have a connection that we hoped to have all our life.

When our children were young we had one 5000gal tank of rainwater to provide for all our needs & we were a family of 6. Not a drop of water was wasted, & most recycled eventually onto the garden. We have very water conscious children & now grandchildren. We must educate the general population to make better choices about their water usage, instead of providing more ways for them to continue to waste as they do now. It should be mandatory for every house in town to have a water tank for their toilet & washing needs, & for the garden.

Rous Water put a cloud over our dreams when about 20-25 years ago they announced they were planning to build a dam here which will
take most of our land. I feel we have been put on hold for so long & it was with great relief when they informed us about 6 years ago that
they were no longer going ahead with it. We would never have been able to afford a piece of land like ours with the money that was offered to buy it which was not market value.

So you can imagine our devastation this year when we were told our land was once again the preferred option.

I feel education about sustainable living is the key to our future. Our children have grown up with solar power, solar hot water, recycling & a deep appreciation about where water comes from.

Our land is our paradise & we hope to be here for a long time in the future.

I appreciate you taking the time to read my thoughts.

With Regards,

Maureen McInnes

[redacted]

[redacted]

From: Meg M [redacted]
Sent: Wednesday, 9 September 2020 11:56 PM
To: Records
Subject: RE: The proposed Dunoon Dam within the Future Water Project 2060

Megan McInnes
[redacted]

Dear Rous Councillors and General Manager
Re: The proposed Dunoon Dam within the Future Water Project 2060
Firstly, thank you for supporting the extension of the submission date. I also acknowledge the complexity of what Rous does in providing water to our region.
My name is Megan McInnes. I was born in Lismore, and grew up on [redacted] with my large, wild, cow herding family for the last 35years. My soul soars through this valley, I would never be able to describe how deep my appreciation and love goes with this land. This project will take the best 100 acres of our home, which is the left side paddock before the wall.

I have had the joy of growing up amongst fields of grass hanging high over my head. We would follow the cow tracks down to the creek with our rods and spend hours exploring the rocks, find new dug outs from platypus, and get freaked out by eels hanging in the shadows. When the rains came, we'd blow up our tractors tires and get ripped down through the gorge, getting spat out at The Channon oval where mum would pick us up a few hours later. Big clans of friends would come. It was/is a place for epic adventures. Dreams ran wild. Pirates rampaged up and down the creek. Faeries lived under tree roots clinging to the sandstone cliffs. It is a wonderland of your highest imagination. We have found some of the largest water dragons sun basking on the rocks in all their primal glory. My entire childhood and early adulthood have grown with these lands. My blood, sweat and so many tears have been swept up in this calm scape.

Not only for the memories, but also now, my family still farms this land. Generations of cattle have grown, frolicked, munched out their lives on this land. The income from the cattle subsidised our living. Energy has been poured out to keep the property as weed free as possible. Helping the riparian area to sustain the waterways for the future. We currently have 3 generations of family living here, and plan to have this piece of wonder to enjoy for generations to come. We are proud to live in this beautiful country and try to be gracious custodians. But this energy and integrity is drowned if this proposal goes through.

We have also only ever lived off tank water. 5000gal for a family of 6 is what we started with, and this tank kept us going for 10 years before we invested into more. Drilled into ethos that every drop counts. We had baths, but instead of letting the water out we bucketed it onto the gardens. Never once did we leave the water going while brushing our teeth. Water efficiency is our second language as we've grown up to know just how important it is. I wonder why such a resource is so willingly flushed down/let run into storm water drains. Water hoarding is big business these days. This much is evident. Why not implement funding for every pre-existing home and new builds? this should be mandatory throughout the whole region.

Why also use drinking water for the toilet/washing machine/ gardens? This common practice is absurd. grey water should be able to be used and/or purified recycled water. How efficient is the town or region relative to how efficient it could be? I know that there's a pipe near Curry Road that bursts every few months with thousands of litres wasted every time. This is only one of the pipes that are in this region. From growing up dealing with pipes and tanks, I know how easy it is for one to burst...But how many more pipes go unnoticed and then cheap repair job, only for it to burst again. There would be so many jobs made just implementing a leakage and pressure management scheme.

Before letting this catastrophic decision go ahead, why not go through all the other water efficiency measures?

Surely the leaks should be fixed before implementing environmental destruction. This seems like a Rio Tinto moment. One that will bite back for a long time to come. It's time to start thinking smarter about water security.

Thank you for reading my concerns and thoughts. I will never support this dam proposal.

Megan McInnes.

Below: youngest grandson Harry learning to ride his first motorbike. Inset: Ella, Harry with 'Pop' Dave. This take just before the wall will be.

[redacted]

From: b t [redacted]
Sent: Wednesday, 9 September 2020 11:57 PM
To: Records
Cc: [redacted]
Subject: RE: The proposed Dunoon Dam within the Future Water Project 2060

Brett Thompson
[redacted]
9th September 2020

Dear Rous Councillors and General Manager

Re: The proposed Dunoon Dam within the Future Water Project 2060

I oppose the Channon Dunoon Dam for the following reasons:

- Destruction of ancient Widjabul country, artefacts and burial sites.
- The loss of the Endangered Ecological Community of Lowland rainforest.
- The loss of threatened flora species.
- The loss of habitat of threatened fauna species.
- The severance of local wildlife corridors.

I support other alternatives including :

- Harvesting of rainwater in appropriate ways such as household tanks and swales.
- Water efficiency.
- Composting toilets.

Kind Regards,
Brett Thompson

[redacted]

From: Bianca Jones [redacted]
Sent: Wednesday, 9 September 2020 9:08 PM
To: Records
Cc: [redacted]
Subject: RE: The proposed Dunoon Dam within the Future Water Project 2060

Bianca L Jones

[redacted]

9th September, 2020

Rous County Council,

Lismore NSW 2480

council@rous.nsw.gov.au

Dear Rous Councillors and General Manager

Re: The proposed Dunoon Dam within the Future Water Project 2060

I am writing to oppose the construction of the proposed Dunoon Dam. A 50 gigalitre dam extending 6km upstream of the dam wall, that destroys First Nations' heritage, and social and ecological assets within its footprint (and beyond) is an old world response (and not a solution) to a new world problem. The impacts of which cannot be off-set by tree planting and bicycle paths. There are alternative options including but not limited to: water efficiency, water harvesting, and water re-use that are economically viable and warrant continued investigation rather than dismissal, as Rous County Council prioritises and promotes the Dunoon Dam as it's top choice for water security into the future.

Rocky Creek has seen child births and christenings. It has seen children tyre-riding down its waters for kms to be picked up by parents at the end of the day – enriched by nature, physically

spent. It has seen the gatherings of loved ones in forested shade on 45°C Summer days. It has seen silent, dawn platypus-spotting as the mist and birdcall rises. And it has seen the ashes of loved ones loosed to its care - for we believed it would always be here for us.

We will fight to save our connection to place, we will fight to save Rocky Creek, because the provision of water and water security need not be reliant on yet another dam. We acknowledge the complexity of providing water and water security to the region and respectfully request that alternatives to the Dunoon Dam continue to be investigated.

The reasons I DO NOT support the proposed Dunoon Dam include the following:

- **Lost opportunity to invest in system-wide water efficiency** - the most rapid and economical way to ensure a balance of supply and demand. Sydney has demonstrated that a focus on system efficiency can allow for population growth (citing an additional 950,000 people) without a rise in water consumption. (Metropolitan Water Plan, 2006, NSW Government) [1]
- **There are several water efficiency options** that would be preferable to The Dunoon Dam and support a system-wide approach to water efficiency. Analysis carried out by Rouse of these options and cost investment has, to date, been inadequate. (Professor Stewart White, 2020, UTS, Sydney).
- **Poor water management by local government would be perpetuated** by the dam rather than analysis, intervention, and investment being directed into 21st century solutions for water security in the region.
- **Destruction of a 6-7 hectares of a listed, critically endangered ecological community** of flaura (Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)) – Lowland Rainforest of Subtropical Australia. Even rarer for this region as it includes warm temperate rainforest on sandstone.
- **Destruction The Channon Gorge and ~55 hectares of Big Scrub Rainforest remnant.** Only 1% of The Big Scrub remains and this 55 hectares of Big Scrub is of huge ecological importance and value. It has avoided centuries of post-colonial destruction to now be threatened by Rous County Council for an unnecessary dam.

- **Disregard and destruction of First Nations' cultural heritage** on Widjabal/Wi-abal country of The Bundjalung Nation**,** including significant burial sites and artifacts (Cultural Heritage Impact Assessment, 2011)*(2)*.

- **Destruction and fragmentation of existing habitat and wildlife corridors** of high importance for the movement of fauna, as key habitat and for biodiversity of flora and fauna (including conservation species) (McNally et.al., 2000; Jensen and Robertson, 2001; Landmark Ecological Services, 2012).

- **The proposed dam is the antithesis of "the six guiding principles under the Part 3A assessment process (DEC and DPI 2005).** These principles are, to: Maintain or improve biodiversity values; Conserve biological diversity and promote ecologically sustainable development; Protect areas of high conservation value; Prevent the extinction of threatened species; Protect the long-term viability of local populations of a species, population or ecological community; and Protect aspects of the environment that are matters of national environmental significance" (SMEC, 2011).

- **Offsets cannot mitigate the permanent ecological damage** and changes in the ecosystem, lack of recovery, trans-boundary effects and cumulative effects this dam project will cause.

- **Rous is required to *avoid* this destruction because there are economically viable and more effective solutions that do not have the following:**
    - **Industrial/construction zone** for The Channon/Dunoon community; noise, machinery, trucks, visual impact. Ongoing sound impact from pump house etc.
    - **Higher prices for consumers due to a 4x increase in the cost of water.** Rous general manager, in response to a question from councillor Vanessa Ekins, said he expected a fourfold increase in the cost of supplying water if the dam is built.
    - **The small population increase** predicted for the four Rous-supplied councils of 12,720(5) between 2020-2060 does not justify such a large and destructive dam. The dam risks being an expensive white dinosaur, diverting expenditure away from more sustainable, flexible and effective solutions. NSW Department of

Planning, Industry and Environment 2019, *'NSW population projections* ', Sydney, viewed 03 August 2020, <https://www.planning.nsw.gov.au/Research-and-Demography/Population-projections/Projections> scroll down to "Local Government Factsheets".(5)

- **Catastrophic flooding downstream in worst floods,** particularly for the first 3 kilometres below. (Environmental Flows Assessment 2011)(6)
- **Potential for a big dam to drive unneeded population growth,** as the government attempts to gain value from an otherwise unnecessary, and stranded, asset.

Councils are required under State planning regulations to: "Focus development to areas of least biodiversity sensitivity in the region and implement the 'avoid, minimise, offset' hierarchy to biodiversity, including areas of high environmental value." NSW Department of Planning, Industry and Environment 2019, 'Delivering the plan', Sydney, viewed 03 August 2020 < https://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans/North-Coast/Delivering-the-plan >, Direction 2: Enhance biodiversity coastal and aquatic habitats and water catchments. (4)

I SUPPORT these alternatives:

To take action on a suite of smart water options and proven alternatives.

The tide is turning on renewable and sustainable power. It is time for the tide to turn on how we meet our water needs too. This is 21st century thinking.

- **An investment in system-wide water efficiency and strong demand management.** Analysed, costed and deployed, creating jobs. (We understand Rous has *not* costed this in creating their future water plan)

  Existing research over the past decade consistently finds that the best 'bang-for-buck' investment in water supply comes from demand management and identifying savings within the existing supply.*(7) (8)*

  Professor Stuart White from UTS has provided a detailed and costed proposal "The Rous Sustainable Water Program" which shows exactly how and why system-wide optimisation of water use is possible and economical. In comparison, the proposed dam is

simply financially, environmentally and socially irresponsible.*(9)* (Stuart White, 2020 www.bit.ly/Prof-Stuart-White-Rous-slides)

- **Water re-use in various ways,** including Purified Recycled Potable water.
  A wealth of global research and experience already exists regarding potable reuse of water as set out in Water Research Australia's report, Potable Water Reuse: What can Australia learn from global
  experience? https://www.waterra.com.au/publications/document-search/?download=1806*(9)*
  Example: The city of Windhoek in Namibia in Southern Africa has been using purified recycled water for 30 years using advanced technology. https://www.wingoc.com.na/our-history*(10)*
- **Water harvesting** (urban runoff; rain tanks):
  Water tanks on all new (and existing) developments.*(11) This builds community resilience - much needed, as the recent extreme bushfire season has shown.*

The Australian government advises that: "Depending on tank size and climate, mains water use can be reduced by up to 100%. This in turn can help: reduce the need for new dams or desalination plants; protect remaining environmental flows in rivers; reduce infrastructure operating costs."

Rainwater harvesting also decreases stormwater runoff, thereby helping to reduce local flooding and scouring of creeks.*(12)* https://www.yourhome.gov.au/water/rainwater

- **Contingency planning** would enable Rous to be ready to rapidly implement supply measures if it becomes necessary in times of drought.
- **Groundwater, where this is environmentally safe**
  The Australian government provides a lot of information on the ecological impacts and groundwater usage.*(13)*
  https://www.environment.gov.au/water/publications/what-are-the-ecological-impacts-of-groundwater-drawdown

With scalable supply alternatives in place, the existing supply from Rocky Ck Dam will be made resilient to anticipated times of drought and projected population growth, without the environmental destruction, social costs, and the over-capitalisation risk of an oversized and unnecessary dam.

References and Notes

1. Metropolitan Water Plan 2006, NSW Government. Exec Summary section of the doc https://www.dropbox.com/s/pu9898oq6kocrph/NSW%20Govt%202006%20MWP%20summary.pdf?dl=0
2. Ainsworth Heritage, Cultural Heritage Impact Assessment, 2011
3. SMEC Australia, Terrestrial Ecology Impact Assessment, 2011
4. NSW Department of Planning, Industry and Environment 2019, 'Delivering the plan', Sydney, viewed 03 August 2020 < https://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans/North-Coast/Delivering-the-plan > , Direction 2: Enhance biodiversity coastal and aquatic habitats and water catchments.
5. NSW Department of Planning, Industry and Environment 2019, *'NSW population projections* ', Sydney, viewed 03 August 2020, <https://www.planning.nsw.gov.au/Research-and-Demography/Population-projections/Projections> Scroll down to "Local Government Factsheets".
6. Environmental Flows Assessment Proposed Dunoon Dam, 30 Aug 2012, Eco Logical Australia.
7. The Rous Regional Water Efficiency Program 1997, *Final report of the Rous Regional Demand Management Strategy : preferred options*, Rous County Council, Lismore.
8. Watson R., Turner A and Fane S 2018, *Water Efficiency and Demand Management Opportunities for Hunter Water*, Institute for Sustainable Futures, Sydney.
9. Stuart White, 2020 www.bit.ly/Prof-Stuart-White-Rous-slides)
10. Kahn,Stuart and Branch, Amos 2019, *Potable water reuse: What can Australia learn from global experience?,* Water Research Australia Limited, Adelaide.
11. Windhoek Goreangab Operating Company (Pty) Ltd 2020,*Our history | Wingoc,* Veolia Environment, Windhoek, viewed 3 August 2020, <https://www.wingoc.com.na/>
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13. Australian Government Department of Industry 2013, Science, Energy and Resources, *Rainwater | Your home*, Canberra, viewed 3 August 2020, <https://www.yourhome.gov.au/water/rainwater>
14. Department of Agriculture, Water and the Environment 2018, *What are the ecological impacts of groundwater drawdown? | Department of Agriculture, Water and the Environment,* Canberra, viewed 6 August 2020, <https://www.environment.gov.au/water/publications/what-are-the-ecological-impacts-of-groundwater-drawdown>

[redacted]

From: Naomi Shine [redacted]
Sent: Wednesday, 9 September 2020 9:40 PM
To: [redacted]
Subject: The Future Water Project 2060; proposed Dam, future water strategies.

Naomi Shine
[redacted]

9th September 2020
Rous County Council,
Lismore NSW 2480
<council@rous.nsw.gov.au>

Dear Rous Councillors and General Manager,

Planning future water supply for our region is a very important job and it seems you will find many people interested in the Future Water Project 2060. This is because how we use, consume and plan for water is integral to our sustainability as a region. I suggest that only the most leading edge, well thought-out, tried and tested, sustainable water supply plans will please community and not much else.

I write in support of the efforts of community members and groups who have sought to inform the broader community, bringing together information and ideas to inform ourselves and Rous Water about options for intelligent future water strategy. It is possible for our region to be an example for other parts of the world if we introduce diverse water sustainability strategies (some are listed below); let us become a good news story about water, livability and good planning.

This from [redacted] Councillor Jeff Johnson;

The NSW Government is currently undertaking its own review of the future water needs of our region including domestic, agricultural and commercial usage. The Rous Water study only looks at urban water usage and supply. Surely, we need to at least wait to see what the NSW Government's review comes up with before being asked to determine a long-term strategy with massive cost and sustainability implications?

Currently, the public is being asked to choose either Option A or B (the Dunoon Dam or a massive increase in ground water usage). What if there are options C, D or E, or a combination between them that haven't been given proper consideration?
The total cost of the Dunoon Dam over an expected '80-year life span' would be over $650 million in today's dollars. All water users in the region would have to pay for it through increased rates and water usage charges. Rous Water currently supplies water to the local government areas of Ballina, Lismore, Byron and Richmond Valley. If the Dunoon Dam goes ahead, Rous Water estimates that water usage and supply charges will need to increase by 400%.

Is building a new dam the best way forward?

For a start, all major new subdivisions in the Ballina Shire have a recycled water pipe built into the infrastructure for toilets, laundry and garden usage. This greatly reduces the demand for 'new water' to be supplied. Surely programs like this can be extended or retrofitted to areas of high-water usage? If we could get closer to closing the loop then a new water source wouldn't be needed. The concept of building a massive new dam just to flush the water down the toilet and into the creeks, rivers and ultimately the ocean doesn't seem right to me.

It's time we looked at closing the loop with our water rather than just building larger dams or unsustainably tapping into the aquifers for a single use water management strategy.

Instead of investing all our resources into the proposed Dunoon dam, a range of alternative strategies need further investigation and investment. A suite of options that encourage greater water usage efficiency and reuse could provide an even more secure long-term water strategy. For example:

Approximately 15-20% of the existing water supplied by Rous is wasted through leaking pipes. Greater investment to reduce this huge amount of lost water should be a priority.

Greater reuse options – expand the 'purple pipe' infrastructure to increase water reusage, particularly for industry, new subdivisions and large water users.

Rainwater tanks – increase the rebates and requirement for rainwater tanks.

We are fortunate in the Northern Rivers given our high rainfall. How are other areas going to secure their 'long term water needs' when they receive far less rainfall than our region? In the recent drought, one of the worst on record, our region was the least affected. As outlined above, there are other options available to secure our long-term water needs.

My thanks to the wonderful 'No Dam at The Channon or Dunoon' people who put the following together and with which I completely agree;

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:
●Lost opportunity to invest in system-wide water efficiency - this is the cheapest & fastestway to ensure supply-demand balance. By focussing on system efficiency, Sydney added anadditional 950,000 people without a rise in consumption. (Metropolitan Water Plan 2006, NSWGovernment) (1)
●The 21st century is about a suite of smart water options. This dam would be a lostopportunity to make our system fit for the 21st century. It would swallow all resources in onebig expensive 'white dinosaur' project.
●The dam would encourage continued inefficient and often wasteful water management by local governments. They would have no incentive to do things differently.
●Destruction of important Indigenous cultural heritage, including burial sites (CulturalHeritage Impact Assessment, 2011)(2). Ongoing disregard for First Nations' heritage.
●Destruction of The Channon Gorge and its endangered ecological community of lowland rainforest (including regionally rare warm temperate rainforest on sandstone), and its threatened flora and fauna species is completely unacceptable. (Terrestrial Ecology Impact Assessment, 2011)(3). Rous is planning to offset the loss of rainforest on sandstone with regeneration of degraded land in the buffer zone. Offsetting is problematic because the type of vegetation offered as recompense is never equivalent. This example is worse than most. (Nan Nicholson, botanist) Councils are required under State planning regulations to: "Focus development to areas of least biodiversity sensitivity in the region and implement the 'avoid, minimise, offset' hierarchy to biodiversity, including areas of high environmental value." NSW Department of Planning,Industry and Environment 2019, 'Delivering the plan', Sydney, viewed 03 August 2020 <https://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans/North-Coast/Delivering-the-plan >, Direction 2: Enhance biodiversity coastal and aquatic habitats and watercatchments. (4)
Rous is required to avoid this destruction because there are economically viable and more effective solutions.
●Industrial/construction zone for The Channon/Dunoon community; noise, machinery, trucks,visual impact. Ongoing sound impact from pump house etc.
●Higher prices for consumers due to a 4x increase in the cost of water. Rous generalmanager, in response to a question from councillor Vanessa Ekins, said he expected afourfold increase in the cost of supplying water if the dam is built.
●The small population increase predicted for the four Rous-supplied councils of 12,720(5)between 2020-2060 does not justify such a large and destructive dam. The

dam risks being an expensive white dinosaur, diverting expenditure away from more sustainable, flexible andeffective solutions. NSW Department of Planning, Industry and Environment 2019, 'NSW population projections ', Sydney, viewed 03 August 2020,<https://www.planning.nsw.gov.au/Research-and-Demography/Population-projections/Projections> scroll down to "Local Government Factsheets".(5)
●Catastrophic flooding downstream in worst floods, particularly for the first 3 kilometres below.(Environmental Flows Assessment 2011)(6)
●Potential for a big dam to drive unneeded population growth, as the government attempts to gain value from an otherwise unnecessary, and stranded, asset.

I SUPPORT these alternatives:I believe we need to take action on a suite of smart water options and proven alternatives.The tide is turning on renewable and sustainable power. It is time for the tide to turn on how we meet our water needs too. This is 21st century thinking.
●An investment in system-wide water efficiency and strong demand management. Analysed, costed and deployed, creating jobs. (We understand Rous has not costed this in creating their future water plan). Existing research over the past decade consistently finds that the best 'bang-for-buck' investment in water supply comes from demand management and identifying savings within the existing supply.(7)(8)Professor Stuart White from UTS has provided a detailed and costed proposal "The Rous Sustainable Water Program" which shows exactly how and why system-wide optimisation of water use is possible and economical. In comparison, the proposed dam is simply financially, environmentally and socially irresponsible.(9) (Stuart White, 2020 www.bit.ly/Prof-Stuart-White-Rous-slides)
●Water reuse in various ways, including Purified Recycled Potable water. A wealth of global research and experience already exists regarding potable reuse of water asset out in Water Research Australia's report, Potable Water Reuse: What can Australia learnfrom global experience?
https://www.waterra.com.au/publications/document-search/?download=1806(9)Example: The city of Windhoek in Namibia in Southern Africa has been using purified recycledwater for 30 years using advanced technology. https://www.wingoc.com.na/our-history(10)
●Water harvesting (urban runoff; rain tanks):Water tanks on all new (and existing) developments.(11)This builds community resilience -much needed, as the recent extreme bushfire season has shown.The Australian government advises that: "Depending on tank size and climate, mains water use can be reduced by up to 100%. This in turn can help: reduce the need for new dams ordesalination plants; protect remaining environmental flows in rivers; reduce infrastructureoperating costs."Rainwater harvesting also decreases stormwater runoff, thereby helping to reduce localflooding and scouring of creeks.(12)https://www.yourhome.gov.au/water/rainwater
●Contingency planning would enable Rous to be ready to rapidly implement supply measures if it becomes necessary in times of drought.
●Groundwater, where this is environmentally safe. The Australian government provides a lot of information on the ecological impacts and groundwater usage.(13)https://www.environment.gov.au/water/publications/what-are-the-ecological-impacts-of-groundwater-drawdown With scalable supply alternatives in place, the existing supply from Rocky Ck Dam will be made resilient to anticipated times of

drought and projected population growth, without the environmental destruction, social costs, and the over-capitalisation risk of an outsized and unnecessary dam.

References and Notes(1)Metropolitan Water Plan 2006, NSW Government. Exec Summary section of the dochttps://www.dropbox.com/s/pu9898oq6kocrph/NSW%20Govt%202006%20MWP%20summary.pdf?dl=0(2)Ainsworth Heritage, Cultural Heritage Impact Assessment, 2011(3)SMEC Australia, Terrestrial Ecology Impact Assessment, 2011(4)NSW Department of Planning, Industry and Environment 2019, 'Delivering the plan', Sydney, viewed 03August 2020 <https://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans/North-Coast/Delivering-the-plan >, Direction 2: Enhance biodiversity coastal and aquatic habitats and water catchments.(5)NSW Department of Planning, Industry and Environment 2019, 'NSW population projections ', Sydney,viewed 03 August 2020,<https://www.planning.nsw.gov.au/Research-and-Demography/Population-projections/Projections>Scroll down to "Local Government Factsheets".(6)Environmental Flows Assessment Proposed Dunoon Dam, 30 Aug 2012, Eco Logical Australia.(7)The Rous Regional Water Efficiency Program 1997, Final report of the Rous Regional DemandManagement Strategy : preferred options, Rous County Council, Lismore.(8)Watson R., Turner A and Fane S 2018, Water Efficiency and Demand Management Opportunities forHunter Water, Institute for Sustainable Futures, Sydney.(9)Stuart White, 2020 www.bit.ly/Prof-Stuart-White-Rous-slides)(10)Kahn,Stuart and Branch, Amos 2019, Potable water reuse: What can Australia learn from globalexperience?, Water Research Australia Limited,Adelaide.(11)Windhoek Goreangab Operating Company (Pty) Ltd 2020,Our history | Wingoc, Veolia Environment,Windhoek, viewed 3 August 2020, <https://www.wingoc.com.na/>(12)$220 million dollars - the estimated cost of the new dam - could provide more than 73,000 rainwatertanks (22,700L) at $3,000 each including installation. That is 1.66GL storage with no evaporation andmuch increased community resilience for future climate risks. This more than covers the 0.9GL extrawater needed by the 12,720 new people predicted to come to our area based on 194L/person/dayaverage water use (Rous).(13)Australian Government Department of Industry 2013, Science, Energy and Resources, Rainwater | Yourhome, Canberra, viewed 3 August 2020, <https://www.yourhome.gov.au/water/rainwater>(14)Department of Agriculture, Water and the Environment 2018, What are the ecological impacts ofgroundwater drawdown? | Department of Agriculture, Water and the Environment, Canberra, viewed 6August 2020,<https://www.environment.gov.au/water/publications/what-are-the-ecological-impacts-of-groundwater-drawdown>

Thank you for your time and consideration of my submission.

Naomi Shine
Chair, Lismore Environment Centre.
Cranio Sacral Therapy, dip CST.

[redacted]

From: Mel Rogers [redacted]
Sent: Wednesday, 9 September 2020 10:31 PM
To: Records
Cc: [redacted]
Subject: The proposed Dunoon Dam and the Future Water Project 2060

CYBER SECURITY WARNING – This message is from an external sender – be cautious, particularly with hyperlinks and/or attachments.

From:
(Ms) Mel Rogers
[redacted]

Dear Rous Counvillors and Gen. Manager

Thank you for supporting the extension of the submission date, as a community member I appreciate it. I acknowledge the complexity of what Rous does to provide water to our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

- Lost opportunity to invest in system-wide water efficiency - this is the cheapest & fastest way to ensure supply-demand balance. By focussing on system efficiency, Sydney added an additional 950,000 people without a rise in consumption. (Metropolitan Water Plan 2006, NSW Government) (1)

- The 21st century is about a suite of smart water options. This dam would be a lost opportunity to make our system fit for the 21st century. It would swallow all resources in one big expensive 'white dinosaur' project.

- The dam would encourage continued inefficient and often wasteful water management by local governments. They would have no incentive to do things differently.

- Destruction of important Indigenous cultural heritage, including burial sites (Cultural Heritage Impact Assessment, 2011)(2). Ongoing disregard for First Nations' heritage.

- Destruction of The Channon Gorge and its endangered ecological community of lowland rainforest (including regionally rare warm temperate rainforest on sandstone), and its threatened flora and fauna species. (Terrestrial Ecology Impact Assessment, 2011)(3).

Rous is planning to offset the loss of rainforest on sandstone with regeneration of degraded land in the buffer zone. Offsetting is problematic because the type of vegetation offered as recompense is never equivalent. This example is worse than most. (Nan Nicholson, botanist)

Councils are required under State planning regulations to: "Focus development to areas of least biodiversity sensitivity in the region and implement the 'avoid, minimise, offset' hierarchy to biodiversity, including areas of high environmental value." NSW Department of Planning, Industry and Environment 2019, 'Delivering the plan', Sydney, viewed 03 August 2020 < https://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans/North-Coast/Delivering-the-plan >, Direction 2: Enhance biodiversity coastal and aquatic habitats and water catchments. (4)

Rous is required to avoid this destruction because there are economically viable and more effective solutions.

- Industrial/construction zone for The Channon/Dunoon community; noise, machinery, trucks, visual impact. Ongoing sound impact from pump house etc.

- Higher prices for consumers due to a 4x increase in the cost of water. Rous general manager, in response to a question from councillor Vanessa Ekins, said he expected a fourfold increase in the cost of supplying water if the dam is built.

- The small population increase predicted for the four Rous-supplied councils of 12,720(5) between 2020-2060 does not justify such a large and destructive dam. The dam risks being an expensive white dinosaur, diverting expenditure away from more sustainable, flexible and effective solutions. NSW Department of Planning, Industry and Environment 2019, 'NSW population projections ', Sydney, viewed 03 August 2020, <https://www.planning.nsw.gov.au/Research-and-Demography/Population-projections/Projections> scroll down to "Local Government Factsheets".(5)

- Catastrophic flooding downstream in worst floods, particularly for the first 3 kilometres below. (Environmental Flows Assessment 2011)(6)

- Potential for a big dam to drive unneeded population growth, as the government attempts to gain value from an otherwise unnecessary, and stranded, asset.

I SUPPORT these alternatives:

I believe we need to take action on a suite of smart water options and proven alternatives.

The tide is turning on renewable and sustainable power. It is time for the tide to turn on how we meet our water needs too. This is 21st century thinking.

- An investment in system-wide water efficiency and strong demand management. Analysed, costed and deployed, creating jobs. (We understand Rous has not costed this in creating their future water plan)
Existing research over the past decade consistently finds that the best 'bang-for-buck' investment in water supply comes from demand management and identifying savings within the existing supply.(7) (8) Professor Stuart White from UTS has provided a detailed and costed proposal "The Rous Sustainable Water Program" which shows exactly how and why system-wide optimisation of water use is possible and economical. In comparison, the proposed dam is simply financially, environmentally and socially irresponsible.(9) (Stuart White, 2020 www.bit.ly/Prof-Stuart-White-Rous-slides)

- Water re-use in various ways, including Purified Recycled Potable water.
A wealth of global research and experience already exists regarding potable reuse of water as set out in Water Research Australia's report, Potable Water Reuse: What can Australia learn from global experience? https://www.waterra.com.au/publications/document-search/?download=1806(9)
Example: The city of Windhoek in Namibia in Southern Africa has been using purified recycled water for 30 years using advanced technology. https://www.wingoc.com.na/our-history(10)

- Water harvesting (urban runoff; rain tanks):
Water tanks on all new (and existing) developments.(11) This builds community resilience - much needed, as the recent extreme bushfire season has shown.

The Australian government advises that: "Depending on tank size and climate, mains water use can be reduced by up to 100%. This in turn can help: reduce the need for new dams or desalination plants; protect remaining environmental flows in rivers; reduce infrastructure operating costs."

Rainwater harvesting also decreases stormwater runoff, thereby helping to reduce local flooding and scouring of creeks.(12) https://www.yourhome.gov.au/water/rainwater

- Contingency planning would enable Rous to be ready to rapidly implement supply measures if it becomes necessary in times of drought.

- Groundwater, where this is environmentally safe

The Australian government provides a lot of information on the ecological impacts and groundwater usage.(13) https://www.environment.gov.au/water/publications/what-are-the-ecological-impacts-of-groundwater-drawdown

With scalable supply alternatives in place, the existing supply from Rocky Ck Dam will be made resilient to anticipated times of drought and projected population growth, without the environmental destruction, social costs, and the over-capitalisation risk of an outsized and unnecessary dam.

References and Notes

1) Metropolitan Water Plan 2006, NSW Government. Exec Summary section of the doc https://www.dropbox.com/s/pu9898oq6kocrph/NSW%20Govt%202006%20MWP%20summary.pdf?dl=0

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2020, <https://www.environment.gov.au/water/publications/what-are-the-ecological-impacts-of-groundwater-drawdown>

Thank you for accepting and reading my concerns, and I look forward to hearing further on this important matter.

Kind regards

Mel Rogers

[redacted]

From: Dewi Chai [redacted]
Sent: Wednesday, 9 September 2020 9:41 PM
To: Records
Cc: [redacted]
Subject: The proposed Dunoon Dam within the 2060 water project

From:
Dewi Chai
[redacted]

9th September, 2020

To: Rous County Council, [redacted]

Dear Rous Councillors and General Manager

Re: The proposed Dunoon Dam within the Future Water Project 2060
My name is Dewi Chai - my family and [redacted].

I object to this dam being built. First and foremost, my objection is that this area of the Northern Rivers is one of the most biodiverse areas in NSW, and is home to many rare and endangered species.

To flood an area of temperate rainforest in this region is not an environmentally sound decision. Australia, particularly NSW, has lost vast areas of habitat for **koalas** and other already threatened species to recent bushfires. The area of this proposed dam is part of one of the small areas left partially intact for these species.

Furthermore, Australia's water management is wasteful considering our arid climate, and there are alternative ways to preserve water, for example with mandatory water capture in urban areas for all new dwellings (at the very least).

Thankyou for supporting the extension of the submission date. I do acknowledge the complexity of what Rous does to provide water to our region.

I DO NOT support the proposed The Channon-Dunoon Dam for these reasons:

- • **Lost opportunity to invest in system-wide water efficiency**- this is the cheapest & fastest way to ensure supply-demand balance. By focussing on system efficiency, Sydney added an additional

950,000 people without a rise in consumption. (Metropolitan Water Plan 2006, NSW Government) [1]

- ● **The 21st century is about a suite of smart water options.** This dam would be a lost opportunity to make our system fit for the 21st century. It would swallow all resources in one big expensive 'white dinosaur' project.
- ● **The dam would encourage continued inefficient and often wasteful water management by local governments.**They would have no incentive to do things differently.
- ● **Destruction of important Indigenous cultural heritage,**including burial sites (Cultural Heritage Impact Assessment, 2011)[2].Ongoing disregard for First Nations' heritage.
- ● **Destruction of The Channon Gorge and its endangered ecological community of lowland rainforest**(including regionally rare warm temperate rainforest on sandstone), and its threatened flora and fauna species. (Terrestrial Ecology Impact Assessment, 2011)[3].

Rous is planning to offset the loss of rainforest on sandstone with regeneration of degraded land in the buffer zone. Offsetting is problematic because the type of vegetation offered as recompense is never equivalent. This example is worse than most. (Nan Nicholson, botanist)

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Rous is required to ***avoid***this destruction because there are economically viable and more effective solutions.

- ● **Industrial/construction zone**for The Channon/Dunoon community; noise, machinery, trucks, visual impact. Ongoing sound impact from pump house etc.
- ● **Higher prices for consumers due to a 4x increase in the cost of water.** Rous general manager, in response to a question from councillor Vanessa Ekins, said he expected a fourfold increase in the cost of supplying water if the dam is built.
- ● **The small population increase**predicted for the four Rous-supplied councils of 12,720[5]between 2020-2060 **does not justify**such a large and destructive dam. The dam risks being**an expensive white dinosaur**, diverting expenditure away from more sustainable, flexible and effective solutions. NSW Department of Planning, Industry and Environment 2019, *'NSW population projections*', Sydney, viewed 03 August 2020, <https://www.planning.nsw.gov.au/Research-and-Demography/Population-projections/Projecti ons> scroll down to "Local Government Factsheets".[5]
- ● **Catastrophic flooding downstream in worst floods,** particularlyfor the first 3 kilometres below.(Environmental Flows Assessment 2011)[6]
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  Existing research over the past decade consistently finds that the best 'bang-for-buck' investment in

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Professor Stuart White from UTS has provided a detailed and costed proposal "The Rous Sustainable Water Program" which shows exactly how and why system-wide optimisation of water use is possible and economical. In comparison, the proposed dam is simply financially, environmentally and socially irresponsible.[9] (Stuart White, 2020www.bit.ly/Prof-Stuart-White-Rous-slides)

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  A wealth of global research and experience already exists regarding potable reuse of water as set out in Water Research Australia's report, Potable Water Reuse: What can Australia learn from global experience?

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Example: The city of Windhoek in Namibia in Southern Africa has been using purified recycled water for 30 years using advanced technology. https://www.wingoc.com.na/our-history[10]

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  Water tanks on all new (and existing) developments.[11] *This builds community resilience - much needed, as the recent extreme bushfire season has shown.*

  The Australian government advises that: "Depending on tank size and climate, mains water use can be reduced by up to 100%. This in turn can help: reduce the need for new dams or desalination plants; protect remaining environmental flows in rivers; reduce infrastructure operating costs."

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- ● **Contingency planning** would enable Rousto be ready to rapidly implement supply measures if it becomes necessary in times of drought.
- ● **Groundwater, where this is environmentally safe**

  The Australian government provides a lot of information on the ecological impacts and groundwater usage.[13]https://www.environment.gov.au/water/publications/what-are-the-ecological-impacts-of-ground water-drawdown

  With scalable supply alternatives in place, the existing supply from Rocky Ck Dam will be made resilient to anticipated times of drought and projected population growth, without the environmental destruction, social costs, and the over-capitalisation risk of an outsized and unnecessary dam.

References and Notes

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6. (6) Environmental Flows Assessment Proposed Dunoon Dam, 30 Aug 2012, Eco Logical Australia.
7. (7) The Rous Regional Water Efficiency Program 1997, *Final report of the Rous Regional Demand Management Strategy : preferred options*, Rous County Council, Lismore.
8. (8) Watson R., Turner A and Fane S 2018, *Water Efficiency and Demand Management Opportunities for Hunter Water*, Institute for Sustainable Futures, Sydney.
9. (9) Stuart White, 2020 www.bit.ly/Prof-Stuart-White-Rous-slides)

(10)Kahn,Stuart and Branch, Amos 2019, *Potable water reuse: What can Australia learn from global experience?,* Water Research Australia Limited,Adelaide.
(11)WindhoekGoreangabOperatingCompany(Pty)Ltd2020*,Ourhistory|Wingoc,*VeoliaEnvironment, Windhoek, viewed 3 August 2020, <https://www.wingoc.com.na/>
(12)$220 million dollars - the estimated cost of the new dam - could provide more than 73,000 rainwater tanks (22,700L) at $3,000 each including installation. That is 1.66GL storage with no evaporation and much increased community resilience for future climate risks. This more than covers the 0.9GL extra water needed by the 12,720 new people predicted to come to our area based on 194L/person/day average water use (Rous).

(13)Australian Government Department of Industry 2013, Science, Energy and Resources, *Rainwater | Your home*, Canberra, viewed 3 August 2020, <https://www.yourhome.gov.au/water/rainwater>

(14)Department of Agriculture, Water and the Environment 2018, *What are the ecological impacts of groundwater drawdown? | Department of Agriculture, Water and the Environment,* Canberra, viewed 6 August 2020, <https://www.environment.gov.au/water/publications/what-are-the-ecological-impacts-of-groundwater-dr awdown>

Thank you for your time.

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