

Armidale Water Security Project
Scoping Report
ARC Reference: AINT/2026/05177



Restore & thrive

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Executive Summary

Introduction to the project

Armidale Regional Council is located in the New England region, with an economy anchored by a major regional university, strong agricultural base, and a burgeoning protected horticultural sector. The community is centred on the historic city of Armidale and its surrounding villages. The declaration of the New England Renewable Energy Zone across this area represents a significant strategic shift in land use and infrastructure investment, positioning the region as a key contributor to the State's energy transition.

In 2019, Armidale experienced its driest and warmest year on record. Level 3 water restrictions were introduced in April 2019 and escalated to Level 5 by October 2019. These restrictions remained in place until September 2020. During this time, the NSW Government classified Armidale's water supply at the highest level of risk (Category 5).

At this time, it was expected that the region had between 100 and 200 days until a Day Zero Event (Zero water availability). An event of this significance would see the evacuation of a population of approximately 30,000 - a complex and high-risk response which would place immediate and significant stress on the NSW state with impacts ranging from housing supply and accommodation availability through to healthcare and education. A crisis not seen before in NSW.

This experience highlighted significant vulnerabilities in the region's water security and the urgent need for a resilient and diversified supply system. Council's ability to deliver core services, including road maintenance and emergency response during bushfire conditions, was severely constrained. With the growth in renewable energy infrastructure and the certainty of future droughts affecting the New England area, water security has become a major priority for Council.

As part of investigations to identify alternative water sources, Council negotiated the purchase of Oaky River Dam which was a hydropower dam owned by Essential Energy. In 2013 the dam wall failed due to a sensor malfunction during a major storm event, leading to a spillover and damage to the dam wall. Armidale Regional Council recognised the potential of Oaky River Dam to provide water security for Armidale, and purchased the dam in 2024 with the intention of restoring the dam to its original capacity.

This Scoping Report has been prepared to support Armidale Regional Council's Proposal to:

- restore the Oaky River Dam
- construct a water transfer system to connect Oaky River Dam to the Armidale Water Treatment Plant
- construct a connecting pipeline to Uralla
- upgrade the existing Malpas Dam

Under Part 4 of the *Environmental Planning and Assessment Act 1979* and the State Environmental Planning Policy (Planning Systems) 2021, the Proposal is considered State Significant Infrastructure. As such, this Scoping Report informs the request for the environmental assessment requirements to be issued by the Secretary of the NSW Department of Planning, Housing and Infrastructure (DPHI). The document has been prepared consistent with the *State Significant Development Guidelines – Preparing a Scoping Report* (NSW DPIE, 2022)

Strategic context

The Proposal is supported by strategic planning policies at local, state and federal levels of government. At a strategic level, the Proposal provides an opportunity to:

- Assist in meeting water security matters identified in the New England area, specifically Armidale Regional Council, as well as supporting Uralla and Walcha Councils in their need for a secure water source in close proximity to their local government areas.
- Increase resilience for regional NSW communities with a focus on the New England region.
- Support growth in Armidale and surrounding townships as well as the Controlled Environment Horticulture industry in the New England.
- Contribute to renewable energy infrastructure in the New England Renewable Energy Zone by providing a critical water source for construction, operation and maintenance of renewable energy infrastructure.

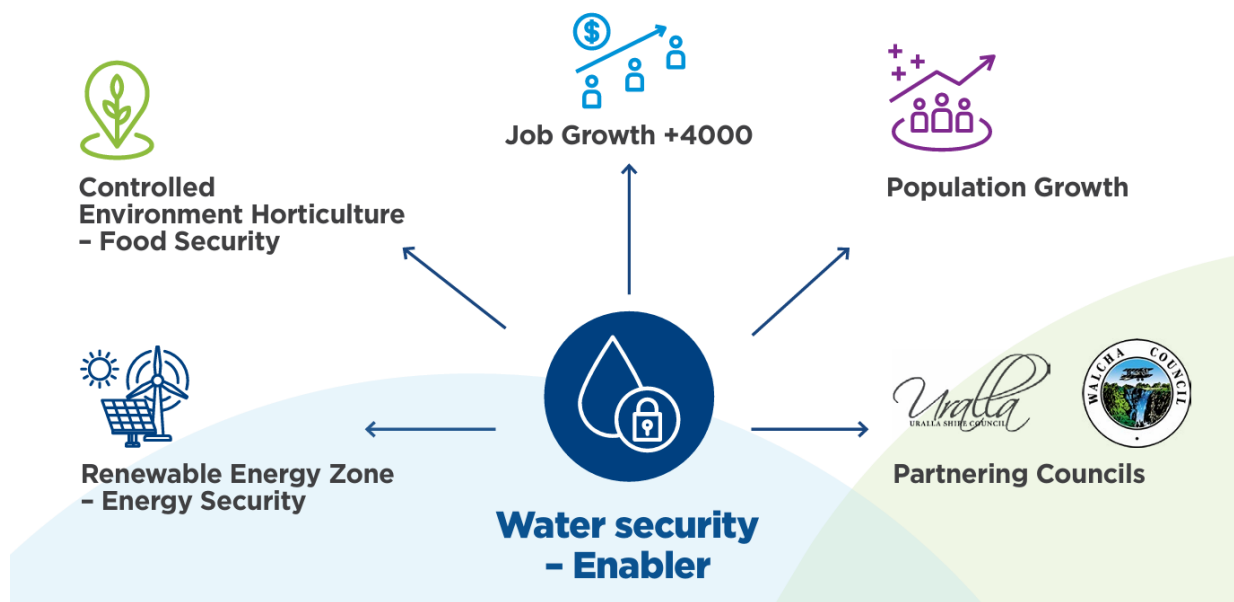


Figure 1 - Water Security Outcomes

Key issues and likely impacts

This Scoping Report has been informed by relevant guidelines prepared by DPHI and government along with community and stakeholder views obtained during ongoing consultation on water security. Concept Designs have been prepared along with preliminary investigations to identify the relevant matters to be addressed in the EIS for the project and the required level of assessment. This includes various desktop assessments and limited field surveys undertaken by NSW Public Works and the project team.

The Proposal is supported by Council's Local Strategic Planning Statement as well as Council's community plan, Advancing Our Region 2025-2034.

Key issues to be assessed during the EIS include:

- Water – a completed secure yield study (NUWS, December 2025) provides the climate-adjusted baseline for water availability, including NARCLiM1.5 modelling across multiple future climate scenarios. The EIS will assess potential impacts on surface water hydrology, cold water pollution and water quality, building on this completed work rather than repeating it.

- Biodiversity – the Proposal will impact native vegetation, threatened species habitat and waterways due to clearing works during construction, particularly adjacent to Waterfall Way where the pipeline is proposed.
- Heritage – the Proposal has the potential to impact known and potential Aboriginal heritage sites during construction as a result of the clearing and earthworks, particularly adjacent to Waterfall Way where the pipeline is proposed. There are also items of historical significance to the development of the New England area which are in close proximity to the project components.
- Land – The Proposal may intermittently impact privately owned land, particularly associated with peak dam levels during times of high rainfall and during significant flood events. Further, a significant length of the Oaky River Dam pipeline to connect to the Armidale WTP runs adjacent to the Waterfall Way which is a state road owned and operated by Transport for NSW (TfNSW). A substantial component of the pipeline alignment will be located within private property adjacent to the corridor, with likely impacts within the road corridor as well as impacts to property accesses along Waterfall Way during construction. The design of the pipeline will be undertaken in consultation with TfNSW.
- Landscape Character and Visual Amenity – the views along Waterfall Way will change during construction of the Oaky River pipeline, including via any vegetation clearing associated with the pipeline. Changes will also take place with regards to the restoration of the Oaky River Dam with the reinstatement of the dam wall resulting in increased water storage along the alignment of the Oaky River becoming a permanent landscape feature again.
- Social and economic – The Proposal will contribute to an influx of workers during construction, providing a range of economic benefits. Further, it is anticipated the Proposal will contribute to the economic viability of the Controlled Environmental Horticulture industry which in turn will stimulate jobs and residential growth in the region. An assessment of social and economic impacts and benefits of the Proposal on the local community will be needed to better understand opportunities.

Project Interfaces

There are several projects which, if constructed, will interface with the Oaky Dam restoration and pipeline project. These are:

- The restoration of Kempsey-Armidale Road. Works will commence in 2026 to reinstate the corridor to pre-natural disaster conditions. Completion date is anticipated by late 2029. With construction for Oaky River Dam anticipated to commence sometime in 2028 (subject to funding), there may be some overlap in construction traffic using Kempsey-Armidale Road to access Oaky Dam restoration as well as complete the road works on Kempsey-Armidale Road.
- The reinstatement and potential upgrade of the existing hydropower plant, which will be made possible through the restoration of the Oaky River Dam wall.
- A future upgrade to the pipeline between Malpas Dam and the Armidale Water Treatment Plant to increase gravity flow rate of water between the WTP and Malpas Dam from 255 L/s to 435 L/s and also allow reverse pumping to store water from Oaky River Dam in Malpas Dam.
- A future connection to the water pipeline for the village of Wollomombi, which may also include a stand-alone water treatment plant.

- New water treatment plant for Armidale due to existing plant reaching end of life. New plant will be constructed in different location with connections to Malpas and Oaky River Dam to be upgraded upon completion of new WTP.
- Hillgrove mine is an existing underground gold and antimony mine along Waterfall Way off Stockton Road. There is currently development plans to expand the operation, which is approximately 15km east of the Oaky River Dam.
- Renewable energy projects in the NEREZ seeking access to potable water, which is essentially one of the drivers for the proposal, with a particular focus on those projects along the Waterfall Way alignment.

These interfaces will be monitored and managed to ensure consistency with the overarching water security management plan developed by Council, and the design and implementation of the Oaky River Dam Restoration project.

Abbreviations and Notations

Item	Description
ACHAR	Aboriginal Cultural Heritage Assessment Report
AEP	Annual Exceedance Probability
AFC	Acceptable Flood Capacity
AHIMS	Aboriginal Heritage Information Management System
ANCOLD	Australian National Committee on Large Dams
BDAR	Biodiversity Assessment Report
BGA	Blue-Green Algae
CEH	Controlled Environment Horticulture
CIV	Capital Investment Value
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DPE	Former NSW Department of Planning and Environment
DPHI	Department of Planning, Housing and Infrastructure
DSNSW	Dam Safety NSW
DSMS	Dam Safety Management System
EIS	Environmental Impact Statement
EP&A Act	Environmental Planning and Assessment Act 1979
EPA	Environment Protection Authority
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
FSL	Full Supply Level
FCC	Flood Consequence Category
IWCM	Integrated Water Cycle Management
LEP	Local Environmental Plan
LGA	Local Government Authority
LSPS	Local Strategic Planning Statement
kL/d	Kilolitres/day
ML	Megalitres

ML/d	Megalitres/day
NEREZ	New England Renewable Energy Zone
PLL	Potential Loss of Life
PRV	Pressure Relief Valve
PMPF	Probable Maximum Precipitation Flood
Proposal	Project consisting of: • Restoration of the Oaky River Dam • A water transfer system to pump water from Oaky River Dam to Armidale Water Treatment Plant • A water transfer system connecting Armidale to Uralla • Raising the existing Malpas Dam.
REZ	Renewable Energy Zone
RFS	Rural Fire Service
RL	Reduced level
TfNSW	Transport for NSW
TSR	Travelling Stock Reserve
SDCC	Sunny Day Consequence Category
SDL	Severity of Damage and Loss
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SSI	State Significant Infrastructure
WTP	Water Treatment Plant

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1. Introduction

1.1. Proponents details

The Armidale Region Local Government Area is in the Northern Tablelands / New England Northwest Region of NSW (the traditional lands of the Nganyaywana people), situated approximately halfway between Brisbane and Sydney. The region includes Armidale city, Guyra township and a network of villages. In 2021, the region had a population of around 30,000 people and is growing.

The Armidale Region does not have a secure water supply. There is a current shortfall of 54% in the yield requirement against the demand requirement to sustain the current population and economic activity of the region. The NSW Government Safe and Secure Water Program has assessed the Armidale water supply at the highest (Category 5) water security risk.

Given this lack of a secure water source, Armidale Regional Council is proposing to reinstate the dam on Oaky River, approximately 50 km east of Armidale, construct a pipeline connecting the dam to the Armidale Water Treatment Plant and raise the Malpas Dam. The Oaky River Dam was damaged by a storm in 2013.

The proponent details are:

Name	Armidale Regional Council
ABN	39 642 954 203
Address	135 Rusden Street, Armidale

1.2. Purpose of this report

This report has been prepared internally by Armidale Regional Council (the proponent) to provide an overview of the project, consider potential environmental impacts associated with its implementation, and identify likely impacts for further investigation and assessment.

The report has been prepared in accordance with the State Government's *State significant infrastructure guidelines – preparing a scoping report* October 2022.

The purpose of this scoping report is to request and inform the content of the Secretary's environmental assessment requirements (SEARs) for the preparation of the environmental impact statement (EIS) for the Project.

1.3. Water Security Strategy

The Proposal is part of a wider water and wastewater strategy for Armidale Regional Council developed to form Council's overarching Water Security Strategy. This Strategy comprises a staged upgrade of Council's critical headworks infrastructure that includes:

- Restoring Oaky River Dam
- Constructing a new pipeline between Oaky River Dam and the existing Armidale Water Treatment Plant (WTP)
- Raising Malpas Dam spillway by 6.5m
- Upgrading the pipeline between Malpas Dam and Armidale WTP
- Upgrading the existing Water Treatment Plants to increase capacity at Armidale and Guyra
- Improving catchment management

The State Significant Infrastructure Proposal includes only the Oaky River Dam restoration, water transfer system and an upgrade to Malpas Dam. This is due to those projects having design plans developed, preliminary assessments undertaken to understand impacts, as well as being priorities for investment by Council given they address the highest need – that is, to provide a safe and secure water source for the future.

It is noted future works at the Water Treatment Plants are not part of this EIS proposal as this is not intrinsically linked to the dam projects, with further investigation underway around options for upgrades. Improved water catchment management within the New England is part of Council's ongoing strategy aimed at the sustainable use of water in the region.

1.4. Project background

Armidale's water is currently sourced from Malpas Dam, which was constructed more than 50 years ago with a storage capacity of 12,266 megalitres (ML). With the completion of Malpas Dam in 1968, there had been a common understanding that that dam would provide water security for 40,000 residents. This assumed the catchment was resilient and could be further exploited.

This assumption prevailed until the impact of 2017-20 Tinderbox Drought which peaked at the end of 2019, casting doubt on these assumptions. This was when the Armidale Region Population had approximately 29,800 residents, significantly less than the assumed 40,000 target for water security.

The conditions of this drought were drier and hotter than any other drought in NSW in the last 120 years¹. In 2019, Armidale experienced its driest and warmest year on record with Level 3 water restrictions enforced across the entire Local Government Area in April 2019 and Level 5 water restrictions introduced in October 2019, lasting until September 2020. During this time, Armidale Council spent a period where there was only 100 days of potable water before the regional centre ran dry and looked towards evacuations of the city in the event there was no water for residents.

As most of Council's Local Strategic Planning Statement (LSPS) priorities depend on a secure and reliable water supply, and in the context of a changing climate, there is a critical urgency to invest in a sustainable, viable water source to safeguard the future of Armidale Regional Council and neighbouring communities.

When considering regional issues the Uralla Local Government Area (LGA), located immediately south of the Armidale Regional Council area, also experienced severe water shortages in 2019 following contamination of its water supply which required bottled water to be trucked in for residents. Armidale Regional Council officers have been collaborating with Uralla Shire Council on a proposal that would enhance water security outcomes for the Uralla community. Recently Uralla Shire Council has identified there are minimal opportunities to address water security within their LGA, with a recent Public Works report identifying a potential pipeline from the Armidale Water Network as the only viable option for the community.

With lesson learnt from the 2017-2020 drought, Council embarked on investigations into measures to provide water security for the New England community. This resulted in the identification of Oaky River Dam, a disused and damaged hydro dam off Kempsey-Armidale Road, as an additional water source for Council. It was subsequently purchased by Council early 2024 for \$4.3M.

Further to Council's own journey around water security, the declaration of the New England Renewable Energy Zone (NEREZ) in December 2021 led to the realisation that external pressures on water supply sources in the New England were becoming increasingly problematic for the region with the need for an additional water source becoming critical.

¹ [The 2017-20 drought | Water](#)

With a preferred option identified and detailed design plans for the dam restoration and upgrade components, ARC identified a priority of works being the Water Security Project (The Proposal) which comprises of two key stages:

- **Stage 1:**
 - Restore Oaky River Dam to its original capacity (2.78GL), implement a water transfer system including two pumping stations and connecting pipeline to Armidale's Water Treatment Plant, with an additional potable connection to Uralla.
- **Stage 2:**
 - Raise Malpas Dam by 6.5m.

Armidale Regional Council is seeking environmental approval for the Proposal. This will facilitate a secure, safe, and accessible water supply for the region along with facilitating the State's energy transition. Construction staging will prioritise Oaky River Dam, the water pipeline and potable connection to Uralla. The upgrade to Malpas Dam will follow once anticipated demand reaches a threshold of 6000ML/year for a dry year extraction, and additional funding becomes available. A graph highlighting the staging thresholds is provided in Section 1.8 relating to project options, noting the graph does not include demand from the NEREZ projects.

Investment in the proposal is essential to reduce risk exposure, enable economic and population growth and facilitate the renewable energy transition across Armidale LGA and surrounding areas. This aligns with the *Regional Drought Resilience Plan* developed jointly by ARC and Uralla Shire Council, with water security identified as a relevant investment under the Plan's framework for proactive government and action.

Further to the above, in restoring the Oaky River Dam, it provides opportunities for a renewable energy source should Council wish to partner with an energy provider to investigate, upgrade and manage a hydropower station in the longer term. Any such activities would be subject to a separate environmental assessment process. Armidale Regional Council is currently exploring high level options with Origin Energy for the future potential of hydropower in the region.

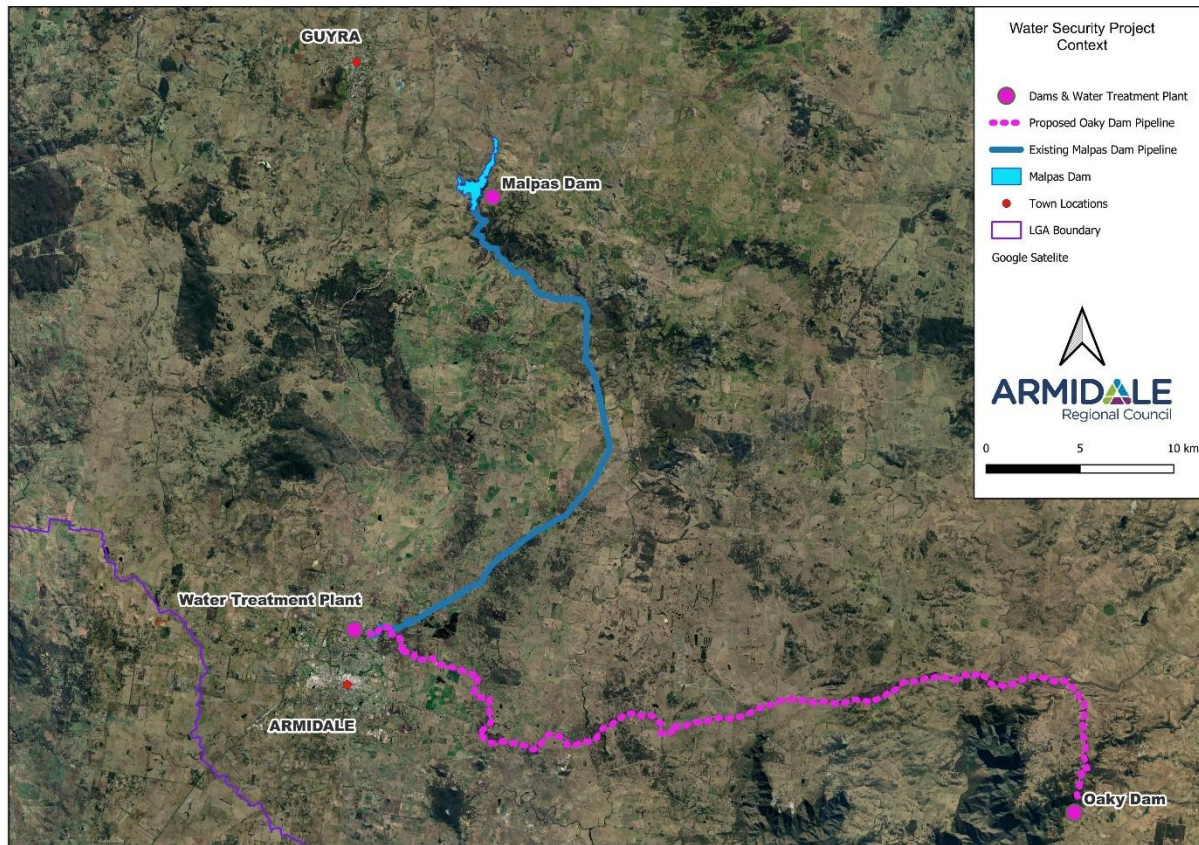


Figure 2 - Armidale Strategic Water Network

1.5. Project objectives

The project objectives are to:

- Address underlying water security deficit for Armidale region, previously identified by NSW Government as Category 5, the highest water security risk
- Maximise the region's potential by providing a viable water source to support major employment industries including the Controlled Environment Horticultural industry
- Reduce risks relating to the raising of Malpas Dam by providing a viable alternative water supply during future construction activities
- Support a Regional Water Security Strategy including a connection to Uralla to support surrounding New England tableland communities
- Support Australia's commitments to renewable energy by providing a sustainable water supply for construction associated with the New England Renewable Energy Zone while maintaining supply to the Council communities.
- Increase system resilience and operational flexibility across the regional network by building redundancy so Council can maintain continuity of supply during droughts, outages and major construction or maintenance activities
- Protect and enhance environmental, cultural heritage and regulatory outcomes by securing necessary approvals, licences and impact mitigations to ensure the project is delivering in a way that minimises ecological impacts and supports sustainable long-term water management
- Facilitate success of Council's Community Plan 2025-3034 including providing the community with *"safe, secure and accessible water that is sustainably managed now and into the future."*

- Facilitate success of the Local Strategic Planning Statement, *Advancing our region: Towards 50,000* by providing secure water supply, critical enabling infrastructure for Council's future.
- Stimulate the local economy through construction jobs, supplier contracts and flow on benefits to the local community in the development and implementation of the project.

1.6. Project justification

Armidale and Uralla communities support key agricultural industries including:

- Livestock farming for sheep and beef to support food and textile industries
- Controlled Environment Horticultural farming systems to support production of food crops such as tomatoes and strawberries
- Agribusinesses such as GrazAg and Elders that provide support, services and products to farming communities.

Additionally, the area is home to research and development centres focused on improving livestock genetics and production such as University of New England (UNE), manufacturing industries that support the region such as Uniplan, and commercial developments which contribute to the region's economic success. Water is a critical enabler of many of these activities, with water security providing a necessary catalyst for these industries to grow and prosper.

The area experienced its worst drought in 2019 where water restrictions were introduced with Level 5 restrictions implemented until late 2020. This was the end of the 2017-20 NSW drought, which resulted in the driest and warmest year on record for the New England Region. The nature of this drought, and the resulting impact on New England communities, brought about the realisation that Malpas Dam was insufficient to provide water security, and Council needed to work on a future solution to increase resilience for the region. As part of Council's draft Integrated Water Cycle Management (IWCM) strategy, a water cycle analysis was completed to forecast the 30-year unrestricted annual extraction using Council's nominated growth rate of 1.065% for Armidale City and 1% for Guyra. This highlighted a deficit in water availability to support this incremental growth.

Council's strategic planning identifies a current secure yield of 2,428 ML/year compared to projected dry year demand of 4,478 ML/year in 2026, increasing to 6,183 ML/year by 2054, and up to 7,347 ML/year under higher growth scenarios. Neighbouring Uralla Shire also faces supply and water quality constraints.

This highlights water security is both a current issue as well as one that urgently needs to be resolved to facilitate NSW government's renewable energy transition. A further compounding factor in the timing is the current weather predictions for the east coast, where a major El Niño is predicted in 2026 bringing warm and dry conditions, increasing risks of drought and bushfires in eastern Australia.

With regards to the NSW Government targets for renewable energy transition and the additional pressure this has placed on the region's water security, the following is relevant:

- In 2021 a New England Renewable Energy Zone (NEREZ) was announced. It was declared Critical State Significant Infrastructure (CSSI) by the Minister for Planning and Public Spaces in July 2024. It is expected to deliver 47% of the NSW Government's REZ generation target which is essential to achieving the NSW and Australian net zero targets. It is also the highest output of any REZ in a region with the least amount of water to accommodate construction and population demands.
- EnergyCo's Water and Wastewater Security Study confirms peak construction demand, anticipated to be in 2032, will significantly exceed available water supply across Armidale, Uralla and Walcha. Existing systems cannot support this demand, which is identified as a significant risk to the roll out of renewable energy in the region.

- Armidale and Uralla have been contacted by project proponents seeking access to town water supplies for construction purposes. This access is not feasible due to the regional town water supply deficit and the need to prioritise water for drinking over construction. Development of the NEREZ and achievement of NSW and Australian renewable energy and net-zero targets are therefore contingent on increasing secure town water supply to the Armidale Region.
- Stage 1 of Council's water security project could address the peak demand period of the NEREZ if relevant approvals are achieved by end of 2027, and funding for implementation can be identified by early 2028.

Water security represents the greatest challenge to sustaining and growing the Armidale community and surrounding regional area. This includes productive use of land (horticulture), new industries (including the construction of renewable energy infrastructure), and growing education and tourism sectors.

A staged regional water security solution has been developed with NSW Government support under the Safe and Secure Water Program. This comprises restoration of Oaky River Dam and connection to the Armidale system, followed by upgrades to Malpas Dam and connecting infrastructure. Further upgrades to the water network, specifically an extension to Uralla, have been included to better align with the needs of the NEREZ as well as provide a regional water solution and enable early commencement for what may be a time-critical project.

Oaky River Dam, which will hold up to 2.78 GL upon restoration, provides an estimated secure yield of 3,217 ML/year due to it being a constantly fed water source. Integration with the existing system will increase combined secure yield to approximately 6,448 ML/year following Stage 1 and 9,277 ML/year following Stage 2, providing a scalable regional solution capable of supporting both town water supply and New England Renewable Energy Zone related demand.

1.7. Site location

The project consists of two distinct components comprising two dams and linear infrastructure consisting of a 600mm pipeline from Oaky Dam to Council's Water Treatment Plant in Armidale as well as a potable water connection to Uralla. Both dams are in rural areas on land partly owned by Council, with the pipeline intended to traverse along the Waterfall Way corridor from Oaky Dam to Armidale and along the New England Highway between Uralla and Armidale. Location details are:

- Oaky River Dam located at 328 Oaky River Dam Road, Wollomombi NSW 2350. Latitude: -30.573 | Longitude: 152.07
- Oy River Dam to Armidale WTP Pipeline starts at Oaky River Dam, travels along Kempsey Road northbound, then Waterfall Way westbound until Middle Farm Road. It then traverses north and west via local streets to the Armidale Water Treatment Plant (2 Edgar Street, Armidale. Latitude -30.492 | Longitude: 151.67).
- Armidale to Uralla Pipeline will connect via a new reservoir at the Armidale Airport to the Uralla reservoir at Mount Hutton via the Armidale Regional Airport, traveling south along the New England Highway and then along Hill Street in Uralla.
- Malpas Dam located at 534 Malpas Dam Road, Guyra (Lot 1 DP 231464). Latitude: -30.295 | Longitude 151.711

1.7.1 Oaky River dam site features

Oaky River Dam is located approximately 50 km east of Armidale on the Oaky River. The Dam was constructed between 1951 and 1956 by the then New England County Council (later Country Energy and then Essential Energy) as part of the Oaky River Hydro-Electric Scheme. The scheme served to provide power to its constituent areas in the Armidale region.

Following an extreme flood event on Friday 22nd February 2013, water overtopped the dam crest leading to total collapse of the right embankment and one span of the nearby intake tower access bridge. The dam's left embankment was also severely damaged.

Prior to its failure, Oaky River Dam had a gross storage capacity of 2,780 ML and a catchment area of 200km².

Oaky River Dam is accessible via two existing access roads, both located across private land. The dam is in an isolated rural area surrounded by rolling hills of bushland and cleared grazing land. The dam wall itself is nestled within a steep and rugged valley surrounded by dense riparian vegetation. The closest residential receivers are located approximately 675 m west and 1.3 km north of the dam wall.

Downstream of the dam, Oaky River passes through steep and rugged, well-vegetated valleys to the Chandler River. Oxley Wild Rivers National Park is located to the south-west of the dam. The dam once restored will return to its previous capacity (2,780 ML storage and 200km² catchment).



Oaky River Dam Opening in 1956 (pre-failure), looking upstream.



Oaky River Dam Pre-failure.



Existing Oaky River Dam (post-failure), looking upstream.



Oaky River Dam (post-failure), showing total collapse of the right embankment and damage to the left

Figure 3 - Oaky River Dam historical photos of opening and post failure

1.7.2 Water pipeline and transfer station features

The proposed water transfer system (WTS) will move water from the Oaky River Dam to the Armidale Water Treatment Plant through a 54km long pipeline. This will include a new intake / pump station at the restored dam wall, as well as an intermediate pump station. The intermediate pump station (with a balance tank) will be located by the side of Kempsey Road, approximately 2.7km north of the Oaky River Dam.

To minimise biodiversity impacts associated with clearing of significant vegetation along road reserves, Council is investigating easements on adjacent cleared farmland, particularly along Waterfall Way. Council has commenced early consultation with impacted property owners. This is to ensure transparency in the Proposal, ensure there is ongoing dialogue between impacted parties, and to negotiate potential access easements thus reducing the risk of future compulsory acquisitions. It is noted easements associated with the pipeline are unlikely to impede existing grazing activities as the pipeline is intended to be buried up to 1.8m along the majority of the alignment.

Where there are creek crossings, Council will seek to minimise impacts on waterways, including through negotiations with Transport for NSW on the potential use of concrete bridges and structures along the Waterfall Way corridor. A list of the creek crossings provided in Table 1.

The exact alignment for the pipeline will be finalised once these investigations are completed during the development of the EIS.

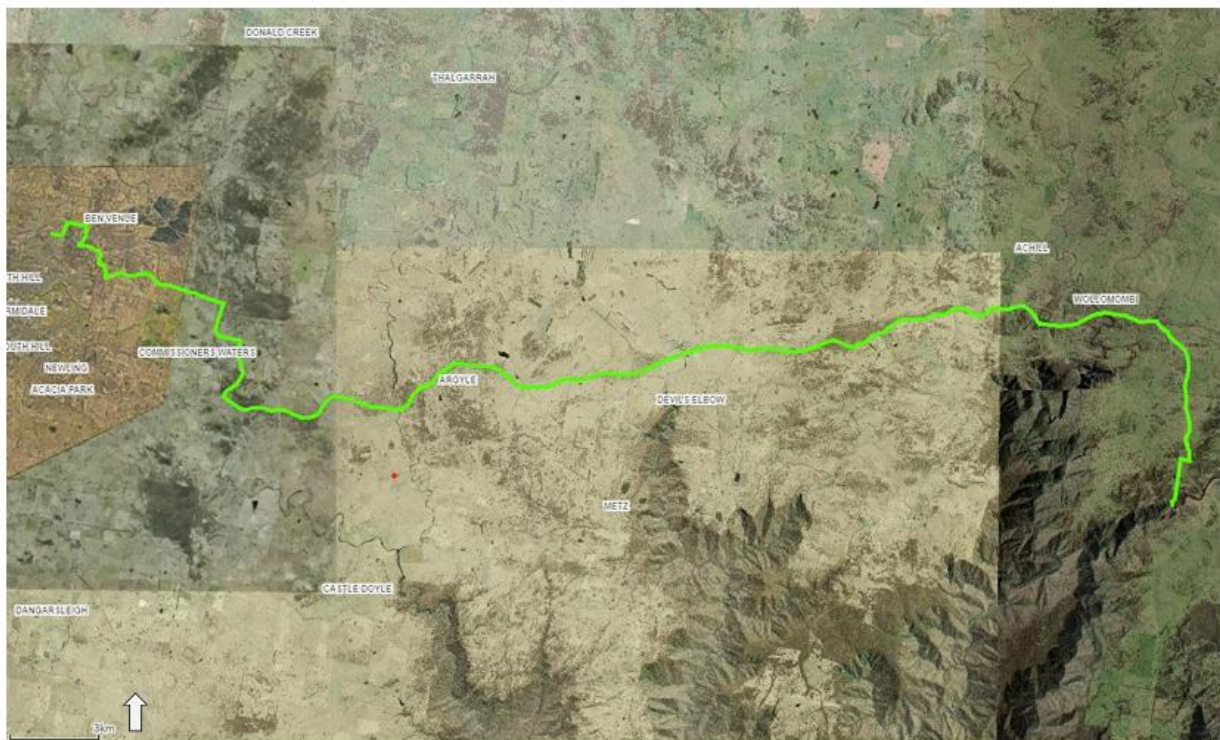


Figure 4 - Aerial map of Pipeline alignment

Table 1 - Creek crossings impacted by pipeline

Waterfall Way alignment (east to west)	
Chandler River	The river ranges from 16-20 m in width with steep rocky banks.
Wollomombi River	The riverbed is about 20-30 m wide with a rocky bed and a few trees scattered along the banks.

Green Gully Creek	This is a minor creek which may run dry during the dry season.
St Helena Creek	The creek bed is about 20 m wide with a low-lying area adjacent to the creek bed containing some riparian vegetation.
Four Mile Creek	The creek bed is about 10 m wide with steep banks and riparian vegetation.
Bakers Creek	The creek bed is about 10 m wide with rocky outcrops and limited trees along the alignment.
Cooney Creek and Limerick Creek	The two creeks are about 100 m apart along the pipeline alignment and merge on the southern side of the highway. Creeks are shallow and wide. Low lying areas exist on both sides and in between.
Gara River	The riverbed is about 20 m wide with 2-3 m high banks. No trees along the alignment.
Burying Ground Creek	This creek bed is about 10 m wide, banks 1-2 m high with a shallow depression for about 50m across. No trees.
Along Kempsey Road (north to south)	
Diamond Creek	This creek bed is about 6 m wide and with steep banks ~3m high. No trees.
Macphersons Gully	This is a minor creek which may run dry in certain periods. Few trees / vegetation on banks.
Honeysuckle Creek	This is a minor creek which may run dry in certain periods. Few trees / vegetation on banks.

1.7.3 Uralla pipeline features

The proposed pipeline from the Armidale to Uralla will be located along or adjacent to the existing New England Highway corridor for most of the route between the Armidale Regional Airport and the Mount Hutton Reservoir.

The section of the New England Highway between the Uralla Road roundabout and Uralla is characterised by several sections of three lane road with overtaking lanes, wide shoulders and wide centre lines with predominantly rural cleared farmland along the entire route. There is one major creek crossing being Saumarez Creek located just over 3km southwest of the Armidale Regional Airport.

There is some planting within the highway corridor consisting of both introduced tree species for windbreaks, and native vegetation plantings closer to Uralla. There is also a section of highway where the Main North rail line runs parallel to the highway for approximately 2.5km south of the intersection with Barleyfields Road.

1.7.4 Malpas Dam site features

Malpas Dam is located approximately 33 km northeast of Armidale on the Gara River at 534 Malpas Dam Road Guyra. The dam has a surface storage area of 1.8 km², a catchment of approximately 197 km², and a storage capacity of 12,266 ML. Malpas Dam is a 'declared' dam under DSNSW guidelines.

Malpas Dam is located approximately 10 km downstream of the Little Llangothlin Nature Reserve. Downstream of the dam wall the Gara River winds through vegetated valleys and agricultural land to the Gara Dam and beyond.

Access to the dam wall is from Malpas Dam Road, a 5.5 km unsealed road from the New England Highway. Malpas Dam Road also provides access to a number of rural properties within the area.

Land uses immediately surrounding the dam are predominantly cleared rural / agricultural farms. The closest residential receivers are located approx. 610 m north-east and 665 m west of the dam wall. Facilities associated with the St Kilda Fishing Club Headquarters and the Armidale Rowing Club are located on the eastern shoreline just upstream of the dam wall. Remnant vegetation is generally located on the southern and south-western banks of the reservoir, with larger areas of remnant native vegetation to the south of Malpas Dam.



Figure 5: Location of Malpas Dam, east of Guyra township

1.8. Project options

A Water Security Assessment and Options Evaluation Report was prepared for Council by NSWPW (formerly Public Works Advisory) in March 2022 which is provided in Attachment 1. The options assessment was undertaken to evaluate and shortlist options to improve the long-term security of the Armidale and Guyra water supply and included:

- quantification of the issue.
- assessment of Malpas dam raising options.
- identification of alternative catchments and schemes.
- formulation and assessment of scheme options.
- staging and cost estimates.

In quantifying the issue, a water cycle analysis was completed to forecast the 30-year unrestricted annual extraction using a Council nominated growth rate of 1.06% for the service population (Armidale and Guyra residents and businesses). This was to quantify the water security issue whereby the secure yield of Council's water supply headworks is equal to forecast unrestricted annual demand estimates.

Secure Yield is defined by DPIE as the highest annual water demand that can be supplied from a water supply headworks system while meeting the 5/10/10 design rule, which dictates that water restrictions must not be too severe, not too frequent, nor of excessive duration. The result of this is that water supply headworks are normally sized so that:

- duration of restrictions does not exceed 5% of the time
- frequency of restrictions does not exceed 10% of years
- severity of restrictions does not exceed 10%

The above rule is typical of what is being used by Local Water Utilities across Regional NSW as a service standard for water security and has been applied for the assessment and evaluations report.

The capacity of the existing Armidale and Guyra water supply headworks was estimated to be 2,428 ML/year on a secure yield basis. The 2048 unrestricted annual extraction estimate, based on growth rates and historic weather patterns, is 5,778 ML/year, thus leaving a shortage of 3,349 ML/year needed to achieve water security. Options investigated had to be able to address this shortage.

New water sources investigated included alternative surface water, groundwater, recycled effluent, managed aquifer recharge and rainwater / stormwater systems. The only feasible new water sources identified came from surface waters which included the Gwydir River, Aberfoyle River and water sources within the Macleay River Catchment (which includes Oaky and Styx rivers), as well as associated storage options. Storage options on the Styx River, Aberfoyle River and Nowlands Backwater were not included as this is currently prohibited under the relevant Water Sharing Plans.

Groundwater was investigated in detail to supplement water supply, with four production bores identified as part of these investigations. Council estimated a total yield of 1,512 kL/d from these bores for 16 hours pumping. This amounted to about 550 ML/year.

In order to meet the entire shortfall in secure yield about 30 to 50 more production bores would be required. The risks of developing such a borefield include:

- finding the number of bores required with sufficient yield
- obtaining approval for the bore construction
- negotiating the land and access requirements for the scheme
- ensuring extraction does not impact working farms accessing groundwater.

Further to the above, Council made an application to the Natural Resources Access Regulator (NRAR) for a Specific Purpose Access Licence of 512 ML/year. Water NSW, within the Department of Primary Industries and Regional Development, recommended the approval limit the extraction to 200 ML/year with the primary concern being impact on neighbouring bores.

Considering the above risks and challenges, the development of a borefield to supply the entire shortfall in yield has not been considered as a viable option. Groundwater has however been allocated against supplementary supplies, particularly when there are drought-like conditions in the New England.

The Oaky River Dam, an old hydropower dam previously owned by Essential Energy, was also considered a potential alternative water source following Essential Energy's decision to sell the dam. It

was considered that the Oaky River Dam would provide similar flows to the Styx River and provided several advantages including:

- existing access to site and power supplies
- similar flow characteristics to the Styx River, with similar potential yield
- the water sharing plan for the Macleay River allows for dams in the Oaky River Water Source
- the river is 50m above the Styx River source considered and about 8km closer to Armidale reducing both the pumping power required and the pipeline cost.
- the existing site use means that the environmental impact is lower.

Following the identification of these alternative surface water sources, an objective assessment was undertaken to identify shortlisted options. This included consideration of the extraction and storage options against factors relating to water security, future risk management, land use, environmental impacts and engineering challenges. Staging and cost estimates were also assessed. These shortlisted options were then assessed to determine if the secure yield would make up the shortfall in the existing water supply.

A list of schemes that would meet the shortfall were identified that involved a combination of storage options, extraction from existing rivers and raising of Malpas Dam. The schemes are listed below to highlight components of each one.

Table 2: Scheme options and works required

No	Scheme	Malpas raising	Works required
1	25 ML/d from Styx River	N	74 km of 600 mm diameter pipeline, 2 pumping stations (1060kW & 840kW).
2	10 ML/d from Styx River plus 7.8 GL on-stream storage on Chandler River	N	66 km of 375 mm diameter pipeline 2 pumping stations (400 kW & 540 kW) 1 dam 7.8 GL
3	15 ML/d from Styx River	3m	74 km of 450 mm diameter pipeline 2 pumping stations (680 kW & 590 kW) Raise Malpas Dam 3m
4	10 ML/d from Styx River	6.5m	74 km of 375 mm diameter pipeline 2 pumping stations (470 kW & 420 kW) Raise Malpas 6.5m
5	10 ML/d from Aberfoyle River plus 10 ML/d from Nowlands Backwater	6.5m	13 km of 375 mm diameter pipeline 44 km of 525mm diameter pipeline 3 pumping stations (90 kW, 730 kW and 270 kW) Raise Malpas 6.5m
6	25 ML/d from Oaky River Dam	N	Restore and upgrade Oaky River Dam Transfer to Malpas Dam 67 km of 600mm diameter

			pipeline, 2 pumping stations (880 kW & 840 kW)
7	15 ML/day from Oaky River Dam	3m	Restore and upgrade Oaky River Dam 67 km of 450 mm diameter pipeline 2 pumping stations (560 kW & 590 kW) Raise Malpas Dam 3m
8	10 ML/day from Oaky River Dam	6.5m	Restore and upgrade Oaky River Dam Transfer to Malpas Dam 67 km of 375 mm diameter pipeline 2 pumping stations (380 kW & 420 kW) Raise Malpas dam by 6.5 m

The shortlisted options and assessment rankings are summarized in Table 3 below:

Table 3: Shortlisted options and rankings

Works	Staging	Capital Cost (\$M)	Annual O&M Cost (\$M)	30-year PV (\$M)	Non-cost score	TBL Score <u>Non-cost NPV</u>	Rank
25ML/d from Styx River	None	111	1.30	95.53	52.8	0.55	6
10 ML/d from Styx River + 7.8 GL Storage on Chandler River	None	99	0.95	84.35	37.2	0.44	8
15 ML/d from Styx River + 3m raising	None	102	1.08	87.85	52.5	0.60	5
	Styx river transfer by 2025; Raise Malpas by 2033	102	1.10	80.98	52.5	0.65	4
10 ML/d from Styx River+ 6.5m raising	None	95	0.91	80.98	31.2	0.38	9
10 ML/d from Aberfoyle River plus 10 ML/d from Nowlands Backwater	None	97	0.86	81.72	16.4	0.20	10
25 ML/d from Oaky River Dam	None	111	1.22	94.94	65.7	0.69	3
15 ML/day from Oaky River to	None	95	1.07	81.92	67.0	0.82	1
	Oaky River transfer by 2025;	106	1.07	83.28	67.0	0.81	2

Malpas + 3 m raising	Raise Malpas by 2033						
10 ML/day from Oaky River to Malpas + 6.5 m raising	None	100	0.87	83.98	41.9	0.50	7

The amended option to transfer water from Oaky River Dam to the Armidale WTP was developed post the options evaluation report, with the advantage of this being Oaky River Dam could become Council's water supply dam when Malpas was taken offline for raising. The result of this change is that rather than water being pumped from Oaky River to Malpas Dam, it is transferred to the Armidale WTP and treated there for immediate domestic use.

With regards to the impact from the State's energy transition policy, it is acknowledged the options analysis was undertaken before the full extent of water impacts from the NEREZ were understood. With the roll out of renewable energy infrastructure across the New England, water needs of the region will be heightened for the peak construction period, with some easing of water needs from renewable energy infrastructure for maintenance purposes.

Another factor in the preferred staged option for providing water security is Council's aspirational growth target of creating 4,000 new jobs by 2040 and achieving a population of 50,000 by 2050. Staging of the Proposal will provide flexibility for Council for the Malpas Dam upgrade which will be guided by growth of the New England region and the impact from the NEREZ.

The graph in Figure 7 highlights the secure yields and unrestricted annual demands for water for Armidale Regional Council.

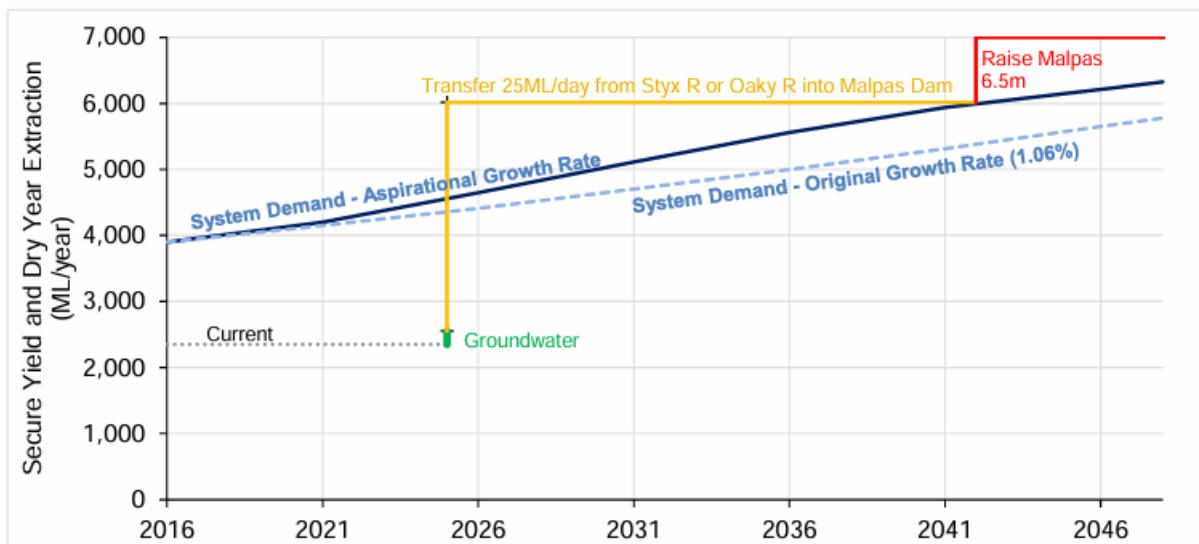


Figure 6: Aspirational Case - secure yield and unrestricted annual demand

It is important to note a couple of relevant factors in the graph above:

- Council has an existing water security problem now, thus Oaky River Dam project is required as soon as possible which will also address some of the water needs from the NEREZ.
- If Council were to continue with the original growth rate of 1.06% over a twenty year period, the Malpas Dam upgrade would not be needed before 2046.
- If Council were to achieve the aspirational growth target outlined in their LSPS, Malpas Dam raising would be needed by 2041.

- With the advent of the energy transition policy being rolled out across NSW and the rest of the country, water needs to support the construction and ongoing maintenance regime associated with renewable energy projects is likely to bring on the need for Malpas raising by 2041. This is regardless of the growth target achieved by Council.

To accommodate Council's revised aspirational growth strategy, as well as address the additional water needs associated with the NEREZ, the following option was recommended with a staged implementation:

- Stage 1 – Restore Oaky River Dam and construct a 25 ML/day transfer capacity from the Oaky River Dam to Armidale.
- Stage 2 – Raise Malpas Dam by 6.5 m by 2041.

The advantage of this approach is that:

- *Mitigating risk* - It reduces the demand on Malpas Dam during construction, enabling the storage level to be reduced (making the work easier and safer) with the dam to be refilled to the higher inundation level once works are complete.
- *Access to water* - It provides an immediate additional water source as Oaky River Dam water would be added to Council's water supply, thus not relying on Malpas to fill.
- *Flexibility in construction* - Council can remain flexible with the timing of the Malpas Dam raising and future connection upgrades until there is sufficient growth in water demand to warrant the additional yield

Uralla Pipeline

Uralla Shire Council, with the assistance of NSW Public Works, has undertaken a preliminary assessment of long-term water-security options for Uralla. The assessment responds to Uralla's existing secure-yield deficit, the vulnerability of Kentucky Creek Dam to drought and source-water quality events, the age and condition of the Uralla Water Treatment Plant, forecast growth for Uralla township and surrounds, and the additional demands expected from development of the New England Renewable Energy Zone.

The water connection from Armidale to Uralla is consistent with the preliminary findings of these investigations so far, in that it provides a secure water source for Uralla in the event another drought similar to 2019 occurs in the short term, as well as reducing the impact of the roll-out of renewable energy infrastructure in the Uralla Local Government Area. The inclusion of a pipeline connecting the Armidale to Uralla via a new reservoir at the Armidale Airport would substantially reduce exposure to Uralla's source-specific risks, including arsenic, algal activity, sediment accumulation and variable raw-water quality during extended dry periods, and provides a more regionally based water security outcome for the New England.

It is intended Uralla Council will undertake more detailed community consultation with their community later in 2026, which will include the proposed pipeline and whether this becomes a longer term solution for Uralla's water security noting by undertaking the planning process now it will reduce the risk for what may be a time-critical piece of infrastructure.

2. Strategic Context

The project is supported by strategic planning policies at local, state and federal levels. The project provides enabling infrastructure to:

- increase resilience for the New England region by providing water security and mitigating the impact of future climate events.
- provide necessary enabling infrastructure to support the delivery of renewable energy and transmission projects in the New England Renewable Energy Zone (NEREZ)
- facilitate housing outcomes for regional communities consistent with Council's own growth strategies

It is reflected in various state strategies as well as Armidale Council community and planning frameworks as shown below.

2.1 State Context

2.1.1 NSW Government Net Zero Plan Stage 1: 2020-2030

The Net Zero Plan is the foundation for the State's action on climate change and the goal of reaching net zero emissions by 2050. As part of the government's commitment to net zero, NSW has formally identified five Renewable Energy Zones (REZs) including the New England which is expected to be the largest.

The project provides critical enabling infrastructure to enable the construction of the NEREZ in the form of water security. This includes supporting the increased workforce to the area as part of the roll-out of renewable energy infrastructure, and ongoing operation and maintenance.

2.1.2 NSW North Coast Regional Water Strategy

The *Regional Water Strategy - North Coast* (November 2022) sets a 20-year strategy that identified regional challenges and outlines actions to respond to these challenges to manage water efficiently and sustainably into the future. The project aligns with the following regional water strategy objectives from the plan:

- *Deliver and manage water for local communities* – through developing a water security strategy for the New England communities and seeking to improve water security for the regional centre of Armidale and surrounding New England communities
- *Enable economic prosperity* – through supporting local industries such as the Controlled Environment Horticulture industry, with the future of New England agricultural industry providing food security for the New England and beyond as well as employment opportunities.
- *Affordability* – by seeking to invest in water security for the New England communities via a value for money proposition in restoring the Oaky River dam, investing in water transfer infrastructure to pipe water to the Armidale treatment plant, and consistent with a longer-term strategy of supplying a sustainable and affordable water supply to Uralla

The project also aligns with the *North Coast Regional Water Strategy – Implementation Plan* and in particular:

- Priority 3: *Prepare for future climatic extremes,*
- Action 3.1: *Support local councils to provide a secure and affordable water supply systems for towns.*

The Strategy acknowledges Armidale is more prone to water shortfalls than for a regional centre such as Port Macquarie on the coast, with the Implementation Plan acknowledging councils' need to plan for future climatic events, with the Proposal seeking to secure a sustainable, resilient future for the LGA.

2.1.3 NSW Government New England North West Regional Plan

The *New England North West Regional Plan 2041* sets a 20-year vision for the New England North West region, including a supporting land use framework to guide land use changes for a sustainable future. The Plan identifies Armidale as a centre for population growth, and one that provides the region with key health and education services and supports critical jobs growth.

The project is consistent with the regional plan in identifying and securing a secure water for the regional centre of Armidale, supporting residential and employment growth, and increasing resilience for New England communities.

2.1.4 NSW Water Strategy

The NSW Water Strategy is a 20-year framework for NSW designed to improve the security, reliability and quality of water resources, particularly through climate variability. It sets high level objectives and principles; builds on the progress made from previous reforms; identifies key challenges, opportunities, strategic priorities, and actions; and clarifies the water management and service delivery framework and policy context for NSW.

The Proposal aligns with the following priorities:

- Priority 1: Build community confidence and capacity through engagement, transparency and accountability
- Priority 4: Increase resilience to changes in water availability (variability and climate change).
- Priority 6: Support resilient, prosperous, and livable cities and towns.
- Priority 7: Enable a future focused, capable and innovative water sector.

2.2 Local Context

2.2.1 Armidale Regional Council Community Strategic Plan – Advancing our region 2025-2034

The proposal to provide a secure water supply for Armidale and surrounding communities aligns with Council's Community Strategic Plan 2025-2034, which revolves around six themes being:

- Thriving region (economy and tourism)
- Connected region (transport and technology)
- Future region (sustainability and resilience)
- Enriched region (community and culture)
- Liveable region (places and spaces)
- Strong region (engagement and responsibility)

Goal 2 under Future region refers to *"a clean, green and responsible region"* which includes ensuring *"the community is provided with safe, secure and accessible water that is sustainably managed now and into the future"*. This reflects the community's desire for enhanced water security for the area to support industrial expansion and population growth.

When the concept of increased water security is linked to the roll-out of renewable energy infrastructure, themes for Thriving region and Future region are both relevant with goals focused on

delivery of *“infrastructure that enables jobs and improves liveability”* and *“promote and increase use of renewable resources and alternative energy sources”*.

This proposal aims to improve the resilience and reliability of Armidale’s water supply to address future and current water security needs, including during drought, and facilitate the roll-out of renewable energy infrastructure in the NEREZ.

2.2.2 Advancing our region: Towards 50,000. Armidale Regional Council Local Strategic Planning Statement

Towards 50,000 is underpinned by a water security package to support the increased population, increase resilience for the New England communities, and support priority job precincts for current and future engine industries. These employment opportunities consistent of the burgeoning Controlled Environment Horticulture (CEH), Renewable Energy industries and a growing manufacturing base.

Vision One of the LSPS focuses on prosperity and growth with Planning Priority A5 referring to the region’s *“comprehensive plan for water security which support growth and community resilience”* which recognises *“the role that the New England is playing in supporting Australia’s future renewable energy and carbon offset targets.”*

The proposal is identified as critical enabling infrastructure to support Council’s vision in the LSPS and the state’s renewable energy transition

2.2.3 Armidale Regional Council Local Housing Strategy

The Local Housing Strategy is a 20 year plan that guides delivery of housing in the Armidale Region, facilitating the vision of the LSPS for population growth of 10,000 by 2043.

The growth will be predominantly based in Armidale, then Guyra with the villages and rural areas absorbing the balance.

One of the highest priorities for housing in the LHS relates to water security to support the existing population and industries as well as provide for the future.

2.2.4 Regional Drought Resilience Plan – Armidale Regional Council and Uralla Shire Council

Under the Commonwealth Government’s Future Drought Fund, Armidale and Uralla councils collaborated in the development of a Regional Drought Resilience Plan to strengthen preparations for drought and broaden resilience to its impacts.

The proposal is aligned with the Drought Resilience Plan as it addresses the community’s concerns of not supporting inaction in preparing for the future. The proposal seeks to provide an additional water source with the intention of connecting to Uralla in the medium term and provide a more resilient water supply to supplement the Kennedy Dam during droughts.

3. Project

3.1 Project Overview

The Armidale Water Security Project, hereafter referred to as the Proposal, incorporates four discrete components to be undertaken in two stages:

Stage 1 – short term

- Restore the Oaky River Dam to its full storage capacity prior to its pre-failure condition
- Construct a water transfer system comprising of a new 54 km long rising main from the dam to the Armidale WTP and associated pumping stations
- Construct a water transfer system comprising of a new 16 km long gravity fed pipeline from the Armidale Regional Airport to connect to the Uralla water network in Uralla township.

Stage 2 – medium term

- Increase the water storage capacity at Malpas Dam to address long-term water security for the Armidale area.

The introduction of Oaky River Dam into the water network for Armidale Regional Council will provide some relief to the water security issue, and minimise the risks associated with raising Malpas Dam in the medium term once funding becomes available.

The staging of the Proposal has been designed so that the Stage 2 works can remain flexible and linked to evidence of sufficient growth in water demand to warrant the additional yield.

It is noted that any augmentation of the existing water supply works is likely to trigger an assessment of Council's operating rules under the water access licence. The objectives of these rules are to comply with the principles of the Water Management Act and associated Water Sharing Plans, manage downstream third party impacts, and to protect the health of the rivers and their instream ecology.

3.2 Key components of the Proposal

3.2.1 Stage 1 - Oaky River Dam

The restoration of the Oaky River Dam is being undertaken to restore the dam to its original storage capacity prior to the storm event in February 2013. The major storm event led to the total collapse of the right embankment and one span of the intake tower access bridge, as well as significant damage to the left embankment.

Oaky River Dam will be reconstructed to a fixed FSL approximating the top level of the original radial gates which would provide a new dam storage capacity of 2,780ML at RL874.50m AHD (consistent with the previous dam capacity). Figure 8 shows the Oaky River Dam inundation line which is proposed to be reinstated as a result of the dam restoration.

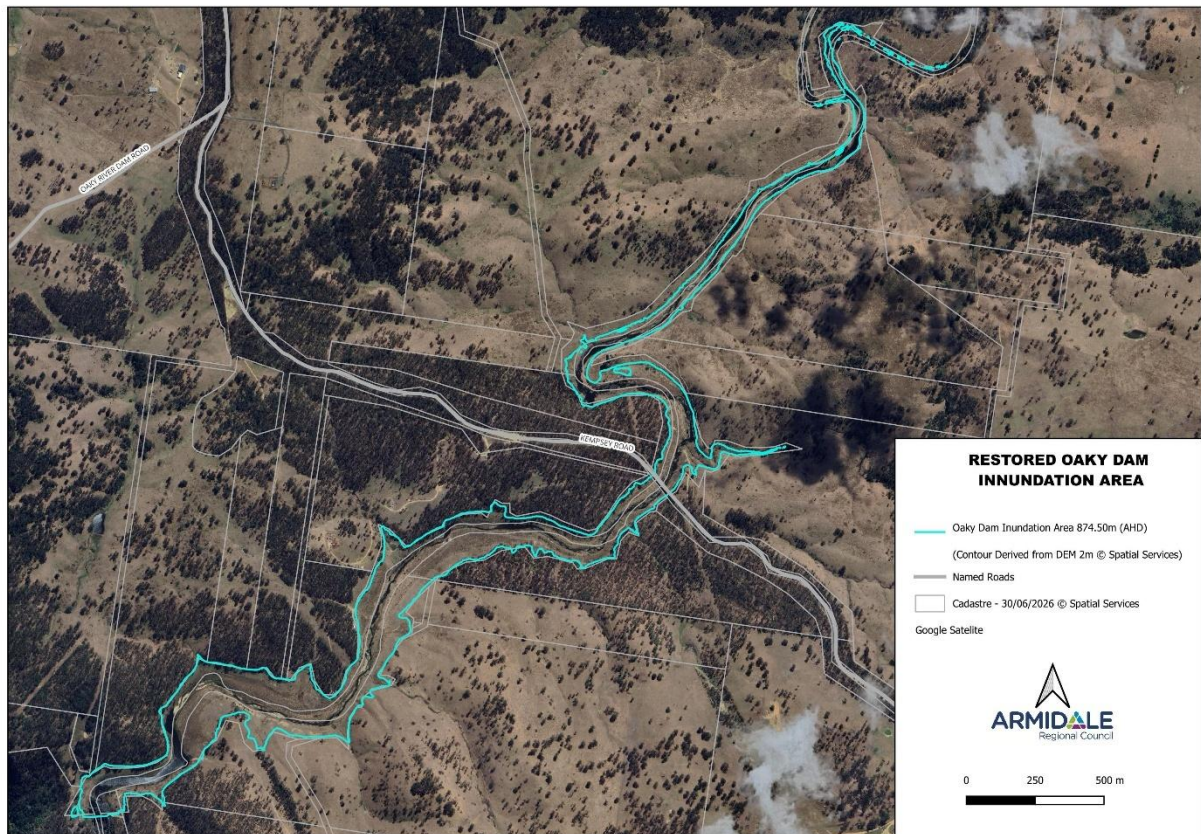


Figure 7: Oaky River Dam inundation area

The preferred dam reconstruction option incorporates the removal of the existing overhead bridge, radial gates and support elements and demolition of the rockfill embankments, intake and outlet work structures. A new mass concrete gravity structure is proposed which will span across the river and supplant the current dam with a centralised spillway arrangement designed to withstand the required maximum flood. An offtake structure feeding the proposed pipeline to the Armidale WTP will be attached to the proposed Oaky River Dam pumping station.

A stepped concrete downstream face is proposed to reduce water velocities as it passes over the wall and flood impact, along with a downstream flow dissipator to protect foundations immediately down from the toe of the dam. An environmental flow facility will be provided if specified as part of the licence conditions.

The offtake will be attached to the proposed pumping station adjacent to the dam which will feed the rising main to the Armidale WTP.

The spillway will be centred on the river as per the original dam and no additional material source is required. The spillway will be provided at FSL 874.50m AHD with a width of 130m to allow passage of the Acceptable Flood Capacity (AFC). Side walls at RL878.65m AHD will also be provided.

Updated flood hydrology and dam break assessments have determined the consequence category of the proposed dam to be HIGH C which means it has to safely pass the 1 in 10,000 AEP flood event and withstand the 1 in 500 AEP earthquake.

Construction of the Oaky River Dam will require diversion / dewatering works in the river to ensure flood free demolition of existing structures and dam reconstruction. A concrete batching plant will also need to be established on site. Excavation of an access road and parking area will be established adjacent to the pumping station and offtake structure with material to be transported off site.

The proposed arrangement of the dam wall reconstruction is shown overpage in Figure 9.

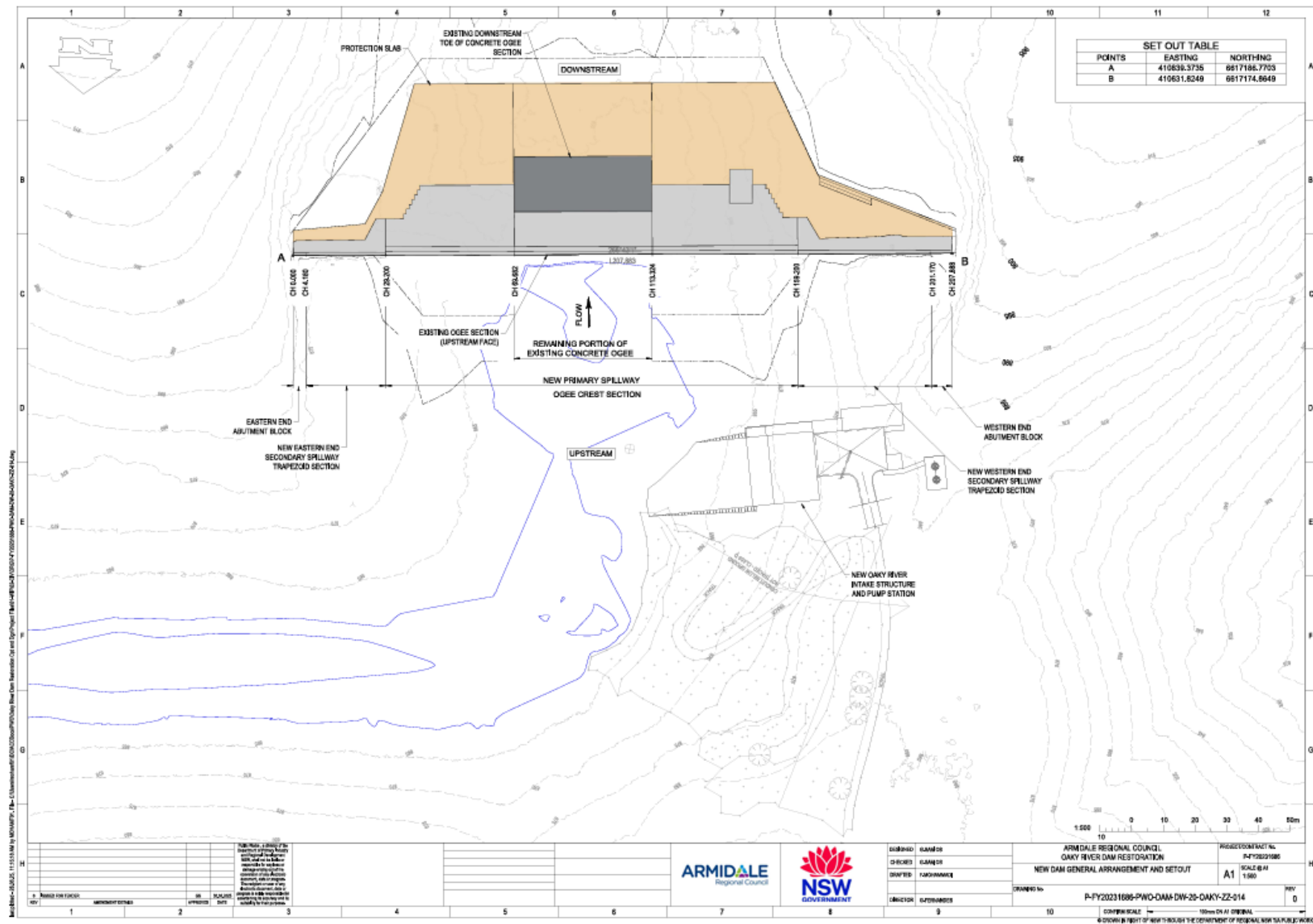


Figure 8: Oaky River Dam wall restoration design

3.2.2 Stage 1b - Oaky River Dam to Armidale WTP pipeline works

The proposed new Oaky River Dam to Armidale water pipeline will transfer water from the restored dam to the Armidale WTP. This part of the Proposal will consist of:

- A new pump station at Oaky River Dam.
- A connection to the electricity network to operate the Oaky River Dam pumping system, noting there are power sources close to the existing dam
- A new 54 km long 600 mm diameter steel pipeline which will be buried along most of the alignment with the exception of creek and gully crossings
- An intermediate pump station and holding tank between Oaky River Dam and Waterfall Way (approximately 2.7km from Oaky River Dam), including a connection to the nearby electricity network, access track, fencing and landscaping
- Associated structures to support the pipeline and pumping stations including air valves, scour valves and isolation valves.

Pipeline

The pipeline from Oaky River Dam will follow an existing easement up to Kempsey Road, where it was originally envisaged to run along Kempsey Road and Waterfall Way to Middle Farm Road, before crossing the highway and following Council roads to Armidale WTP. Due to significant biodiversity constraints identified during preliminary investigations, the pipeline alignment was subsequently deviated to run within private properties between Kempsey Road and Waterfall Way. Details are summarised in Table 4 and Figure 10.

The pipeline will be constructed using ductile iron or steel pipes designed to withstand high pressures. Mild steel pipes (internally cement lined, externally fusion bonded polyethylene coated, hereinafter called "MSCL") will be used on the steep gradients and uneven, rocky terrain between the Oaky River Dam and Kempsey Road. The remaining pipeline would consist of PN35 - DN600 ductile iron cement lined (DACL), except in areas such as creeks, aerial crossings or steep gradients where MSCL pipes may be more appropriate.

Armidale Regional Council will be working with Transport for NSW to investigate the ability for the pipeline to attach to existing bridge structures on Waterfall Way. This will reduce the environmental footprint associated with the river crossings and provide a value for money solution for the multiple water crossings associated with the pipeline.

It is intended that the pipeline will be open trenched with a minimum cover of 750mm except for the following locations where the pipeline will be installed either overhead or using trenchless techniques.

- Under Waterfall Way, near Middle Farm Road in Armidale (thrust-bored crossing).
- Aerial crossings for St. Helena, Diamond Creek and McPhersons Creek.
- Open trenched pipeline crossings / concrete encased under creeks (where TfNSW agreement cannot be reached).

Table 4: Potential pipeline land tenure

Road	Length (km)	Land Tenure
Oaky River Dam to Kempsey Road	1.9 km	Existing Access Easement ~ 1.4 km
Kempsey Road	6.2 km	Private Properties (4) ~ 4.1 km

Waterfall Way	34.5 km	Private Properties (47) ~ 19.6 km Road Reserve* ~ 14.9 km
Armidale Town	12.1 km	Private Properties (10) ~ 0.7 km Road Reserve ~ 9.2 km Council land ~ 2.2 km

Pump Station at Oaky River Dam

The proposed pump station (PS) at Oaky River Dam will consist of a wet well on the riverbank with inlet pipes from the well to the river drawing water through screens. Two DN600 inlet pipes are proposed with two screens on each pipe. Each screen will be sized for 145 L/s with a minimum submergence of 600 mm. The screens invert level will be set at RL 864.0 m AHD. Considering 50% blockage of the screens, the minimum draw down level of water at the river will be RL866.10 m.

Air scouring facility will be provided for cleaning of the screens at regular intervals. Two air compressors (duty/standby) will be provided for this purpose.

Four vertical turbine pumps (three duty / standby) each with a duty of 145 L/s @ 174 m (365 kW each) will be provided in the wet well. Pumps will be provided with variable speed drives enabling pumping any flow rate between 145 L/s to 435 L/s (i.e., 12.5 to 37.5 ML/d). Each pump will be provided with a non-return valve and isolation valve with a flow meter on the common delivery main. The pumps require a minimum submergence of ~1 m over the impellers, and with a 0.5% gradient of the inlet pipe, the wet well floor level would be at RL 860.0 m.

The top of the wet well will be a minimum 1.0 m above the FSL, i.e., RL 872.5 m. The wet well will be 8 m x 4 m x 12 m deep and consist of an opening with removable dome type skylight above each pump enabling removal of pumps for maintenance purposes.

Two pressure vessels of 30 cum capacity each will be provided for Stage 1 for the pumping main near the wet well above FSL. The two compressors provided for the air scouring of inlet will be sized to charge the vessels. A third vessel of similar capacity will be added in future.

Intermediate Pump Station and Balance Tank

An intermediate pump station will be constructed along Kempsey Road between Oaky River Dam and Waterfall Way. The intermediate pump station will consist of four pumps (3 duty/ standby) with a maximum duty of 145 L/s @ 154 m head (327 kW) each. The pumps will receive water from a 1 megalitre (ML) balance tank, which would be located above-ground feeding the pumps with positive suction.

Pumps will be horizontal multi-stage type, provided with variable speed drives enabling pumping at any flow rate between 145 L/s to 435 L/s (i.e., 12.5 to 37.5 ML/d). Each pump will be provided with a non-return valve and isolation valve with a flow meter on the common delivery main.

The pump station building will be approximately 33 m x 9 m x 4.5 m, constructed of concrete tilt up panel and metal clad roof to accommodate pumps, VSDs, compressors, electrical and telemetry equipment. A monorail will be provided for pump removal for maintenance purposes.

The balance tank will be concrete construction, likely be constructed as cast in-situ or using pre-cast post tensioning method. The roof will consist of a galvanised steel structure with support beams and purlins and aluminium roof sheeting.

Electricity connections

There are existing power sources close to the dam with a substation located on Oaky River Dam Road. It is intended to access power through these sources with consultation with Essential Energy to be undertaken in the design of any power connections.

Associated Structures

Ancillary structures including surge tanks, air valves, scour valves and isolation valves will be installed along the pipeline. Pumps, flow meters, control valves, electrical and telemetry, power supply etc. will be installed for the pumping stations and balance tanks.

A building to accommodate compressors, electrical switchboards, VSDs, telemetry equipment and caretaker's office will be provided at the Oaky River Dam near the wet well above FSL. The building will be approximately 18m x 4m x 3.5m and likely to be constructed with concrete tilt-up panels.



Figure 9: Proposed pipeline route

3.2.4 Stage 1c – Pipeline to Uralla

The proposed Armidale to Uralla pipeline will transfer water from the Armidale Regional Airport to the Uralla reservoir at Mount Mutton. This part of the Proposal will consist of:

- A new holding tank at the Armidale Regional Airport.
- A gravity fed 250 mm diameter pipeline along the New England Highway from the Airport holding tank to the Mount Mutton reservoir at Uralla, via Hill Street,
- Associated structures to support the pipeline including air valves, scour valves and isolation valves.

Pipeline

Detailed concept plans will be developed as part of the EIS investigation, with the intention for the pipeline to traverse north along Stoney Ridge Road to the New England Highway from the Armidale WTP. From there it will follow the New England Highway to the airport, with investigations underway on the location of the pipeline which will be guided by consultation with Transport for NSW, minimising impacts to adjacent residents, and seeking to avoid areas of native vegetation along the corridor.

The pipeline will be similar to the pipeline from Oaky River Dam to the WTP, with a lesser diameter of 250 mm (subject to hydraulic modelling) with the intention to have the majority of the pipeline inground with the exception of the overpasses and Saumarez Creek and other creek crossings.

Armidale Regional Council will be working with Transport for NSW to investigate the ability for the pipeline to attach to existing bridge structures on the New England Highway to minimise environmental impacts and reduce costs.

Holding tanks

The size and location of the holding tanks, particularly at the Armidale Regional Airport, will be guided by water security investigations undertaken by Public Works for Uralla Shire Council as well as consultation with the Armidale Regional Airport and the Civil Aviation Safety Authority.

Associated Structures

Ancillary structures including surge tanks, air valves, scour valves and isolation valves will be installed along the pipeline. Additional treatment facilities may also be located at both the Airport and Mount Mutton reservoirs to ensure safe treatment of any bacteria that may form in the pipeline linking the Armidale WTP to Uralla.

3.2.5 Stage 2 – Malpas Dam wall raising

The proposed raising of Malpas Dam will increase the existing storage at FSL from 12,266 ML to approximately 27,000 ML (at RL1182.35m AHD) and is expected to be a key component of infrastructure required to meet the additional water security requirements of the Armidale Regional Council and associated New England communities well into the future.

Raising of the FSL of Malpas Dam will involve construction of a 6.5 m high concrete ogee structure within the existing spillway channel, with a vertical upstream face and 0.7H to 1V downstream slope. A 50 m wide spillway crest structure provided in a duck bill (3 sided) arrangement, will allow for a wider spillway crest width without widening of the existing spillway channel. The structure would be designed to withstand all relevant loads (including sliding, overturning and uplift pressures) and anchored into rock to improve stability.

A reinforced concrete slab would be provided at the toe of the crest to protect the base and channel floor against overflow discharges, the slab extending far enough downstream to contain any hydraulic jump effects and anchored into rock for stability. The remainder of the spillway channel would remain unlined. A reinforced concrete dissipator structure is proposed to the downstream end of the spillway channel to dissipate any excess energy from flood flows before they leave the channel. A concrete batching plant will need to be established on site as part of this process.

Raising the existing embankment crest by 2.46 m is proposed to be achieved by providing a concrete parapet wall. Fill placed behind the parapet wall will allow passage of pedestrians and vehicles and maintain a good view of the dam storage area.

The proposed dam raising will require demolition of the existing tower deck, tower house and bridge and replacement of these at the higher level. The tower deck and bridge would be raised by 2.40 m to the same level as the raised dam crest (RL1186.90 m). A new valve block would also be constructed along with a new outlet pipeline within the existing tunnel. This will involve breaking into the existing outlet system and decommissioning the existing valve block.

Malpas Dam has a consequence category assessment of HIGH C and as such is required to pass safely the 1 in 100,000 AEP flood and withstand a 1 in 1,000 AEP earthquake event in accordance with ANCOLD and Dams Safety NSW guidelines. The current concept design satisfies these requirements.

During construction, the storage level would need to be lowered by approximately 300 mm to allow for construction of the spillway concrete crest structure and the concrete parapet walls. Some diversion/dewatering works would be required to ensure flood free construction.

No major rock excavation is proposed other than the spillway crest structure and upgraded valve house construction. Excavation for a higher access road and parking area adjacent to the raised intake tower and bridge would be required with this material to be disposed of offsite.

The raising of the Malpas Dam spillway will be undertaken once the Oaky Dam restoration works are complete and the water transfer station is operational. This will ensure water security for the Armidale

community when the main water supply dam (ie Malpas Dam) is out of action due to construction, with the restored Oaky River Dam essentially becoming the temporary main water supply dam.

The proposed arrangement of the Malpas Dam is shown overpage in Figure 12. The upgraded Malpas Dam inundation area is shown in Figure 13.



Figure 11: Malpas Dam raising inundation area

3.3 Property and easements

The majority of property impacts from the Proposal arise from the construction of the water pipeline and transfer system, as well as the raising of the Malpas Dam spillway.

Armidale Regional Council has the power to acquire land (including an interest in land) for the purpose of exercising any of its functions (which includes the supply of water) in accordance with s. 187 of the Local Government Act 1993 (NSW). Any acquisitions completed as part of the Proposal must be undertaken in accordance with the process outlined within the *Land Acquisition (Just Terms Compensation) Act 1991* (NSW) (Just Terms Act).

A list of impacted properties for Oaky River Dam, Malpas Dam and the Oaky River Dam pipeline is provided in Table 5, This includes whether the interest in land is partial or full, noting the majority of these impacts are likely to result in an easement to provide Council with specific rights for the purposes of access, maintenance and operation. The list does not include potentially impacted properties for the Uralla pipeline section as this is under investigation with Public Works and Uralla Shire Council. The list is likely to be refined once detailed analysis is undertaken of the pipeline routes, including the New England corridor and the ability to utilise some of the bridge structures along both corridors.

Table 5: List of impact properties

Table 5: List of impacted properties		
Oaky River Dam		
Property Address	Parcel	Partial/Whole
328 Oaky River Dam Road, Wollomombi 2350	Lot 1 DP 117173	Partial
328 Oaky River Dam Road, Wollomombi 2350	Lot 1 DP 218773	Partial
328 Oaky River Dam Road, Wollomombi 2350	Lot 2 DP 1295371	Partial
328 Oaky River Dam Road, Wollomombi 2350	Lot 2 DP 218773	Partial
328 Oaky River Dam Road, Wollomombi 2350	Lot 3 DP 218773	Partial
328 Oaky River Dam Road, Wollomombi 2350	Lot 4 DP 218773	Partial
328 Oaky River Dam Road, Wollomombi 2350	Lot 5 DP 218773	Partial
328 Oaky River Dam Road, Wollomombi 2350	Lot 6 DP 218773	Partial
328 Oaky River Dam Road, Wollomombi 2350	Lot 7 DP 218773	Partial
328 Oaky River Dam Road, Wollomombi 2350	Lot 47 DP 751470	Partial
Oaky River Dam to Armidale WTP pipeline		
Property Address	Parcel	Partial/Whole
165 Apple Tree Hill Drive, Armidale	Lot 332 DP755808	Partial

3138 Grafton Road, Hillgrove	Lot 3 DP1145435	Partial
3532A Grafton Road, Hillgrove	Lot 80 DP755828	Partial
2804 Grafton Road, Hillgrove	Lot 111 DP755847, Lots 238 & 239 DP755834, Lots 36 & 37 DP755834	Partial
328 Oaky River Dam Road, Wollomombi	Lot 47 DP751470, Lot 6 DP218773	Partial
13576 Kempsey Road, Wollomombi	Lot 75 DP751470	Partial
2040 Grafton Road, Metz	Lot 1 DP1110173, Lot 1 DP1235261, Lot 2 DP857712	Partial
51 Old Hillgrove Road, Metz 140 Stockton Road, Hillgrove	Lot 2 DP1195562	Partial
1584 Grafton Road, Metz	Lot 2 DP582587	Partial
1668 Grafton Road, Metz	Lot 8 DP746586	Partial
13837 Kempsey Road, Wollomombi	Lot 125 DP751470	Partial
100 Apple Tree Hill Drive, Armidale	Lot B DP 415959	Partial
890 Grafton Road, Armidale	Lot 1 DP127593, Lot 102 DP755826	Partial
1514 Grafton Road, Armidale	Lot 3 DP582587	Partial
1352A Grafton Road, Metz	Part Lot 101 DP1318006	Partial
1352 Grafton Road, Metz	Lot 101 DP1318006	Partial
97 Wollomombi Falls Road, Wollomombi	Lot 1 DP1074030	Partial
3532 Grafton Road, Hillgrove	Lot 81 DP755828	Partial
1490 Grafton Road, Hillgrove	Lot 9 DP746586	Partial
433 Cookes Road, Armidale	Lot 82 DP755826	Partial
14 Silverton Road, Metz	Lot 2 DP1293656, Lot 3, DP1293656	Partial
13835 Kempsey Road, Wollomombi	Lots 85, 94, 95, 98 & 130 DP751470	Partial
8 Metz Road, Metz	Lot 230 DP755834	Partial
110 Silverton Road, Metz	Lot 181 DP755834	Partial
3452 Grafton Road, Hillgrove	Lot 1 DP651916	Partial
1060 Grafton Road, Metz	Lot 13 DP822753, Lot 3 DP786950	Partial
131-173 Apple Tree Hill Drive, Armidale	Lot 938 DP755808	Partial
340 Cookes Road, Armidale	Lot 348 & 349 DP755808, Lot 8 DP755826	Partial
928 Grafton Road, Armidale	Lot 1 DP1234472	Partial
Multiple locations - Crown Lands	Lot 7001 DP1075618, Lot 7002 DP1075619, Lot 7003 DP1060201, Lot 7004 DP1058839, Lot 7009 DP1060213, Lot 7301 DP1153578, Lot 7302 DP1150925, Lot 7302 DP1149637, Lot 7303 DP1149389, Lot 7303 DP1144376, Lot 7304 DP1149637, Lot 7305 DP1147956, Lot 7307 DP1153518	TBC
Malpas Dam raising		
Property Address	Parcel	Partial/Whole
7029 Guyra Road, Guyra 2365	Lot 8 DP 231465	Partial

534 Malpas Dam Road, Black Mountain 2365	Lot 1 DP 231464; Lots 1 & 2 DP 231465	Partial
458 Malpas Dam Road, Black Mountain 2365	Lots 2, 3, 6 & 7 DP 231464	Partial
238 Urandangi Road, Guyra 2365	Lots 3, 4, 5, 6 & 7 DP 231465	Partial

Council has previously engaged with property owners along the pipeline alignment to discuss the project and seek access for preliminary investigations in early 2024, including survey work. Direct conversations have also taken place with landowners who had questions about the project and investigations. As a result of the preliminary investigations and early consultation with impacted property owners some refinements have been made to alignment.

3.4 Construction

3.4.1 Project Staging.

The proposed Water Security Project will be constructed in stages, with the restoration of Oaky Dam and water transfer system being undertaken in Stage 1 and the raising of Malpas Dam occurring in Stage 2.

Commencement for construction of Stage 1 is anticipated to occur mid to late 2028 dependent on funding availability and environmental approval framework. The restoration of the Oaky River Dam and construction of the pipelines are expected to take up to 2 years in total, with the dam restoration and pipeline work occurring concurrently.

Timing for completion of the Oaky Dam and associated water pipeline is critical for the roll-out of the national energy grid, with the NEREZ peak construction period anticipated to be in 2032. The Oaky Dam and water pipeline will need to be in place at least 12 months prior to this anticipated peak to facilitate the construction activities associated with the REZ as well as ensuing water security for Armidale Regional Council and Uralla Shire Council communities.

Stage 2 works, comprising raising the spillway for Malpas Dam, will proceed in line with population growth and demand as well as funding availability. The raising of the dam may also be brought forward due to increased water demand from the NEREZ. In staging the water upgrades, Council maintains flexibility in construction as well as water availability for local, regional and state needs. It is anticipated that construction of the Malpas Dam raising would take approximately 12 months to complete.

3.4.2 Construction approach

With respect to the overall construction approach for the Proposal, the following general order of works is envisaged:

Early works

Early works are needed prior to the commencement of Stage 1 works, noting it is likely this will be undertaken by Council or Council-contracted staff prior to the major works package commencing. The early works consists of the following:

- Construction of an all-weather road access from Kempsey Road via gate 2 which joins Kempsey-Armidale Road approximately 700 metres south of Oaky River Dam Road. The road will be approximately 10 m in width and 3 km long, with stock fencing either side and access gates for its entire length to the Dam construction site. This is to facilitate safe access to the site and enable stock transfers between paddocks.

- A Condition Report of existing dam wall foundations – In order to understand the structural integrity of the remaining dam wall, it is proposed to investigate the condition of the centre foundation section of the dam prior to construction commencing. The centre section of the wall will be retained and mass poured concrete around the toe of the dam completed as part of a 'weir' type construction. Cofferdams will also be constructed to remove water from around the structure and allow a complete engineering assessment.
- Develop site for a concrete batching plant and storage area - At the base of the site access road, and above the dam water level, there will be a temporary concrete batching plant and bulk storage area.

Stage 1a – Oaky River Dam Restoration

The Oaky Dam Restoration works involves the dismantling and removal of most of the remaining dam wall, intake towers and associated operating infrastructure. Once this is achieved, the new dam wall will be erected at the same height as previous, with associated operating infrastructure also being replaced.

The order of works is proposed as follows:

- Establishment of site, including site facilities and preparing the area for works associated with the dam restoration and activities such as concrete batching plant setup.
- Installation of dewatering and flood diversion measures.
- Installation of environmental protection measures including erosion and sediment controls.
- Installation of safe vehicular access to the site for construction equipment.
- Removal of existing radial gates and overhead bridge.
- Demolition and removal of existing intake towers and outlet works including all mechanical/electrical equipment and associated components.
- Excavation and foundation preparation for the proposed concrete gravity structure.
- Construction of the concrete gravity structure and dissipator works.
- Construction of the dam concrete parapet walls.
- Installation of new valves and pipework in the outlet block.
- Construction of offtake structure, attached pumping station, electrical building and associated works including installation of mechanical/electrical equipment.
- Reinstatement of electrical supply.
- Installation of updated instrument data collection system.
- Construction of a new boat ramp location.
- Removal of all temporary access and haul roads.
- Rehabilitation of construction areas (including landscaping and any offset areas).
- De-establishment.

Stage 1b – Oaky River Dam to Armidale WTP pipeline

This stage comprises constructing the water transport system connecting Oaky River Dam to the Armidale Water Treatment Plant. It is likely to be undertaken via a separate contract to enable the pipeline works to occur at the same time as the dam restoration.

The order of works is proposed as follows:

- Site clearing and trenching comprising vegetation clearing along proposed pipeline route, installation of temporary sediment and erosion control measures, excavation of trench and dewatering if necessary.
- Establishment of temporary work areas for equipment, pipe delivery and storage, and borrow pits.
- Setting up launching areas where pipeline will be above ground due to sensitive areas (eg creek crossings or gullies).
- Pipeline installation including laying of fill material to support pipeline, laying and welding of pipeline segments, installation of ancillary infrastructure such as surge tanks, air valves, scour valves and isolation valves.
- Installation of pump stations, flow metres, control valves and power supply to operate pump stations and any storage tanks.
- Commissioning and land rehabilitation including backfilling of trenches, revegetation of disturbed sites, replacing any damaged farm fencing and installation of pipeline survey points.

As part of the water transport system, there will be two pump houses. The first pump house will be built adjacent to the dam access road comprising a concrete and structural steel building with deep well pumps installed.

An intermediate pumphouse will be built in road reserve adjacent to the intersection of Oaky River Dam Road and Kempsey Road. It is located approximately 3 kms from the dam pumphouse and in an area indicating no flora of interest within the footprint. A copy of this report is in Attachment 2

With regards to mitigation measures to be implemented during Stage 1 works the following is relevant:

- Any hot works will be undertaken outside of total fire ban days and under a hot work permit system as per SafeWork NSW.
- All erosion and sediment controls measures will be undertaken in accordance with Volume 1 of Managing Urban Stormwater: Soils and Construction (Landcom 2004) (the “Blue Book”).
- The management of construction wastes will be undertaken in accordance with relevant NSW Environmental Protection Agency guidelines focused on waste sorting, lawful disposal and resource recovery.

Stage 1c – Armidale to Uralla pipeline

This stage comprises constructing the water pipeline connecting Armidale to Uralla. It is likely to be undertaken concurrently with the Oaky River Dam to Armidale pipeline to ensure the connected network can be made operational at the same time.

The order of works will be similar to the Oaky River Dam pipeline apart from the addition of works to install a holding tank at the Armidale Regional Airport.

Stage 2 – Malpas Dam raising

This stage comprises dewatering the dam to enable raising the existing spillway 6.5 m, doubling the capacity of the dam when it is full.

The order of works is proposed as follows:

- Site establishment, including obtaining environmental and other approvals.
- Installation of dewatering and flood diversion measures.

- Installation of environmental protection measures including erosion and sediment controls in accordance with the Blue Book.
- Temporary lowering of water storage.
- Establishment of batching plant for concrete works.
- Excavation and foundation preparation in the spillway channel for the concrete crest structure.
- Construction of the spillway crest structure and dissipator structure.
- Stripping of the existing embankment crest fill for the parapet wall.
- Construction of the dam crest concrete parapet wall, and retaining block and raised pavement backfill.
- Removal of existing valves in the intake tower.
- Excavation for and construction of raised access road to the tower.
- Removal of existing tower house and bridge.
- Construction of the raised intake tower reinforced concrete stem and deck.
- Construction of the reinforced concrete raised bridge supports including foundation preparation.
- Installation of new valves in the tower.
- Installation of the raised bridge sections.
- Installation of tower house structure including mechanical equipment.
- Removal of existing pipes and valves from the tunnel and valve block (house).
- Construction of new valve block.
- Installation of new outlet pipework and valves in tunnel and valve block.
- Reinstatement of all electrical supply.
- Decommissioning of existing valve block.
- Installation of updated instrument data collection system.
- Relocation of impacted structures and facilities.
- Construction of a new boat ramp location.
- Removal of all temporary access and haul roads.
- Rehabilitation of construction areas (including landscaping).
- De-establishment.

The management of construction wastes will be undertaken in accordance with relevant NSW Environmental Protection Agency guidelines focused on waste sorting, lawful disposal and resource recovery.

3.4.3 Construction equipment and machinery

Machinery and equipment to be used during construction would include:

- Temporary site fencing, site offices and worker facilities

- Erosion and sediment control materials (terrestrial and aquatic)
- Excavators and bulldozers
- Road compaction vehicles for compacting road fill and pavement
- Concrete batching plants
- Cranes for relocation of the existing tower deck and bridge
- Trucks for material haulage
- Pipeline materials
- Trenching machine
- Dump trucks
- Truck with HDD rig
- Vacuum truck
- Generators
- Water carts
- Light vehicles
- Site sheds
- Portable toilets

No blasting activities are currently proposed as part of construction works.

3.4.4 Construction materials

The concrete batching plant set up adjacent to the existing Oaky River Dam will have raw materials trucked in, likely from Armidale.

With regards to any rock materials for Oaky River Dam restoration, there is an existing quarry onsite that was used in the initial dam construction. It is intended to pull material from this source to use on access roads and other activities needing quarry rock.

3.5 Operation and maintenance

3.5.1 Oaky River Dam

Once complete, Oaky River Dam and associated pipelines will be managed by Council as part of their secure water network. This will be undertaken in accordance with any conditions set as part of the environmental approval and water licence such as:

- Management of environmental flows
- Water quality monitoring developed in consultation with Water NSW, with an interim monitoring plan developed for the environmental investigations in Attachment 3.
- Restoration and management of any biodiversity offset areas

3.5.2 Malpas Dam

Malpas Dam will continue to operate as normal during the construction and operation of the Stage 1 works (ie Oaky River Dam restoration and pipeline). This is except for Malpas Dam acting as a storage facility for excess water pumped from Oaky River Dam to Malpas Dam via the Armidale WTP in the future. This will ensure that Malpas Dam still retains some capacity even during dry periods.

During the upgrade to Malpas Dam, the newly restored Oaky River Dam will be the alternative water source used to provide potable drinking water to the Armidale and Guyra communities.

4. Statutory context

Table 6 describes the statutory planning process for the project and identifies other legislation and approvals that may apply to the project. Further investigations as part of the EIS will confirm whether these approvals will be needed, including aspects of the Proposal they will apply to, and any additional approvals for the water security project.

Table 6: Statutory powers relevant to Proposal

Matter	Discussion
Power to grant approval	Under Part 5, Division 5.2 of the EP&A Act and section 2.13(1) of the <i>State Environmental Planning Policy (SEPP) (Planning Systems) 2021</i> the Project is state significant infrastructure (SSI). As such, an Environmental Impact Statement (EIS) is required to be prepared. The Minister for Planning and Public Space (or delegate) would be the approval authority. Further, Council is seeking for the project to be declared Critical State Significant Infrastructure under section 5.13 of the Act and is awaiting advice from the Minister for Planning and Public Space. Notwithstanding the declaration being unresolved at this stage, the pathway for approval is the same, with the difference being the Minister is the approval entity for Critical State Significant Infrastructure.
Permissibility	Division 24, Section 2.158 of the <i>State Environmental Planning Policy (Transport and Infrastructure) 2021</i> (SEPP (Transport and Infrastructure) 2021) defines the RU1 Primary Production land use zones over the Proposal area as 'prescribed zones'. Section 2.159 of the SEPP states that development for the purpose of water storage facilities may be carried out without consent on land in prescribed zones. Both the Malpas Dam and Oaky River Dam projects are located in prescribed zones and may be carried out without consent under Part 4 of the EP&A Act. Section 2.13(1) and Schedule 3, Section 4 of SEPP (Planning Systems) prevail however in that any development for the purpose of water storage facilities with a capital investment value (CIV) of more than \$30 million is declared to be SSI, thus requiring an EIS. The Malpas Dam raising proposal is estimated to cost \$67 million, with Oaky River Dam including the associated pump station is estimated at \$98 million. Given the project values, the dam projects are considered SSI under the SEPP (Planning Systems). It is noted the proposed Oaky River Dam to Armidale WTP pipeline and associated infrastructure are permissible without consent under Division 24, Section 2.159(1) of SEPP (Transport and Infrastructure) 2021, which allows development for the purpose of water reticulation system,

	(pipes, pumping stations, dosing facilities etc), on any land where carried out by or on behalf of a public authority. Given the pipeline is intrinsically linked to the Oaky Dam restoration project, it forms part of the Proposal and will be assessed comprehensively as part of the EIS.
Approvals that cannot be refused	Section 5.24 of the EP&A Act provides that a number of other approvals, if required for an approved SSI proposal, cannot be refused and must be granted on terms which are substantially consistent with the SSI approval. These approvals include: • A Consent (Road Occupancy Licence) under Section 138 of the <i>Roads Act 1993</i> which includes the erection of a structure; carrying out of work in, on or over a public road; or the digging up or disturbance of the surface of a road. • An environment protection licence under Chapter 3 of the <i>Protection of the Environmental Operations Act 1997</i>. • A licence under the <i>Pipelines Act 1967</i>.
Approvals not required for approved SSI	Section 5.23 of the EP&A Act provides a number of additional approvals, permits or licences that are not required for an approved SSI proposal which include the following that are relevant to the Proposal: • Permits under section 201, 205 and 219 of the <i>Fisheries Management Act 1994</i>. • Approvals under Part 4, or excavation permits under section 139, of the <i>Heritage Act 1977</i>. • Aboriginal heritage impact permits under section 90 of the <i>National Parks and Wildlife Act 1974</i>. • Bushfire safety authority under section 100B of the <i>Rural Fires Act 1997</i>. • A water use approval under section 89, a water management work approval under section 90 or an activity approval (other than an aquifer interference approval) under section 91 of the <i>Water Management Act 2000</i>.
Commonwealth approvals	<i>Environmental Protection Biodiversity and Conservation Act 1999</i> The EPBC Act requires referral to the Commonwealth Minister for the Environment for any actions likely to have a significant impact on Matters of National Environmental Significance (MNES). The NSW Bilateral Agreement streamlines the assessment process for major projects that require both NSW and Commonwealth environmental approvals. Under the Agreement, the NSW Government

	assesses the development on behalf of the Australian Government and considers the report prepared by the NSW Government when granting the approval. The NSW Bilateral Agreement will apply to this Project. A search using the Protected Matters Search Tool (PMST) revealed a number of Matters of National Environmental Significance (MNES), including threatened species and ecological communities, wetlands of international importance and world and national heritage listed properties within proximity to the Proposal area. (Appendix 2) As such, it is intended to refer the Proposal to the Commonwealth prior to the lodgement of the EIS. <i>Aboriginal and Torres Strait Island Heritage Protection Act 1984</i> The <i>Aboriginal and Torres Strait Island Heritage Protection Act 1984</i> may apply to contemporary Aboriginal cultural property, ancient sites, and other Indigenous rights and interests. <i>Native Title Act 1993</i> The <i>Native Title Act 1993</i> recognises and protects native title. Searches of the area impacted by the Proposal have identified 12 undetermined Aboriginal Land Claims affecting 13 impacted lots along the pipeline route. Further consultation with Crown Lands is required to confirm whether the land affected by Aboriginal Land Claim is 'claimable'. If the land is not claimable, then no further action would be required, but if the land is claimable, a series of steps is required prior to gaining consent to construct the pipeline.
Other approvals	<i>Water Management Act 2000</i> A Water access licence under the Water Management Act (and associated Water Sharing Plans) is not integrated into the SSI assessment. Council is working with Water NSW to ensure appropriate licences are in place, as well as any amendments needed to the <i>Water Sharing Plan for the Macleay Unregulated and Alluvial Water Sources 2016</i>. <i>Biodiversity Conservation Act 2016</i> Under section 7.9 of the BC Act an application to carry out SSI under the EP&A Act is to be accompanied by a Biodiversity Development Assessment Report (BDAR) <i>Biosecurity Act 2015</i> Under the <i>Biosecurity Act 2015</i> 'all plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any

	biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable’. <i>Contaminated Land Management Act 1997</i> The Contaminated Land Management Act 1997 (CLM Act) establishes a process for investigating, managing and remediating contaminated land. The CLM Act outlines the circumstances in which notification to the Environment Protection Authority is required in relation to the contamination of land. <i>Crown Land Management Act 2016</i> The <i>Crown Land Management Act 2016</i> sets out the framework for the management of Crown land in NSW. If Crown land is impacted, and the land is not acquired, a lease, licence or permit under the Act may be required. As the Proposal traverses several Crown Land parcels, further consultation with Crown Lands will be required. <i>Dam Safety Act 2015</i> The <i>Dam Safety Act 2015</i> was enacted to ensure the safety of declared dams in New South Wales. It aims to promote risk management and the application of safety standards to protect public safety and the environment. Both Oaky River Dam and Malpas Dam are declared dams. Council will continue working with Dams Safety NSW including in the updates of operational plans such as Dam Safety Management Plan for both dams.
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5. Community and stakeholder engagement

Armidale Regional Council regularly engages with the wider Armidale community on water security through various forums, strategies and mediums. This includes the development of significant strategic documents such as:

- Advancing Our Region Community Plan which sets out the vision and goals for the region, along with a 10-year plan shaped what Council has heard from the community including over 1800 community contributions during a 2021 engagement program and contributions received during the 2024 Community Plan review. Water security was a key theme coming out of these conversations.
- Armidale Regional Council Local Strategic Planning Statement (Advancing our Region: Towards 50,000) sets out a 20-year plan to achieve Council's vision for a prosperous future with a diverse economy, vibrant community, unique environment and a population that grows towards 50,000 people. Water security, including the Oaky River Dam restoration and Malpas Dam upgrade, plays a critical role in achieving this vision.

Council communicates effectively with its community via the Council website. This includes a public engagement campaign referred to as Water Drops. The Oaky River Dam restoration project is specifically mentioned on Council's public facing website with regular updates to the community provided via the Water Drops page on [Your Say Armidale](#) and via council's social media Facebook site. This has provided a valuable means for Council to regularly share facts around water security, ask for community feedback on proposals or current issues, and assist implementation of water conservation measures by providing up to date information to the wider community.

The Water Security Project is a regular discussion on all of these forums and will be used throughout the environmental approval process.

5.1 Key Messages

There are four key themes around this project which provide justification for the investment, as well as highlight the order of works and key partners in delivery. The key messages for the project include:

- With current forecasts pointing to a warmer and drier 2026, and increasing water restrictions for Armidale and Guyra residents, developing an **alternative water source is of highest priority** for Armidale. This recognises the inevitability of future droughts, and a high likelihood a drought as severe as 2019 will be experienced again within the next 30 years.
- **Water security** is a regional issue and needs to be addressed in order to support Council's aspirations for the future (as per the Community Plan and the Local Strategic Planning Statement); ensure Armidale is well prepared for any future droughts; and assist adjacent Councils in the future to manage their water security issues (ie Uralla and Walcha Councils).
- The **staging of the Proposal** addresses both water security and construction risk. Whilst the raising of Malpas Dam was initially identified as the key component to address water security, there is a risk that in raising the dam wall Council may impact water availability for the Armidale community townships and businesses. In raising the existing water supply dam, there needs to be a safe and reliable alternative water supply to support the community and ensure there are no water emergencies. This is why the restoration of Oaky Dam is the first stage of the water security project. In essence, Oaky Dam restoration is needed to safely raise Malpas Dam.
- The state strategy for rolling out **renewable energy infrastructure** in the New England region is both an opportunity and a pain point. EnergyCo has identified a significant need for water to enable the construction of the renewable energy infrastructure, thus placing pressure on Council's existing water supply. EnergyCo is however a potential funding pathway for the

project, with Council engaged in regular discussions with EnergyCo and the wider NSW State Government on potential project costs, and potential funding pathways for implementation.

These four key themes will be reflected consistently across the consultation process for the project.

5.2 Existing communications

Armidale Regional Council provides regular updates to the community via the Council webpage as well as its Facebook page. These updates provide timely information on any proposed changes to water restrictions, tips for sustainable water usage and an avenue for community members to engage with Council on water security matters.

Along with the regular updates provided by Council, the following consultation events are relevant to the Proposal being:

levels of service and perceived value – Council is engaging with the community around water access and usage charges, which reflects both the community's ability to absorb additional water charges associated with major upgrades, as well as reflects the value of water is to the future of Armidale. Consultation with the community commenced on 22 July 2026.

Draft Integrated Water Cycle Management (IWCM) strategy – The NSW IWCM framework is considered best practice for developing and delivering integrated water cycle management projects. It seeks a balance between community needs, the economy, and the environment and requires consultation and collaboration to create liveable and resilient communities. Armidale Regional Council is developing an IWCM for the area, and is intending on engaging in a major consultation exercise in late 2026 to seek community views on various aspects and investment strategies around water and wastewater. Work undertaken to date highlights the need for an additional water source, including references to the Proposal as the basis for ensuring water security for the community.

Based on consultation undertaken on water security for the Armidale region, there is majority support for investing in a major upgrade to the water network consistent with the Proposal. This reflects the feeling within the community around water availability, with the impacts of the 2019-20 drought still lingering within the community.

5.3 Stakeholder and community engagement plan

A stakeholder and community engagement plan has been developed for the Proposal which highlights consultation and engagement activities for the environmental assessment process. The plan seeks to ensure consistent messaging on the Proposal, with an overarching strategy that specifies:

- Level of consultation to be carried out
- Identification of key stakeholders and interests in project
- Potential issues, risks and mitigation strategies
- Consultation and communication activities to ensure effective, relevant and timely communication with all stakeholders
- Communication protocols and responsibilities within the project team.

A copy of the plan is provided in Attachment 4.

5.4 Key stakeholders

Water security for Armidale Regional Council impacts not only the residential communities within Armidale and surrounding towns, but also key industrial, employment and horticultural activities. The Proposal also seeks to provide a level of water security in the longer term for the adjacent local government areas of Uralla and Walcha, as well as support the roll out of renewable energy in the NEREZ

under the guidance of EnergyCo. Given the complex and far-reaching outcomes for the water security project, a list of stakeholders and their interests is provided in Table 7. This is not a comprehensive list but it does highlight the diversity of interests in the project:

Table 7: Stakeholder list

Stakeholder	Interest
Residents of Armidale Regional Council with reticulated water	Will mitigate impacts from future droughts to ensure ongoing water for residential usage. This is relevant given the 2019/20 drought and level 5 restrictions placed on towns within ARC. As of May 2026, Armidale and Guyra were on Level 2 water restrictions.
Property owners along Waterfall Way between Kempsey-Armidale Road and Middle Farm Road	Potential property impacts associated with water pipeline connecting Oaky Dam to Armidale Water Treatment Plant (approximately 47 private properties directly impacted).
Property owners adjacent to Malpas Dam	Potential property impacts associated with raising of Malpas Dam (approximately 20 private properties directly impacted by increased inundation).
Armidale Aboriginal Land Council	The project will impact existing water bodies and streams, with engagement with First Nations communities to understand and mitigate potential cultural impacts. Further, there are 12 undetermined Aboriginal Land Claims affecting 13 impacted lots within the Oaky River Dam to Armidale Pipeline route
Uralla Shire Council	The water security project aims to provide a level of water security to Uralla Shire Council. This is particularly important to the residents of Uralla Shire who were significantly impacted by the 2019/20 drought with water having to be trucked in.
Walcha Shire Council	As a result of the 2019 drought and water scarcity impacting Walcha's ability to appropriately manage activities such as bush fire management and maintenance activities, Walcha Council has also identified a water security issue for town and surrounding areas. There are opportunities in the medium to longer term for Armidale's water security project to address Walcha's issues.
Department of Planning, Housing and Infrastructure (DPHI)	The project will need approval under the state planning legislation as a State Significant

	Infrastructure in order to proceed. DPHI will be the approval agency.
Department of Climate Change, Energy, the Environment and Water (DCCEEW)	Council will need to work closely with DCCEEW in obtaining any relevant water licences for the approval, as well as comply with relevant environmental policies, legislations and guidelines in the development and delivery of the project.
Department of Public Works (PWA)	PWA has worked with Council in developing an overarching water security strategy as well as concept and detailed designs for the dam upgrades and pipelines associated with the project. PWA provide technical expertise on water infrastructure projects.
Department of Primary Industries and Regional Development	DPIRD is the NSW government agency with responsibilities including Agriculture. Given the importance of the Horticultural industry in Armidale and the link to water security, DPIRD is seen as a partner in the conversation around the need to address water security to ensure food security and employment opportunities for the region.
Controlled Environment Horticultural (CEH) industry	The growing horticultural industry within Armidale Council, is earmarked as a potential major growth area for employment within Council's LSPS. In order to expand, it will need some confidence of a safe and reliable water source, which this project will provide.
Transport for NSW	The proposed water pipeline connecting Oaky River Dam traverses along the Waterfall Way corridor which is owned and operated by TfNSW. Council will need to liaise with TfNSW in developing options for constructing the pipeline along the road corridor, including the potential use of bridge infrastructure to cross stream and rivers.
EnergyCo	EnergyCo's role in the NEREZ is the Infrastructure Planner under the <i>Electricity Infrastructure Act 2020</i> . This role is to effectively facilitate generation infrastructure, noting the individual projects are considered major water users associated with the development of the NEREZ. Council is in discussions with EnergyCo around funding pathways to implement a project which enables the roll out of renewable energy

	infrastructure as well as leaves a lasting community legacy for the community.
Proponents of renewable energy projects	Water availability and the lack of it for renewable energy projects will impact on the speed at which projects can be rolled out in the NEREZ. The proposal seeks to mitigate this risk, thus it is anticipated proponents would be supportive of the Proposal.
Water NSW	State's corporate water management agency who can provide expertise and guidance on the project when required. Water NSW is not involved in the management and operation of ARC's existing water infrastructure however are a key player in terms of water licencing and providing guidance on long term water monitoring needed on both dams.
NSW Reconstruction Authority	Due to role in Disaster Adaptation – would anticipate support for project due to addressing water security and minimising impacts from future droughts as well as floods / bushfires (flood mitigation via dam and water availability in event of bushfires). With the advent of the Disaster Adaptation Plans being rolled out across the State, it is anticipated the Proposal would be referenced in the relevant plan for addressing longer term resilience in the New England communities
State and Federal elected representatives	Council needs to keep the local MPs (state and federal) updated on the proposal and progress, including discussing potential funding opportunities across Government.
Alinta Energy (Oven Mountain Pumped Hydro)	Proponent of Pumped Hydro Plant further south of the Oaky River Dam along Kempsey-Armidale Road. The project is currently in development, noting there may be some benefits with regards to a future Oaky Dam Hydro plant depending on the outcome of the approval process and construction timeline.
University of New England	Potential partner in supporting water security project to facilitate a strong and productive agricultural and food industry in the New England. They may also assist in lobbying for innovation around water usage, as well as the benefits the Proposal would achieve in supporting food security in the tablelands.

Fisheries	Council will need to consult with Fisheries to ensure there is no net loss of key fish habitats associated with the project. Fisheries has previously been contacted with regards to the Proposal, with consultation to continue, particularly with regards to water crossings and the design of dams.
Dam Safety NSW	Council will need to consult with Dam Safety NSW in the design and operation of the dams.
NSW NPWS	Due to the proximity to the Oxley Wild Rivers National Park, the NSW NPWS will be consulted to ensure there are minimal downstream impacts during both construction and operation of the Oaky River Dam restoration.

5.5 Key Consultation Actions

Engagement and consultation with the key stakeholders, including Armidale and New England communities, forms an important part of the EIS process.

Council is committed to building ongoing relationships and trust with the local community, noting the genesis of the water security project was based on the community expressing the need for a more resilient and secure water source for the regional centre and surrounding communities.

As part of the consultation process, Armidale Regional Council will meet and engage with all directly affected landholders and users as part of the planning process and during construction.

To ensure there is adequate opportunity for residents, businesses and other stakeholders to engage in the project as it progresses, a high-level program is outlined in Table 8.

Table 8: Key consultation activities for environmental assessment process

Stage	Activities	Communications Material
EIS Preparation	Stakeholder briefings and meetings State Government workshops New England Council workshops Water Drops communication information Project information line and email Community group briefings and meetings Consultation and information sharing with directly impacted landowners for pipeline Engagement with major water users (eg Controlled Environment Horticultural industries)	Targeted community newsletters Information sessions around community, including in shopping centres, Council building and library Stakeholder briefings FAQs Media releases Armidale Regional Council website Social media / Facebook One on One meetings

EIS Exhibition	EIS displays Stakeholder meetings and briefings Community group briefings and meetings Project information line and emails Newspaper advertisements	Targeted community newsletters Information sessions around community, including in shopping centres, Council building and library Stakeholder briefings FAQs Media releases Armidale Regional Council website Social media / Facebook One on One meetings Digital copies of EIS on NSW Planning Portal
Post-EIS	Stakeholder briefings and meetings Project information line and emails Community events	Water drops communication information Stakeholder briefings Media Release Armidale Regional Council website Social media / Facebook One on One meetings Digital copies of Submissions Report on NSW Planning Portal

6. Proposed assessment of impacts

This section identifies the matters requiring further assessment in the EIS and the proposed approach to assessing each of these matters.

The identification of key matters that may be addressed in the EIS has been undertaken in accordance with the *State significant infrastructure guidelines – preparing a scoping report* (DPE, 2022). The key matters are those environmental aspects that will require further studies to assess the potential impacts and develop measures to avoid, mitigate and /or offset those impacts where necessary.

The level of assessment required has been determined based on Appendix D of the State Significant Guidelines. A detailed level of assessment will be required where the project may result in significant impacts on the matter, including cumulative impacts and where detailed specialist studies and investigations are required to be completed by technical experts. Detailed level of assessments may require specialists to work closely with specialists working on other matters to determine the likely indirect impacts of the project.

A standard level of assessment is where the project is unlikely to result in significant impacts on the matter, including cumulative impacts. Standard assessments may involve technical specialists however impacts are likely to be well understood, relatively easy to predict using standard methods and capable of being mitigated to comply with relevant standards.

Where the project will have no impact on the matter, or the impacts of the project are minor and not worth considering, they will require no further assessment in the EIS.

To identify matters that require further assessment in the EIS and the level of assessment required, the following key factors were considered:

- Scale and nature of likely impact and sensitivity of the surrounds
- Likelihood of generating cumulative impacts
- Ability to avoid, minimise and offset the impacts of the proposal
- Complexity of the technical assessment required.

The following matters have been identified as potentially resulting in a significant impact and will require detailed assessment in the EIS:

- Water – hydrology, groundwater, water availability, water quality, cold water pollution, flooding and climate change
- Biodiversity – terrestrial and aquatic ecology including potential downstream impacts on conservation areas (including National Parks)
- Heritage – Aboriginal and historic
- Hazards and Risks – dam safety

Matters that have been identified as unlikely to result in significant impacts but will require standard assessment in the EIS include:

- Access – traffic and access to property
- Amenity – noise and vibration
- Built Environment – private property, public land, public infrastructure
- Air – atmospheric emissions
- Economic – Livelihood, opportunity cost

- Social – community, livelihoods, accessibility
- Hazards and Risks – Bushfire, Waste

A scoping summary table has been included in Appendix A which provides a summary of the matters for assessment and identifies the level of environmental assessment required in the EIS (detailed or standard), specifies what method of consultation will be required for each matter (specific or general) and which matters will require a cumulative impact assessment.

6.1 Water

6.1.1 Existing environment

Surface Water resources and users

The Proposal involves two existing dams as well as two pipelines being a 54km pipeline from Oaky River Dam to Armidale, and a 25km pipeline from Armidale to Uralla. These pipelines intersect with several creeks and gullies.

Oaky River Dam is located on the southern side of Waterfall Way and accessed off Oaky River Dam Road via Kempsey Road. The dam wall was damaged in a storm event in 2013 with the right embankment completely failing. Part of the dam wall structure remains within the riverbanks with the existing flow running through the damaged dam wall. Downstream water users are negligible as Oaky River is a relatively small tributary running southwest into the Oxley Wild Rivers National Park where it joins with the Chandler River and then the Macleay River.

The area to be inundated is rural in nature and consistent with the historical full storage level for the dam. On the northern embankment there is remnant bushland above the 2013 inundation line. The southern embankment behind the dam wall comprises mostly cleared farmland. There has been little regrowth within the inundation line since 2013 due mostly to steep and rocky embankments on the northern side and grazing on the southern side of Oaky River.

The proposed Oaky River Dam to Armidale WTP pipeline and associated infrastructure intersects with several named watercourses and numerous unnamed perennial tributaries or drainage lines. These range from rocky creek beds to vegetated slopes leading into natural drainage lines. Bridges and culverts are present at the majority of the water crossings, with investigations to take place on the ability to utilise these existing structures to enable the pipeline to cross the water bodies with minimal environmental footprint within the water courses.



Figure 12: Aerial view of damaged Oaky River Dam wall

Malpas Dam is located on the Gara River south-east of the town of Guyra and is the main water supply source for Armidale as well as a backup supply for Guyra during drought conditions. The dam is an earth and rockfill dam built around 1968, with a catchment area of about 197 km², and a reservoir storage capacity of about 12,266 ML.

The surface storage area of Malpas Dam is 1.8 km². There are pockets of native vegetation on some of the southern embankment with predominantly rural cleared farmland surrounding the dam.



Figure 13: View of Malpas Dam spillway and intake tower

There are two small dams (Guyra No 1 Dam and Guyra No 2 Dam) on Ryanda Creek, a tributary of Gara River, upstream of Malpas Dam. There are also a number of quite small farm dams scattered across the Gara River catchment upstream of Malpas Dam. These dams are significantly smaller than the Malpas Dam and are unlikely to impact on any water quality issues within the Malpas Dam area.

Malpas Dam is the home of the New England Sailing Club, with regular sailing competitions held on the dam. Picnicking and viewing facilities are located close to the dam, but there is strictly no camping allowed on the banks to minimise any impacts to water quality.

Flooding

A flood hydrology study was undertaken by NSWPW (2021) to determine the appropriate flood capacity for Malpas Dam, with a number of model calibration scenarios developed to estimate the design peak inflow into the dam. The preferred scenario (Scenario 1 XP-RAFTS model) was found to reproduce the recorded hydrograph shape, peak discharge and timing at Malpas Dam for the 2001, 2010 and 2011 events. The model also matched the timing of the flood peaks at Willow Glen, Urandangie Creek, Malpas Dam and downstream of the dam for all three events. The Scenario 1 XP-RAFTS model estimated that design inflows to Malpas Dam would have a critical storm duration of 12 hours for the 1 in 100,000 AEP event and 6 hours for the PMPF event. This is considered reasonable for a 197 km² rural catchment. The flood and dam break study is provided in Attachment 5.

A similar exercise was undertaken for Oaky River Dam, with the study consisting of:

- Hydrologic modelling – to produce flood inflow data as inputs into the floodplain modelling;
- Hydraulic modelling – to analyse the flooding characteristics along the floodplain inclusive of flood inundation mapping; and
- Dam Failure Consequence Assessment – to analyse the modelled flood impacts (Population at Risk (PAR) analysis, preliminary qualitative desktop environmental impact search, etc)

The flood and dam break study for the Oaky River Dam reconstruction is provided in Attachment 6.

Water Quality

Malpas Dam, like many water supply dams, has regular outbreaks of blue-green algae (BGA) from early Spring to early Autumn. BGA can result in objectionable taste and odour and in extreme cases produce algal toxins. To address this, Armidale WTP incorporates best practice treatment regimes in utilising ozone and other advanced water treatment processes to improve water quality and tackle taste, odour, algal toxins, dissolve organic carbon, iron and manganese.

Powdered activated carbon, another best practice treatment regime, is dosed into the Malpas to Guyra Pipeline to remove taste, odour compounds and toxins that are produced by blue-green algae.

Armidale WTP counteracts blue-green algae in its raw water source (Malpas Dam) with ozone while Guyra WTP utilises a more conventional approach by using powdered activated carbon. During a drought, when the Guyra Dams are empty, a pipeline from the Malpas Dam to the Guyra Water Treatment Plant becomes the alternative raw water source. Armidale and Guyra treat their raw water source for blue-green algae independently and there is no available pumping and pipeline infrastructure to transport treated water from Armidale to Guyra.

Malpas Dam has regular testing as part of the compliance with the Australian Drinking Water Guidelines (2011). This includes:

- daily testing by operators at the treatment plants
- weekly verification tests on drinking water sampled from the reticulated system are undertaken at Forensic & Analytical Science Service, NSW Health appointed NATA accredited laboratory
- Dam profiling undertaken biweekly by the operations team to monitor raw water quality and blue-green algae levels.

- Weekly independent blue- green algae classification and biovolume tests of raw water at the source (Malpas reservoir & Guyra Dams) during summer. These are undertaken at a NATA accredited laboratory to monitor blue-green algae levels.
- Weekly blue-green algae toxin tests of raw water from Malpas and Guyra Dams at the NSW Health Laboratory, Forensic & Analytical Science Service

The testing to date has shown no incidents of PFAS or radiological contamination for the Malpas Dam.

Oaky River Dam has also undergone prior water quality testing, with 12 months of data showing results consistent with Malpas Dam. Council has since commenced radioactivity analysis for Oaky River Dam and is in discussion with DCCEEW to establish a water quality monitoring program in preparation for the EIS. This program will assess water quality, flow rates, and chemical indicators to evaluate the health of Oaky River and inform future treatment options.

Groundwater

Armidale is situated high on the Great Dividing Range, with limited underlying fractured rock aquifers in the immediate area thus limiting the availability of groundwater in the area.

In 2019 Armidale Regional Council investigated the ability to utilise bore water during 2019/20 as water security became a significant issue for the community. As part of these investigations, over 40 bores were drilled with around 15% of these showing any availability of water for use. Of the 6 bores/wells sunk where water was found, approval was given to extract only 200ML per annum which was less than half of what Council sought. Given the restrictions on water extraction, production bores at Izzeard Park and Guyra Showgrounds are used to supplement water in the town during drought, with production bores in Armidale used for irrigating parks and sports fields to reduce pressure on the potable water supply.

Testing undertaken as part of the Guyra investigations highlighted the following water quality results:

- Total Dissolved Solids (TDS) 342 mg/L which was dominated by high bicarbonate concentration. The desirable ranking for drinking water is below 500 mg/L
- pH of 7.27 showing alkaline
- low levels of Na, K, Mg, Ca, Cl at less than 42 mg/L
- Hardness was 259 which is classified as relatively hard. This would affect washing thus some water softening agent would be required for domestic use
- Fe and Mn traces were seen as acceptable.

Further data relating to recharge rates at existing wells will be collected as part of the EIS process to inform Council of any potential impacts to groundwater resources as a result of the Proposal.

The groundwater aquifers in the Water Sharing plan for the Macleay Unregulated and Alluvial Water Sources (2016) are categorised as upriver alluvium and the costal floodplain alluvium, forming the Coastal Macleay Floodplain Alluvial Groundwater. The Oaky River and Gara River are NOT an identified connected surface water source to these aquifers.

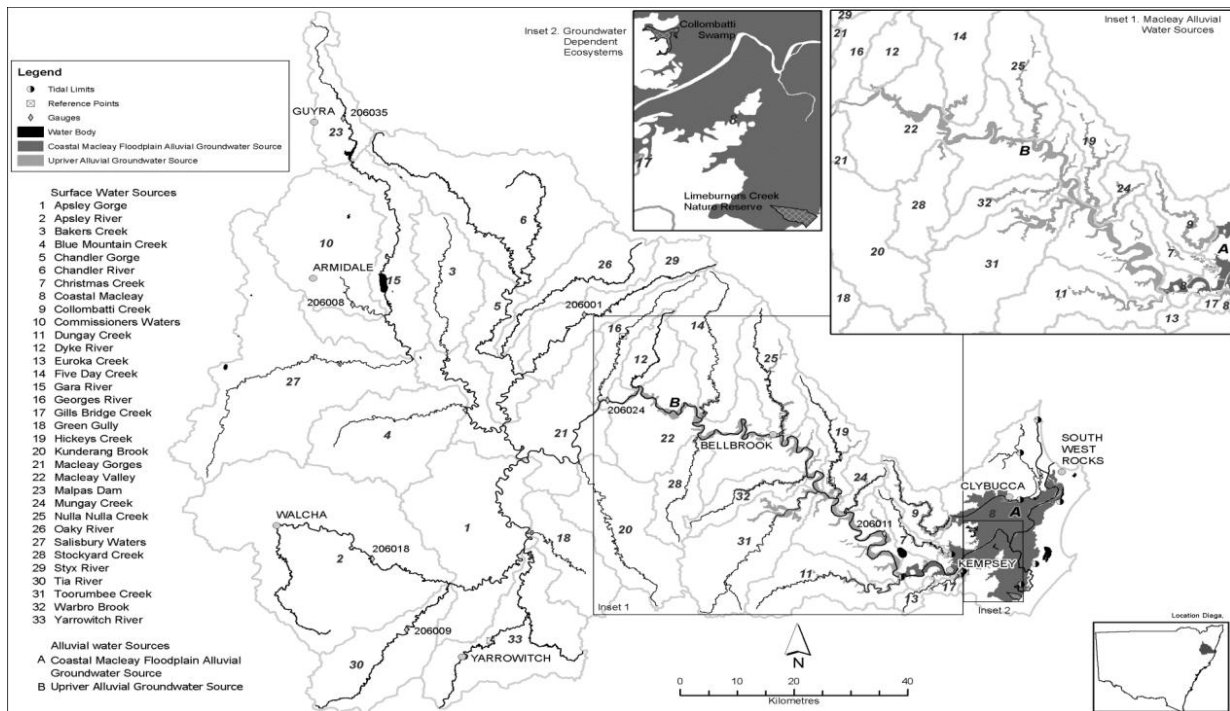


Figure 14: Water sources in the Macleay River Extraction Management Unit

6.1.2 Potential impacts

The Proposal could potentially influence:

- Changed hydrology of downstream environments for the Oaky River (due to Oaky River Dam restoration) and Gara River (due to raising of Malpas Dam wall)
- Surface-groundwater interactions and groundwater dependent ecosystems
- Erosion and sediment run-off into the waterways during construction
- Contamination from spillage or inappropriately stored chemicals and fuels during construction
- Water availability
- Water quality
- Cold water pollution
- Changing flood patterns

These issues are discussed below.

Flooding

Changes to hydrology and flooding will occur from the Proposal, including due to additional areas of inundation upstream of the Malpas Dam, with Oaky River Dam inundation area being returned to the pre 2013 scenario. This relates to both dams on a permanent bases at full supply level (FSL) and temporarily during flood events, including extreme flood events such as the 1 in 1,000 / 1 in 10,000 AEP flood peaks.

The increase to the FSL at Malpas Dam and changes to the spillways on both dams may alter the hydrological conditions both upstream and downstream of the dam wall when the spillways are operating.

Additional flood modelling and a hydrological assessment will be undertaken as part of the EIS to assess likely impacts associated with the Proposal.

Water availability

The purpose of the Proposal is to secure water availability for the Armidale region. It is proposed to construct the Proposal in two stages, with Oaky River Dam restoration works and the water pipeline connecting the Oaky River Dam to the Armidale Treatment Plant to take place first. This will ensure there is water availability to the Armidale community from Oaky River Dam whilst the construction works take place at Malpas Dam in Stage 2.

The Oaky River is a perennial stream in the upper catchment of the Macleay River. It traverses through steep gorge country before connecting to the Chandler River southwest of the dam. Given it is a minor tributary, the impacts to downstream users in the Macleay River catchment are assumed to be negligible given the size of the Macleay River catchment. This will be quantified as part of the EIS with a water monitoring plan to be put in place to record flow volumes from the Oaky River including into the Chandler River.

Malpas Dam is in a relatively dry catchment area with little rainfall compared to the Oaky River Dam catchment. As a result of this, the long-term strategy for Council is for water from the Oaky River Dam to be used to top up Malpas Dam once raised. This will be guided by water licencing approvals, noting Council has commenced consultation with the Department of Climate Change, Energy, the Environment and Water (DCCEEW) for a water extraction licence. Obtaining a sustainable yield for the New England will be a major factor in the application for the licence.

Secure yield modelling for the Proposal has been completed by NSW Urban Water Services (NUWS) on behalf of NSW Public Works (Report No. 24007, December 2025). The study assessed secure yields for the existing headworks system and all nominated augmentation options across multiple climate scenarios, including historic climate, 2013 DCCEEW Guidelines climate change adjustment, NARCLiM1.5 RCP8.5 projections (six global climate models), and 10,000-year stochastic daily hydroclimate data. The modelling confirmed that Stage 1 (Oaky River Dam restoration with 2.78 GL storage and 25 ML/day transfer) delivers a secure yield of 3,217 ML/year under climate-adjusted conditions, and that the full conjunctive operation of Oaky Dam and raised Malpas Dam delivers a secure yield of 9,277 ML/year under the same conditions. This completed yield study forms the baseline for the EIS water availability assessment and does not require repetition as part of the EIS process

The Armidale Water Supply Yield Studies Final Report (2020-2025) is provided in Attachment 7.

Groundwater

The [Bureau of Meteorology Groundwater Dependent Ecosystem Atlas](#) shows the groundwater on Gara River is an intermediate and local flow system in Palaeozoic or Mesozoic intrusives, while Oaky River is local only flow system. Remote sensing using Landsat and MODIS, and GIS rules-based analysis has identified potential for groundwater dependent ecosystems. See table below.

Table 9: Groundwater systems in Gara and Oaky Rivers

Layer	Description	Gara River	Oaky River
Terrestrial groundwater dependent ecosystem	Ecosystems which access subsurface groundwater to meet all or some of their water requirements, including vegetation.	Low potential	Low potential
Aquatic Groundwater Dependent ecosystem	Ecosystems that are dependent on groundwater-fed surface water bodies such as wetlands, rivers, lakes and springs. This relates only to the aquatic component of a	Low to moderate potential	Isolated patches of high potential

	system, and excludes vegetation that may fringe a surface water body.		
Terrestrial Inflow dependant ecosystem	Vegetation ecosystems that are likely to use groundwater in addition to rainfall.	Isolated patches of likely	Likely
Aquatic Inflow dependant ecosystem	Extent of rivers, wetlands and springs assigned with a likelihood of being inflow dependent.	Likely	Likely

Reinstatement of Oaky River Dam will again reduce stream flows in the Oaky River. Below the dam wall, the Oaky River weaves through a steep gorge for approximately 16km until it meets the Chandler River. It is within the Oxley Wild Rivers National Park and Gondwana Rainforests a UNESCO World Heritage-listed area. It is largely inaccessible by road. Establishing groundwater monitoring bores in this sensitive environment and challenging terrain would cause significant ecosystem disturbance in terms of road construction and drilling and is not recommended.

Water quality

The proposal may have impacts on water quality which may directly affect the dam areas and downstream environments both during construction and operation. Such impacts are likely to include:

- during construction the reservoir water quality may be impacted by sediment and spills or through the initial filling of reservoirs.
- changes to nutrient loads and water quality downstream of the dams may impact aquatic ecology
- construction impacts associated with the pipeline may impact on local streams and waterways. Mitigation measures will be dependent on the design and construction methodology associated with the water crossings, with the preference being to utilize existing bridge and culvert structures to minimise works within the banks of any water courses.
- The Proposal may impact on ecological health by cold water pollution effects when waters are released from the dams, particularly in warmer months. It is noted the Oaky River Dam is not a deep dam, thus the temperature stratification may not be significant. Regardless, the operation of the offtake towers, including the ability to take water from the upper levels during the warmer months, will be explored as part of the design.

6.1.3 Proposed assessment approach

A detailed hydrological and flood assessment will be undertaken as part of the EIS to determine the potential hydrological impacts downstream of the Malpas Dam and Oaky River Dam wall. The hydrological baseline and secure yield assessment has been completed through the Armidale Water Supply Yield Study (NUWS, Report No. 24007, December 2025), prepared on behalf of NSW Public Works. This study is appended to the EIS as a completed technical study and provides the foundation for the water availability and climate change assessments described below. The assessment will comprise of:

- Baseline assessment characterising the existing hydrological conditions
- Identification and assessment of potential construction related impacts
- Assessment of cold-water pollution

- Assessment of surface water impacts
- Assessment of operational impacts including changes to the hydrological regime and changes to environmental water availability and flows
- Compliance with relevant water sharing plans
- Integration of the completed secure yield modelling (NUWS, 2025), including NARCLiM1.5 RCP8.5 climate projections, into the hydrological impact assessment
- Consideration of cumulative impacts

The assessment of risks and impacts will be used to identify potential mitigation and management measures that can be built into the design, management and operational aspects of the dams and pipeline.

The assessment of impacts will also provide input into the aquatic ecology assessment which will be assessed as part of the biodiversity assessment described in Section 6.2.

Flooding

A flood model for Malpas Dam has been developed by NSWPW which has identified the current structure to be capable of withstanding a 1 in 100,000 AEP event as well as a PMPF event. Further modelling will be undertaken on the proposed upgrade to ensure there is no worsening of flood impacts.

6.2 Biodiversity

6.2.1 Existing environment

Terrestrial ecology

Oaky River Dam is located in a rural area where the dam wall is within an area surrounded by rugged steep cliffs and dense riparian vegetation. The southern embankment and the eastern half of the dam inundation area have gentler slopes and areas of semi-cleared open grassland where grazing activity has taken place. Oxley Rivers National Park is located to the southwest of the Dam.

The proposed Oaky River to Armidale pipeline alignment will traverse alongside the Middle Farm and minor roads (at its western end), Waterfall Way and Kempsey Road (at the eastern end). The majority of the impact will be along Waterfall Way which has patches of box woodland, woodland scrub, Montane bog and fen and grassy forest. Council is seeking to locate the pipeline in predominantly cleared rural farmland to avoid roadside vegetation, thus engaging in an avoidance strategy to minimise harm.

Malpas Dam is in a rural area, with much of the surrounding land subject to extensive clearing for grazing and agricultural activities. Remnant vegetation is generally located on the southern and south-western banks of the reservoir, with larger areas of remnant native vegetation to the south of Malpas Dam. Malpas Dam is located within 10 km downstream of Little Llangothlin Nature Reserve.

The existing Malpas Dam, Oaky River Dam and associated watercourses and parts of the Oaky River Dam to Armidale WTP pipeline alignment are mapped on the NSW Biodiversity Values Map, in the Lesryk report in Attachment 2. A search of the NSW Bionet Atlas (DPHI, accessed 2023 and 2024) has identified:

- 12 threatened species recorded within a 10 x 10km radius centred on the Oaky River Dam,
- 61 threatened species recorded within a 10 x 10km of the proposed Oaky Dam to Armidale WTP pipeline alignment area.

- 4 threatened flora and fauna species recorded within a 10 x 10km radius centred on the Malpas Dam reservoir,

Aquatic ecology

A review of the Fisheries NSW Spatial Data Portal identified the Malpas Dam reservoir as having a poor freshwater fish community status, while the reservoir and its tributaries are mapped as key fish habitat. Oaky River Dam reservoir and its tributaries are also mapped as key fish habitat, noting the flow past Oaky River Dam is via a natural waterfall just over 100 metres in height, thus making fish passage difficult.

The proposed pipeline includes multiple creek and waterway crossing, including an area of wetland at Cooney Creek crossing. Mitigation strategies include seeking to attach the pipeline to concrete bridge structures where possible to minimise damage from in-creek crossings as well as realigning the pipeline to avoid the wetland area, with the proposed alignment tracking to the north of the wetland area.

A preliminary environmental investigation undertaken by Lesryk Environmental in May 2024 for the proposed Oaky River Dam to Armidale pipeline (Attachment 2) indicated the majority of major drainage lines present between Armidale and Oaky River Dam are mapped as Key Fish Habitat.

6.2.2 Potential impacts

The project may result in significant direct and indirect impacts on terrestrial and aquatic biodiversity. Direct impacts will be associated with the clearing of vegetation for construction of the dam infrastructure and sections of the pipeline as well as changing hydrology systems due to the reinstatement of the dam on Oaky River. Changes to the inundation levels upstream of the Malpas Dam and Oaky River Dam will also have direct impacts on surrounding vegetation.

Terrestrial ecology

The raising of Malpas Dam wall and the restoration of Oaky River Dam would cause inundation of additional land upstream of the dam walls, including areas of remnant vegetation. It is noted the Oaky Dam restoration works seek to re-establish the original inundation line. The impact on terrestrial ecology is anticipated to be lessened due to the area being impacted previously by the dam. Regrowth over the last 10+ years has been limited as a result of the Tinderbox Drought in 2017-2020, grazing along the embankments north of the dam wall as well as steep and rocky terrain in the vicinity of the dam wall.

To reduce direct impacts associated with the pipeline, following a preliminary environmental assessment of the proposed Oaky River Dam to Armidale WTP pipeline (Lesrky, 2024), the alignment of the pipeline was altered. This was undertaken to minimise impacts on significant endangered vegetation communities along Waterfall Way and Kempsey Road. The proposed pipeline will now traverse predominantly cleared farmland and road reserves.

Aquatic ecology

Indirect impacts on downstream aquatic ecosystems are likely due to changes in the downstream hydrology and water quality.

The reconstruction of the Oaky River Dam will alter the current downstream ecology of the area that has established in the last decade due to the increased water flow from the damaged dam wall. As a result, sensitive downstream environments including the Oxley Wild Rivers National Park may be impacted due to changes in hydrological flows associated with the Oaky River Dam becoming a water storage dam for municipal use.

Similarly, the altered spillway of Malpas Dam may change hydrological conditions downstream, potentially affecting aquatic ecology.

6.2.3 Proposed assessment approach

Detailed assessments of the Proposal will continue, building on work completed to date as well as providing valuable input to the detailed design phase to mitigate impacts on biodiversity.

It is intended to undertake detailed assessments for the Oaky River Dam restoration and pipelines. Due to the timing of Malpas Dam likely to be sometime after 2030, a desktop analysis is proposed for Malpas Dam, with a more detailed analysis undertaken closer to the commencement of construction to identify impacts and mitigation measures.

Terrestrial ecology

A detailed Biodiversity Development Assessment Report (BDAR) would be prepared as part of the EIS to meet the requirement of the Biodiversity Assessment Method (BAM) and in accordance with the *Biodiversity Conservation Act 2016* and *Environment Protection and Biodiversity Conservation Act 1999*. The intent of this work is to assess potential terrestrial biodiversity impacts (direct and indirect) as a result Stage 1 of the proposal.

This would include impacts associated with the additional inundation areas and the change in water quality and hydrological conditions associated with the operation of the dam and construction of the Oaky River Dam to Armidale WTP pipeline.

The proposed assessment approach will include:

- A desktop assessment of the area
- Field investigations across impact areas to ground-truth desktop assessment and inform development of vegetation and habitat mapping and impact assessment
- Assessment of direct and indirect construction, operational and cumulative impacts
- Provision of measures to avoid and mitigate impacts

These assessments will be conducted in consideration of the following guidelines:

- Threatened Species Survey and Assessment Guidelines (DPE, 2016)
- Guidelines for developments adjoining land managed by the Office of Environment and Heritage (EES, 2013) due to the proximity of the Oxley Wild Rivers National Park

EPBC Act assessments will be conducted for all EPBC listed species recorded onsite or considered likely to occur. The EPBC Offsets Policy requirements will be addressed, focusing on the use of the NSE Biodiversity Offsets Scheme to meet Commonwealth EPBC Act offset requirements. The assessment will also ensure EPBC Act assessment requirements are met and addressed in downstream impacts, indirect impacts, offsets and mitigation.

Aquatic ecology

A detailed Aquatic Ecology Impact Assessment will be undertaken which will involve investigation of both upstream and downstream impacts of Stage 1 of the proposal during construction and operation, with a desktop evaluation being undertaken for Stage 2 being the Malpas Dam raising.

Fish surveys will be undertaken in accordance with *Survey guidelines for Australia's threatened fish: Guidelines for detecting fish listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999* (Department of Sustainability, Environment, Water, Population and Communities 2011). These assessments will inform the presence or absence, abundance and distribution of species occurring within the Oaky River and surrounds as well as waterway crossings associated with the pipeline.

Additional eDNA assessments will inform the abundance and distribution of key listed species and the platypus through analysis of trace DNA within the aquatic environment around Oaky River Dam.

Key Fish Habitat assessments will be undertaken as part of the comprehensive aquatic ecology assessment in accordance with policy and guidelines for fish habitat conservation and management (Department of Primary Industries (DPI), 2013). In-field characterisation, in combination with examination of existing stream order data, will be undertaken in accordance with DPI (Fisheries) policy by assessing 'waterway type' and 'waterway class'.

Assessment of other biotic and abiotic components such as water quality, riparian vegetation, algae (phytoplankton, periphyton), macroinvertebrates and sediment quality will be undertaken. The results from these assessments will further inform the current ecological values within the study area.

6.3 Aboriginal Heritage

6.3.1 Existing environment

The Proposal is located on the lands of the Nganyaywana people. A search of the Aboriginal Heritage Information Management System (AHIMS) was undertaken for Malpas Dam site on 2 May 2023. No previously recorded Aboriginal sites or declared Aboriginal Places were identified within a 1 km radius of the Malpas Dam. This is likely due to the lack of previous surveys undertaken in this area.

The original damming of the rivers and creation of the existing reservoirs would have likely inundated or impacted some Aboriginal sites. The surrounding landscape indicates the potential for physical sites to be located on the lower slopes and adjacent flats surrounding the existing reservoir as well as along creek banks and drainage lines including where Urandangie Creek feeds into the reservoir. Nearby ridgelines and hill tops may also be associated with ceremonial or cultural sites and may be impacted by the proposed works.

Two extensive AHIMS searches were conducted on 31 March 2023 for the Oaky River Dam to Armidale WTP pipeline alignment (including the Oaky River Dam area) as part of preliminary investigations prepared to inform the design of Oaky River Dam to Armidale WTP Pipeline. The AHIMS searches returned 234 sites.

The most frequent site type in the search areas are artefact scatters (36.3%), isolated finds (35.5%) and modified trees (19.7%). There are several AHIMS sites which are on the proposed alignment or within the 20 m study area corridor, which include a range of scarred trees (including contemporary scarred trees), artefact scatters and Potential Archaeological Deposits (PAD). This will be explored further as part of the Environmental Impact Statement report.

6.3.2 Potential Impacts

The proposal has the potential to impact Aboriginal items and sites through direct surface disturbance associated with the construction of the pipelines and their associated infrastructure, concrete gravity structure at Oaky River Dam, Malpas dam wall, embankment works as well as the resultant increased inundation level associated with the raising of the Malpas Dam wall. The proposal also has the potential to impact on non-tangible cultural heritage and ceremonial values associated with the land.

6.3.3 Proposed assessment approach

The EIS will identify and describe the Aboriginal cultural heritage values that exist across the whole area that will be affected by the proposal and will document these findings in an Aboriginal Cultural Heritage Assessment Report (ACHAR). This will include a surface survey and may also require test excavation. The ACHAR would be prepared in accordance with the following:

- *National Parks and Wildlife Act 1974.*
- *Guide to investigation, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH, 2011).

- *Code of Practice for Archaeological Investigation of Aboriginal objects in NSW* (DECCW, 2010).
- *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW, 2010).

The ACHAR will assess and document the impacts the proposal may have on Aboriginal cultural heritage values and will demonstrate attempts to avoid impacts, or where impacts are unavoidable, will outline measures to mitigate such impacts.

Consultation with Aboriginal people will be undertaken and documented in accordance with the consultation guidelines. The ACHAR will document the significance of any tangible and intangible cultural heritage values for Aboriginal people who have a cultural association with the land.

6.4 Historic heritage

6.4.1 Existing environment

A review of the State Heritage Inventory has identified several heritage items listed under the Guyra Local Environmental Plan 2012 and the Armidale Regional Local Environmental Plan 2012 within a 5 km radius of the Malpas Dam wall and Oaky River Dam Wall as well as within 500 metres of the pipeline. The details of these items are provided in Table 10.

Table 10: Heritage items relevant to Proposal

Item	Description
Malpas Dam	
Item A073 - Urundangie Hatchery (238 Urundangie Road) (Local)	This formed part of a historically significant fish hatchery established in the Guyra area in the late 1920s. It is located on Urundangie Creek approximately 2.5 km upstream (northwest) of the dam wall
Item I332 - Former Coach Road (Local)	This is a road reserve originally part of the historical coach road infrastructure critical to the development of Guyra. It is located approximately 5 km northwest of the dam wall
Item I241 - Avenue of Trees (Local)	This is a local landscape feature and is located approximately 4.8 km southwest of the dam wall
Oaky River Dam	
Gondwana Rainforests of Australia (World Heritage Area, National Heritage Listed Place, State)	This refers to the Oxley Wild Rivers National Park which is part of the Gondwana Rainforests of Australia World Heritage-listed site stretching from Newcastle to South-East Queensland. The Oxley Rivers National Park is located approximately 2km downstream of Oaky River Dam
Oaky River Dam to Armidale WTP pipeline	
I120- Culvert (Local)	This is a historic culvert on Gara Road southeast of the intersection with Waterfall Way. The pipeline will be located within 100m of this item.
I338 – Hillgrove Station Shearing Shed (Local)	The shearing shed is a landmark building located close to Waterfall Way constructed c1900. The

	pipeline will be located within 200m of the building.
I339 - St Helena Homestead (Local)	This is a historic federation homestead built around 1910 located along Grafton Road. The homestead is located approximately 300 metres off Waterfall Way, with the pipeline traversing along the road corridor.
I182 - Eucalyptus Tree (Local)	This is a large Mountain Gum within the road reserve which is likely to have environmental values as well as historical values due to many hollows. It is located on the corner of Middle Farm Road and Somerset Lane where the pipeline will be located within 100 m.

6.4.2 Potential impacts

A portion of the local heritage listed Urandangie Hatchery will be newly inundated as a direct result of the proposal. The remaining heritage listed items are not expected to be impacted. Potential impacts to *Gondwana Rainforests of Australia* heritage item in the vicinity of Oaky River Dam as well as local heritage items along water transfer systems will need to be considered as part of the EIS. The current proposed alignment avoids the heritage listed areas, however there may be indirect impacts which need to be explored.

6.4.3 Proposed assessment approach

A Statement of Heritage Impact (SoHI) will be prepared by a suitably qualified heritage consultant to assess the impact the proposal may have on the heritage significance of the Urandangie Hatchery, Gondwana Rainforests of Australia heritage item and locally listed heritage items along the Oaky River Dam to Armidale WTP pipeline alignment and its associated infrastructure.

This will include consideration of impacts such as access, visual amenity, landscape and vistas and curtilage that may be associated with the proposed construction and operation of the proposal. Options to avoid (where possible) and minimise such impacts will be outlined in the SoHI.

6.5 Hazards and Risks

6.5.1 Existing environment

Dam safety

Under the NSW Dams Safety legislation, all dam owners have a responsibility to the community to address any failure risk. As such, under the *Dams Safety Regulation 2019*, owners of declared dams must produce a consequence category assessment, which is a classification assigned based on the potential severity of adverse impacts to the community, property and the environment if the dam failed.

Malpas Dam is a declared dam with a consequent category assessment of HIGH C. This requires the dam to safely pass the 1 in 100,000 AEP flood and withstand a 1 in 1,000 AEP earthquake event in accordance with the Australian National Committee On Large Dams (ANCOLD) and Dams Safety NSW guidelines.

WRM Water and Environment Pty Ltd has carried out an updated hydrological investigation for the raised Malpas Dam (WRM, 2023). The updated hydrological model produced a peak inflow of 955 m³/s for the critical 1 in 100,000 AEP storm event. The inflow hydrograph developed in the

hydrological study was then used in the concept design for the raising of Malpas Dam to ensure that the flood was successfully passed. The 1 in 100,000 AEP flood level was used to set the design level of the embankment wall height.

An updated seismic analysis was carried out (NSW Public Works, 2023) for the raised Malpas Dam structure, including intake tower and bridge.

The design characteristics adopted for the concept design are in accordance with current DSNSW guidelines. Under DSNSW's definition, the raised Malpas Dam is deemed to be a 'declared' structure with an FCC of HIGH C.

The raised Malpas Dam Consequence Category was confirmed following further discussion with DSNSW and Council, taking into consideration that there would not be any in future development in the downstream areas and therefore no potential increase to the storage's Consequence Category.

The Malpas Dam concept design has been peer reviewed against the DSNSW requirements to ensure it complies, and is in accordance with all relevant ANCOLD guidelines, Australian Standards and current best practice. The independent dam safety report will be submitted to DSNSW with further consultation anticipated during the design and construction phase.

With regards to Oaky River Dam, the existing dam failed in 2013 due to a large storm event that resulted in overtopping the dam wall. The proposed restoration works will upgrade the dam structure to meet current design standards which will mitigate the potential for future dam failure. It is likely the Oaky River Dam will become a declared dam once restored, with a low classification that recognises if the dam wall fails in the future, it is likely the waters will dissipate downstream and flow into the existing river system with minimal impact.

To minimise any risk associated with the restored Oaky River Dam, the most recent dambreak study assigned the dam a SIGNIFICANT Sunny Day Consequence Category (SDCC) and a SIGNIFICANT Flood Consequence Category (FCC). The DSNSW starting point, for any dam assessed as having a SIGNIFICANT FCC, is for it to pass the 1 in 10,000 AEP flood event.

WRM Water and Environment Pty Ltd has carried out an updated hydrological investigation for Oaky River Dam (WRM, 2024). The updated hydrological model produced a peak inflow of 1196 m³/s for the critical 1 in 10,000 AEP storm event. The inflow hydrograph developed in the hydrological study was then used in the concept design for the reconstruction of Oaky River Dam to ensure that the flood was successfully passed. The 1 in 10,000 AEP flood level was used to set the design of the spillway and level of the side wall height.

There is no consequence category currently assigned to the Oaky River Dam. This is due to there being no population downstream that will be threatened by a failure of the existing structure, and the environmental consequences understood due to the 2013 dam break

The consequence category and declaration of the Oaky River Dam restoration is to be assessed with DSNSW once planning documents are submitted.

The concept design is in accordance with all relevant ANCOLD guidelines, Australian Standards and current best practice with the detailed design needing to satisfy DSNSW requirements to ensure its longevity and avoid future impacts from flooding.

Bushfire

The statutory bushfire season for the New England region normally runs from the beginning of September through to the end of March, covering the spring and summer months. During the 2019/20 bushfires it is notable that fires started in the New England in August due to prevailing dry conditions off the back of one of the worst droughts in the region. The area around the Oaky River Dam was subject to a major wildfire that impacted the National Park and adjacent state forests, as well as

Kempsey-Armidale Road which is undergoing significant restoration works due to the bushfires and subsequent storm events.

The area surrounding the Oaky River Dam is characterised by steep and heavily vegetated slopes that are currently mapped as Bushfire Prone Land Vegetation Category 1

Climate Change

Armidale Regional Council has an overarching commitment to be carbon neutral (net zero emissions) by 2030 as identified in their Renewable Energy Action Plan (Constructive Energy, June 2022). Council has partnered with the University of New England, business owners and the local community through Zero30 which will achieve certification of the Armidale LGA through the Climate Active Carbon Neutral Standard and help to manage greenhouse emissions and achieve carbon neutrality by 2030. To achieve certification, ARC must measure emissions, reduce these where possible, offset remaining emissions and publicly report on their achievement.

Notwithstanding Council's commitment to net zero and a sustainable future, the impacts of climate change are being felt across the community, with one of the longest droughts in the New England history ending in 2020 resulting in Level 5 water restrictions, bushfires in late 2019 exacerbated by the dry environment, and major storm events in 2020 and 2022 impacting regional communities, including their critical transport links such as Kempsey to Armidale Road. It is predicted climate change will continue to impact on the New England communities with water security being a critical need to address the impacts of climate change, which is what this Proposal seeks to achieve.

6.5.2 Potential impacts

There is potential for changed flooding impacts both upstream and downstream of both dams. Further, the risk of a potential dam wall failure needs to be appropriately assessed given Oaky River Dam was significantly damaged by a major storm in 2013 where one of the embankments failed. Whilst assessments have taken place on both dam upgrade designs, further investigations of dam designs will be undertaken as the Proposal progresses to ensure both dams are capable of withstanding major flood events.

Given the remote and bushfire prone locations, particularly relevant to Oaky River Dam, there would be increased ignition risk from construction activities. To minimise any impacts associated with wildfires, works will be undertaken through a hot works permit where appropriate. This is to minimise impacts from any work that generates heat, sparks or flames and ensure compliance with *Work Health and Safety Regulation 2017*.

Construction activities are expected to produce greenhouse gas emissions related to land clearing, energy consumption, operation of machinery and transportation of materials and waste products. During operation, indirect greenhouse gas emissions may include maintenance activities and use of electricity for the operation of water intakes, pump stations and security lighting.

6.5.3 Proposed assessment approach

Dam safety

Investigations have taken place on the existing Malpas Dam wall in addition to the current upgrade designs for both dams. On the basis of these investigations, it was found the current concept designs satisfy the DSNSW requirements and are in accordance with all relevant ANCOLD guidelines, Australian Standards and current best practice. These investigations will be revisited as the project progresses into detailed design to mitigate any future risk of dam failures for either dam projects.

Bushfire risk

A bushfire risk assessment will be undertaken to assess bushfire risk during construction as well as to the primary assets once operational. This assessment will identify potential ignition sources and detail

bushfire protection measures and fire suppression capabilities that could be implemented during high risk weather, as well as in the event of a bushfire in the adjacent areas.

The assessment will be used to inform emergency management plans developed for the construction period as well as once the assets are operational. The assessment would be completed in consideration of the following:

- Planning for Bushfire Protection 2019 (NSW RFS)
- Bushfire Risk Management Plans (BFRMP) for the Armidale area
- State Environmental Planning Policy (Resilience and Hazards) 2021

Climate Change

With reference to climate change, it should be noted the Proposal has been developed in response to impacts from climate change and in particular, droughts and bushfires.

In anticipation of SEARs specific to climate change, Public Works requested WRM to model the proposed Malpas Dam upgrade's AFC event (i.e., the 1 in 10,000 AEP flood event) along Recommended Concentration Pathways (RCPs) projected to the year 2090. A 'climate-changed' 1 in 10,000 AEP flood dam routing exercise is currently being examined in which exacerbated flood conditions are expected, i.e., a higher peak AFC dam floodwater level than current (as reported in the Dambreak and PLL Study). It is anticipated the current design of the 130m long primary spillway would not need to be lengthened as the one metre high abutment blocks would have the ability to neatly contain the climate-changed peak AFC floodwater (i.e., a reasonable minimum freeboard) while the two abutment crests may experience 'minor' flood overtopping.

Climate Change impacts will be considered as part of the EIS. This will include:

- Identify potential construction and operational carbon emissions, including mitigation measures to minimise emissions
- Review climate change projections relevant to the Proposal
- Draw on the completed Armidale Water Supply Yield Study (NUWS, Report No. 24007, December 2025), which tested secure yield under NARCLiM1.5 RCP8.5 projections across six global climate models for the period 1951 to 2099. The study confirmed that the preferred combined Oaky Dam and raised Malpas Dam option delivers a secure yield of 8,837 ML/year under NARCLiM1.5 RCP8.5 conditions, providing a robust climate-adjusted baseline that does not require replication in the EIS.
- Review past and observed climate and natural hazard events for the sites
- Undertaken a detailed dam wall stability analysis of the detailed design for the Oaky River Dam restoration to ensure it can withstand the climate-changed AFC event

6.6 Geotechnical

6.6.1 Existing environment

Malpas Dam

The NSW 1:250,000 Geological Sheet Series SH 56-10 and 11 Dorrigo – Coffs Harbour indicates that the site lies in Sandon Beds formations consisting of Greywacke, argillite, chert, jasper and/or basic volcanics. The principal rock type around Malpas Dam is described as silicified siltstone (Department of Mines NSW, 1966). The rock is typically of high strength, slightly weathered, grey to dark grey with tight or re- cemented joints. Interbedded quartzite is quite common.

An extract from the ANCOLD Bulletin No. 27 (March 1969) prepared for Malpas Dam following construction indicates that the dam site is located in silicified siltstone, quartzite and indurated claystone that are highly fractured, faulted and folded.

With regards to the Malpas Dam wall, there is a 400-500 mm thick crest capping layer of rockfill fines which covers the dam crest, providing a protective layer over the impervious zones.

The Zone 1 clay core represents the primary control for seepage and piping through the dam. Construction records indicate the material comprises silty, sandy clay of low plasticity. From previous investigations, the overall indication is that Zone 1 is constructed of good quality, well compacted clay materials and provides an effective low permeability and ductile core zone.

The Zone 2 semi-impervious zone provides some level of transitioning from the finer core zone to the coarser outer zone. Previous investigations show that the Zone 2 materials typically comprise silty, sandy gravel and fine to medium gravel with some low plasticity clay.

Zone 3 materials typically comprised sandy gravel and gravel (GM), fine to coarse grained with some sand, silt and clay. The Zone 3 materials are generally coarser than what would normally be used in a modern filter zone, but the indication has been that they would not be coarse enough to allow a continuing erosion condition to develop.

The Zone 4 rockfill material is relatively finer near the crest, probably owing to the narrow width of the zone, than that identified in the middle and toe of the dam. The rockfill material at the toe of the dam is coarse open graded and fairly homogeneous with no obvious signs of layering. The general view is that it would have good discharge capacity.

Oaky River Dam

Geotechnical fieldwork was carried out at Oaky River Dam comprising a program of borehole drilling, including diamond coring at selected locations. A total of five (5) boreholes (ORDS1 to ORDS4 and ORDS6) were drilled at various locations. Boreholes ORDS1, ORDS2 and ORDS6 were drilled on the proposed right abutment (right-hand side of the dam) near the existing electrical building, generally aligned to the centreline of the dam crest.

In boreholes ORDS1 and ORDS2, a surface layer of gravel fill was encountered to depths of 0.1m and 0.4m. The gravel is grey and orange-brown, medium dense and dry.

Meta-siltstone (possibly silicified) was encountered from the surface in borehole ORDS6 and beneath the gravel fill surface layer in borehole ORDS1 and ORDS2. The meta-siltstone was drilled to borehole termination depths of 0.05m to 0.6m. The foundation material is slightly weathered and grey.

Borehole ORDS3 was drilled at the northern end of the quarry wall near a power pole.

Borehole ORDS3 was drilled from the top of the northern end of the quarry wall to a depth of 8.5m. Meta-siltstone (possibly silicified) was encountered from the surface. When first encountered, the meta-siltstone is orange, brown, highly weathered, highly fractured and low to medium strength to a depth of 1.2m. From depths of 1.2m to 8.5m, the meta-siltstone is generally slightly weathered, high strength and grey.

Borehole ORDS4 was drilled approximately 145m north-north-west from the dam at the initial position for the proposed intake tower to a depth of 9.8m.

The subsurface profile comprises a 0.3m thick layer of fill including gravel with sand and clay, which is pale grey and orange-brown, medium dense and dry, followed by meta-siltstone (possibly silicified) to the borehole termination depth of 9.8m. The meta-siltstone when first encountered has soil-like properties as it is extremely weathered, very stiff to hard consistency and dry to a depth of 1.0m. From a depth of 1.0m to 2.6m, the meta-siltstone is extremely weathered to highly weathered, hard consistency to very low strength, from depths of 2.6m to 7.55m the rock characteristics are generally moderately weathered, high strength and brown with grey and grey with minor brown and from

7.55m to 9.8m, the rock profile is slightly weathered to moderately weathered, high strength and predominantly grey.

Oaky River Dam to Armidale WTP pipeline

Geotechnical fieldwork was carried out at Oaky River Dam to Armidale WTP pipeline area. The results indicated that approximately 3.5km (or 6%) of the pipeline alignment will be excavated in soil units (i.e., alluvial deposits, and unconsolidated material). Approximately 51.2km (or 94%) of the route will be within units designated as rock formations, The rock formations are expected to comprise shallow depths of residual soil and extremely weathered rock; however, moderately weathered to slightly weathered rock outcrop was observed at the ground surface and in road cuttings and creek crossings at various places along the alignment.

A copy of the 2024 fieldwork report is provided in Attachment 8.

6.6.2 Potential impacts

The Proposal has the potential to impact both geology and soils. Forest encroachment and vegetation removal can result in destabilisation of soils, including erosion and sediment increase.

Depending on where the construction activity takes place, it is anticipated excavations in residual soil and extremely weathered to highly weathered rock are expected to be easy. Hard ripping, likely requiring assistance from a rock breaker, is expected within moderately weathered to slightly weathered or better-quality rock. The ability to excavate areas associated with the Oaky River dam restoration, Malpas Dam raising and the pipeline infrastructure will depend on the defect spacing within the rock mass, the closer the defect spacing, the easier it will be to excavate.

6.6.3 Proposed assessment approach

Detailed geotechnical investigations have been undertaken for the majority of Stage 1 of the Proposal. This work will be validated as part of the EIS.

6.7 Social

6.7.1 Existing environment

In 2021 the Armidale Regional Council area had 12,950 dwellings with an average household size of 2.26 people. Armidale city holds the majority of the population with 82%, followed by Guyra (7%) and the combined smaller villages and rural areas accounting for 11%. A community snapshot has been provided in Figure 17 to highlight employment, top industries and household composition.

The drought that ended with the 2019-20 bushfires is still fresh in the community's mind, where Level 5 water restrictions were implemented, and Guyra ran out of water.

The Proposal is linked to providing water security for the New England community now and into the future, as well as facilitate employment and industry growth, including that associated with agriculture, horticulture and livestock.

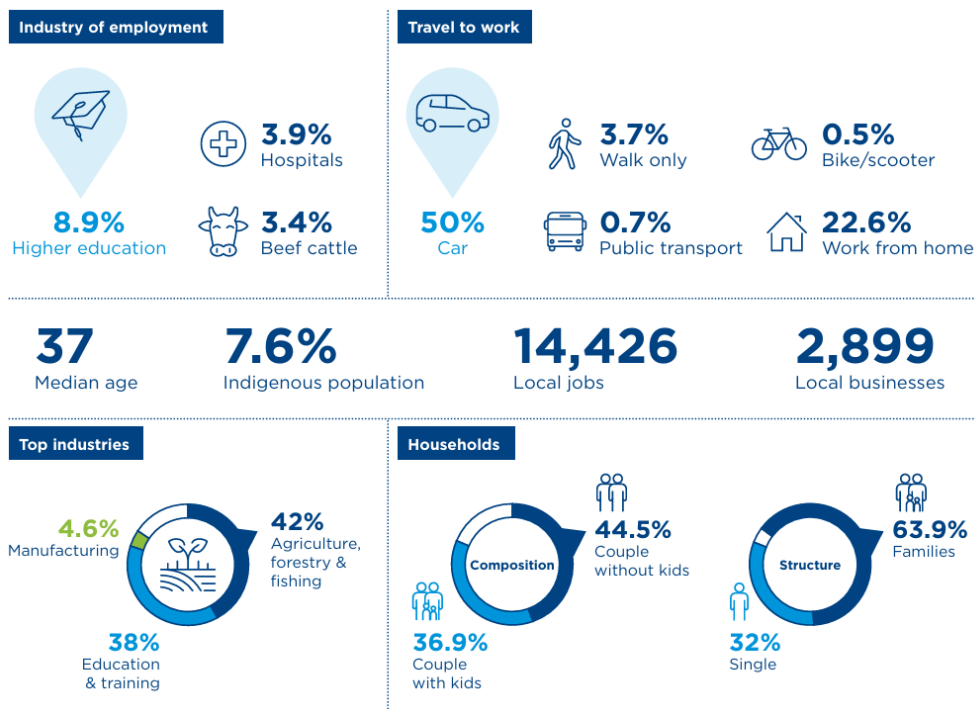


Figure 15: Community snapshot of Armidale LGA based on 2021 census

6.7.2 Potential impacts

The Proposal would require workers during the construction phase, which may lead to a short-term increase in local populations which can then in turn place pressure on community services. Any population increases would also likely result in increased road traffic, which would be amplified by planned construction traffic. These impacts would most likely affect the local communities of Wollomombi and Armidale (associated with Oaky River Dam restoration) and Guyra (associated with Malpas Dam raising).

Housing impacts are likely to be felt during the construction phase of the Proposal, which would require an estimated 50 workers. While the Proposal should endeavour to source local workers, accommodation for any workers from outside of the region would raise the demand for accommodation. The use of existing houses on site will be explored as part of the construction planning.

The need for accommodation for workers may decrease the availability of short-term accommodation (e.g. hotels) and long-term accommodation (e.g. rentals). This is most likely to occur in towns closest to the construction site and would include Guyra and Armidale, noting Armidale already has times where the short-term accommodation is full and visitors have difficulty sourcing short term stays.

Operation of Malpas Dam upgrade would impact private landowners due to land inundation from FSL and acquisition of land by Council. Easements across private property associated with the pipeline will also place restrictions on existing farmland. No relocation or resettlement of residential buildings is required for either dam upgrade, with Malpas Dam upgrade potentially requiring relocation or reinstatement of some recreational facilities such as the sailing club building, boat ramp and pontoon.

Throughout the development of the Proposal, community consultation will remain an essential component of impact assessment to ensure the community is well informed, understands the project need and potential staging pathways, and feels listened to in expressing their views about the Proposal.

6.7.3 Proposed assessment methodology

A social impact assessment (SIA) would be carried out in accordance with the *Social Impact Assessment Guideline for State Significant Projects* (DPE, 2023). This will include:

- Identification of areas of social influence for the project
- A review of existing social baseline including demographic characteristics, community and recreational facilities and community values
- Identification of potential social and economic impacts and benefits during construction and operation, as informed by stakeholder and community consultations
- Explore how future growth may interact with the project, including benefits from Proposal and consequences of lengthy implementation
- Identification of potential mitigation measures to address potential social impacts and maximise benefits of the Proposal.

6.8 Economic

6.8.1 Existing environment

The Armidale Regional Council area supports a diverse regional economy anchored by agriculture, livestock, the University of New England, a growing controlled environment horticulture sector, and emerging renewable energy industries associated with the New England Renewable Energy Zone. The region had a population of approximately 30,000 people in 2021 and is growing, with Council's Local Strategic Planning Statement identifying a target of 50,000 residents by 2050.

Water security is a critical constraint on economic growth. Council's current secure yield of 2,428 ML/year falls significantly short of projected dry year demand of 4,478 ML/year in 2026, rising to 6,183 ML/year by 2054. This deficit limits the capacity of existing and prospective industries to expand, including the controlled environment horticulture sector identified as a priority employment precinct in Council's planning framework.

6.8.2 Potential impacts

The Proposal is expected to generate significant positive economic outcomes for the Armidale region, including direct employment during construction and flow-on benefits to local suppliers and service providers.

The Proposal will also support regional economic activity dependent on secure water supply, including the controlled environment horticulture industry, agricultural operations, and construction of renewable energy infrastructure within the New England Renewable Energy Zone. Without the Proposal, the water security deficit represents a direct constraint on investment and employment growth.

Potential adverse economic impacts are limited and primarily relate to temporary disruption to landowners along the pipeline corridor and around both dam sites during construction, including restrictions on land use within easement areas.

6.8.3 Proposed assessment approach

A standard economic assessment will be undertaken as part of the EIS. This will include:

- quantification of direct and indirect employment generated during construction and operation
- assessment of economic benefits to the regional economy including through enabling industries dependent on water security
- assessment of impacts on affected landowners and businesses during construction and operation
- consideration of opportunity cost and natural resource use, including water extracted under relevant Water Sharing Plans.

The economic assessment will draw on the Social Impact Assessment (Section 6.7) and align with the NSW Treasury Cost Benefit Analysis Guidance (2023) and the DPE Social Impact Assessment Guideline (November 2023).

6.9 Traffic and access

6.9.1 Existing environment

Access to the Malpas Dam is via Malpas Dam Road, a 5.5km dirt road which connects to the dam via Springmount Road off the New England Highway. There are several vehicular tracks in proximity to the Malpas Dam reservoir which provide vital access to the various areas surrounding the dam such as the dam wall, intake tower and rowing club.

There are two access roads to Oaky River Dam from Kempsey Road (Gate 1 and Gate 2). The access through Gate 1 is currently the main access, with the track longer than that accessed through Gate 2, and consists of steep grades, narrow sections, uneven terrain and multiple bends. The access through Gate 2 is shorter and has fewer steep gradients, thus this is likely to become the main access track during construction and operation.

The proposed Oaky River Dam to Armidale WTP pipeline and Malpas Dam to Armidale WTP pipeline and their associated infrastructure run through a large number of private properties. ARC will obtain access agreements from affected landowners to enable construction works to proceed. The pipeline alignments will also traverse local and State roads.

6.9.2 Potential impacts

During the construction phase, traffic volumes along local and regional / State roads will increase. Traffic generated by the construction works would include:

- Transport of plant and equipment including concrete trucks, cranes, site offices, excavators and other earthmoving equipment
- Transport of materials including steel reinforcing, concrete, rock material and fill, waste materials etc
- Workers commuting to site.

Due to the significant number of construction vehicles accessing the Malpas Dam and Oaky River Dam sites, damage to local access roads is likely.

Changes to traffic conditions are likely in the vicinity of Malpas Dam and Oaky River Dam with access to some properties along Malpas Dam Road and Oaky River Dam Road potentially being impacted,

particularly during transport of major plant and equipment. It is noted however that access to residences would remain during construction.

Local roads are likely to be impacted during the construction of the pipelines with some short-term access restrictions likely.

Where the pipelines traverse private property, access to local residences may be impacted and restrictions to some land may be imposed. Private property access agreements for the proposed pipelines would be sought by ARC to ensure no construction activities take place across the pipeline easement that may impact on the high-pressure water line.

During operation of the upgraded Malpas dam, the increase in FSL and 1 in 100,000 AEP flood peak would inundate a number of existing access tracks located closest to the Malpas Dam reservoir, including the access road to the raised intake tower bridge. A new access road will be established, mostly along the current alignment and diverting to higher contours near the bridge entry.

Access to Oaky River Dam via Gate 1 is likely to be closed as there is no easement. The secondary access, via Gate 2, also traverses through private property where there is no existing access easement. Given the access through Gate 2 provides a shorter and easier alignment, it is likely Council will seek an access easement to enable safe access during construction and ongoing operation of the dam. This access easement will also be used to access the pipeline during construction and operation.

6.9.3 Proposed assessment approach

A Traffic Impact Assessment would be prepared for the Proposal and would consider existing traffic data and flows (including traffic counts), road safety history, traffic generation calculations for construction and operational phases of the Proposal and an assessment of likely impacts including identification of appropriate mitigation measures.

6.10 Amenity

6.10.1 Existing environment

Malpas Dam is in a rural environment consisting primarily of rolling hills. The landscape consists of cleared paddocks used for grazing with remnant or regrowth pockets of trees and vegetation present. This vegetation is predominately located along the eastern foreshore of the Malpas Dam reservoir. There is some rural infrastructure located adjacent to Malpas Dam, such as fences and dams.

The waterbody is used for recreational purposes, and there are several picnic areas and viewpoints along the publicly accessible shorelines of the dam. There is also a boatshed and wharf present, currently used by a local water sports club.

The nearest sensitive receiver (a private residence) is located approximately 710 m to the southwest of the dam wall, near the old quarry location.

The Oaky River Dam is located within a deep, narrow valley surrounded by rural properties and riparian vegetation. No residents are located in the immediate vicinity of the dam or within the area affected by the inundation of the dam.

The Oaky River Dam to Armidale WTP pipeline and Malpas Dam to Armidale WTP pipeline alignment and their associated infrastructure will traverse private rural land, public roads and urban areas passing by a number of sensitive receivers.

6.10.2 Potential Impacts

Noise and vibration

The Proposal would create noise and vibration during the construction works. Impacts would include noise generated by construction activities including excavation works, concrete batching and rock

breaking. Road noise would also increase due to the increase in vehicle movements to facilitate the construction works. No blasting or quarrying activities are currently proposed as part of the construction works.

There are anticipated to be little to minimal changes to noise and vibration due to the dams operation.

Landscape character and visual amenity

Potential visual amenity impacts during construction of Malpas Dam raising are likely to be limited primarily to the area surrounding the dam wall, which would be visible from adjoining public areas and picnic areas overlooking the dam. There is one homestead (Manbulloo) located to the southwest of the reservoir which is likely to have views of the southern-most area of the reservoir.

The views of the Malpas Dam and Oaky Dam reservoirs and surrounding landscape will change with the increase of the FSL. Areas that are currently shoreline around the bulk of the existing dam will be inundated by water following the capacity increase. This will change the overall landscape views, with an increase of water and decrease of grazed slopes and vegetated foreshores. There is also the potential for standing dead trees along the dam edge from inundation for a period after the dam FSL has been increased.

The views of the areas surrounding the Oaky Dam to Armidale WTP pipeline and the Malpas dam to Armidale WTP pipeline alignment will change during construction, due to the presence of construction equipment and machinery. Once operational, views of the area are also expected to change due to the presence of the pipelines (particularly in areas where it will be above ground), pumping stations, balance tanks and waterway crossings.

6.10.3 Proposed assessment approach

Noise and vibration

A construction noise and vibration assessment would be prepared for the Proposal. Consideration of operational noise from pump stations and the like near to sensitive receivers will also be assessed as part of the EIS.

Landscape character and visual amenity

Consideration of landscape character and visual impacts would be undertaken as part of the EIS. This would include the identification of appropriate management measures to mitigate potential impacts.

6.11 Built environment

6.11.1 Existing environment

Land use surrounding the Malpas Dam reservoir is primarily rural, used for extensive sheep and cattle grazing. There is no public access to Malpas Dam, with access to the foreshore only available to members of the local water sport clubs. There are limited picnic and viewing facilities available at the dam.

There is no public access to Oaky River Dam. There are two roads on private property that are currently used to access Oaky River Dam from Kempsey Road (Gate 1 and Gate 2). The access through Gate 1 is currently being used, with this likely to change during construction and operation to the access through Gate 2.

The pipeline alignments traverse private lands, roads, road reserves and is located in proximity to public recreation areas.

6.11.2 Potential impacts

The Proposal will have minimal impact on the built environment due to its remote location. Any impacts to the built environment will be covered under the Social Impact Assessment for the Proposal.

6.11.3 Proposed assessment approach

Consideration of built environment impacts will be addressed under the Social Impact Assessment due to the remote location for the Proposal.

6.12 Air quality

6.12.1 Existing environment

The Proposal is located in the northern tablelands of NSW where the climate is classified as a cool temperate climate with dry, cold and frosty winters and warm summer days with cool nights. Air quality within the Proposal area is expected to be very good given the existing land use and absence of heavy industry in the immediate area. Vehicle emissions are likely to be the principal airborne pollutant within the Armidale urban area.

There are no point source emissions located within the immediate vicinity of the Proposal however according to the National Pollutant Inventory, three (3) point source emissions are registered in Armidale including:

- Lowes Petroleum Service Armidale Depot – 1 McLennan Street, Armidale
- Caltex Armidale Depot – 142 Miller Street, Armidale
- Elgas Armidale – 41 Mott Street, Armidale

6.12.2 Potential impacts

The construction works associated with earthworks, rock breaking, material storage and construction vehicle movements on unsealed roads would generate dust resulting temporary air quality impacts.

Air quality impacts during operation are expected to be minimal and would be limited to vehicle emissions and dust generation (unsealed roads) associated with maintenance and inspection of the infrastructure.

6.12.3 Proposed assessment approach

The EIS would consider and assess the potential air quality impacts associated with the construction and operation of the Proposal. It is expected that the assessment will be limited to a qualitative assessment of current air quality and potential construction and operational impacts and identification of appropriate management measures to mitigate potential impacts.

6.13 Cumulative impacts

6.13.1 Existing Environment

The DPHI Cumulative Impact Assessment Guidelines for State Significant Projects (March 2026) require the proponent to scope the cumulative impact assessment and identify the key matters, study area, time period, relevant future projects, proposed assessment approach and key uncertainties. This section addresses those requirements.

Context

The Proposal is advancing at a time of significant and concurrent infrastructure investment across the New England region. The declaration of the NERZ has triggered a pipeline of 42 approved and

proposed renewable energy, storage and transmission projects across the Armidale, Uralla, Walcha and Glen Innes Severn local government areas. These projects involve substantial construction workforces, significant land disturbance, and material demand for water, road access and local services. Many using the same corridors, catchments and community infrastructure that the Proposal will also rely on and affect.

The Proposal itself is in part a direct response to this growth context. Providing a secure and expanded water supply for Armidale is a precondition for the NEREZ's construction and operational water needs being met. This creates an unusual relationship between the Proposal and the NEREZ projects: the Proposal is both a response to cumulative demand and a contributor to the environment in which that demand arises. The EIS will need to clearly frame this relationship and assess the Proposal's cumulative interactions with the NEREZ projects in terms of relevance and proportionately.

Relevant future projects

NEREZ projects with construction programs overlapping the anticipated construction period of the Proposal include wind, solar, battery storage, transmission and energy hub developments. The NEREZ Transmission Project, with a construction duration of approximately 102 months, will run concurrently with the majority of the Proposal's construction program. Several wind and solar projects have construction programs of 24 to 36 months with anticipated start dates from 2026 onwards. The Table below provides a list of projects Energy Co and Armidale Council consider to be relevant to the Proposal.

Table 11: Projects of interest in cumulative impacts

Project name	Status (Major Projects Portal)	Portal Link	Comments
Armidale BESS	Determined (approved)	https://www.planningportal.nsw.gov.au/major-projects/projects/armidale-battery-energy-storage-system	Approved 05/12/2025
Armidale East BESS	Prepare EIS	https://www.planningportal.nsw.gov.au/major-projects/projects/armidale-east-battery-energy-storage-system	SEARs issued 2023 and expire 22/9/26
Boorolong Wind Farm	Prepare EIS	https://www.planningportal.nsw.gov.au/major-projects/projects/boorolong-wind-farm	SEARs issued September 2025
Ebor BESS	Exhibition (19/6-17/7)	https://www.planningportal.nsw.gov.au/major-projects/projects/ebor-battery-energy-storage-system	Project placed on exhibition 19/6/26
Gara BESS	More information required	https://www.planningportal.nsw.gov.au/major-projects/projects/gara-battery-energy-storage-system	DPHI requested additional information March 2026
Holloway BESS	Prepare EIS	https://www.planningportal.nsw.gov.au/major-projects/projects/holloway-battery-energy-storage-system	SEARs issued October 2025

Kooyong BESS	Prepare EIS	https://www.planningportal.nsw.gov.au/major-projects/projects/kooyong-battery-energy-storage-system	SEARs issued August 2025
Hillgrove mine Mod 5 – Extension of Life	Response to submissions	https://www.planningportal.nsw.gov.au/major-projects/projects/mod-5-extension-mine-life	Response to submissions letter issued to proponent February 2026
Northern Tablelands Wind Farm	Prepare EIS	https://www.planningportal.nsw.gov.au/major-projects/projects/northern-tablelands-wind-farm	SEARs issued October 2025
Oven Mountain Pumped Hydro	Assessment	https://www.planningportal.nsw.gov.au/major-projects/projects/oven-mountain-pumped-hydro-energy-storage	Additional information requested 27/6/2025
Oxley Solar Farm	Determined (approved)	https://www.planningportal.nsw.gov.au/major-projects/projects/oxley-solar-farm	Project approved 11/12/23
Tilibuster 2 Solar Farm	More information required	https://www.planningportal.nsw.gov.au/major-projects/projects/tilibuster-2-solar-farm	Additional information requested March 2026
Tilibuster Solar Farm (modification 1)	Assessment	https://www.planningportal.nsw.gov.au/major-projects/projects/mod-1-development-footprint-update	Additional information submitted 18 June 2026 Project approval March 2022
UNE New Wright Block	Determined (approved)	https://www.planningportal.nsw.gov.au/major-projects/projects/une-new-wright-block	Project approved 21/09/2020
Wongalea BESS	Prepare EIS	https://www.planningportal.nsw.gov.au/major-projects/projects/wongalea-battery-energy-storage-system	SEARs issued June 2025

In addition to the NEREZ projects, the following have been identified as relevant future projects:

- the restoration of Kempsey-Armidale Road, anticipated for completion by late 2029, with likely construction traffic overlap on Waterfall Way and Kempsey-Armidale Road
- the Hillgrove Mine expansion, approximately 15 km east of Oaky River Dam along Waterfall Way
- Armidale Sewage Treatment Plant Replacement

- future Council infrastructure including the new Armidale Water Treatment Plant and the upgraded pipeline from Malpas Dam to the Armidale Water Treatment Plant.

6.13.2 Potential Impacts

Water is the most significant cumulative matter. The NEREZ project pipeline generates substantial construction water demand across the region. The Proposal will bring additional water into the system, which is central to its strategic justification. It will also assess the longer-term cumulative benefit the Proposal delivers to the regional water balance and the Controlled Environment Horticulture Industry, supporting future food security.

Biodiversity presents a second significant cumulative matter. The NEREZ projects involve extensive land disturbance across the same bioregion as the Proposal, with several project corridors intersecting or running adjacent to the Waterfall Way pipeline alignment. The combined clearing footprint of the Proposal and relevant NEREZ projects has the potential to compound impacts on threatened species and ecological communities, including cumulative habitat fragmentation effects that would not be apparent from assessing each project individually.

Traffic and access is a cumulative matter primarily during construction. Waterfall Way and Kempsey-Armidale Road are the key shared corridors. Construction traffic from the Proposal, NEREZ projects and the Kempsey-Armidale Road restoration works will converge on these routes over an overlapping period. The Traffic Impact Assessment will need to model this combined loading rather than treating the Proposal's traffic contribution in isolation.

Social and economic impacts are also cumulative. The combined construction workforce across the NEREZ and the Proposal will place pressure on housing, accommodation, local services and community amenity in Armidale and surrounding towns. The Social Impact Assessment will need to consider the Proposal's contribution to this broader pattern of change.

6.13.3 Proposed assessment approach

The CIA will be undertaken in accordance with the DPHI Cumulative Impact Assessment Guidelines for State Significant Projects (March 2026) and will be integrated into the relevant technical studies for the EIS. For each key matter, the EIS will define the study area proportionate to the geographic reach of the relevant cumulative impact, identify relevant future projects in accordance with Table 2 of the CIA Guidelines, apply quantitative methods where data permits, and identify mitigation measures to minimise the Proposal's contribution to cumulative impacts.

Key uncertainties

The primary uncertainties at the scoping stage relate to the sequencing and construction programs of NEREZ projects, a number of which are yet to receive final approval or have not confirmed construction start dates. The EIS will apply conservative assumptions regarding construction overlap and will undertake sensitivity testing where cumulative impacts on key matters are found to be potentially significant. Where NEREZ proponents have data that would assist the cumulative assessment, Council will seek to engage those proponents directly in accordance with the collaboration principles in the CIA Guidelines.

6.14 Matters requiring no further assessment

Based on the above preliminary environmental assessment, the matters described in Table 12 have been identified as requiring no further assessment in the EIS.

Table 12: Matters requiring no further assessment

Theme	Matter	Justification
Access	Port and airport facilities Road and Rail facilities	The use of ports, rail and airport facilities will not be required and as such no consideration of these is required in the EIS
Amenity	Odour	The proposal will not generate any odours and as such no further assessment will be required
Built environment	Design Quality	Given the nature of the works and the remote locations, design quality of the built environment is not considered likely to require any further assessment.

7. References

Lesryk Environmental, 2024: Preliminary Environmental Investigation - Oaky River Dam to Armidale Water Pipeline Project – Biodiversity Assessment

NSW DPIE, 2022: State significant development guidelines – preparing a scoping report

NSW Public Works, 2025: Dambreak and Potential Loss of Life Study

NSW Public Works, 2025: Proposed Reconstructed Oaky River Dam Dambreak Study

NSW Public Works, 2026: Oaky to Armidale Water Transfer System – Water Treatment Plant and Intermediate Pump Station. Geotechnical Investigation.

NSW Urban Water Services Pty Ltd, 2025: Armidale Water Supply - Yield Studies (2020-2025)

Public Works Advisory, 2022: Armidale Regional Council Water Security Assessment and Options Evaluation

WRM, January 2021, Malpas Dam Remediation, Flood Hydrology Study.

WRM, January 2024, Oaky River Dam Remediation, Flood Hydrology Study.

8. Appendices

8.1 Appendix A - Scoping summary table

Table 13: Scoping Summary Table

Level of assessment	Matter	Cumulative impact assessment	Engagement	Relevant government plans, policies and guidelines	Scoping report reference
Detailed	Water – hydrology, flooding, groundwater, water availability, water quality, cold water pollution	Y	Specific	Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC/ARMCANZ, 2000) ANZECC Guidelines and Water Quality Objectives in NSW (Department of Environment and Conservation, 2006). Australian Drinking Water Guidelines (ADWG, 2011) NSW Cold Water Pollution Strategy Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom, 2004) Managing Urban Stormwater: Soils and Construction Volume 2 (Department of Environment and Climate Change, 2008) Approved Methods for the Sampling and Analysis of Water Pollutants in NSW (Department of Environment and Climate Change, 2008) <i>Water Sharing Plan for the Macleay River Area Unregulated and Alluvial Water Sources Order 2016</i> <i>The North Coast Regional Water Strategy</i> (DPE, 2023) NSW Aquifer Interference Policy (DPI, 2012) Risk Assessment Guidelines for Groundwater Dependent Ecosystems (Office of Water, 2012) NSW and ACT Regional Climate Modelling (NARCLiM): NARCLiM 1.0; NARCLiM 1.5 – using data, models, simulations, and guidance, appropriate to assessment of the Proposal impacts and risks	Section 6.1
Detailed	Biodiversity – terrestrial, ecology,	Y	Specific	Biodiversity Assessment Method (EES, 2020)	

	aquatic ecology, conservation areas			<i>Policy and Guidelines for Fish Habitat Conservation and Management – Update 2013</i> (DPI, 2013) <i>Fisheries Management Act 1994</i> (NSW Government) <i>Commonwealth Environmental Protection and Biodiversity Conservation Act 1999</i> 1.1 Significant Impact Guidelines – Matters of National Environmental Significance (Commonwealth of Australia, 2013) Commonwealth Department of the Environment – Nationally Threatened Ecological Communities and Threatened Species Guidelines (various) Commonwealth Department of the Environment – Survey Guidelines for Nationally Threatened Species (various) Threatened Species Survey and Assessment Guidelines at http://www.environment.nsw.gov.au/threatenedspecies/surveyassessmentgdlns.htm NSW Biodiversity Offsets Policy for Major Projects (Office and Environment and Heritage, 2014) Framework for Biodiversity Assessment (Office and Environment and Heritage, 2014) Aquatic Ecology in Environmental Impact Assessment – EIA Guideline (DoP/Marcus Lincoln Smith 2003)	
Detailed	Heritage – Aboriginal, historic	Y	Specific	Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales (EES, 2011) Aboriginal Cultural Heritage Consultation requirements for proponents (DECCW, 2010) Code of practice for archaeological investigation of Aboriginal objects in NSW (DECCW, 2010)	

				NSW Skeletal Remains: Guidelines for Management of Human Remains (Heritage Office 1998) Aboriginal Heritage Information Management System site registration form (OEH, 2011) Archaeological Assessment Guidelines (Heritage Council, 1996) Care agreement application form for transfer of Aboriginal Objects Assessing Significance for Historical Archaeological Sites and Relics (Heritage Branch, DPE, 2009) Criteria for assessment of excavation directors (NSW Heritage Council, 2011) NSW Heritage Manual (Heritage Office and Department of Urban Affairs and Planning, 1994) Assessing Heritage Significance (OEH, 2001) The Australia ICOMOS Burra Charter	
Detailed	Hazards and Risks – dam safety, bushfire, climate change.	N	General	Dams Safety Committee Guidance and archived Dams Safety Committee Guidance Sheets, including but not limited to, DSC2A (Dam Safety Management System) and DSC2B (Documentation and Information Flow Over Dam Life Cycle) Planning for Bushfire Protection 2019 (NSW RFS) Bushfire Risk Management Plans (BFRMP) for the LGA AS/NZS 31000:2009 Risk Management – Principles and Guidelines Australian Government’s Climate Change Impacts and Risk Management – A Guide for Business State Environmental Planning Policy (Resilience and Hazards) 2021 National Climate Resilience and Adaptation Strategy 2021-2025 (DAWE, 2021)	

Detailed	Geotechnical	N	General	Guidelines for Surveying Soil and Land Resources, 2nd Edition Australian Soil and Land Survey Handbook, 3rd Edition The Australian Soil Classification Landslide risk management guidelines presented in Australian Geomechanics Society (2007) Soil and Landscaper Issues in Environmental Impact Assessment (DLWC, 2000) Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom, 2004) Managing Urban Stormwater: Soils and Construction Volume 2 (Department of Environment and Climate Change, 2008)	
Detailed	Social	Y	Specific	DPE Social Impact Assessment Guideline (November 2023) Armidale Regional Council Community Plan – Advancing our region 2025-2034	
Standard	Traffic and Transport	N	General	Guide to Traffic Management – Part 3 Traffic Studies and Analysis (Austroads, 2017) Guide to Traffic Management Part 12(Austroads) The complementary Roads and Maritime Supplement	
Standard	Amenity - Noise and Vibration, Landscape Character, Visual Amenity, Built environment	N	General	Interim Construction Noise Guideline (Department of Environment and Climate Change, 2009) NSW Road Noise Policy (Department of Environment, Climate Change and Water, 2011) NSW Noise Policy for Industry (EPA, 2017) Construction Noise and Vibration Strategy, (Transport for NSW, 2023).	

				Guideline for Landscape Character and Visual Impact Assessment – EIA N04 (Transport for NSW, 2023).	
Standard	Air	N	General	Institute of Air Quality Management Guidance on the assessment of dust from demolition and construction 2016 Approved methods for the modelling and assessment of air pollutants (NSW EPA, 2022	
