Submission No 45

SUPPORT FOR DROUGHT AFFECTED COMMUNITIES IN NEW SOUTH WALES

Organisation: Parkes Shire Council

Date Received: 29 November 2019

PARKES
It all adds up.

Support for drought affected communities in NSW

NSW Parliamentary Inquiry
November 2019

Introduction

Parkes is strategically located within five hours of Sydney and three hours of Canberra. Ideally situated along the Newell Highway, Australia's major inland touring route, where it intersects with essential rail corridors, Parkes is an accessible and appealing destination for tourism, lifestyle and business.

The Parkes Region boasts a diverse economy with strong industries including transport, mining, health care, tourism, agriculture and public administration. With its central location Parkes allows businesses to connect with suppliers and customers quickly with over 80% of the Australian population able to be reached by road within 12 hours.

Parkes Shire has 554 registered agricultural operators in the Shire, representing 40% of businesses in the Shire as a total (2017 ABS). In 2016/17, the output worth from Parkes Shire for agriculture was estimated at $235m with agricultural support businesses outputs worth a further $16.3m - reflecting the importance of agriculture to our Shire.

Since mid-2017, the Shire has been in drought, with more than 50% currently declared to be in an 'intense drought'. The annual rainfall is 584mm and recorded 328mm in 2018 and so far this year Parkes Airport has received only 222mm.

Parkes Shire Council welcomes the opportunity to briefly detail some of the impacts of the current drought on the Shire as well as some of the opportunities we believe could benefit in preparing for future events. We have sought input against the terms of reference for this inquiry from our Economic Development Manager at Parkes Shire Council, the president of our local Chamber of Commerce who is also a leading stock and station agent across the area, the Drought Response Officer as well as Council's Director of Infrastructure.

Parkes has been fortunate to have taken the initiative to successfully apply for Government funding over the past 6 years to provide new water infrastructure including a new WTP, new STP, upgraded borefields and recently commissioned Recycled Water Ring Main to maintain our green spaces and provide support water to Northparkes Mines. This new infrastructure is now proving to be instrumental in Council's ability to service the Shire in this ongoing drought.

Please note more detail on any of the below responses can be provided, however we wanted to provide this document as a brief overview in response to the terms of reference.

Terms of reference for inquiry

(a) population loss and loss of key trades, skills and businesses, and community services such as schools and medical services;

Economic Development Manager, Parkes Shire Council - Anna Wyllie:

"One of the aims of Economic Development is to ensure that local economies are strong and diverse. The aim of this is to minimise the impact of a downturn in a particular sector of the economy. The aim is to have transferable skills from one industry to another such as agriculture to mining - however, this is easier said than done. Especially in communities where the local economy is based purely around agriculture. Even within the Parkes Shire we are seeing the drought impacting different areas of the Shire differently.

"Whilst there has been an impact of the township of Parkes especially within the retail sector some of the impact has been offset by projects such as Inland Rail and Northparkes Mines expansion. The impact of the drought has been felt to a much greater extent in our smaller townships such as Peak Hill, Tullamore and Trundle - where less money in the farmers packets has directly resulted in less money in the local businesses and sadly lead to the closure of some businesses."

Parkes Chamber of Commerce President and local Stock and Station agent business owner Geoff Rice:

"We are losing trades as a result of this ongoing drought. Agricultural based machinery dealers have been impacted with one merging with another business and 5 people losing their jobs. Remaining dealerships are sharing resources, not only across the region, but across the nation (Western Australia) to try and retain their staff. Other local businesses are currently making the decisions to retrench employees and spending will decrease across all industries and business houses."

(b) business debt finance and responses of financial companies to the impact of drought;

Parkes Chamber of Commerce President and local Stock and Station agent business owner Geoff Rice:

"Many local business accounts are now being pushed from 30 days to 90 days, extensions being requested daily. Farmers are selling their stock to pay their bills as they have no reserves left to pay for their basic services - they are living hand to mouth. The only thing that is keeping this process alive is that we are extremely fortunate with current commodity prices to allow farmers to sell a few at a time. The only rebate available is on transport of feed and not cost of feed which is not really benefitting farmers who are purchasing or selling the feed.

"I believe interest rate cuts would be helpful - you cannot link rebates etc to a commodity or that commodity will rise to match the rebate which does not assist the agricultural community, you just get price rises across the board."

(c) direct and indirect impacts of drought on businesses and industries;

Parkes Chamber of Commerce President and local Stock and Station agent business owner Geoff Rice:

"Indirectly this drought is affecting all local businesses - and it will continue to affect business for two years after it breaks as there will not be any reserves remaining to spend. It is going to take years to get back on track and replenish local farmers' reserves.

"In terms of livestock in this region, we are down between 25 and 50% in livestock numbers and breeding stock which will halve their incomes at a minimum. It is going to get much worse.

"Cropping farmers have no reserves - they will not have any income from 12 months after their plant their crops - and they have to be successful on top of that. The question is how will they even afford to put the next crop in - many have saved seed to plant, however no funding remains for the super, sprays and diesel to sow. Any profits made from the first harvest will be eaten up in loan repayments.

"The local banks have been aware on a local level - they have been supportive of the situation and there have been nor forced sales. Many are selling, but not forced to sell."

(d) transition and recovery from drought when drought conditions begin to improve;

Economic Development Manager, Parkes Shire Council - Anna Wyllie:

"This will be a challenge as many people have lost their breeding stock and have no seed."

Parkes Chamber of Commerce President and local Stock and Station agent business owner Geoff Rice:

"With livestock, the issue is that the numbers aren't there - the amount of breeding stock sold in the past 6 months has been enormous in our district. We are down to or below 25% of breeding stock now - this will be a five year recovery from the end of the drought.

"With cropping, they will need to borrow money for fertiliser, sprays and diesel. We have started working with a finance company to assist with this, however finding the stock to replenish will be the hard part. And with cropping you only have one opportunity per year to sow, if we don't get that chance, it's another 12 months.

(e) preparedness for future drought events;

Economic Development Manager, Parkes Shire Council - Anna Wyllie:

"Preparing for these events is vital, plans should be in place - all levels of government need to proactive not reactive and support needs to be simple and easy to access."

Parkes Chamber of Commerce President and local Stock and Station agent business owner Geoff Rice:

"The ability to manage water resources is crucial - dams, bored, tanks - this is a bigger issue than feed right now. Many are selling stock with the forecast of nil rainfall and no other resources going into summer. Many are working off groundwater reserves, however the ability to harvest this and store it is difficult.

"For cropping farmers perhaps the opportunity to better store grain to be able to manage their sales, hold onto it rather than sell when not ready. Silo infrastructure assistance would prove beneficial as many have stored their grain in bags as it was cheaper and now it has been destroyed by feral pigs.

"This drought is very unusual in the fact that 'good' farmers had reserves for two years, but we are over that now.

"Businesses will come out of this drought a lot smarter - using staff and resources more efficiently, working in collaboration with other similar businesses."

Parkes Shire Drought Response Officer, Roger Kitson:

I believe to really assist the rural section going forward, there are a number of improvements that would be made and these include:

+ Eligibility criteria needs to be easier for lease farming regarding drought loans

+ Machinery is critical for improving the efficiency and sustainability of farming. Currently machinery is not allowed to be purchased with drought funding. The Farm innovation fund could easily be opened up to accommodate this. (These companies are major contributors to financing community sporting clubs, ag show etc)

+ Assisting farmers with rates.

+ Drought loans are taking far too long to be processed which restricts farmers ability to manage their farms during drought and make decisions for future planning.

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WELCOME: Neighbourhood Central Executive Officer Pam Symonds, Parkes Shire Drought Response Officer Roger Kitson, Parkes Mayor Cr Ken Keith OAM and Cr Neil Westcott.

Here for farmers

Drought Response Officer appointed to help our rural residents

BY CHRISTINE LITTLE

THERE'S a new face in town and he's here to help.

That's the crucial message the Parkes Shire's new Drought Response Officer Roger Kitson is sending to farmers, businesses, contractors and anyone else affected by the current drought.

Three weeks into his new role - based at Neighbourhood Central in Currajong Street - Mr Kitson has already met with a number of farmers, but has plans to get out into the community.

His appointment is an outcome from the Parkes Shire Drought Forum held at the Parkes Services Club last September, where Parkes Shire Council discussed, with the community, ways it could spend its $1 million drought assistance funding received from the Australian Government.

Forum participants called for a one-stop-shop coordinator to make it easier for those impacted by the drought to seek help.

Mr Kitson is involved in coordinating efforts regarding financial assistance for grants and funding for farmers and businesses, deferral of loan repayments, mental health services and transport assistance for livestock.

He will also help coordinate assistance in developing infrastructure for farms, local businesses and community groups to increase resilience.

Mr Kitson has moved to Parkes from the Sunshine Coast and holds a Bachelor of Social Science, majoring in sustainability and geography.

He has completed further training in agribusiness, value chains and consumers in global food systems.

"I come from a family with a strong connection to the agricultural sector and have been farming for many generations across a range of agricultural industries including grain, cotton, cattle and sheep, as well as dairy," Mr Kitson said.

"Growing up within and experiencing a diversity of agricultural backgrounds had given me a broad understanding of issues impacting the agricultural sector, regional communities and related businesses which support the agricultural industry and communities."

He said at the moment the majority of local farmers are seeking his help with funding and what their options may be.

"There are so many groups involved in the drought response, they're doing a fantastic job and they're really dedicated," he said.

"My job is to direct farmers to these groups and help them out with a realistic approach."

Mr Kitson has a number of plans for the Parkes Shire, one main aim being to encourage more farmers to apply for the funding that

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NEWS: PARKES MAN CHARGED WITH CHILD EXPLOITATION - PAGE 3

+ Need more Financial councillors on the ground to assist with applications. All applications are done online and many farmers don't have the capacity to do this.

+ Drought funding needs to assist farmers with current issues in relation to drought. Majority of funding is for future drought preparedness.

+ A drought response officer (disaster response officer) needs to be established in every Shire.

+ Funding to assist farmers to implement regenerative farming practises. It has been proven that correct management of natural grasses can sequester carbon on a similar rate to tropical rainforests. Farmers have the potential to be part of solution to climate change, increasing biodiversity and rehydrating the landscape. This has a benefit for all Australians and therefore farmers should be paid or compensated for this.

(f) assessment of current Government programs;

Economic Development Manager, Parkes Shire Council - Anna Wyllie:

"There is currently no grants or support directly for small business with many of the grant programs being too prescribed and with very tight deadlines. In other cases the assistance has been too little too late in many cases. Impacted areas need more people on the ground to help - socially, financially and mentally."

Parkes Chamber of Commerce President and local Stock and Station agent business owner Geoff Rice:

"The main thing we are hearing is that is very difficult to access assistance through the government. Luckily Council sought funding to secure a Drought Response Officer who has really helped with this and assisting many farmers access assistance. However, it did come too late for many. Farmers who had sought off farm income to remain viable and feed their families and stock, were then ineligible for assistance which was very disappointing. The other problem is making the assistance through NGOs - most farmers will not approach a NGO as they do not want to look like a charity case. It is seen as a disconnect from government support and the perception that money is being wasted through administration through NGOs rather than making it to the farmers is very concerning.

"A more effective way of assisting the farmers would be interest rate cut or direct help from the government accessed through accountants etc - this would be more welcome by farmers. Or wage support would be another helpful measure in these times.

"There is no assistance for cropping farmers - support must be for rural sector not just livestock producers. With assistance they could be investing in grain handling infrastructure or more efficient sowing equipment - help needs o to be offered to farmers as a whole".

(g) temporary relief from state taxes, charges and levies for drought affected businesses;

Parkes Chamber of Commerce President and local Stock and Station agent business owner Geoff Rice:

"Yes - relief from taxes etc would be most welcome. People would take advantage of this and it would be very beneficial.

"Farmers are all consumed by just surviving right now - any assistance that could be accessed through their accountants would be much easier."

(h) capacity and coordination of town water supplies and further recycling opportunities;

Since the 1930s there has been the idea to connect the Parkes, Forbes and Eugowra regions (Parkes, Forbes and Cabonne shire councils) together via a pipeline as well as transfer stations and new borefields, to provide water security for prolonged droughts.
In 2009 CENTROC engaged consultants to complete a study into these pipelines and estimated costings etc for this (please find attached). The recommendations from the study includes a pipeline from Gooloogong to the Parkes Reservoir (Eugowra Road pump station) and to Forbes. The study also recommended upgrading Trunk Main C from Carcoar WTP to Gooloogong.

Parkes Shire Council has recently been awarded funding through the Critical Drought Initiative Program to fund the first stage of these works with a $4m State Government grant. Council is hoping to further leverage this funding through a Federal Government grant to deliver further infrastructure to continue to further this drought proofing project for the region.

Council believes investment into water sharing infrastructure would be extremely beneficial to the whole region, utilising water resources that are currently available.

Director of Infrastructure Parkes Shire Council - Andrew Francis:

Water and water security is a fundamental part of modern society. For communities to thrive and grow there is an expectation that Government of all levels will work together to provide a safe and reliable water supply.

Never before has a comprehensive, integrated, regional approach to water security been adopted. Then again, never before has Australia been as exposed to the impacts of drought and climate change as we now are. The work that Parkes Shire Council has carried out sees water security as a collaborative responsibility of all levels of Government, natural water systems are larger than one community and needs to be managed for not only urban use but also industry and agriculture.

Parkes Shire Council who is also a member of Centroc has already completed, and seeks to continue, to secure water for our urban communities, for the industrial sectors that support our livelihoods, and for our unique and precious natural environment. The Centroc Councils have recently completed a Carbon Plus Study, which will ensure that those Councils continue to manage the carbon footprint of its water security strategy. Achieving water security for Central New South Wales will require significant investment in both infrastructure and demand management programs.

Through Centroc, the 17 local government councils within the region have demonstrated their capability to unite, collaborate and work toward a common goal. Already the collective efforts have successfully developed a long-term sustainable water supply strategy which significantly improves the water supply security of the central west region whilst balancing social, environmental and economic outcomes.

The is no comprise when it comes to water security as it is an essential element for communities to prosper. But Council also believes that it is essential that Governments of all levels look at the issues around water security as a integrated and collaborative approach. This will require significant investment from Government.

"Rainfall, or the lack of it, significantly impacts water supply and therefore water demand."

Severely poor rainfall experience from 2004 to 2008, over and above the conditions experienced generally through the millennium drought period, has triggered the need for improving water security in Parkes.

The effect that this can have on a regional economy is evident especially in agricultural value add. In 2010/11 which was not considered a drought year ,the total value of agricultural output in Parkes Shire was $173m, which increased from $94m in 2005/06 which was in the middle of the drought (source:id solutions). This demonstrates significant financial and economic benefit for the region with the availability of water.

Even though initiatives have proven to be effective, they have not solved the problem of the fluctuating availability of water. Council concludes that increasing the reliability and resilience as well as the total volume of water supply is the only remaining option and both recycling and new supply options have been investigated and considered.

To discuss this submission further, please contact:

Andrew Francis, Director Infrastructure – Parkes Shire Council
[redacted]

Anna Wyllie, Economic Development Manager - Parkes Shire Council
[redacted]

Roger Kitson, Drought Response Officer
[redacted]

Parkes Shire Council

Parkes Water Supply Augmentation
Centroc Water Grid Connection

INVESTIGATION REPORT
REVISION 4

FEBRUARY 2016

PARKES SHIRE COUNCIL

HydroScience
Strategic Water Solutions

Parkes Water Supply Augmentation

Centroc Water Grid Connection

Investigation Report

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Executive Summary

This Centroc Water Grid pipeline, covered by this investigation report, will connect water sources in Forbes Shire Council (Lachlan River and bores), Parkes Shire Council (bores) and Central Tablelands Water (Lake Rowlands and bores).

The concept of cross connecting water sources in the Central West existed for many years. As the impacts of droughts varies across the region, it follows that drought resilience will be improved if water can be transferred to areas that are impacted by drought from sources that are less affected.

This investigation covers the following elements:

- A 9 km pipeline from Forbes Bore 3 to Parkes Eugowra Road Pumping Station Site (Eugowra Road PS)
- A 39 km pipeline from Parkes Eugowra Road PS to Central Tablelands Water (CTW) Gooloogong bores site
- A pumping station at the Eugowra Road PS with two sets of pumps, one for transferring water to Forbes and the other to Gooloogong
- A pumping station at Gooloogong Bores site to transfer water to Parkes Eugowra Road PS.

The Centroc Water Grid is designed to transfer up to 10 ML/day between Forbes and Parkes and up to 5 ML/day between Parkes and Gooloogong. All pipes are designed to transfer water in either direction, thus enabling the transfer of water:

- From Gooloogong to Parkes and/or Forbes
- From Forbes to Parkes and/or Gooloogong
- From Parkes to Forbes and/or Gooloogong

The estimated cost of the Centroc Water Grid as described in this investigation report is $22.5 million. The estimate excludes the cost of a pumping station at Forbes water treatment plant and upgrade of power supply.

Contents

1 Introduction

1.1 Context

The concept of cross connecting water sources in the Central West has existed for many years. Such connection would enable the transfer of water during droughts from areas that are not affected by droughts to areas where the water sources are stressed.

Figure 1 is a 1961 map showing proposed pipe extensions in the Central West to improve drought resilience (map supplied by Matt Parmeter, NSW Office of Water).

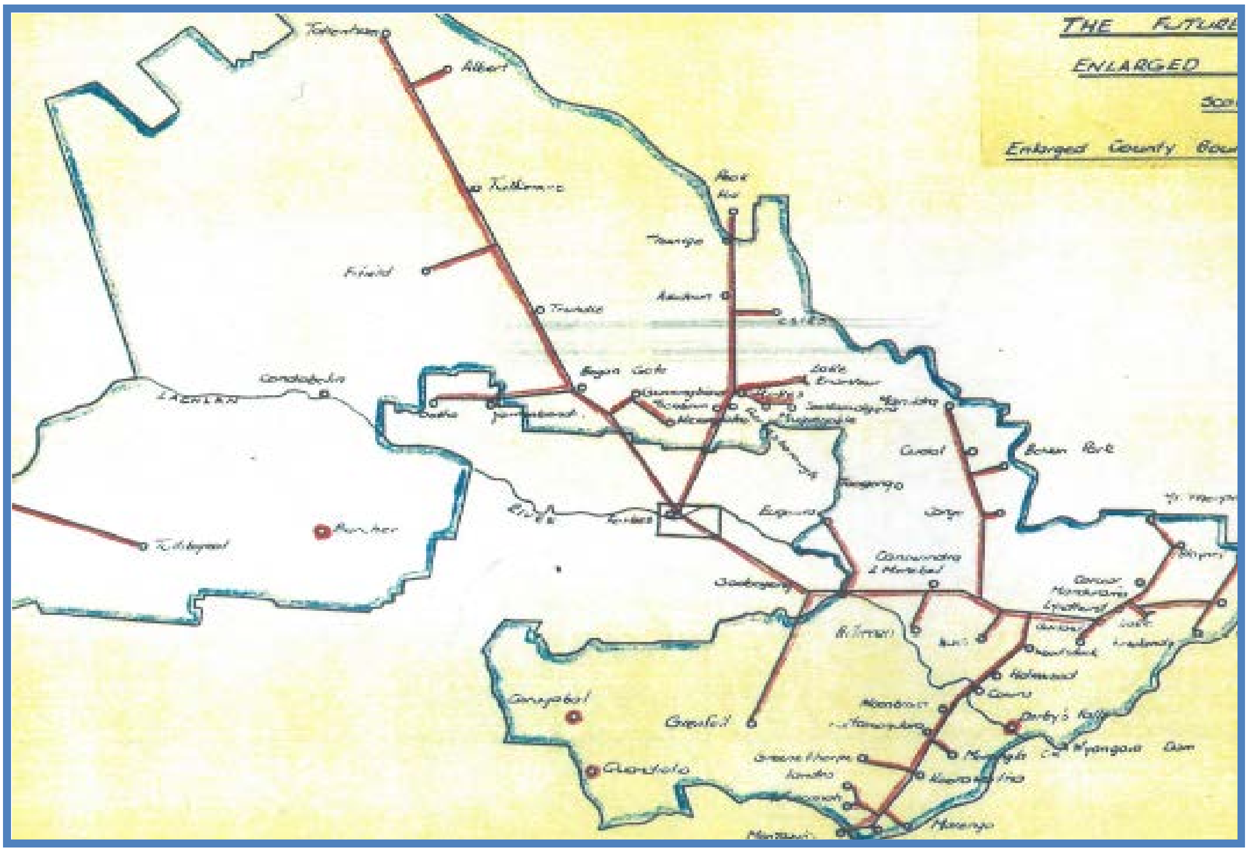


Figure 1: 1961 Plan for Pipe Extensions

More recently, in 2009, the Centroc Water Security Study recommended a pipeline from Gooloogong Bores to Forbes along Lachlan Valley Way with a branch to Parkes Water Supply shown in Figure 2.

Figure 2: Centroc Grid Pipeline 2009

As part of the Parkes Water Supply Augmentation Project, Parkes Shire Council (PSC) commissioned HydroScience to investigate the future connection of Parkes water supply to the Centroc water grid.

The route included in this investigation for the pipeline between Parkes and Gooloogong was proposed by the NSW Office of Water. It runs along Waugan Way, The Escort Way (aka Eugowra Forbes Road) and Lachlan Valley Way, shown in Figure 7 on page 15.

1.2 Scope

This report outlines the preliminary design for the infrastructure required to transfer the water from the Eugowra Road PS to Gooloogong Reservoir and to Forbes, and also from the Gooloogong Reservoir to the Eugowra Road PS. These facilities include:

- A rising main from Eugowra Road PS to Forbes Bore 3
- A rising main from Eugowra Road PS to Gooloogong Bores Reservoir
- A new pumping station at the Eugowra Road PS site comprising two sets of pumps, one for pumping to Forbes and the other to Gooloogong
- A new pumping station at Gooloogong Bores Reservoir

The timing for the implementation of the Centroc water grid and for the connection of Parkes to the water grid will depend on funding and needs that will be defined over the next few years.

Eugowra Road PS includes two water reservoirs and two pumping stations that are used to transfer water from the nearby Lachlan River intake and the bore field to Parkes water treatment plant. These facilities will be used, when necessary, to transfer water from Forbes and/or Gooloogong to Parkes. The site is referred to in this report as Eugowra Road PS. For more details on Eugowra Road PS refer to Section 4.

1.3 Regional Approach

This investigation is carried out by Parkes Shire Council. Nevertheless, it addresses water transfer across shire boundaries.

Parkes Shire Council and HydroScience recognise and appreciate the assistance and cooperation of the NSW Office of Water, Central Tablelands Water, Forbes Shire Council and Centroc.

2 Project Outline

2.1 Objectives

The purpose of the Centroc Water Grid pipeline described in this report is to transfer water between three sites and three local water utilities (LWUs):

- Central Tablelands Water, at Gooloogong Bores site
- Parkes Shire Council, at Eugowra Road PS
- Forbes Shire Council, at Forbes water treatment plant, through Bore 3

This pipeline will improve the drought resilience of the region and will enable the transfer of water between the three LWUs. This would occur typically in drought condition, but could also be used when major, water infrastructure components in any LWUs is not available as a result of a breakdown or major upgrade works.

2.2 Design Criteria

2.2.1 Capacity

The proposed transfer capacities of the proposed system suggested in Public Works Discussion Paper 4a and confirmed by NSW Office of Water are:

- From Parkes:
  - To Gooloogong – 5 ML/day
  - To Forbes – 10 ML/day
- From Forbes to Parkes Eugowra Road PS – 10 ML/day. The water from Forbes can be subsequently pumped to Gooloogong.
- From Gooloogong to Parkes Eugowra Road PS – 5 ML/day. The water from Gooloogong can be subsequently pumped to Forbes.

2.2.2 Water Quality and Sources

The grid will transfer treated and / or bore water. The sources at the three supply nodes of the grid are:

- Gooloogong: Treated water from Lake Rowland and/or chlorinated water from Gooloogong Bores
- Parkes: Chlorinated water from Parkes bore field
- Forbes: It is yet to be specified whether the water supplied to the Centroc Grid from Forbes will be sourced from the Forbes water treatment plant (WTP) (after treatment) or from Forbes bore 3 (untreated)

Additional sources may be groundwater from bores along the pipe route. A large number of agricultural bores are available in the region, as shown in Figure 3.

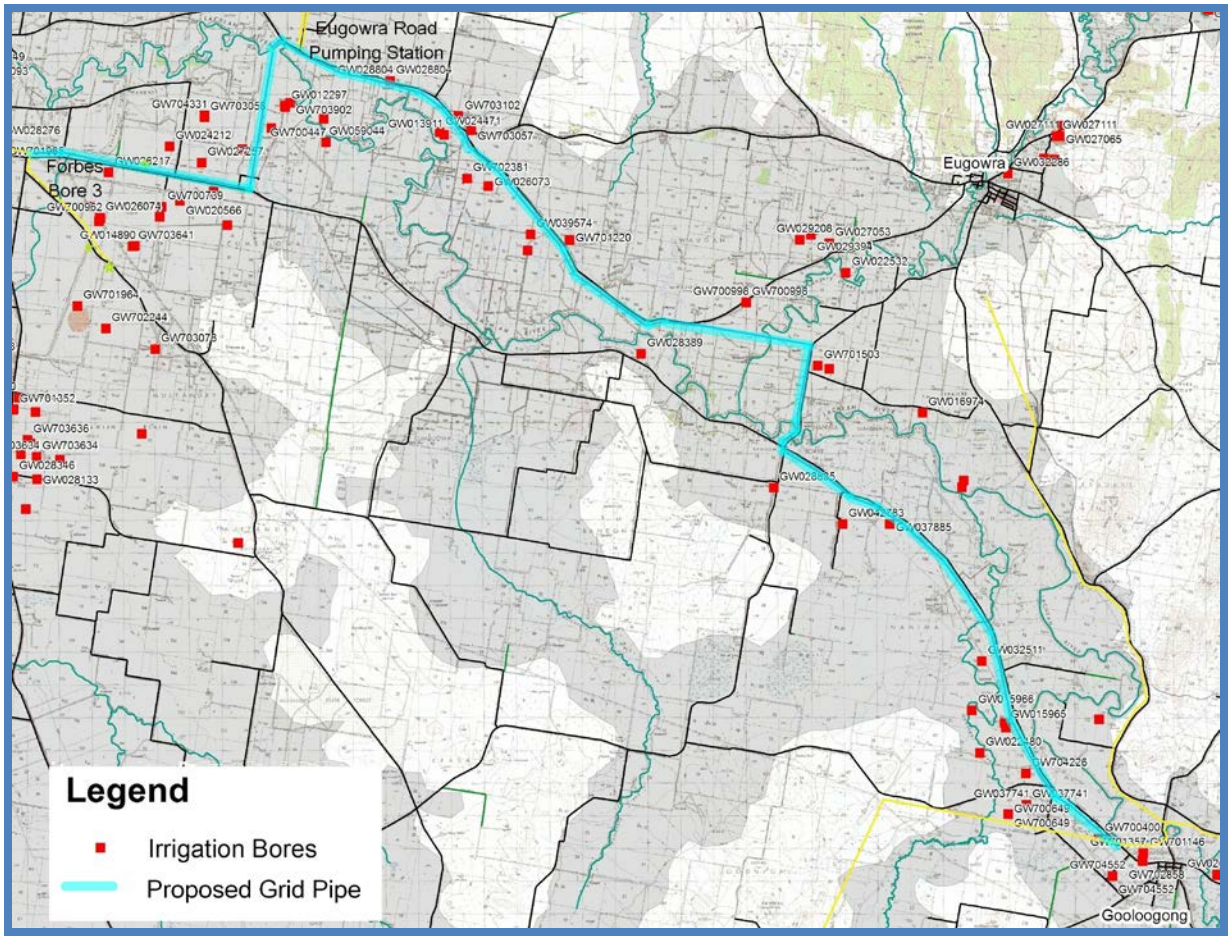


Figure 3: Agricultural Bores in the Region

3 Proposed Centroc Grid Pipeline

3.1 Proposed Rising Main – Eugowra Road to Forbes Bore 3

3.1.1 Overview

The scope of this report includes connecting Eugowra Road PS to Forbes bore 3 via a rising main. This rising main serves the purpose of allowing the connection of Forbes' water supply to the Centroc Grid.

Forbes bore 3 is operational with a yield of approximately 80 L/s (Source: advised by PSC). However, this bore is not yet connected to the Forbes' water supply. The pipeline between Forbes bore 3 and Forbes WTP is outside the scope of this report. Public Works have supplied a preliminary proposed pipeline network shown in Figure 4.

As stated in section 1.2 it is currently unspecified which water source from Forbes will supply the Centroc Grid. Additionally it is unknown what will drive the transfer of water through the proposed pipelines to the Eugowra Road PS. It is likely that an additional pumping station will be required to transfer water from Forbes bore 3 and/or Forbes WTP to Eugowra Road site. The pumping station(s) are also outside the scope of this report.

The pumps required to transfer 10 ML/day of water from the Eugowra Road PS to Forbes WTP are outlined in section 4.3 of this report.

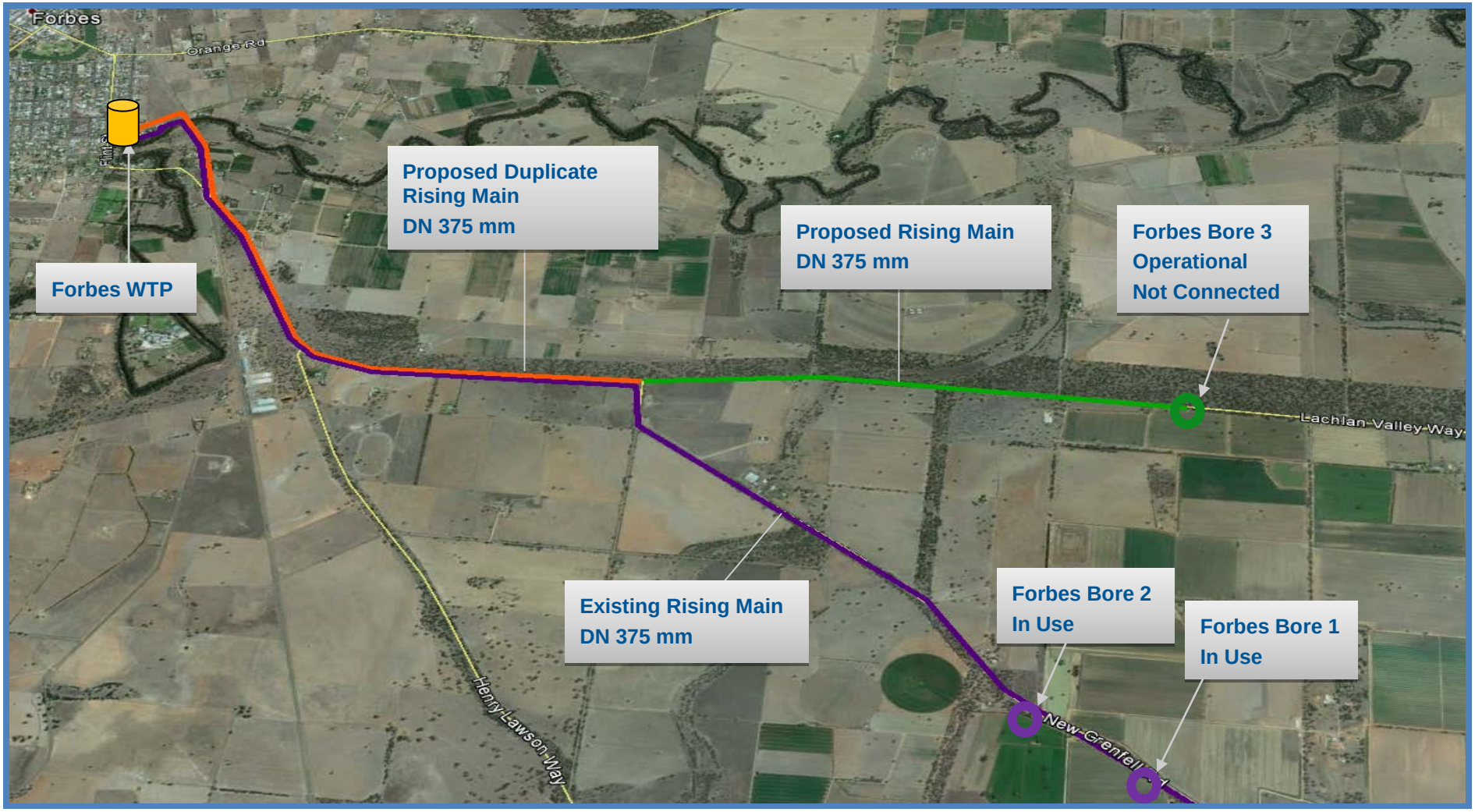


Figure 4: Proposed Forbes Bore 3 Connection Provided by Public Works

3.1.2 Design Criteria

This section outlines the design criteria for the rising main from Eugowra Road PS to Forbes Bore 3.

The preliminary design specifications for the proposed rising main are shown in Table 1. Table 1 also presents the assumed design specifications for the trunk main from Forbes bore 3 to Forbes WTP.

Table 1: Preliminary Design Specifications Pipe to Forbes

Rising Main	Eugowra Road PS – Forbes Bore 3	Forbes Bore 3 – Forbes WTP
Length	8.6 km	9.0 km
Diameter	DN 375 mm	DN 375 mm
Material	DICL or HDPE	DICL or HDPE
Transfer Capacity	10 ML/day, 116 L/s	10 ML/day, 116 L/s
Velocity	1.1 m/s	1.1 m/s
Rate of Friction Loss [1]	2.9 m/km	2.9 m/km
Friction Loss at 10 ML/day	24.9 m (8.6 km @ 2.9 m/km)	26.1 m (9.0 km @ 2.9 m/km)

1. A mean internal diameter of 375mm was used for friction loss calculation as the pipe material is yet to be confirmed.

The proposed pipe network connecting Forbes to Parkes will be used to:

- Transfer water from Forbes Bore 3 to Forbes while the current Eugowra Road PS supplies Parkes.
- Transfer water from Forbes Bore 3 to the Eugowra Road PS, for subsequent pumping to Parkes and/or Gooloogong.
- Transfer water from the Eugowra Road PS to Forbes WTP while Forbes Bore 3 is not in use.

Public Works envisaged that the Eugowra Road Pump Station and Forbes Bore 3 will not supply water to Forbes WTP simultaneously.

A schematic for the proposed rising main connecting the Eugowra Road PS to Forbes bore 3 is shown in Figure 5.

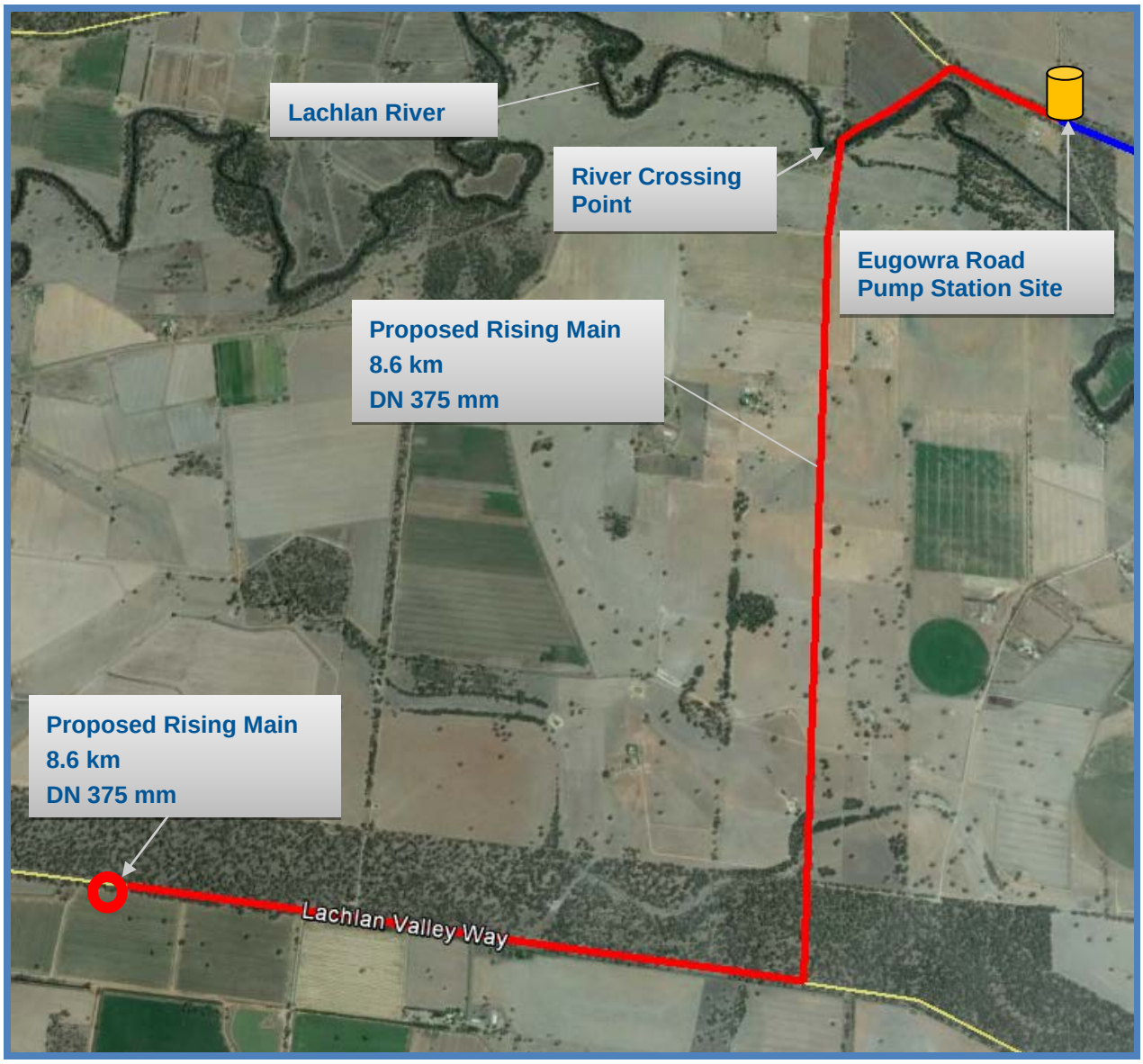


Figure 5: Proposed Pipeline Connecting Eugowra Road PS and Forbes Bore 3

3.1.3 Proposed Route

The proposed pipeline route was chosen such that it follows roads where possible and minimises pipeline length.

The rising main will need to cross the Lachlan River, as well as two main roads, Eugowra-Forbes Road and Lachlan Valley Way. In addition, the pipeline will cross a number of unsealed roads.

3.1.4 Hydraulic Design

An approximate long section of the pipeline is shown in Figure 6 (Source: Google Maps). It is assumed the pipe will be laid in a trench at a depth of approximately 1m.

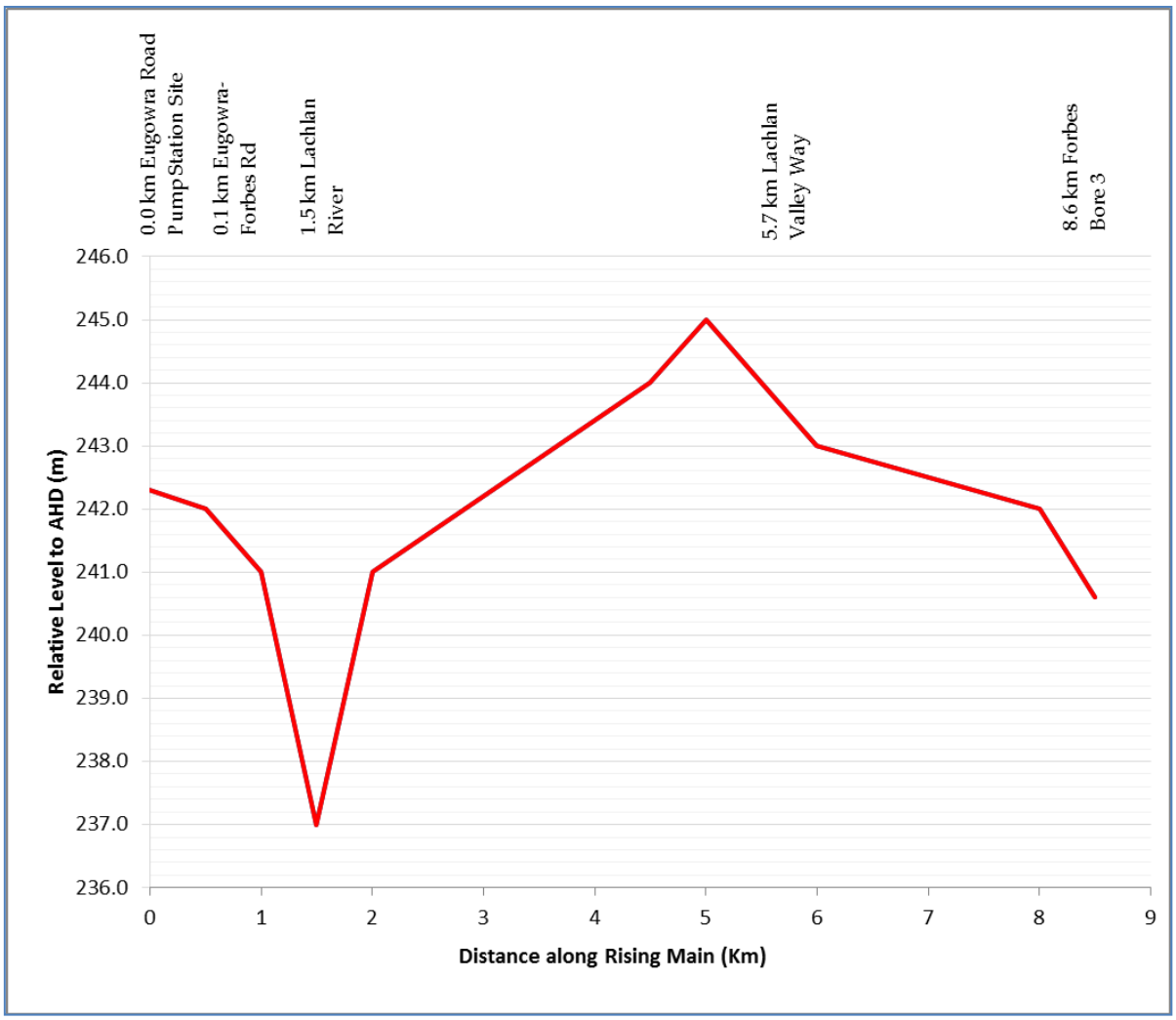


Figure 6: Approximate Long Section of Proposed Rising Main from Eugowra Road to Forbes Bore 3

3.2 Proposed Rising Main – Eugowra Road PS to Gooloogong Bores

3.2.1 Design Criteria

The proposed pipeline connects the Eugowra Road PS directly to the Gooloogong Bores Reservoir via Lachlan Valley Way and various back roads; illustrated in Figure 7.

The first 10 km of the pipeline (f from Eugowra Road PS) has been sized at DN 375 mm in order to allow for the future expansion of the PSC bore field along the pipeline. The remaining length of pipeline to Gooloogong Bores is sized at DN 300 mm.

The preliminary design specifications for the proposed pipeline are presented in Table 2.

Table 2: Preliminary Design Specifications of Eugowra Road PS to Gooloogong Pipe

Pipeline	Value
Material	DICL or HDPE
Transfer Capacity	60 L/s (5 ML/day)
Total Pipeline Length	38.7 km

Pipeline	Value
Total Friction Losses at 5 ML/day	53.8 m
DN 375 mm Section	
Length	10.0 km
Velocity	0.5 m/s
Friction Loss Rate	0.5 m/km
Total Friction Loss at 5 ML/day	5 m (10.0 km @ 0.5 m/km)
DN 300 mm Section	
Length	28.7 km
Velocity	0.7 m/s
Friction Loss Rate	1.7 m/km
Total Friction Loss at 5 ML/day	48.8 m (28.7 km @ 1.7 m/km)

These design specifications assume that the pipe will not be used to simultaneously transfer water to or from Gooloogong and transfer bore water from future bores along the pipe.

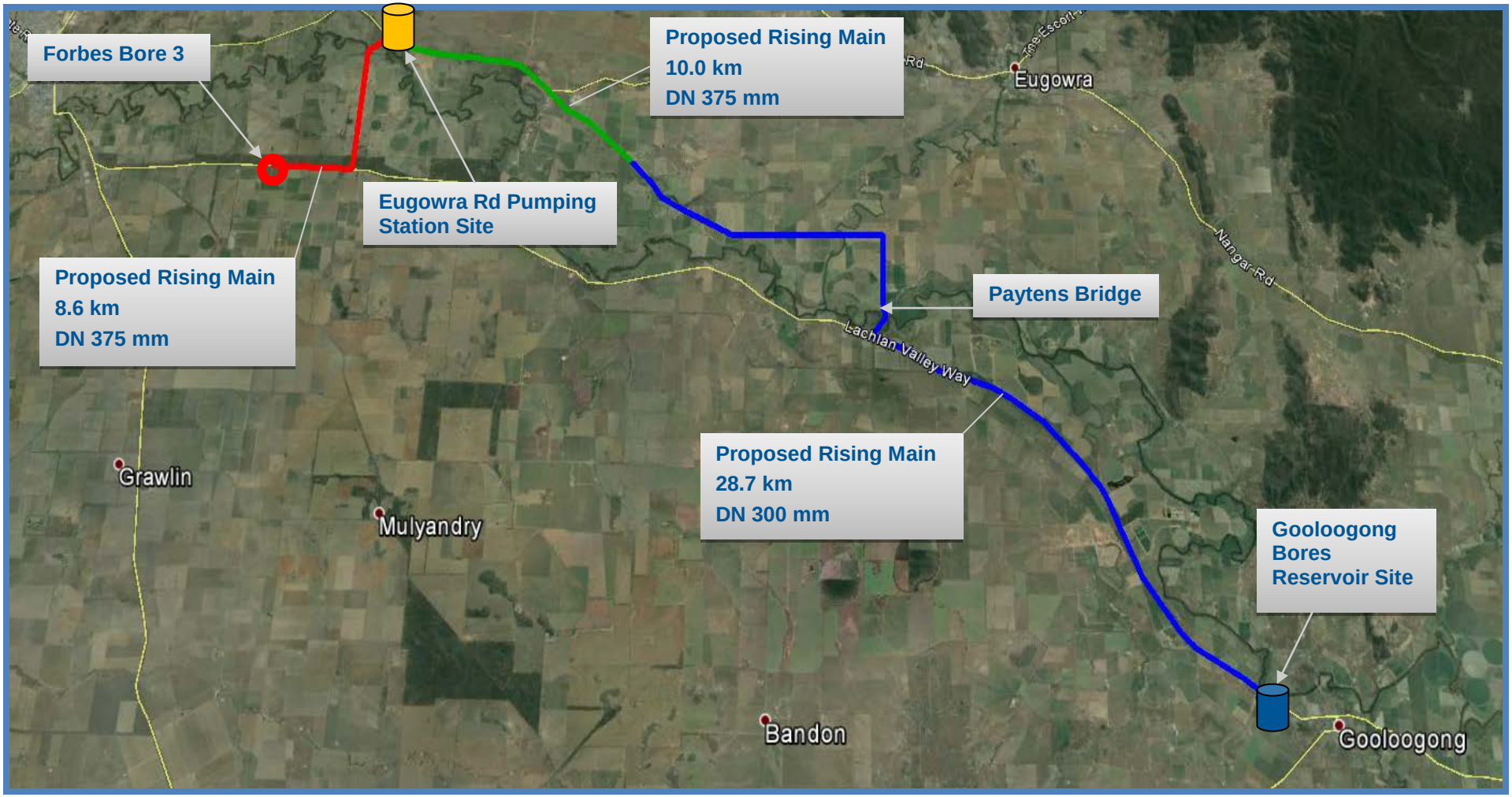


Figure 7: Proposed Pipe Route between Parkes and Gooloogong (Public Works, 2014)

3.2.2 Hydraulic Design

Parkes Shire Council commissioned a survey along the proposed route of the pipe from Eugowra Road PS to Gooloogong Bores site. The survey plans are included in Appendix C.

An approximate long section of the rising main is shown in Figure 8 (Source: Survey). It is assumed the pipe will run at a depth of approximately 1m.

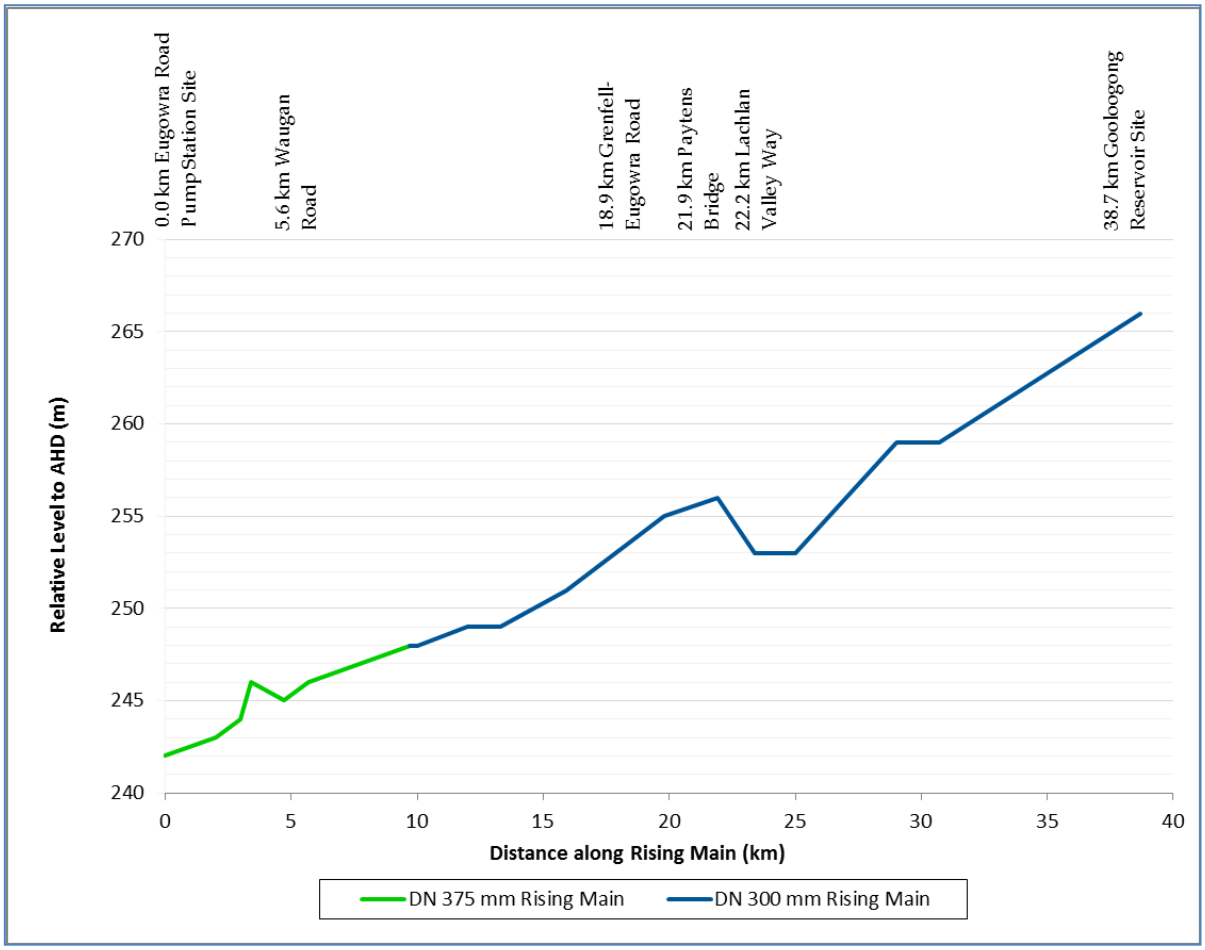


Figure 8: Simplified Long Section of Proposed Rising Main Eugowra Road PS to Gooloogong

4 Eugowra Road PS

4.1 Centroc Grid Water Source and Balance tanks

Currently bore water and river water are pumped separately to supply Parkes and Northparkes Mines from two dedicated balance tanks. One stores river water (tank 1B) and the other bore water (tank 1A).

From the Eugowra Road PS, the Centroc Grid will be supplied with bore water only. As part of this upgrade it is proposed to provide chlorination to the bore water that will be transferred to Gooloogong and/or to Forbes.

Water sourced from the Lachlan River will not be pumped through the Centroc Grid pipeline, as the quality of the water is typically not as good as the bore water.

The characteristics of the existing balance tanks are outlined in Table 3.

Table 3: Eugowra Road Balance Tank Characteristics

Parameter	Value	Source
Existing Bore Water Balance Tank (1A)		
Material	Concrete	Site Inspection
Type	Standpipe	Site Inspection
Height	~8 m	Site Inspection (estimated)
Diameter	~8 m	Survey
Storage Capacity	0.25 ML	Calculated
Existing River Water Balance Tank (1B)		
Material	Concrete	Site Inspection
Type	Standpipe	Site Inspection
Height	~10 m	Site Inspection (estimated)
Diameter	~11 m	Survey
Storage Capacity	0.95 ML	Calculated

In the proposed arrangement the existing tank 1A will:

- Act as a balance tank to the new transfer pumping stations
- Receive water from Forbes and/or Gooloogong for transfer to Parkes or to Centroc water grid
- Continue to receive bore water from the Parkes bore field and act as balance tank to the existing pumping station that is used to transfer bore water to Parkes water treatment plant

The rising mains to Gooloogong Bores reservoir and to Forbes Bore 3 will act as a two way pipes. They will supply Parkes with water from Lake Rowlands via Gooloogong or from Gooloogong bores (Centroc Water Security Study, 2009) and from Forbes Bore 3. To facilitate this flow, a piping

arrangement has been designed such that it will bypass the new pumping station and deliver the water to the existing Tank 1A, shown in the plan in Appendix B. The flow of water will be controlled with manual stop valves.

4.2 Parkes - Gooloogong Pumping Station

4.2.1 Housing

It is proposed the new pump station building be built of brick or concrete. The building will house the two sets of pumps for transferring water to Forbes and to Gooloogong.

It is proposed to assume flood level of 244.50, the same level adopted for the Lachlan River Pumping Station. This level is approximately 1 m above the existing ground level at the site. The floor of the pump housing will be constructed above this flood level; that is, the floor of the pump shed will be constructed at an elevation of RL 244.50 m.

Figure 9: Lowara typical Pump Arrangement

4.2.2 Description

The proposed Centroc Transfer Pumping Station to Gooloogong comprises two vertical multi-stage pumps on a duty / assist arrangement. It is proposed that under drought conditions, a standby pump be acquired and stored (uninstalled) on, or near the site.

4.2.3 Design Criteria

Table 4: Static Head Calculation

Ref	Parameter	Source	Value
1 Eugowra Road PS			
1.1	Ground Level at Balance Tank	Survey	RL 243.5
1.2	Min. Water Level in Balance Tank	Assumed	2 m[1]
1.3	Bottom Water Level	1.1 + 1.2	RL 245.5
2. Gooloogong Bores Reservoir			
2.1	Ground Level at Reservoir	Survey	RL 267.1
2.2	Height of Reservoir	PSC	4.0 m
2.3	Height of Pipeline Discharge	2.1 + 2.2	RL 271.1 m
3. Static Head			
3.1	Max Static Head	2.3 - 1.3	25.6 m

[1] Assume minimum pump intake head is 1 m; pumps will be located 1 m higher than base of balance tank. See section 4.2.1.

4.2.4 Pumps

The preliminary design specifications for the pumps are as specified in Table 5 below:

Table 5: Eugowra Road PS60 – Gooloogong Pump Specifications

Pump Parameter	Value
Pump	Lowara 125SV4G300T with 30 kW motors, or equivalent
Number	2 (duty / assist)
Drive	Fixed Speed
Static Head	25.6 m (Table 4)
Friction Losses	53.8 m (Table 2)
Total Head	79.4 m (25.6 m + 53.8 m)
Duty	One pump: 40 L/s (3.5 ML/day) at 51.0 m head Two pumps: 56 L/s (4.8 ML/day) at 74.4 m head
Power	30 kW (per pump)
Efficiency [2]	~75%

[1] Efficiency value is for two pumps running in parallel.

When pumping against the worst case static head (i.e. Eugowra Rd balance tank at BWL) both pumps operating in parallel will be capable of transferring approximately 4.8 ML/day (4% below the required 5 ML/day); however, at lower static head (higher water level in pump feed balance tank) both pumps operating in parallel will be capable of transferring the required 5 ML/day.

4.3 Parkes – Forbes Pumping Station

4.3.1 Description

The proposed pumps will comprise two vertical, multi-stage pumps operating on a duty / assist arrangement. The design transfer capacity between Forbes and Parkes water supply is 10 ML/day (116 L/s).

4.3.2 Design Criteria

The head loss calculations from Eugowra Road PS to Forbes WTP are presented in Table 6.

Table 6: Head Calculation of Rising Main from Eugowra Road to Forbes WTP

Ref	Parameter	Source	Value
1. Eugowra Road PS			
1.1	Ground level at Balance Tank site	Survey	RL 243.5 m
1.2	Min. Water level	Assume	2 m[1]
1.3	Bottom Water Level	1.1 + 1.2	RL 245.5 m

Ref	Parameter	Source	Value
2. On Route			
2.1	Maximum elevation along rising main (Figure 6)	Google Maps	RL 245.0 m
2.2	Elevation at Forbes Bore 3	Google Maps	RL 240.6 m
3. Forbes WTP			
3.1	Ground level at Forbes WTP	Google Maps	RL 238.6 m
3.2	Height of Reservoir	PSC	5.0 m
3.3	Water discharge elevation	2.1 + 2.2	RL 243.6 m
3. Static Head			
3.1	Max static head	3.3 - 1.3	-1.9 m

[1.] Assume pump requires 1m head at intake; pumps will be located 1 m higher than the base of the balance tank for flood protection. See section 4.2.1.

4.3.3 Pumps

The preliminary design specifications for the pumps are as specified in Table 7 below:

Table 7: Eugowra Road PS to Forbes Pump Specifications

Pump Parameter	Value
Pump	Lowara PVa 124/2-SA111-5504 with 55 kW motors, or equivalent
Number	2 (duty / assist)
Drive	Fixed speed
Static Head	-1.9 m (Table 6)
Friction Losses	51.0 m (Table 1) [1]
Total Head	49.1 m
Duty	One pump: 88.5 L/s (7.6 ML/day) @ 28.0 m Two pumps: 116.4 L/s (10.1 ML/day) @ 49.9 m
Power	55 kW (per pump)
Efficiency [2]	~73%

[1.] The friction losses are calculated as the summation of the friction losses in each section of pipeline from the Eugowra Road PS to the Forbes WTP; [2.] Efficiency value is for two pumps running in parallel.

4.4 Control

Each pump will be powered and controlled by a fixed speed drive. The pumps will be manually activated remotely through the Parkes Shire Council / SCADA system. There will also be local controls for starting the pumps. The controls will have an integrated low level alarm to disable the pumps and

provide an alarm back to through the SCADA. Flow rates and turbidity will be visible through the SCADA control.

In addition to the pump controls explained below both pump stations will have a low level lock out signal. The existing bore water balance tank at the Eugowra Road site contains a level sensor; this will be used to provide the low level lock out signal to the transfer pumping stations.

4.4.1 Gooloogong Pumping Station

The new pumping station, pumping to Gooloogong, will be controlled through a manually operated SCADA system.

When the Gooloogong reservoir is full, the pumps at Eugowra Road PS will stop. This will be done either by transmitting a signal from Central Tablelands Water SCADA system to Parkes Shire Council SCADA system. If this is not technically possible, and altitude valve at Gooloogong will close when the reservoir is full, and the increased pressure in the discharge end of the pumps will cause them to stop.

4.4.2 Forbes Pumping Station

The new pump station, pumping to Forbes, will be controlled through an automatically operated SCADA system in addition to an automatic, low level lock out system.

The level sensor at the Forbes WTP reservoir will be used to provide a signal to the proposed pump station at the Eugowra Road PS. Alternatively, an altitude valve will be used to increase the pressure and stop the pumps as described in the previous section.

4.5 Electrical Installation

4.5.1 Power Supply

If both pumping stations are required to operate at full capacity, the total power requirements for the new pumping station are 200 kW. Pumps will be equipped with soft starters and programmed to start sequentially to reduce the starting current.

The transformer on the Eugowra Road PS will need to be upgraded or replaced with a new transformer. Parkes Shire Council is investigations the works required to upgrade the power supply.

4.5.2 Electrical Works

The pumping station building will house electrical cabinets for the incoming supply, motor control centre and telemetry equipment required to control the pumps.

4.6 Chlorination System

4.6.1 Description

The water pumped through the Centroc Grid is to be chlorinated. It is proposed that one chlorination system be installed to disinfect the flows to both Forbes and Gooloogong. This assumes that water is pumped to either Forbes or Gooloogong, but not to both simultaneously. If simultaneous operation is required, second chlorination system may be required for the chlorination of the second flow. This is to be addressed in the design stage.

It is proposed to locate the chlorination point immediately downstream of the transfer pumping station, as shown in Appendix B.

The chlorination rate must be able to meet the maximum demand of 60 L/s to Gooloogong and 116 L/s to Forbes. At an estimated chlorine dose of 2-3 mg/L the required capacity of the chlorination systems is 430 - 650 g/hr and 840 – 1260 g/hr respectively.

Due to the long detention time in the pipeline, a re-chlorination facility may be required along the rising main. This is to be determined in the design stage.

4.6.2 Housing

It is proposed to colourbond shed, currently used to house the unused chlorination system located at the Lachlan River pumping station, and use it to house the proposed chlorination system at the Eugowra Road PS.

4.7 Flow Meter

Magnetic flow meters will be installed on each rising main. The flow meters will be connected to the Parkes SCADA system to monitor and record the flows.

4.8 Site Layout and Constraints

The new infrastructure to be installed at the current Eugowra Road PS is as follows:

- New transfer pumping station, including pump housing and switchboard housing
- Relocated chlorination housing shed, and new chlorination system
- Pipework and valves

A survey of the site indicates there is sufficient space to install the proposed infrastructure. As such no additional land need be purchased.

It is proposed that the existing, decommissioned, sodium silicate dosing infrastructure be removed. This will ensure adequate room is available for the construction of an access road to the new transfer pumping station and relocated chlorination shed. This arrangement is shown in Appendix B.

5 Gooloogong Bores Reservoir Site

5.1 Centroc Grid Water Source and Reservoir

The Gooloogong Bores reservoir currently receives bore water from one of two bores operating on a duty / standby arrangement. The bore water is chlorinated using a gas chlorination system.

A supply pipes extends from CTW's Carcoar Water Filtration Plant, supplying treated water from Lake Rowland. Water from the Gooloogong bores is used during peak demand periods only. In these periods, the bore water is used to supplement the Grenfell or the Eugowra-Gooloogong water grid.

From the Gooloogong Bores reservoir site, the Centroc Grid will be supplied with chlorinated bore water from the Gooloogong bore field or treated water transferred from Lake Rowlands. (Centroc Water Security Study, 2009). To facilitate this flow a new pumping station will be installed at the Gooloogong Bores reservoir site. The proposed general arrangement of the new infrastructure is shown in Appendix C. The flow of water will be controlled with manual stop valves.

The characteristics of the existing infrastructure are outline in Table 8.

Table 8: Gooloogong Bores Existing Infrastructure Characteristics

Parameter	Value / Description	Source
Existing Bore Water Reservoir		
Material	Concrete	Central Tablelands Water, 2005
Type	Standpipe	Assumed
Height	~5 m	Assumed
Diameter	~7 m	Calculated
Storage Capacity	0.18 ML	Central Tablelands Water, 2005
Existing Bore Water Chlorination System		
Type	Gas	Central Tablelands Water, 2005
Dose	5 mg/L	Central Tablelands Water, 2005
Disinfection Potential	2.6 ML/day	Central Tablelands Water, 2005
Gas Flow Regulation Method	Manually adjustable v-notch	Central Tablelands Water, 2005
Existing Bores		
Arrangement	Duty / Standby	Central Tablelands Water, 2005
Bore Pump Capacity	3.8 ML/day (per bore)	Central Tablelands Water, 2005
Bore Field Rated Capacity	5 ML/day	Central Tablelands Water, 2005

5.1 System Description

It is proposed water be pumped directly from the reservoir at Gooloogong bores to the bore water balance tank (tank 1A) at the Eugowra Road PS via the Centroc pipeline described in section 3. A schematic of the pipeline is presented in Figure 7.

5.2 Gooloogong - Eugowra Road PS

5.2.1 Description

The Centroc Transfer Pumping Station at the Gooloogong Reservoir site will comprise of two vertical multi-stage pumps, installed on a duty / assist arrangement.

5.2.2 Design Criteria

The static head calculation is presented in Table 9.

Table 9: Static Head Calculation from Gooloogong to Eugowra Road PS

Ref	Parameter	Source	Value
1. Gooloogong Bores Reservoir			
1.1	Ground level of Reservoir	Survey	RL 267.0 m
1.2	Minimum Water Level	Assumed	1.0 m
1.3	Min Water Elevation	2.1 + 2.2	RL 268.0 m
2. Eugowra Road PS			
2.1	Ground level of Reservoir	Survey	RL 243.5 m
2.2	Height of Reservoir	Estimated	8.0 m
2.3	Level of Discharge	2.1 + 2.2	RL 251.5 m
3. Static Head			
3.1	Max static head	2.3 – 1.3	- 16.5 m

5.2.3 Pumps

The pump selection is based on two vertical, multistage pumps operating on a duty / assist arrangement. It is proposed that under drought conditions, a stand by pump be acquired and stored (uninstalled) on, or near the site. The preliminary design specifications for the pumps are as follows:

Table 10: Gooloogong Reservoir Pumping Station Pump Specifications

Pump Parameter	Value
Pump	Lowara MPV 125.2/2B-SAK-1854 with 18.5 kW motors, or equivalent
Number	2 (duty / assist)
Drive	Fixed speed
Static Head	- 16.5 m (Table 9)
Friction Losses	53.8 m (Table 2)

Pump Parameter	Value
Total Head	37.3 m
Duty	One Pump: 50.5 L/s (4.4 ML/day) @ 22.0 m Two Pumps: 60.3 L/s (5.2 ML/day) @ 37.8 m
Power	18.5 kW (per pump)
Efficiency [1]	~74%

[1] Efficiency value is for two pumps running in parallel.

5.3 Control

It is assumed there is currently no automated control or sensors installed at the Gooloogong Bores reservoir site. It is proposed a low level sensor is installed in the existing reservoir to provide a low level lock out to the proposed pump station should the water level fall below an operational height.

The level sensors installed in the Eugowra Road PS balance tank will provide an automated, control signal based on the level in the receiving balance tank.

5.4 Chlorination

It is proposed the bore water supplied to the Centroc grid from the Gooloogong bores is chlorinated by the existing bore water chlorination system prior to flowing into the bore water reservoir. Due to the long detention time in the pipeline, a re-chlorination facility may be required along the rising main or at the Eugowra Road site. This is to be determined in the design stage.

5.5 Flow Meter

Similarly to the Eugowra Road site a magnetic flow meter will be included in the new arrangement. The flow meter will be connected to the CTW SCADA system. Site Layout and Constraints

The new infrastructure to be installed at the current Gooloogong Bores reservoir site is as follows:

- New transfer pumping station, including pump housing and switchboard housing
- Pipework and valves

A survey of the site indicates there is sufficient space to install the proposed infrastructure. As such no additional land need be purchased.

6 Cost Estimates

The capital cost estimate (excluding GST 10%) for the project is summarised in Table 11 below.

Table 11: Capital Cost Estimates (excl. GST)

Item	Unit	No.	Unit Cost	Cost Estimate
Eugowra Road PS				
Gooloogong Pumps (Skid Mounted Lowara 125SV4G300T 30kW)	No.	2	$20,000	$40,000
Forbes Pumps (Lowara PVa 124/2-SA111-5504 55kW)	No.	2	$25,000	$50,000
Pumping Station Building	m^2	15	$1000	$15,000
Yard Piping, Valves and Flow Meter	LS	1	$30,000	$30,000
Chlorination System	No.	1	$30,000	$30,000
Electrical Equipment And Telemetry (excluding upgrading power to the site)	LS	1	$100,000	$100,000
Gooloogong Bores Reservoir Site				
Parkes Pumps (Skid Mounted Lowara MPV 125.2/2B-SAK-2204 22 kW)	No.	2	$18,000	$36,000
Pumping Station Building	m^2	10	$1000	$10,000
Yard Piping, Valves and Flow Meter	LS	1	$15,000	$15,000
Electrical Equipment And Telemetry (excluding upgrading power to the site)	LS	1	$50,000	$50,000
Centroc Grid				
28.7 km of DN300 mm DICL Rising Main	m	28,700	$290	$8,323,000
10 km of DN 375 mm DICL Rising Main	m	10,000	$390	$3,900,000
8.6 km of DN 375 mm DICL Rising Main	m	8,600	$390	$3,354,000
Lachlan River Crossings	No.	2	$200,000	$400,000
Sub-Total				**$16,353,000**
Survey, Investigation & Design (15 %)				$2,452,950
Sub-Total (incl. SID)				**$18,805,950**
Contingency (20 %)				$3,761,190
Total Estimated Capital Cost (incl. Contingency)				**$22,567,140**

The cost estimates exclude:

- Pumping station at Forbes WTP
- Upgrade of power supply to Eugowra Road PS
- Upgrade of power supply to Gooloogong Bores site
- Cost associate with land acquisition, easements and licences
- Environmental assessment.

The proposed water transfer system is to be used to provide water shortage relief infrequently, in drought or other emergencies. The operation and maintenance costs will depend on the duration of operation.

7 References

Central Tablelands Water. (2005). *Operations Management Plan.*

MWH. (2009). *Centroc Water Security Study Componant 2: Options Paper.*

NSW Government, Public Works. (2014). *Discussion Paper 4A - Concept For River/Bore Water Transfer System To Provide Regional Water Security.* Sydney.

Appendix A

Pump Performance Curves

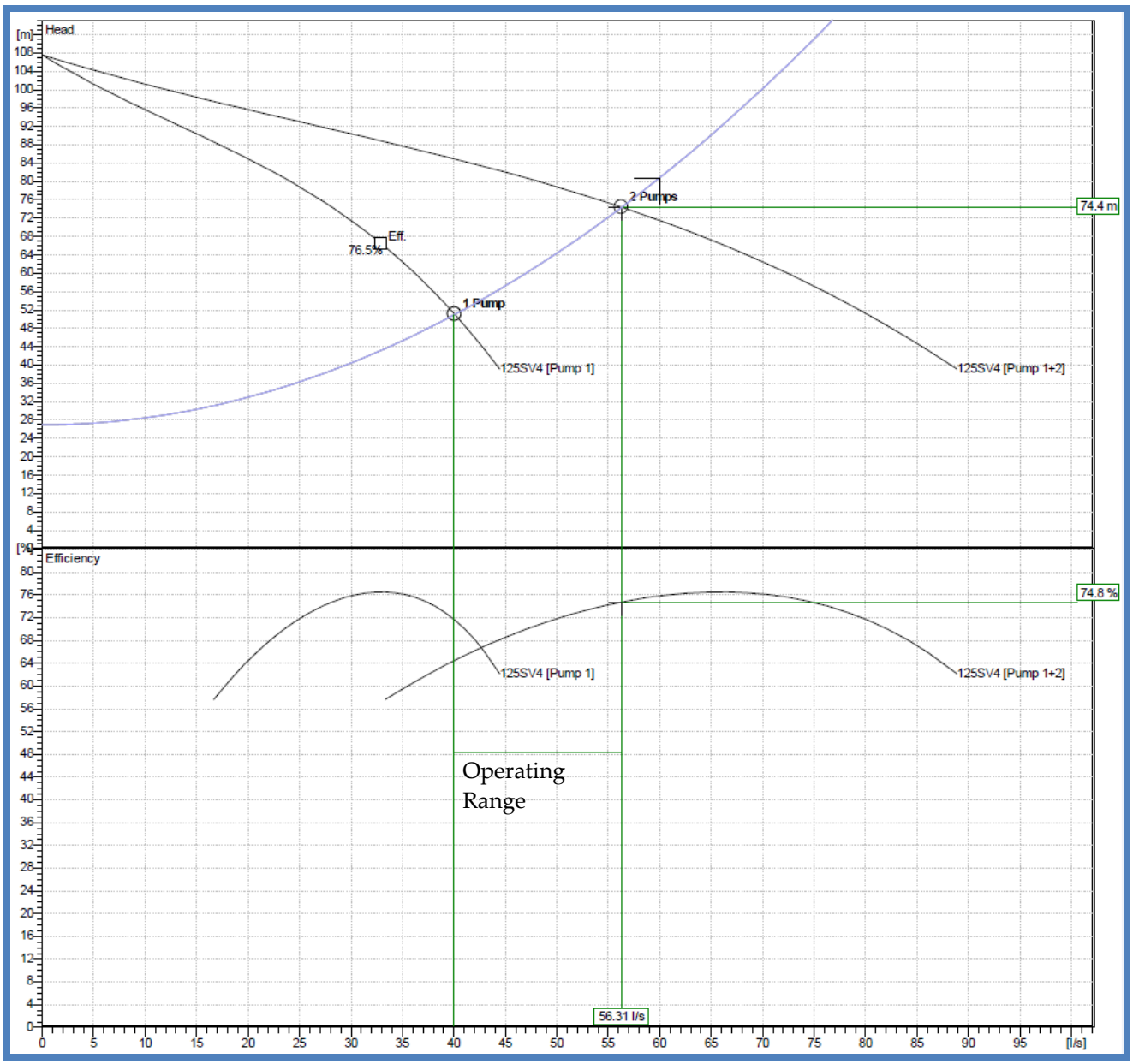


Figure 10: Eugowra Road to Gooloogong Pump Performance Curve (Lowara 125SV4G300T with 30 kW motors)

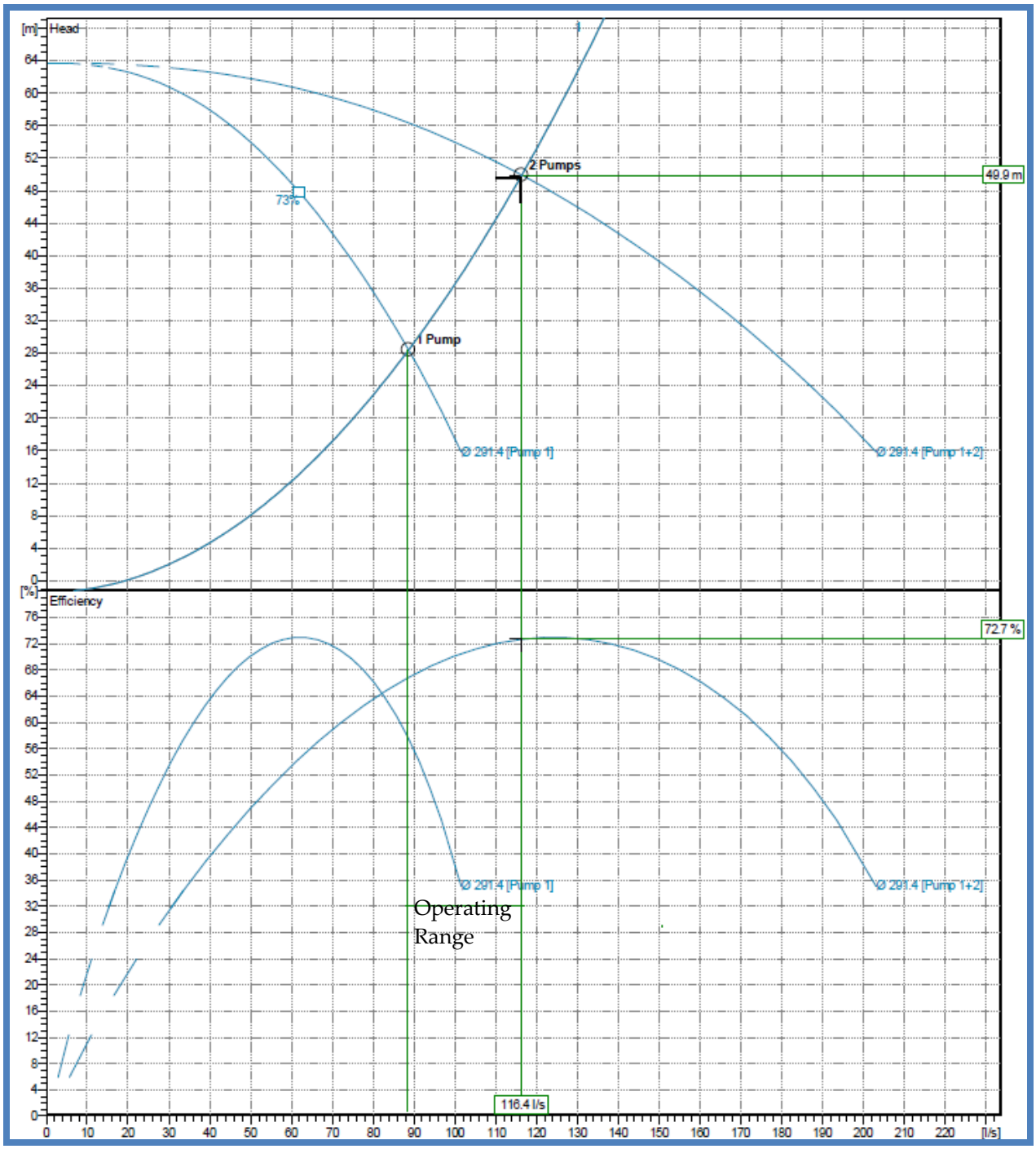


Figure 11: Eugowra Road to Forbes Pump Performance Curve (Lowara PVa 124/2-SA111-5504 with 55 kW motors)

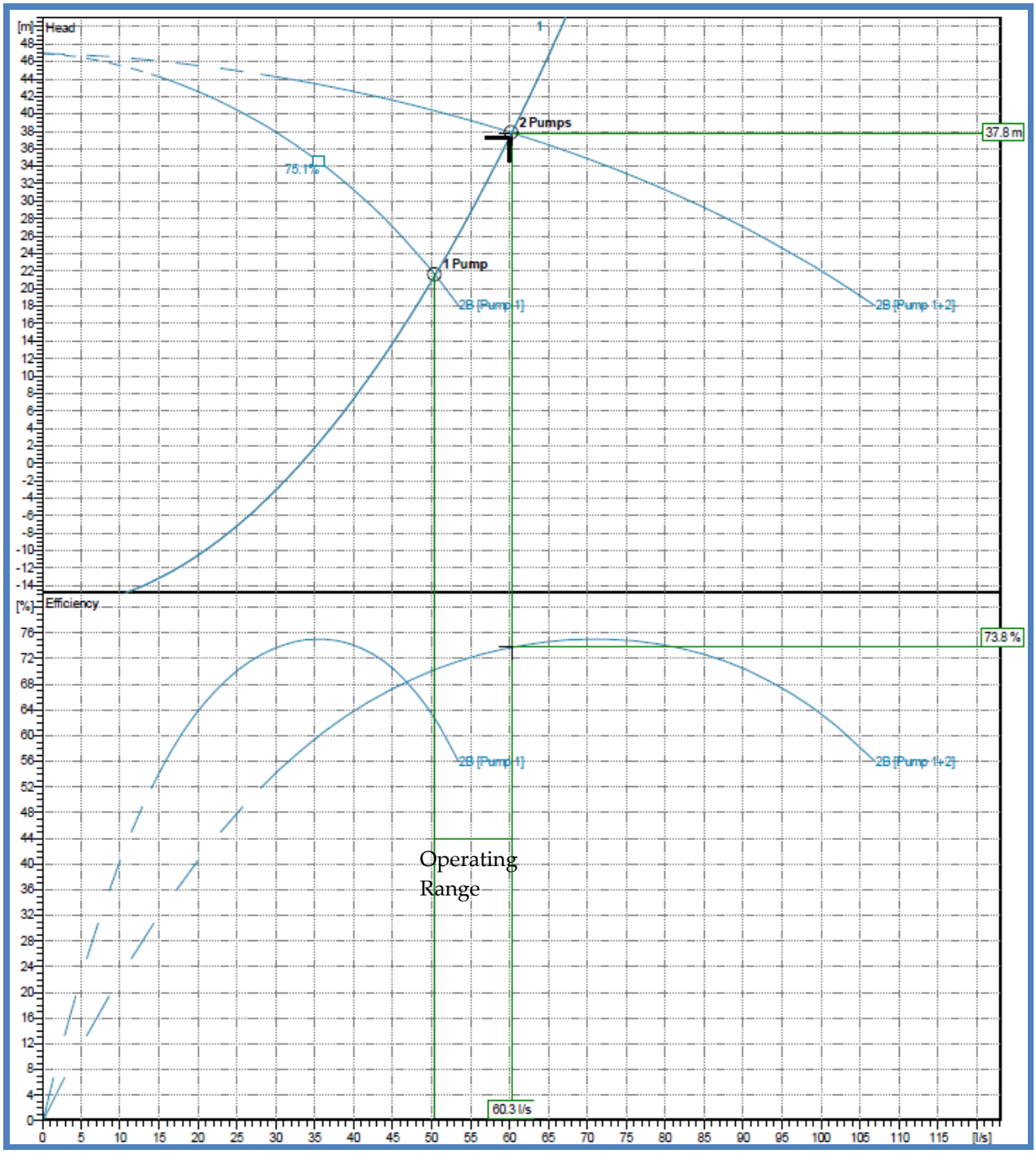
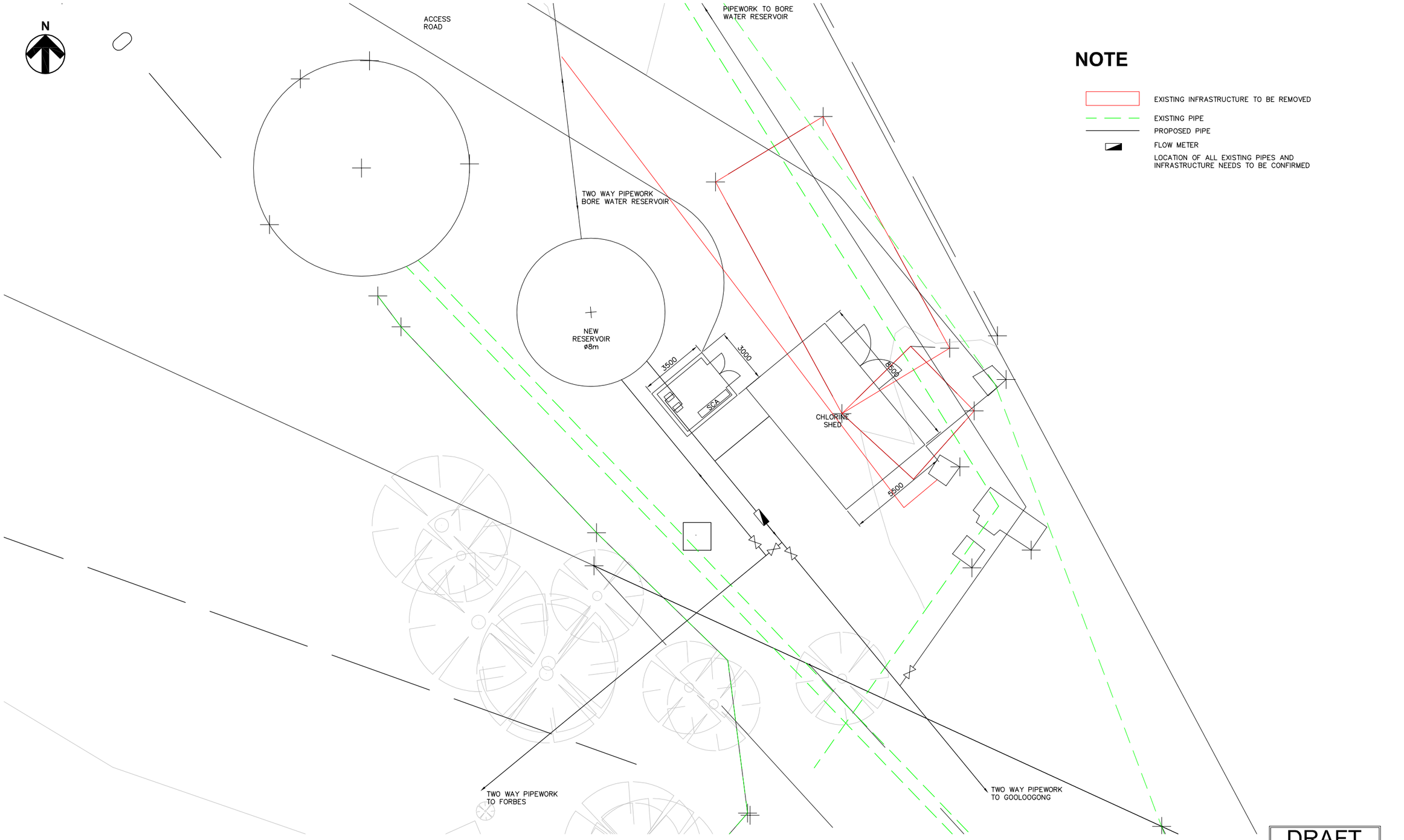


Figure 12: Gooloogong to Eugowra Road Pump Performance Curve (MPV 125.2/2B-SAK-1854 with 18.5 kW motors)

Appendix B

General Arrangement Eugowra Road and Gooloogong Bores Sites



NOTE

- EXISTING INFRASTRUCTURE TO BE REMOVED
- EXISTING PIPE
- PROPOSED PIPE
- FLOW METER
- LOCATION OF ALL EXISTING PIPES AND INFRASTRUCTURE NEEDS TO BE CONFIRMED

DRAFT
FOR REVIEW

REV	DATE	DESCRIPTION	BY	DES	CHK
B	23.01.15	DRAFT – FOR REVIEW	ACL	JIW	GAZ

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	NAME	DATE	SIGNATURE
DESIGNED	JOSHUA IWASZKO		
DRAWN	A.CLARK	23.01.15	
CHECKED	J.IWASZKO	23.01.15	
APPROVED	G.AZAR	23.01.15	
SUB REF.			

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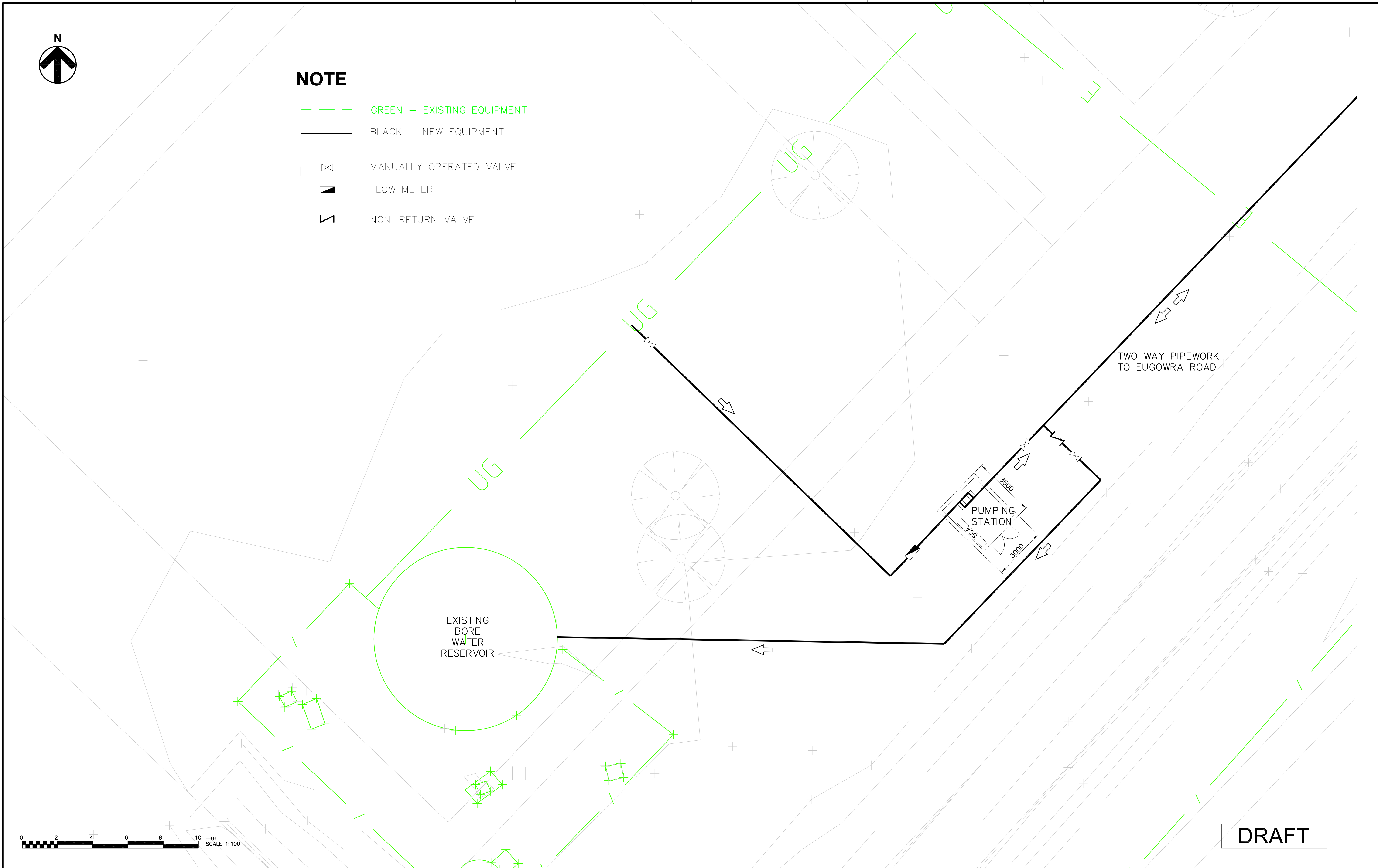
Drawing Title.

PARKES SHIRE COUNCIL
PARKES WATER SUPPLY AUGMENTATION
EUGOWRA RD PUMPING STATION UPGRADE

GENERAL ARRANGEMENT

Scale	1:100
SIZE	A1
Project Number	A932
Drawing Number	C-100
REV.	C



REV	DATE	DESCRIPTION	BY	DES	CHK
A	10.04.15	DRAFT – FOR REVIEW	JIW	JIW	GAZ

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DESIGNED	JOSHUA IWASZKO		
	NAME	DATE	SIGNATURE
DRAWN	J.IWASZKO	10.04.15	
CHECKED	G.AZAR	10.04.15	
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Drawing Title.
PARKES SHIRE COUNCIL
PARKES WATER SUPPLY AUGMENTATION
GOOLOOGONG BORES PUMPING STATION

GENERAL ARRANGEMENT

Scale 1:100 | SIZE A1
Project Number A932
Drawing Number C-150 | REV. A

Appendix C

Route Survey – Eugowra Road Site to Gooloogong Bores (Supplied as a separate file)

Sydney

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PARKES SHIRE COUNCIL

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